



Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

March 9, 2022

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

RE: Tower Share Application
131 Manor Road, Guilford, CT 06437
Latitude: 42.330038
Longitude: -72.721794
Site #: 806361_Crown_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 131 Manor Road, Guilford, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 110-foot level of the existing 150-foot monopole tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the fenced compound. Included are plans by Kimley Horn, dated March 1, 2022, Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated September 20, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Connecticut Siting Council, Docket No. 56, on April 14, 1986. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Matthew T. Hoey III, First Selectman and Jaime Stein, Town Planner for the Town of Guilford as well as the tower owner (Crown Castle) and property owner (BW Bishop & Sons, Inc.).

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the existing tower is 150-feet and the Dish Wireless LLC antennas will be located at a center line height of 110-feet.
2. The proposed modifications will not result in an increase of the site boundary as depicted on the attached site plan.



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SITE SOLUTIONS

Turnkey Wireless Development

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. The combined site operations will result in a total power density of 26.76% as evidenced by Exhibit F.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully submits that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole tower in Guilford. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 110-foot level of the existing 150-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish Wireless LLC with this tower sharing application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Guilford.

Sincerely,

Denise Sabo

Denise Sabo

Mobile: 203-435-3640

Fax: 413-521-0558

Office: 4 Angela's Way, Burlington CT 06013

Email: denise@northeastitesolutions.com



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Matthew T. Hoey III, First Selectman
Town of Guilford
31 Park Street
Guilford, CT 06437

Jaime Stein, Town Planner
Town of Guilford
50 Boston Street
Guilford, CT 06437

BW Bishop & Sons, Inc.
1355 Boston Post Road
Guilford, CT 06437

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 56

AN APPLICATION OF METRO MOBILE CTS OF NEW HAVEN, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF FACILITIES TO PROVIDE CELLULAR SERVICE IN NEW HAVEN COUNTY. : CONNECTICUT SITING
: COUNCIL
: April 14, 1986

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

Pursuant to the foregoing opinion, the Council hereby directs that a certificate of environmental compatibility and public need as required by section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of New Haven, Inc., for the construction, maintenance, and operation of cellular mobile phone telecommunication towers and associated equipment in the towns of Wolcott, Naugatuck, West Haven (existing tower), Milford, Hamden (existing tower), Guilford, and North Branford subject to the conditions below.

1. The proposed and alternate Beacon Falls sites are rejected without prejudice.
2. The Wolcott tower shall be constructed to meet Zone C wind loading with 1" of radial ice and shall not exceed 180' in height excluding antennas.
3. The Naugatuck tower shall not exceed 160' in height, excluding antennas. The certificate holder shall offer to remove the existing privately owned, unused tower now on the site.
4. Any future actions requiring the removal of the existing West Haven or Hamden towers to be shared by the certificate holder shall also apply to the equipment mounted on those towers by the certificate holder, regardless of that equipment's status under Chapter 277a of the CGS.

5. The Milford tower shall be a monopole structure not to exceed 100' in height, excluding antennas.
6. The Guilford tower shall be a monopole structure not to exceed 150' in height, excluding antennas.
7. The North Branford Route 17 site is rejected. The North Branford East Reeds Gap Road tower shall not exceed 160' in height, excluding antennas.
8. The certificate holder shall submit a development and management plan for the Wolcott, Naugatuck, Milford, Hamden, Guilford, and North Branford sites pursuant to sections 16-50j-75 through 16-50j-77 of the RSA, except that irrelevant items in section 16-50j-76 need only be identified as such. In addition to the requirements of section 16-50j-76, the D&M plan shall provide plans for evergreen screening around the fenced perimeter at the Wolcott, Milford, Hamden, Guilford, and North Branford sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.
9. All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the site development and management plan required by order 8.
10. The certificate holder shall permit public or private entities to share space on the towers approved herein, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with 16-50j-73, the

certificate holder shall notify the Council of the addition of any equipment to any approved tower.

11. A fence not lower than 8' shall surround each tower and associated equipment.
12. Unless necessary to comply with order 13, below, no lights shall be installed on any of these towers.
13. The facilities' construction and any future tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to jurisdiction pursuant to sections 16-50i and 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.
14. Construction activities shall take place during daylight working hours.
15. This decision and order shall be void and the towers and associated equipment shall be dismantled and removed, or reapplication for any new use shall be made to the CSC before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction.
16. This decision and order shall be void if all construction authorized herein is not completed within three years of the issuance of this decision, or within three years of the completion of any appeal if appeal of this decision is taken, unless otherwise approved by the Council.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the decision and order shall be served on each person listed below. A notice

of the issuance shall be published in The Record-Journal, The New Haven Register, The Branford Review, The Evening Sentinel, The Waterbury American, and The Waterbury Republican.

The parties to this proceeding are:

Metro Mobile CTS of New Haven, Inc. (Applicant)
5 Eversley Avenue
Norwalk, Connecticut 06855

ATTN: Armand Mascioli
General Manager

Mr. Kevin B. Sullivan, Esq. (its attorneys)
Byrne, Slater, Sandler, Shulman & Rouse, P.C.
111 Pearl Street
P.O. Box 3216
Hartford, Connecticut 06103

Mr. Richard Rubin, Esq.
Fleischman and Walsh, P.C.
1725 N Street, N.W.
Washington, D.C. 20036

Guilford Conservation Commission

represented by:

Mr. David B. Damer
Chairman
Guilford Conservation Commission
440 Great Hill Road
Guilford, Connecticut 06437

Mr. Robert W. Griswold, Jr.
100 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Town of Hamden
Memorial Town Hall
2372 Whitney Avenue
Hamden, Connecticut 06518

ATTN: Shirley Gonzales
Town Planner

Guilford Planning and Zoning Commission

represented by:

Mr. David W. Fisher
Chairman
Town Hall
31 Park Street
Guilford, Connecticut 06437

Town of Hamden

represented by:

John DeNicola, Jr.
Mayor
Town of Hamden
Memorial Town Hall
2372 Whitney Avenue
New Haven, Connecticut 06518

Citizens Park Council of New Haven

represented by:

Mr. John J. Ciarleglio
President
Citizens Park Council
of New Haven
36 Elmwood Road
New Haven, Connecticut 06515

Mr. Thomas V. Keating
343 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Ms. Evelyn M. Sirowich
245 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Mr. Jack B. Levine
11 White Birch Lane
Beacon Falls, Connecticut 06403

Southern New England Telephone Company

represented by:

Mr. Peter J. Tyrrell, Esq.
227 Church Street
New Haven, Connecticut 06506

Mr. Dennis Bialecki
96 West Road
Beacon Falls, Connecticut 06403

Brittany Woods Homeowner's Association

represented by:

Mr. Stephen P. DeI Sole, Esq.
DeI Sole & DeI Sole
152 Temple Street
P.O. Box 405
New Haven, Connecticut 06502-0405

Ms. Barbara G. Schlein
Box 2993 Westville Station
New Haven, Connecticut 06515

Mr. & Mrs. Joseph T. Farrell, Jr.
334 Rimmon Hill Road
Beacon Falls, Connecticut 06403

Town of Beacon Falls

represented by:

The Honorable Leonard F. D'Amico
First Selectman
10 Maple Avenue
Beacon Falls, Connecticut 06403

West Rock Ridge Park Association

represented by:

Mr. William L. Doheny Jr., D.D.S.
President
220 Mountain Road
Hamden, Connecticut 06514

Department of Parks,
Recreation & Trees

represented by:

Mr. Robert G. Sheeley
Director
Parks, Recreation & Trees
P.O. Box 1416
New Haven, Connecticut 06506

Town of Wallingford

represented by:

William W. Dickinson, Jr.
Mayor
Municipal Building
350 Center Street
P.O. Box 427
Wallingford, Connecticut 06492

New Haven Sierra Club

represented by:

Ms. Laurie Klein
270 Edgewood Avenue
New Haven, Connecticut 06511

Peter M. Lerner
State Representative
8 Merritt Avenue
Woodbridge, Connecticut 06525

Carleton J. Benson
State Representative
161 Scott Road
Prospect, Connecticut 06712

Dr. Stephen Collins (service waived)
Vice Chairman
West Rock State Park
Advisory Council
Bethany, Connecticut

Mr. Louis Melillo (service waived)
985 Wintergreen Avenue
Hamden, Connecticut

Mr. John McGeever (service waived)
339 Rimmon Hill
Beacon Falls, Connecticut 06403

Senator John Consoli (service waived)
51 Luke Hill Road
Bethany, Connecticut 06525

Representative George P. Bassing (service waived)
14 Oakwood Drive
Seymour, Connecticut 06483

Dr. George D. Whitney (service waived)
858 Oakwood Road
Orange, Connecticut

Mr. Steve Molnar (service waived)
205 West Road
Beacon Falls, Connecticut

Mr. James W. Grandy (service waived)
President
Hamden Land Conservation Trust
Hamden, Connecticut

Senator Richard S. Eaton (service waived)
269 Mulberry Point Road
Guilford, Connecticut 06437

Representative Robert M. Ward
719 Totoket Road
Northford, Connecticut 06472

Town of North Branford

represented by:

John Gesmonde, Esquire
3127 Whitney Avenue
Hamden, Connecticut 06518

Regina Smith
1887 Middletown Avenue
Northford, Connecticut 06472

(service waived)

Richard A. Nizolek
The Restland Farm Corporation
Route 17
Northford, Connecticut 06472

Mary Liska
83 Reeds Gap Road
Northford, Connecticut 06472

Ben Bullard
50 Christmas Hill Road
Guilford, Connecticut 06437

(service waived)

Roland Robichaud
31 Berncliff Drive
North Branford, Connecticut 06471

(service waived)

Irene Flynn
1926 Middletown Avenue
Northford, Connecticut 06472

(service waived)

Charles Pope
199 Donalds Road
Guilford, Connecticut 06437

Richard Abate
131 Manor Road
Guilford, Connecticut 06437

(service waived)

City of Milford

represented by:

Mayor Alberta Jagoe
Alderman Maurice Condon
Alderman Frederick Lisman
City Hall
River Street
Milford, Connecticut 06460

Thomas Scelfo
81 Berncliff Drive
North Branford, Connecticut 06471

(service waived)

Senator Thomas Scott
22 Meyers Court
Milford, Connecticut 06460

(service waived)

Helen Moore
385 Oronoque Road
Milford, Connecticut 06460

(service waived)

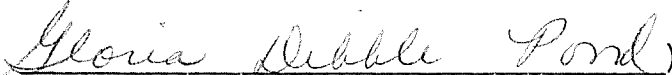

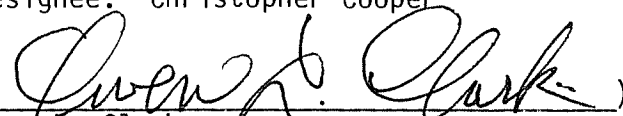

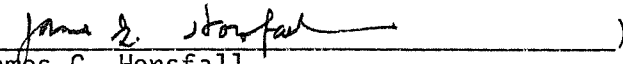
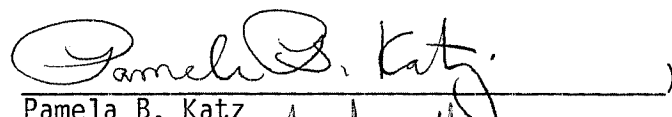
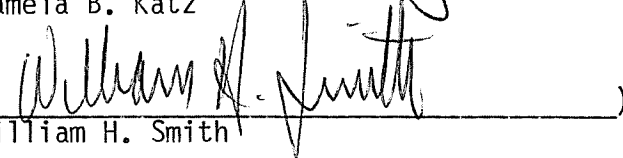

William Barberi
298 Oronoque Road
Milford, Connecticut 06460

(service waived)

C E R T I F I C A T I O N

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:

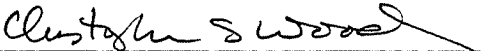
Dated at New Britain, Connecticut, this 14th day of April, 1986.

<u>Council Members</u>	<u>Vote Cast</u>
 Gloria Dibble Pond Chairperson	Yes
_____) Commissioner John Downey Designee: Commissioner Peter G. Boucher	Absent
 Commissioner Stanley Pad Designee: Christopher Cooper	No
 Owen L. Clark	Yes
 Mortimer A. Gelston	Yes
 James G. Horsfall	Yes
 Pamela B. Katz	Yes
 William H. Smith	No
 Colin C. Tait	No

STATE OF CONNECTICUT)
 :
COUNTY OF HARTFORD) ss. New Britain, April 14, 1986

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:



Christopher S. Wood, Executive Director
Connecticut Siting Council

Exhibit B

Property Card

All information is for assessment purposes only. Assessments are calculated at 70% of the estimated October 1, 2017 market value which was the date of the last revaluation as completed by eQuality Valuation Services, LLC.



The Town of
Guilford
Connecticut, USA Founded 1639

"Discover a piece of Connecticut History"

Information on the Property Records for the Municipality of Guilford was last updated on 1/22/2021.

Parcel Information

Location:	LONG HILL RD	Map and Parcel:	090017	Census Tract:	1903
Zoning:	R-5	Developer's Map:		Developer's Lot:	
Total Acreage:	21.2	Farm, Forest, Open Space Acres:	20.2	Unique ID:	580

Value Information

	Appraised Value	Assessed Value
Land	845,130	391,500
Buildings	0	0
Detached Outbuildings	0	0
Total	845,130	391,500

Owner's Information

Owner's Data

BISHOP B W & SONS INC
1355 BOSTON POST RD
GUILFORD, CT 06437

Owner History - Sales

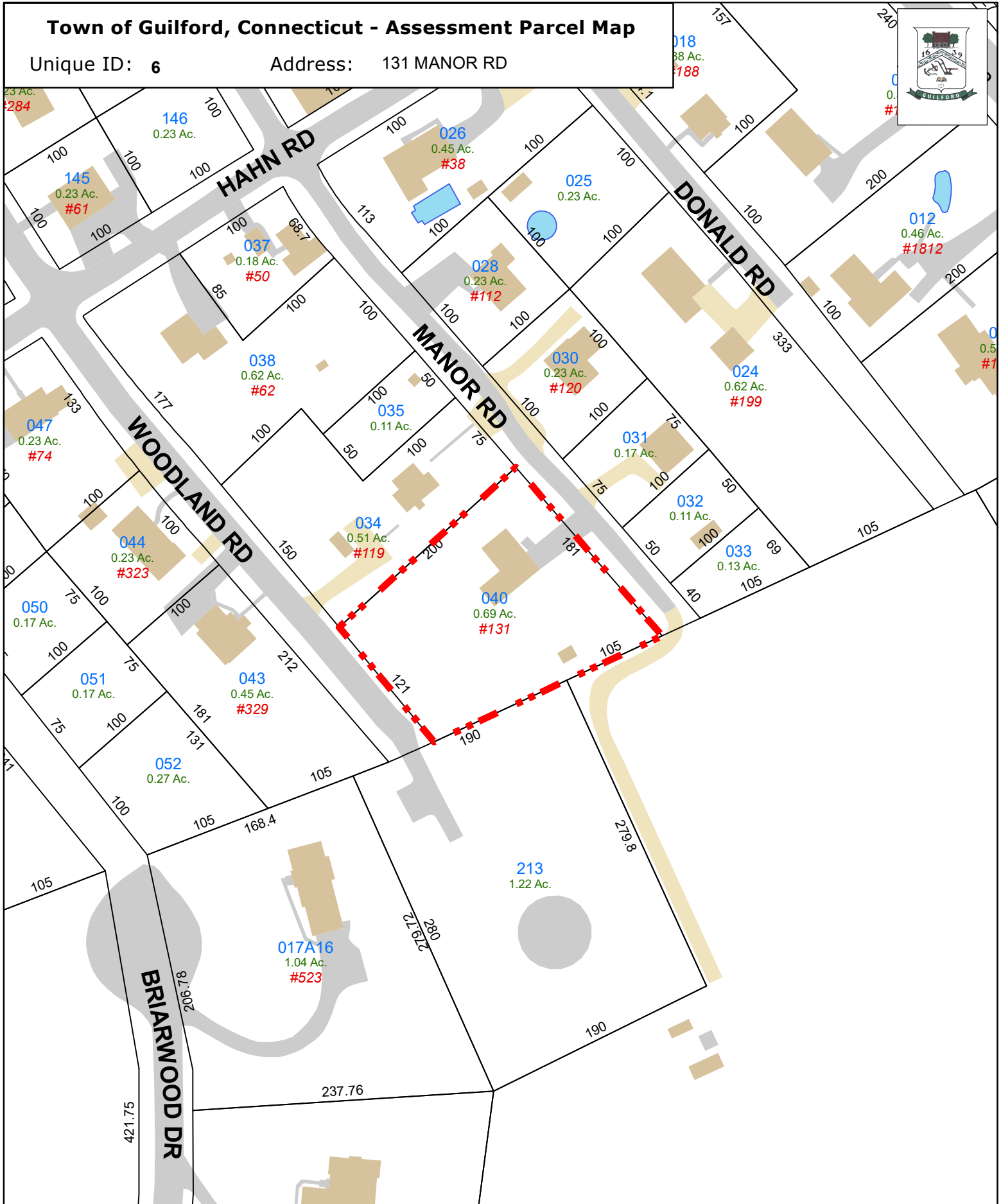
Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
BISHOP B W & SONS INC	0131	0193	11/19/1987		No	\$0

Information Published With Permission From The Assessor

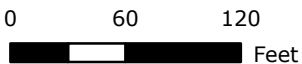
Town of Guilford, Connecticut - Assessment Parcel Map

Unique ID: 6

Address: 131 MANOR RD



Approximate Scale: 1 inch = 100 feet



Map Produced: September 2020

Disclaimer:
This map is for informational purposes only. All information is subject to verification by any user. The Town of Guilford and its mapping contractors assume no legal responsibility for the information contained herein.

Exhibit C

Construction Drawings



DISH Wireless L.L.C. SITE ID:

BOHVN00154A

DISH Wireless L.L.C. SITE ADDRESS:

**131 MANOR ROAD
GUILFORD, CT 06437**

SCOPE OF WORK
<p>THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:</p> <p>TOWER SCOPE OF WORK:</p> <ul style="list-style-type: none"> • INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) • INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT • INSTALL PROPOSED JUMPERS • INSTALL (6) PROPOSED RRUs (2 PER SECTOR) • INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP) • INSTALL (1) PROPOSED HYBRID CABLE <p>GROUND SCOPE OF WORK:</p> <ul style="list-style-type: none"> • INSTALL (1) PROPOSED METAL PLATFORM • INSTALL (1) PROPOSED ICE BRIDGE • INSTALL (1) PROPOSED PPC CABINET • INSTALL (1) PROPOSED EQUIPMENT CABINET • INSTALL (1) PROPOSED POWER CONDUIT • INSTALL (1) PROPOSED TELCO CONDUIT • INSTALL (1) PROPOSED TELCO-FIBER BOX • INSTALL (1) PROPOSED GPS UNIT • INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED) • INSTALL (1) PROPOSED FIBER NID (IF REQUIRED) • DISH Wireless L.L.C. TO USE EXISTING EMPTY METER SOCKET

SITE INFORMATION	PROJECT DIRECTORY
<p>PROPERTY OWNER: JEFFREY CARELTON ADDRESS: 131 MANOR ROAD GUILFORD, CT 06437</p> <p>TOWER TYPE: MONOPOLE</p> <p>CROWN CASTLE SITE ID: 806361</p> <p>CROWN CASTLE APP NUMBER: 553372 COUNTY: NEW HAVEN</p> <p>LATITUDE (NAD 83): 41° 19' 48.09" N 41.330025° N LONGITUDE (NAD 83): 72° 43' 18.51" W 72.721808° W</p> <p>ZONING JURISDICTION: CONNECTICUT SITING COUNCIL ZONING DISTRICT: R-3</p> <p>PARCEL NUMBER: 090091903.023011</p> <p>OCCUPANCY GROUP: U</p> <p>CONSTRUCTION TYPE: II-B</p> <p>POWER COMPANY: CONNECTICUT LIGHT & POWER CO TELEPHONE COMPANY: LIGHTOWER</p>	<p>APPLICANT: DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120</p> <p>TOWER OWNER: CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377</p> <p>SITE DESIGNER: KIMLEY-HORN & ASSOCIATES 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 (216) 505-7771 COA #: PEC.0000738</p> <p>SITE ACQUISITION: VICTOR NUNEZ (917) 563-3682</p> <p>CONSTRUCTION MANAGER: JAVIER SOTO JAVIER.SOTO@DISH.COM</p> <p>RF ENGINEER: SYED ZAIDI SYED.ZAIDI@DISH.COM</p>



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601



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.

DRAWN BY: AMG
CHECKED BY: KJC
APPROVED BY: ---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/01/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLC-16450

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM
CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

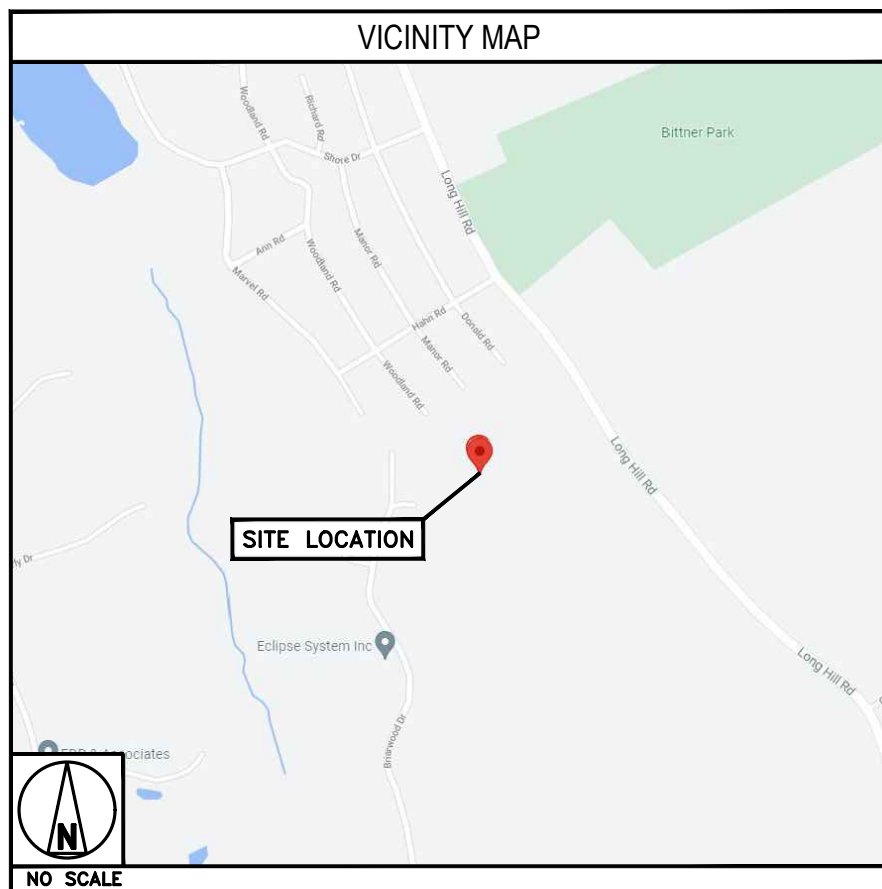
11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

DIRECTIONS

DIRECTIONS FROM DISH Wireless L.L.C. OFFICE: 03/01/22
Exp. 01/31/23

- 95 SOUTH TO EXIT 58 (RT 77)
- TAKE RT 77 NORTH TO A LEFT ONTO FLAT MEADOW RD (1.5 MILES).
- TAKE SECOND RIGHT (AT END OF RD.) ONTO LONG HILL RD.
- TAKE A LEFT ONTO HAHN RD. (2 MILES).
- TAKE SECOND LEFT ONTO MANOR RD.
- SITE AT END OF MANOR RD.

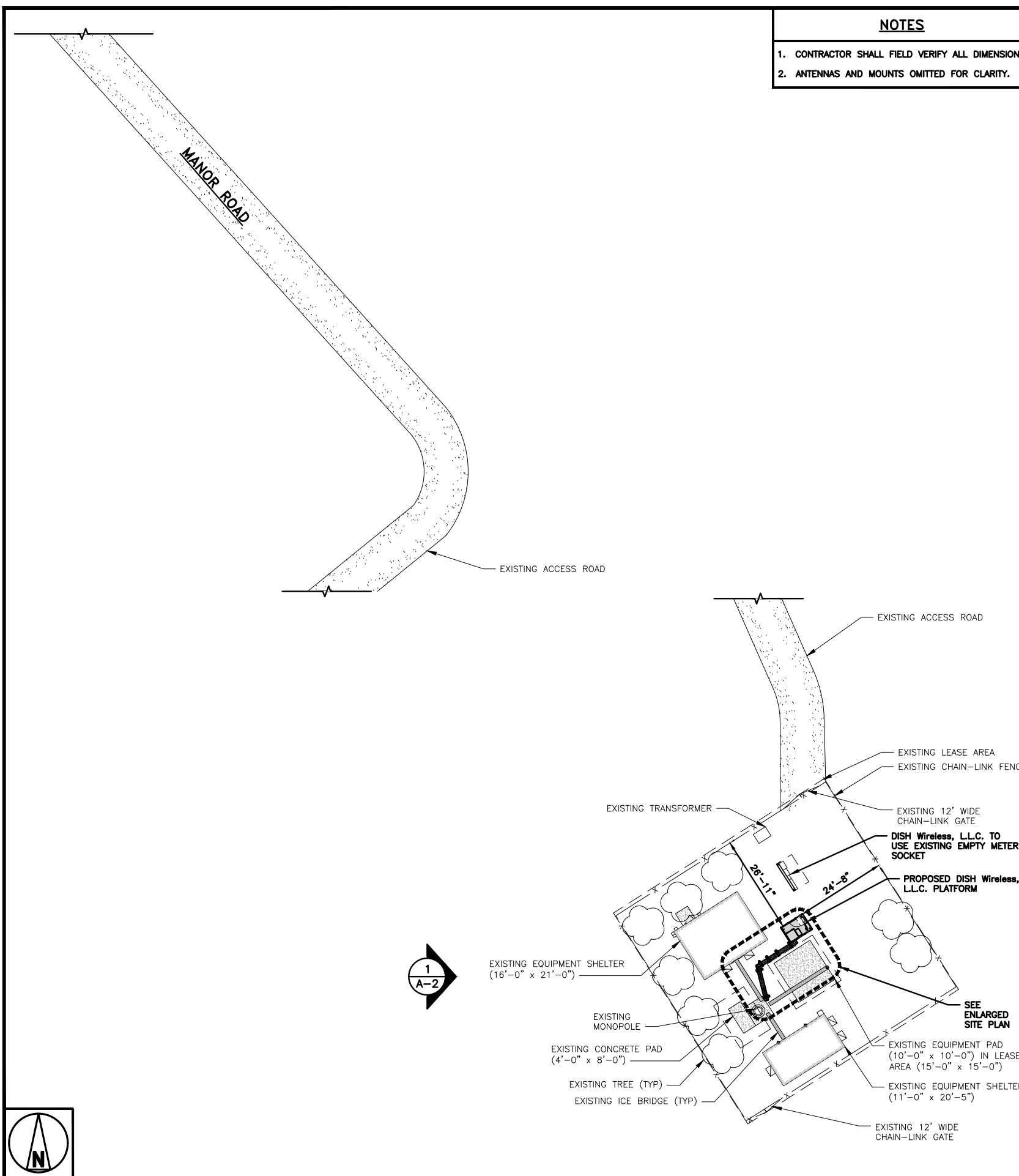


CONNECTICUT CODE OF COMPLIANCE

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	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

SHEET INDEX	
SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

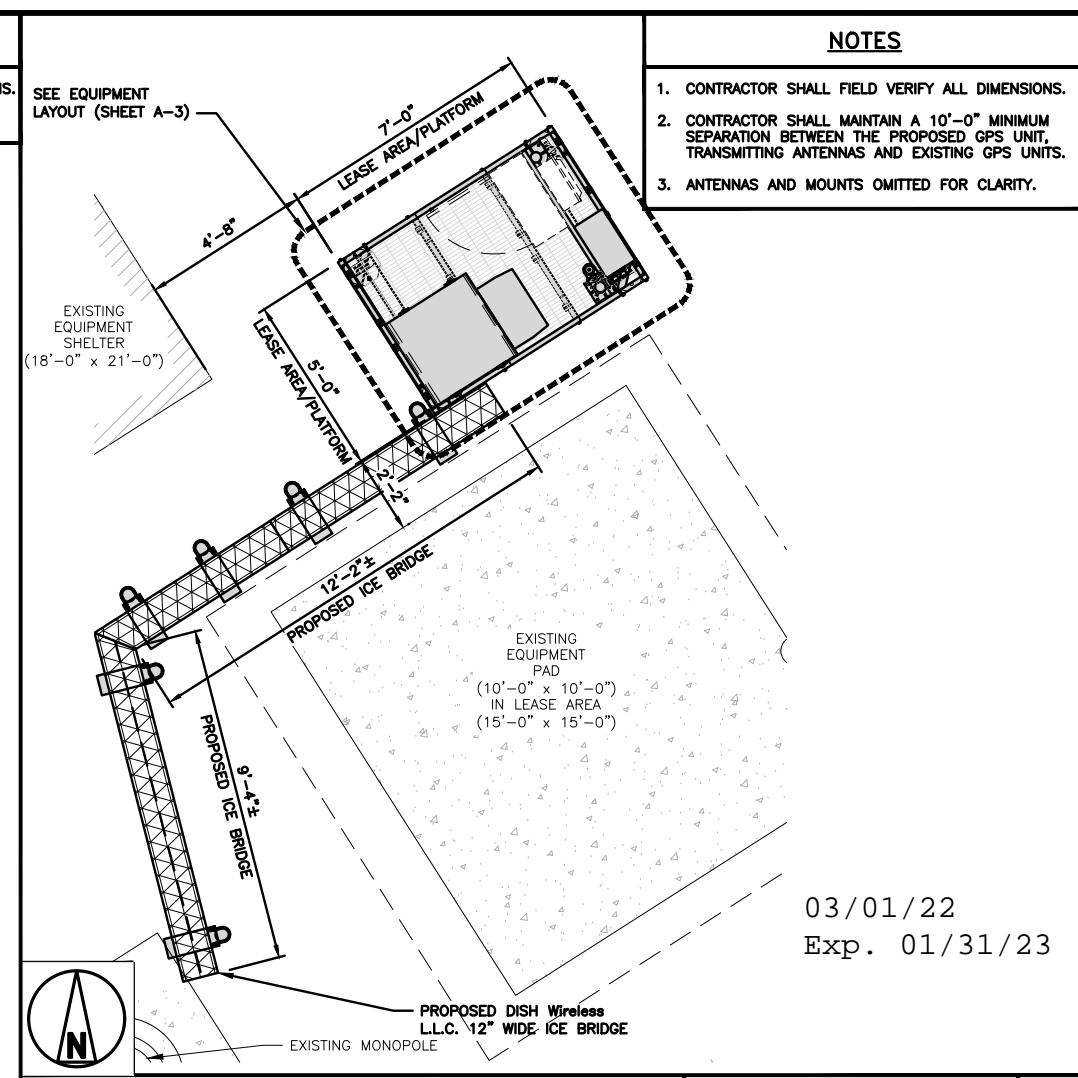


OVERALL SITE PLAN

16' 12' 8' 4' 0' 16' 32'
1/16"=1'-0"

1

NOTES
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

12" 6" 0' 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

2

NOTES
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



OVERALL UTILITY ROUTE PLAN

NO SCALE

3

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley Horn
COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

STATE OF CONNECTICUT
BRUCE BREWER
29510
LICENSED PROFESSIONAL ENGINEER
03/01/22
Exp. 01/31/23

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.

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMG	KJC	---
RFDS REV #:	---	

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/01/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLC-16450

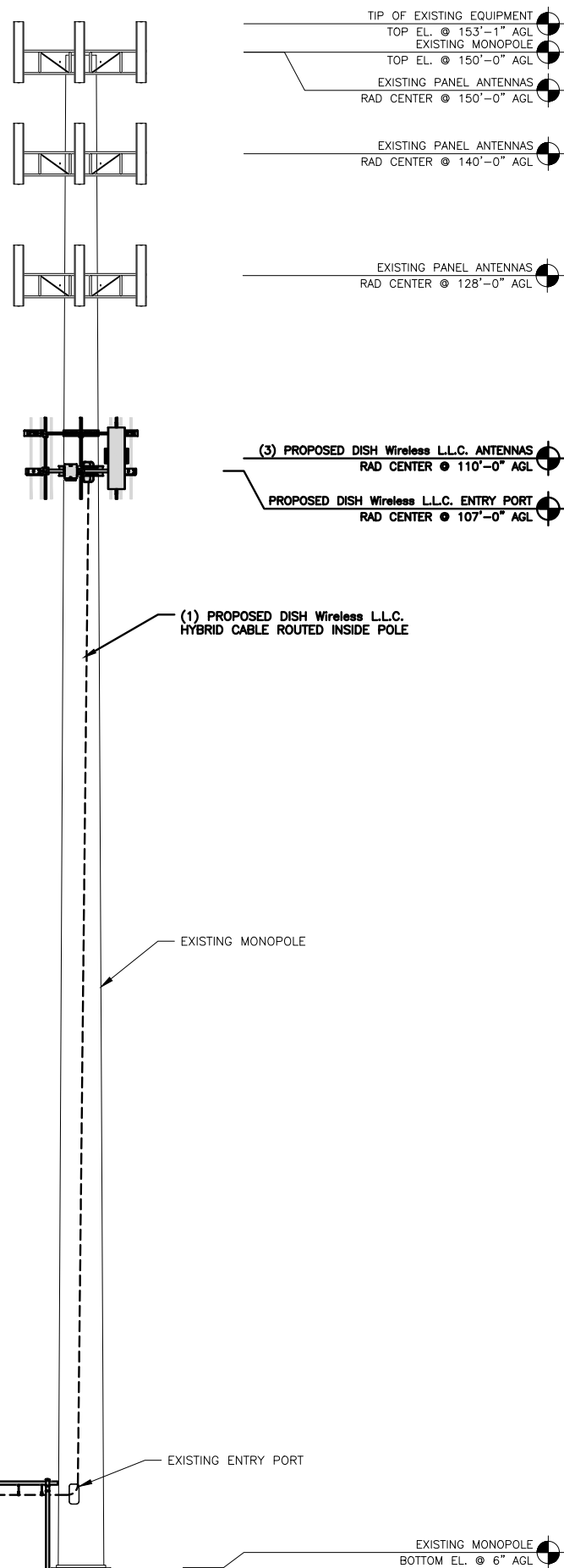
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
OVERALL AND ENLARGED
SITE PLAN

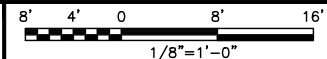
SHEET NUMBER
A-1

NOTES

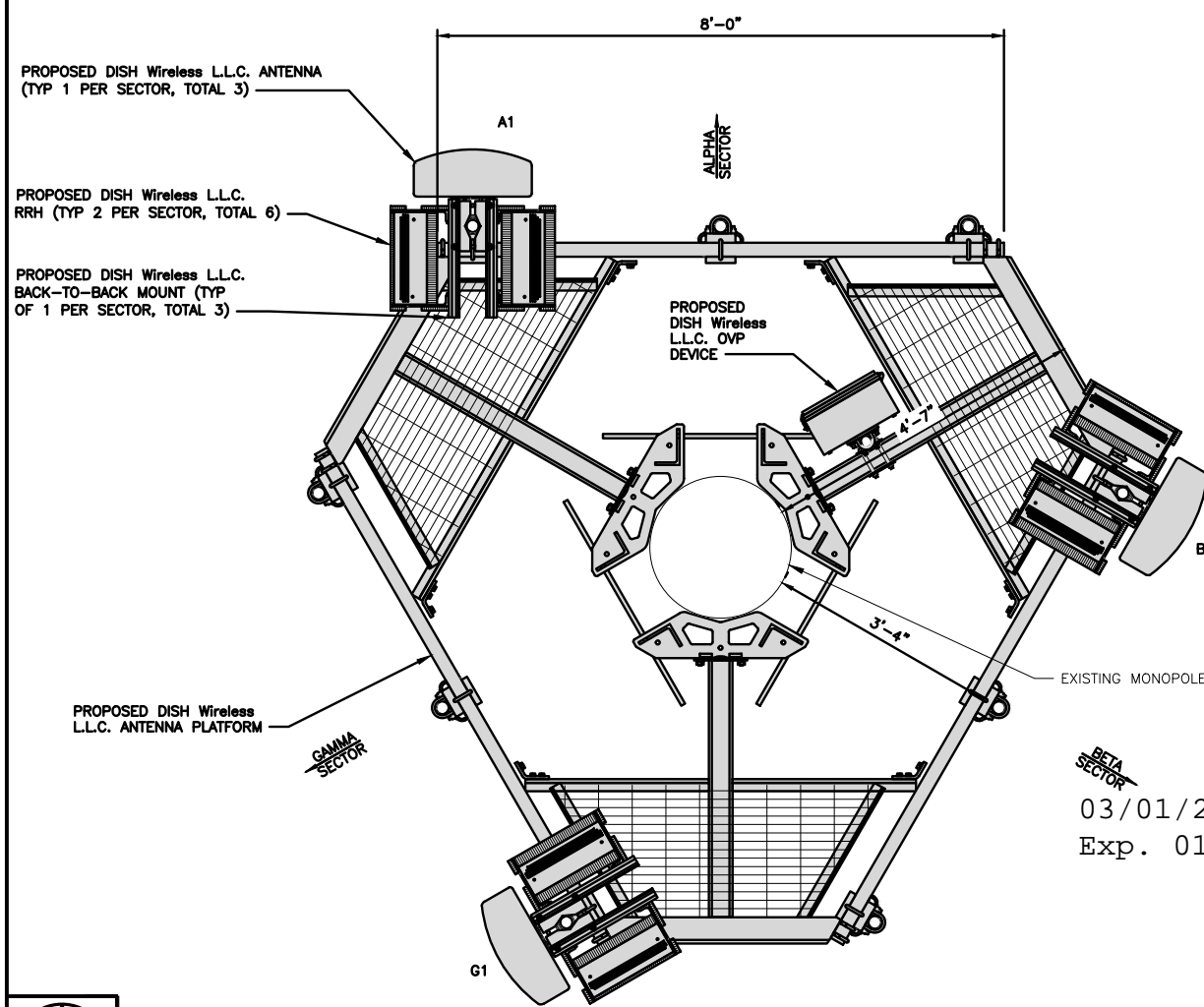
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



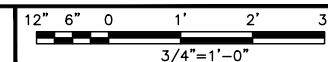
PROPOSED WEST ELEVATION



1



ANTENNA LAYOUT



2

SECTOR	POSITION	ANTENNA					TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	0°	110'-0"	(1) HIGH-CAPACITY HYBRID CABLE (135'-0" LONG)
BETA	B1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	120°	110'-0"	
GAMMA	G1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	240°	110'-0"	

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU - TA08025-B604	5G	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.
	A1	FUJITSU - TA08025-B605	5G	
BETA	B1	FUJITSU - TA08025-B604	5G	
	B1	FUJITSU - TA08025-B605	5G	
GAMMA	G1	FUJITSU - TA08025-B604	5G	
	G1	FUJITSU - TA08025-B605	5G	

ANTENNA SCHEDULE

NO SCALE

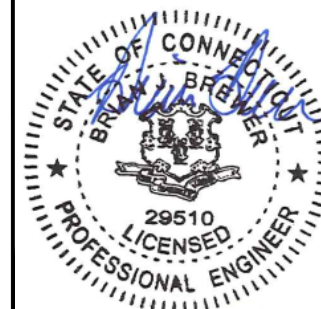
3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601



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AMG KJC ---

RFDS REV #: ---

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KHCLC-16450

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

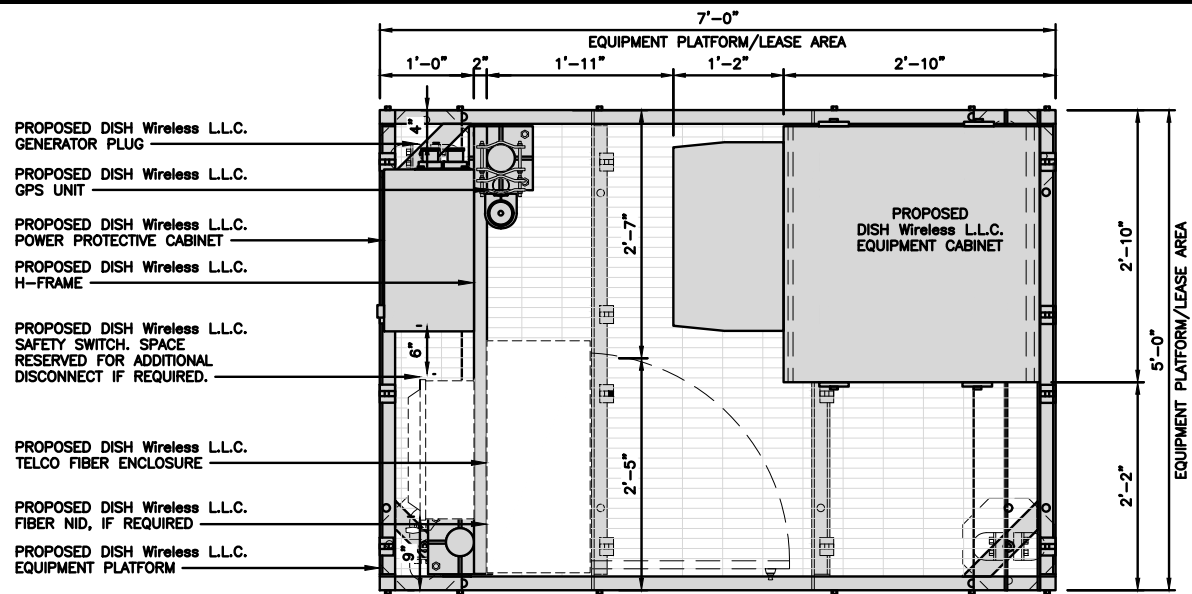
SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

SHEET NUMBER

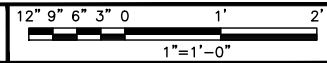
A-3

NOTES

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT CABINET OMITTED FOR CLARITY



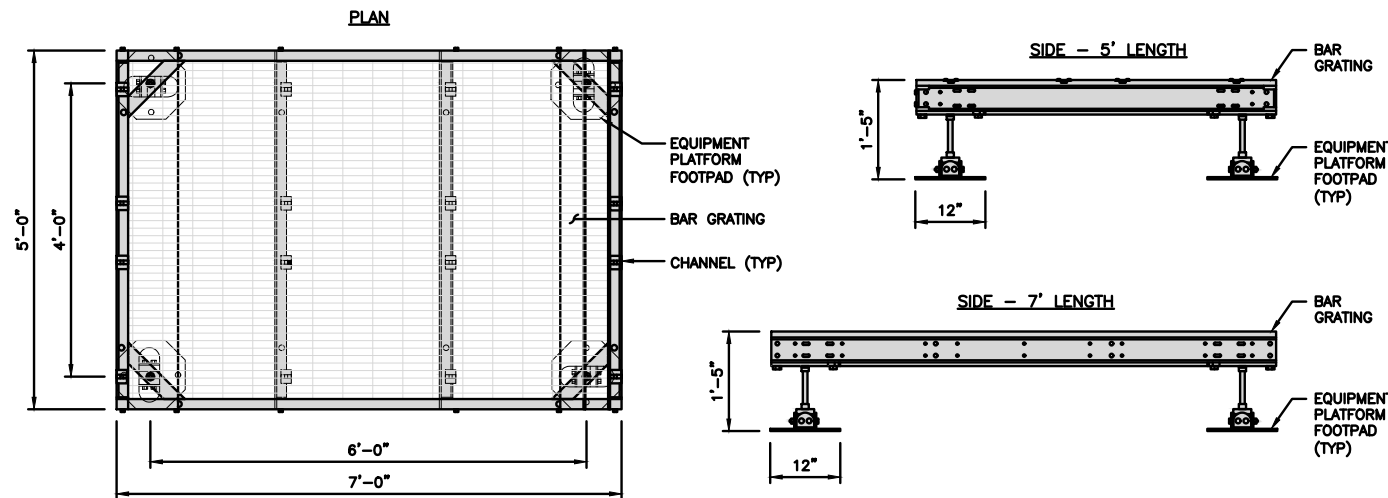
PLATFORM EQUIPMENT PLAN



**COMMSCOPE MTC4045LP
5X7 PLATFORM**

DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

- NOTE:**
1. GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"
2. PLATFORM TO BE LEVEL WITHIN 1"



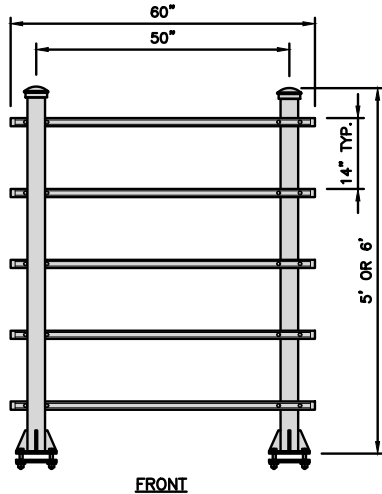
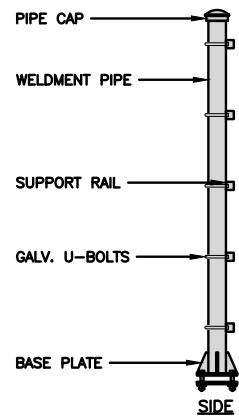
PLATFORM DETAIL

NO SCALE 2

**COMMSCOPE MTC4045HFLD
H-FRAME**

UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

- NOTE:**
OR DISH Wireless L.L.C. APPROVED EQUIVALENT



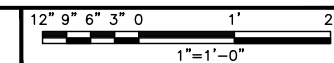
H-FRAME DETAIL

NO SCALE 3

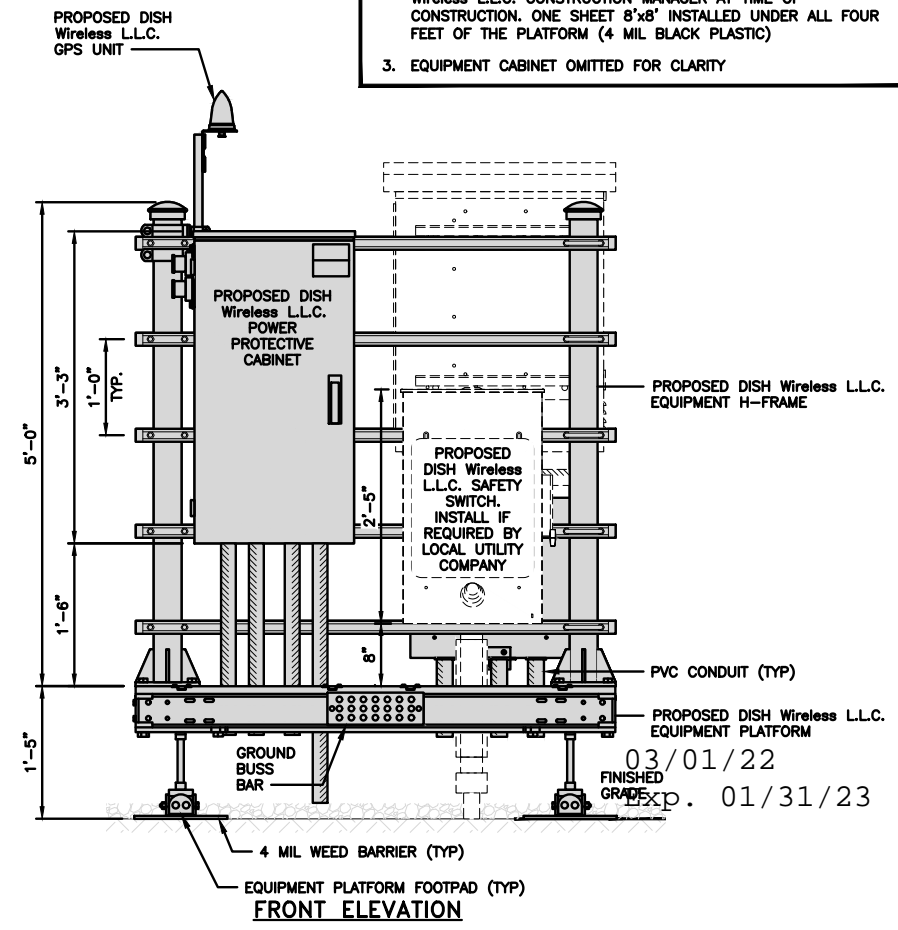
NOT USED

NO SCALE 4

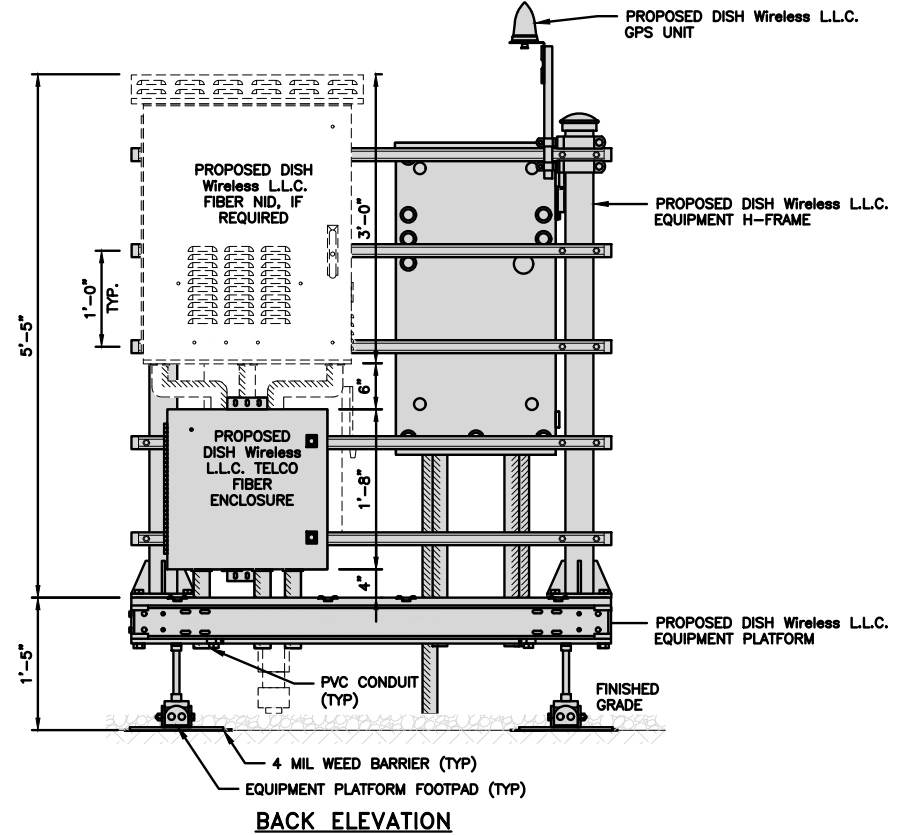
H-FRAME EQUIPMENT ELEVATION



5

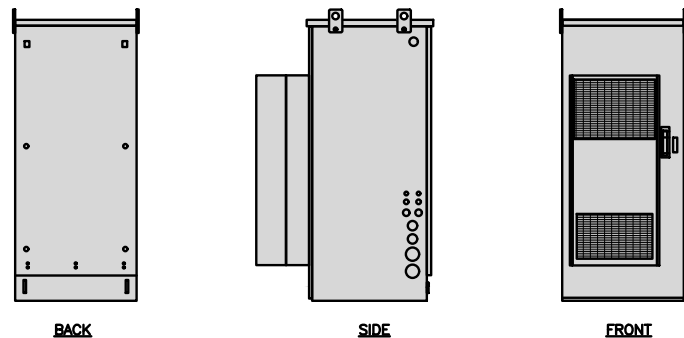
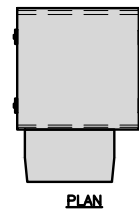


FRONT ELEVATION



BACK ELEVATION

CHARLES INDUSTRY HEX CUBE-PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	-48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs

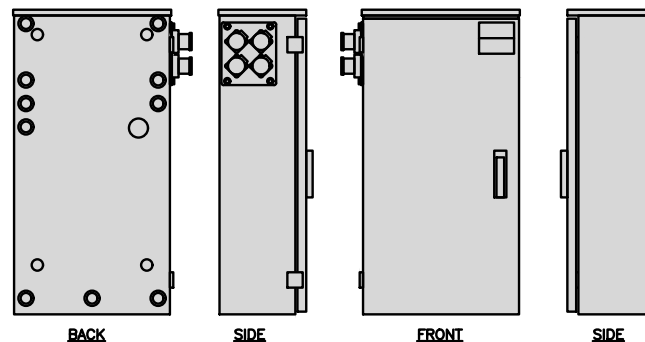
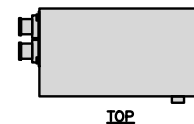


CABINET DETAIL

NO SCALE

1

RAYCAP PPC RDIAC-2465-P-240-MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

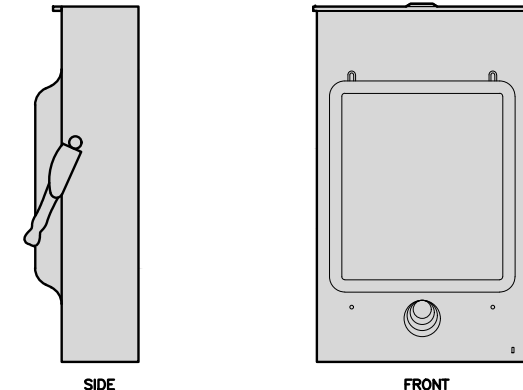
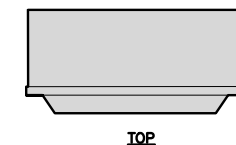


POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

2

SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875

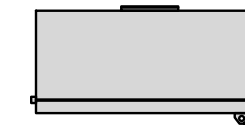


SAFETY SWITCH DETAIL

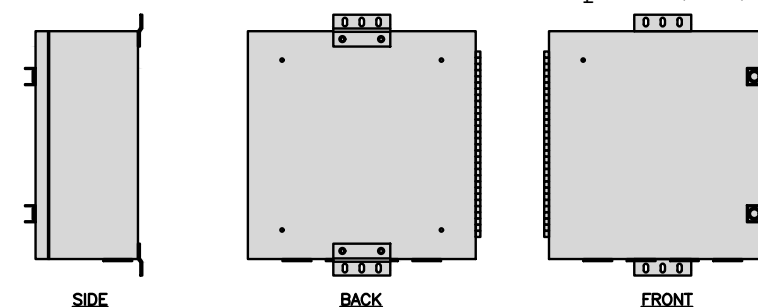
NO SCALE

3

CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



03/01/22
Exp. 01/31/23



FIBER TELCO ENCLOSURE DETAIL

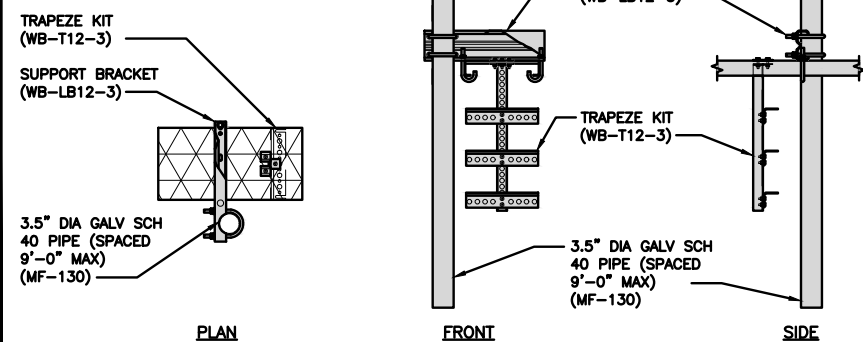
NO SCALE

6

NOT USED NO SCALE 4

NOT USED NO SCALE 5

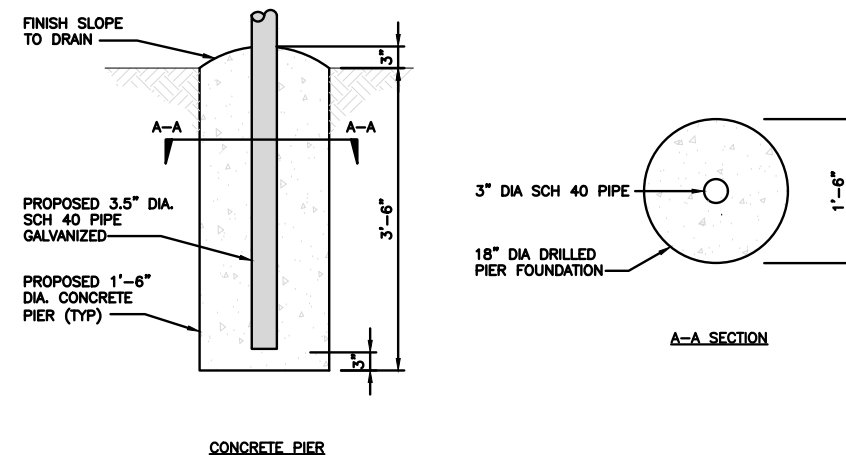
COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT		INCLUDED PRODUCTS:	WB-T12-3 TRAPEZE KIT, 3 RUNGS
DIMENSIONS (HxL)	160"x10'	WB-LB12-3 SUPPORT BRACKET	
WEIGHT/ VOLUME	325.0 LBS	MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"	
CABLE RUN (QTY)	12		



ICE BRIDGE DETAIL

NO SCALE

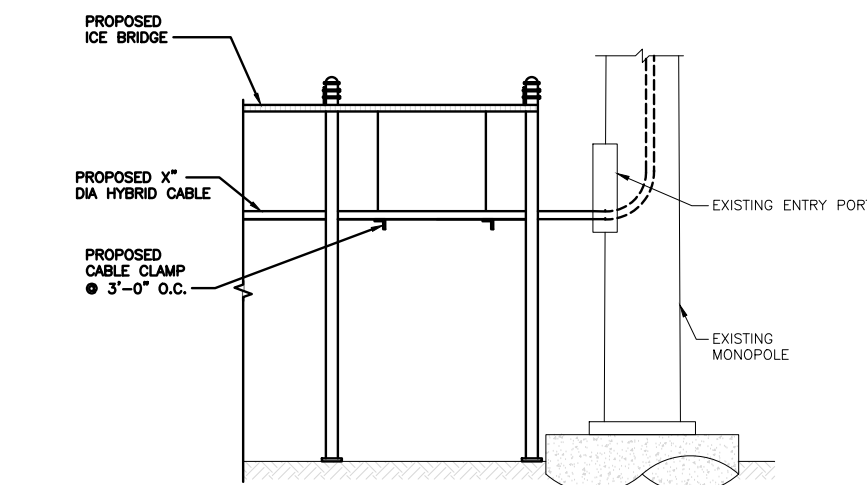
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TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



HYBRID CABLE RUN

NO SCALE

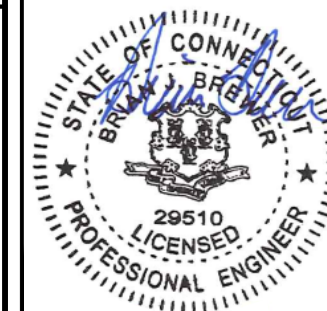
9

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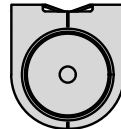
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PROJECT INFORMATION
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GUILFORD, CT 06437

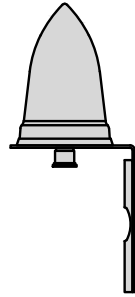
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

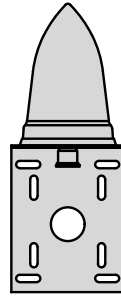
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



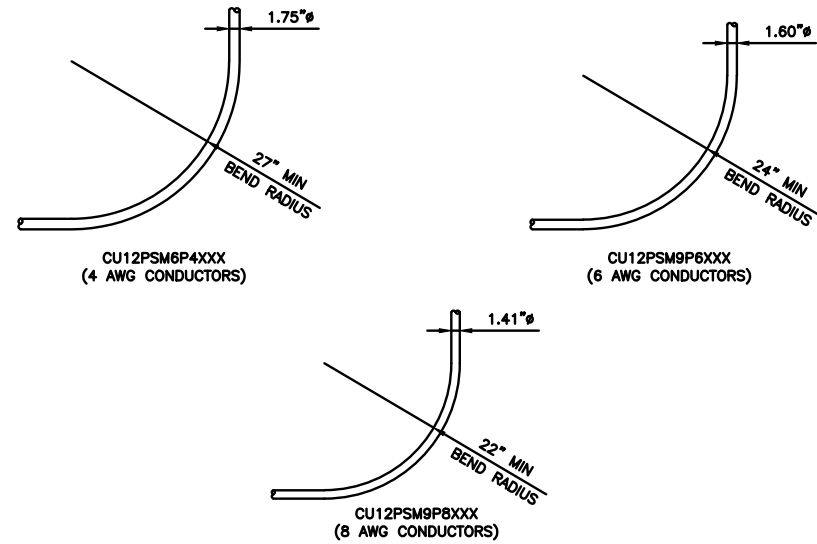
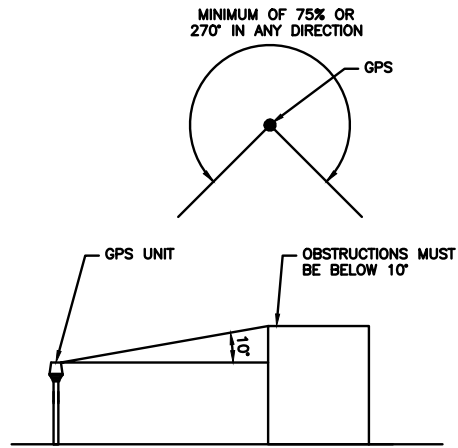
TOP



BACK



SIDE



GPS DETAIL

NO SCALE

1

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2

CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUS

NO SCALE

3

03/01/22
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131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-5

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

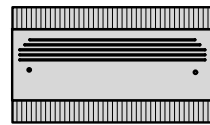
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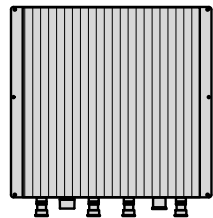
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9

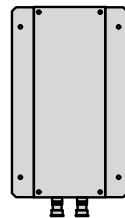
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



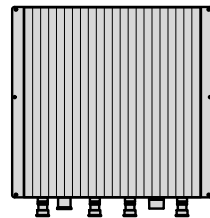
PLAN



BACK



SIDE



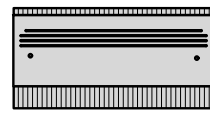
FRONT

RRH DETAIL

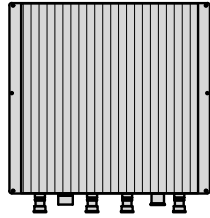
NO SCALE

1

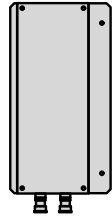
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



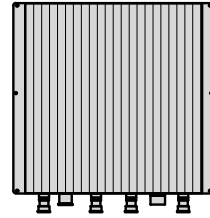
PLAN



BACK



SIDE



FRONT

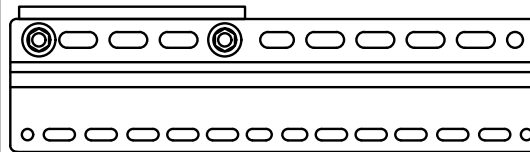
RRH DETAIL

NO SCALE

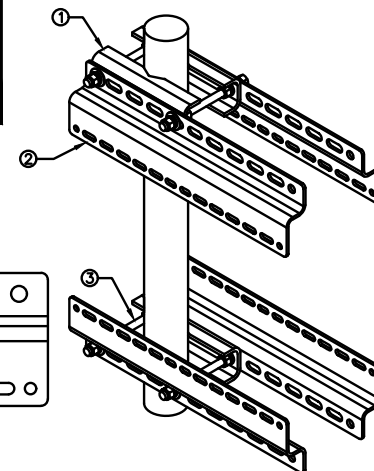
2

SABRE DOUBLE Z-BRACKET C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



RRH MOUNT DETAIL

NO SCALE

3

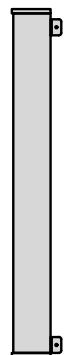
JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	82.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



PLAN



BACK



SIDE



FRONT

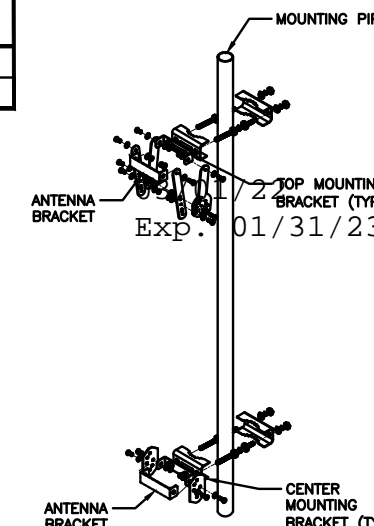
ANTENNA DETAIL

NO SCALE

4

JMA ANTENNA MOUNTING BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5 TO 4.5 INCHES

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS
FOR 4-, 6-, AND 8-FOOT ANTENNAS
ANTENNA BRACKET NOT PART OF KIT



ANTENNA BRACKET DETAIL

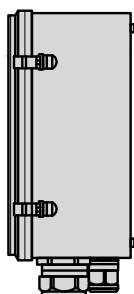
NO SCALE

6

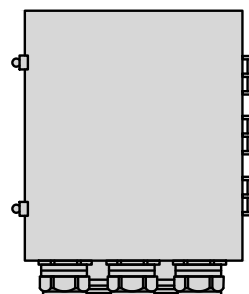
RAYCAP RDIC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



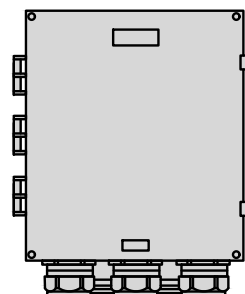
PLAN



SIDE



BACK



FRONT

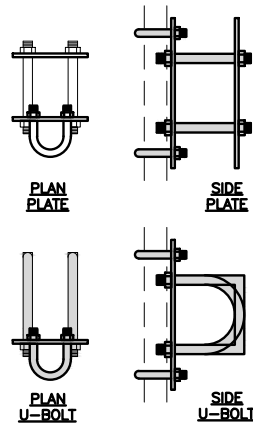
SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

7

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



PLAN
U-BOLT

SIDE
U-BOLT

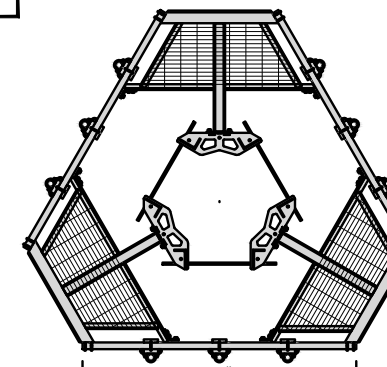
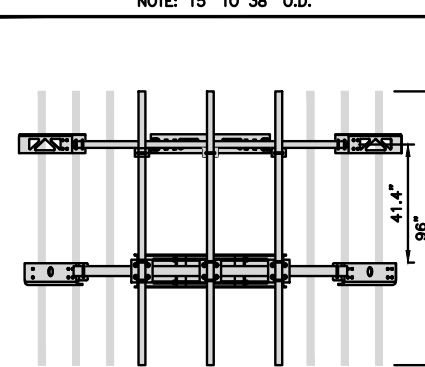
RRH/OVP MOUNT DETAIL

NO SCALE

8

COMMSCOPE MC-PK8-DSH	
FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



ANTENNA PLATFORM DETAIL

NO SCALE

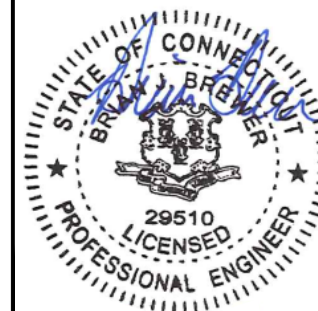
9

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601



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TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:

AMG KJC ---

RFDS REV #: ---

**CONSTRUCTION
DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/01/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

KHCLC-16450

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

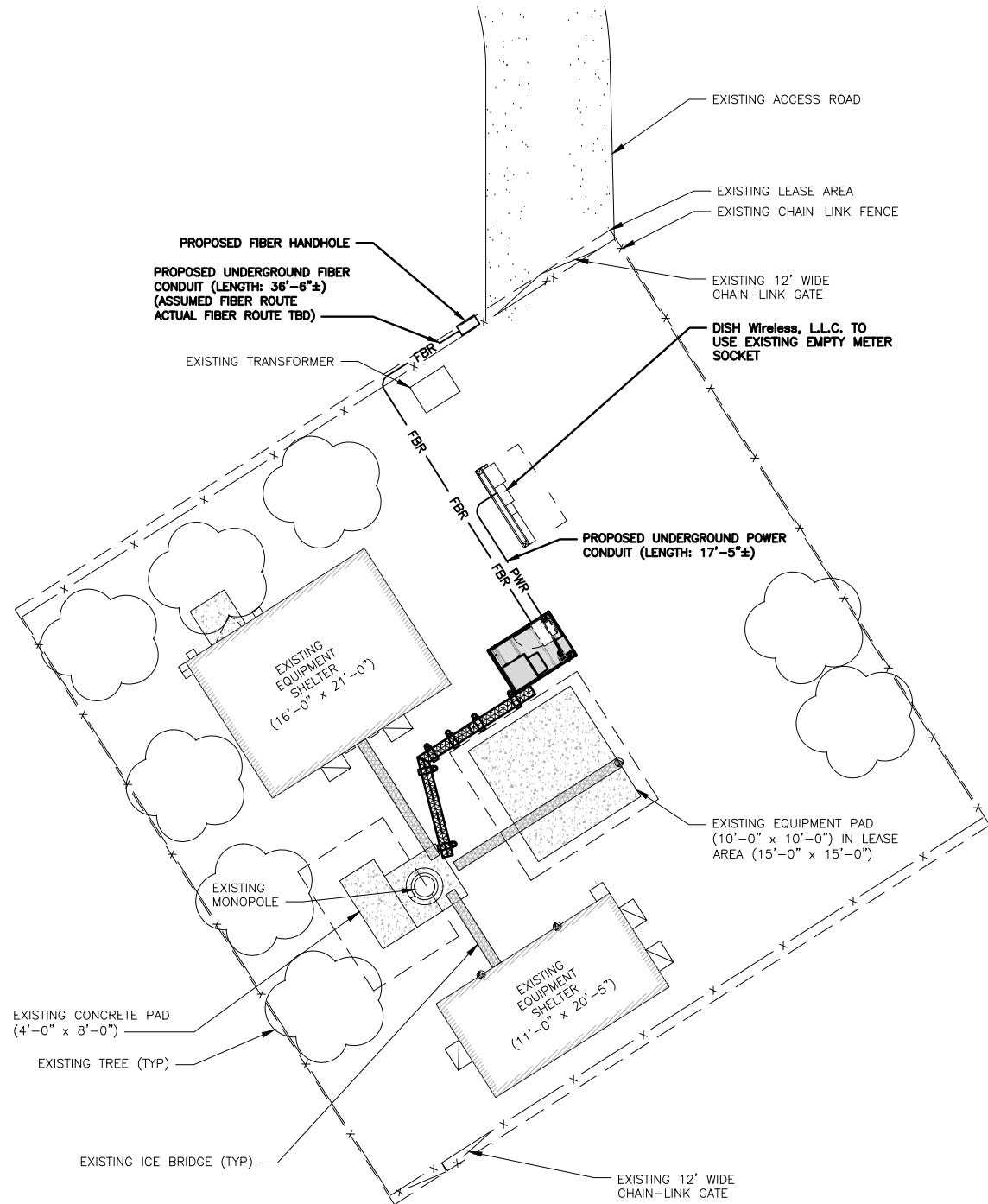
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

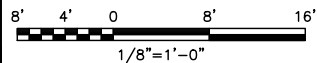
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS NOT AN OPTION, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



UTILITY ROUTE PLAN



1

DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
2. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL STATE AND LOCAL CODES, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
3. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
4. CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETE SYSTEM.
6. CONTRACTOR SHALL PROVIDE PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NEC ARTICLE 314.
7. CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
8. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM.
9. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC 250. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, AND EQUIPMENT CABINETS.
10. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
11. PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS.
13. ALL TRENCHES IN COMPOUND TO BE HAND DUG

ELECTRICAL NOTES

03/01/22

Exp. 01/31/23
NO SCALE

2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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RALEIGH, NC 27601



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AMG	KJC	---

RFDS REV #: ---

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
ELECTRICAL/FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER

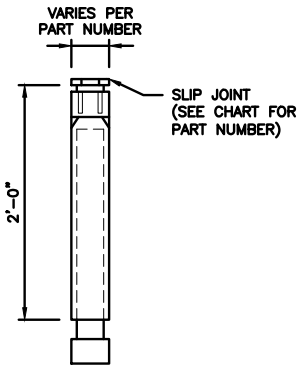
E-1

NOT USED

NO SCALE

3

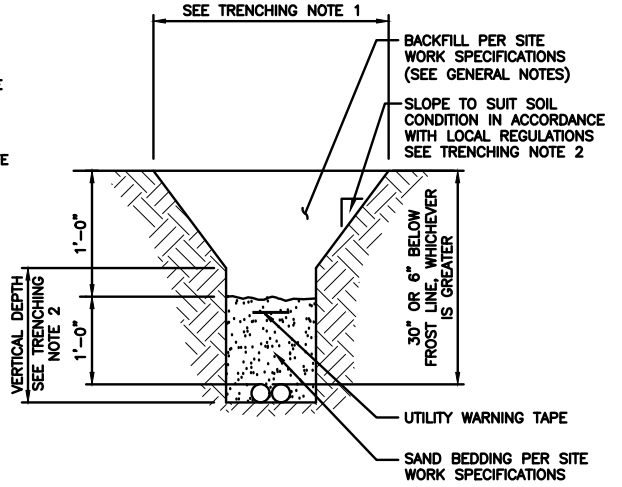
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"



NOTE: CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

TRENCHING NOTES

- CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION, WHICHEVER IS THE MOST STRINGENT.



EXPANSION JOINT DETAIL

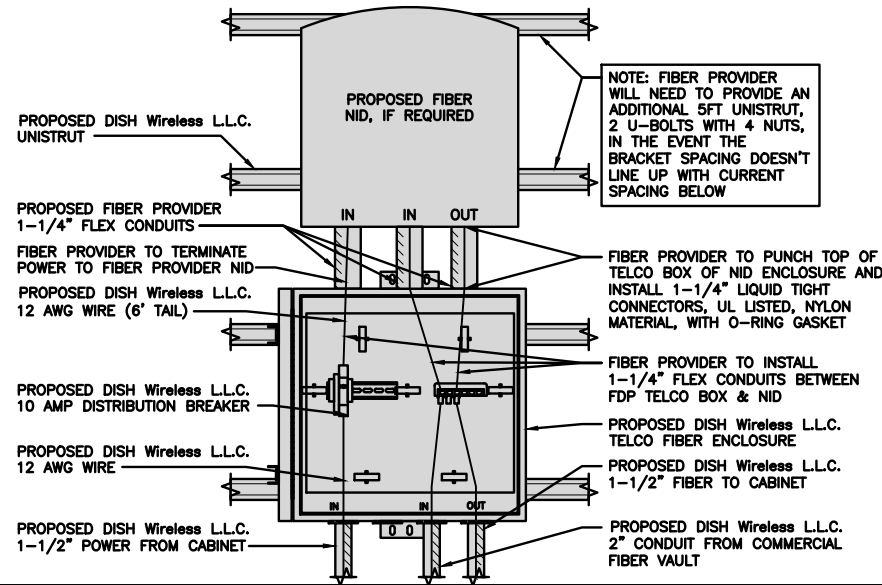
NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL

NO SCALE 2

NOT USED

NO SCALE 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

03/01/22
Exp. 01/31/23



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LITTLETON, CO 80120



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DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER
E-2

NOT USED

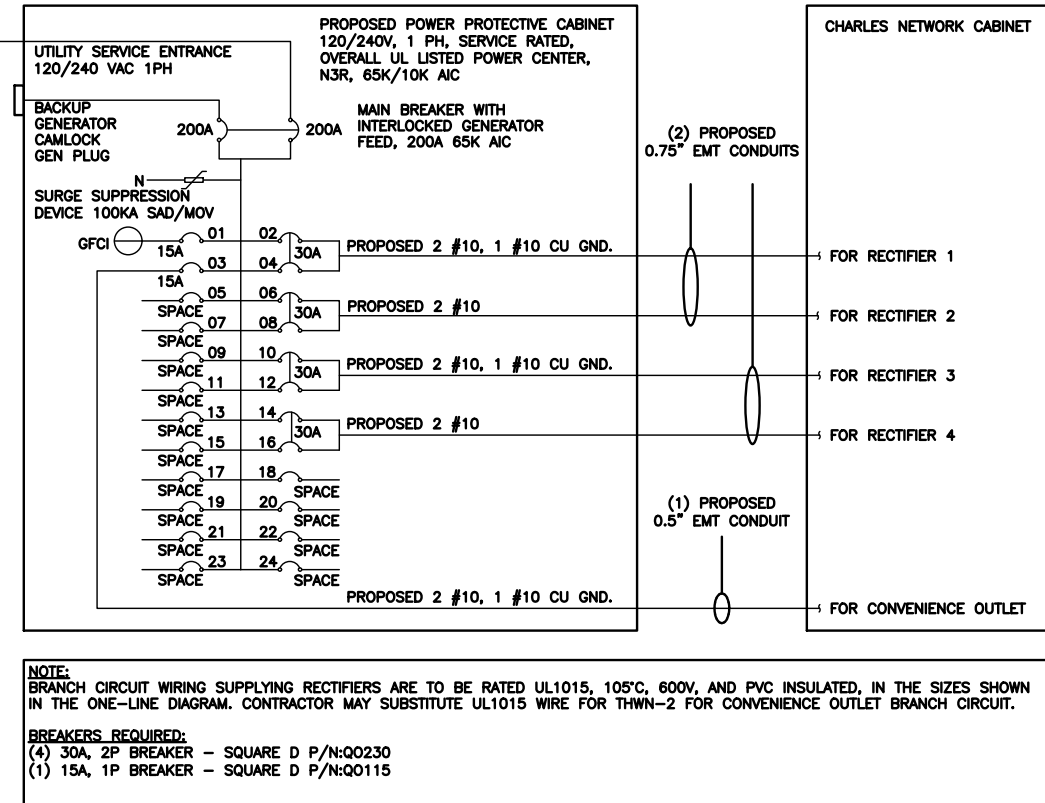
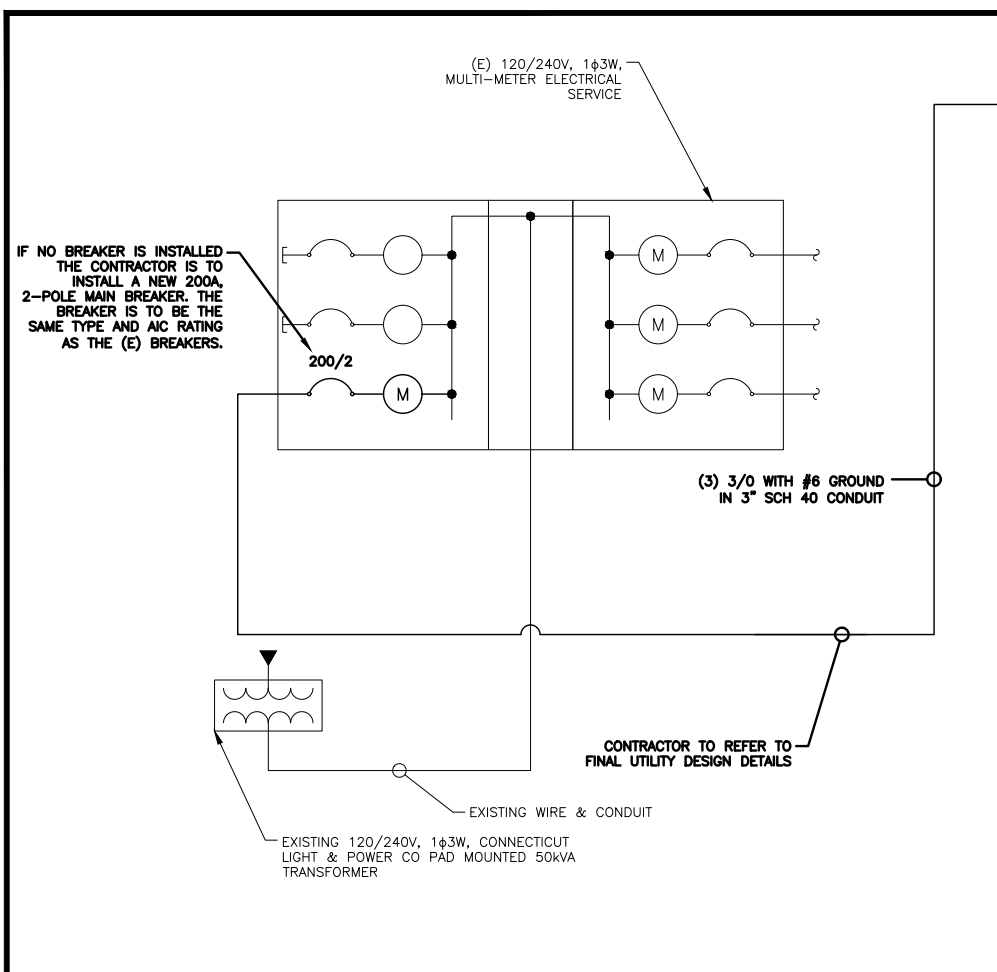
NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9



NOTE:
BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105°C, 600V, AND PVC INSULATED, IN THE SIZES SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER - SQUARE D P/N:Q0230
(1) 15A, 1P BREAKER - SQUARE D P/N:Q0115

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T-1) ARTICLE 210.19(A)(1) FPN NO. 4.

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2014/17 NEC TABLE 310.15(B)(3)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

#12 FOR 15A-20A/1P BREAKER: 0.8 x 30A = 24.0A
#10 FOR 25A-30A/2P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A-40A/2P BREAKER: 0.8 x 55A = 44.0A
#6 FOR 45A-60A/2P BREAKER: 0.8 x 75A = 60.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
0.5" CONDUIT - 0.122 SQ. IN AREA
0.75" CONDUIT - 0.213 SQ. IN AREA
2.0" CONDUIT - 1.316 SQ. IN AREA
3.0" CONDUIT - 2.907 SQ. IN AREA

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.
#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

0.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.
#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.
3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE. *03/01/22*

Exp. 01/31/23

dish wireless.

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BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
ELECTRICAL ONE-LINE, FAULT
CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

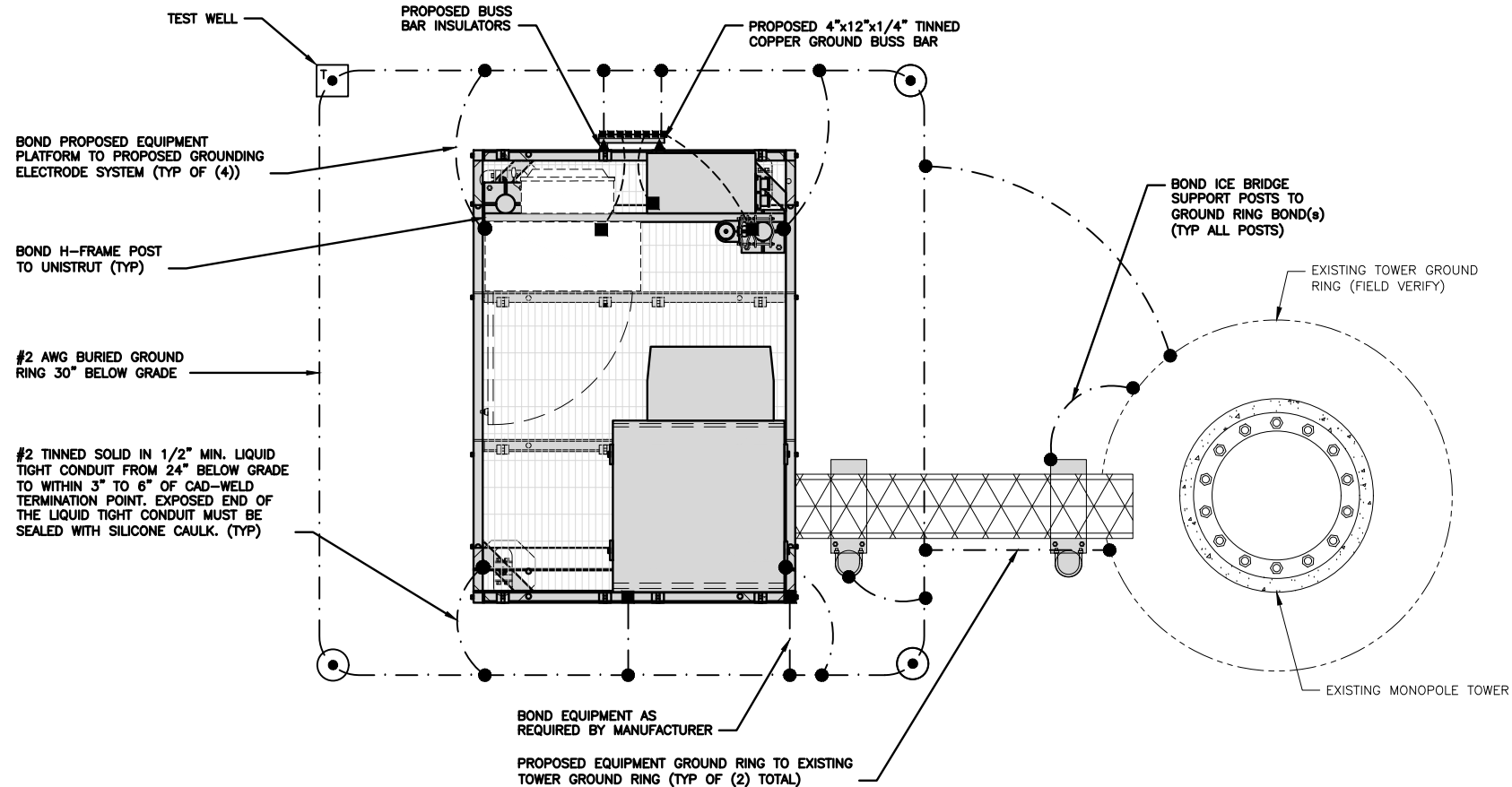
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
PPC GFCI OUTLET	180	180	15A	1	A	2	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET			15A	3	B	4	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
-SPACE-				5	A	6	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2
-SPACE-				7	B	8	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2
-SPACE-				9	A	10	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3
-SPACE-				11	B	12	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3
-SPACE-				13	A	14	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4
-SPACE-				15	B	16	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS			180	180				11520	11520	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			11700	11700	VOLTAGE AMPS					
			98	98	AMPS					
			98		MAX AMPS					
			123		MAX 125%					

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

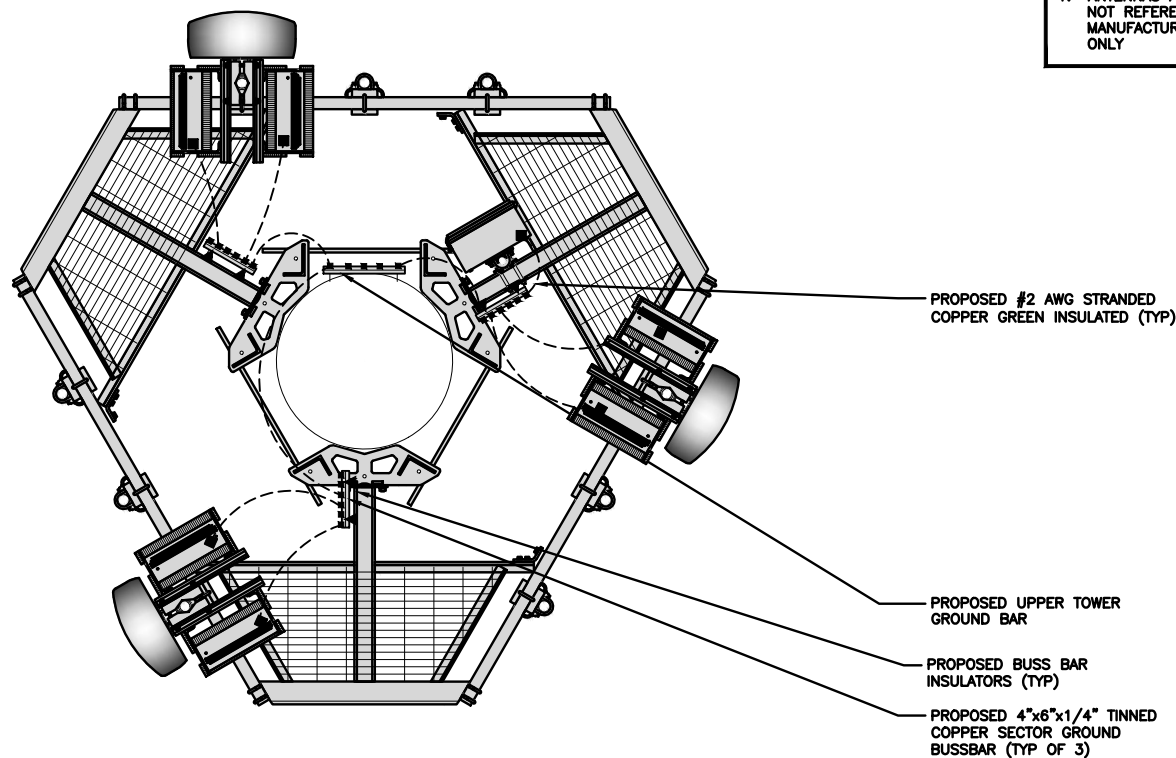


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

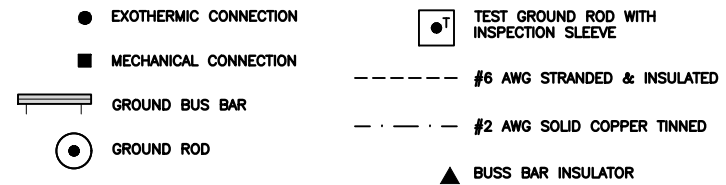
NOTES

1. ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE ONLY



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH Wireless L.L.C. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

- EXTERIOR GROUND RING:** #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- TOWER GROUND RING:** THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- INTERIOR GROUND RING:** #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- BOND TO INTERIOR GROUND RING:** #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- GROUND ROD:** UL LISTED COPPER CLAD STEEL MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.
- CELL REFERENCE GROUND BAR:** POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- HATCH PLATE GROUND BAR:** BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- EXTERIOR CABLE ENTRY PORT GROUND BARS:** LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- TELCO GROUND BAR:** BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- FRAME BONDING:** THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- INTERIOR UNIT BONDS:** METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.
- FENCE AND GATE GROUNDING:** METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.
- EXTERIOR UNIT BONDS:** METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE
- ICE BRIDGE SUPPORTS:** EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.
- DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR**
- TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH Wireless L.L.C. GROUNDING NOTES.**

GROUNDING KEY NOTES

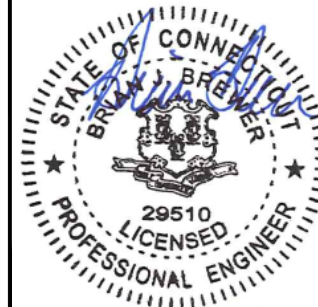
NO SCALE 3



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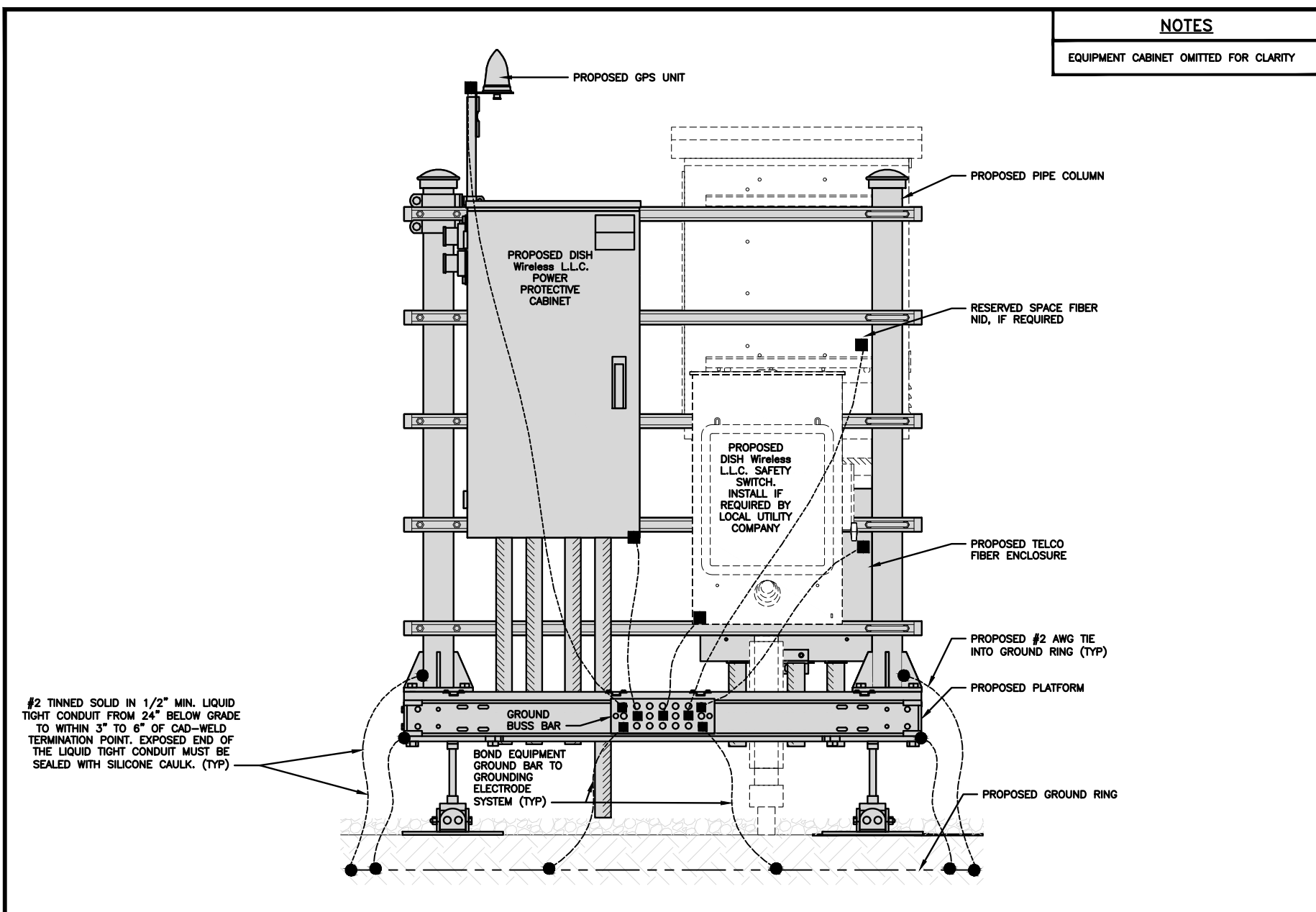
DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
GROUNDING PLANS
AND NOTES

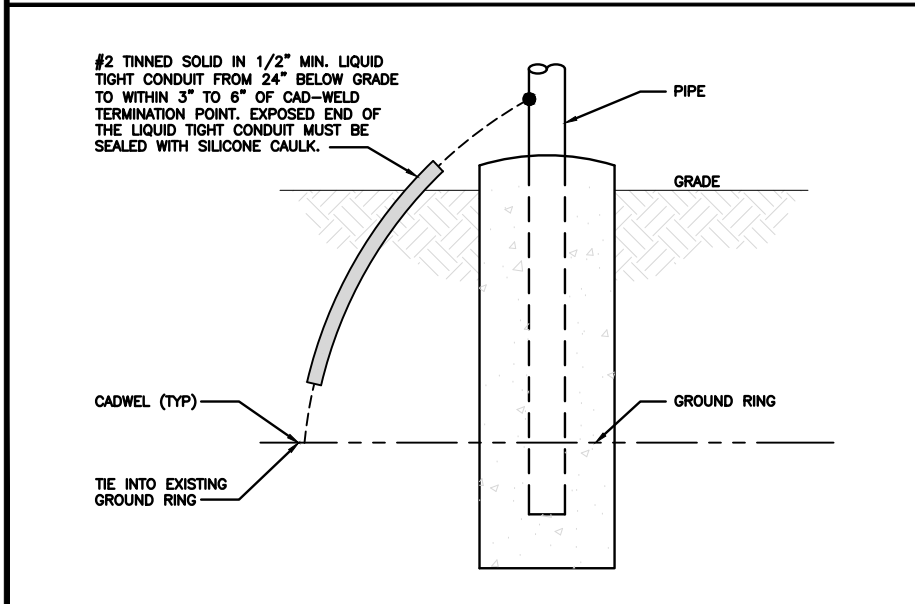
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G-1



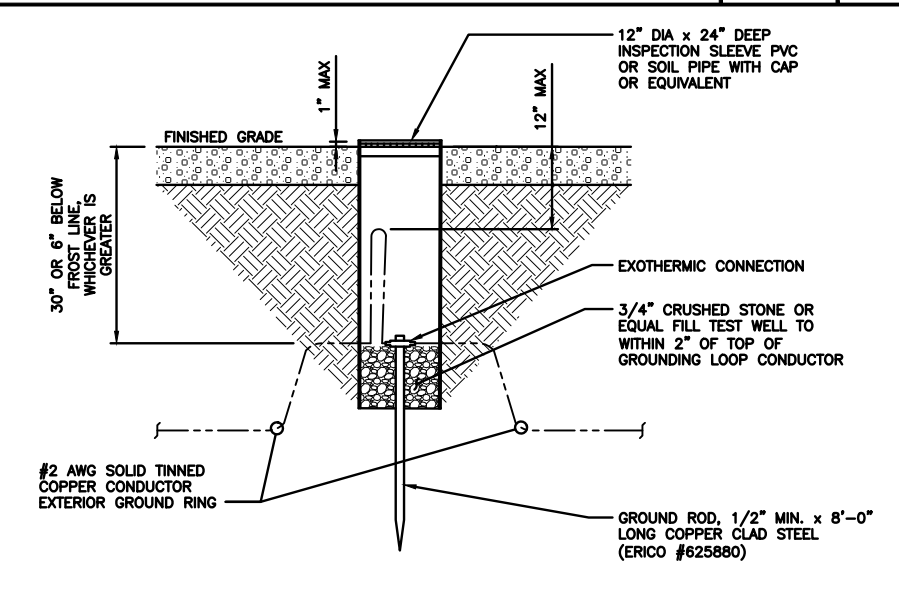
H-FRAME GROUNDING DETAIL

NO SCALE 1



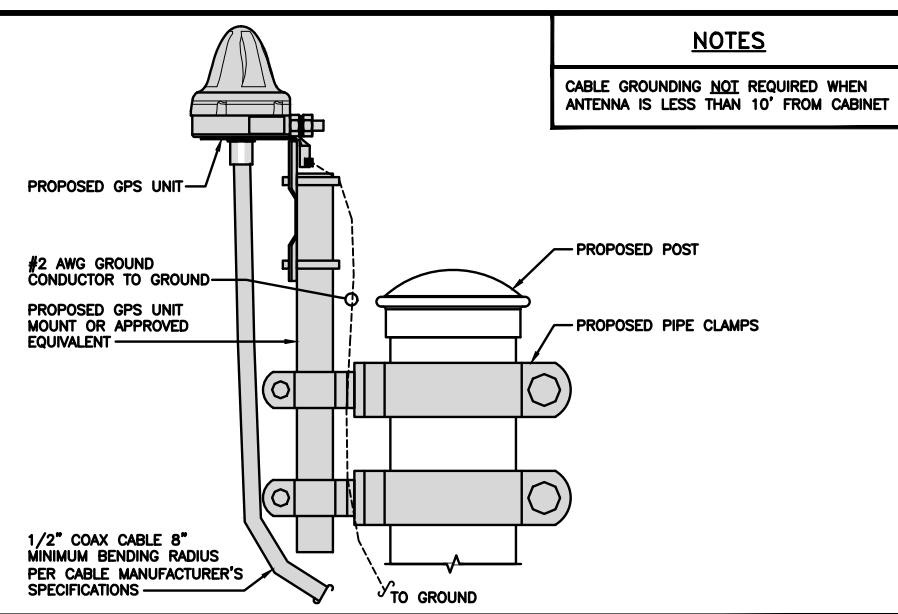
TRANSITIONING GROUND DETAIL

NO SCALE 4



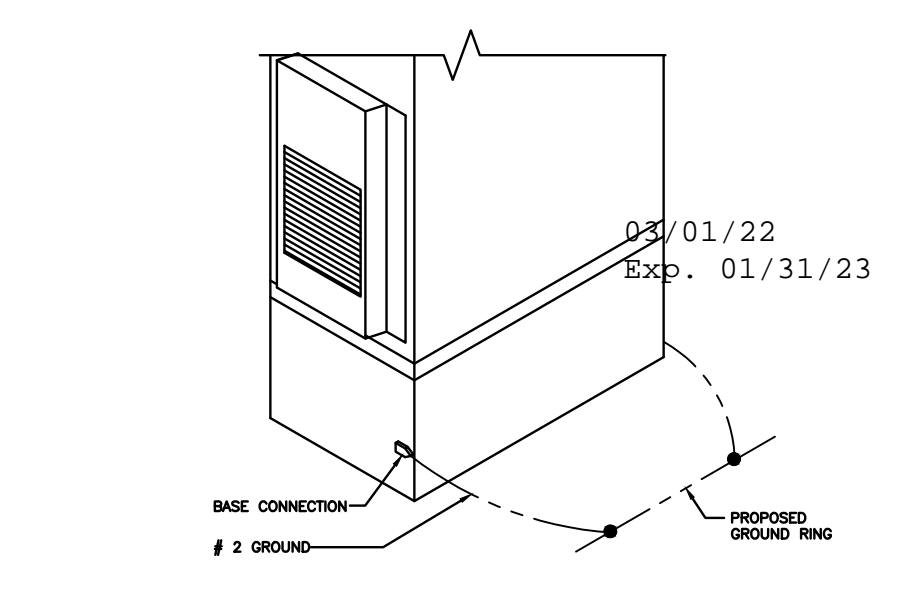
TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE 5



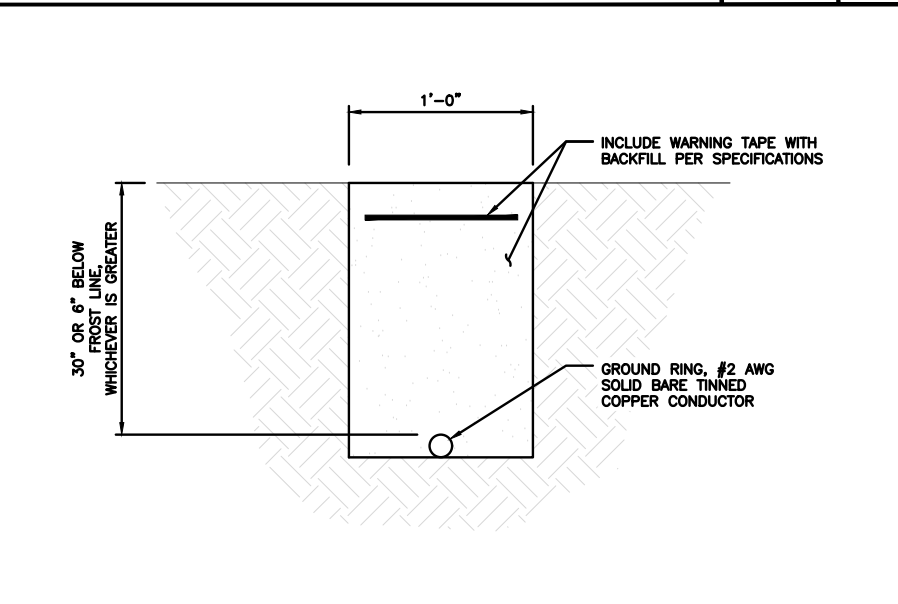
TYPICAL GPS UNIT GROUNDING

NO SCALE 2



OUTDOOR CABINET GROUNDING

NO SCALE 3



TYPICAL GROUND RING TRENCH

NO SCALE 6

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STATE OF CONNECTICUT
BRUNNEN BREWER
29510
LICENSED
PROFESSIONAL ENGINEER

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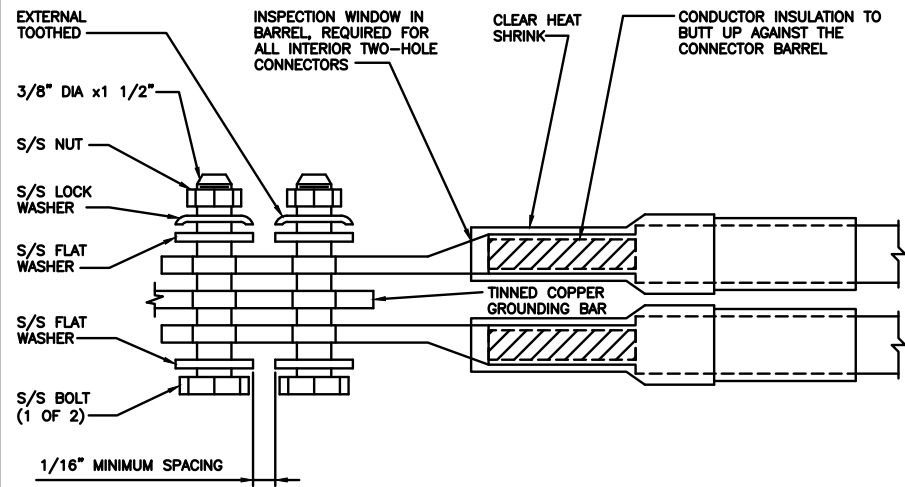
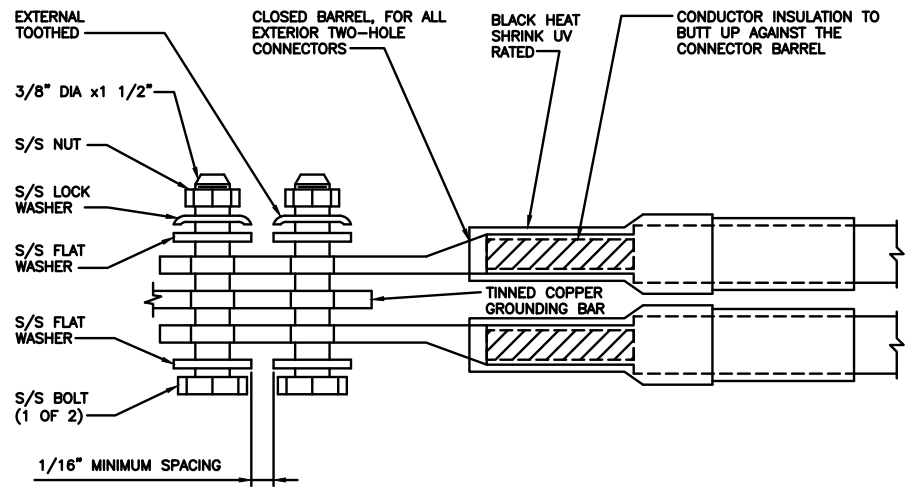
A&E PROJECT NUMBER
KHCLC-16450

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).



TYPICAL GROUNDING NOTES

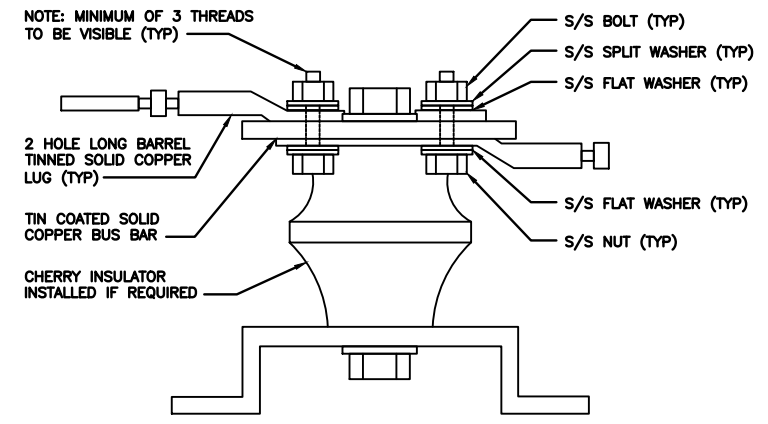
NO SCALE 1

TYPICAL EXTERIOR TWO HOLE LUG

NO SCALE 2

TYPICAL INTERIOR TWO HOLE LUG

NO SCALE 3



LUG DETAIL

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

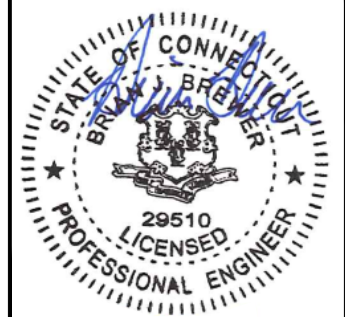
NO SCALE 9



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APPROVED BY: ---

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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

RF JUMPER COLOR CODING

3/4" TAPE WIDTHS WITH 3/4" SPACING

LOW-BAND RRH -
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) - OPTIONAL PER MARKET

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BANDS)

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

MID-BAND RRH -
(AWS BANDS N66+N70)

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BANDS)

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

EXAMPLE 1 - HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

EXAMPLE 2 - HYBRID, OR DISCREET, SUPPORTS
CBRS ONLY, ALL SECTORS

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
RED	RED	RED
BLUE	BLUE	
GREEN	GREEN	ORANGE
ORANGE	YELLOW	PURPLE
PURPLE		

FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

RET MOTORS AT ANTENNAS

ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

MICROWAVE RADIO LINKS

LINKS WILL HAVE A 1.5-2 INCH WHITE WRAP WITH
THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE.
ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH
ADDITIONAL MW RADIO.

MICROWAVE CABLES WILL REQUIRE P-TOUCH
LABELS INSIDE THE CABINET TO IDENTIFY THE
LOCAL AND REMOTE SITE ID'S

FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-360 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

RF CABLE COLOR CODES

NO SCALE

1

LOW BANDS (N71+N26)
OPTIONAL - (N29)
ORANGE

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR

RED

BETA SECTOR

BLUE

GAMMA SECTOR

GREEN

COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4



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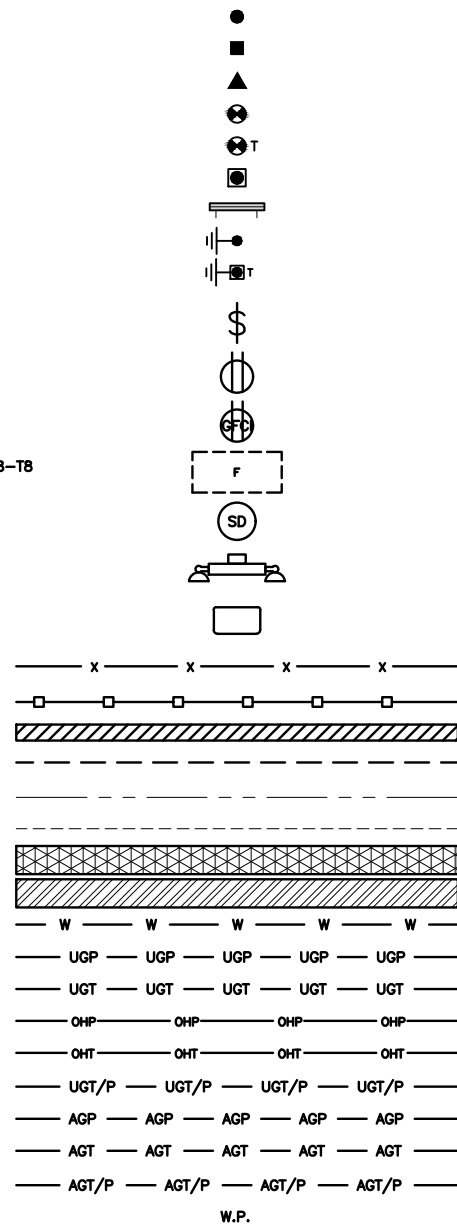
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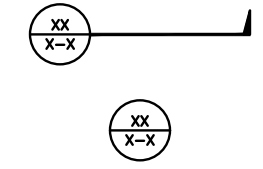
SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION
 MECHANICAL CONNECTION
 BUSS BAR INSULATOR
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 EXOTHERMIC WITH INSPECTION SLEEVE
 GROUNDING BAR
 GROUND ROD
 TEST GROUND ROD WITH INSPECTION SLEEVE
 SINGLE POLE SWITCH
 DUPLEX RECEPTACLE
 DUPLEX GFCI RECEPTACLE
 FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8
 SMOKE DETECTION (DC)
 EMERGENCY LIGHTING (DC)
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
 LED-1-25A400/51K-SR4-120-PE-DBBTXD
 CHAIN LINK FENCE
 WOOD/WROUGHT IRON FENCE
 WALL STRUCTURE
 LEASE AREA
 PROPERTY LINE (PL)
 SETBACKS
 ICE BRIDGE
 CABLE TRAY
 WATER LINE
 UNDERGROUND POWER
 UNDERGROUND TELCO
 OVERHEAD POWER
 OVERHEAD TELCO
 UNDERGROUND TELCO/POWER
 ABOVE GROUND POWER
 ABOVE GROUND TELCO
 ABOVE GROUND TELCO/POWER
 WORKPOINT



SECTION REFERENCE
 DETAIL REFERENCE



LEGEND

AB	ANCHOR BOLT	IN	INCH
ABV	ABOVE	INT	INTERIOR
AC	ALTERNATING CURRENT	LB(S)	POUND(S)
ADDL	ADDITIONAL	LF	LINEAR FEET
AFF	ABOVE FINISHED FLOOR	LTE	LONG TERM EVOLUTION
AFG	ABOVE FINISHED GRADE	MAS	MASONRY
AGL	ABOVE GROUND LEVEL	MAX	MAXIMUM
AIC	AMPERAGE INTERRUPTION CAPACITY	MB	MACHINE BOLT
ALUM	ALUMINUM	MECH	MECHANICAL
ALT	ALTERNATE	MFR	MANUFACTURER
ANT	ANTENNA	MGB	MASTER GROUND BAR
APPROX	APPROXIMATE	MIN	MINIMUM
ARCH	ARCHITECTURAL	MISC	MISCELLANEOUS
ATS	AUTOMATIC TRANSFER SWITCH	MTL	METAL
AWG	AMERICAN WIRE GAUGE	MTS	MANUAL TRANSFER SWITCH
BATT	BATTERY	MW	MICROWAVE
BLDG	BUILDING	NEC	NATIONAL ELECTRIC CODE
BLK	BLOCK	NM	NEWTON METERS
BLKG	BLOCKING	NO.	NUMBER
BM	BEAM	#	NUMBER
BTC	BARE TINNED COPPER CONDUCTOR	NTS	NOT TO SCALE
BOF	BOTTOM OF FOOTING	OC	ON-CENTER
CAB	CABINET	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
CANT	CANTILEVERED	OPNG	OPENING
CHG	CHARGING	P/C	PRECAST CONCRETE
CLG	CEILING	PCS	PERSONAL COMMUNICATION SERVICES
CLR	CLEAR	PCU	PRIMARY CONTROL UNIT
COL	COLUMN	PRC	PRIMARY RADIO CABINET
COMM	COMMON	PP	POLARIZING PRESERVING
CONC	CONCRETE	PSF	POUNDS PER SQUARE FOOT
CONSTR	CONSTRUCTION	PSI	POUNDS PER SQUARE INCH
DBL	DOUBLE	PT	PRESSURE TREATED
DC	DIRECT CURRENT	PWR	POWER CABINET
DEPT	DEPARTMENT	QTY	QUANTITY
DF	DOUGLAS FIR	RAD	RADIUS
DIA	DIAMETER	RECT	RECTIFIER
DIAG	DIAGONAL	REF	REFERENCE
DIM	DIMENSION	REINF	REINFORCEMENT
DWG	DRAWING	REQ'D	REQUIRED
DWL	DOWEL	RET	REMOTE ELECTRIC TILT
EA	EACH	RF	RADIO FREQUENCY
EC	ELECTRICAL CONDUCTOR	RMC	RIGID METALLIC CONDUIT
EL	ELEVATION	RRH	REMOTE RADIO HEAD
ELEC	ELECTRICAL	RRU	REMOTE RADIO UNIT
EMT	ELECTRICAL METALLIC TUBING	RWY	RACEWAY
ENG	ENGINEER	SCH	SCHEDULE
EQ	EQUAL	SHT	SHEET
EXP	EXPANSION	SIAD	SMART INTEGRATED ACCESS DEVICE
EXT	EXTERIOR	SIM	SIMILAR
EW	EACH WAY	SPEC	SPECIFICATION
FAB	FABRICATION	SQ	SQUARE
FF	FINISH FLOOR	SS	STAINLESS STEEL
FG	FINISH GRADE	STD	STANDARD
FIF	FACILITY INTERFACE FRAME	STL	STEEL
FIN	FINISH(ED)	TEMP	TEMPORARY
FLR	FLOOR	THK	THICKNESS
FDN	FOUNDATION	TMA	TOWER MOUNTED AMPLIFIER
FOC	FACE OF CONCRETE	TN	TOE NAIL
FOM	FACE OF MASONRY	TOA	TOP OF ANTENNA
FOS	FACE OF STUD	TOC	TOP OF CURB
FOW	FACE OF WALL	TOF	TOP OF FOUNDATION
FS	FINISH SURFACE	TOP	TOP OF PLATE (PARAPET)
FT	FOOT	TOS	TOP OF STEEL
FTG	FOOTING	TOW	TOP OF WALL
GA	GAUGE	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
GEN	GENERATOR	TYP	TYPICAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	UG	UNDERGROUND
GLB	GLUE LAMINATED BEAM	UL	UNDERWRITERS LABORATORY
GLV	GALVANIZED	UNO	UNLESS NOTED OTHERWISE
GPS	GLOBAL POSITIONING SYSTEM	UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
GND	GROUND	UPS	UNINTERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
GSM	GLOBAL SYSTEM FOR MOBILE	VIF	VERIFIED IN FIELD
HDG	HOT DIPPED GALVANIZED	W	WIDE
HDR	HEADER	W/	WITH
HGR	HANGER	WD	WOOD
HVAC	HEAT/VENTILATION/AIR CONDITIONING	WP	WEATHERPROOF
HT	HEIGHT	WT	WEIGHT
IGR	INTERIOR GROUND RING		

ABBREVIATIONS

03/01/22
 Exp. 01/31/23



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 LITTLETON, CO 80120



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 KHCLC-16450

DISH Wireless L.L.C.
 PROJECT INFORMATION
 BOHVN00154A
 131 MANOR ROAD
 GUILFORD, CT 06437

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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



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REV	DATE	DESCRIPTION
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0	03/01/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCL-16450

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

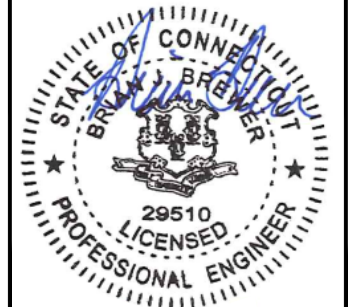
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY. 03/01/22
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.". Exp. 01/31/23
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



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CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/01/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLC-16450

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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



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DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00154A
131 MANOR ROAD
GUILFORD, CT 06437

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

Exhibit D

Structural Analysis Report

Date: **September 20, 2021**



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOHVN00154A
Site Name: CT-CCI-T-806361

Crown Castle Designation: **BU Number:** 806361
Site Name: NHV 102 943127
JDE Job Number: 645108
Work Order Number: 1962923
Order Number: 553372 Rev. 1

Engineering Firm Designation: **Crown Castle Project Number:** 1962923

Site Data: **131 Manor Rd, Guilford, New Haven County, CT**
Latitude 41° 19' 48.09", Longitude -72° 43' 18.51"
150 Foot - Monopole Tower

Crown Castle 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:

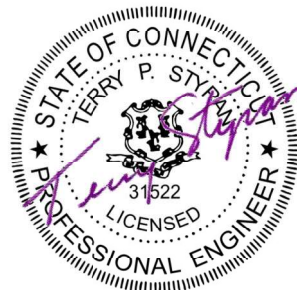
LC7: Proposed Equipment Configuration **Sufficient Capacity - 100.0%**

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 125 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Randall Ashworth, EIT

Respectfully submitted by:

Terry P. Styran, P.E.
Senior Project Engineer



Terry P Styran
2021.09.20
17:30:56 -04'00'

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1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by Valmont. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 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)
110.0	110.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

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)
150.0	150.0	3	alcatel lucent	B4 RRH2X60-4R	1 12 1	1/2 7/8 1-5/8
		3	alcatel lucent	RRH2X60-AWS		
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe		
		6	antel	LPA-80063/6CFX5 w/ Mount Pipe		
		6	commscope	HBXX-6517DS-A2M w/ Mount Pipe		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		1	tower mounts	Platform Mount (LP 101-1_KCKR)		
	1	147.0	1	lucent		
140.0	142.0	6	rfs celwave	FD9R6004/2C-3L		
		3	cci antennas	DMP65R-BU6D w/ Mount Pipe	2 2 2 6 1	3/8 3/4 7/8 1-1/4 Conduit
		3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		3	cci antennas	OPA65R-BU6D w/ Mount Pipe		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS 8843 B2/B66A		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
2	raycap	DC6-48-60-18-8F				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	140.0	3	powerwave technologies	1001940		
		6	powerwave technologies	LGP21401		
		1	tower mounts	Platform Mount (LP 101-1)		
128.0	128.0	3	ericsson	AIR 32 B2A B66AA_T-MOBILE	3	1-5/8
		3	ericsson	AIR6449 B41_T-MOBILE		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RRUS 4415 B25_CCIV2		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO		
		1	tower mounts	Platform Mount [LP 301-1_KCKR]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	780506	CCISITES
4-POST-MODIFICATION INSPECTION	2045675	CCISITES
4-POST-MODIFICATION INSPECTION	3099221	CCISITES
4-POST-MODIFICATION INSPECTION	3335575	CCISITES
4-POST-MODIFICATION INSPECTION	4037923	CCISITES
4-POST-MODIFICATION INSPECTION	5823375	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	217669	CCISITES
4-TOWER MANUFACTURER DRAWINGS	217668	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	1249600	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3002793	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3255562	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3840597	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5605781	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	8611850	CCISITES
4-POST-MODIFICATION INSPECTION	9726127	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	1883636	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), 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. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are included in Appendix C.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	150 - 145	Pole	TP16.937x16x0.1875	Pole	19.9%	Pass
L2	145 - 140	Pole	TP17.875x16.937x0.1875	Pole	36.4%	Pass
L3	140 - 135	Pole	TP18.812x17.875x0.1875	Pole	67.2%	Pass
L4	135 - 133	Pole	TP19.187x18.812x0.1875	Pole	76.8%	Pass
L5	133 - 132.75	Pole + Reinf.	TP19.234x19.187x0.45	Reinf. 20 Tension Rupture	53.5%	Pass
L6	132.75 - 127.75	Pole + Reinf.	TP20.171x19.234x0.4375	Reinf. 20 Tension Rupture	69.9%	Pass
L7	127.75 - 123.75	Pole + Reinf.	TP20.921x20.171x0.425	Reinf. 20 Tension Rupture	84.8%	Pass
L8	123.75 - 123.5	Pole + Reinf.	TP20.968x20.921x0.425	Reinf. 20 Tension Rupture	85.7%	Pass
L9	123.5 - 118.75	Pole + Reinf.	TP21.859x20.968x0.7625	Reinf. 20 Tension Rupture	57.8%	Pass
L10	118.75 - 118.5	Pole + Reinf.	TP21.906x21.859x1.0375	Reinf. 19 Tension Rupture	44.8%	Pass
L11	118.5 - 117	Pole + Reinf.	TP22.187x21.906x1.0125	Reinf. 19 Tension Rupture	47.0%	Pass
L12	117 - 116.75	Pole + Reinf.	TP22.234x22.187x0.75	Reinf. 18 Tension Rupture	61.7%	Pass
L13	116.75 - 111.75	Pole + Reinf.	TP23.171x22.234x0.7125	Reinf. 18 Tension Rupture	70.7%	Pass
L14	111.75 - 106.75	Pole + Reinf.	TP24.108x23.171x0.6875	Reinf. 18 Tension Rupture	80.1%	Pass
L15	106.75 - 101.75	Pole + Reinf.	TP25.046x24.108x0.6625	Reinf. 18 Tension Rupture	89.2%	Pass
L16	101.75 - 95.1667	Pole + Reinf.	TP26.28x25.046x0.6625	Reinf. 18 Tension Rupture	93.1%	Pass
L17	95.1667 - 94.5	Pole + Reinf.	TP26.031x25.093x0.7875	Reinf. 18 Tension Rupture	86.1%	Pass
L18	94.5 - 93.75	Pole + Reinf.	TP26.171x26.031x0.7875	Reinf. 18 Tension Rupture	87.0%	Pass
L19	93.75 - 93.5	Pole + Reinf.	TP26.218x26.171x0.9125	Reinf. 9 Tension Rupture	78.6%	Pass
L20	93.5 - 92.75	Pole + Reinf.	TP26.359x26.218x0.9125	Reinf. 9 Tension Rupture	79.5%	Pass
L21	92.75 - 92.5	Pole + Reinf.	TP26.406x26.359x1.1375	Reinf. 9 Tension Rupture	66.2%	Pass
L22	92.5 - 91.25	Pole + Reinf.	TP26.64x26.406x1.1125	Reinf. 9 Tension Rupture	67.4%	Pass
L23	91.25 - 91	Pole + Reinf.	TP26.687x26.64x1.1125	Reinf. 9 Tension Rupture	67.6%	Pass
L24	91 - 89.25	Pole + Reinf.	TP27.016x26.687x1.1125	Reinf. 9 Tension Rupture	69.2%	Pass
L25	89.25 - 89	Pole + Reinf.	TP27.063x27.016x1.2125	Reinf. 3 Connection	65.8%	Pass
L26	89 - 85.75	Pole + Reinf.	TP27.672x27.063x1.1875	Reinf. 9 Tension Rupture	65.9%	Pass
L27	85.75 - 85.5	Pole + Reinf.	TP27.719x27.672x0.8625	Reinf. 17 Tension Rupture	85.0%	Pass
L28	85.5 - 80.5	Pole + Reinf.	TP28.657x27.719x0.8375	Reinf. 17 Tension Rupture	89.7%	Pass
L29	80.5 - 75.5	Pole + Reinf.	TP29.595x28.657x0.8125	Reinf. 17 Tension Rupture	94.1%	Pass
L30	75.5 - 70.5	Pole + Reinf.	TP30.533x29.595x0.7875	Reinf. 17 Tension Rupture	98.1%	Pass
L31	70.5 - 68.083	Pole + Reinf.	TP30.987x30.533x0.7875	Reinf. 17 Tension Rupture	100.0%	Pass
L32	68.083 - 67.833	Pole + Reinf.	TP31.034x30.987x0.8375	Reinf. 16 Tension Rupture	85.8%	Pass
L33	67.833 - 67	Pole + Reinf.	TP31.19x31.034x0.8375	Reinf. 16 Tension Rupture	86.3%	Pass
L34	67 - 66.75	Pole + Reinf.	TP31.237x31.19x1.0625	Reinf. 6 Tension Rupture	69.5%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L35	66.75 -63.25	Pole + Reinf.	TP31.894x31.237x1.0375	Reinf. 6 Tension Rupture	71.4%	Pass
L36	63.25 -63	Pole + Reinf.	TP31.94x31.894x1.2125	Reinf. 8 Tension Rupture	68.4%	Pass
L37	63 - 59.5	Pole + Reinf.	TP32.597x31.94x1.1875	Reinf. 8 Tension Rupture	70.2%	Pass
L38	59.5 -59.25	Pole + Reinf.	TP32.644x32.597x1.2375	Reinf. 8 Tension Rupture	67.8%	Pass
L39	59.25 -56.25	Pole + Reinf.	TP33.207x32.644x1.2125	Reinf. 8 Tension Rupture	69.3%	Pass
L40	56.25 -56	Pole + Reinf.	TP33.254x33.207x1.0625	Reinf. 6 Tension Rupture	72.1%	Pass
L41	56 - 55.75	Pole + Reinf.	TP33.301x33.254x0.8375	Reinf. 16 Tension Rupture	88.5%	Pass
L42	55.75 -50.75	Pole + Reinf.	TP34.239x33.301x0.825	Reinf. 16 Tension Rupture	91.1%	Pass
L43	50.75 -44.6667	Pole + Reinf.	TP35.38x34.239x0.8125	Reinf. 16 Tension Rupture	91.5%	Pass
L44	44.6667 -43.6667	Pole + Reinf.	TP34.942x33.754x0.875	Reinf. 16 Tension Rupture	90.0%	Pass
L45	43.6667 -38.6667	Pole + Reinf.	TP35.88x34.942x0.8625	Reinf. 16 Tension Rupture	92.0%	Pass
L46	38.6667 -34.5	Pole + Reinf.	TP36.661x35.88x0.85	Reinf. 16 Tension Rupture	93.5%	Pass
L47	34.5 -34.25	Pole + Reinf.	TP36.708x36.661x1.1	Reinf. 16 Tension Rupture	73.4%	Pass
L48	34.25 -33	Pole + Reinf.	TP36.942x36.708x1.1	Reinf. 16 Tension Rupture	73.8%	Pass
L49	33 - 32.75	Pole + Reinf.	TP36.989x36.942x1.1	Reinf. 15 Tension Rupture	73.9%	Pass
L50	32.75 -29.75	Pole + Reinf.	TP37.552x36.989x1.075	Reinf. 15 Tension Rupture	74.9%	Pass
L51	29.75 -29.5	Pole + Reinf.	TP37.598x37.552x1.125	Reinf. 15 Tension Rupture	72.5%	Pass
L52	29.5 -25	Pole + Reinf.	TP38.442x37.598x1.1	Reinf. 15 Tension Rupture	73.8%	Pass
L53	25 - 24.75	Pole + Reinf.	TP38.489x38.442x0.8625	Reinf. 15 Tension Rupture	92.9%	Pass
L54	24.75 -19.75	Pole + Reinf.	TP39.427x38.489x0.85	Reinf. 15 Tension Rupture	94.4%	Pass
L55	19.75 -14.75	Pole + Reinf.	TP40.364x39.427x0.825	Reinf. 15 Tension Rupture	95.8%	Pass
L56	14.75 -14.5	Pole + Reinf.	TP40.411x40.364x0.825	Reinf. 15 Tension Rupture	95.8%	Pass
L57	14.5 -14.25	Pole + Reinf.	TP40.458x40.411x0.825	Reinf. 15 Tension Rupture	95.9%	Pass
L58	14.25 -12.25	Pole + Reinf.	TP40.833x40.458x0.825	Reinf. 15 Tension Rupture	96.4%	Pass
L59	12.25 -12	Pole + Reinf.	TP40.88x40.833x0.7875	Reinf. 14 Tension Rupture	97.4%	Pass
L60	12 - 11.5	Pole + Reinf.	TP40.974x40.88x0.7875	Reinf. 14 Tension Rupture	97.5%	Pass
L61	11.5 -11.25	Pole + Reinf.	TP41.02x40.974x0.9	Reinf. 14 Tension Rupture	92.4%	Pass
L62	11.25 -9.25	Pole + Reinf.	TP41.396x41.02x0.8875	Reinf. 14 Tension Rupture	92.9%	Pass
L63	9.25 -9	Pole + Reinf.	TP41.442x41.396x0.85	Reinf. 13 Tension Rupture	93.7%	Pass
L64	9 - 4.5	Pole + Reinf.	TP42.286x41.442x0.825	Reinf. 13 Tension Rupture	94.8%	Pass
L65	4.5 - 4.25	Pole + Reinf.	TP42.333x42.286x0.85	Reinf. 1 Tension Rupture	87.8%	Pass
L66	4.25 -3	Pole + Reinf.	TP42.567x42.333x0.85	Reinf. 1 Tension Rupture	88.0%	Pass
L67	3 - 2.75	Pole + Reinf.	TP42.614x42.567x0.8375	Reinf. 1 Tension Rupture	88.2%	Pass
L68	2.75 -0	Pole + Reinf.	TP43.13x42.614x0.825	Reinf. 1 Tension Rupture	88.8%	Pass
					Summary	
				Pole	76.8%	Pass
				Reinforcement	100.0%	Pass
				Overall	100.0%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	96.8	Pass
1	Base Plate	0	93.6	Pass
1	Base Foundation (Structure)	0	76.3	Pass
1	Base Foundation (Soil Interaction)	0	24.8	Pass

Structure Rating (max from all components) =	100%
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Notes:

- 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

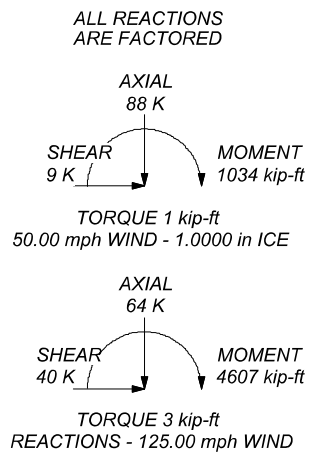
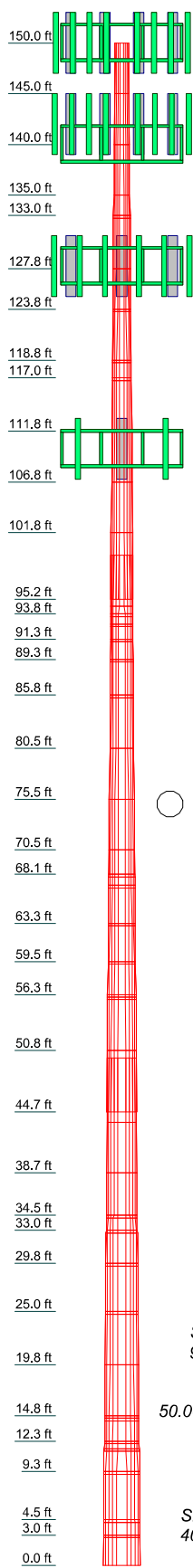
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125.00 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50.00 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 100%

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	1	12	0.4375	4.3333	42.2222	43.1222	0.2	0.1875
2	2	12	0.4375	4.3333	42.2222	43.1222	0.2	0.3750
3	3	12	0.4375	4.3333	42.2222	43.1222	0.2	0.5625
4	4	12	0.4375	4.3333	42.2222	43.1222	0.2	0.7500
5	5	12	0.4375	4.3333	42.2222	43.1222	0.2	0.9375
6	6	12	0.4375	4.3333	42.2222	43.1222	0.2	1.1250
7	7	12	0.4375	4.3333	42.2222	43.1222	0.2	1.3125
8	8	12	0.4375	4.3333	42.2222	43.1222	0.2	1.5000
9	9	12	0.4375	4.3333	42.2222	43.1222	0.2	1.6875
10	10	12	0.4375	4.3333	42.2222	43.1222	0.2	1.8750
11	11	12	0.4375	4.3333	42.2222	43.1222	0.2	2.0625
12	12	12	0.4375	4.3333	42.2222	43.1222	0.2	2.2500
13	13	12	0.4375	4.3333	42.2222	43.1222	0.2	2.4375
14	14	12	0.4375	4.3333	42.2222	43.1222	0.2	2.6250
15	15	12	0.4375	4.3333	42.2222	43.1222	0.2	2.8125
16	16	12	0.4375	4.3333	42.2222	43.1222	0.2	3.0000
17	17	12	0.4375	4.3333	42.2222	43.1222	0.2	3.1875
18	18	12	0.4375	4.3333	42.2222	43.1222	0.2	3.3750
19	19	12	0.4375	4.3333	42.2222	43.1222	0.2	3.5625
20	20	12	0.4375	4.3333	42.2222	43.1222	0.2	3.7500
21	21	12	0.4375	4.3333	42.2222	43.1222	0.2	3.9375
22	22	12	0.4375	4.3333	42.2222	43.1222	0.2	4.1250
23	23	12	0.4375	4.3333	42.2222	43.1222	0.2	4.3125
24	24	12	0.4375	4.3333	42.2222	43.1222	0.2	4.5000
25	25	12	0.4375	4.3333	42.2222	43.1222	0.2	4.6875
26	26	12	0.4375	4.3333	42.2222	43.1222	0.2	4.8750
27	27	12	0.4375	4.3333	42.2222	43.1222	0.2	5.0625
28	28	12	0.4375	4.3333	42.2222	43.1222	0.2	5.2500
29	29	12	0.4375	4.3333	42.2222	43.1222	0.2	5.4375
30	30	12	0.4375	4.3333	42.2222	43.1222	0.2	5.6250
31	31	12	0.4375	4.3333	42.2222	43.1222	0.2	5.8125
32	32	12	0.4375	4.3333	42.2222	43.1222	0.2	6.0000
33	33	12	0.4375	4.3333	42.2222	43.1222	0.2	6.1875
34	34	12	0.4375	4.3333	42.2222	43.1222	0.2	6.3750
35	35	12	0.4375	4.3333	42.2222	43.1222	0.2	6.5625
36	36	12	0.4375	4.3333	42.2222	43.1222	0.2	6.7500
37	37	12	0.4375	4.3333	42.2222	43.1222	0.2	6.9375
38	38	12	0.4375	4.3333	42.2222	43.1222	0.2	7.1250
39	39	12	0.4375	4.3333	42.2222	43.1222	0.2	7.3125
40	40	12	0.4375	4.3333	42.2222	43.1222	0.2	7.5000
41	41	12	0.4375	4.3333	42.2222	43.1222	0.2	7.6875
42	42	12	0.4375	4.3333	42.2222	43.1222	0.2	7.8750
43	43	12	0.4375	4.3333	42.2222	43.1222	0.2	8.0625
44	44	12	0.4375	4.3333	42.2222	43.1222	0.2	8.2500
45	45	12	0.4375	4.3333	42.2222	43.1222	0.2	8.4375
46	46	12	0.4375	4.3333	42.2222	43.1222	0.2	8.6250
47	47	12	0.4375	4.3333	42.2222	43.1222	0.2	8.8125
48	48	12	0.4375	4.3333	42.2222	43.1222	0.2	9.0000
49	49	12	0.4375	4.3333	42.2222	43.1222	0.2	9.1875
50	50	12	0.4375	4.3333	42.2222	43.1222	0.2	9.3750
51	51	12	0.4375	4.3333	42.2222	43.1222	0.2	9.5625
52	52	12	0.4375	4.3333	42.2222	43.1222	0.2	9.7500
53	53	12	0.4375	4.3333	42.2222	43.1222	0.2	9.9375
54	54	12	0.4375	4.3333	42.2222	43.1222	0.2	10.1250
55	55	12	0.4375	4.3333	42.2222	43.1222	0.2	10.3125
56	56	12	0.4375	4.3333	42.2222	43.1222	0.2	10.5000
57	57	12	0.4375	4.3333	42.2222	43.1222	0.2	10.6875
58	58	12	0.4375	4.3333	42.2222	43.1222	0.2	10.8750
59	59	12	0.4375	4.3333	42.2222	43.1222	0.2	11.0625
60	60	12	0.4375	4.3333	42.2222	43.1222	0.2	11.2500
61	61	12	0.4375	4.3333	42.2222	43.1222	0.2	11.4375
62	62	12	0.4375	4.3333	42.2222	43.1222	0.2	11.6250
63	63	12	0.4375	4.3333	42.2222	43.1222	0.2	11.8125
64	64	12	0.4375	4.3333	42.2222	43.1222	0.2	12.0000
65	65	12	0.4375	4.3333	42.2222	43.1222	0.2	12.1875
66	66	12	0.4375	4.3333	42.2222	43.1222	0.2	12.3750
67	67	12	0.4375	4.3333	42.2222	43.1222	0.2	12.5625
68	68	12	0.4375	4.3333	42.2222	43.1222	0.2	12.7500
69	69	12	0.4375	4.3333	42.2222	43.1222	0.2	12.9375
70	70	12	0.4375	4.3333	42.2222	43.1222	0.2	13.1250
71	71	12	0.4375	4.3333	42.2222	43.1222	0.2	13.3125
72	72	12	0.4375	4.3333	42.2222	43.1222	0.2	13.5000
73	73	12	0.4375	4.3333	42.2222	43.1222	0.2	13.6875
74	74	12	0.4375	4.3333	42.2222	43.1222	0.2	13.8750
75	75	12	0.4375	4.3333	42.2222	43.1222	0.2	14.0625
76	76	12	0.4375	4.3333	42.2222	43.1222	0.2	14.2500
77	77	12	0.4375	4.3333	42.2222	43.1222	0.2	14.4375
78	78	12	0.4375	4.3333	42.2222	43.1222	0.2	14.6250
79	79	12	0.4375	4.3333	42.2222	43.1222	0.2	14.8125
80	80	12	0.4375	4.3333	42.2222	43.1222	0.2	15.0000
81	81	12	0.4375	4.3333	42.2222	43.1222	0.2	15.1875
82	82	12	0.4375	4.3333	42.2222	43.1222	0.2	15.3750
83	83	12	0.4375	4.3333	42.2222	43.1222	0.2	15.5625
84	84	12	0.4375	4.3333	42.2222	43.1222	0.2	15.7500
85	85	12	0.4375	4.3333	42.2222	43.1222	0.2	15.9375
86	86	12	0.4375	4.3333	42.2222	43.1222	0.2	16.1250
87	87	12	0.4375	4.3333	42.2222	43.1222	0.2	16.3125
88	88	12	0.4375	4.3333	42.2222	43.1222	0.2	16.5000
89	89	12	0.4375	4.3333	42.2222	43.1222	0.2	16.6875
90	90	12	0.4375	4.3333	42.2222	43.1222	0.2	16.8750
91	91	12	0.4375	4.3333	42.2222	43.1222	0.2	17.0625
92	92	12	0.4375	4.3333	42.2222	43.1222	0.2	17.2500
93	93	12	0.4375	4.3333	42.2222	43.1222	0.2	17.4375
94	94	12	0.4375	4.3333	42.2222	43.1222	0.2	17.6250
95	95	12	0.4375	4.3333	42.2222	43.1222	0.2	17.8125
96	96	12	0.4375	4.3333	42.2222	43.1222	0.2	18.0000
97	97	12	0.4375	4.3333	42.2222	43.1222	0.2	18.1875
98	98	12	0.4375	4.3333	42.2222	43.1222	0.2	18.3750
99	99	12	0.4375	4.3333	42.2222	43.1222	0.2	18.5625
100	100	12	0.4375	4.3333	42.2222	43.1222	0.2	18.7500



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2000 Corporate Drive
Canonsburg, PA 15317
The Pathway to Possible Phone: (724) 416-2000 FAX:

Job: **BU 806361**
Project:
Client: **Crown Castle** Drawn by: **Rashworth** App'd:
Code: **TIA-222-H** Date: **09/20/21** Scale: **NTS**
Path: C:\NEW Directory\806361\WO 1962923 - SAIProd\806361 Modif...
Dwg No. **E-1**

Tower Input Data

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

- Tower is located in New Haven County, Connecticut.
- Tower base elevation above sea level: 282.0000 ft.
- Basic wind speed of 125.00 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.0000 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.00 pcf.
- A wind speed of 50.00 mph is used in combination with ice.
- Temperature drop of 50.00 °F.
- Deflections calculated using a wind speed of 60.00 mph.
- TOWER RATING: 100%.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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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	150.0000- 145.0000	5.0000	0.00	12	16.0000	16.9374	0.1875	0.7500	A572-65 (65 ksi)
L2	145.0000- 140.0000	5.0000	0.00	12	16.9374	17.8748	0.1875	0.7500	A572-65 (65 ksi)
L3	140.0000- 135.0000	5.0000	0.00	12	17.8748	18.8122	0.1875	0.7500	A572-65 (65 ksi)
L4	135.0000- 133.0000	2.0000	0.00	12	18.8122	19.1871	0.1875	0.7500	A572-65 (65 ksi)
L5	133.0000- 132.7500	0.2500	0.00	12	19.1871	19.2340	0.4500	1.8000	A572-65 (65 ksi)
L6	132.7500- 127.7500	5.0000	0.00	12	19.2340	20.1714	0.4375	1.7500	A572-65 (65 ksi)
L7	127.7500- 123.7500	4.0000	0.00	12	20.1714	20.9213	0.4250	1.7000	A572-65 (65 ksi)
L8	123.7500- 123.5000	0.2500	0.00	12	20.9213	20.9681	0.4250	1.7000	A572-65 (65 ksi)
L9	123.5000- 118.7500	4.7500	0.00	12	20.9681	21.8587	0.7625	3.0500	A572-65 (65 ksi)
L10	118.7500- 118.5000	0.2500	0.00	12	21.8587	21.9055	1.0375	4.1500	A572-65 (65 ksi)
L11	118.5000- 117.0000	1.5000	0.00	12	21.9055	22.1868	1.0125	4.0500	A572-65 (65 ksi)
L12	117.0000- 116.7500	0.2500	0.00	12	22.1868	22.2336	0.7500	3.0000	A572-65 (65 ksi)
L13	116.7500- 111.7500	5.0000	0.00	12	22.2336	23.1710	0.7125	2.8500	A572-65 (65 ksi)
L14	111.7500- 106.7500	5.0000	0.00	12	23.1710	24.1084	0.6875	2.7500	A572-65 (65 ksi)
L15	106.7500- 101.7500	5.0000	0.00	12	24.1084	25.0458	0.6625	2.6500	A572-65 (65 ksi)
L16	101.7500- 95.1667	6.5833	4.33	12	25.0458	26.2800	0.6625	2.6500	A572-65 (65 ksi)
L17	95.1667- 94.5000	5.0000	0.00	12	25.0926	26.0307	0.7875	3.1500	A572-65 (65 ksi)
L18	94.5000- 93.7500	0.7500	0.00	12	26.0307	26.1714	0.7875	3.1500	A572-65 (65 ksi)
L19	93.7500- 93.5000	0.2500	0.00	12	26.1714	26.2183	0.9125	3.6500	A572-65 (65 ksi)
L20	93.5000- 92.7500	0.7500	0.00	12	26.2183	26.3590	0.9125	3.6500	A572-65 (65 ksi)
L21	92.7500- 92.5000	0.2500	0.00	12	26.3590	26.4059	1.1375	4.5500	A572-65 (65 ksi)
L22	92.5000- 91.2500	1.2500	0.00	12	26.4059	26.6404	1.1125	4.4500	A572-65 (65 ksi)
L23	91.2500- 91.0000	0.2500	0.00	12	26.6404	26.6873	1.1125	4.4500	A572-65 (65 ksi)
L24	91.0000- 89.2500	1.7500	0.00	12	26.6873	27.0156	1.1125	4.4500	A572-65 (65 ksi)
L25	89.2500- 89.0000	0.2500	0.00	12	27.0156	27.0625	1.2125	4.8500	A572-65 (65 ksi)
L26	89.0000- 85.7500	3.2500	0.00	12	27.0625	27.6723	1.1875	4.7500	A572-65 (65 ksi)
L27	85.7500- 85.5000	0.2500	0.00	12	27.6723	27.7192	0.8625	3.4500	A572-65 (65 ksi)
L28	85.5000- 80.5000	5.0000	0.00	12	27.7192	28.6572	0.8375	3.3500	A572-65 (65 ksi)
L29	80.5000- 75.5000	5.0000	0.00	12	28.6572	29.5953	0.8125	3.2500	A572-65 (65 ksi)
L30	75.5000- 70.5000	5.0000	0.00	12	29.5953	30.5334	0.7875	3.1500	A572-65 (65 ksi)
L31	70.5000- 68.0830	2.4170	0.00	12	30.5334	30.9868	0.7875	3.1500	A572-65 (65 ksi)
L32	68.0830- 67.8330	0.2500	0.00	12	30.9868	31.0337	0.8375	3.3500	A572-65 (65 ksi)
L33	67.8330- 67.0000	0.8330	0.00	12	31.0337	31.1900	0.8375	3.3500	A572-65 (65 ksi)
L34	67.0000- 66.7500	0.2500	0.00	12	31.1900	31.2369	1.0625	4.2500	A572-65 (65 ksi)
L35	66.7500-	3.5000	0.00	12	31.2369	31.8935	1.0375	4.1500	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
	63.2500								(65 ksi)
L36	63.2500- 63.0000	0.2500	0.00	12	31.8935	31.9404	1.2125	4.8500	A572-65 (65 ksi)
L37	63.0000- 59.5000	3.5000	0.00	12	31.9404	32.5971	1.1875	4.7500	A572-65 (65 ksi)
L38	59.5000- 59.2500	0.2500	0.00	12	32.5971	32.6440	1.2375	4.9500	A572-65 (65 ksi)
L39	59.2500- 56.2500	3.0000	0.00	12	32.6440	33.2068	1.2125	4.8500	A572-65 (65 ksi)
L40	56.2500- 56.0000	0.2500	0.00	12	33.2068	33.2537	1.0625	4.2500	A572-65 (65 ksi)
L41	56.0000- 55.7500	0.2500	0.00	12	33.2537	33.3006	0.8375	3.3500	A572-65 (65 ksi)
L42	55.7500- 50.7500	5.0000	0.00	12	33.3006	34.2387	0.8250	3.3000	A572-65 (65 ksi)
L43	50.7500- 44.6667	6.0833	5.33	12	34.2387	35.3800	0.8125	3.2500	A572-65 (65 ksi)
L44	44.6667- 43.6667	6.3333	0.00	12	33.7544	34.9420	0.8750	3.5000	A572-65 (65 ksi)
L45	43.6667- 38.6667	5.0000	0.00	12	34.9420	35.8795	0.8625	3.4500	A572-65 (65 ksi)
L46	38.6667- 34.5000	4.1667	0.00	12	35.8795	36.6608	0.8500	3.4000	A572-65 (65 ksi)
L47	34.5000- 34.2500	0.2500	0.00	12	36.6608	36.7077	1.1000	4.4000	A572-65 (65 ksi)
L48	34.2500- 33.0000	1.2500	0.00	12	36.7077	36.9421	1.1000	4.4000	A572-65 (65 ksi)
L49	33.0000- 32.7500	0.2500	0.00	12	36.9421	36.9890	1.1000	4.4000	A572-65 (65 ksi)
L50	32.7500- 29.7500	3.0000	0.00	12	36.9890	37.5515	1.0750	4.3000	A572-65 (65 ksi)
L51	29.7500- 29.5000	0.2500	0.00	12	37.5515	37.5984	1.1250	4.5000	A572-65 (65 ksi)
L52	29.5000- 25.0000	4.5000	0.00	12	37.5984	38.4422	1.1000	4.4000	A572-65 (65 ksi)
L53	25.0000- 24.7500	0.2500	0.00	12	38.4422	38.4891	0.8625	3.4500	A572-65 (65 ksi)
L54	24.7500- 19.7500	5.0000	0.00	12	38.4891	39.4266	0.8500	3.4000	A572-65 (65 ksi)
L55	19.7500- 14.7500	5.0000	0.00	12	39.4266	40.3642	0.8250	3.3000	A572-65 (65 ksi)
L56	14.7500- 14.5000	0.2500	0.00	12	40.3642	40.4111	0.8250	3.3000	A572-65 (65 ksi)
L57	14.5000- 14.2500	0.2500	0.00	12	40.4111	40.4580	0.8250	3.3000	A572-65 (65 ksi)
L58	14.2500- 12.2500	2.0000	0.00	12	40.4580	40.8330	0.8250	3.3000	A572-65 (65 ksi)
L59	12.2500- 12.0000	0.2500	0.00	12	40.8330	40.8799	0.7875	3.1500	A572-65 (65 ksi)
L60	12.0000- 11.5000	0.5000	0.00	12	40.8799	40.9736	0.7875	3.1500	A572-65 (65 ksi)
L61	11.5000- 11.2500	0.2500	0.00	12	40.9736	41.0205	0.9000	3.6000	A572-65 (65 ksi)
L62	11.2500- 9.2500	2.0000	0.00	12	41.0205	41.3955	0.8875	3.5500	A572-65 (65 ksi)
L63	9.2500-9.0000	0.2500	0.00	12	41.3955	41.4424	0.8500	3.4000	A572-65 (65 ksi)
L64	9.0000-4.5000	4.5000	0.00	12	41.4424	42.2862	0.8250	3.3000	A572-65 (65 ksi)
L65	4.5000-4.2500	0.2500	0.00	12	42.2862	42.3331	0.8500	3.4000	A572-65 (65 ksi)
L66	4.2500-3.0000	1.2500	0.00	12	42.3331	42.5675	0.8500	3.4000	A572-65 (65 ksi)
L67	3.0000-2.7500	0.2500	0.00	12	42.5675	42.6143	0.8375	3.3500	A572-65 (65 ksi)
L68	2.7500-0.0000	2.7500		12	42.6143	43.1300	0.8250	3.3000	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	16.4983	9.5468	304.6805	5.6609	8.2880	36.7616	617.3654	4.6986	3.7855	20.189
	17.4687	10.1127	362.1418	5.9965	8.7736	41.2765	733.7976	4.9772	4.0367	21.529
L2	17.4687	10.1127	362.1418	5.9965	8.7736	41.2765	733.7976	4.9772	4.0367	21.529
	18.4392	10.6787	426.4084	6.3320	9.2591	46.0527	864.0190	5.2557	4.2879	22.869
L3	18.4392	10.6787	426.4084	6.3320	9.2591	46.0527	864.0190	5.2557	4.2879	22.869
	19.4096	11.2446	497.8610	6.6676	9.7447	51.0904	1008.8014	5.5343	4.5392	24.209
L4	19.4096	11.2446	497.8610	6.6676	9.7447	51.0904	1008.8014	5.5343	4.5392	24.209
	19.7978	11.4710	528.5395	6.8019	9.9389	53.1787	1070.9643	5.6457	4.6396	24.745
L5	19.7052	27.1501	1216.6410	6.7079	9.9389	122.4117	2465.2446	13.3624	3.9361	8.747
	19.7537	27.2180	1225.7939	6.7247	9.9632	123.0321	2483.7907	13.3959	3.9487	8.775
L6	19.7582	26.4795	1194.1248	6.7291	9.9632	119.8535	2419.6206	13.0324	3.9822	9.102
	20.7286	27.8001	1381.8366	7.0647	10.4488	132.2487	2799.9756	13.6824	4.2334	9.676
L7	20.7330	27.0229	1344.9080	7.0692	10.4488	128.7145	2725.1483	13.2999	4.2669	10.04
	21.5094	28.0492	1504.0278	7.3377	10.8372	138.7835	3047.5681	13.8049	4.4679	10.513
L8	21.5094	28.0492	1504.0278	7.3377	10.8372	138.7835	3047.5681	13.8049	4.4679	10.513
	21.5579	28.1133	1514.3693	7.3544	10.8615	139.4254	3068.5228	13.8365	4.4805	10.542
L9	21.4388	49.6099	2585.2353	7.2336	10.8615	238.0182	5238.3876	24.4165	3.5760	4.69
	22.3608	51.7964	2942.3361	7.5524	11.3228	259.8597	5961.9707	25.4926	3.8146	5.003
L10	22.2638	69.5583	3848.9749	7.4540	11.3228	339.9317	7799.0666	34.2345	3.0776	2.966
	22.3123	69.7149	3875.0261	7.4708	11.3471	341.5002	7851.8534	34.3115	3.0902	2.978
L11	22.3211	68.1165	3795.2595	7.4797	11.3471	334.4705	7690.2248	33.5249	3.1572	3.118
	22.6122	69.0334	3950.5818	7.5804	11.4927	343.7459	8004.9497	33.9761	3.2325	3.193
L12	22.7048	51.7698	3036.5470	7.6744	11.4927	264.2144	6152.8674	25.4795	3.9360	5.248
	22.7534	51.8829	3056.5079	7.6911	11.5170	265.3906	6193.3136	25.5352	3.9486	5.265
L13	22.7666	49.3748	2918.9143	7.7046	11.5170	253.4436	5914.5118	24.3008	4.0491	5.683
	23.7370	51.5254	3317.1825	8.0401	12.0026	276.3724	6721.5110	25.3592	4.3003	6.036
L14	23.7459	49.7729	3211.4910	8.0491	12.0026	267.5667	6507.3514	24.4967	4.3673	6.352
	24.7163	51.8480	3630.1530	8.3847	12.4881	290.6879	7355.6742	25.5180	4.6185	6.718
L15	24.7251	50.0160	3509.3614	8.3936	12.4881	281.0154	7110.9176	24.6163	4.6855	7.073
	25.6956	52.0156	3947.3362	8.7292	12.9737	304.2564	7998.3732	25.6005	4.9368	7.452
L16	25.6956	52.0156	3947.3362	8.7292	12.9737	304.2564	7998.3732	25.6005	4.9368	7.452
	26.9734	54.6485	4577.6010	9.1711	13.6130	336.2659	9275.4608	26.8963	5.2675	7.951
L17	26.5416	61.6317	4647.1305	8.7012	12.9980	357.5274	9416.3462	30.3332	4.6143	5.859
	26.6711	64.0104	5206.2357	9.0371	13.4839	386.1080	10549.245	31.5040	4.8657	6.179
L18	26.6711	64.0104	5206.2357	9.0371	13.4839	386.1080	10549.245	31.5040	4.8657	6.179
	26.8168	64.3672	5293.7829	9.0874	13.5568	390.4899	10726.639	31.6796	4.9034	6.227
L19	26.7727	74.2169	6043.8919	9.0427	13.5568	445.8209	12246.563	36.5273	4.5684	5.006
	26.8213	74.3547	6077.6230	9.0595	13.5811	447.5070	12314.912	36.5951	4.5810	5.02
L20	26.8213	74.3547	6077.6230	9.0595	13.5811	447.5070	12314.912	36.5951	4.5810	5.02
	26.9669	74.7681	6179.5690	9.1098	13.6540	452.5845	12521.482	36.7986	4.6187	5.062
L21	26.8876	92.3800	7500.7602	9.0293	13.6540	549.3471	15198.573	45.4666	4.0157	3.53
	26.9361	92.5518	7542.6844	9.0461	13.6783	551.4363	15283.523	45.5512	4.0283	3.541
L22	26.9449	90.6072	7398.8284	9.0550	13.6783	540.9192	14992.032	44.5941	4.0953	3.681
	27.1877	91.4473	7606.5438	9.1390	13.7997	551.2096	15412.920	45.0076	4.1581	3.738
L23	27.1877	91.4473	7606.5438	9.1390	13.7997	551.2096	15412.920	45.0076	4.1581	3.738
	27.2363	91.6154	7648.5480	9.1558	13.8240	553.2794	15498.031	45.0903	4.1707	3.749
L24	27.2363	91.6154	7648.5480	9.1558	13.8240	553.2794	15498.031	45.0903	4.1707	3.749
	27.5762	92.7915	7946.9147	9.2733	13.9941	567.8762	16102.603	45.6691	4.2587	3.828
L25	27.5409	100.7419	8561.3197	9.2375	13.9941	611.7808	17347.554	49.5821	3.9907	3.291

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
	27.5895	100.9250	8608.0910	9.2543	14.0184	614.0570	17442.326	49.6722	4.0033	3.302
L26	27.5983	98.9397	8455.0884	9.2633	14.0184	603.1425	17132.301	48.6951	4.0703	3.428
	28.2295	101.2711	9067.0114	9.4815	14.3342	632.5423	18372.223	49.8426	4.2337	3.565
L27	28.3442	74.4574	6830.9372	9.5979	14.3342	476.5470	13841.330	36.6457	5.1047	5.918
	28.3927	74.5877	6866.8517	9.6147	14.3585	478.2419	13914.103	36.7098	5.1172	5.933
L28	28.4016	72.4932	6686.4504	9.6236	14.3585	465.6778	13548.561	35.6789	5.1842	6.19
	29.3727	75.0229	7411.1509	9.9595	14.8444	499.2540	15017.001	36.9240	5.4356	6.49
L29	29.3815	72.8488	7209.3235	9.9684	14.8444	485.6579	14608.043	35.8540	5.5026	6.772
	30.3527	75.3030	7962.7701	10.3042	15.3304	519.4117	16134.731	37.0618	5.7540	7.082
L30	30.3615	73.0494	7737.8897	10.3132	15.3304	504.7427	15679.062	35.9527	5.8210	7.392
	31.3327	75.4281	8518.6718	10.6490	15.8163	538.6015	17261.138	37.1234	6.0724	7.711
L31	31.3327	75.4281	8518.6718	10.6490	15.8163	538.6015	17261.138	37.1234	6.0724	7.711
	31.8021	76.5779	8914.2279	10.8114	16.0512	555.3631	18062.642	37.6893	6.1940	7.865
L32	31.7845	81.3052	9433.2004	10.7935	16.0512	587.6955	19114.221	40.0159	6.0600	7.236
	31.8330	81.4317	9477.2943	10.8102	16.0755	589.5502	19203.567	40.0782	6.0725	7.251
L33	31.8330	81.4317	9477.2943	10.8102	16.0755	589.5502	19203.567	40.0782	6.0725	7.251
	31.9948	81.8531	9625.2068	10.8662	16.1564	595.7512	19503.278	40.2856	6.1144	7.301
L34	31.9155	103.0737	11941.532	10.7856	16.1564	739.1200	24196.783	50.7297	5.5114	5.187
	31.9640	103.2342	11997.392	10.8024	16.1807	741.4624	24309.969	50.8087	5.5240	5.199
L35	31.9728	100.8887	11744.243	10.8114	16.1807	725.8173	23797.020	49.6543	5.5910	5.389
	32.6526	103.0823	12527.106	11.0465	16.5209	758.2601	25383.313	50.7340	5.7670	5.559
L36	32.5909	119.7865	14392.428	10.9838	16.5209	871.1672	29162.961	58.9553	5.2980	4.369
	32.6395	119.9696	14458.535	11.0006	16.5452	873.8835	29296.913	59.0454	5.3105	4.38
L37	32.6483	117.5916	14195.012	11.0096	16.5452	857.9559	28762.942	57.8750	5.3775	4.528
	33.3281	120.1024	15123.848	11.2446	16.8853	895.6817	30645.018	59.1108	5.5535	4.677
L38	33.3105	124.9601	15685.495	11.2267	16.8853	928.9442	31783.066	61.5016	5.4195	4.379
	33.3590	125.1470	15755.981	11.2435	16.9096	931.7779	31925.889	61.5936	5.4321	4.39
L39	33.3678	122.7164	15474.573	11.2525	16.9096	915.1360	31355.681	60.3973	5.4991	4.535
	33.9505	124.9139	16320.847	11.4540	17.2011	948.8236	33070.461	61.4788	5.6499	4.66
L40	34.0034	109.9738	14503.872	11.5077	17.2011	843.1926	29388.777	54.1258	6.0519	5.696
	34.0520	110.1343	14567.454	11.5245	17.2254	845.6944	29517.612	54.2047	6.0645	5.708
L41	34.1314	87.4185	11725.040	11.6050	17.2254	680.6818	23758.110	43.0247	6.6675	7.961
	34.1799	87.5450	11776.008	11.6218	17.2497	682.6779	23861.386	43.0870	6.6801	7.976
L42	34.1843	86.2715	11613.652	11.6263	17.2497	673.2658	23532.409	42.4602	6.7136	8.138
	35.1555	88.7635	12649.385	11.9621	17.7356	713.2182	25631.084	43.6867	6.9650	8.442

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L43	35.1599	87.4513	12471.714 6	11.9666	17.7356	703.2005	25271.075 1	43.0409	6.9985	8.614
	36.3415	90.4372	13793.329 3	12.3752	18.3268	752.6300	27949.024 8	44.5104	7.3043	8.99
L44	35.6718	92.6377	12782.677 7	11.7708	17.4848	731.0744	25901.170 6	45.5935	6.7012	7.658
	35.8659	95.9837	14218.397 6	12.1960	18.0999	785.5493	28810.328 3	47.2403	7.0194	8.022
L45	35.8703	94.6472	14030.710 9	12.2005	18.0999	775.1798	28430.024 2	46.5825	7.0529	8.177
	36.8410	97.2511	15220.855 7	12.5361	18.5856	818.9596	30841.580 2	47.8640	7.3042	8.469
L46	36.8454	95.8758	15016.333 2	12.5406	18.5856	807.9553	30427.162 2	47.1872	7.3377	8.633
	37.6542	98.0143	16043.692 3	12.8203	18.9903	844.8355	32508.870 3	48.2396	7.5471	8.879
L47	37.5661	125.9565	20330.618 6	12.7308	18.9903	1070.5782	41195.345 3	61.9920	6.8771	6.252
	37.6146	126.1225	20411.127 0	12.7476	19.0146	1073.4451	41358.477 0	62.0737	6.8897	6.263
L48	37.6146	126.1225	20411.127 0	12.7476	19.0146	1073.4451	41358.477 0	62.0737	6.8897	6.263
	37.8572	126.9528	20816.858 2	12.8315	19.1360	1087.8368	42180.598 4	62.4823	6.9525	6.32
L49	37.8572	126.9528	20816.858 2	12.8315	19.1360	1087.8368	42180.598 4	62.4823	6.9525	6.32
	37.9058	127.1188	20898.644 3	12.8483	19.1603	1090.7266	42346.319 2	62.5640	6.9650	6.332
L50	37.9146	124.3163	20466.385 8	12.8572	19.1603	1068.1665	41470.446 3	61.1847	7.0320	6.541
	38.4970	126.2635	21443.248 5	13.0586	19.4517	1102.3849	43449.834 9	62.1430	7.1828	6.682
L51	38.4793	131.9551	22348.454 2	13.0407	19.4517	1148.9210	45284.027 3	64.9443	7.0488	6.266
	38.5279	132.1249	22434.847 2	13.0575	19.4760	1151.9244	45459.082 9	65.0279	7.0614	6.277
L52	38.5367	129.2773	21981.433 5	13.0664	19.4760	1128.6437	44540.343 6	63.6264	7.1284	6.48
	39.4103	132.2661	23541.511 7	13.3685	19.9131	1182.2146	47701.485 1	65.0973	7.3545	6.686
L53	39.4940	104.3682	18813.127 1	13.4535	19.9131	944.7632	38120.496 0	51.3669	7.9910	9.265
	39.5426	104.4984	18883.619 0	13.4703	19.9373	947.1482	38263.331 7	51.4309	8.0036	9.28
L54	39.5470	103.0182	18628.496 8	13.4748	19.9373	934.3520	37746.385 0	50.7024	8.0371	9.455
	40.5176	105.5843	20055.522 5	13.8104	20.4230	982.0067	40637.925 8	51.9654	8.2883	9.751
L55	40.5264	102.5453	19503.523 5	13.8194	20.4230	954.9784	39519.426 2	50.4697	8.3553	10.128
	41.4971	105.0359	20959.427 5	14.1550	20.9087	1002.4283	42469.482 4	51.6955	8.6066	10.432
L56	41.4971	105.0359	20959.427 5	14.1550	20.9087	1002.4283	42469.482 4	51.6955	8.6066	10.432
	41.5456	105.1604	21034.064 8	14.1718	20.9329	1004.8310	42620.718 0	51.7568	8.6192	10.447
L57	41.5456	105.1604	21034.064 8	14.1718	20.9329	1004.8310	42620.718 0	51.7568	8.6192	10.447
	41.5941	105.2849	21108.879 2	14.1886	20.9572	1007.2365	42772.312 1	51.8180	8.6317	10.463
L58	41.5941	105.2849	21108.879 2	14.1886	20.9572	1007.2365	42772.312 1	51.8180	8.6317	10.463
	41.9824	106.2812	21713.790 4	14.3229	21.1515	1026.5847	43998.026 3	52.3084	8.7322	10.585
L59	41.9956	101.5453	20785.137 1	14.3363	21.1515	982.6799	42116.322 9	49.9775	8.8327	11.216
	42.0441	101.6642	20858.216 9	14.3531	21.1758	985.0041	42264.402 5	50.0360	8.8453	11.232
L60	42.0441	101.6642	20858.216 9	14.3531	21.1758	985.0041	42264.402 5	50.0360	8.8453	11.232

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
	42.1412	101.9019	21004.890	14.3866	21.2243	989.6608	42561.602	50.1530	8.8704	11.264
L61	42.1015	116.1333	23804.543	14.3464	21.2243	1121.5686	48234.458	57.1573	8.5689	9.521
	42.1501	116.2692	23888.180	14.3631	21.2486	1124.2230	48403.930	57.2242	8.5815	9.535
L62	42.1545	114.6901	23578.425	14.3676	21.2486	1109.6453	47776.281	56.4470	8.6150	9.707
	42.5427	115.7618	24245.608	14.5019	21.4429	1130.7069	49128.175	56.9744	8.7155	9.82
L63	42.5559	110.9731	23285.696	14.5153	21.4429	1085.9409	47183.133	54.6176	8.8160	10.372
	42.6045	111.1014	23366.557	14.5321	21.4672	1088.4792	47346.979	54.6807	8.8286	10.387
L64	42.6133	107.9001	22721.234	14.5410	21.4672	1058.4183	46039.380	53.1051	8.8956	10.782
	43.4869	110.1417	24166.918	14.8431	21.9042	1103.2981	48968.728	54.2084	9.1217	11.057
L65	43.4780	113.4109	24854.235	14.8342	21.9042	1134.6764	50361.419	55.8174	9.0547	10.653
	43.5266	113.5392	24938.685	14.8509	21.9285	1137.2711	50532.538	55.8805	9.0673	10.667
L66	43.5266	113.5392	24938.685	14.8509	21.9285	1137.2711	50532.538	55.8805	9.0673	10.667
	43.7692	114.1807	25363.808	14.9349	22.0499	1150.2889	51393.952	56.1963	9.1301	10.741
L67	43.7736	112.5353	25013.282	14.9393	22.0499	1134.3920	50683.691	55.3864	9.1636	10.942
	43.8222	112.6617	25097.674	14.9561	22.0742	1136.9672	50854.691	55.4487	9.1761	10.957
L68	43.8266	111.0134	24745.280	14.9606	22.0742	1121.0031	50140.647	54.6374	9.2096	11.163
	44.3604	112.3832	25672.660	15.1452	22.3413	1149.1101	52019.769	55.3116	9.3478	11.331

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 150.0000- 145.0000				1	1	1			
L2 145.0000- 140.0000				1	1	1			
L3 140.0000- 135.0000				1	1	1			
L4 135.0000- 133.0000				1	1	1			
L5 133.0000- 132.7500				1	1	0.919196			
L6 132.7500- 127.7500				1	1	0.920307			
L7 127.7500- 123.7500				1	1	0.928276			
L8 123.7500- 123.5000				1	1	0.927165			
L9 123.5000- 118.7500				1	1	0.876127			
L10 118.7500- 118.5000				1	1	0.845269			
L11 118.5000- 117.0000				1	1	0.856074			
L12 117.0000- 116.7500				1	1	0.879028			
L13 116.7500-				1	1	0.896111			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	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
ft	ft ²	in							
111.7500									
L14				1	1	0.901452			
111.7500-									
106.7500									
L15				1	1	0.909427			
106.7500-									
101.7500									
L16				1	1	0.898775			
101.7500-									
95.1667									
L17 95.1667-				1	1	0.908839			
94.5000									
L18 94.5000-				1	1	0.906001			
93.7500									
L19 93.7500-				1	1	0.906154			
93.5000									
L20 93.5000-				1	1	0.903037			
92.7500									
L21 92.7500-				1	1	0.876104			
92.5000									
L22 92.5000-				1	1	0.889265			
91.2500									
L23 91.2500-				1	1	0.88815			
91.0000									
L24 91.0000-				1	1	0.880453			
89.2500									
L25 89.2500-				1	1	0.884384			
89.0000									
L26 89.0000-				1	1	0.88742			
85.7500									
L27 85.7500-				1	1	0.903433			
85.5000									
L28 85.5000-				1	1	0.910774			
80.5000									
L29 80.5000-				1	1	0.919921			
75.5000									
L30 75.5000-				1	1	0.93091			
70.5000									
L31 70.5000-				1	1	0.92289			
68.0830									
L32 68.0830-				1	1	0.923801			
67.8330									
L33 67.8330-				1	1	0.920966			
67.0000									
L34 67.0000-				1	1	0.905291			
66.7500									
L35 66.7500-				1	1	0.913034			
63.2500									
L36 63.2500-				1	1	0.897596			
63.0000									
L37 63.0000-				1	1	0.902105			
59.5000									
L38 59.5000-				1	1	0.896126			
59.2500									
L39 59.2500-				1	1	0.902333			
56.2500									
L40 56.2500-				1	1	0.901098			
56.0000									
L41 56.0000-				1	1	0.928244			
55.7500									
L42 55.7500-				1	1	0.926136			
50.7500									
L43 50.7500-				1	1	0.937704			
44.6667									
L44 44.6667-				1	1	0.935663			
43.6667									
L45 43.6667-				1	1	0.935111			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
38.6667									
L46 38.6667-34.5000				1	1	0.937455			
L47 34.5000-34.2500				1	1	0.92252			
L48 34.2500-33.0000				1	1	0.918716			
L49 33.0000-32.7500				1	1	0.917961			
L50 32.7500-29.7500				1	1	0.929559			
L51 29.7500-29.5000				1	1	0.917173			
L52 29.5000-25.0000				1	1	0.923897			
L53 25.0000-24.7500				1	1	0.936349			
L54 24.7500-19.7500				1	1	0.937441			
L55 19.7500-14.7500				1	1	0.953114			
L56 14.7500-14.5000				1	1	0.952523			
L57 14.5000-14.2500				1	1	0.951934			
L58 14.2500-12.2500				1	1	0.947272			
L59 12.2500-12.0000				1	1	0.990848			
L60 12.0000-11.5000				1	1	0.989648			
L61 11.5000-11.2500				1	1	0.919523			
L62 11.2500-9.2500				1	1	0.927466			
L63 9.2500-9.0000				1	1	0.912798			
L64 9.0000-4.5000				1	1	0.930002			
L65 4.5000-4.2500				1	1	0.955592			
L66 4.2500-3.0000				1	1	0.952702			
L67 3.0000-2.7500				1	1	0.912717			
L68 2.7500-0.0000				1	1	0.920519			

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 r	Perimeter r	Weight plf

9" x 1-1/4" Flate Plate	A	No	Surface (CaAa)	29.7500 - 0.0000	1	1	0.500 0.500	9.0000	20.5000	0.00
8" x 1-1/4" Flate Plate	A	No	Surface (CaAa)	59.5000 - 29.7500	1	1	0.500 0.500	8.0000	18.5000	0.00
7" x 1-1/4" Flate Plate	A	No	Surface (CaAa)	89.2500 - 59.5000	1	1	0.500 0.500	7.0000	16.5000	0.00
5" x 1-1/4" Flate Plate	A	No	Surface (CaAa)	125.0000 - 89.2500	1	1	0.500 0.500	5.0000	12.5000	0.00

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 plf

9" x 1-1/4" Flate Plate	B	No	Surface Af (CaAa)	29.7500 - 0.0000	1	1	0.500 0.500	9.0000	20.5000	0.00
8" x 1-1/4" Flate Plate	B	No	Surface Af (CaAa)	59.5000 - 29.7500	1	1	0.500 0.500	8.0000	18.5000	0.00
7" x 1-1/4" Flate Plate	B	No	Surface Af (CaAa)	89.2500 - 59.5000	1	1	0.500 0.500	7.0000	16.5000	0.00
5" x 1-1/4" Flate Plate	B	No	Surface Af (CaAa)	125.0000 - 89.2500	1	1	0.500 0.500	5.0000	12.5000	0.00

9" x 1-1/4" Flate Plate	C	No	Surface Af (CaAa)	29.7500 - 0.0000	1	1	0.500 0.500	9.0000	20.5000	0.00
8" x 1-1/4" Flate Plate	C	No	Surface Af (CaAa)	59.5000 - 29.7500	1	1	0.500 0.500	8.0000	18.5000	0.00
7" x 1-1/4" Flate Plate	C	No	Surface Af (CaAa)	89.2500 - 59.5000	1	1	0.500 0.500	7.0000	16.5000	0.00
5" x 1-1/4" Flate Plate	C	No	Surface Af (CaAa)	125.0000 - 89.2500	1	1	0.500 0.500	5.0000	12.5000	0.00

6" x 1" Flate Plate	A	No	Surface Af (CaAa)	70.5833 - 0.0000	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flate Plate	B	No	Surface Af (CaAa)	70.5833 - 0.0000	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flate Plate	C	No	Surface Af (CaAa)	70.5833 - 0.0000	1	1	0.000 0.000	6.0000	14.0000	0.00

4.5" x 1" Flate Plate	A	No	Surface Af (CaAa)	135.0000 - 70.5833	1	1	0.000 0.000	4.5000	11.0000	0.00
4.5" x 1" Flate Plate	B	No	Surface Af (CaAa)	135.0000 - 70.5833	1	1	0.000 0.000	4.5000	11.0000	0.00
4.5" x 1" Flate Plate	C	No	Surface Af (CaAa)	135.0000 - 70.5833	1	1	0.000 0.000	4.5000	11.0000	0.00

Transition Stiffener	A	No	Surface Af (CaAa)	6.0000 - 0.0000	1	1	0.000 0.000	1.2500	14.5000	0.00
Transition Stiffener	B	No	Surface Af (CaAa)	13.0000 - 0.0000	1	1	0.000 0.000	1.2500	14.5000	0.00
Transition Stiffener	C	No	Surface Af (CaAa)	16.0000 - 0.0000	1	1	0.000 0.000	1.2500	14.5000	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 _A A _A ft ² /ft	Weight plf	
LDF4-50A(1/2)	A	No	No	Inside Pole	150.0000 - 8.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.15 0.15 0.15	
LDF5-50A(7/8)	A	No	No	Inside Pole	150.0000 - 8.0000	12	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.33 0.33 0.33	
HB158-1-08U8-S8J18(1-5/8)	A	No	No	Inside Pole	150.0000 - 8.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.30 1.30 1.30	

FB-L98B-002-75000(3/8)	B	No	No	Inside Pole	140.0000 - 8.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.06 0.06 0.06	
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	140.0000 - 8.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.58 0.58 0.58	
WR-VG66ST-BRD(7/8)	B	No	No	Inside Pole	140.0000 - 8.0000	2	No Ice 1/2" Ice	0.0000 0.0000	0.91 0.91	

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
LCF114-50J(1-1/4)	B	No	No	Inside Pole	140.0000 - 8.0000	6	1" Ice	0.0000	0.91
							No Ice	0.0000	0.70
							1/2" Ice	0.0000	0.70
1" Rigid Conduit	B	No	No	Inside Pole	140.0000 - 8.0000	1	1" Ice	0.0000	0.70
							No Ice	0.0000	0.60
							1/2" Ice	0.0000	0.60
***							1" Ice	0.0000	0.60
LDF7-50A(1-5/8)	B	No	No	Inside Pole	128.0000 - 8.0000	3	No Ice	0.0000	0.82
							1/2" Ice	0.0000	0.82
							1" Ice	0.0000	0.82

CU12PSM9P6XXX (1-1/2)	B	No	No	Inside Pole	110.0000 - 8.0000	1	No Ice	0.0000	2.35
							1/2" Ice	0.0000	2.35
							1" Ice	0.0000	2.35

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	150.0000-145.0000	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	145.0000-140.0000	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	140.0000-135.0000	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L4	135.0000-133.0000	A	0.000	0.000	1.500	0.000	0.01
		B	0.000	0.000	1.500	0.000	0.02
		C	0.000	0.000	1.500	0.000	0.00
L5	133.0000-132.7500	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.00
L6	132.7500-127.7500	A	0.000	0.000	3.750	0.000	0.03
		B	0.000	0.000	3.750	0.000	0.04
		C	0.000	0.000	3.750	0.000	0.00
L7	127.7500-123.7500	A	0.000	0.000	4.042	0.000	0.02
		B	0.000	0.000	4.042	0.000	0.04
		C	0.000	0.000	4.042	0.000	0.00
L8	123.7500-123.5000	A	0.000	0.000	0.396	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L9	123.5000-118.7500	A	0.000	0.000	7.521	0.000	0.03
		B	0.000	0.000	7.521	0.000	0.05
		C	0.000	0.000	7.521	0.000	0.00
L10	118.7500-118.5000	A	0.000	0.000	0.396	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L11	118.5000-117.0000	A	0.000	0.000	2.375	0.000	0.01
		B	0.000	0.000	2.375	0.000	0.02
		C	0.000	0.000	2.375	0.000	0.00
L12	117.0000-116.7500	A	0.000	0.000	0.396	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L13	116.7500-111.7500	A	0.000	0.000	7.917	0.000	0.03
		B	0.000	0.000	7.917	0.000	0.05
		C	0.000	0.000	7.917	0.000	0.00
L14	111.7500-	A	0.000	0.000	7.917	0.000	0.03

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
	106.7500	B	0.000	0.000	7.917	0.000	0.06
		C	0.000	0.000	7.917	0.000	0.00
L15	106.7500-	A	0.000	0.000	7.917	0.000	0.03
	101.7500	B	0.000	0.000	7.917	0.000	0.06
		C	0.000	0.000	7.917	0.000	0.00
L16	101.7500-	A	0.000	0.000	10.424	0.000	0.04
	95.1667	B	0.000	0.000	10.424	0.000	0.08
		C	0.000	0.000	10.424	0.000	0.00
L17	95.1667-94.5000	A	0.000	0.000	1.056	0.000	0.00
		B	0.000	0.000	1.056	0.000	0.01
		C	0.000	0.000	1.056	0.000	0.00
L18	94.5000-93.7500	A	0.000	0.000	1.188	0.000	0.00
		B	0.000	0.000	1.188	0.000	0.01
		C	0.000	0.000	1.188	0.000	0.00
L19	93.7500-93.5000	A	0.000	0.000	0.396	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L20	93.5000-92.7500	A	0.000	0.000	1.188	0.000	0.00
		B	0.000	0.000	1.188	0.000	0.01
		C	0.000	0.000	1.188	0.000	0.00
L21	92.7500-92.5000	A	0.000	0.000	0.396	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L22	92.5000-91.2500	A	0.000	0.000	1.979	0.000	0.01
		B	0.000	0.000	1.979	0.000	0.02
		C	0.000	0.000	1.979	0.000	0.00
L23	91.2500-91.0000	A	0.000	0.000	0.396	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L24	91.0000-89.2500	A	0.000	0.000	2.771	0.000	0.01
		B	0.000	0.000	2.771	0.000	0.02
		C	0.000	0.000	2.771	0.000	0.00
L25	89.2500-89.0000	A	0.000	0.000	0.479	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.479	0.000	0.00
L26	89.0000-85.7500	A	0.000	0.000	6.229	0.000	0.02
		B	0.000	0.000	6.229	0.000	0.04
		C	0.000	0.000	6.229	0.000	0.00
L27	85.7500-85.5000	A	0.000	0.000	0.479	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.479	0.000	0.00
L28	85.5000-80.5000	A	0.000	0.000	9.583	0.000	0.03
		B	0.000	0.000	9.583	0.000	0.06
		C	0.000	0.000	9.583	0.000	0.00
L29	80.5000-75.5000	A	0.000	0.000	9.583	0.000	0.03
		B	0.000	0.000	9.583	0.000	0.06
		C	0.000	0.000	9.583	0.000	0.00
L30	75.5000-70.5000	A	0.000	0.000	9.604	0.000	0.03
		B	0.000	0.000	9.604	0.000	0.06
		C	0.000	0.000	9.604	0.000	0.00
L31	70.5000-68.0830	A	0.000	0.000	5.237	0.000	0.01
		B	0.000	0.000	5.237	0.000	0.03
		C	0.000	0.000	5.237	0.000	0.00
L32	68.0830-67.8330	A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.542	0.000	0.00
		C	0.000	0.000	0.542	0.000	0.00
L33	67.8330-67.0000	A	0.000	0.000	1.805	0.000	0.00
		B	0.000	0.000	1.805	0.000	0.01
		C	0.000	0.000	1.805	0.000	0.00
L34	67.0000-66.7500	A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.542	0.000	0.00
		C	0.000	0.000	0.542	0.000	0.00
L35	66.7500-63.2500	A	0.000	0.000	7.583	0.000	0.02
		B	0.000	0.000	7.583	0.000	0.04
		C	0.000	0.000	7.583	0.000	0.00
L36	63.2500-63.0000	A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.542	0.000	0.00
		C	0.000	0.000	0.542	0.000	0.00
L37	63.0000-59.5000	A	0.000	0.000	7.583	0.000	0.02

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B	0.000	0.000	7.583	0.000	0.04
		C	0.000	0.000	7.583	0.000	0.00
L38	59.5000-59.2500	A	0.000	0.000	0.583	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
		C	0.000	0.000	0.583	0.000	0.00
L39	59.2500-56.2500	A	0.000	0.000	7.000	0.000	0.02
		B	0.000	0.000	7.000	0.000	0.04
		C	0.000	0.000	7.000	0.000	0.00
L40	56.2500-56.0000	A	0.000	0.000	0.583	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
		C	0.000	0.000	0.583	0.000	0.00
L41	56.0000-55.7500	A	0.000	0.000	0.583	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
		C	0.000	0.000	0.583	0.000	0.00
L42	55.7500-50.7500	A	0.000	0.000	11.667	0.000	0.03
		B	0.000	0.000	11.667	0.000	0.06
		C	0.000	0.000	11.667	0.000	0.00
L43	50.7500-44.6667	A	0.000	0.000	14.194	0.000	0.03
		B	0.000	0.000	14.194	0.000	0.08
		C	0.000	0.000	14.194	0.000	0.00
L44	44.6667-43.6667	A	0.000	0.000	2.333	0.000	0.01
		B	0.000	0.000	2.333	0.000	0.01
		C	0.000	0.000	2.333	0.000	0.00
L45	43.6667-38.6667	A	0.000	0.000	11.667	0.000	0.03
		B	0.000	0.000	11.667	0.000	0.06
		C	0.000	0.000	11.667	0.000	0.00
L46	38.6667-34.5000	A	0.000	0.000	9.722	0.000	0.02
		B	0.000	0.000	9.722	0.000	0.05
		C	0.000	0.000	9.722	0.000	0.00
L47	34.5000-34.2500	A	0.000	0.000	0.583	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
		C	0.000	0.000	0.583	0.000	0.00
L48	34.2500-33.0000	A	0.000	0.000	2.917	0.000	0.01
		B	0.000	0.000	2.917	0.000	0.02
		C	0.000	0.000	2.917	0.000	0.00
L49	33.0000-32.7500	A	0.000	0.000	0.583	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
		C	0.000	0.000	0.583	0.000	0.00
L50	32.7500-29.7500	A	0.000	0.000	7.000	0.000	0.02
		B	0.000	0.000	7.000	0.000	0.04
		C	0.000	0.000	7.000	0.000	0.00
L51	29.7500-29.5000	A	0.000	0.000	0.625	0.000	0.00
		B	0.000	0.000	0.625	0.000	0.00
		C	0.000	0.000	0.625	0.000	0.00
L52	29.5000-25.0000	A	0.000	0.000	11.250	0.000	0.02
		B	0.000	0.000	11.250	0.000	0.06
		C	0.000	0.000	11.250	0.000	0.00
L53	25.0000-24.7500	A	0.000	0.000	0.625	0.000	0.00
		B	0.000	0.000	0.625	0.000	0.00
		C	0.000	0.000	0.625	0.000	0.00
L54	24.7500-19.7500	A	0.000	0.000	12.500	0.000	0.03
		B	0.000	0.000	12.500	0.000	0.06
		C	0.000	0.000	12.500	0.000	0.00
L55	19.7500-14.7500	A	0.000	0.000	12.500	0.000	0.03
		B	0.000	0.000	12.500	0.000	0.06
		C	0.000	0.000	12.760	0.000	0.00
L56	14.7500-14.5000	A	0.000	0.000	0.625	0.000	0.00
		B	0.000	0.000	0.625	0.000	0.00
		C	0.000	0.000	0.677	0.000	0.00
L57	14.5000-14.2500	A	0.000	0.000	0.625	0.000	0.00
		B	0.000	0.000	0.625	0.000	0.00
		C	0.000	0.000	0.677	0.000	0.00
L58	14.2500-12.2500	A	0.000	0.000	5.000	0.000	0.01
		B	0.000	0.000	5.156	0.000	0.03
		C	0.000	0.000	5.417	0.000	0.00
L59	12.2500-12.0000	A	0.000	0.000	0.625	0.000	0.00
		B	0.000	0.000	0.677	0.000	0.00
		C	0.000	0.000	0.677	0.000	0.00
L60	12.0000-11.5000	A	0.000	0.000	1.250	0.000	0.00

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B	0.000	0.000	1.354	0.000	0.01
		C	0.000	0.000	1.354	0.000	0.00
L61	11.5000-11.2500	A	0.000	0.000	0.625	0.000	0.00
		B	0.000	0.000	0.677	0.000	0.00
		C	0.000	0.000	0.677	0.000	0.00
L62	11.2500-9.2500	A	0.000	0.000	5.000	0.000	0.01
		B	0.000	0.000	5.417	0.000	0.03
		C	0.000	0.000	5.417	0.000	0.00
L63	9.2500-9.0000	A	0.000	0.000	0.625	0.000	0.00
		B	0.000	0.000	0.677	0.000	0.00
		C	0.000	0.000	0.677	0.000	0.00
L64	9.0000-4.5000	A	0.000	0.000	11.493	0.000	0.01
		B	0.000	0.000	12.188	0.000	0.01
		C	0.000	0.000	12.188	0.000	0.00
L65	4.5000-4.2500	A	0.000	0.000	0.666	0.000	0.00
		B	0.000	0.000	0.677	0.000	0.00
		C	0.000	0.000	0.677	0.000	0.00
L66	4.2500-3.0000	A	0.000	0.000	3.328	0.000	0.00
		B	0.000	0.000	3.385	0.000	0.00
		C	0.000	0.000	3.385	0.000	0.00
L67	3.0000-2.7500	A	0.000	0.000	0.666	0.000	0.00
		B	0.000	0.000	0.677	0.000	0.00
		C	0.000	0.000	0.677	0.000	0.00
L68	2.7500-0.0000	A	0.000	0.000	7.321	0.000	0.00
		B	0.000	0.000	7.448	0.000	0.00
		C	0.000	0.000	7.448	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	150.0000- 145.0000	A	0.987	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	145.0000- 140.0000	A	0.984	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	140.0000- 135.0000	A	0.980	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.00
L4	135.0000- 133.0000	A	0.978	0.000	0.000	1.891	0.000	0.02
		B		0.000	0.000	1.891	0.000	0.03
		C		0.000	0.000	1.891	0.000	0.01
L5	133.0000- 132.7500	A	0.977	0.000	0.000	0.236	0.000	0.00
		B		0.000	0.000	0.236	0.000	0.00
		C		0.000	0.000	0.236	0.000	0.00
L6	132.7500- 127.7500	A	0.975	0.000	0.000	4.725	0.000	0.05
		B		0.000	0.000	4.725	0.000	0.07
		C		0.000	0.000	4.725	0.000	0.03
L7	127.7500- 123.7500	A	0.972	0.000	0.000	5.062	0.000	0.05
		B		0.000	0.000	5.062	0.000	0.07
		C		0.000	0.000	5.062	0.000	0.03
L8	123.7500- 123.5000	A	0.970	0.000	0.000	0.493	0.000	0.00
		B		0.000	0.000	0.493	0.000	0.01
		C		0.000	0.000	0.493	0.000	0.00
L9	123.5000- 118.7500	A	0.968	0.000	0.000	9.360	0.000	0.08
		B		0.000	0.000	9.360	0.000	0.10
		C		0.000	0.000	9.360	0.000	0.06
L10	118.7500- 118.5000	A	0.966	0.000	0.000	0.492	0.000	0.00
		B		0.000	0.000	0.492	0.000	0.01
		C		0.000	0.000	0.492	0.000	0.00
L11	118.5000- 117.0000	A	0.965	0.000	0.000	2.954	0.000	0.03
		B		0.000	0.000	2.954	0.000	0.03
		C		0.000	0.000	2.954	0.000	0.02
L12	117.0000-	A	0.965	0.000	0.000	0.492	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
	116.7500	B		0.000	0.000	0.492	0.000	0.01
		C		0.000	0.000	0.492	0.000	0.00
L13	116.7500-111.7500	A	0.962	0.000	0.000	9.841	0.000	0.08
		B		0.000	0.000	9.841	0.000	0.11
		C		0.000	0.000	9.841	0.000	0.06
L14	111.7500-106.7500	A	0.958	0.000	0.000	9.833	0.000	0.08
		B		0.000	0.000	9.833	0.000	0.12
		C		0.000	0.000	9.833	0.000	0.06
L15	106.7500-101.7500	A	0.954	0.000	0.000	9.824	0.000	0.08
		B		0.000	0.000	9.824	0.000	0.12
		C		0.000	0.000	9.824	0.000	0.06
L16	101.7500-95.1667	A	0.948	0.000	0.000	12.920	0.000	0.11
		B		0.000	0.000	12.920	0.000	0.16
		C		0.000	0.000	12.920	0.000	0.07
L17	95.1667-94.5000	A	0.945	0.000	0.000	1.308	0.000	0.01
		B		0.000	0.000	1.308	0.000	0.02
		C		0.000	0.000	1.308	0.000	0.01
L18	94.5000-93.7500	A	0.944	0.000	0.000	1.471	0.000	0.01
		B		0.000	0.000	1.471	0.000	0.02
		C		0.000	0.000	1.471	0.000	0.01
L19	93.7500-93.5000	A	0.943	0.000	0.000	0.490	0.000	0.00
		B		0.000	0.000	0.490	0.000	0.01
		C		0.000	0.000	0.490	0.000	0.00
L20	93.5000-92.7500	A	0.943	0.000	0.000	1.470	0.000	0.01
		B		0.000	0.000	1.470	0.000	0.02
		C		0.000	0.000	1.470	0.000	0.01
L21	92.7500-92.5000	A	0.942	0.000	0.000	0.490	0.000	0.00
		B		0.000	0.000	0.490	0.000	0.01
		C		0.000	0.000	0.490	0.000	0.00
L22	92.5000-91.2500	A	0.942	0.000	0.000	2.450	0.000	0.02
		B		0.000	0.000	2.450	0.000	0.03
		C		0.000	0.000	2.450	0.000	0.01
L23	91.2500-91.0000	A	0.941	0.000	0.000	0.490	0.000	0.00
		B		0.000	0.000	0.490	0.000	0.01
		C		0.000	0.000	0.490	0.000	0.00
L24	91.0000-89.2500	A	0.940	0.000	0.000	3.429	0.000	0.03
		B		0.000	0.000	3.429	0.000	0.04
		C		0.000	0.000	3.429	0.000	0.02
L25	89.2500-89.0000	A	0.939	0.000	0.000	0.573	0.000	0.00
		B		0.000	0.000	0.573	0.000	0.01
		C		0.000	0.000	0.573	0.000	0.00
L26	89.0000-85.7500	A	0.937	0.000	0.000	7.447	0.000	0.06
		B		0.000	0.000	7.447	0.000	0.08
		C		0.000	0.000	7.447	0.000	0.04
L27	85.7500-85.5000	A	0.935	0.000	0.000	0.573	0.000	0.00
		B		0.000	0.000	0.573	0.000	0.01
		C		0.000	0.000	0.573	0.000	0.00
L28	85.5000-80.5000	A	0.932	0.000	0.000	11.448	0.000	0.09
		B		0.000	0.000	11.448	0.000	0.13
		C		0.000	0.000	11.448	0.000	0.06
L29	80.5000-75.5000	A	0.926	0.000	0.000	11.436	0.000	0.09
		B		0.000	0.000	11.436	0.000	0.13
		C		0.000	0.000	11.436	0.000	0.06
L30	75.5000-70.5000	A	0.920	0.000	0.000	11.445	0.000	0.09
		B		0.000	0.000	11.445	0.000	0.13
		C		0.000	0.000	11.445	0.000	0.06
L31	70.5000-68.0830	A	0.915	0.000	0.000	6.122	0.000	0.05
		B		0.000	0.000	6.122	0.000	0.06
		C		0.000	0.000	6.122	0.000	0.03
L32	68.0830-67.8330	A	0.914	0.000	0.000	0.633	0.000	0.00
		B		0.000	0.000	0.633	0.000	0.01
		C		0.000	0.000	0.633	0.000	0.00
L33	67.8330-67.0000	A	0.913	0.000	0.000	2.109	0.000	0.02
		B		0.000	0.000	2.109	0.000	0.02
		C		0.000	0.000	2.109	0.000	0.01
L34	67.0000-66.7500	A	0.912	0.000	0.000	0.633	0.000	0.00
		B		0.000	0.000	0.633	0.000	0.01
		C		0.000	0.000	0.633	0.000	0.00
L35	66.7500-63.2500	A	0.910	0.000	0.000	8.857	0.000	0.07

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
		B		0.000	0.000	8.857	0.000	0.09
		C		0.000	0.000	8.857	0.000	0.05
L36	63.2500-63.0000	A	0.907	0.000	0.000	0.632	0.000	0.00
		B		0.000	0.000	0.632	0.000	0.01
		C		0.000	0.000	0.632	0.000	0.00
L37	63.0000-59.5000	A	0.904	0.000	0.000	8.849	0.000	0.06
		B		0.000	0.000	8.849	0.000	0.09
		C		0.000	0.000	8.849	0.000	0.05
L38	59.5000-59.2500	A	0.901	0.000	0.000	0.673	0.000	0.00
		B		0.000	0.000	0.673	0.000	0.01
		C		0.000	0.000	0.673	0.000	0.00
L39	59.2500-56.2500	A	0.899	0.000	0.000	8.079	0.000	0.06
		B		0.000	0.000	8.079	0.000	0.08
		C		0.000	0.000	8.079	0.000	0.04
L40	56.2500-56.0000	A	0.896	0.000	0.000	0.673	0.000	0.00
		B		0.000	0.000	0.673	0.000	0.01
		C		0.000	0.000	0.673	0.000	0.00
L41	56.0000-55.7500	A	0.896	0.000	0.000	0.673	0.000	0.00
		B		0.000	0.000	0.673	0.000	0.01
		C		0.000	0.000	0.673	0.000	0.00
L42	55.7500-50.7500	A	0.892	0.000	0.000	13.450	0.000	0.10
		B		0.000	0.000	13.450	0.000	0.13
		C		0.000	0.000	13.450	0.000	0.07
L43	50.7500-44.6667	A	0.882	0.000	0.000	16.340	0.000	0.11
		B		0.000	0.000	16.340	0.000	0.16
		C		0.000	0.000	16.340	0.000	0.08
L44	44.6667-43.6667	A	0.875	0.000	0.000	2.686	0.000	0.02
		B		0.000	0.000	2.686	0.000	0.03
		C		0.000	0.000	2.686	0.000	0.01
L45	43.6667-38.6667	A	0.869	0.000	0.000	13.405	0.000	0.09
		B		0.000	0.000	13.405	0.000	0.13
		C		0.000	0.000	13.405	0.000	0.07
L46	38.6667-34.5000	A	0.859	0.000	0.000	11.154	0.000	0.08
		B		0.000	0.000	11.154	0.000	0.11
		C		0.000	0.000	11.154	0.000	0.05
L47	34.5000-34.2500	A	0.853	0.000	0.000	0.669	0.000	0.00
		B		0.000	0.000	0.669	0.000	0.01
		C		0.000	0.000	0.669	0.000	0.00
L48	34.2500-33.0000	A	0.852	0.000	0.000	3.342	0.000	0.02
		B		0.000	0.000	3.342	0.000	0.03
		C		0.000	0.000	3.342	0.000	0.02
L49	33.0000-32.7500	A	0.850	0.000	0.000	0.668	0.000	0.00
		B		0.000	0.000	0.668	0.000	0.01
		C		0.000	0.000	0.668	0.000	0.00
L50	32.7500-29.7500	A	0.845	0.000	0.000	8.014	0.000	0.05
		B		0.000	0.000	8.014	0.000	0.08
		C		0.000	0.000	8.014	0.000	0.04
L51	29.7500-29.5000	A	0.841	0.000	0.000	0.709	0.000	0.00
		B		0.000	0.000	0.709	0.000	0.01
		C		0.000	0.000	0.709	0.000	0.00
L52	29.5000-25.0000	A	0.834	0.000	0.000	12.751	0.000	0.08
		B		0.000	0.000	12.751	0.000	0.12
		C		0.000	0.000	12.751	0.000	0.06
L53	25.0000-24.7500	A	0.826	0.000	0.000	0.708	0.000	0.00
		B		0.000	0.000	0.708	0.000	0.01
		C		0.000	0.000	0.708	0.000	0.00
L54	24.7500-19.7500	A	0.817	0.000	0.000	14.134	0.000	0.09
		B		0.000	0.000	14.134	0.000	0.13
		C		0.000	0.000	14.134	0.000	0.06
L55	19.7500-14.7500	A	0.797	0.000	0.000	14.093	0.000	0.09
		B		0.000	0.000	14.093	0.000	0.13
		C		0.000	0.000	14.553	0.000	0.07
L56	14.7500-14.5000	A	0.784	0.000	0.000	0.703	0.000	0.00
		B		0.000	0.000	0.703	0.000	0.01
		C		0.000	0.000	0.795	0.000	0.00
L57	14.5000-14.2500	A	0.782	0.000	0.000	0.703	0.000	0.00
		B		0.000	0.000	0.703	0.000	0.01
		C		0.000	0.000	0.794	0.000	0.00
L58	14.2500-12.2500	A	0.776	0.000	0.000	5.621	0.000	0.04

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
		B		0.000	0.000	5.876	0.000	0.05
		C		0.000	0.000	6.348	0.000	0.03
L59	12.2500-12.0000	A	0.769	0.000	0.000	0.702	0.000	0.00
		B		0.000	0.000	0.787	0.000	0.01
		C		0.000	0.000	0.792	0.000	0.00
L60	12.0000-11.5000	A	0.767	0.000	0.000	1.403	0.000	0.01
		B		0.000	0.000	1.573	0.000	0.01
		C		0.000	0.000	1.584	0.000	0.01
L61	11.5000-11.2500	A	0.764	0.000	0.000	0.701	0.000	0.00
		B		0.000	0.000	0.786	0.000	0.01
		C		0.000	0.000	0.792	0.000	0.00
L62	11.2500-9.2500	A	0.756	0.000	0.000	5.605	0.000	0.03
		B		0.000	0.000	6.279	0.000	0.06
		C		0.000	0.000	6.324	0.000	0.03
L63	9.2500-9.0000	A	0.747	0.000	0.000	0.700	0.000	0.00
		B		0.000	0.000	0.784	0.000	0.01
		C		0.000	0.000	0.789	0.000	0.00
L64	9.0000-4.5000	A	0.725	0.000	0.000	12.947	0.000	0.06
		B		0.000	0.000	14.049	0.000	0.09
		C		0.000	0.000	14.146	0.000	0.07
L65	4.5000-4.2500	A	0.694	0.000	0.000	0.759	0.000	0.00
		B		0.000	0.000	0.776	0.000	0.00
		C		0.000	0.000	0.781	0.000	0.00
L66	4.2500-3.0000	A	0.682	0.000	0.000	3.785	0.000	0.02
		B		0.000	0.000	3.872	0.000	0.02
		C		0.000	0.000	3.897	0.000	0.02
L67	3.0000-2.7500	A	0.666	0.000	0.000	0.755	0.000	0.00
		B		0.000	0.000	0.772	0.000	0.00
		C		0.000	0.000	0.777	0.000	0.00
L68	2.7500-0.0000	A	0.618	0.000	0.000	8.235	0.000	0.04
		B		0.000	0.000	8.422	0.000	0.04
		C		0.000	0.000	8.468	0.000	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	150.0000-145.0000	0.0000	0.0000	0.0000	0.0000
L2	145.0000-140.0000	0.0000	0.0000	0.0000	0.0000
L3	140.0000-135.0000	0.0000	0.0000	0.0000	0.0000
L4	135.0000-133.0000	0.0000	0.0000	0.0000	0.0000
L5	133.0000-132.7500	0.0000	0.0000	0.0000	0.0000
L6	132.7500-127.7500	0.0000	0.0000	0.0000	0.0000
L7	127.7500-123.7500	0.0000	0.0000	0.0000	0.0000
L8	123.7500-123.5000	0.0000	0.0000	0.0000	0.0000
L9	123.5000-118.7500	0.0000	0.0000	0.0000	0.0000
L10	118.7500-118.5000	0.0000	0.0000	0.0000	0.0000
L11	118.5000-117.0000	0.0000	0.0000	0.0000	0.0000
L12	117.0000-116.7500	0.0000	0.0000	0.0000	0.0000
L13	116.7500-111.7500	0.0000	0.0000	0.0000	0.0000
L14	111.7500-	0.0000	0.0000	0.0000	0.0000

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
	106.7500				
L15	106.7500-101.7500	0.0000	0.0000	0.0000	0.0000
L16	101.7500-95.1667	0.0000	0.0000	0.0000	0.0000
L17	95.1667-94.5000	0.0000	0.0000	0.0000	0.0000
L18	94.5000-93.7500	0.0000	0.0000	0.0000	0.0000
L19	93.7500-93.5000	0.0000	0.0000	0.0000	0.0000
L20	93.5000-92.7500	0.0000	0.0000	0.0000	0.0000
L21	92.7500-92.5000	0.0000	0.0000	0.0000	0.0000
L22	92.5000-91.2500	0.0000	0.0000	0.0000	0.0000
L23	91.2500-91.0000	0.0000	0.0000	0.0000	0.0000
L24	91.0000-89.2500	0.0000	0.0000	0.0000	0.0000
L25	89.2500-89.0000	0.0000	0.0000	0.0000	0.0000
L26	89.0000-85.7500	0.0000	0.0000	0.0000	0.0000
L27	85.7500-85.5000	0.0000	0.0000	0.0000	0.0000
L28	85.5000-80.5000	0.0000	0.0000	0.0000	0.0000
L29	80.5000-75.5000	0.0000	0.0000	0.0000	0.0000
L30	75.5000-70.5000	0.0000	0.0000	0.0000	0.0000
L31	70.5000-68.0830	0.0000	0.0000	0.0000	0.0000
L32	68.0830-67.8330	0.0000	0.0000	0.0000	0.0000
L33	67.8330-67.0000	0.0000	0.0000	0.0000	0.0000
L34	67.0000-66.7500	0.0000	0.0000	0.0000	0.0000
L35	66.7500-63.2500	0.0000	0.0000	0.0000	0.0000
L36	63.2500-63.0000	0.0000	0.0000	0.0000	0.0000
L37	63.0000-59.5000	0.0000	0.0000	0.0000	0.0000
L38	59.5000-59.2500	0.0000	0.0000	0.0000	0.0000
L39	59.2500-56.2500	0.0000	0.0000	0.0000	0.0000
L40	56.2500-56.0000	0.0000	0.0000	0.0000	0.0000
L41	56.0000-55.7500	0.0000	0.0000	0.0000	0.0000
L42	55.7500-50.7500	0.0000	0.0000	0.0000	0.0000
L43	50.7500-44.6667	0.0000	0.0000	0.0000	0.0000
L44	44.6667-43.6667	0.0000	0.0000	0.0000	0.0000
L45	43.6667-38.6667	0.0000	0.0000	0.0000	0.0000
L46	38.6667-34.5000	0.0000	0.0000	0.0000	0.0000
L47	34.5000-34.2500	0.0000	0.0000	0.0000	0.0000
L48	34.2500-33.0000	0.0000	0.0000	0.0000	0.0000
L49	33.0000-32.7500	0.0000	0.0000	0.0000	0.0000
L50	32.7500-29.7500	0.0000	0.0000	0.0000	0.0000
L51	29.7500-29.5000	0.0000	0.0000	0.0000	0.0000
L52	29.5000-25.0000	0.0000	0.0000	0.0000	0.0000
L53	25.0000-24.7500	0.0000	0.0000	0.0000	0.0000
L54	24.7500-19.7500	0.0000	0.0000	0.0000	0.0000
L55	19.7500-14.7500	0.0000	0.1115	0.0000	0.1659
L56	14.7500-14.5000	0.0000	0.4395	0.0000	0.6456
L57	14.5000-14.2500	0.0000	0.4397	0.0000	0.6457
L58	14.2500-12.2500	0.1426	0.3556	0.1947	0.5271
L59	12.2500-12.0000	0.3760	0.2171	0.5101	0.3349
L60	12.0000-11.5000	0.3763	0.2173	0.5101	0.3348
L61	11.5000-11.2500	0.3768	0.2175	0.5104	0.3348
L62	11.2500-9.2500	0.3779	0.2182	0.5105	0.3344
L63	9.2500-9.0000	0.3790	0.2188	0.5104	0.3339
L64	9.0000-4.5000	0.2803	0.1619	0.3728	0.2528
L65	4.5000-4.2500	0.0829	0.0479	0.1066	0.0967
L66	4.2500-3.0000	0.0831	0.0480	0.1065	0.0958
L67	3.0000-2.7500	0.0832	0.0481	0.1063	0.0946
L68	2.7500-0.0000	0.0836	0.0483	0.1054	0.0910

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
L4	32	4.5" x 1" Flate Plate	133.00 - 135.00	1.0000	1.0000
L4	33	4.5" x 1" Flate Plate	133.00 - 135.00	1.0000	1.0000
L4	34	4.5" x 1" Flate Plate	133.00 - 135.00	1.0000	1.0000
L5	32	4.5" x 1" Flate Plate	132.75 - 133.00	1.0000	1.0000
L5	33	4.5" x 1" Flate Plate	132.75 - 133.00	1.0000	1.0000
L5	34	4.5" x 1" Flate Plate	132.75 - 133.00	1.0000	1.0000
L6	32	4.5" x 1" Flate Plate	127.75 - 132.75	1.0000	1.0000
L6	33	4.5" x 1" Flate Plate	127.75 - 132.75	1.0000	1.0000
L6	34	4.5" x 1" Flate Plate	127.75 - 132.75	1.0000	1.0000
L7	16	5" x 1-1/4" Flate Plate	123.75 - 125.00	1.0000	1.0000
L7	21	5" x 1-1/4" Flate Plate	123.75 - 125.00	1.0000	1.0000
L7	26	5" x 1-1/4" Flate Plate	123.75 - 125.00	1.0000	1.0000
L7	32	4.5" x 1" Flate Plate	123.75 - 127.75	1.0000	1.0000
L7	33	4.5" x 1" Flate Plate	123.75 - 127.75	1.0000	1.0000
L7	34	4.5" x 1" Flate Plate	123.75 - 127.75	1.0000	1.0000
L8	16	5" x 1-1/4" Flate Plate	123.50 - 123.75	1.0000	1.0000
L8	21	5" x 1-1/4" Flate Plate	123.50 - 123.75	1.0000	1.0000
L8	26	5" x 1-1/4" Flate Plate	123.50 - 123.75	1.0000	1.0000
L8	32	4.5" x 1" Flate Plate	123.50 - 123.75	1.0000	1.0000
L8	33	4.5" x 1" Flate Plate	123.50 - 123.75	1.0000	1.0000
L8	34	4.5" x 1" Flate Plate	123.50 - 123.75	1.0000	1.0000
L9	16	5" x 1-1/4" Flate Plate	118.75 - 123.50	1.0000	1.0000
L9	21	5" x 1-1/4" Flate Plate	118.75 - 123.50	1.0000	1.0000
L9	26	5" x 1-1/4" Flate Plate	118.75 - 123.50	1.0000	1.0000
L9	32	4.5" x 1" Flate Plate	118.75 - 123.50	1.0000	1.0000
L9	33	4.5" x 1" Flate Plate	118.75 - 123.50	1.0000	1.0000
L9	34	4.5" x 1" Flate Plate	118.75 - 123.50	1.0000	1.0000
L10	16	5" x 1-1/4" Flate Plate	118.50 - 118.75	1.0000	1.0000
L10	21	5" x 1-1/4" Flate Plate	118.50 - 118.75	1.0000	1.0000
L10	26	5" x 1-1/4" Flate Plate	118.50 - 118.75	1.0000	1.0000
L10	32	4.5" x 1" Flate Plate	118.50 - 118.75	1.0000	1.0000
L10	33	4.5" x 1" Flate Plate	118.50 - 118.75	1.0000	1.0000
L10	34	4.5" x 1" Flate Plate	118.50 - 118.75	1.0000	1.0000
L11	16	5" x 1-1/4" Flate Plate	117.00 - 118.50	1.0000	1.0000
L11	21	5" x 1-1/4" Flate Plate	117.00 - 118.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			118.50		
L11	26	5" x 1-1/4" Flate Plate	117.00 - 118.50	1.0000	1.0000
L11	32	4.5" x 1" Flate Plate	117.00 - 118.50	1.0000	1.0000
L11	33	4.5" x 1" Flate Plate	117.00 - 118.50	1.0000	1.0000
L11	34	4.5" x 1" Flate Plate	117.00 - 118.50	1.0000	1.0000
L12	16	5" x 1-1/4" Flate Plate	116.75 - 117.00	1.0000	1.0000
L12	21	5" x 1-1/4" Flate Plate	116.75 - 117.00	1.0000	1.0000
L12	26	5" x 1-1/4" Flate Plate	116.75 - 117.00	1.0000	1.0000
L12	32	4.5" x 1" Flate Plate	116.75 - 117.00	1.0000	1.0000
L12	33	4.5" x 1" Flate Plate	116.75 - 117.00	1.0000	1.0000
L12	34	4.5" x 1" Flate Plate	116.75 - 117.00	1.0000	1.0000
L13	16	5" x 1-1/4" Flate Plate	111.75 - 116.75	1.0000	1.0000
L13	21	5" x 1-1/4" Flate Plate	111.75 - 116.75	1.0000	1.0000
L13	26	5" x 1-1/4" Flate Plate	111.75 - 116.75	1.0000	1.0000
L13	32	4.5" x 1" Flate Plate	111.75 - 116.75	1.0000	1.0000
L13	33	4.5" x 1" Flate Plate	111.75 - 116.75	1.0000	1.0000
L13	34	4.5" x 1" Flate Plate	111.75 - 116.75	1.0000	1.0000
L14	16	5" x 1-1/4" Flate Plate	106.75 - 111.75	1.0000	1.0000
L14	21	5" x 1-1/4" Flate Plate	106.75 - 111.75	1.0000	1.0000
L14	26	5" x 1-1/4" Flate Plate	106.75 - 111.75	1.0000	1.0000
L14	32	4.5" x 1" Flate Plate	106.75 - 111.75	1.0000	1.0000
L14	33	4.5" x 1" Flate Plate	106.75 - 111.75	1.0000	1.0000
L14	34	4.5" x 1" Flate Plate	106.75 - 111.75	1.0000	1.0000
L15	16	5" x 1-1/4" Flate Plate	101.75 - 106.75	1.0000	1.0000
L15	21	5" x 1-1/4" Flate Plate	101.75 - 106.75	1.0000	1.0000
L15	26	5" x 1-1/4" Flate Plate	101.75 - 106.75	1.0000	1.0000
L15	32	4.5" x 1" Flate Plate	101.75 - 106.75	1.0000	1.0000
L15	33	4.5" x 1" Flate Plate	101.75 - 106.75	1.0000	1.0000
L15	34	4.5" x 1" Flate Plate	101.75 - 106.75	1.0000	1.0000
L16	16	5" x 1-1/4" Flate Plate	95.17 - 101.75	1.0000	1.0000
L16	21	5" x 1-1/4" Flate Plate	95.17 - 101.75	1.0000	1.0000
L16	26	5" x 1-1/4" Flate Plate	95.17 - 101.75	1.0000	1.0000
L16	32	4.5" x 1" Flate Plate	95.17 - 101.75	1.0000	1.0000
L16	33	4.5" x 1" Flate Plate	95.17 - 101.75	1.0000	1.0000
L16	34	4.5" x 1" Flate Plate	95.17 - 101.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L17	16	5" x 1-1/4" Flate Plate	94.50 - 95.17	1.0000	1.0000
L17	21	5" x 1-1/4" Flate Plate	94.50 - 95.17	1.0000	1.0000
L17	26	5" x 1-1/4" Flate Plate	94.50 - 95.17	1.0000	1.0000
L17	32	4.5" x 1" Flate Plate	94.50 - 95.17	1.0000	1.0000
L17	33	4.5" x 1" Flate Plate	94.50 - 95.17	1.0000	1.0000
L17	34	4.5" x 1" Flate Plate	94.50 - 95.17	1.0000	1.0000
L18	16	5" x 1-1/4" Flate Plate	93.75 - 94.50	1.0000	1.0000
L18	21	5" x 1-1/4" Flate Plate	93.75 - 94.50	1.0000	1.0000
L18	26	5" x 1-1/4" Flate Plate	93.75 - 94.50	1.0000	1.0000
L18	32	4.5" x 1" Flate Plate	93.75 - 94.50	1.0000	1.0000
L18	33	4.5" x 1" Flate Plate	93.75 - 94.50	1.0000	1.0000
L18	34	4.5" x 1" Flate Plate	93.75 - 94.50	1.0000	1.0000
L19	16	5" x 1-1/4" Flate Plate	93.50 - 93.75	1.0000	1.0000
L19	21	5" x 1-1/4" Flate Plate	93.50 - 93.75	1.0000	1.0000
L19	26	5" x 1-1/4" Flate Plate	93.50 - 93.75	1.0000	1.0000
L19	32	4.5" x 1" Flate Plate	93.50 - 93.75	1.0000	1.0000
L19	33	4.5" x 1" Flate Plate	93.50 - 93.75	1.0000	1.0000
L19	34	4.5" x 1" Flate Plate	93.50 - 93.75	1.0000	1.0000
L20	16	5" x 1-1/4" Flate Plate	92.75 - 93.50	1.0000	1.0000
L20	21	5" x 1-1/4" Flate Plate	92.75 - 93.50	1.0000	1.0000
L20	26	5" x 1-1/4" Flate Plate	92.75 - 93.50	1.0000	1.0000
L20	32	4.5" x 1" Flate Plate	92.75 - 93.50	1.0000	1.0000
L20	33	4.5" x 1" Flate Plate	92.75 - 93.50	1.0000	1.0000
L20	34	4.5" x 1" Flate Plate	92.75 - 93.50	1.0000	1.0000
L21	16	5" x 1-1/4" Flate Plate	92.50 - 92.75	1.0000	1.0000
L21	21	5" x 1-1/4" Flate Plate	92.50 - 92.75	1.0000	1.0000
L21	26	5" x 1-1/4" Flate Plate	92.50 - 92.75	1.0000	1.0000
L21	32	4.5" x 1" Flate Plate	92.50 - 92.75	1.0000	1.0000
L21	33	4.5" x 1" Flate Plate	92.50 - 92.75	1.0000	1.0000
L21	34	4.5" x 1" Flate Plate	92.50 - 92.75	1.0000	1.0000
L22	16	5" x 1-1/4" Flate Plate	91.25 - 92.50	1.0000	1.0000
L22	21	5" x 1-1/4" Flate Plate	91.25 - 92.50	1.0000	1.0000
L22	26	5" x 1-1/4" Flate Plate	91.25 - 92.50	1.0000	1.0000
L22	32	4.5" x 1" Flate Plate	91.25 - 92.50	1.0000	1.0000
L22	33	4.5" x 1" Flate Plate	91.25 - 92.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			92.50		
L22	34	4.5" x 1" Flate Plate	91.25 - 92.50	1.0000	1.0000
L23	16	5" x 1-1/4" Flate Plate	91.00 - 91.25	1.0000	1.0000
L23	21	5" x 1-1/4" Flate Plate	91.00 - 91.25	1.0000	1.0000
L23	26	5" x 1-1/4" Flate Plate	91.00 - 91.25	1.0000	1.0000
L23	32	4.5" x 1" Flate Plate	91.00 - 91.25	1.0000	1.0000
L23	33	4.5" x 1" Flate Plate	91.00 - 91.25	1.0000	1.0000
L23	34	4.5" x 1" Flate Plate	91.00 - 91.25	1.0000	1.0000
L24	16	5" x 1-1/4" Flate Plate	89.25 - 91.00	1.0000	1.0000
L24	21	5" x 1-1/4" Flate Plate	89.25 - 91.00	1.0000	1.0000
L24	26	5" x 1-1/4" Flate Plate	89.25 - 91.00	1.0000	1.0000
L24	32	4.5" x 1" Flate Plate	89.25 - 91.00	1.0000	1.0000
L24	33	4.5" x 1" Flate Plate	89.25 - 91.00	1.0000	1.0000
L24	34	4.5" x 1" Flate Plate	89.25 - 91.00	1.0000	1.0000
L25	15	7" x 1-1/4" Flate Plate	89.00 - 89.25	1.0000	1.0000
L25	20	7" x 1-1/4" Flate Plate	89.00 - 89.25	1.0000	1.0000
L25	25	7" x 1-1/4" Flate Plate	89.00 - 89.25	1.0000	1.0000
L25	32	4.5" x 1" Flate Plate	89.00 - 89.25	1.0000	1.0000
L25	33	4.5" x 1" Flate Plate	89.00 - 89.25	1.0000	1.0000
L25	34	4.5" x 1" Flate Plate	89.00 - 89.25	1.0000	1.0000
L26	15	7" x 1-1/4" Flate Plate	85.75 - 89.00	1.0000	1.0000
L26	20	7" x 1-1/4" Flate Plate	85.75 - 89.00	1.0000	1.0000
L26	25	7" x 1-1/4" Flate Plate	85.75 - 89.00	1.0000	1.0000
L26	32	4.5" x 1" Flate Plate	85.75 - 89.00	1.0000	1.0000
L26	33	4.5" x 1" Flate Plate	85.75 - 89.00	1.0000	1.0000
L26	34	4.5" x 1" Flate Plate	85.75 - 89.00	1.0000	1.0000
L27	15	7" x 1-1/4" Flate Plate	85.50 - 85.75	1.0000	1.0000
L27	20	7" x 1-1/4" Flate Plate	85.50 - 85.75	1.0000	1.0000
L27	25	7" x 1-1/4" Flate Plate	85.50 - 85.75	1.0000	1.0000
L27	32	4.5" x 1" Flate Plate	85.50 - 85.75	1.0000	1.0000
L27	33	4.5" x 1" Flate Plate	85.50 - 85.75	1.0000	1.0000
L27	34	4.5" x 1" Flate Plate	85.50 - 85.75	1.0000	1.0000
L28	15	7" x 1-1/4" Flate Plate	80.50 - 85.50	1.0000	1.0000
L28	20	7" x 1-1/4" Flate Plate	80.50 - 85.50	1.0000	1.0000
L28	25	7" x 1-1/4" Flate Plate	80.50 - 85.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	32	4.5" x 1" Flate Plate	80.50 - 85.50	1.0000	1.0000
L28	33	4.5" x 1" Flate Plate	80.50 - 85.50	1.0000	1.0000
L28	34	4.5" x 1" Flate Plate	80.50 - 85.50	1.0000	1.0000
L29	15	7" x 1-1/4" Flate Plate	75.50 - 80.50	1.0000	1.0000
L29	20	7" x 1-1/4" Flate Plate	75.50 - 80.50	1.0000	1.0000
L29	25	7" x 1-1/4" Flate Plate	75.50 - 80.50	1.0000	1.0000
L29	32	4.5" x 1" Flate Plate	75.50 - 80.50	1.0000	1.0000
L29	33	4.5" x 1" Flate Plate	75.50 - 80.50	1.0000	1.0000
L29	34	4.5" x 1" Flate Plate	75.50 - 80.50	1.0000	1.0000
L30	15	7" x 1-1/4" Flate Plate	70.50 - 75.50	1.0000	1.0000
L30	20	7" x 1-1/4" Flate Plate	70.50 - 75.50	1.0000	1.0000
L30	25	7" x 1-1/4" Flate Plate	70.50 - 75.50	1.0000	1.0000
L30	28	6" x 1" Flate Plate	70.50 - 70.58	1.0000	1.0000
L30	29	6" x 1" Flate Plate	70.50 - 70.58	1.0000	1.0000
L30	30	6" x 1" Flate Plate	70.50 - 70.58	1.0000	1.0000
L30	32	4.5" x 1" Flate Plate	70.58 - 75.50	1.0000	1.0000
L30	33	4.5" x 1" Flate Plate	70.58 - 75.50	1.0000	1.0000
L30	34	4.5" x 1" Flate Plate	70.58 - 75.50	1.0000	1.0000
L31	15	7" x 1-1/4" Flate Plate	68.08 - 70.50	1.0000	1.0000
L31	20	7" x 1-1/4" Flate Plate	68.08 - 70.50	1.0000	1.0000
L31	25	7" x 1-1/4" Flate Plate	68.08 - 70.50	1.0000	1.0000
L31	28	6" x 1" Flate Plate	68.08 - 70.50	1.0000	1.0000
L31	29	6" x 1" Flate Plate	68.08 - 70.50	1.0000	1.0000
L31	30	6" x 1" Flate Plate	68.08 - 70.50	1.0000	1.0000
L32	15	7" x 1-1/4" Flate Plate	67.83 - 68.08	1.0000	1.0000
L32	20	7" x 1-1/4" Flate Plate	67.83 - 68.08	1.0000	1.0000
L32	25	7" x 1-1/4" Flate Plate	67.83 - 68.08	1.0000	1.0000
L32	28	6" x 1" Flate Plate	67.83 - 68.08	1.0000	1.0000
L32	29	6" x 1" Flate Plate	67.83 - 68.08	1.0000	1.0000
L32	30	6" x 1" Flate Plate	67.83 - 68.08	1.0000	1.0000
L33	15	7" x 1-1/4" Flate Plate	67.00 - 67.83	1.0000	1.0000
L33	20	7" x 1-1/4" Flate Plate	67.00 - 67.83	1.0000	1.0000
L33	25	7" x 1-1/4" Flate Plate	67.00 - 67.83	1.0000	1.0000
L33	28	6" x 1" Flate Plate	67.00 - 67.83	1.0000	1.0000
L33	29	6" x 1" Flate Plate	67.00 - 67.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L33	30	6" x 1" Flate Plate	67.83 67.00 - 67.83	1.0000	1.0000
L34	15	7" x 1-1/4" Flate Plate	66.75 - 67.00	1.0000	1.0000
L34	20	7" x 1-1/4" Flate Plate	66.75 - 67.00	1.0000	1.0000
L34	25	7" x 1-1/4" Flate Plate	66.75 - 67.00	1.0000	1.0000
L34	28	6" x 1" Flate Plate	66.75 - 67.00	1.0000	1.0000
L34	29	6" x 1" Flate Plate	66.75 - 67.00	1.0000	1.0000
L34	30	6" x 1" Flate Plate	66.75 - 67.00	1.0000	1.0000
L35	15	7" x 1-1/4" Flate Plate	63.25 - 66.75	1.0000	1.0000
L35	20	7" x 1-1/4" Flate Plate	63.25 - 66.75	1.0000	1.0000
L35	25	7" x 1-1/4" Flate Plate	63.25 - 66.75	1.0000	1.0000
L35	28	6" x 1" Flate Plate	63.25 - 66.75	1.0000	1.0000
L35	29	6" x 1" Flate Plate	63.25 - 66.75	1.0000	1.0000
L35	30	6" x 1" Flate Plate	63.25 - 66.75	1.0000	1.0000
L36	15	7" x 1-1/4" Flate Plate	63.00 - 63.25	1.0000	1.0000
L36	20	7" x 1-1/4" Flate Plate	63.00 - 63.25	1.0000	1.0000
L36	25	7" x 1-1/4" Flate Plate	63.00 - 63.25	1.0000	1.0000
L36	28	6" x 1" Flate Plate	63.00 - 63.25	1.0000	1.0000
L36	29	6" x 1" Flate Plate	63.00 - 63.25	1.0000	1.0000
L36	30	6" x 1" Flate Plate	63.00 - 63.25	1.0000	1.0000
L37	15	7" x 1-1/4" Flate Plate	59.50 - 63.00	1.0000	1.0000
L37	20	7" x 1-1/4" Flate Plate	59.50 - 63.00	1.0000	1.0000
L37	25	7" x 1-1/4" Flate Plate	59.50 - 63.00	1.0000	1.0000
L37	28	6" x 1" Flate Plate	59.50 - 63.00	1.0000	1.0000
L37	29	6" x 1" Flate Plate	59.50 - 63.00	1.0000	1.0000
L37	30	6" x 1" Flate Plate	59.50 - 63.00	1.0000	1.0000
L38	14	8" x 1-1/4" Flate Plate	59.25 - 59.50	1.0000	1.0000
L38	19	8" x 1-1/4" Flate Plate	59.25 - 59.50	1.0000	1.0000
L38	24	8" x 1-1/4" Flate Plate	59.25 - 59.50	1.0000	1.0000
L38	28	6" x 1" Flate Plate	59.25 - 59.50	1.0000	1.0000
L38	29	6" x 1" Flate Plate	59.25 - 59.50	1.0000	1.0000
L38	30	6" x 1" Flate Plate	59.25 - 59.50	1.0000	1.0000
L39	14	8" x 1-1/4" Flate Plate	56.25 - 59.25	1.0000	1.0000
L39	19	8" x 1-1/4" Flate Plate	56.25 - 59.25	1.0000	1.0000
L39	24	8" x 1-1/4" Flate Plate	56.25 - 59.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L39	28	6" x 1" Flate Plate	56.25 - 59.25	1.0000	1.0000
L39	29	6" x 1" Flate Plate	56.25 - 59.25	1.0000	1.0000
L39	30	6" x 1" Flate Plate	56.25 - 59.25	1.0000	1.0000
L40	14	8" x 1-1/4" Flate Plate	56.00 - 56.25	1.0000	1.0000
L40	19	8" x 1-1/4" Flate Plate	56.00 - 56.25	1.0000	1.0000
L40	24	8" x 1-1/4" Flate Plate	56.00 - 56.25	1.0000	1.0000
L40	28	6" x 1" Flate Plate	56.00 - 56.25	1.0000	1.0000
L40	29	6" x 1" Flate Plate	56.00 - 56.25	1.0000	1.0000
L40	30	6" x 1" Flate Plate	56.00 - 56.25	1.0000	1.0000
L41	14	8" x 1-1/4" Flate Plate	55.75 - 56.00	1.0000	1.0000
L41	19	8" x 1-1/4" Flate Plate	55.75 - 56.00	1.0000	1.0000
L41	24	8" x 1-1/4" Flate Plate	55.75 - 56.00	1.0000	1.0000
L41	28	6" x 1" Flate Plate	55.75 - 56.00	1.0000	1.0000
L41	29	6" x 1" Flate Plate	55.75 - 56.00	1.0000	1.0000
L41	30	6" x 1" Flate Plate	55.75 - 56.00	1.0000	1.0000
L42	14	8" x 1-1/4" Flate Plate	50.75 - 55.75	1.0000	1.0000
L42	19	8" x 1-1/4" Flate Plate	50.75 - 55.75	1.0000	1.0000
L42	24	8" x 1-1/4" Flate Plate	50.75 - 55.75	1.0000	1.0000
L42	28	6" x 1" Flate Plate	50.75 - 55.75	1.0000	1.0000
L42	29	6" x 1" Flate Plate	50.75 - 55.75	1.0000	1.0000
L42	30	6" x 1" Flate Plate	50.75 - 55.75	1.0000	1.0000
L43	14	8" x 1-1/4" Flate Plate	44.67 - 50.75	1.0000	1.0000
L43	19	8" x 1-1/4" Flate Plate	44.67 - 50.75	1.0000	1.0000
L43	24	8" x 1-1/4" Flate Plate	44.67 - 50.75	1.0000	1.0000
L43	28	6" x 1" Flate Plate	44.67 - 50.75	1.0000	1.0000
L43	29	6" x 1" Flate Plate	44.67 - 50.75	1.0000	1.0000
L43	30	6" x 1" Flate Plate	44.67 - 50.75	1.0000	1.0000
L44	14	8" x 1-1/4" Flate Plate	43.67 - 44.67	1.0000	1.0000
L44	19	8" x 1-1/4" Flate Plate	43.67 - 44.67	1.0000	1.0000
L44	24	8" x 1-1/4" Flate Plate	43.67 - 44.67	1.0000	1.0000
L44	28	6" x 1" Flate Plate	43.67 - 44.67	1.0000	1.0000
L44	29	6" x 1" Flate Plate	43.67 - 44.67	1.0000	1.0000
L44	30	6" x 1" Flate Plate	43.67 - 44.67	1.0000	1.0000
L45	14	8" x 1-1/4" Flate Plate	38.67 - 43.67	1.0000	1.0000
L45	19	8" x 1-1/4" Flate Plate	38.67 - 43.67	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			43.67		
L45	24	8" x 1-1/4" Flate Plate	38.67 - 43.67	1.0000	1.0000
L45	28	6" x 1" Flate Plate	38.67 - 43.67	1.0000	1.0000
L45	29	6" x 1" Flate Plate	38.67 - 43.67	1.0000	1.0000
L45	30	6" x 1" Flate Plate	38.67 - 43.67	1.0000	1.0000
L46	14	8" x 1-1/4" Flate Plate	34.50 - 38.67	1.0000	1.0000
L46	19	8" x 1-1/4" Flate Plate	34.50 - 38.67	1.0000	1.0000
L46	24	8" x 1-1/4" Flate Plate	34.50 - 38.67	1.0000	1.0000
L46	28	6" x 1" Flate Plate	34.50 - 38.67	1.0000	1.0000
L46	29	6" x 1" Flate Plate	34.50 - 38.67	1.0000	1.0000
L46	30	6" x 1" Flate Plate	34.50 - 38.67	1.0000	1.0000
L47	14	8" x 1-1/4" Flate Plate	34.25 - 34.50	1.0000	1.0000
L47	19	8" x 1-1/4" Flate Plate	34.25 - 34.50	1.0000	1.0000
L47	24	8" x 1-1/4" Flate Plate	34.25 - 34.50	1.0000	1.0000
L47	28	6" x 1" Flate Plate	34.25 - 34.50	1.0000	1.0000
L47	29	6" x 1" Flate Plate	34.25 - 34.50	1.0000	1.0000
L47	30	6" x 1" Flate Plate	34.25 - 34.50	1.0000	1.0000
L48	14	8" x 1-1/4" Flate Plate	33.00 - 34.25	1.0000	1.0000
L48	19	8" x 1-1/4" Flate Plate	33.00 - 34.25	1.0000	1.0000
L48	24	8" x 1-1/4" Flate Plate	33.00 - 34.25	1.0000	1.0000
L48	28	6" x 1" Flate Plate	33.00 - 34.25	1.0000	1.0000
L48	29	6" x 1" Flate Plate	33.00 - 34.25	1.0000	1.0000
L48	30	6" x 1" Flate Plate	33.00 - 34.25	1.0000	1.0000
L49	14	8" x 1-1/4" Flate Plate	32.75 - 33.00	1.0000	1.0000
L49	19	8" x 1-1/4" Flate Plate	32.75 - 33.00	1.0000	1.0000
L49	24	8" x 1-1/4" Flate Plate	32.75 - 33.00	1.0000	1.0000
L49	28	6" x 1" Flate Plate	32.75 - 33.00	1.0000	1.0000
L49	29	6" x 1" Flate Plate	32.75 - 33.00	1.0000	1.0000
L49	30	6" x 1" Flate Plate	32.75 - 33.00	1.0000	1.0000
L50	14	8" x 1-1/4" Flate Plate	29.75 - 32.75	1.0000	1.0000
L50	19	8" x 1-1/4" Flate Plate	29.75 - 32.75	1.0000	1.0000
L50	24	8" x 1-1/4" Flate Plate	29.75 - 32.75	1.0000	1.0000
L50	28	6" x 1" Flate Plate	29.75 - 32.75	1.0000	1.0000
L50	29	6" x 1" Flate Plate	29.75 - 32.75	1.0000	1.0000
L50	30	6" x 1" Flate Plate	29.75 - 32.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L51	13	9" x 1-1/4" Flate Plate	29.50 - 29.75	1.0000	1.0000
L51	18	9" x 1-1/4" Flate Plate	29.50 - 29.75	1.0000	1.0000
L51	23	9" x 1-1/4" Flate Plate	29.50 - 29.75	1.0000	1.0000
L51	28	6" x 1" Flate Plate	29.50 - 29.75	1.0000	1.0000
L51	29	6" x 1" Flate Plate	29.50 - 29.75	1.0000	1.0000
L51	30	6" x 1" Flate Plate	29.50 - 29.75	1.0000	1.0000
L52	13	9" x 1-1/4" Flate Plate	25.00 - 29.50	1.0000	1.0000
L52	18	9" x 1-1/4" Flate Plate	25.00 - 29.50	1.0000	1.0000
L52	23	9" x 1-1/4" Flate Plate	25.00 - 29.50	1.0000	1.0000
L52	28	6" x 1" Flate Plate	25.00 - 29.50	1.0000	1.0000
L52	29	6" x 1" Flate Plate	25.00 - 29.50	1.0000	1.0000
L52	30	6" x 1" Flate Plate	25.00 - 29.50	1.0000	1.0000
L53	13	9" x 1-1/4" Flate Plate	24.75 - 25.00	1.0000	1.0000
L53	18	9" x 1-1/4" Flate Plate	24.75 - 25.00	1.0000	1.0000
L53	23	9" x 1-1/4" Flate Plate	24.75 - 25.00	1.0000	1.0000
L53	28	6" x 1" Flate Plate	24.75 - 25.00	1.0000	1.0000
L53	29	6" x 1" Flate Plate	24.75 - 25.00	1.0000	1.0000
L53	30	6" x 1" Flate Plate	24.75 - 25.00	1.0000	1.0000
L54	13	9" x 1-1/4" Flate Plate	19.75 - 24.75	1.0000	1.0000
L54	18	9" x 1-1/4" Flate Plate	19.75 - 24.75	1.0000	1.0000
L54	23	9" x 1-1/4" Flate Plate	19.75 - 24.75	1.0000	1.0000
L54	28	6" x 1" Flate Plate	19.75 - 24.75	1.0000	1.0000
L54	29	6" x 1" Flate Plate	19.75 - 24.75	1.0000	1.0000
L54	30	6" x 1" Flate Plate	19.75 - 24.75	1.0000	1.0000
L55	13	9" x 1-1/4" Flate Plate	14.75 - 19.75	1.0000	1.0000
L55	18	9" x 1-1/4" Flate Plate	14.75 - 19.75	1.0000	1.0000
L55	23	9" x 1-1/4" Flate Plate	14.75 - 19.75	1.0000	1.0000
L55	28	6" x 1" Flate Plate	14.75 - 19.75	1.0000	1.0000
L55	29	6" x 1" Flate Plate	14.75 - 19.75	1.0000	1.0000
L55	30	6" x 1" Flate Plate	14.75 - 19.75	1.0000	1.0000
L55	38	Transition Stiffener	14.75 - 16.00	1.0000	1.0000
L56	13	9" x 1-1/4" Flate Plate	14.50 - 14.75	1.0000	1.0000
L56	18	9" x 1-1/4" Flate Plate	14.50 - 14.75	1.0000	1.0000
L56	23	9" x 1-1/4" Flate Plate	14.50 - 14.75	1.0000	1.0000
L56	28	6" x 1" Flate Plate	14.50 - 14.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L56	29	6" x 1" Flate Plate	14.75 14.50 - 14.75	1.0000	1.0000
L56	30	6" x 1" Flate Plate	14.50 - 14.75	1.0000	1.0000
L56	38	Transition Stiffener	14.50 - 14.75	1.0000	1.0000
L57	13	9" x 1-1/4" Flate Plate	14.25 - 14.50	1.0000	1.0000
L57	18	9" x 1-1/4" Flate Plate	14.25 - 14.50	1.0000	1.0000
L57	23	9" x 1-1/4" Flate Plate	14.25 - 14.50	1.0000	1.0000
L57	28	6" x 1" Flate Plate	14.25 - 14.50	1.0000	1.0000
L57	29	6" x 1" Flate Plate	14.25 - 14.50	1.0000	1.0000
L57	30	6" x 1" Flate Plate	14.25 - 14.50	1.0000	1.0000
L57	38	Transition Stiffener	14.25 - 14.50	1.0000	1.0000
L58	13	9" x 1-1/4" Flate Plate	12.25 - 14.25	1.0000	1.0000
L58	18	9" x 1-1/4" Flate Plate	12.25 - 14.25	1.0000	1.0000
L58	23	9" x 1-1/4" Flate Plate	12.25 - 14.25	1.0000	1.0000
L58	28	6" x 1" Flate Plate	12.25 - 14.25	1.0000	1.0000
L58	29	6" x 1" Flate Plate	12.25 - 14.25	1.0000	1.0000
L58	30	6" x 1" Flate Plate	12.25 - 14.25	1.0000	1.0000
L58	37	Transition Stiffener	12.25 - 13.00	1.0000	1.0000
L58	38	Transition Stiffener	12.25 - 14.25	1.0000	1.0000
L59	13	9" x 1-1/4" Flate Plate	12.00 - 12.25	1.0000	1.0000
L59	18	9" x 1-1/4" Flate Plate	12.00 - 12.25	1.0000	1.0000
L59	23	9" x 1-1/4" Flate Plate	12.00 - 12.25	1.0000	1.0000
L59	28	6" x 1" Flate Plate	12.00 - 12.25	1.0000	1.0000
L59	29	6" x 1" Flate Plate	12.00 - 12.25	1.0000	1.0000
L59	30	6" x 1" Flate Plate	12.00 - 12.25	1.0000	1.0000
L59	37	Transition Stiffener	12.00 - 12.25	1.0000	1.0000
L59	38	Transition Stiffener	12.00 - 12.25	1.0000	1.0000
L60	13	9" x 1-1/4" Flate Plate	11.50 - 12.00	1.0000	1.0000
L60	18	9" x 1-1/4" Flate Plate	11.50 - 12.00	1.0000	1.0000
L60	23	9" x 1-1/4" Flate Plate	11.50 - 12.00	1.0000	1.0000
L60	28	6" x 1" Flate Plate	11.50 - 12.00	1.0000	1.0000
L60	29	6" x 1" Flate Plate	11.50 - 12.00	1.0000	1.0000
L60	30	6" x 1" Flate Plate	11.50 - 12.00	1.0000	1.0000
L60	37	Transition Stiffener	11.50 - 12.00	1.0000	1.0000
L60	38	Transition Stiffener	11.50 - 12.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L61	13	9" x 1-1/4" Flate Plate	11.25 - 11.50	1.0000	1.0000
L61	18	9" x 1-1/4" Flate Plate	11.25 - 11.50	1.0000	1.0000
L61	23	9" x 1-1/4" Flate Plate	11.25 - 11.50	1.0000	1.0000
L61	28	6" x 1" Flate Plate	11.25 - 11.50	1.0000	1.0000
L61	29	6" x 1" Flate Plate	11.25 - 11.50	1.0000	1.0000
L61	30	6" x 1" Flate Plate	11.25 - 11.50	1.0000	1.0000
L61	37	Transition Stiffener	11.25 - 11.50	1.0000	1.0000
L61	38	Transition Stiffener	11.25 - 11.50	1.0000	1.0000
L62	13	9" x 1-1/4" Flate Plate	9.25 - 11.25	1.0000	1.0000
L62	18	9" x 1-1/4" Flate Plate	9.25 - 11.25	1.0000	1.0000
L62	23	9" x 1-1/4" Flate Plate	9.25 - 11.25	1.0000	1.0000
L62	28	6" x 1" Flate Plate	9.25 - 11.25	1.0000	1.0000
L62	29	6" x 1" Flate Plate	9.25 - 11.25	1.0000	1.0000
L62	30	6" x 1" Flate Plate	9.25 - 11.25	1.0000	1.0000
L62	37	Transition Stiffener	9.25 - 11.25	1.0000	1.0000
L62	38	Transition Stiffener	9.25 - 11.25	1.0000	1.0000
L63	13	9" x 1-1/4" Flate Plate	9.00 - 9.25	1.0000	1.0000
L63	18	9" x 1-1/4" Flate Plate	9.00 - 9.25	1.0000	1.0000
L63	23	9" x 1-1/4" Flate Plate	9.00 - 9.25	1.0000	1.0000
L63	28	6" x 1" Flate Plate	9.00 - 9.25	1.0000	1.0000
L63	29	6" x 1" Flate Plate	9.00 - 9.25	1.0000	1.0000
L63	30	6" x 1" Flate Plate	9.00 - 9.25	1.0000	1.0000
L63	37	Transition Stiffener	9.00 - 9.25	1.0000	1.0000
L63	38	Transition Stiffener	9.00 - 9.25	1.0000	1.0000
L64	13	9" x 1-1/4" Flate Plate	4.50 - 9.00	1.0000	1.0000
L64	18	9" x 1-1/4" Flate Plate	4.50 - 9.00	1.0000	1.0000
L64	23	9" x 1-1/4" Flate Plate	4.50 - 9.00	1.0000	1.0000
L64	28	6" x 1" Flate Plate	4.50 - 9.00	1.0000	1.0000
L64	29	6" x 1" Flate Plate	4.50 - 9.00	1.0000	1.0000
L64	30	6" x 1" Flate Plate	4.50 - 9.00	1.0000	1.0000
L64	36	Transition Stiffener	4.50 - 6.00	1.0000	1.0000
L64	37	Transition Stiffener	4.50 - 9.00	1.0000	1.0000
L64	38	Transition Stiffener	4.50 - 9.00	1.0000	1.0000
L65	13	9" x 1-1/4" Flate Plate	4.25 - 4.50	1.0000	1.0000
L65	18	9" x 1-1/4" Flate Plate	4.25 - 4.50	1.0000	1.0000
L65	23	9" x 1-1/4" Flate Plate	4.25 - 4.50	1.0000	1.0000
L65	28	6" x 1" Flate Plate	4.25 - 4.50	1.0000	1.0000
L65	29	6" x 1" Flate Plate	4.25 - 4.50	1.0000	1.0000
L65	30	6" x 1" Flate Plate	4.25 - 4.50	1.0000	1.0000
L65	36	Transition Stiffener	4.25 - 4.50	1.0000	1.0000
L65	37	Transition Stiffener	4.25 - 4.50	1.0000	1.0000
L65	38	Transition Stiffener	4.25 - 4.50	1.0000	1.0000
L66	13	9" x 1-1/4" Flate Plate	3.00 - 4.25	1.0000	1.0000
L66	18	9" x 1-1/4" Flate Plate	3.00 - 4.25	1.0000	1.0000
L66	23	9" x 1-1/4" Flate Plate	3.00 - 4.25	1.0000	1.0000
L66	28	6" x 1" Flate Plate	3.00 - 4.25	1.0000	1.0000
L66	29	6" x 1" Flate Plate	3.00 - 4.25	1.0000	1.0000
L66	30	6" x 1" Flate Plate	3.00 - 4.25	1.0000	1.0000
L66	36	Transition Stiffener	3.00 - 4.25	1.0000	1.0000
L66	37	Transition Stiffener	3.00 - 4.25	1.0000	1.0000
L66	38	Transition Stiffener	3.00 - 4.25	1.0000	1.0000
L67	13	9" x 1-1/4" Flate Plate	2.75 - 3.00	1.0000	1.0000
L67	18	9" x 1-1/4" Flate Plate	2.75 - 3.00	1.0000	1.0000
L67	23	9" x 1-1/4" Flate Plate	2.75 - 3.00	1.0000	1.0000
L67	28	6" x 1" Flate Plate	2.75 - 3.00	1.0000	1.0000
L67	29	6" x 1" Flate Plate	2.75 - 3.00	1.0000	1.0000
L67	30	6" x 1" Flate Plate	2.75 - 3.00	1.0000	1.0000
L67	36	Transition Stiffener	2.75 - 3.00	1.0000	1.0000
L67	37	Transition Stiffener	2.75 - 3.00	1.0000	1.0000
L67	38	Transition Stiffener	2.75 - 3.00	1.0000	1.0000
L68	13	9" x 1-1/4" Flate Plate	0.00 - 2.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L68	18	9" x 1-1/4" Flate Plate	0.00 -2.75	1.0000	1.0000
L68	23	9" x 1-1/4" Flate Plate	0.00 -2.75	1.0000	1.0000
L68	28	6" x 1" Flate Plate	0.00 -2.75	1.0000	1.0000
L68	29	6" x 1" Flate Plate	0.00 -2.75	1.0000	1.0000
L68	30	6" x 1" Flate Plate	0.00 -2.75	1.0000	1.0000
L68	36	Transition Stiffener	0.00 -2.75	1.0000	1.0000
L68	37	Transition Stiffener	0.00 -2.75	1.0000	1.0000
L68	38	Transition Stiffener	0.00 -2.75	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L4	32	4.5" x 1" Flate Plate	133.00 - 135.00	Auto	0.0000
L4	33	4.5" x 1" Flate Plate	133.00 - 135.00	Auto	0.0000
L4	34	4.5" x 1" Flate Plate	133.00 - 135.00	Auto	0.0000
L5	32	4.5" x 1" Flate Plate	132.75 - 133.00	Auto	0.1239
L5	33	4.5" x 1" Flate Plate	132.75 - 133.00	Auto	0.1239
L5	34	4.5" x 1" Flate Plate	132.75 - 133.00	Auto	0.1239
L6	32	4.5" x 1" Flate Plate	127.75 - 132.75	Auto	0.0872
L6	33	4.5" x 1" Flate Plate	127.75 - 132.75	Auto	0.0872
L6	34	4.5" x 1" Flate Plate	127.75 - 132.75	Auto	0.0872
L7	16	5" x 1-1/4" Flate Plate	123.75 - 125.00	Auto	0.1127
L7	21	5" x 1-1/4" Flate Plate	123.75 - 125.00	Auto	0.1127
L7	26	5" x 1-1/4" Flate Plate	123.75 - 125.00	Auto	0.1127
L7	32	4.5" x 1" Flate Plate	123.75 - 127.75	Auto	0.0295
L7	33	4.5" x 1" Flate Plate	123.75 - 127.75	Auto	0.0295
L7	34	4.5" x 1" Flate Plate	123.75 - 127.75	Auto	0.0295
L8	16	5" x 1-1/4" Flate Plate	123.50 - 123.75	Auto	0.1052
L8	21	5" x 1-1/4" Flate Plate	123.50 - 123.75	Auto	0.1052
L8	26	5" x 1-1/4" Flate Plate	123.50 - 123.75	Auto	0.1052
L8	32	4.5" x 1" Flate Plate	123.50 - 123.75	Auto	0.0057
L8	33	4.5" x 1" Flate Plate	123.50 - 123.75	Auto	0.0057
L8	34	4.5" x 1" Flate Plate	123.50 - 123.75	Auto	0.0057
L9	16	5" x 1-1/4" Flate Plate	118.75 - 123.50	Auto	0.2609
L9	21	5" x 1-1/4" Flate Plate	118.75 - 123.50	Auto	0.2609

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L9	26	5" x 1-1/4" Flate Plate	118.75 - 123.50	Auto	0.2609
L9	32	4.5" x 1" Flate Plate	118.75 - 123.50	Auto	0.1788
L9	33	4.5" x 1" Flate Plate	118.75 - 123.50	Auto	0.1788
L9	34	4.5" x 1" Flate Plate	118.75 - 123.50	Auto	0.1788
L10	16	5" x 1-1/4" Flate Plate	118.50 - 118.75	Auto	0.3832
L10	21	5" x 1-1/4" Flate Plate	118.50 - 118.75	Auto	0.3832
L10	26	5" x 1-1/4" Flate Plate	118.50 - 118.75	Auto	0.3832
L10	32	4.5" x 1" Flate Plate	118.50 - 118.75	Auto	0.3147
L10	33	4.5" x 1" Flate Plate	118.50 - 118.75	Auto	0.3147
L10	34	4.5" x 1" Flate Plate	118.50 - 118.75	Auto	0.3147
L11	16	5" x 1-1/4" Flate Plate	117.00 - 118.50	Auto	0.3610
L11	21	5" x 1-1/4" Flate Plate	117.00 - 118.50	Auto	0.3610
L11	26	5" x 1-1/4" Flate Plate	117.00 - 118.50	Auto	0.3610
L11	32	4.5" x 1" Flate Plate	117.00 - 118.50	Auto	0.2900
L11	33	4.5" x 1" Flate Plate	117.00 - 118.50	Auto	0.2900
L11	34	4.5" x 1" Flate Plate	117.00 - 118.50	Auto	0.2900
L12	16	5" x 1-1/4" Flate Plate	116.75 - 117.00	Auto	0.2115
L12	21	5" x 1-1/4" Flate Plate	116.75 - 117.00	Auto	0.2115
L12	26	5" x 1-1/4" Flate Plate	116.75 - 117.00	Auto	0.2115
L12	32	4.5" x 1" Flate Plate	116.75 - 117.00	Auto	0.1239
L12	33	4.5" x 1" Flate Plate	116.75 - 117.00	Auto	0.1239
L12	34	4.5" x 1" Flate Plate	116.75 - 117.00	Auto	0.1239
L13	16	5" x 1-1/4" Flate Plate	111.75 - 116.75	Auto	0.1651
L13	21	5" x 1-1/4" Flate Plate	111.75 - 116.75	Auto	0.1651
L13	26	5" x 1-1/4" Flate Plate	111.75 - 116.75	Auto	0.1651
L13	32	4.5" x 1" Flate Plate	111.75 - 116.75	Auto	0.0723
L13	33	4.5" x 1" Flate Plate	111.75 - 116.75	Auto	0.0723
L13	34	4.5" x 1" Flate Plate	111.75 - 116.75	Auto	0.0723
L14	16	5" x 1-1/4" Flate Plate	106.75 - 111.75	Auto	0.1014
L14	21	5" x 1-1/4" Flate Plate	106.75 - 111.75	Auto	0.1014
L14	26	5" x 1-1/4" Flate Plate	106.75 - 111.75	Auto	0.1014
L14	32	4.5" x 1" Flate Plate	106.75 - 111.75	Auto	0.0078
L14	33	4.5" x 1" Flate Plate	106.75 - 111.75	Auto	0.0078
L14	34	4.5" x 1" Flate Plate	106.75 - 111.75	Auto	0.0078

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L15	16	5" x 1-1/4" Flate Plate	101.75 - 106.75	Auto	0.0378
L15	21	5" x 1-1/4" Flate Plate	101.75 - 106.75	Auto	0.0378
L15	26	5" x 1-1/4" Flate Plate	101.75 - 106.75	Auto	0.0378
L15	32	4.5" x 1" Flate Plate	101.75 - 106.75	Auto	0.0000
L15	33	4.5" x 1" Flate Plate	101.75 - 106.75	Auto	0.0000
L15	34	4.5" x 1" Flate Plate	101.75 - 106.75	Auto	0.0000
L16	16	5" x 1-1/4" Flate Plate	95.17 - 101.75	Auto	0.0012
L16	21	5" x 1-1/4" Flate Plate	95.17 - 101.75	Auto	0.0012
L16	26	5" x 1-1/4" Flate Plate	95.17 - 101.75	Auto	0.0012
L16	32	4.5" x 1" Flate Plate	95.17 - 101.75	Auto	0.0000
L16	33	4.5" x 1" Flate Plate	95.17 - 101.75	Auto	0.0000
L16	34	4.5" x 1" Flate Plate	95.17 - 101.75	Auto	0.0000
L17	16	5" x 1-1/4" Flate Plate	94.50 - 95.17	Auto	0.0302
L17	21	5" x 1-1/4" Flate Plate	94.50 - 95.17	Auto	0.0302
L17	26	5" x 1-1/4" Flate Plate	94.50 - 95.17	Auto	0.0302
L17	32	4.5" x 1" Flate Plate	94.50 - 95.17	Auto	0.0000
L17	33	4.5" x 1" Flate Plate	94.50 - 95.17	Auto	0.0000
L17	34	4.5" x 1" Flate Plate	94.50 - 95.17	Auto	0.0000
L18	16	5" x 1-1/4" Flate Plate	93.75 - 94.50	Auto	0.0231
L18	21	5" x 1-1/4" Flate Plate	93.75 - 94.50	Auto	0.0231
L18	26	5" x 1-1/4" Flate Plate	93.75 - 94.50	Auto	0.0231
L18	32	4.5" x 1" Flate Plate	93.75 - 94.50	Auto	0.0000
L18	33	4.5" x 1" Flate Plate	93.75 - 94.50	Auto	0.0000
L18	34	4.5" x 1" Flate Plate	93.75 - 94.50	Auto	0.0000
L19	16	5" x 1-1/4" Flate Plate	93.50 - 93.75	Auto	0.0851
L19	21	5" x 1-1/4" Flate Plate	93.50 - 93.75	Auto	0.0851
L19	26	5" x 1-1/4" Flate Plate	93.50 - 93.75	Auto	0.0851
L19	32	4.5" x 1" Flate Plate	93.50 - 93.75	Auto	0.0000
L19	33	4.5" x 1" Flate Plate	93.50 - 93.75	Auto	0.0000
L19	34	4.5" x 1" Flate Plate	93.50 - 93.75	Auto	0.0000
L20	16	5" x 1-1/4" Flate Plate	92.75 - 93.50	Auto	0.0800
L20	21	5" x 1-1/4" Flate Plate	92.75 - 93.50	Auto	0.0800
L20	26	5" x 1-1/4" Flate Plate	92.75 - 93.50	Auto	0.0800
L20	32	4.5" x 1" Flate Plate	92.75 - 93.50	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L20	33	4.5" x 1" Flate Plate	92.75 - 93.50	Auto	0.0000
L20	34	4.5" x 1" Flate Plate	92.75 - 93.50	Auto	0.0000
L21	16	5" x 1-1/4" Flate Plate	92.50 - 92.75	Auto	0.1956
L21	21	5" x 1-1/4" Flate Plate	92.50 - 92.75	Auto	0.1956
L21	26	5" x 1-1/4" Flate Plate	92.50 - 92.75	Auto	0.1956
L21	32	4.5" x 1" Flate Plate	92.50 - 92.75	Auto	0.1062
L21	33	4.5" x 1" Flate Plate	92.50 - 92.75	Auto	0.1062
L21	34	4.5" x 1" Flate Plate	92.50 - 92.75	Auto	0.1062
L22	16	5" x 1-1/4" Flate Plate	91.25 - 92.50	Auto	0.1747
L22	21	5" x 1-1/4" Flate Plate	91.25 - 92.50	Auto	0.1747
L22	26	5" x 1-1/4" Flate Plate	91.25 - 92.50	Auto	0.1747
L22	32	4.5" x 1" Flate Plate	91.25 - 92.50	Auto	0.0830
L22	33	4.5" x 1" Flate Plate	91.25 - 92.50	Auto	0.0830
L22	34	4.5" x 1" Flate Plate	91.25 - 92.50	Auto	0.0830
L23	16	5" x 1-1/4" Flate Plate	91.00 - 91.25	Auto	0.1671
L23	21	5" x 1-1/4" Flate Plate	91.00 - 91.25	Auto	0.1671
L23	26	5" x 1-1/4" Flate Plate	91.00 - 91.25	Auto	0.1671
L23	32	4.5" x 1" Flate Plate	91.00 - 91.25	Auto	0.0746
L23	33	4.5" x 1" Flate Plate	91.00 - 91.25	Auto	0.0746
L23	34	4.5" x 1" Flate Plate	91.00 - 91.25	Auto	0.0746
L24	16	5" x 1-1/4" Flate Plate	89.25 - 91.00	Auto	0.1571
L24	21	5" x 1-1/4" Flate Plate	89.25 - 91.00	Auto	0.1571
L24	26	5" x 1-1/4" Flate Plate	89.25 - 91.00	Auto	0.1571
L24	32	4.5" x 1" Flate Plate	89.25 - 91.00	Auto	0.0634
L24	33	4.5" x 1" Flate Plate	89.25 - 91.00	Auto	0.0634
L24	34	4.5" x 1" Flate Plate	89.25 - 91.00	Auto	0.0634
L25	15	7" x 1-1/4" Flate Plate	89.00 - 89.25	Auto	0.4290
L25	20	7" x 1-1/4" Flate Plate	89.00 - 89.25	Auto	0.4290
L25	25	7" x 1-1/4" Flate Plate	89.00 - 89.25	Auto	0.4290
L25	32	4.5" x 1" Flate Plate	89.00 - 89.25	Auto	0.1118
L25	33	4.5" x 1" Flate Plate	89.00 - 89.25	Auto	0.1118
L25	34	4.5" x 1" Flate Plate	89.00 - 89.25	Auto	0.1118
L26	15	7" x 1-1/4" Flate Plate	85.75 - 89.00	Auto	0.4069
L26	20	7" x 1-1/4" Flate Plate	85.75 - 89.00	Auto	0.4069

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L26	25	7" x 1-1/4" Flate Plate	85.75 - 89.00	Auto	0.4069
L26	32	4.5" x 1" Flate Plate	85.75 - 89.00	Auto	0.0773
L26	33	4.5" x 1" Flate Plate	85.75 - 89.00	Auto	0.0773
L26	34	4.5" x 1" Flate Plate	85.75 - 89.00	Auto	0.0773
L27	15	7" x 1-1/4" Flate Plate	85.50 - 85.75	Auto	0.2699
L27	20	7" x 1-1/4" Flate Plate	85.50 - 85.75	Auto	0.2699
L27	25	7" x 1-1/4" Flate Plate	85.50 - 85.75	Auto	0.2699
L27	32	4.5" x 1" Flate Plate	85.50 - 85.75	Auto	0.0000
L27	33	4.5" x 1" Flate Plate	85.50 - 85.75	Auto	0.0000
L27	34	4.5" x 1" Flate Plate	85.50 - 85.75	Auto	0.0000
L28	15	7" x 1-1/4" Flate Plate	80.50 - 85.50	Auto	0.2414
L28	20	7" x 1-1/4" Flate Plate	80.50 - 85.50	Auto	0.2414
L28	25	7" x 1-1/4" Flate Plate	80.50 - 85.50	Auto	0.2414
L28	32	4.5" x 1" Flate Plate	80.50 - 85.50	Auto	0.0000
L28	33	4.5" x 1" Flate Plate	80.50 - 85.50	Auto	0.0000
L28	34	4.5" x 1" Flate Plate	80.50 - 85.50	Auto	0.0000
L29	15	7" x 1-1/4" Flate Plate	75.50 - 80.50	Auto	0.1960
L29	20	7" x 1-1/4" Flate Plate	75.50 - 80.50	Auto	0.1960
L29	25	7" x 1-1/4" Flate Plate	75.50 - 80.50	Auto	0.1960
L29	32	4.5" x 1" Flate Plate	75.50 - 80.50	Auto	0.0000
L29	33	4.5" x 1" Flate Plate	75.50 - 80.50	Auto	0.0000
L29	34	4.5" x 1" Flate Plate	75.50 - 80.50	Auto	0.0000
L30	15	7" x 1-1/4" Flate Plate	70.50 - 75.50	Auto	0.1505
L30	20	7" x 1-1/4" Flate Plate	70.50 - 75.50	Auto	0.1505
L30	25	7" x 1-1/4" Flate Plate	70.50 - 75.50	Auto	0.1505
L30	28	6" x 1" Flate Plate	70.50 - 70.58	Auto	0.0000
L30	29	6" x 1" Flate Plate	70.50 - 70.58	Auto	0.0000
L30	30	6" x 1" Flate Plate	70.50 - 70.58	Auto	0.0000
L30	32	4.5" x 1" Flate Plate	70.58 - 75.50	Auto	0.0000
L30	33	4.5" x 1" Flate Plate	70.58 - 75.50	Auto	0.0000
L30	34	4.5" x 1" Flate Plate	70.58 - 75.50	Auto	0.0000
L31	15	7" x 1-1/4" Flate Plate	68.08 - 70.50	Auto	0.1238
L31	20	7" x 1-1/4" Flate Plate	68.08 - 70.50	Auto	0.1238
L31	25	7" x 1-1/4" Flate Plate	68.08 - 70.50	Auto	0.1238

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L31	28	6" x 1" Flate Plate	68.08 - 70.50	Auto	0.0000
L31	29	6" x 1" Flate Plate	68.08 - 70.50	Auto	0.0000
L31	30	6" x 1" Flate Plate	68.08 - 70.50	Auto	0.0000
L32	15	7" x 1-1/4" Flate Plate	67.83 - 68.08	Auto	0.1334
L32	20	7" x 1-1/4" Flate Plate	67.83 - 68.08	Auto	0.1334
L32	25	7" x 1-1/4" Flate Plate	67.83 - 68.08	Auto	0.1334
L32	28	6" x 1" Flate Plate	67.83 - 68.08	Auto	0.0000
L32	29	6" x 1" Flate Plate	67.83 - 68.08	Auto	0.0000
L32	30	6" x 1" Flate Plate	67.83 - 68.08	Auto	0.0000
L33	15	7" x 1-1/4" Flate Plate	67.00 - 67.83	Auto	0.1295
L33	20	7" x 1-1/4" Flate Plate	67.00 - 67.83	Auto	0.1295
L33	25	7" x 1-1/4" Flate Plate	67.00 - 67.83	Auto	0.1295
L33	28	6" x 1" Flate Plate	67.00 - 67.83	Auto	0.0000
L33	29	6" x 1" Flate Plate	67.00 - 67.83	Auto	0.0000
L33	30	6" x 1" Flate Plate	67.00 - 67.83	Auto	0.0000
L34	15	7" x 1-1/4" Flate Plate	66.75 - 67.00	Auto	0.2118
L34	20	7" x 1-1/4" Flate Plate	66.75 - 67.00	Auto	0.2118
L34	25	7" x 1-1/4" Flate Plate	66.75 - 67.00	Auto	0.2118
L34	28	6" x 1" Flate Plate	66.75 - 67.00	Auto	0.0804
L34	29	6" x 1" Flate Plate	66.75 - 67.00	Auto	0.0804
L34	30	6" x 1" Flate Plate	66.75 - 67.00	Auto	0.0804
L35	15	7" x 1-1/4" Flate Plate	63.25 - 66.75	Auto	0.1887
L35	20	7" x 1-1/4" Flate Plate	63.25 - 66.75	Auto	0.1887
L35	25	7" x 1-1/4" Flate Plate	63.25 - 66.75	Auto	0.1887
L35	28	6" x 1" Flate Plate	63.25 - 66.75	Auto	0.0535
L35	29	6" x 1" Flate Plate	63.25 - 66.75	Auto	0.0535
L35	30	6" x 1" Flate Plate	63.25 - 66.75	Auto	0.0535
L36	15	7" x 1-1/4" Flate Plate	63.00 - 63.25	Auto	0.2422
L36	20	7" x 1-1/4" Flate Plate	63.00 - 63.25	Auto	0.2422
L36	25	7" x 1-1/4" Flate Plate	63.00 - 63.25	Auto	0.2422
L36	28	6" x 1" Flate Plate	63.00 - 63.25	Auto	0.1160
L36	29	6" x 1" Flate Plate	63.00 - 63.25	Auto	0.1160
L36	30	6" x 1" Flate Plate	63.00 - 63.25	Auto	0.1160
L37	15	7" x 1-1/4" Flate Plate	59.50 - 63.00	Auto	0.2192

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L37	20	7" x 1-1/4" Flate Plate	59.50 - 63.00	Auto	0.2192
L37	25	7" x 1-1/4" Flate Plate	59.50 - 63.00	Auto	0.2192
L37	28	6" x 1" Flate Plate	59.50 - 63.00	Auto	0.0891
L37	29	6" x 1" Flate Plate	59.50 - 63.00	Auto	0.0891
L37	30	6" x 1" Flate Plate	59.50 - 63.00	Auto	0.0891
L38	14	8" x 1-1/4" Flate Plate	59.25 - 59.50	Auto	0.3218
L38	19	8" x 1-1/4" Flate Plate	59.25 - 59.50	Auto	0.3218
L38	24	8" x 1-1/4" Flate Plate	59.25 - 59.50	Auto	0.3218
L38	28	6" x 1" Flate Plate	59.25 - 59.50	Auto	0.0957
L38	29	6" x 1" Flate Plate	59.25 - 59.50	Auto	0.0957
L38	30	6" x 1" Flate Plate	59.25 - 59.50	Auto	0.0957
L39	14	8" x 1-1/4" Flate Plate	56.25 - 59.25	Auto	0.3032
L39	19	8" x 1-1/4" Flate Plate	56.25 - 59.25	Auto	0.3032
L39	24	8" x 1-1/4" Flate Plate	56.25 - 59.25	Auto	0.3032
L39	28	6" x 1" Flate Plate	56.25 - 59.25	Auto	0.0709
L39	29	6" x 1" Flate Plate	56.25 - 59.25	Auto	0.0709
L39	30	6" x 1" Flate Plate	56.25 - 59.25	Auto	0.0709
L40	14	8" x 1-1/4" Flate Plate	56.00 - 56.25	Auto	0.2427
L40	19	8" x 1-1/4" Flate Plate	56.00 - 56.25	Auto	0.2427
L40	24	8" x 1-1/4" Flate Plate	56.00 - 56.25	Auto	0.2427
L40	28	6" x 1" Flate Plate	56.00 - 56.25	Auto	0.0000
L40	29	6" x 1" Flate Plate	56.00 - 56.25	Auto	0.0000
L40	30	6" x 1" Flate Plate	56.00 - 56.25	Auto	0.0000
L41	14	8" x 1-1/4" Flate Plate	55.75 - 56.00	Auto	0.1658
L41	19	8" x 1-1/4" Flate Plate	55.75 - 56.00	Auto	0.1658
L41	24	8" x 1-1/4" Flate Plate	55.75 - 56.00	Auto	0.1658
L41	28	6" x 1" Flate Plate	55.75 - 56.00	Auto	0.0000
L41	29	6" x 1" Flate Plate	55.75 - 56.00	Auto	0.0000
L41	30	6" x 1" Flate Plate	55.75 - 56.00	Auto	0.0000
L42	14	8" x 1-1/4" Flate Plate	50.75 - 55.75	Auto	0.1451
L42	19	8" x 1-1/4" Flate Plate	50.75 - 55.75	Auto	0.1451
L42	24	8" x 1-1/4" Flate Plate	50.75 - 55.75	Auto	0.1451
L42	28	6" x 1" Flate Plate	50.75 - 55.75	Auto	0.0000
L42	29	6" x 1" Flate Plate	50.75 - 55.75	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L42	30	6" x 1" Flate Plate	50.75 - 55.75	Auto	0.0000
L43	14	8" x 1-1/4" Flate Plate	44.67 - 50.75	Auto	0.1061
L43	19	8" x 1-1/4" Flate Plate	44.67 - 50.75	Auto	0.1061
L43	24	8" x 1-1/4" Flate Plate	44.67 - 50.75	Auto	0.1061
L43	28	6" x 1" Flate Plate	44.67 - 50.75	Auto	0.0000
L43	29	6" x 1" Flate Plate	44.67 - 50.75	Auto	0.0000
L43	30	6" x 1" Flate Plate	44.67 - 50.75	Auto	0.0000
L44	14	8" x 1-1/4" Flate Plate	43.67 - 44.67	Auto	0.1257
L44	19	8" x 1-1/4" Flate Plate	43.67 - 44.67	Auto	0.1257
L44	24	8" x 1-1/4" Flate Plate	43.67 - 44.67	Auto	0.1257
L44	28	6" x 1" Flate Plate	43.67 - 44.67	Auto	0.0000
L44	29	6" x 1" Flate Plate	43.67 - 44.67	Auto	0.0000
L44	30	6" x 1" Flate Plate	43.67 - 44.67	Auto	0.0000
L45	14	8" x 1-1/4" Flate Plate	38.67 - 43.67	Auto	0.1027
L45	19	8" x 1-1/4" Flate Plate	38.67 - 43.67	Auto	0.1027
L45	24	8" x 1-1/4" Flate Plate	38.67 - 43.67	Auto	0.1027
L45	28	6" x 1" Flate Plate	38.67 - 43.67	Auto	0.0000
L45	29	6" x 1" Flate Plate	38.67 - 43.67	Auto	0.0000
L45	30	6" x 1" Flate Plate	38.67 - 43.67	Auto	0.0000
L46	14	8" x 1-1/4" Flate Plate	34.50 - 38.67	Auto	0.0697
L46	19	8" x 1-1/4" Flate Plate	34.50 - 38.67	Auto	0.0697
L46	24	8" x 1-1/4" Flate Plate	34.50 - 38.67	Auto	0.0697
L46	28	6" x 1" Flate Plate	34.50 - 38.67	Auto	0.0000
L46	29	6" x 1" Flate Plate	34.50 - 38.67	Auto	0.0000
L46	30	6" x 1" Flate Plate	34.50 - 38.67	Auto	0.0000
L47	14	8" x 1-1/4" Flate Plate	34.25 - 34.50	Auto	0.1396
L47	19	8" x 1-1/4" Flate Plate	34.25 - 34.50	Auto	0.1396
L47	24	8" x 1-1/4" Flate Plate	34.25 - 34.50	Auto	0.1396
L47	28	6" x 1" Flate Plate	34.25 - 34.50	Auto	0.0000
L47	29	6" x 1" Flate Plate	34.25 - 34.50	Auto	0.0000
L47	30	6" x 1" Flate Plate	34.25 - 34.50	Auto	0.0000
L48	14	8" x 1-1/4" Flate Plate	33.00 - 34.25	Auto	0.1349
L48	19	8" x 1-1/4" Flate Plate	33.00 - 34.25	Auto	0.1349
L48	24	8" x 1-1/4" Flate Plate	33.00 - 34.25	Auto	0.1349

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L48	28	6" x 1" Flate Plate	33.00 - 34.25	Auto	0.0000
L48	29	6" x 1" Flate Plate	33.00 - 34.25	Auto	0.0000
L48	30	6" x 1" Flate Plate	33.00 - 34.25	Auto	0.0000
L49	14	8" x 1-1/4" Flate Plate	32.75 - 33.00	Auto	0.1302
L49	19	8" x 1-1/4" Flate Plate	32.75 - 33.00	Auto	0.1302
L49	24	8" x 1-1/4" Flate Plate	32.75 - 33.00	Auto	0.1302
L49	28	6" x 1" Flate Plate	32.75 - 33.00	Auto	0.0000
L49	29	6" x 1" Flate Plate	32.75 - 33.00	Auto	0.0000
L49	30	6" x 1" Flate Plate	32.75 - 33.00	Auto	0.0000
L50	14	8" x 1-1/4" Flate Plate	29.75 - 32.75	Auto	0.1116
L50	19	8" x 1-1/4" Flate Plate	29.75 - 32.75	Auto	0.1116
L50	24	8" x 1-1/4" Flate Plate	29.75 - 32.75	Auto	0.1116
L50	28	6" x 1" Flate Plate	29.75 - 32.75	Auto	0.0000
L50	29	6" x 1" Flate Plate	29.75 - 32.75	Auto	0.0000
L50	30	6" x 1" Flate Plate	29.75 - 32.75	Auto	0.0000
L51	13	9" x 1-1/4" Flate Plate	29.50 - 29.75	Auto	0.2161
L51	18	9" x 1-1/4" Flate Plate	29.50 - 29.75	Auto	0.2161
L51	23	9" x 1-1/4" Flate Plate	29.50 - 29.75	Auto	0.2161
L51	28	6" x 1" Flate Plate	29.50 - 29.75	Auto	0.0000
L51	29	6" x 1" Flate Plate	29.50 - 29.75	Auto	0.0000
L51	30	6" x 1" Flate Plate	29.50 - 29.75	Auto	0.0000
L52	13	9" x 1-1/4" Flate Plate	25.00 - 29.50	Auto	0.1954
L52	18	9" x 1-1/4" Flate Plate	25.00 - 29.50	Auto	0.1954
L52	23	9" x 1-1/4" Flate Plate	25.00 - 29.50	Auto	0.1954
L52	28	6" x 1" Flate Plate	25.00 - 29.50	Auto	0.0000
L52	29	6" x 1" Flate Plate	25.00 - 29.50	Auto	0.0000
L52	30	6" x 1" Flate Plate	25.00 - 29.50	Auto	0.0000
L53	13	9" x 1-1/4" Flate Plate	24.75 - 25.00	Auto	0.1114
L53	18	9" x 1-1/4" Flate Plate	24.75 - 25.00	Auto	0.1114
L53	23	9" x 1-1/4" Flate Plate	24.75 - 25.00	Auto	0.1114
L53	28	6" x 1" Flate Plate	24.75 - 25.00	Auto	0.0000
L53	29	6" x 1" Flate Plate	24.75 - 25.00	Auto	0.0000
L53	30	6" x 1" Flate Plate	24.75 - 25.00	Auto	0.0000
L54	13	9" x 1-1/4" Flate Plate	19.75 - 24.75	Auto	0.0930

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L54	18	9" x 1-1/4" Flate Plate	19.75 - 24.75	Auto	0.0930
L54	23	9" x 1-1/4" Flate Plate	19.75 - 24.75	Auto	0.0930
L54	28	6" x 1" Flate Plate	19.75 - 24.75	Auto	0.0000
L54	29	6" x 1" Flate Plate	19.75 - 24.75	Auto	0.0000
L54	30	6" x 1" Flate Plate	19.75 - 24.75	Auto	0.0000
L55	13	9" x 1-1/4" Flate Plate	14.75 - 19.75	Auto	0.0577
L55	18	9" x 1-1/4" Flate Plate	14.75 - 19.75	Auto	0.0577
L55	23	9" x 1-1/4" Flate Plate	14.75 - 19.75	Auto	0.0577
L55	28	6" x 1" Flate Plate	14.75 - 19.75	Auto	0.0000
L55	29	6" x 1" Flate Plate	14.75 - 19.75	Auto	0.0000
L55	30	6" x 1" Flate Plate	14.75 - 19.75	Auto	0.0000
L55	38	Transition Stiffener	14.75 - 16.00	Auto	0.0000
L56	13	9" x 1-1/4" Flate Plate	14.50 - 14.75	Auto	0.0430
L56	18	9" x 1-1/4" Flate Plate	14.50 - 14.75	Auto	0.0430
L56	23	9" x 1-1/4" Flate Plate	14.50 - 14.75	Auto	0.0430
L56	28	6" x 1" Flate Plate	14.50 - 14.75	Auto	0.0000
L56	29	6" x 1" Flate Plate	14.50 - 14.75	Auto	0.0000
L56	30	6" x 1" Flate Plate	14.50 - 14.75	Auto	0.0000
L56	38	Transition Stiffener	14.50 - 14.75	Auto	0.0000
L57	13	9" x 1-1/4" Flate Plate	14.25 - 14.50	Auto	0.0416
L57	18	9" x 1-1/4" Flate Plate	14.25 - 14.50	Auto	0.0416
L57	23	9" x 1-1/4" Flate Plate	14.25 - 14.50	Auto	0.0416
L57	28	6" x 1" Flate Plate	14.25 - 14.50	Auto	0.0000
L57	29	6" x 1" Flate Plate	14.25 - 14.50	Auto	0.0000
L57	30	6" x 1" Flate Plate	14.25 - 14.50	Auto	0.0000
L57	38	Transition Stiffener	14.25 - 14.50	Auto	0.0000
L58	13	9" x 1-1/4" Flate Plate	12.25 - 14.25	Auto	0.0353
L58	18	9" x 1-1/4" Flate Plate	12.25 - 14.25	Auto	0.0353
L58	23	9" x 1-1/4" Flate Plate	12.25 - 14.25	Auto	0.0353
L58	28	6" x 1" Flate Plate	12.25 - 14.25	Auto	0.0000
L58	29	6" x 1" Flate Plate	12.25 - 14.25	Auto	0.0000
L58	30	6" x 1" Flate Plate	12.25 - 14.25	Auto	0.0000
L58	37	Transition Stiffener	12.25 - 13.00	Auto	0.0000
L58	38	Transition Stiffener	12.25 - 14.25	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L59	13	9" x 1-1/4" Flate Plate	12.00 - 12.25	Auto	0.0179
L59	18	9" x 1-1/4" Flate Plate	12.00 - 12.25	Auto	0.0179
L59	23	9" x 1-1/4" Flate Plate	12.00 - 12.25	Auto	0.0179
L59	28	6" x 1" Flate Plate	12.00 - 12.25	Auto	0.0000
L59	29	6" x 1" Flate Plate	12.00 - 12.25	Auto	0.0000
L59	30	6" x 1" Flate Plate	12.00 - 12.25	Auto	0.0000
L59	37	Transition Stiffener	12.00 - 12.25	Auto	0.0000
L59	38	Transition Stiffener	12.00 - 12.25	Auto	0.0000
L60	13	9" x 1-1/4" Flate Plate	11.50 - 12.00	Auto	0.0158
L60	18	9" x 1-1/4" Flate Plate	11.50 - 12.00	Auto	0.0158
L60	23	9" x 1-1/4" Flate Plate	11.50 - 12.00	Auto	0.0158
L60	28	6" x 1" Flate Plate	11.50 - 12.00	Auto	0.0000
L60	29	6" x 1" Flate Plate	11.50 - 12.00	Auto	0.0000
L60	30	6" x 1" Flate Plate	11.50 - 12.00	Auto	0.0000
L60	37	Transition Stiffener	11.50 - 12.00	Auto	0.0000
L60	38	Transition Stiffener	11.50 - 12.00	Auto	0.0000
L61	13	9" x 1-1/4" Flate Plate	11.25 - 11.50	Auto	0.0472
L61	18	9" x 1-1/4" Flate Plate	11.25 - 11.50	Auto	0.0472
L61	23	9" x 1-1/4" Flate Plate	11.25 - 11.50	Auto	0.0472
L61	28	6" x 1" Flate Plate	11.25 - 11.50	Auto	0.0000
L61	29	6" x 1" Flate Plate	11.25 - 11.50	Auto	0.0000
L61	30	6" x 1" Flate Plate	11.25 - 11.50	Auto	0.0000
L61	37	Transition Stiffener	11.25 - 11.50	Auto	0.0000
L61	38	Transition Stiffener	11.25 - 11.50	Auto	0.0000
L62	13	9" x 1-1/4" Flate Plate	9.25 - 11.25	Auto	0.0372
L62	18	9" x 1-1/4" Flate Plate	9.25 - 11.25	Auto	0.0372
L62	23	9" x 1-1/4" Flate Plate	9.25 - 11.25	Auto	0.0372
L62	28	6" x 1" Flate Plate	9.25 - 11.25	Auto	0.0000
L62	29	6" x 1" Flate Plate	9.25 - 11.25	Auto	0.0000
L62	30	6" x 1" Flate Plate	9.25 - 11.25	Auto	0.0000
L62	37	Transition Stiffener	9.25 - 11.25	Auto	0.0000
L62	38	Transition Stiffener	9.25 - 11.25	Auto	0.0000
L63	13	9" x 1-1/4" Flate Plate	9.00 - 9.25	Auto	0.0197
L63	18	9" x 1-1/4" Flate Plate	9.00 - 9.25	Auto	0.0197
L63	23	9" x 1-1/4" Flate Plate	9.00 - 9.25	Auto	0.0197
L63	28	6" x 1" Flate Plate	9.00 - 9.25	Auto	0.0000
L63	29	6" x 1" Flate Plate	9.00 - 9.25	Auto	0.0000
L63	30	6" x 1" Flate Plate	9.00 - 9.25	Auto	0.0000
L63	37	Transition Stiffener	9.00 - 9.25	Auto	0.0000
L63	38	Transition Stiffener	9.00 - 9.25	Auto	0.0000
L64	13	9" x 1-1/4" Flate Plate	4.50 - 9.00	Auto	0.0027
L64	18	9" x 1-1/4" Flate Plate	4.50 - 9.00	Auto	0.0027
L64	23	9" x 1-1/4" Flate Plate	4.50 - 9.00	Auto	0.0027
L64	28	6" x 1" Flate Plate	4.50 - 9.00	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L64	29	6" x 1" Flate Plate	4.50 -9.00	Auto	0.0000
L64	30	6" x 1" Flate Plate	4.50 -9.00	Auto	0.0000
L64	36	Transition Stiffener	4.50 -6.00	Auto	0.0000
L64	37	Transition Stiffener	4.50 -9.00	Auto	0.0000
L64	38	Transition Stiffener	4.50 -9.00	Auto	0.0000
L65	13	9" x 1-1/4" Flate Plate	4.25 -4.50	Auto	0.0000
L65	18	9" x 1-1/4" Flate Plate	4.25 -4.50	Auto	0.0000
L65	23	9" x 1-1/4" Flate Plate	4.25 -4.50	Auto	0.0000
L65	28	6" x 1" Flate Plate	4.25 -4.50	Auto	0.0000
L65	29	6" x 1" Flate Plate	4.25 -4.50	Auto	0.0000
L65	30	6" x 1" Flate Plate	4.25 -4.50	Auto	0.0000
L65	36	Transition Stiffener	4.25 -4.50	Auto	0.0000
L65	37	Transition Stiffener	4.25 -4.50	Auto	0.0000
L65	38	Transition Stiffener	4.25 -4.50	Auto	0.0000
L66	13	9" x 1-1/4" Flate Plate	3.00 -4.25	Auto	0.0000
L66	18	9" x 1-1/4" Flate Plate	3.00 -4.25	Auto	0.0000
L66	23	9" x 1-1/4" Flate Plate	3.00 -4.25	Auto	0.0000
L66	28	6" x 1" Flate Plate	3.00 -4.25	Auto	0.0000
L66	29	6" x 1" Flate Plate	3.00 -4.25	Auto	0.0000
L66	30	6" x 1" Flate Plate	3.00 -4.25	Auto	0.0000
L66	36	Transition Stiffener	3.00 -4.25	Auto	0.0000
L66	37	Transition Stiffener	3.00 -4.25	Auto	0.0000
L66	38	Transition Stiffener	3.00 -4.25	Auto	0.0000
L67	13	9" x 1-1/4" Flate Plate	2.75 -3.00	Auto	0.0000
L67	18	9" x 1-1/4" Flate Plate	2.75 -3.00	Auto	0.0000
L67	23	9" x 1-1/4" Flate Plate	2.75 -3.00	Auto	0.0000
L67	28	6" x 1" Flate Plate	2.75 -3.00	Auto	0.0000
L67	29	6" x 1" Flate Plate	2.75 -3.00	Auto	0.0000
L67	30	6" x 1" Flate Plate	2.75 -3.00	Auto	0.0000
L67	36	Transition Stiffener	2.75 -3.00	Auto	0.0000
L67	37	Transition Stiffener	2.75 -3.00	Auto	0.0000
L67	38	Transition Stiffener	2.75 -3.00	Auto	0.0000
L68	13	9" x 1-1/4" Flate Plate	0.00 -2.75	Auto	0.0000
L68	18	9" x 1-1/4" Flate Plate	0.00 -2.75	Auto	0.0000
L68	23	9" x 1-1/4" Flate Plate	0.00 -2.75	Auto	0.0000
L68	28	6" x 1" Flate Plate	0.00 -2.75	Auto	0.0000
L68	29	6" x 1" Flate Plate	0.00 -2.75	Auto	0.0000
L68	30	6" x 1" Flate Plate	0.00 -2.75	Auto	0.0000
L68	36	Transition Stiffener	0.00 -2.75	Auto	0.0000
L68	37	Transition Stiffener	0.00 -2.75	Auto	0.0000
L68	38	Transition Stiffener	0.00 -2.75	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
KS24019-L112Aw/ Mount Pipe	A	From Leg	4.0000	0.0000	150.0000	No Ice	0.3558	0.3558	0.01
			0.00			1/2"	0.5186	0.5186	0.02
			-3.00			Ice	0.6999	0.6999	0.02
LPA-80063/6CFX5 w/ Mount Pipe	A	From Leg	4.0000	0.0000	150.0000	No Ice	9.8047	10.1945	0.05
			0.00			1/2"	10.3732	11.3625	0.14
			0.00			Ice	10.9065	12.2463	0.25
						1" Ice			
(2) LPA-80063/6CFX5 w/ Mount Pipe	B	From Leg	4.0000	0.0000	150.0000	No Ice	9.8047	10.1945	0.05
			0.00			1/2"	10.3732	11.3625	0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			0.00			Ice	10.9065	12.2463	0.25
(3) LPA-80063/6CFX5 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	9.8047	10.1945	0.05
						No Ice	10.3732	11.3625	0.14
						1/2" Ice	10.9065	12.2463	0.25
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	7.3400	5.5100	0.06
						No Ice	8.0800	6.2200	0.11
						1/2" Ice	8.8300	6.9400	0.18
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	7.3400	5.5100	0.06
						No Ice	8.0800	6.2200	0.11
						1/2" Ice	8.8300	6.9400	0.18
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	7.3400	5.5100	0.06
						No Ice	8.0800	6.2200	0.11
						1/2" Ice	8.8300	6.9400	0.18
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	7.9700	5.9900	0.08
						No Ice	8.7300	6.7200	0.14
						1/2" Ice	9.5000	7.4700	0.22
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	7.9700	5.9900	0.08
						No Ice	8.7300	6.7200	0.14
						1/2" Ice	9.5000	7.4700	0.22
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	7.9700	5.9900	0.08
						No Ice	8.7300	6.7200	0.14
						1/2" Ice	9.5000	7.4700	0.22
B4 RRH2X60-4R	A	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	0.0000	2.0048	0.06
						No Ice	0.0000	2.2369	0.08
						1/2" Ice	0.0000	2.4759	0.10
B4 RRH2X60-4R	B	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	0.0000	2.0048	0.06
						No Ice	0.0000	2.2369	0.08
						1/2" Ice	0.0000	2.4759	0.10
B4 RRH2X60-4R	C	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	0.0000	2.0048	0.06
						No Ice	0.0000	2.2369	0.08
						1/2" Ice	0.0000	2.4759	0.10
(2) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 -3.00	0.0000	150.0000	1" Ice	0.3142	0.0762	0.00
						No Ice	0.3862	0.1189	0.01
						1/2" Ice	0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	B	From Leg	4.0000 0.00 -3.00	0.0000	150.0000	1" Ice	0.3142	0.0762	0.00
						No Ice	0.3862	0.1189	0.01
						1/2" Ice	0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	C	From Leg	4.0000 0.00 -3.00	0.0000	150.0000	1" Ice	0.3142	0.0762	0.00
						No Ice	0.3862	0.1189	0.01
						1/2" Ice	0.4656	0.1685	0.01
DB-T1-6Z-8AB-0Z	C	From Leg	1.0000 0.00 0.00	0.0000	150.0000	1" Ice	4.8000	2.0000	0.04
						No Ice	5.0704	2.1926	0.08
						1/2" Ice	5.3481	2.3926	0.12
RRH2X60-AWS	A	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	3.5002	1.8157	0.06
						No Ice	3.7609	2.0519	0.08
						1/2" Ice	4.0285	2.2894	0.11
RRH2X60-AWS	B	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	3.5002	1.8157	0.06
						No Ice	3.7609	2.0519	0.08
						1/2" Ice	4.0285	2.2894	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
RRH2X60-AWS	C	From Leg	4.0000 0.00 0.00	0.0000	150.0000	1" Ice	3.5002	1.8157	0.06
						No Ice	3.7609	2.0519	0.08
						1/2"	4.0285	2.2894	0.11
Platform Mount (LP 101-1_KCKR)	C	None		0.0000	150.0000	1" Ice	47.0500	47.0500	1.78
						No Ice	55.2000	55.2000	2.73
						1/2"	63.9600	63.9600	3.86

7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	5.7460	4.2543	0.06
						No Ice	6.1791	5.0137	0.10
						1/2"	6.6067	5.7109	0.16
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	5.7460	4.2543	0.06
						No Ice	6.1791	5.0137	0.10
						1/2"	6.6067	5.7109	0.16
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	5.7460	4.2543	0.06
						No Ice	6.1791	5.0137	0.10
						1/2"	6.6067	5.7109	0.16
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	11.9600	5.9700	0.11
						No Ice	12.7000	6.6300	0.20
						1/2"	13.4600	7.3000	0.30
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	11.9600	5.9700	0.11
						No Ice	12.7000	6.6300	0.20
						1/2"	13.4600	7.3000	0.30
DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	11.9600	5.9700	0.11
						No Ice	12.7000	6.6300	0.20
						1/2"	13.4600	7.3000	0.30
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	12.2500	6.0500	0.09
						No Ice	13.0000	6.7100	0.18
						1/2"	13.7600	7.3900	0.27
OPA65R-BU6D w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	12.2500	6.0500	0.09
						No Ice	13.0000	6.7100	0.18
						1/2"	13.7600	7.3900	0.27
OPA65R-BU6D w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	12.2500	6.0500	0.09
						No Ice	13.0000	6.7100	0.18
						1/2"	13.7600	7.3900	0.27
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	9.2200	6.2500	0.07
						No Ice	9.9800	6.9600	0.14
						1/2"	10.7600	7.7000	0.22
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	9.2200	6.2500	0.07
						No Ice	9.9800	6.9600	0.14
						1/2"	10.7600	7.7000	0.22
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	140.0000	1" Ice	9.2200	6.2500	0.07
						No Ice	9.9800	6.9600	0.14
						1/2"	10.7600	7.7000	0.22
1001940	A	From Leg	4.0000 0.00 0.00	0.0000	140.0000	1" Ice	0.1758	0.0833	0.00
						No Ice	0.2317	0.1264	0.00
						1/2"	0.2950	0.1778	0.01
1001940	B	From Leg	4.0000 0.00 0.00	0.0000	140.0000	1" Ice	0.1758	0.0833	0.00
						No Ice	0.2317	0.1264	0.00
						1/2"	0.2950	0.1778	0.01

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement		C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral				ft ²	ft ²	
			ft	ft	°	ft				K
1001940	C	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.1758	0.0833	0.00
			0.00	0.00			No Ice	0.2317	0.1264	0.00
			0.00	0.00			1/2"	0.2950	0.1778	0.01
(2) LGP21401	A	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	1.1040	0.2070	0.01
			0.00	0.00			No Ice	1.2388	0.2738	0.02
			0.00	0.00			1/2"	1.3810	0.3475	0.03
(2) LGP21401	B	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	1.1040	0.2070	0.01
			0.00	0.00			No Ice	1.2388	0.2738	0.02
			0.00	0.00			1/2"	1.3810	0.3475	0.03
(2) LGP21401	C	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	1.1040	0.2070	0.01
			0.00	0.00			No Ice	1.2388	0.2738	0.02
			0.00	0.00			1/2"	1.3810	0.3475	0.03
RRUS 4478 B14	A	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	1.8425	0.06
			0.00	0.00			No Ice	0.0000	2.0123	0.08
			2.00	0.00			1/2"	0.0000	2.1895	0.09
RRUS 4478 B14	B	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	1.8425	0.06
			0.00	0.00			No Ice	0.0000	2.0123	0.08
			2.00	0.00			1/2"	0.0000	2.1895	0.09
RRUS 4478 B14	C	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	1.8425	0.06
			0.00	0.00			No Ice	0.0000	2.0123	0.08
			2.00	0.00			1/2"	0.0000	2.1895	0.09
RRUS 4449 B5/B12	A	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	1.4081	0.07
			0.00	0.00			No Ice	0.0000	1.5637	0.09
			2.00	0.00			1/2"	0.0000	1.7267	0.11
RRUS 4449 B5/B12	B	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	1.4081	0.07
			0.00	0.00			No Ice	0.0000	1.5637	0.09
			2.00	0.00			1/2"	0.0000	1.7267	0.11
RRUS 4449 B5/B12	C	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	1.4081	0.07
			0.00	0.00			No Ice	0.0000	1.5637	0.09
			2.00	0.00			1/2"	0.0000	1.7267	0.11
RRUS 8843 B2/B66A	A	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	0.0000	0.07
			0.00	0.00			No Ice	0.0000	0.0000	0.09
			2.00	0.00			1/2"	0.0000	0.0000	0.11
RRUS 8843 B2/B66A	B	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	0.0000	0.07
			0.00	0.00			No Ice	0.0000	0.0000	0.09
			2.00	0.00			1/2"	0.0000	0.0000	0.11
RRUS 8843 B2/B66A	C	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	0.0000	0.0000	0.07
			0.00	0.00			No Ice	0.0000	0.0000	0.09
			2.00	0.00			1/2"	0.0000	0.0000	0.11
DC6-48-60-18-8F	A	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	1.2117	1.2117	0.02
			0.00	0.00			No Ice	1.8924	1.8924	0.04
			2.00	0.00			1/2"	2.1051	2.1051	0.07
DC6-48-60-18-8F	A	From Leg	4.0000	0.0000	0.0000	140.0000	1" Ice	1.2117	1.2117	0.02
			0.00	0.00			No Ice	1.8924	1.8924	0.04
			2.00	0.00			1/2"	2.1051	2.1051	0.07
Platform Mount (LP 101-1)	C	None			0.0000	140.0000	1" Ice			
							No Ice	35.8300	35.8300	1.50
							1/2"	40.9800	40.9800	2.32
							Ice	46.5700	46.5700	3.26

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
(3) P2 STD 13.5'	C	None		0.0000	140.0000	No Ice	4.5600	4.5600	0.25
						1/2"	6.3900	6.3900	0.31
						Ice	8.1800	8.1800	0.40
site pro PRK-SFS-L	A	From Leg	2.0000 0.00 0.00	0.0000	140.0000	1" Ice	5.5200	4.6400	0.13
						No Ice	5.5200	4.6400	0.13
						1/2"	6.9000	5.8000	0.17
site pro PRK-SFS-L	B	From Leg	2.0000 0.00 0.00	0.0000	140.0000	Ice	8.2800	6.9600	0.20
						1" Ice	5.5200	4.6400	0.13
						No Ice	5.5200	4.6400	0.13
site pro PRK-SFS-L	C	From Leg	2.0000 0.00 0.00	0.0000	140.0000	1/2"	6.9000	5.8000	0.17
						Ice	8.2800	6.9600	0.20
						No Ice	5.5200	4.6400	0.13
*** AIR6449 B41_T-MOBILE	A	From Leg	4.0000 0.00 0.00	0.0000	128.0000	1" Ice	5.2700	2.0300	0.11
						No Ice	5.2700	2.0300	0.11
						1/2"	5.7000	2.3600	0.15
AIR6449 B41_T-MOBILE	B	From Leg	4.0000 0.00 0.00	0.0000	128.0000	Ice	6.1400	2.7000	0.20
						1" Ice	5.2700	2.0300	0.11
						No Ice	5.2700	2.0300	0.11
AIR6449 B41_T-MOBILE	C	From Leg	4.0000 0.00 0.00	0.0000	128.0000	1/2"	5.7000	2.3600	0.15
						Ice	6.1400	2.7000	0.20
						No Ice	5.2700	2.0300	0.11
APXVAALL24_43-U-NA20_TMO	A	From Leg	4.0000 0.00 0.00	0.0000	128.0000	1" Ice	14.6700	5.3200	0.15
						No Ice	14.6700	5.3200	0.15
						1/2"	15.4300	5.9900	0.26
APXVAALL24_43-U-NA20_TMO	B	From Leg	4.0000 0.00 0.00	0.0000	128.0000	Ice	16.2100	6.6800	0.38
						1" Ice	14.6700	5.3200	0.15
						No Ice	14.6700	5.3200	0.15
APXVAALL24_43-U-NA20_TMO	C	From Leg	4.0000 0.00 0.00	0.0000	128.0000	1/2"	15.4300	5.9900	0.26
						Ice	16.2100	6.6800	0.38
						No Ice	14.6700	5.3200	0.15
AIR 32 B2A B66AA_T-MOBILE	A	From Leg	4.0000 0.00 0.00	0.0000	128.0000	1" Ice	3.8600	2.5100	0.17
						No Ice	3.8600	2.5100	0.17
						1/2"	4.2300	2.8600	0.22
AIR 32 B2A B66AA_T-MOBILE	B	From Leg	4.0000 0.00 0.00	0.0000	128.0000	Ice	4.6100	3.2200	0.27
						1" Ice	3.8600	2.5100	0.17
						No Ice	3.8600	2.5100	0.17
AIR 32 B2A B66AA_T-MOBILE	C	From Leg	4.0000 0.00 0.00	0.0000	128.0000	1/2"	4.2300	2.8600	0.22
						Ice	4.6100	3.2200	0.27
						No Ice	3.8600	2.5100	0.17
RRUS 4415 B25_CCIV2	A	From Leg	4.0000 0.00 0.00	0.0000	128.0000	1" Ice	0.0000	0.0000	0.05
						No Ice	0.0000	0.0000	0.05
						1/2"	0.0000	0.0000	0.06
RRUS 4415 B25_CCIV2	B	From Leg	4.0000 0.00 0.00	0.0000	128.0000	Ice	0.0000	0.0000	0.08
						1" Ice	0.0000	0.0000	0.05
						No Ice	0.0000	0.0000	0.05
RRUS 4415 B25_CCIV2	C	From Leg	4.0000 0.00 0.00	0.0000	128.0000	1/2"	0.0000	0.0000	0.06
						Ice	0.0000	0.0000	0.08
						No Ice	0.0000	0.0000	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.0000 0.00 0.00	0.0000	128.0000	No Ice	0.0000	1.9701	0.07
						1/2"	0.0000	2.1466	0.09
						Ice	0.0000	2.3306	0.12
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.0000 0.00 0.00	0.0000	128.0000	No Ice	0.0000	1.9701	0.07
						1/2"	0.0000	2.1466	0.09
						Ice	0.0000	2.3306	0.12
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.0000 0.00 0.00	0.0000	128.0000	No Ice	0.0000	1.9701	0.07
						1/2"	0.0000	2.1466	0.09
						Ice	0.0000	2.3306	0.12
Platform Mount [LP 301-1_KCKR]	C	None		0.0000	128.0000	No Ice	35.0300	35.0300	1.86
						1/2"	44.4600	44.4600	2.52
						Ice	53.7200	53.7200	3.33
*** MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	8.0100	4.2300	0.11
						1/2"	8.5200	4.6900	0.19
						Ice	9.0400	5.1600	0.29
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	8.0100	4.2300	0.11
						1/2"	8.5200	4.6900	0.19
						Ice	9.0400	5.1600	0.29
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	8.0100	4.2300	0.11
						1/2"	8.5200	4.6900	0.19
						Ice	9.0400	5.1600	0.29
TA08025-B604	A	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	0.0000	0.9811	0.06
						1/2"	0.0000	1.1117	0.08
						Ice	0.0000	1.2496	0.10
TA08025-B604	B	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	0.0000	0.9811	0.06
						1/2"	0.0000	1.1117	0.08
						Ice	0.0000	1.2496	0.10
TA08025-B604	C	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	0.0000	0.9811	0.06
						1/2"	0.0000	1.1117	0.08
						Ice	0.0000	1.2496	0.10
TA08025-B605	A	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	0.0000	1.1295	0.08
						1/2"	0.0000	1.2666	0.09
						Ice	0.0000	1.4112	0.11
TA08025-B605	B	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	0.0000	1.1295	0.08
						1/2"	0.0000	1.2666	0.09
						Ice	0.0000	1.4112	0.11
TA08025-B605	C	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	0.0000	1.1295	0.08
						1/2"	0.0000	1.2666	0.09
						Ice	0.0000	1.4112	0.11
RDIDC-9181-PF-48	A	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	2.3118	1.2931	0.02
						1/2"	2.5022	1.4479	0.04
						Ice	2.7000	1.6101	0.06
Commscope MC-PK8-DSH	C	None		0.0000	110.0000	No Ice	34.2400	34.2400	1.75
						1/2"	62.9500	62.9500	2.10
						Ice	91.6600	91.6600	2.45
(2) 8' x 2" Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	1.9000	1.9000	0.03
						1/2"	2.7281	2.7281	0.04
						Ice	3.4009	3.4009	0.06
						1" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
(2) 8' x 2" Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	1.9000	1.9000	0.03
						1/2" Ice	2.7281	2.7281	0.04
						1" Ice	3.4009	3.4009	0.06
(2) 8' x 2" Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	110.0000	No Ice	1.9000	1.9000	0.03
						1/2" Ice	2.7281	2.7281	0.04
						1" Ice	3.4009	3.4009	0.06

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 145	Pole	Max Tension	26	0.00	-0.00	0.00
			Max. Compression	26	-8.92	1.22	-1.77
			Max. Mx	20	-2.55	49.60	-0.19
			Max. My	14	-2.56	0.29	-49.49
			Max. Vy	20	-10.09	49.60	-0.19
			Max. Vx	14	10.05	0.29	-49.49
			Max. Torque	22			4.13
L2	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.28	1.23	-1.78
			Max. Mx	20	-2.78	101.05	-0.49
			Max. My	14	-2.79	0.57	-100.74
			Max. Vy	20	-10.49	101.05	-0.49
			Max. Vx	14	10.45	0.57	-100.74
			Max. Torque	22			4.13
L3	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.79	1.25	-1.13
			Max. Mx	20	-6.73	202.10	-0.65
			Max. My	14	-6.74	0.88	-201.36
			Max. Vy	20	-18.70	202.10	-0.65
			Max. Vx	14	18.66	0.88	-201.36
			Max. Torque	22			4.12
L4	135 - 133	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.99	1.26	-1.14
			Max. Mx	20	-6.91	239.63	-0.77
			Max. My	14	-6.92	0.99	-238.81
			Max. Vy	20	-18.85	239.63	-0.77
			Max. Vx	14	18.81	0.99	-238.81
			Max. Torque	10			-3.67
L5	133 - 132.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.03	1.26	-1.14
			Max. Mx	20	-6.96	244.34	-0.78
			Max. My	14	-6.97	1.01	-243.51
			Max. Vy	20	-18.86	244.34	-0.78
			Max. Vx	14	18.82	1.01	-243.51
			Max. Torque	10			-3.67
L6	132.75 - 127.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.91	1.27	-1.15
			Max. Mx	20	-11.29	340.93	-1.08
			Max. My	14	-11.30	1.30	-339.89
			Max. Vy	20	-23.89	340.93	-1.08
			Max. Vx	14	23.85	1.30	-339.89
			Max. Torque	10			-3.67
L7	127.75 - 123.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.60	1.28	-1.16
			Max. Mx	20	-11.86	437.15	-1.32
			Max. My	14	-11.87	1.53	-435.95
			Max. Vy	20	-24.24	437.15	-1.32
			Max. Vx	14	24.20	1.53	-435.95
			Max. Torque	10			-3.67
L8	123.75 - 123.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.65	1.28	-1.16
			Max. Mx	20	-11.91	443.21	-1.33

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L9	123.5 - 118.75	Pole	Max. My	14	-11.92	1.55	-442.00
			Max. Vy	20	-24.25	443.21	-1.33
			Max. Vx	14	24.21	1.55	-442.00
			Max. Torque	10			-3.66
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.89	1.30	-1.17
L10	118.75 - 118.5	Pole	Max. Mx	20	-12.90	559.55	-1.61
			Max. My	14	-12.91	1.83	-558.13
			Max. Vy	20	-24.74	559.55	-1.61
			Max. Vx	14	24.70	1.83	-558.13
			Max. Torque	10			-3.66
			Max Tension	1	0.00	0.00	0.00
L11	118.5 - 117	Pole	Max. Compression	26	-28.97	1.30	-1.17
			Max. Mx	20	-12.98	565.73	-1.63
			Max. My	14	-12.99	1.84	-564.31
			Max. Vy	20	-24.76	565.73	-1.63
			Max. Vx	14	24.72	1.84	-564.31
			Max. Torque	10			-3.66
L12	117 - 116.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.46	1.30	-1.17
			Max. Mx	20	-13.37	603.00	-1.72
			Max. My	14	-13.37	1.93	-601.51
			Max. Vy	20	-24.94	603.00	-1.72
			Max. Vx	14	24.89	1.93	-601.51
L13	116.75 - 111.75	Pole	Max. Torque	10			-3.66
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.52	1.30	-1.17
			Max. Mx	20	-13.43	609.24	-1.73
			Max. My	14	-13.44	1.94	-607.73
			Max. Vy	20	-24.96	609.24	-1.73
L14	111.75 - 106.75	Pole	Max. Vx	14	24.91	1.94	-607.73
			Max. Torque	10			-3.66
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.86	1.30	-1.17
			Max. Mx	20	-14.51	735.26	-2.02
			Max. My	14	-14.52	2.23	-733.53
L15	106.75 - 101.75	Pole	Max. Vy	20	-25.47	735.26	-2.02
			Max. Vx	14	25.42	2.23	-733.53
			Max. Torque	10			-3.66
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.09	1.30	-0.84
			Max. Mx	20	-18.54	875.01	-2.22
L16	101.75 - 95.1667	Pole	Max. My	14	-18.54	2.52	-873.07
			Max. Vy	20	-29.41	875.01	-2.22
			Max. Vx	14	29.41	2.52	-873.07
			Max. Torque	10			-3.66
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.47	1.30	-0.84
L17	95.1667 - 94.5	Pole	Max. Mx	20	-19.73	1023.22	-2.52
			Max. My	14	-19.73	2.81	-1021.25
			Max. Vy	20	-29.90	1023.22	-2.52
			Max. Vx	14	29.89	2.81	-1021.25
			Max. Torque	10			-3.43
			Max Tension	1	0.00	0.00	0.00
L17	95.1667 - 94.5	Pole	Max. Compression	26	-39.10	1.30	-0.84
			Max. Mx	20	-20.27	1090.69	-2.65
			Max. My	14	-20.27	2.94	-1088.72
			Max. Vy	20	-30.11	1090.69	-2.65
			Max. Vx	14	30.11	2.94	-1088.72
			Max. Torque	10			-3.43
L17	95.1667 - 94.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.69	1.30	-0.84

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L18	94.5 - 93.75	Pole	Max. Mx	20	-22.46	1242.82	-2.94
			Max. My	14	-22.46	3.23	-1240.82
			Max. Vy	20	-30.74	1242.82	-2.94
			Max. Vx	14	30.74	3.23	-1240.82
			Max. Torque	10			-3.43
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.94	1.30	-0.84
			Max. Mx	20	-22.67	1265.90	-2.98
			Max. My	14	-22.68	3.27	-1263.90
			Max. Vy	20	-30.82	1265.90	-2.98
L19	93.75 - 93.5	Pole	Max. Vx	14	30.81	3.27	-1263.90
			Max. Torque	10			-3.43
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.03	1.30	-0.84
			Max. Mx	20	-22.76	1273.60	-3.00
			Max. My	14	-22.77	3.29	-1271.60
			Max. Vy	20	-30.84	1273.60	-3.00
			Max. Vx	14	30.83	3.29	-1271.60
			Max. Torque	10			-3.43
			Max Tension	1	0.00	0.00	0.00
L20	93.5 - 92.75	Pole	Max. Compression	26	-42.30	1.30	-0.84
			Max. Mx	20	-22.99	1296.76	-3.04
			Max. My	14	-23.00	3.33	-1294.76
			Max. Vy	20	-30.92	1296.76	-3.04
			Max. Vx	14	30.92	3.33	-1294.76
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.40	1.30	-0.84
			Max. Mx	20	-23.09	1304.49	-3.05
			Max. My	14	-23.10	3.35	-1302.49
L21	92.75 - 92.5	Pole	Max. Vy	20	-30.95	1304.49	-3.05
			Max. Vx	14	30.94	3.35	-1302.49
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.40	1.30	-0.84
			Max. Mx	20	-23.09	1304.49	-3.05
			Max. My	14	-23.10	3.35	-1302.49
			Max. Vy	20	-30.95	1304.49	-3.05
			Max. Vx	14	30.94	3.35	-1302.49
			Max. Torque	10			-3.42
L22	92.5 - 91.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.93	1.30	-0.84
			Max. Mx	20	-23.54	1343.26	-3.13
			Max. My	14	-23.54	3.42	-1341.25
			Max. Vy	20	-31.10	1343.26	-3.13
			Max. Vx	14	31.10	3.42	-1341.25
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.03	1.30	-0.84
			Max. Mx	20	-23.65	1351.04	-3.14
L23	91.25 - 91	Pole	Max. My	14	-23.65	3.43	-1349.03
			Max. Vy	20	-31.12	1351.04	-3.14
			Max. Vx	14	31.11	3.43	-1349.03
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.77	1.30	-0.84
			Max. Mx	20	-24.28	1405.66	-3.24
			Max. My	14	-24.28	3.53	-1403.65
			Max. Vy	20	-31.33	1405.66	-3.24
			Max. Vx	14	31.33	3.53	-1403.65
L24	91 - 89.25	Pole	Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.77	1.30	-0.84
			Max. Mx	20	-24.28	1405.66	-3.24
			Max. My	14	-24.28	3.53	-1403.65
			Max. Vy	20	-31.33	1405.66	-3.24
			Max. Vx	14	31.33	3.53	-1403.65
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.88	1.30	-0.84
L25	89.25 - 89	Pole	Max. Mx	20	-24.40	1413.50	-3.26
			Max. My	14	-24.40	3.55	-1411.48
			Max. Vy	20	-31.35	1413.50	-3.26
			Max. Vx	14	31.34	3.55	-1411.48
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.36	1.30	-0.84
			Max. Mx	20	-25.69	1515.99	-3.44
			Max. My	14	-25.69	3.73	-1513.96
			Max. Vy	20	-31.74	1515.99	-3.44
L26	89 - 85.75	Pole	Max. Vx	14	31.73	3.73	-1513.96
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.36	1.30	-0.84
			Max. Mx	20	-25.69	1515.99	-3.44
			Max. My	14	-25.69	3.73	-1513.96
			Max. Vy	20	-31.74	1515.99	-3.44
			Max. Vx	14	31.73	3.73	-1513.96
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
L27	85.75 - 85.5	Pole	Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L28	85.5 - 80.5	Pole	Max. Compression	26	-45.45	1.30	-0.84
			Max. Mx	20	-25.78	1523.92	-3.46
			Max. My	14	-25.78	3.75	-1521.89
			Max. Vy	20	-31.76	1523.92	-3.46
			Max. Vx	14	31.75	3.75	-1521.89
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.29	1.30	-0.84
			Max. Mx	20	-27.38	1683.96	-3.74
			Max. My	14	-27.38	4.03	-1681.91
L29	80.5 - 75.5	Pole	Max. Vy	20	-32.28	1683.96	-3.74
			Max. Vx	14	32.27	4.03	-1681.91
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.15	1.30	-0.84
			Max. Mx	20	-29.02	1846.52	-4.03
			Max. My	14	-29.02	4.32	-1844.45
			Max. Vy	20	-32.78	1846.52	-4.03
			Max. Vx	14	32.78	4.32	-1844.45
			Max. Torque	10			-3.42
L30	75.5 - 70.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.04	1.30	-0.84
			Max. Mx	20	-30.69	2011.57	-4.31
			Max. My	14	-30.70	4.60	-2009.48
			Max. Vy	20	-33.27	2011.57	-4.31
			Max. Vx	14	33.27	4.60	-2009.48
			Max. Torque	10			-3.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.96	1.30	-0.84
			Max. Mx	20	-31.51	2092.24	-4.44
L31	70.5 - 68.083	Pole	Max. My	14	-31.51	4.73	-2090.14
			Max. Vy	20	-33.51	2092.24	-4.44
			Max. Vx	14	33.51	4.73	-2090.14
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.07	1.30	-0.84
			Max. Mx	20	-31.62	2100.62	-4.46
			Max. My	14	-31.62	4.75	-2098.52
			Max. Vy	20	-33.52	2100.62	-4.46
			Max. Vx	14	33.52	4.75	-2098.52
L32	68.083 - 67.833	Pole	Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.40	1.30	-0.84
			Max. Mx	20	-31.91	2128.57	-4.50
			Max. My	14	-31.91	4.79	-2126.47
			Max. Vy	20	-33.62	2128.57	-4.50
			Max. Vx	14	33.61	4.79	-2126.47
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.52	1.30	-0.84
L33	67.833 - 67	Pole	Max. Mx	20	-32.02	2136.97	-4.52
			Max. My	14	-32.03	4.81	-2134.87
			Max. Vy	20	-33.63	2136.97	-4.52
			Max. Vx	14	33.63	4.81	-2134.87
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.20	1.30	-0.84
			Max. Mx	20	-33.50	2255.35	-4.71
			Max. My	14	-33.50	5.00	-2253.23
			Max. Vy	20	-34.03	2255.35	-4.71
L34	67 - 66.75	Pole	Max. Vx	14	34.03	5.00	-2253.23
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.33	1.30	-0.84
			Max. Mx	20	-33.63	2263.85	-4.73
			Max. My	14	-33.63	5.02	-2261.74
			Max. Vy	20			
			Max. Vx	14			
			Max. Torque	10			
			Max Tension	1			
L35	66.75 - 63.25	Pole	Max. Compression	26	-54.20	1.30	-0.84
			Max. Mx	20	-33.50	2255.35	-4.71
			Max. My	14	-33.50	5.00	-2253.23
			Max. Vy	20	-34.03	2255.35	-4.71
			Max. Vx	14	34.03	5.00	-2253.23
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.33	1.30	-0.84
			Max. Mx	20	-33.63	2263.85	-4.73
			Max. My	14	-33.63	5.02	-2261.74
L36	63.25 - 63	Pole	Max. Vy	20			
			Max. Vx	14			
			Max. Torque	10			
			Max Tension	1			
			Max. Compression	26			
			Max. Mx	20			
			Max. My	14			
			Max. Vy	20			
			Max. Vx	14			
			Max. Torque	10			

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L37	63 - 59.5	Pole	Max. Vy	20	-34.05	2263.85	-4.73
			Max. Vx	14	34.04	5.02	-2261.74
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.21	1.30	-0.84
			Max. Mx	20	-35.30	2383.70	-4.92
			Max. My	14	-35.30	5.21	-2381.57
			Max. Vy	20	-34.46	2383.70	-4.92
L38	59.5 - 59.25	Pole	Max. Vx	14	34.46	5.21	-2381.57
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.35	1.30	-0.84
			Max. Mx	20	-35.43	2392.32	-4.94
			Max. My	14	-35.44	5.22	-2390.19
			Max. Vy	20	-34.48	2392.32	-4.94
			Max. Vx	14	34.47	5.22	-2390.19
L39	59.25 - 56.25	Pole	Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.02	1.30	-0.84
			Max. Mx	20	-36.92	2496.25	-5.10
			Max. My	14	-36.92	5.39	-2494.11
			Max. Vy	20	-34.83	2496.25	-5.10
			Max. Vx	14	34.83	5.39	-2494.11
			Max. Torque	10			-3.41
L40	56.25 - 56	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.15	1.30	-0.84
			Max. Mx	20	-37.04	2504.96	-5.12
			Max. My	14	-37.04	5.41	-2502.82
			Max. Vy	20	-34.85	2504.96	-5.12
			Max. Vx	14	34.85	5.41	-2502.82
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
L41	56 - 55.75	Pole	Max. Compression	26	-58.26	1.30	-0.84
			Max. Mx	20	-37.13	2513.68	-5.13
			Max. My	14	-37.14	5.42	-2511.53
			Max. Vy	20	-34.87	2513.68	-5.13
			Max. Vx	14	34.87	5.42	-2511.53
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.42	1.30	-0.84
L42	55.75 - 50.75	Pole	Max. Mx	20	-39.04	2689.22	-5.41
			Max. My	14	-39.04	5.70	-2687.06
			Max. Vy	20	-35.37	2689.22	-5.41
			Max. Vx	14	35.36	5.70	-2687.06
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.75	1.30	-0.84
			Max. Mx	20	-39.34	2715.75	-5.45
L43	50.75 - 44.6667	Pole	Max. My	14	-39.34	5.74	-2713.59
			Max. Vy	20	-35.43	2715.75	-5.45
			Max. Vx	14	35.43	5.74	-2713.59
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.70	1.30	-0.84
			Max. Mx	20	-43.67	2942.65	-5.80
			Max. My	14	-43.68	6.09	-2940.46
L44	44.6667 - 43.6667	Pole	Max. Vy	20	-36.22	2942.65	-5.80
			Max. Vx	14	36.22	6.09	-2940.46
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.04	1.30	-0.84
			Max. Mx	20	-45.78	3124.73	-6.07
			Max. My	14	-45.78	6.36	-3122.52
			Max. Vy	20	-36.66	3124.73	-6.07
L45	43.6667 - 38.6667	Pole	Max. Vy	20	-36.66	3124.73	-6.07
			Max. Vx	14	36.66	6.36	-3122.52
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.04	1.30	-0.84

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L46	38.6667 - 34.5	Pole	Max. Vx	14	36.65	6.36	-3122.52
			Max. Torque	10			-3.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.00	1.30	-0.84
			Max. Mx	20	-47.55	3278.10	-6.30
			Max. My	14	-47.56	6.58	-3275.88
			Max. Vy	20	-37.01	3278.10	-6.30
L47	34.5 - 34.25	Pole	Max. Vx	14	37.00	6.58	-3275.88
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.15	1.30	-0.84
			Max. Mx	20	-47.70	3287.35	-6.31
			Max. My	14	-47.70	6.60	-3285.13
			Max. Vy	20	-37.01	3287.35	-6.31
L48	34.25 - 33	Pole	Max. Vx	14	37.01	6.60	-3285.13
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.86	1.30	-0.84
			Max. Mx	20	-48.34	3333.68	-6.38
			Max. My	14	-48.34	6.66	-3331.46
			Max. Vy	20	-37.15	3333.68	-6.38
L49	33 - 32.75	Pole	Max. Vx	14	37.15	6.66	-3331.46
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.01	1.30	-0.84
			Max. Mx	20	-48.48	3342.97	-6.39
			Max. My	14	-48.49	6.68	-3340.74
			Max. Vy	20	-37.15	3342.97	-6.39
L50	32.75 - 29.75	Pole	Max. Vx	14	37.15	6.68	-3340.74
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.74	1.30	-0.84
			Max. Mx	20	-50.04	3454.83	-6.55
			Max. My	14	-50.05	6.84	-3452.59
			Max. Vy	20	-37.45	3454.83	-6.55
L51	29.75 - 29.5	Pole	Max. Vx	14	37.44	6.84	-3452.59
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.89	1.30	-0.84
			Max. Mx	20	-50.19	3464.19	-6.56
			Max. My	14	-50.19	6.85	-3461.95
			Max. Vy	20	-37.45	3464.19	-6.56
L52	29.5 - 25	Pole	Max. Vx	14	37.45	6.85	-3461.95
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.56	1.30	-0.84
			Max. Mx	20	-52.61	3633.61	-6.80
			Max. My	14	-52.61	7.09	-3631.36
			Max. Vy	20	-37.88	3633.61	-6.80
L53	25 - 24.75	Pole	Max. Vx	14	37.87	7.09	-3631.36
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.69	1.30	-0.84
			Max. Mx	20	-52.74	3643.08	-6.82
			Max. My	14	-52.74	7.11	-3640.83
			Max. Vy	20	-37.88	3643.08	-6.82
L54	24.75 - 19.75	Pole	Max. Vx	14	37.87	7.11	-3640.83
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.19	1.30	-0.84
			Max. Mx	20	-55.00	3833.34	-7.08
			Max. My	14	-55.00	7.37	-3831.07
			Max. Vy	20	-38.26	3833.34	-7.08
L55	19.75 -	Pole	Max. Vx	14	38.25	7.37	-3831.07
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	14.75		Max. Compression	26	-80.72	1.30	-0.86
			Max. Mx	20	-57.31	4025.29	-7.34
			Max. My	14	-57.31	7.63	-4023.01
			Max. Vy	20	-38.58	4025.29	-7.34
			Max. Vx	14	38.58	7.63	-4023.01
			Max. Torque	10			-3.40
L56	14.75 - 14.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.85	1.30	-0.86
			Max. Mx	20	-57.44	4034.93	-7.36
			Max. My	14	-57.44	7.65	-4032.65
			Max. Vy	20	-38.58	4034.93	-7.36
			Max. Vx	14	38.57	7.65	-4032.65
			Max. Torque	10			-3.40
L57	14.5 - 14.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.98	1.30	-0.86
			Max. Mx	20	-57.55	4044.58	-7.37
			Max. My	14	-57.55	7.66	-4042.29
			Max. Vy	20	-38.60	4044.58	-7.37
			Max. Vx	14	38.59	7.66	-4042.29
			Max. Torque	10			-3.40
L58	14.25 - 12.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.01	1.29	-0.88
			Max. Mx	20	-58.47	4121.95	-7.47
			Max. My	14	-58.47	7.76	-4119.57
			Max. Vy	20	-38.80	4121.95	-7.47
			Max. Vx	14	38.73	7.76	-4119.57
			Max. Torque	10			-3.40
L59	12.25 - 12	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.14	1.29	-0.88
			Max. Mx	20	-58.60	4131.65	-7.49
			Max. My	14	-58.60	7.78	-4129.25
			Max. Vy	20	-38.80	4131.65	-7.49
			Max. Vx	14	38.72	7.78	-4129.25
			Max. Torque	10			-3.40
L60	12 - 11.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.40	1.29	-0.88
			Max. Mx	20	-58.83	4151.06	-7.51
			Max. My	14	-58.83	7.80	-4148.61
			Max. Vy	20	-38.86	4151.06	-7.51
			Max. Vx	14	38.76	7.80	-4148.61
			Max. Torque	10			-3.40
L61	11.5 - 11.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.53	1.29	-0.88
			Max. Mx	20	-58.96	4160.77	-7.52
			Max. My	14	-58.96	7.81	-4158.30
			Max. Vy	20	-38.87	4160.77	-7.52
			Max. Vx	14	38.77	7.81	-4158.30
			Max. Torque	10			-3.40
L62	11.25 - 9.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.62	1.27	-0.89
			Max. Mx	20	-59.93	4238.69	-7.63
			Max. My	14	-59.93	7.92	-4235.95
			Max. Vy	20	-39.08	4238.69	-7.63
			Max. Vx	14	38.92	7.92	-4235.95
			Max. Torque	10			-3.40
L63	9.25 - 9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.75	1.27	-0.89
			Max. Mx	20	-60.06	4248.45	-7.64
			Max. My	14	-60.06	7.93	-4245.67
			Max. Vy	20	-39.08	4248.45	-7.64
			Max. Vx	14	38.91	7.93	-4245.67
			Max. Torque	10			-3.40
L64	9 - 4.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.01	1.24	-0.91
			Max. Mx	20	-62.09	4425.21	-7.87
			Max. My	14	-62.09	8.16	-4421.36
			Max. Vy	20	-39.51	4425.21	-7.87

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L65	4.5 - 4.25	Pole	Max. Vx	14	39.21	8.16	-4421.36
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.14	1.24	-0.91
			Max. Mx	20	-62.22	4435.08	-7.88
			Max. My	14	-62.22	8.17	-4431.15
			Max. Vy	20	-39.51	4435.08	-7.88
L66	4.25 - 3	Pole	Max. Vx	14	39.20	8.17	-4431.15
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.80	1.24	-0.91
			Max. Mx	20	-62.80	4484.53	-7.95
			Max. My	14	-62.80	8.24	-4480.19
			Max. Vy	20	-39.66	4484.53	-7.95
L67	3 - 2.75	Pole	Max. Vx	14	39.31	8.24	-4480.19
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.92	1.24	-0.91
			Max. Mx	20	-62.93	4494.44	-7.96
			Max. My	14	-62.93	8.25	-4490.01
			Max. Vy	20	-39.65	4494.44	-7.96
L68	2.75 - 0	Pole	Max. Vx	14	39.30	8.25	-4490.01
			Max. Torque	10			-3.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.28	1.24	-0.91
			Max. Mx	20	-64.16	4603.81	-8.10
			Max. My	14	-64.16	8.39	-4598.30
			Max. Vy	20	-39.93	4603.81	-8.10
			Max. Vx	14	39.50	8.39	-4598.30
			Max. Torque	10			-3.40

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	88.28	0.01	-8.58
	Max. H _x	20	64.19	39.89	-0.05
	Max. H _z	3	48.14	-0.05	39.46
	Max. M _x	2	4598.17	-0.05	39.46
	Max. M _z	8	4603.12	-39.89	0.05
	Max. Torsion	22	3.40	34.18	19.70
	Min. Vert	7	48.14	-34.20	19.78
	Min. H _x	8	64.19	-39.89	0.05
	Min. H _z	14	64.19	0.05	-39.46
	Min. M _x	14	-4598.30	0.05	-39.46
	Min. M _z	20	-4603.81	39.89	-0.05
	Min. Torsion	10	-3.40	-34.18	-19.70

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	53.49	0.00	0.00	0.05	0.26	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	64.19	0.05	-39.46	-4598.17	-7.77	-2.14
0.9 Dead+1.0 Wind 0 deg - No Ice	48.14	0.05	-39.46	-4536.78	-7.73	-2.13
1.2 Dead+1.0 Wind 30 deg - No Ice	64.19	19.84	-34.31	-3986.79	-2306.92	-0.51

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
0.9 Dead+1.0 Wind 30 deg- No Ice	48.14	19.84	-34.31	-3933.56	-2276.18	-0.50
1.2 Dead+1.0 Wind 60 deg- No Ice	64.19	34.20	-19.78	-2306.04	-3987.17	1.26
0.9 Dead+1.0 Wind 60 deg- No Ice	48.14	34.20	-19.78	-2275.24	-3933.99	1.26
1.2 Dead+1.0 Wind 90 deg- No Ice	64.19	39.89	-0.05	-8.06	-4603.12	2.69
0.9 Dead+1.0 Wind 90 deg- No Ice	48.14	39.89	-0.05	-7.94	-4541.76	2.69
1.2 Dead+1.0 Wind 120 deg - No Ice	64.19	34.18	19.70	2292.29	-3979.45	3.40
0.9 Dead+1.0 Wind 120 deg - No Ice	48.14	34.18	19.70	2261.69	-3926.38	3.39
1.2 Dead+1.0 Wind 150 deg - No Ice	64.19	19.87	34.47	3980.63	-2294.01	3.20
0.9 Dead+1.0 Wind 150 deg - No Ice	48.14	19.87	34.47	3927.49	-2263.47	3.18
1.2 Dead+1.0 Wind 180 deg - No Ice	64.19	-0.05	39.46	4598.30	8.39	2.14
0.9 Dead+1.0 Wind 180 deg - No Ice	48.14	-0.05	39.46	4536.88	8.18	2.13
1.2 Dead+1.0 Wind 210 deg - No Ice	64.19	-19.84	34.31	3986.92	2307.59	0.51
0.9 Dead+1.0 Wind 210 deg - No Ice	48.14	-19.84	34.31	3933.66	2276.67	0.50
1.2 Dead+1.0 Wind 240 deg - No Ice	64.19	-34.20	19.78	2306.13	3987.87	-1.26
0.9 Dead+1.0 Wind 240 deg - No Ice	48.14	-34.20	19.78	2275.31	3934.51	-1.26
1.2 Dead+1.0 Wind 270 deg - No Ice	64.19	-39.89	0.05	8.10	4603.81	-2.69
0.9 Dead+1.0 Wind 270 deg - No Ice	48.14	-39.89	0.05	7.97	4542.26	-2.68
1.2 Dead+1.0 Wind 300 deg - No Ice	64.19	-34.18	-19.70	-2292.26	3980.07	-3.40
0.9 Dead+1.0 Wind 300 deg - No Ice	48.14	-34.18	-19.70	-2261.67	3926.84	-3.39
1.2 Dead+1.0 Wind 330 deg - No Ice	64.19	-19.87	-34.47	-3980.55	2294.60	-3.20
0.9 Dead+1.0 Wind 330 deg - No Ice	48.14	-19.87	-34.47	-3927.43	2263.90	-3.19
1.2 Dead+1.0 Ice+1.0 Temp	88.28	-0.00	0.00	0.91	1.24	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	88.28	0.01	-8.58	-1031.32	0.48	-0.45
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	88.28	4.29	-7.43	-893.47	-514.80	-0.14
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	88.28	7.42	-4.30	-515.95	-891.77	0.22
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	88.28	8.57	-0.01	0.10	-1029.42	0.51
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	88.28	7.42	4.29	516.39	-890.87	0.67
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	88.28	4.28	7.43	894.58	-513.23	0.65
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	88.28	-0.01	8.58	1033.34	2.30	0.45
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	88.28	-4.29	7.43	895.49	517.59	0.14
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	88.28	-7.42	4.30	517.97	894.57	-0.22
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	88.28	-8.57	0.01	1.92	1032.21	-0.51
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	88.28	-7.42	-4.29	-514.37	893.65	-0.67
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	88.28	-4.28	-7.43	-892.56	516.01	-0.65
Dead+Wind 0 deg -Service	53.49	0.01	-8.57	-991.65	-1.46	-0.47
Dead+Wind 30 deg -Service	53.49	4.31	-7.45	-859.81	-497.33	-0.12

Load Combination	Vertical	Shear _x	Shear _z	Overtuming Moment, M _x	Overtuming Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 60 deg -Service	53.49	7.42	-4.29	-497.31	-859.72	0.27
Dead+Wind 90 deg -Service	53.49	8.66	-0.01	-1.69	-992.56	0.59
Dead+Wind 120 deg -Service	53.49	7.42	4.28	494.43	-858.03	0.75
Dead+Wind 150 deg -Service	53.49	4.31	7.48	858.55	-494.53	0.70
Dead+Wind 180 deg -Service	53.49	-0.01	8.57	991.76	2.02	0.47
Dead+Wind 210 deg -Service	53.49	-4.31	7.45	859.91	497.90	0.12
Dead+Wind 240 deg -Service	53.49	-7.42	4.29	497.41	860.29	-0.27
Dead+Wind 270 deg -Service	53.49	-8.66	0.01	1.79	993.13	-0.59
Dead+Wind 300 deg -Service	53.49	-7.42	-4.28	-494.32	858.60	-0.75
Dead+Wind 330 deg -Service	53.49	-4.31	-7.48	-858.44	495.10	-0.70

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-53.49	0.00	0.00	53.49	0.00	0.000%
2	0.05	-64.19	-39.46	-0.05	64.19	39.46	0.000%
3	0.05	-48.14	-39.46	-0.05	48.14	39.46	0.000%
4	19.84	-64.19	-34.31	-19.84	64.19	34.31	0.000%
5	19.84	-48.14	-34.31	-19.84	48.14	34.31	0.000%
6	34.20	-64.19	-19.78	-34.20	64.19	19.78	0.000%
7	34.20	-48.14	-19.78	-34.20	48.14	19.78	0.000%
8	39.89	-64.19	-0.05	-39.89	64.19	0.05	0.000%
9	39.89	-48.14	-0.05	-39.89	48.14	0.05	0.000%
10	34.18	-64.19	19.70	-34.18	64.19	-19.70	0.000%
11	34.18	-48.14	19.70	-34.18	48.14	-19.70	0.000%
12	19.87	-64.19	34.47	-19.87	64.19	-34.47	0.000%
13	19.87	-48.14	34.47	-19.87	48.14	-34.47	0.000%
14	-0.05	-64.19	39.46	0.05	64.19	-39.46	0.000%
15	-0.05	-48.14	39.46	0.05	48.14	-39.46	0.000%
16	-19.84	-64.19	34.31	19.84	64.19	-34.31	0.000%
17	-19.84	-48.14	34.31	19.84	48.14	-34.31	0.000%
18	-34.20	-64.19	19.78	34.20	64.19	-19.78	0.000%
19	-34.20	-48.14	19.78	34.20	48.14	-19.78	0.000%
20	-39.89	-64.19	0.05	39.89	64.19	-0.05	0.000%
21	-39.89	-48.14	0.05	39.89	48.14	-0.05	0.000%
22	-34.18	-64.19	-19.70	34.18	64.19	19.70	0.000%
23	-34.18	-48.14	-19.70	34.18	48.14	19.70	0.000%
24	-19.87	-64.19	-34.47	19.87	64.19	34.47	0.000%
25	-19.87	-48.14	-34.47	19.87	48.14	34.47	0.000%
26	0.00	-88.28	0.00	0.00	88.28	-0.00	0.000%
27	0.01	-88.28	-8.58	-0.01	88.28	8.58	0.000%
28	4.29	-88.28	-7.43	-4.29	88.28	7.43	0.000%
29	7.42	-88.28	-4.30	-7.42	88.28	4.30	0.000%
30	8.57	-88.28	-0.01	-8.57	88.28	0.01	0.000%
31	7.42	-88.28	4.29	-7.42	88.28	-4.29	0.000%
32	4.28	-88.28	7.43	-4.28	88.28	-7.43	0.000%
33	-0.01	-88.28	8.58	0.01	88.28	-8.58	0.000%
34	-4.29	-88.28	7.43	4.29	88.28	-7.43	0.000%
35	-7.42	-88.28	4.30	7.42	88.28	-4.30	0.000%
36	-8.57	-88.28	0.01	8.57	88.28	-0.01	0.000%
37	-7.42	-88.28	-4.29	7.42	88.28	4.29	0.000%
38	-4.28	-88.28	-7.43	4.28	88.28	7.43	0.000%
39	0.01	-53.49	-8.57	-0.01	53.49	8.57	0.000%
40	4.31	-53.49	-7.45	-4.31	53.49	7.45	0.000%
41	7.42	-53.49	-4.29	-7.42	53.49	4.29	0.000%
42	8.66	-53.49	-0.01	-8.66	53.49	0.01	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
43	7.42	-53.49	4.28	-7.42	53.49	-4.28	0.000%
44	4.31	-53.49	7.48	-4.31	53.49	-7.48	0.000%
45	-0.01	-53.49	8.57	0.01	53.49	-8.57	0.000%
46	-4.31	-53.49	7.45	4.31	53.49	-7.45	0.000%
47	-7.42	-53.49	4.29	7.42	53.49	-4.29	0.000%
48	-8.66	-53.49	0.01	8.66	53.49	-0.01	0.000%
49	-7.42	-53.49	-4.28	7.42	53.49	4.28	0.000%
50	-4.31	-53.49	-7.48	4.31	53.49	7.48	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	6	0.00000001	0.00010165
3	Yes	5	0.00000001	0.00082740
4	Yes	7	0.00000001	0.00016173
5	Yes	6	0.00000001	0.00091222
6	Yes	7	0.00000001	0.00016023
7	Yes	6	0.00000001	0.00090320
8	Yes	6	0.00000001	0.00013136
9	Yes	6	0.00000001	0.00004229
10	Yes	7	0.00000001	0.00016915
11	Yes	6	0.00000001	0.00095731
12	Yes	7	0.00000001	0.00015612
13	Yes	6	0.00000001	0.00087950
14	Yes	6	0.00000001	0.00013338
15	Yes	6	0.00000001	0.00004247
16	Yes	7	0.00000001	0.00016371
17	Yes	6	0.00000001	0.00092383
18	Yes	7	0.00000001	0.00016532
19	Yes	6	0.00000001	0.00093353
20	Yes	6	0.00000001	0.00016321
21	Yes	6	0.00000001	0.00005225
22	Yes	7	0.00000001	0.00015581
23	Yes	6	0.00000001	0.00087760
24	Yes	7	0.00000001	0.00016868
25	Yes	6	0.00000001	0.00095434
26	Yes	4	0.00000001	0.00025649
27	Yes	7	0.00000001	0.00013734
28	Yes	7	0.00000001	0.00017492
29	Yes	7	0.00000001	0.00017469
30	Yes	7	0.00000001	0.00013708
31	Yes	7	0.00000001	0.00017708
32	Yes	7	0.00000001	0.00017447
33	Yes	7	0.00000001	0.00013810
34	Yes	7	0.00000001	0.00017761
35	Yes	7	0.00000001	0.00017771
36	Yes	7	0.00000001	0.00013807
37	Yes	7	0.00000001	0.00017469
38	Yes	7	0.00000001	0.00017743
39	Yes	5	0.00000001	0.00013526
40	Yes	5	0.00000001	0.00081890
41	Yes	5	0.00000001	0.00080210
42	Yes	5	0.00000001	0.00016093
43	Yes	5	0.00000001	0.00092693
44	Yes	5	0.00000001	0.00075531
45	Yes	5	0.00000001	0.00014130
46	Yes	5	0.00000001	0.00084874
47	Yes	5	0.00000001	0.00086990
48	Yes	5	0.00000001	0.00016743
49	Yes	5	0.00000001	0.00075383
50	Yes	5	0.00000001	0.00092136

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	27.758	47	1.8552	0.0195
L2	145 - 140	25.825	47	1.8314	0.0146
L3	140 - 135	23.936	47	1.7715	0.0105
L4	135 - 133	22.132	47	1.6670	0.0073
L5	133 - 132.75	21.445	47	1.6135	0.0062
L6	132.75 - 127.75	21.361	47	1.6104	0.0062
L7	127.75 - 123.75	19.711	47	1.5402	0.0050
L8	123.75 - 123.5	18.448	47	1.4726	0.0042
L9	123.5 - 118.75	18.371	47	1.4681	0.0042
L10	118.75 - 118.5	16.937	47	1.4149	0.0037
L11	118.5 - 117	16.863	47	1.4127	0.0037
L12	117 - 116.75	16.421	47	1.3990	0.0036
L13	116.75 - 111.75	16.348	47	1.3959	0.0035
L14	111.75 - 106.75	14.921	47	1.3294	0.0031
L15	106.75 - 101.75	13.567	47	1.2570	0.0027
L16	101.75 - 95.1667	12.291	47	1.1786	0.0023
L17	99.5 - 94.5	11.744	47	1.1424	0.0021
L18	94.5 - 93.75	10.568	47	1.0993	0.0020
L19	93.75 - 93.5	10.397	47	1.0884	0.0019
L20	93.5 - 92.75	10.340	47	1.0852	0.0019
L21	92.75 - 92.5	10.170	47	1.0756	0.0019
L22	92.5 - 91.25	10.114	47	1.0729	0.0019
L23	91.25 - 91	9.835	47	1.0595	0.0018
L24	91 - 89.25	9.779	47	1.0568	0.0018
L25	89.25 - 89	9.395	47	1.0381	0.0018
L26	89 - 85.75	9.341	47	1.0356	0.0018
L27	85.75 - 85.5	8.648	47	1.0022	0.0017
L28	85.5 - 80.5	8.595	47	0.9988	0.0017
L29	80.5 - 75.5	7.586	47	0.9288	0.0015
L30	75.5 - 70.5	6.651	47	0.8573	0.0013
L31	70.5 - 68.083	5.791	47	0.7843	0.0011
L32	68.083 - 67.833	5.403	47	0.7494	0.0010
L33	67.833 - 67	5.364	47	0.7460	0.0010
L34	67 - 66.75	5.235	47	0.7347	0.0010
L35	66.75 - 63.25	5.197	47	0.7320	0.0010
L36	63.25 - 63	4.674	47	0.6931	0.0009
L37	63 - 59.5	4.638	47	0.6907	0.0009
L38	59.5 - 59.25	4.144	47	0.6566	0.0009
L39	59.25 - 56.25	4.110	47	0.6543	0.0009
L40	56.25 - 56	3.708	47	0.6260	0.0008
L41	56 - 55.75	3.675	47	0.6233	0.0008
L42	55.75 - 50.75	3.643	47	0.6201	0.0008
L43	50.75 - 44.6667	3.028	47	0.5542	0.0007
L44	50 - 43.6667	2.942	47	0.5443	0.0007
L45	43.6667 - 38.6667	2.247	47	0.4969	0.0006
L46	38.6667 - 34.5	1.760	47	0.4332	0.0005
L47	34.5 - 34.25	1.405	47	0.3805	0.0004
L48	34.25 - 33	1.386	47	0.3780	0.0004
L49	33 - 32.75	1.288	47	0.3658	0.0004
L50	32.75 - 29.75	1.269	47	0.3633	0.0004
L51	29.75 - 29.5	1.050	47	0.3335	0.0004
L52	29.5 - 25	1.033	47	0.3311	0.0004
L53	25 - 24.75	0.741	47	0.2880	0.0003
L54	24.75 - 19.75	0.726	47	0.2850	0.0003
L55	19.75 - 14.75	0.459	47	0.2257	0.0002
L56	14.75 - 14.5	0.254	47	0.1660	0.0002
L57	14.5 - 14.25	0.245	47	0.1631	0.0002
L58	14.25 - 12.25	0.237	47	0.1601	0.0002
L59	12.25 - 12	0.175	47	0.1367	0.0001
L60	12 - 11.5	0.168	47	0.1337	0.0001
L61	11.5 - 11.25	0.154	47	0.1276	0.0001
L62	11.25 - 9.25	0.147	47	0.1250	0.0001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L63	9.25 - 9	0.099	47	0.1034	0.0001
L64	9 - 4.5	0.094	47	0.1006	0.0001
L65	4.5 - 4.25	0.023	47	0.0495	0.0000
L66	4.25 - 3	0.021	47	0.0467	0.0000
L67	3 - 2.75	0.010	47	0.0332	0.0000
L68	2.75 - 0	0.009	47	0.0305	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.0000	KS24019-L1 12Aw/ Mount Pipe	47	27.758	1.8552	0.0195	6709
140.0000	7770.00 w/ Mount Pipe	47	23.936	1.7715	0.0105	3546
128.0000	AIR6449 B41_T-MOBILE	47	19.791	1.5442	0.0051	3731
110.0000	MX08FRO665-21 w/ Mount Pipe	47	14.438	1.3045	0.0029	4025

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	128.252	18	8.5716	0.0899
L2	145 - 140	119.371	18	8.4677	0.0675
L3	140 - 135	110.686	18	8.1965	0.0485
L4	135 - 133	102.382	18	7.7178	0.0340
L5	133 - 132.75	99.216	18	7.4723	0.0288
L6	132.75 - 127.75	98.827	18	7.4583	0.0285
L7	127.75 - 123.75	91.216	18	7.1354	0.0233
L8	123.75 - 123.5	85.391	18	6.8241	0.0195
L9	123.5 - 118.75	85.036	18	6.8034	0.0193
L10	118.75 - 118.5	78.414	18	6.5579	0.0170
L11	118.5 - 117	78.072	18	6.5475	0.0169
L12	117 - 116.75	76.033	18	6.4843	0.0164
L13	116.75 - 111.75	75.695	18	6.4701	0.0163
L14	111.75 - 106.75	69.102	18	6.1629	0.0141
L15	106.75 - 101.75	62.842	18	5.8283	0.0122
L16	101.75 - 95.1667	56.944	18	5.4655	0.0105
L17	99.5 - 94.5	54.414	18	5.2982	0.0098
L18	94.5 - 93.75	48.972	18	5.0986	0.0091
L19	93.75 - 93.5	48.177	18	5.0479	0.0089
L20	93.5 - 92.75	47.914	18	5.0331	0.0089
L21	92.75 - 92.5	47.128	18	4.9886	0.0087
L22	92.5 - 91.25	46.868	18	4.9763	0.0087
L23	91.25 - 91	45.576	18	4.9143	0.0085
L24	91 - 89.25	45.320	18	4.9018	0.0084
L25	89.25 - 89	43.543	18	4.8153	0.0082
L26	89 - 85.75	43.291	18	4.8036	0.0081
L27	85.75 - 85.5	40.081	18	4.6488	0.0077
L28	85.5 - 80.5	39.838	18	4.6330	0.0076
L29	80.5 - 75.5	35.165	18	4.3086	0.0067
L30	75.5 - 70.5	30.833	18	3.9770	0.0059
L31	70.5 - 68.083	26.851	18	3.6387	0.0051
L32	68.083 - 67.833	25.052	18	3.4765	0.0048
L33	67.833 - 67	24.871	18	3.4608	0.0048
L34	67 - 66.75	24.272	18	3.4086	0.0046
L35	66.75 - 63.25	24.094	18	3.3960	0.0046
L36	63.25 - 63	21.673	18	3.2155	0.0043
L37	63 - 59.5	21.505	18	3.2043	0.0042
L38	59.5 - 59.25	19.216	18	3.0462	0.0039
L39	59.25 - 56.25	19.057	18	3.0354	0.0039

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L40	56.25 - 56	17.193	18	2.9040	0.0037
L41	56 - 55.75	17.041	18	2.8918	0.0037
L42	55.75 - 50.75	16.890	18	2.8766	0.0036
L43	50.75 - 44.6667	14.040	18	2.5710	0.0031
L44	50 - 43.6667	13.640	18	2.5250	0.0031
L45	43.6667 - 38.6667	10.421	18	2.3053	0.0027
L46	38.6667 - 34.5	8.164	18	2.0097	0.0023
L47	34.5 - 34.25	6.517	18	1.7649	0.0020
L48	34.25 - 33	6.425	18	1.7534	0.0019
L49	33 - 32.75	5.974	18	1.6968	0.0019
L50	32.75 - 29.75	5.885	18	1.6854	0.0019
L51	29.75 - 29.5	4.870	18	1.5468	0.0017
L52	29.5 - 25	4.790	18	1.5358	0.0017
L53	25 - 24.75	3.437	18	1.3358	0.0014
L54	24.75 - 19.75	3.367	18	1.3221	0.0014
L55	19.75 - 14.75	2.128	18	1.0467	0.0011
L56	14.75 - 14.5	1.177	18	0.7699	0.0008
L57	14.5 - 14.25	1.137	18	0.7563	0.0008
L58	14.25 - 12.25	1.098	18	0.7427	0.0007
L59	12.25 - 12	0.810	18	0.6340	0.0006
L60	12 - 11.5	0.777	18	0.6199	0.0006
L61	11.5 - 11.25	0.713	18	0.5918	0.0006
L62	11.25 - 9.25	0.683	18	0.5794	0.0006
L63	9.25 - 9	0.461	18	0.4794	0.0005
L64	9 - 4.5	0.436	18	0.4664	0.0005
L65	4.5 - 4.25	0.109	18	0.2293	0.0002
L66	4.25 - 3	0.097	18	0.2166	0.0002
L67	3 - 2.75	0.048	18	0.1540	0.0001
L68	2.75 - 0	0.041	18	0.1413	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.0000	KS24019-L112Aw/ Mount Pipe	18	128.252	8.5716	0.0899	1569
140.0000	7770.00 w/ Mount Pipe	18	110.686	8.1965	0.0485	811
128.0000	AIR6449 B41_T-MOBILE	18	91.589	7.1536	0.0235	837
110.0000	MX08FRO665-21 w/ Mount Pipe	18	66.872	6.0480	0.0134	891

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 145 (1)	TP16.9374x16x0.1875	5.0000	0.0000	0.0	10.1127	-2.54	591.60	0.004
L2	145 - 140 (2)	TP17.8748x16.9374x0.1875	5.0000	0.0000	0.0	10.6787	-2.78	624.70	0.004
L3	140 - 135 (3)	TP18.8122x17.8748x0.1875	5.0000	0.0000	0.0	11.2446	-6.72	657.81	0.010
L4	135 - 133 (4)	TP19.1871x18.8122x0.1875	2.0000	0.0000	0.0	11.4710	-6.90	671.05	0.010
L5	133 - 132.75 (5)	TP19.234x19.1871x0.45	0.2500	0.0000	0.0	27.2180	-6.95	1592.25	0.004

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L6	132.75 - 127.75 (6)	TP20.1714x19.234x0.437 5	5.0000	0.0000	0.0	27.800 1	-11.28	1626.31	0.007
L7	127.75 - 123.75 (7)	TP20.9213x20.1714x0.42 5	4.0000	0.0000	0.0	28.049 2	-11.85	1640.88	0.007
L8	123.75 - 123.5 (8)	TP20.9681x20.9213x0.42 5	0.2500	0.0000	0.0	28.113 3	-11.90	1644.63	0.007
L9	123.5 - 118.75 (9)	TP21.8587x20.9681x0.76 25	4.7500	0.0000	0.0	51.796 4	-12.89	3030.09	0.004
L10	118.75 - 118.5 (10)	TP21.9055x21.8587x1.03 75	0.2500	0.0000	0.0	69.714 9	-12.97	4078.32	0.003
L11	118.5 - 117 (11)	TP22.1868x21.9055x1.01 25	1.5000	0.0000	0.0	69.033 4	-13.36	4038.45	0.003
L12	117 - 116.75 (12)	TP22.2336x22.1868x0.75 9	0.2500	0.0000	0.0	51.882 9	-13.42	3035.15	0.004
L13	116.75 - 111.75 (13)	TP23.171x22.2336x0.712 5	5.0000	0.0000	0.0	51.525 4	-14.51	3014.24	0.005
L14	111.75 - 106.75 (14)	TP24.1084x23.171x0.687 5	5.0000	0.0000	0.0	51.848 0	-18.53	3033.11	0.006
L15	106.75 - 101.75 (15)	TP25.0458x24.1084x0.66 25	5.0000	0.0000	0.0	52.015 6	-19.72	3042.91	0.006
L16	101.75 - 95.1667 (16)	TP26.28x25.0458x0.6625 5	6.5833	0.0000	0.0	52.915 5	-20.26	3095.56	0.007
L17	95.1667 - 94.5 (17)	TP26.0307x25.0926x0.78 75	5.0000	0.0000	0.0	64.010 4	-22.45	3744.61	0.006
L18	94.5 - 93.75 (18)	TP26.1714x26.0307x0.78 75	0.7500	0.0000	0.0	64.367 2	-22.67	3765.48	0.006
L19	93.75 - 93.5 (19)	TP26.2183x26.1714x0.91 25	0.2500	0.0000	0.0	74.354 7	-22.76	4349.75	0.005
L20	93.5 - 92.75 (20)	TP26.359x26.2183x0.912 5	0.7500	0.0000	0.0	74.768 1	-22.99	4373.94	0.005
L21	92.75 - 92.5 (21)	TP26.4059x26.359x1.137 5	0.2500	0.0000	0.0	92.551 8	-23.09	5414.28	0.004
L22	92.5 - 91.25 (22)	TP26.6404x26.4059x1.11 25	1.2500	0.0000	0.0	91.447 3	-23.54	5349.67	0.004
L23	91.25 - 91 (23)	TP26.6873x26.6404x1.11 25	0.2500	0.0000	0.0	91.615 4	-23.64	5359.50	0.004
L24	91 - 89.25 (24)	TP27.0156x26.6873x1.11 25	1.7500	0.0000	0.0	92.791 5	-24.27	5428.30	0.004
L25	89.25 - 89 (25)	TP27.0625x27.0156x1.21 25	0.2500	0.0000	0.0	100.92 50	-24.39	5904.11	0.004
L26	89 - 85.75 (26)	TP27.6723x27.0625x1.18 75	3.2500	0.0000	0.0	101.27 10	-25.68	5924.36	0.004
L27	85.75 - 85.5 (27)	TP27.7192x27.6723x0.86 25	0.2500	0.0000	0.0	74.587 7	-25.77	4363.38	0.006
L28	85.5 - 80.5 (28)	TP28.6572x27.7192x0.83 75	5.0000	0.0000	0.0	75.022 9	-27.37	4388.84	0.006
L29	80.5 - 75.5 (29)	TP29.5953x28.6572x0.81 25	5.0000	0.0000	0.0	75.303 0	-29.02	4405.23	0.007
L30	75.5 - 70.5 (30)	TP30.5334x29.5953x0.78 75	5.0000	0.0000	0.0	75.428 1	-30.69	4412.54	0.007
L31	70.5 - 68.083 (31)	TP30.9868x30.5334x0.78 75	2.4170	0.0000	0.0	76.577 9	-31.50	4479.81	0.007
L32	68.083 - 67.833 (32)	TP31.0337x30.9868x0.83 75	0.2500	0.0000	0.0	81.431 7	-31.61	4763.75	0.007
L33	67.833 - 67 (33)	TP31.19x31.0337x0.8375 75	0.8330	0.0000	0.0	81.853 1	-31.90	4788.41	0.007
L34	67 - 66.75 (34)	TP31.2369x31.19x1.0625 40	0.2500	0.0000	0.0	103.23 40	-32.02	6039.20	0.005
L35	66.75 - 63.25 (35)	TP31.8935x31.2369x1.03 75	3.5000	0.0000	0.0	103.08 20	-33.49	6030.32	0.006
L36	63.25 - 63 (36)	TP31.9404x31.8935x1.21 25	0.2500	0.0000	0.0	119.97 00	-33.63	7018.22	0.005
L37	63 - 59.5 (37)	TP32.5971x31.9404x1.18 75	3.5000	0.0000	0.0	120.10 20	-35.29	7025.99	0.005
L38	59.5 - 59.25 (38)	TP32.644x32.5971x1.237 5	0.2500	0.0000	0.0	125.14 70	-35.43	7321.10	0.005
L39	59.25 - 56.25 (39)	TP33.2068x32.644x1.212 5	3.0000	0.0000	0.0	124.91 40	-36.91	7307.46	0.005
L40	56.25 - 56	TP33.2537x33.2068x1.06 5	0.2500	0.0000	0.0	110.13 40	-37.04	6442.85	0.006

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L41	(40) 56 - 55.75	25 TP33.3006x33.2537x0.83	0.2500	0.0000	0.0	40 87.545	-37.13	5121.38	0.007
L42	(41) 55.75 - 50.75	75 TP34.2387x33.3006x0.82	5.0000	0.0000	0.0	0 88.763	-39.04	5192.66	0.008
L43	(42) 50.75 - 44.6667	5 TP35.38x34.2387x0.8125	6.0833	0.0000	0.0	5 87.819	-39.33	5137.44	0.008
L44	(43) 44.6667 - 43.6667	(44) TP34.942x33.7544x0.875	6.3333	0.0000	0.0	4 95.983	-43.67	5615.05	0.008
L45	(44) 43.6667 - 38.6667	(45) TP35.8795x34.942x0.862	5.0000	0.0000	0.0	7 97.251	-45.78	5689.19	0.008
L46	(45) 38.6667 - 34.5	(46) TP36.6608x35.8795x0.85	4.1667	0.0000	0.0	1 98.014	-47.55	5733.84	0.008
L47	(46) 34.5 - 34.25	(47) TP36.7077x36.6608x1.1	0.2500	0.0000	0.0	3 126.12	-47.70	7378.17	0.006
L48	(47) 34.25 - 33	(48) TP36.9421x36.7077x1.1	1.2500	0.0000	0.0	30 126.95	-48.34	7426.74	0.007
L49	(48) 33 - 32.75	(49) TP36.989x36.9421x1.1	0.2500	0.0000	0.0	30 127.11	-48.48	7436.45	0.007
L50	(49) 32.75 - 29.75	(50) TP37.5515x36.989x1.075	3.0000	0.0000	0.0	90 126.26	-50.04	7386.41	0.007
L51	(50) 29.75 - 29.5	(51) TP37.5984x37.5515x1.12	0.2500	0.0000	0.0	30 132.12	-50.19	7729.31	0.006
L52	(51) 29.5 - 25	(52) TP38.4422x37.5984x1.1	4.5000	0.0000	0.0	50 132.26	-52.61	7737.57	0.007
L53	(52) 25 - 24.75	(53) TP38.4891x38.4422x0.86	0.2500	0.0000	0.0	60 104.49	-52.74	6113.16	0.009
L54	(53) 24.75 - 19.75	(54) TP39.4266x38.4891x0.85	5.0000	0.0000	0.0	80 105.58	-55.00	6176.68	0.009
L55	(54) 19.75 - 14.75	(55) TP40.3642x39.4266x0.82	5.0000	0.0000	0.0	40 105.03	-57.30	6144.60	0.009
L56	(55) 14.75 - 14.5	(56) TP40.4111x40.3642x0.82	0.2500	0.0000	0.0	5 105.16	-57.43	6151.88	0.009
L57	(56) 14.5 - 14.25	(57) TP40.458x40.4111x0.825	0.2500	0.0000	0.0	5 105.28	-57.55	6159.17	0.009
L58	(57) 14.25 - 12.25	(58) TP40.833x40.458x0.825	2.0000	0.0000	0.0	50 105.78	-58.04	6188.31	0.009
L59	(58) 12.25 - 12	(59) TP40.8799x40.833x0.787	0.2500	0.0000	0.0	30 101.54	-58.49	5940.40	0.010
L60	(59) 12 - 11.5	(60) TP40.9736x40.8799x0.78	0.5000	0.0000	0.0	50 101.66	-58.62	5947.36	0.010
L61	(60) 11.5 - 11.25	(61) TP41.0205x40.9736x0.9	0.2500	0.0000	0.0	75 116.13	-58.84	6793.80	0.009
L62	(61) 11.25 - 9.25	(62) TP41.3955x41.0205x0.88	2.0000	0.0000	0.0	30 114.69	-58.98	6709.37	0.009
L63	(62) 9.25 - 9	(63) TP41.4424x41.3955x0.85	0.2500	0.0000	0.0	00 110.97	-59.95	6491.93	0.009
L64	(63) 9 - 4.5	(64) TP42.2862x41.4424x0.82	4.5000	0.0000	0.0	30 107.90	-60.08	6312.16	0.010
L65	(64) 4.5 - 4.25	(65) TP42.3331x42.2862x0.85	0.2500	0.0000	0.0	00 113.41	-62.11	6634.54	0.009
L66	(65) 4.25 - 3	(66) TP42.5675x42.3331x0.85	1.2500	0.0000	0.0	10 113.53	-62.25	6642.04	0.009
L67	(66) 3 - 2.75	(67) TP42.6143x42.5675x0.83	0.2500	0.0000	0.0	90 112.53	-62.83	6583.31	0.010
L68	(67) 2.75 - 0	(68) TP43.13x42.6143x0.825	2.7500	0.0000	0.0	50 111.01	-62.96	6494.28	0.010
						30			

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M _{uy} kip-ft	φM _{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L1	150 - 145 (1)	TP16.9374x16x0.1875	49.93	246.96	0.202	0.00	246.96	0.000
L2	145 - 140 (2)	TP17.8748x16.9374x0.18	101.55	270.48	0.375	0.00	270.48	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L3	140 - 135 (3)	TP18.8122x17.8748x0.18 75	202.67	294.47	0.688	0.00	294.47	0.000
L4	135 - 133 (4)	TP19.1871x18.8122x0.18 75	240.27	304.18	0.790	0.00	304.18	0.000
L5	133 - 132.75 (5)	TP19.234x19.1871x0.45 75	244.99	755.73	0.324	0.00	755.73	0.000
L6	132.75 - 127.75 (6)	TP20.1714x19.234x0.437 5	341.75	812.34	0.421	0.00	812.34	0.000
L7	127.75 - 123.75 (7)	TP20.9213x20.1714x0.42 5	438.12	852.48	0.514	0.00	852.48	0.000
L8	123.75 - 123.5 (8)	TP20.9681x20.9213x0.42 5	444.19	856.42	0.519	0.00	856.42	0.000
L9	123.5 - 118.75 (9)	TP21.8587x20.9681x0.76 25	560.68	1596.19	0.351	0.00	1596.19	0.000
L10	118.75 - 118.5 (10)	TP21.9055x21.8587x1.03 75	566.88	2097.67	0.270	0.00	2097.67	0.000
L11	118.5 - 117 (11)	TP22.1868x21.9055x1.01 25	604.20	2111.46	0.286	0.00	2111.46	0.000
L12	117 - 116.75 (12)	TP22.2336x22.1868x0.75 5	610.44	1630.16	0.374	0.00	1630.16	0.000
L13	116.75 - 111.75 (13)	TP23.171x22.2336x0.712 5	736.63	1697.62	0.434	0.00	1697.62	0.000
L14	111.75 - 106.75 (14)	TP24.1084x23.171x0.687 5	876.51	1785.55	0.491	0.00	1785.55	0.000
L15	106.75 - 101.75 (15)	TP25.0458x24.1084x0.66 25	1024.93	1868.89	0.548	0.00	1868.89	0.000
L16	101.75 - 95.1667 (16)	TP26.28x25.0458x0.6625 75	1092.51	1934.99	0.565	0.00	1934.99	0.000
L17	95.1667 - 94.5 (17)	TP26.0307x25.0926x0.78 75	1244.85	2371.67	0.525	0.00	2371.67	0.000
L18	94.5 - 93.75 (18)	TP26.1714x26.0307x0.78 75	1267.96	2398.58	0.529	0.00	2398.58	0.000
L19	93.75 - 93.5 (19)	TP26.2183x26.1714x0.91 25	1275.68	2748.81	0.464	0.00	2748.81	0.000
L20	93.5 - 92.75 (20)	TP26.359x26.2183x0.912 5	1298.87	2780.00	0.467	0.00	2780.00	0.000
L21	92.75 - 92.5 (21)	TP26.4059x26.359x1.137 5	1306.61	3387.20	0.386	0.00	3387.20	0.000
L22	92.5 - 91.25 (22)	TP26.6404x26.4059x1.11 25	1345.43	3385.81	0.397	0.00	3385.81	0.000
L23	91.25 - 91 (23)	TP26.6873x26.6404x1.11 25	1353.22	3398.52	0.398	0.00	3398.52	0.000
L24	91 - 89.25 (24)	TP27.0156x26.6873x1.11 25	1407.92	3488.18	0.404	0.00	3488.18	0.000
L25	89.25 - 89 (25)	TP27.0625x27.0156x1.21 25	1415.77	3771.84	0.375	0.00	3771.84	0.000
L26	89 - 85.75 (26)	TP27.6723x27.0625x1.18 75	1518.39	3885.39	0.391	0.00	3885.39	0.000
L27	85.75 - 85.5 (27)	TP27.7192x27.6723x0.86 25	1526.34	2937.60	0.520	0.00	2937.60	0.000
L28	85.5 - 80.5 (28)	TP28.6572x27.7192x0.83 75	1686.59	3066.67	0.550	0.00	3066.67	0.000
L29	80.5 - 75.5 (29)	TP29.5953x28.6572x0.81 25	1849.38	3190.48	0.580	0.00	3190.48	0.000
L30	75.5 - 70.5 (30)	TP30.5334x29.5953x0.78 75	2014.64	3308.36	0.609	0.00	3308.36	0.000
L31	70.5 - 68.083 (31)	TP30.9868x30.5334x0.78 75	2095.42	3411.32	0.614	0.00	3411.32	0.000
L32	68.083 - 67.833 (32)	TP31.0337x30.9868x0.83 75	2103.80	3621.31	0.581	0.00	3621.31	0.000
L33	67.833 - 67 (33)	TP31.19x31.0337x0.8375 75	2131.79	3659.40	0.583	0.00	3659.40	0.000
L34	67 - 66.75 (34)	TP31.2369x31.19x1.0625 75	2140.21	4554.43	0.470	0.00	4554.43	0.000
L35	66.75 - 63.25 (35)	TP31.8935x31.2369x1.03 75	2258.72	4657.62	0.485	0.00	4657.62	0.000
L36	63.25 - 63 (36)	TP31.9404x31.8935x1.21 25	2267.24	5367.83	0.422	0.00	5367.83	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L37	63 - 59.5 (37)	TP32.5971x31.9404x1.1875	2387.24	5501.73	0.434	0.00	5501.73	0.000
L38	59.5 - 59.25 (38)	TP32.644x32.5971x1.2375	2395.87	5723.44	0.419	0.00	5723.44	0.000
L39	59.25 - 56.25 (39)	TP33.2068x32.644x1.2125	2499.93	5828.15	0.429	0.00	5828.15	0.000
L40	56.25 - 56 (40)	TP33.2537x33.2068x1.0625	2508.66	5194.68	0.483	0.00	5194.68	0.000
L41	56 - 55.75 (41)	TP33.3006x33.2537x0.8375	2517.38	4193.35	0.600	0.00	4193.35	0.000
L42	55.75 - 50.75 (42)	TP34.2387x33.3006x0.825	2693.13	4380.94	0.615	0.00	4380.94	0.000
L43	50.75 - 44.6667 (43)	TP35.38x34.2387x0.8125	2719.71	4356.28	0.624	0.00	4356.28	0.000
L44	44.6667 - 43.6667 (44)	TP34.942x33.7544x0.875	2946.87	4825.23	0.611	0.00	4825.23	0.000
L45	43.6667 - 38.6667 (45)	TP35.8795x34.942x0.8625	3129.17	5030.46	0.622	0.00	5030.46	0.000
L46	38.6667 - 34.5 (46)	TP36.6608x35.8795x0.85	3282.71	5189.40	0.633	0.00	5189.40	0.000
L47	34.5 - 34.25 (47)	TP36.7077x36.6608x1.1	3291.97	6593.63	0.499	0.00	6593.63	0.000
L48	34.25 - 33 (48)	TP36.9421x36.7077x1.1	3338.36	6682.03	0.500	0.00	6682.03	0.000
L49	33 - 32.75 (49)	TP36.989x36.9421x1.1	3347.65	6699.79	0.500	0.00	6699.79	0.000
L50	32.75 - 29.75 (50)	TP37.5515x36.989x1.075	3459.64	6771.40	0.511	0.00	6771.40	0.000
L51	29.75 - 29.5 (51)	TP37.5984x37.5515x1.125	3469.01	7075.70	0.490	0.00	7075.70	0.000
L52	29.5 - 25 (52)	TP38.4422x37.5984x1.1	3638.63	7261.75	0.501	0.00	7261.75	0.000
L53	25 - 24.75 (53)	TP38.4891x38.4422x0.8625	3648.10	5817.86	0.627	0.00	5817.86	0.000
L54	24.75 - 19.75 (54)	TP39.4266x38.4891x0.85	3838.57	6031.97	0.636	0.00	6031.97	0.000
L55	19.75 - 14.75 (55)	TP40.3642x39.4266x0.825	4030.73	6157.42	0.655	0.00	6157.42	0.000
L56	14.75 - 14.5 (56)	TP40.4111x40.3642x0.825	4040.38	6172.17	0.655	0.00	6172.17	0.000
L57	14.5 - 14.25 (57)	TP40.458x40.4111x0.825	4050.03	6186.95	0.655	0.00	6186.95	0.000
L58	14.25 - 12.25 (58)	TP40.833x40.458x0.825	4088.69	6246.23	0.655	0.00	6246.23	0.000
L59	12.25 - 12 (59)	TP40.8799x40.833x0.7875	4127.40	6036.11	0.684	0.00	6036.11	0.000
L60	12 - 11.5 (60)	TP40.9736x40.8799x0.7875	4137.09	6050.39	0.684	0.00	6050.39	0.000
L61	11.5 - 11.25 (61)	TP41.0205x40.9736x0.9	4156.48	6889.23	0.603	0.00	6889.23	0.000
L62	11.25 - 9.25 (62)	TP41.3955x41.0205x0.8875	4166.18	6816.00	0.611	0.00	6816.00	0.000
L63	9.25 - 9 (63)	TP41.4424x41.3955x0.85	4243.92	6670.39	0.636	0.00	6670.39	0.000
L64	9 - 4.5 (64)	TP42.2862x41.4424x0.825	4253.65	6501.33	0.654	0.00	6501.33	0.000
L65	4.5 - 4.25 (65)	TP42.3331x42.2862x0.85	4429.52	6969.75	0.636	0.00	6969.75	0.000
L66	4.25 - 3 (66)	TP42.5675x42.3331x0.85	4439.33	6985.68	0.635	0.00	6985.68	0.000
L67	3 - 2.75 (67)	TP42.6143x42.5675x0.8375	4488.43	6968.00	0.644	0.00	6968.00	0.000
L68	2.75 - 0 (68)	TP43.13x42.6143x0.825	4498.26	6885.76	0.653	0.00	6885.76	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 $\frac{T_u}{\phi T_n}$
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Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u ϕT_n
L1	150 - 145 (1)	TP16.9374x16x0.1875	10.13	177.48	0.057	1.95	261.49	0.007
L2	145 - 140 (2)	TP17.8748x16.9374x0.1875	10.53	187.41	0.056	1.95	291.58	0.007
L3	140 - 135 (3)	TP18.8122x17.8748x0.1875	18.73	197.34	0.095	1.50	323.30	0.005
L4	135 - 133 (4)	TP19.1871x18.8122x0.1875	18.88	201.32	0.094	1.50	336.45	0.004
L5	133 - 132.75 (5)	TP19.234x19.1871x0.45	18.90	477.68	0.040	1.50	789.26	0.002
L6	132.75 - 127.75 (6)	TP20.1714x19.234x0.4375	23.93	487.89	0.049	1.50	846.91	0.002
L7	127.75 - 123.75 (7)	TP20.9213x20.1714x0.425	24.27	492.26	0.049	1.50	887.51	0.002
L8	123.75 - 123.5 (8)	TP20.9681x20.9213x0.425	24.29	493.39	0.049	1.50	891.57	0.002
L9	123.5 - 118.75 (9)	TP21.8587x20.9681x0.7625	24.77	909.03	0.027	1.50	1686.87	0.001
L10	118.75 - 118.5 (10)	TP21.9055x21.8587x1.0375	24.80	1223.50	0.020	1.50	2245.87	0.001
L11	118.5 - 117 (11)	TP22.1868x21.9055x1.0125	24.97	1211.54	0.021	1.50	2256.54	0.001
L12	117 - 116.75 (12)	TP22.2336x22.1868x0.75	24.99	910.55	0.027	1.50	1720.72	0.001
L13	116.75 - 111.75 (13)	TP23.171x22.2336x0.7125	25.50	904.27	0.028	1.50	1786.40	0.001
L14	111.75 - 106.75 (14)	TP24.1084x23.171x0.6875	29.46	909.93	0.032	1.27	1874.62	0.001
L15	106.75 - 101.75 (15)	TP25.0458x24.1084x0.6625	29.94	912.87	0.033	1.27	1957.96	0.001
L16	101.75 - 95.1667 (16)	TP26.28x25.0458x0.6625	30.16	928.67	0.032	1.27	2026.28	0.001
L17	95.1667 - 94.5 (17)	TP26.0307x25.0926x0.7875	30.79	1123.38	0.027	1.27	2494.43	0.001
L18	94.5 - 93.75 (18)	TP26.1714x26.0307x0.7875	30.86	1129.64	0.027	1.27	2522.32	0.001
L19	93.75 - 93.5 (19)	TP26.2183x26.1714x0.9125	30.88	1304.93	0.024	1.27	2904.72	0.000
L20	93.5 - 92.75 (20)	TP26.359x26.2183x0.9125	30.97	1312.18	0.024	1.27	2937.12	0.000
L21	92.75 - 92.5 (21)	TP26.4059x26.359x1.1375	30.99	1624.28	0.019	1.27	3610.27	0.000
L22	92.5 - 91.25 (22)	TP26.6404x26.4059x1.1125	31.14	1604.90	0.019	1.27	3603.82	0.000
L23	91.25 - 91 (23)	TP26.6873x26.6404x1.1125	31.16	1607.85	0.019	1.27	3617.07	0.000
L24	91 - 89.25 (24)	TP27.0156x26.6873x1.1125	31.38	1628.49	0.019	1.27	3710.54	0.000
L25	89.25 - 89 (25)	TP27.0625x27.0156x1.2125	31.39	1771.23	0.018	1.27	4027.51	0.000
L26	89 - 85.75 (26)	TP27.6723x27.0625x1.1875	31.78	1777.31	0.018	1.27	4140.56	0.000
L27	85.75 - 85.5 (27)	TP27.7192x27.6723x0.8625	31.80	1309.01	0.024	1.27	3092.41	0.000
L28	85.5 - 80.5 (28)	TP28.6572x27.7192x0.8375	32.32	1316.65	0.025	1.27	3221.98	0.000
L29	80.5 - 75.5 (29)	TP29.5953x28.6572x0.8125	32.82	1321.57	0.025	1.26	3345.97	0.000
L30	75.5 - 70.5 (30)	TP30.5334x29.5953x0.7875	33.32	1323.76	0.025	1.26	3463.67	0.000
L31	70.5 - 68.083 (31)	TP30.9868x30.5334x0.7875	33.56	1343.94	0.025	1.26	3570.07	0.000
L32	68.083 - 67.833 (32)	TP31.0337x30.9868x0.8375	33.57	1429.13	0.023	1.26	3795.97	0.000
L33	67.833 - 67 (33)	TP31.19x31.0337x0.8375	33.66	1436.52	0.023	1.26	3835.37	0.000
L34	67 - 66.75 (34)	TP31.2369x31.19x1.0625	33.68	1811.76	0.019	1.26	4808.82	0.000
L35	66.75 - 63.25 (35)	TP31.8935x31.2369x1.0375	34.07	1809.10	0.019	1.26	4910.23	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u ϕT_n
L36	63.25 - 63 (36)	TP31.9404x31.8935x1.21 25	34.09	2105.47	0.016	1.26	5690.91	0.000
L37	63 - 59.5 (37)	TP32.5971x31.9404x1.18 75	34.50	2107.80	0.016	1.26	5823.59	0.000
L38	59.5 - 59.25 (38)	TP32.644x32.5971x1.237 5	34.52	2196.33	0.016	1.26	6067.60	0.000
L39	59.25 - 56.25 (39)	TP33.2068x32.644x1.212 5	34.88	2192.24	0.016	1.26	6169.65	0.000
L40	56.25 - 56 (40)	TP33.2537x33.2068x1.06 25	34.89	1932.86	0.018	1.26	5473.15	0.000
L41	56 - 55.75 (41)	TP33.3006x33.2537x0.83 75	34.92	1536.41	0.023	1.26	4387.32	0.000
L42	55.75 - 50.75 (42)	TP34.2387x33.3006x0.82 5	35.41	1557.80	0.023	1.26	4578.63	0.000
L43	50.75 - 44.6667 (43)	TP35.38x34.2387x0.8125	35.48	1541.23	0.023	1.26	4550.71	0.000
L44	44.6667 - 43.6667 (44)	TP34.942x33.7544x0.875	36.26	1684.51	0.022	1.26	5047.87	0.000
L45	43.6667 - 38.6667 (45)	TP35.8795x34.942x0.862 5	36.70	1706.76	0.022	1.26	5257.15	0.000
L46	38.6667 - 34.5 (46)	TP36.6608x35.8795x0.85	37.05	1720.15	0.022	1.26	5418.52	0.000
L47	34.5 - 34.25 (47)	TP36.7077x36.6608x1.1	37.05	2213.45	0.017	1.26	6932.88	0.000
L48	34.25 - 33 (48)	TP36.9421x36.7077x1.1	37.19	2228.02	0.017	1.26	7024.46	0.000
L49	33 - 32.75 (49)	TP36.989x36.9421x1.1	37.20	2230.93	0.017	1.26	7042.84	0.000
L50	32.75 - 29.75 (50)	TP37.5515x36.989x1.075	37.49	2215.92	0.017	1.26	7109.97	0.000
L51	29.75 - 29.5 (51)	TP37.5984x37.5515x1.12 5	37.50	2318.79	0.016	1.26	7439.40	0.000
L52	29.5 - 25 (52)	TP38.4422x37.5984x1.1	37.92	2321.27	0.016	1.26	7624.75	0.000
L53	25 - 24.75 (53)	TP38.4891x38.4422x0.86 25	37.92	1833.95	0.021	1.26	6069.90	0.000
L54	24.75 - 19.75 (54)	TP39.4266x38.4891x0.85	38.30	1853.00	0.021	1.26	6287.82	0.000
L55	19.75 - 14.75 (55)	TP40.3642x39.4266x0.82 5	38.62	1843.38	0.021	1.26	6411.25	0.000
L56	14.75 - 14.5 (56)	TP40.4111x40.3642x0.82 5	38.61	1845.57	0.021	1.26	6426.46	0.000
L57	14.5 - 14.25 (57)	TP40.458x40.4111x0.825	38.63	1847.75	0.021	1.26	6441.69	0.000
L58	14.25 - 12.25 (58)	TP40.833x40.458x0.825	38.77	1865.24	0.021	1.26	6502.78	0.000
L59	12.25 - 12 (59)	TP40.8799x40.833x0.787 5	38.77	1784.21	0.022	1.26	6277.55	0.000
L60	12 - 11.5 (60)	TP40.9736x40.8799x0.78 75	38.80	1788.38	0.022	1.26	6292.26	0.000
L61	11.5 - 11.25 (61)	TP41.0205x40.9736x0.9	38.81	2040.52	0.019	1.26	7184.43	0.000
L62	11.25 - 9.25 (62)	TP41.3955x41.0205x0.88 75	38.89	2022.21	0.019	1.26	7105.66	0.000
L63	9.25 - 9 (63)	TP41.4424x41.3955x0.85	38.96	1949.83	0.020	1.26	6946.04	0.000
L64	9 - 4.5 (64)	TP42.2862x41.4424x0.82 5	39.05	1903.48	0.021	1.26	6765.67	0.000
L65	4.5 - 4.25 (65)	TP42.3331x42.2862x0.85	39.24	1992.61	0.020	1.26	7254.57	0.000
L66	4.25 - 3 (66)	TP42.5675x42.3331x0.85	39.35	2003.87	0.020	1.26	7270.99	0.000
L67	3 - 2.75 (67)	TP42.6143x42.5675x0.83 75	39.34	1977.21	0.020	1.26	7249.59	0.000
L68	2.75 - 0 (68)	TP43.13x42.6143x0.825	39.46	1960.31	0.020	1.26	7161.72	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u ϕP_n	M_{ux} ϕM_{nx}	M_{uy} ϕM_{ny}	V_u ϕV_n	T_u ϕT_n			
L1	150 - 145 (1)	0.004	0.202	0.000	0.057	0.007	0.211	1.050	4.8.2
L2	145 - 140 (2)	0.004	0.375	0.000	0.056	0.007	0.384	1.050	4.8.2
L3	140 - 135 (3)	0.010	0.688	0.000	0.095	0.005	0.708	1.050	4.8.2
L4	135 - 133 (4)	0.010	0.790	0.000	0.094	0.004	0.810	1.050	4.8.2
L5	133 - 132.75 (5)	0.004	0.324	0.000	0.040	0.002	0.330	1.050	4.8.2
L6	132.75 - 127.75 (6)	0.007	0.421	0.000	0.049	0.002	0.430	1.050	4.8.2
L7	127.75 - 123.75 (7)	0.007	0.514	0.000	0.049	0.002	0.524	1.050	4.8.2
L8	123.75 - 123.5 (8)	0.007	0.519	0.000	0.049	0.002	0.528	1.050	4.8.2
L9	123.5 - 118.75 (9)	0.004	0.351	0.000	0.027	0.001	0.356	1.050	4.8.2
L10	118.75 - 118.5 (10)	0.003	0.270	0.000	0.020	0.001	0.274	1.050	4.8.2
L11	118.5 - 117 (11)	0.003	0.286	0.000	0.021	0.001	0.290	1.050	4.8.2
L12	117 - 116.75 (12)	0.004	0.374	0.000	0.027	0.001	0.380	1.050	4.8.2
L13	116.75 - 111.75 (13)	0.005	0.434	0.000	0.028	0.001	0.440	1.050	4.8.2
L14	111.75 - 106.75 (14)	0.006	0.491	0.000	0.032	0.001	0.498	1.050	4.8.2
L15	106.75 - 101.75 (15)	0.006	0.548	0.000	0.033	0.001	0.556	1.050	4.8.2
L16	101.75 - 95.1667 (16)	0.007	0.565	0.000	0.032	0.001	0.572	1.050	4.8.2
L17	95.1667 - 94.5 (17)	0.006	0.525	0.000	0.027	0.001	0.532	1.050	4.8.2
L18	94.5 - 93.75 (18)	0.006	0.529	0.000	0.027	0.001	0.535	1.050	4.8.2
L19	93.75 - 93.5 (19)	0.005	0.464	0.000	0.024	0.000	0.470	1.050	4.8.2
L20	93.5 - 92.75 (20)	0.005	0.467	0.000	0.024	0.000	0.473	1.050	4.8.2
L21	92.75 - 92.5 (21)	0.004	0.386	0.000	0.019	0.000	0.390	1.050	4.8.2
L22	92.5 - 91.25 (22)	0.004	0.397	0.000	0.019	0.000	0.402	1.050	4.8.2
L23	91.25 - 91 (23)	0.004	0.398	0.000	0.019	0.000	0.403	1.050	4.8.2
L24	91 - 89.25 (24)	0.004	0.404	0.000	0.019	0.000	0.408	1.050	4.8.2
L25	89.25 - 89 (25)	0.004	0.375	0.000	0.018	0.000	0.380	1.050	4.8.2
L26	89 - 85.75 (26)	0.004	0.391	0.000	0.018	0.000	0.395	1.050	4.8.2
L27	85.75 - 85.5 (27)	0.006	0.520	0.000	0.024	0.000	0.526	1.050	4.8.2
L28	85.5 - 80.5 (28)	0.006	0.550	0.000	0.025	0.000	0.557	1.050	4.8.2
L29	80.5 - 75.5 (29)	0.007	0.580	0.000	0.025	0.000	0.587	1.050	4.8.2
L30	75.5 - 70.5 (30)	0.007	0.609	0.000	0.025	0.000	0.617	1.050	4.8.2
L31	70.5 - 68.083 (31)	0.007	0.614	0.000	0.025	0.000	0.622	1.050	4.8.2
L32	68.083 - 67.833 (32)	0.007	0.581	0.000	0.023	0.000	0.588	1.050	4.8.2
L33	67.833 - 67 (33)	0.007	0.583	0.000	0.023	0.000	0.590	1.050	4.8.2
L34	67 - 66.75 (34)	0.005	0.470	0.000	0.019	0.000	0.476	1.050	4.8.2
L35	66.75 - 63.25 (35)	0.006	0.485	0.000	0.019	0.000	0.491	1.050	4.8.2
L36	63.25 - 63 (36)	0.005	0.422	0.000	0.016	0.000	0.427	1.050	4.8.2
L37	63 - 59.5 (37)	0.005	0.434	0.000	0.016	0.000	0.439	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u ϕP_n	M_{ux} ϕM_{nx}	M_{uy} ϕM_{ny}	V_u ϕV_n	T_u ϕT_n			
L38	59.5 - 59.25 (38)	0.005	0.419	0.000	0.016	0.000	0.424	1.050	4.8.2
L39	59.25 - 56.25 (39)	0.005	0.429	0.000	0.016	0.000	0.434	1.050	4.8.2
L40	56.25 - 56 (40)	0.006	0.483	0.000	0.018	0.000	0.489	1.050	4.8.2
L41	56 - 55.75 (41)	0.007	0.600	0.000	0.023	0.000	0.608	1.050	4.8.2
L42	55.75 - 50.75 (42)	0.008	0.615	0.000	0.023	0.000	0.623	1.050	4.8.2
L43	50.75 - 44.6667 (43)	0.008	0.624	0.000	0.023	0.000	0.633	1.050	4.8.2
L44	44.6667 - 43.6667 (44)	0.008	0.611	0.000	0.022	0.000	0.619	1.050	4.8.2
L45	43.6667 - 38.6667 (45)	0.008	0.622	0.000	0.022	0.000	0.631	1.050	4.8.2
L46	38.6667 - 34.5 (46)	0.008	0.633	0.000	0.022	0.000	0.641	1.050	4.8.2
L47	34.5 - 34.25 (47)	0.006	0.499	0.000	0.017	0.000	0.506	1.050	4.8.2
L48	34.25 - 33 (48)	0.007	0.500	0.000	0.017	0.000	0.506	1.050	4.8.2
L49	33 - 32.75 (49)	0.007	0.500	0.000	0.017	0.000	0.506	1.050	4.8.2
L50	32.75 - 29.75 (50)	0.007	0.511	0.000	0.017	0.000	0.518	1.050	4.8.2
L51	29.75 - 29.5 (51)	0.006	0.490	0.000	0.016	0.000	0.497	1.050	4.8.2
L52	29.5 - 25 (52)	0.007	0.501	0.000	0.016	0.000	0.508	1.050	4.8.2
L53	25 - 24.75 (53)	0.009	0.627	0.000	0.021	0.000	0.636	1.050	4.8.2
L54	24.75 - 19.75 (54)	0.009	0.636	0.000	0.021	0.000	0.646	1.050	4.8.2
L55	19.75 - 14.75 (55)	0.009	0.655	0.000	0.021	0.000	0.664	1.050	4.8.2
L56	14.75 - 14.5 (56)	0.009	0.655	0.000	0.021	0.000	0.664	1.050	4.8.2
L57	14.5 - 14.25 (57)	0.009	0.655	0.000	0.021	0.000	0.664	1.050	4.8.2
L58	14.25 - 12.25 (58)	0.009	0.655	0.000	0.021	0.000	0.664	1.050	4.8.2
L59	12.25 - 12 (59)	0.010	0.684	0.000	0.022	0.000	0.694	1.050	4.8.2
L60	12 - 11.5 (60)	0.010	0.684	0.000	0.022	0.000	0.694	1.050	4.8.2
L61	11.5 - 11.25 (61)	0.009	0.603	0.000	0.019	0.000	0.612	1.050	4.8.2
L62	11.25 - 9.25 (62)	0.009	0.611	0.000	0.019	0.000	0.620	1.050	4.8.2
L63	9.25 - 9 (63)	0.009	0.636	0.000	0.020	0.000	0.646	1.050	4.8.2
L64	9 - 4.5 (64)	0.010	0.654	0.000	0.021	0.000	0.664	1.050	4.8.2
L65	4.5 - 4.25 (65)	0.009	0.636	0.000	0.020	0.000	0.645	1.050	4.8.2
L66	4.25 - 3 (66)	0.009	0.635	0.000	0.020	0.000	0.645	1.050	4.8.2
L67	3 - 2.75 (67)	0.010	0.644	0.000	0.020	0.000	0.654	1.050	4.8.2
L68	2.75 - 0 (68)	0.010	0.653	0.000	0.020	0.000	0.663	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	150 - 145	Pole	TP16.9374x16x0.1875	1	-2.54	621.18	20.1	Pass
L2	145 - 140	Pole	TP17.8748x16.9374x0.1875	2	-2.78	655.94	36.6	Pass
L3	140 - 135	Pole	TP18.8122x17.8748x0.1875	3	-6.72	690.70	67.5	Pass
L4	135 - 133	Pole	TP19.1871x18.8122x0.1875	4	-6.90	704.61	77.1	Pass
L5	133 - 132.75	Pole	TP19.234x19.1871x0.45	5	-6.95	1671.86	31.5	Pass
L6	132.75 - 127.75	Pole	TP20.1714x19.234x0.4375	6	-11.28	1707.63	41.0	Pass
L7	127.75 - 123.75	Pole	TP20.9213x20.1714x0.425	7	-11.85	1722.92	49.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	σP_{allow} K	% Capacity	Pass Fail	
L8	123.75 - 123.5	Pole	TP20.9681x20.9213x0.425	8	-11.90	1726.86	50.3	Pass	
L9	123.5 - 118.75	Pole	TP21.8587x20.9681x0.7625	9	-12.89	3181.59	33.9	Pass	
L10	118.75 - 118.5	Pole	TP21.9055x21.8587x1.0375	10	-12.97	4282.24	26.1	Pass	
L11	118.5 - 117	Pole	TP22.1868x21.9055x1.0125	11	-13.36	4240.37	27.6	Pass	
L12	117 - 116.75	Pole	TP22.2336x22.1868x0.75	12	-13.42	3186.91	36.2	Pass	
L13	116.75 - 111.75	Pole	TP23.171x22.2336x0.7125	13	-14.51	3164.95	41.9	Pass	
L14	111.75 - 106.75	Pole	TP24.1084x23.171x0.6875	14	-18.53	3184.77	47.4	Pass	
L15	106.75 - 101.75	Pole	TP25.0458x24.1084x0.6625	15	-19.72	3195.06	53.0	Pass	
L16	101.75 - 95.1667	Pole	TP26.28x25.0458x0.6625	16	-20.26	3250.34	54.5	Pass	
L17	95.1667 - 94.5	Pole	TP26.0307x25.0926x0.7875	17	-22.45	3931.84	50.6	Pass	
L18	94.5 - 93.75	Pole	TP26.1714x26.0307x0.7875	18	-22.67	3953.75	51.0	Pass	
L19	93.75 - 93.5	Pole	TP26.2183x26.1714x0.9125	19	-22.76	4567.24	44.8	Pass	
L20	93.5 - 92.75	Pole	TP26.3599x26.2183x0.9125	20	-22.99	4592.64	45.1	Pass	
L21	92.75 - 92.5	Pole	TP26.4059x26.3599x1.1375	21	-23.09	5684.99	37.2	Pass	
L22	92.5 - 91.25	Pole	TP26.6404x26.4059x1.1125	22	-23.54	5617.15	38.3	Pass	
L23	91.25 - 91	Pole	TP26.6873x26.6404x1.1125	23	-23.64	5627.47	38.4	Pass	
L24	91 - 89.25	Pole	TP27.0156x26.6873x1.1125	24	-24.27	5699.71	38.9	Pass	
L25	89.25 - 89	Pole	TP27.0625x27.0156x1.2125	25	-24.39	6199.32	36.2	Pass	
L26	89 - 85.75	Pole	TP27.6723x27.0625x1.1875	26	-25.68	6220.58	37.7	Pass	
L27	85.75 - 85.5	Pole	TP27.7192x27.6723x0.8625	27	-25.77	4581.55	50.1	Pass	
L28	85.5 - 80.5	Pole	TP28.6572x27.7192x0.8375	28	-27.37	4608.28	53.0	Pass	
L29	80.5 - 75.5	Pole	TP29.5953x28.6572x0.8125	29	-29.02	4625.49	55.9	Pass	
L30	75.5 - 70.5	Pole	TP30.5334x29.5953x0.7875	30	-30.69	4633.17	58.7	Pass	
L31	70.5 - 68.083	Pole	TP30.9868x30.5334x0.7875	31	-31.50	4703.80	59.2	Pass	
L32	68.083 - 67.833	Pole	TP31.0337x30.9868x0.8375	32	-31.61	5001.94	56.0	Pass	
L33	67.833 - 67	Pole	TP31.19x31.0337x0.8375	33	-31.90	5027.83	56.2	Pass	
L34	67 - 66.75	Pole	TP31.2369x31.19x1.0625	34	-32.02	6341.16	45.3	Pass	
L35	66.75 - 63.25	Pole	TP31.8935x31.2369x1.0375	35	-33.49	6331.84	46.7	Pass	
L36	63.25 - 63	Pole	TP31.9404x31.8935x1.2125	36	-33.63	7369.13	40.7	Pass	
L37	63 - 59.5	Pole	TP32.5971x31.9404x1.1875	37	-35.29	7377.29	41.8	Pass	
L38	59.5 - 59.25	Pole	TP32.644x32.5971x1.2375	38	-35.43	7687.15	40.4	Pass	
L39	59.25 - 56.25	Pole	TP33.2068x32.644x1.2125	39	-36.91	7672.83	41.4	Pass	
L40	56.25 - 56	Pole	TP33.2537x33.2068x1.0625	40	-37.04	6764.99	46.6	Pass	
L41	56 - 55.75	Pole	TP33.3006x33.2537x0.8375	41	-37.13	5377.45	57.9	Pass	
L42	55.75 - 50.75	Pole	TP34.2387x33.3006x0.825	42	-39.04	5452.29	59.3	Pass	
L43	50.75 - 44.6667	Pole	TP35.38x34.2387x0.8125	43	-39.33	5394.31	60.2	Pass	
L44	44.6667 - 43.6667	Pole	TP34.942x33.7544x0.875	44	-43.67	5895.80	58.9	Pass	
L45	43.6667 - 38.6667	Pole	TP35.8795x34.942x0.8625	45	-45.78	5973.65	60.1	Pass	
L46	38.6667 - 34.5	Pole	TP36.6608x35.8795x0.85	46	-47.55	6020.53	61.1	Pass	
L47	34.5 - 34.25	Pole	TP36.7077x36.6608x1.1	47	-47.70	7747.08	48.2	Pass	
L48	34.25 - 33	Pole	TP36.9421x36.7077x1.1	48	-48.34	7798.08	48.2	Pass	
L49	33 - 32.75	Pole	TP36.989x36.9421x1.1	49	-48.48	7808.27	48.2	Pass	
L50	32.75 - 29.75	Pole	TP37.5515x36.989x1.075	50	-50.04	7755.73	49.3	Pass	
L51	29.75 - 29.5	Pole	TP37.5984x37.5515x1.125	51	-50.19	8115.78	47.3	Pass	
L52	29.5 - 25	Pole	TP38.4422x37.5984x1.1	52	-52.61	8124.45	48.4	Pass	
L53	25 - 24.75	Pole	TP38.4891x38.4422x0.8625	53	-52.74	6418.82	60.6	Pass	
L54	24.75 - 19.75	Pole	TP39.4266x38.4891x0.85	54	-55.00	6485.51	61.5	Pass	
L55	19.75 - 14.75	Pole	TP40.3642x39.4266x0.825	55	-57.30	6451.83	63.3	Pass	
L56	14.75 - 14.5	Pole	TP40.4111x40.3642x0.825	56	-57.43	6459.47	63.3	Pass	
L57	14.5 - 14.25	Pole	TP40.458x40.4111x0.825	57	-57.55	6467.13	63.3	Pass	
L58	14.25 - 12.25	Pole	TP40.833x40.458x0.825	58	-58.04	6497.73	63.3	Pass	
L59	12.25 - 12	Pole	TP40.8799x40.833x0.7875	59	-58.49	6237.42	66.1	Pass	
L60	12 - 11.5	Pole	TP40.9736x40.8799x0.7875	60	-58.62	6244.73	66.1	Pass	
L61	11.5 - 11.25	Pole	TP41.0205x40.9736x0.9	61	-58.84	7133.49	58.3	Pass	
L62	11.25 - 9.25	Pole	TP41.3955x41.0205x0.8875	62	-58.98	7044.84	59.1	Pass	
L63	9.25 - 9	Pole	TP41.4424x41.3955x0.85	63	-59.95	6816.53	61.5	Pass	
L64	9 - 4.5	Pole	TP42.2862x41.4424x0.825	64	-60.08	6627.77	63.3	Pass	
L65	4.5 - 4.25	Pole	TP42.3331x42.2862x0.85	65	-62.11	6966.27	61.5	Pass	
L66	4.25 - 3	Pole	TP42.5675x42.3331x0.85	66	-62.25	6974.14	61.5	Pass	
L67	3 - 2.75	Pole	TP42.6143x42.5675x0.8375	67	-62.83	6912.48	62.3	Pass	
L68	2.75 - 0	Pole	TP43.13x42.6143x0.825	68	-62.96	6818.99	63.2	Pass	
							Summary		
							Pole (L4)	77.1	Pass
							RATING =	77.1	Pass

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B
BASE LEVEL DRAWING

APPENDIX C
ADDITIONAL CALCULATIONS

Pole Geometry

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	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	150	54.8333	4.3333	12	16	26.28	0.1875	Auto	A572-65
2	99.5	54.8333	5.3333	12	25.09	35.38	0.3125	Auto	A572-65
3	50	50	0	12	33.75	43.13	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	29.75	plate	PL9x1-1/4 {Bar #1}	3												
2	29.75	59.5	plate	PL8x1-1/4 {Bar #2}	3												
3	59.5	89.25	plate	PL7x1-1/4 {Bar #3}	3												
4	89.25	123.75	plate	PL5x1-1/4 {Bar #4}	3												
5	25	34.5	plate	MS-650 (1.1875")	3												
6	56	67	plate	MS-600 (1.1875")	3												
7	85.75	92.75	plate	MS-450 (1.1875")	3												
8	56.25	63.25	plate	CCI-SFP-045100	3												
9	85.75	93.75	plate	CCI-SFP-040075	3												
10	0	4.5	plate	ransition Stiffener TS	1												
11	0	11.5	plate	ransition Stiffener TS	1												
12	0	14.5	plate	ransition Stiffener TS	1												
13	3	9.25	plate	CCI-AFP-060100	1												
14	9.25	12.25	plate	CCI-AFP-060100	2												
15	12.25	33	plate	CCI-AFP-060100	3												
16	33	68.083	plate	CCI-AFP-060100	3												
17	68.083	91.25	plate	CCI-AFP-045100	3												
18	91.25	117	plate	CCI-AFP-045100	3												
19	117	118.75	plate	CCI-AFP-045100	6												
20	118.75	133	plate	CCI-AFP-045100	3												
21																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	9	1.25	11.25	0.625	Welded	n/a	Capacity Input	n/a	15.000	9.647	1.2200	A572-65
2	8	1.25	10	0.625	Capacity Input	n/a	Capacity Input	n/a	18.000	8.397	1.2200	A572-65
3	7	1.25	8.75	0.625	Capacity Input	n/a	Capacity Input	n/a	18.000	7.147	1.2200	A572-65
4	5	1.25	6.25	0.625	Capacity Input	n/a	PC 8.8 - M20 (100)	15.000	18.000	4.647	1.2200	A572-65
5	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.250	6.563	1.1875	A572-65
6	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
7	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.625	3.250	1.1875	A572-65
8	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
9	4	0.75	3	0.375	PC 8.8 - M20 (100)	12	PC 8.8 - M20 (100)	12.000	16.000	2.063	1.1875	A572-65
10	1	6	6	3	Welded	n/a	Welded	n/a	0.000	6.000	0.0000	A572-65
11	1	6	6	3	Welded	n/a	Welded	n/a	0.000	6.000	0.0000	A572-65
12	1	6	6	3	Welded	n/a	Welded	n/a	0.000	6.000	0.0000	A572-65
13	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
14	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
15	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
16	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
17	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65
18	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65
19	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65
20	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
PL9x1-1/4 {Bar #1}	Top	-	0	-	-	-	-	-	-	-	-	-	-	565
	Bottom	-	-	-	-	80	CJP Groove	9	1.25	45	0	-	-	-
PL8x1-1/4 {Bar #2}	Top	-	0	-	-	-	-	-	-	-	-	-	-	494
	Bottom	-	0	-	-	-	0	-	-	-	-	-	-	565
PL7x1-1/4 {Bar #3}	Top	-	-	-	-	-	-	-	-	-	-	-	-	353
	Bottom	-	-	-	-	-	0	-	-	-	-	-	-	494
PL5x1-1/4 {Bar #4}	Top	5	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	-	0	-	-	-	-	-	-	353
Transition Stiffener TS1	Top	-	-	-	-	70	None	-	-	-	-	191.25	0.375	-
	Bottom	-	-	-	-	80	CJP Groove	10.5	0.5	45	0.625	-	-	-
Transition Stiffener TS2	Top	-	-	-	-	70	None	-	-	-	-	155.25	0.375	-
	Bottom	-	-	-	-	80	CJP Groove	10.5	0.5	45	0.625	-	-	-
Transition Stiffener TS3	Top	-	-	-	-	70	None	-	-	-	-	71.25	0.375	-
	Bottom	-	-	-	-	80	CJP Groove	10.5	0.5	45	0.625	-	-	-

TNX Geometry Input

Increment (ft): [Export to TNX](#)

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	150 - 145	5		12	16.000	16.937	0.1875	A572-65	1.000
2	145 - 140	5		12	16.937	17.875	0.1875	A572-65	1.000
3	140 - 135	5		12	17.875	18.812	0.1875	A572-65	1.000
4	135 - 133	2		12	18.812	19.187	0.1875	A572-65	1.000
5	133 - 132.75	0.25		12	19.187	19.234	0.45	A572-65	0.919
6	132.75 - 127.75	5		12	19.234	20.171	0.4375	A572-65	0.920
7	127.75 - 123.75	4		12	20.171	20.921	0.425	A572-65	0.928
8	123.75 - 123.5	0.25		12	20.921	20.968	0.425	A572-65	0.927
9	123.5 - 118.75	4.75		12	20.968	21.859	0.7625	A572-65	0.876
10	118.75 - 118.5	0.25		12	21.859	21.906	1.0375	A572-65	0.845
11	118.5 - 117	1.5		12	21.906	22.187	1.0125	A572-65	0.856
12	117 - 116.75	0.25		12	22.187	22.234	0.75	A572-65	0.879
13	116.75 - 111.75	5		12	22.234	23.171	0.7125	A572-65	0.896
14	111.75 - 106.75	5		12	23.171	24.108	0.6875	A572-65	0.901
15	106.75 - 101.75	5		12	24.108	25.046	0.6625	A572-65	0.909
16	101.75 - 99.5	6.5833	4.3333	12	25.046	26.280	0.6625	A572-65	0.899
17	99.5 - 94.5	5		12	25.093	26.031	0.7875	A572-65	0.909
18	94.5 - 93.75	0.75		12	26.031	26.171	0.7875	A572-65	0.906
19	93.75 - 93.5	0.25		12	26.171	26.218	0.9125	A572-65	0.906
20	93.5 - 92.75	0.75		12	26.218	26.359	0.9125	A572-65	0.903
21	92.75 - 92.5	0.25		12	26.359	26.406	1.1375	A572-65	0.876
22	92.5 - 91.25	1.25		12	26.406	26.640	1.1125	A572-65	0.889
23	91.25 - 91	0.25		12	26.640	26.687	1.1125	A572-65	0.888
24	91 - 89.25	1.75		12	26.687	27.016	1.1125	A572-65	0.880
25	89.25 - 89	0.25		12	27.016	27.063	1.2125	A572-65	0.884
26	89 - 85.75	3.25		12	27.063	27.672	1.1875	A572-65	0.887
27	85.75 - 85.5	0.25		12	27.672	27.719	0.8625	A572-65	0.903
28	85.5 - 80.5	5		12	27.719	28.657	0.8375	A572-65	0.911
29	80.5 - 75.5	5		12	28.657	29.595	0.8125	A572-65	0.920
30	75.5 - 70.5	5		12	29.595	30.533	0.7875	A572-65	0.931
31	70.5 - 68.083	2.417		12	30.533	30.987	0.7875	A572-65	0.923
32	68.083 - 67.833	0.25		12	30.987	31.034	0.8375	A572-65	0.924
33	67.833 - 67	0.833		12	31.034	31.190	0.8375	A572-65	0.921
34	67 - 66.75	0.25		12	31.190	31.237	1.0625	A572-65	0.905
35	66.75 - 63.25	3.5		12	31.237	31.894	1.0375	A572-65	0.913
36	63.25 - 63	0.25		12	31.894	31.940	1.2125	A572-65	0.898
37	63 - 59.5	3.5		12	31.940	32.597	1.1875	A572-65	0.902
38	59.5 - 59.25	0.25		12	32.597	32.644	1.2375	A572-65	0.896
39	59.25 - 56.25	3		12	32.644	33.207	1.2125	A572-65	0.902
40	56.25 - 56	0.25		12	33.207	33.254	1.0625	A572-65	0.901
41	56 - 55.75	0.25		12	33.254	33.301	0.8375	A572-65	0.928
42	55.75 - 50.75	5		12	33.301	34.239	0.825	A572-65	0.926
43	50.75 - 50	6.0833	5.3333	12	34.239	35.380	0.8125	A572-65	0.938
44	50 - 43.6667	6.3333		12	33.754	34.942	0.875	A572-65	0.936
45	43.6667 - 38.6667	5		12	34.942	35.880	0.8625	A572-65	0.935
46	38.6667 - 34.5	4.1667		12	35.880	36.661	0.85	A572-65	0.937
47	34.5 - 34.25	0.25		12	36.661	36.708	1.1	A572-65	0.923
48	34.25 - 33	1.25		12	36.708	36.942	1.1	A572-65	0.919
49	33 - 32.75	0.25		12	36.942	36.989	1.1	A572-65	0.918
50	32.75 - 29.75	3		12	36.989	37.552	1.075	A572-65	0.930
51	29.75 - 29.5	0.25		12	37.552	37.598	1.125	A572-65	0.917
52	29.5 - 25	4.5		12	37.598	38.442	1.1	A572-65	0.924
53	25 - 24.75	0.25		12	38.442	38.489	0.8625	A572-65	0.936
54	24.75 - 19.75	5		12	38.489	39.427	0.85	A572-65	0.937
55	19.75 - 14.75	5		12	39.427	40.364	0.825	A572-65	0.953
56	14.75 - 14.5	0.25		12	40.364	40.411	0.825	A572-65	0.953
57	14.5 - 14.25	0.25		12	40.411	40.458	0.825	A572-65	0.952
58	14.25 - 12.25	2		12	40.458	40.833	0.825	A572-65	0.947
59	12.25 - 12	0.25		12	40.833	40.880	0.7875	A572-65	0.991
60	12 - 11.5	0.5		12	40.880	40.974	0.7875	A572-65	0.990
61	11.5 - 11.25	0.25		12	40.974	41.020	0.9	A572-65	0.920
62	11.25 - 9.25	2		12	41.020	41.396	0.8875	A572-65	0.927
63	9.25 - 9	0.25		12	41.396	41.442	0.85	A572-65	0.913
64	9 - 4.5	4.5		12	41.442	42.286	0.825	A572-65	0.930
65	4.5 - 4.25	0.25		12	42.286	42.333	0.85	A572-65	0.956
66	4.25 - 3	1.25		12	42.333	42.567	0.85	A572-65	0.953
67	3 - 2.75	0.25		12	42.567	42.614	0.8375	A572-65	0.913
68	2.75 - 0	2.75		12	42.614	43.130	0.825	A572-65	0.921

TNX Section Forces

Increment (ft): 5		TNX Output		
Section Height (ft)		P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	150 - 145	2.54	49.93	10.13
2	145 - 140	2.78	101.55	10.53
3	140 - 135	6.72	202.67	18.73
4	135 - 133	6.90	240.27	18.88
5	133 - 132.75	6.95	244.99	18.90
6	132.75 - 127.75	11.28	341.75	23.93
7	127.75 - 123.75	11.85	438.12	24.27
8	123.75 - 123.5	11.90	444.19	24.29
9	123.5 - 118.75	12.89	560.68	24.77
10	118.75 - 118.5	12.97	566.88	24.80
11	118.5 - 117	13.36	604.20	24.97
12	117 - 116.75	13.42	610.44	24.99
13	116.75 - 111.75	14.51	736.63	25.50
14	111.75 - 106.75	18.53	876.51	29.46
15	106.75 - 101.75	19.72	1024.93	29.94
16	101.75 - 99.5	20.26	1092.51	30.16
17	99.5 - 94.5	22.45	1244.85	30.79
18	94.5 - 93.75	22.67	1267.96	30.86
19	93.75 - 93.5	22.76	1275.68	30.88
20	93.5 - 92.75	22.99	1298.86	30.97
21	92.75 - 92.5	23.09	1306.61	30.99
22	92.5 - 91.25	23.54	1345.43	31.14
23	91.25 - 91	23.64	1353.22	31.16
24	91 - 89.25	24.27	1407.92	31.38
25	89.25 - 89	24.39	1415.76	31.39
26	89 - 85.75	25.68	1518.40	31.78
27	85.75 - 85.5	25.77	1526.34	31.80
28	85.5 - 80.5	27.37	1686.59	32.32
29	80.5 - 75.5	29.02	1849.38	32.82
30	75.5 - 70.5	30.69	2014.64	33.32
31	70.5 - 68.083	31.50	2095.41	33.56
32	68.083 - 67.833	31.61	2103.80	33.57
33	67.833 - 67	31.90	2131.79	33.66
34	67 - 66.75	32.02	2140.20	33.68
35	66.75 - 63.25	33.49	2258.73	34.07
36	63.25 - 63	33.63	2267.25	34.09
37	63 - 59.5	35.29	2387.25	34.50
38	59.5 - 59.25	35.43	2395.87	34.52
39	59.25 - 56.25	36.91	2499.94	34.88
40	56.25 - 56	37.04	2508.65	34.89
41	56 - 55.75	37.13	2517.38	34.92
42	55.75 - 50.75	39.04	2693.14	35.41
43	50.75 - 50	39.33	2719.70	35.48
44	50 - 43.6667	43.67	2946.87	36.26
45	43.6667 - 38.6667	45.78	3129.16	36.70
46	38.6667 - 34.5	47.55	3282.71	37.05
47	34.5 - 34.25	47.70	3291.97	37.05
48	34.25 - 33	48.34	3338.36	37.19
49	33 - 32.75	48.48	3347.65	37.20
50	32.75 - 29.75	50.04	3459.64	37.49
51	29.75 - 29.5	50.19	3469.01	37.50
52	29.5 - 25	52.61	3638.63	37.92
53	25 - 24.75	52.74	3648.10	37.92
54	24.75 - 19.75	55.00	3838.57	38.30
55	19.75 - 14.75	57.30	4030.73	38.62
56	14.75 - 14.5	57.43	4040.38	38.61
57	14.5 - 14.25	57.55	4050.03	38.63
58	14.25 - 12.25	58.47	4127.40	38.77
59	12.25 - 12	58.60	4137.09	38.77
60	12 - 11.5	58.83	4156.48	38.80
61	11.5 - 11.25	58.96	4166.18	38.81
62	11.25 - 9.25	59.93	4243.91	38.96
63	9.25 - 9	60.06	4253.65	38.96
64	9 - 4.5	62.09	4429.53	39.25
65	4.5 - 4.25	62.22	4439.33	39.24
66	4.25 - 3	62.80	4488.43	39.35
67	3 - 2.75	62.93	4498.26	39.34
68	2.75 - 0	64.16	4606.67	39.55

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP16.937x16x0.1875	Pole	19.9%	Pass
145 - 140	Pole	TP17.875x16.937x0.1875	Pole	36.4%	Pass
140 - 135	Pole	TP18.812x17.875x0.1875	Pole	67.2%	Pass
135 - 133	Pole	TP19.187x18.812x0.1875	Pole	76.8%	Pass
133 - 132.75	Pole + Reinf.	TP19.234x19.187x0.45	Reinf. 20 Tension Rupture	53.5%	Pass
132.75 - 127.75	Pole + Reinf.	TP20.171x19.234x0.4375	Reinf. 20 Tension Rupture	69.9%	Pass
127.75 - 123.75	Pole + Reinf.	TP20.921x20.171x0.425	Reinf. 20 Tension Rupture	84.8%	Pass
123.75 - 123.5	Pole + Reinf.	TP20.968x20.921x0.425	Reinf. 20 Tension Rupture	85.7%	Pass
123.5 - 118.75	Pole + Reinf.	TP21.859x20.968x0.7625	Reinf. 20 Tension Rupture	57.8%	Pass
118.75 - 118.5	Pole + Reinf.	TP21.906x21.859x1.0375	Reinf. 19 Tension Rupture	44.8%	Pass
118.5 - 117	Pole + Reinf.	TP22.187x21.906x1.0125	Reinf. 19 Tension Rupture	47.0%	Pass
117 - 116.75	Pole + Reinf.	TP22.234x22.187x0.75	Reinf. 18 Tension Rupture	61.7%	Pass
116.75 - 111.75	Pole + Reinf.	TP23.171x22.234x0.7125	Reinf. 18 Tension Rupture	70.7%	Pass
111.75 - 106.75	Pole + Reinf.	TP24.108x23.171x0.6875	Reinf. 18 Tension Rupture	80.1%	Pass
106.75 - 101.75	Pole + Reinf.	TP25.046x24.108x0.6625	Reinf. 18 Tension Rupture	89.2%	Pass
101.75 - 99.5	Pole + Reinf.	TP26.28x25.046x0.6625	Reinf. 18 Tension Rupture	93.1%	Pass
99.5 - 94.5	Pole + Reinf.	TP26.031x25.093x0.7875	Reinf. 18 Tension Rupture	86.1%	Pass
94.5 - 93.75	Pole + Reinf.	TP26.171x26.031x0.7875	Reinf. 18 Tension Rupture	87.0%	Pass
93.75 - 93.5	Pole + Reinf.	TP26.218x26.171x0.9125	Reinf. 9 Tension Rupture	78.6%	Pass
93.5 - 92.75	Pole + Reinf.	TP26.359x26.218x0.9125	Reinf. 9 Tension Rupture	79.5%	Pass
92.75 - 92.5	Pole + Reinf.	TP26.406x26.359x1.1375	Reinf. 9 Tension Rupture	66.2%	Pass
92.5 - 91.25	Pole + Reinf.	TP26.64x26.406x1.1125	Reinf. 9 Tension Rupture	67.4%	Pass
91.25 - 91	Pole + Reinf.	TP26.687x26.64x1.1125	Reinf. 9 Tension Rupture	67.6%	Pass
91 - 89.25	Pole + Reinf.	TP27.016x26.687x1.1125	Reinf. 9 Tension Rupture	69.2%	Pass
89.25 - 89	Pole + Reinf.	TP27.063x27.016x1.2125	Reinf. 3 Connection	65.8%	Pass
89 - 85.75	Pole + Reinf.	TP27.672x27.063x1.1875	Reinf. 9 Tension Rupture	65.9%	Pass
85.75 - 85.5	Pole + Reinf.	TP27.719x27.672x0.8625	Reinf. 17 Tension Rupture	85.0%	Pass
85.5 - 80.5	Pole + Reinf.	TP28.657x27.719x0.8375	Reinf. 17 Tension Rupture	89.7%	Pass
80.5 - 75.5	Pole + Reinf.	TP29.595x28.657x0.8125	Reinf. 17 Tension Rupture	94.1%	Pass
75.5 - 70.5	Pole + Reinf.	TP30.533x29.595x0.7875	Reinf. 17 Tension Rupture	98.1%	Pass
70.5 - 68.08	Pole + Reinf.	TP30.987x30.533x0.7875	Reinf. 17 Tension Rupture	100.0%	Pass
68.08 - 67.83	Pole + Reinf.	TP31.034x30.987x0.8375	Reinf. 16 Tension Rupture	85.8%	Pass
67.83 - 67	Pole + Reinf.	TP31.19x31.034x0.8375	Reinf. 16 Tension Rupture	86.3%	Pass
67 - 66.75	Pole + Reinf.	TP31.237x31.19x1.0625	Reinf. 6 Tension Rupture	69.5%	Pass
66.75 - 63.25	Pole + Reinf.	TP31.894x31.237x1.0375	Reinf. 6 Tension Rupture	71.4%	Pass
63.25 - 63	Pole + Reinf.	TP31.94x31.894x1.2125	Reinf. 8 Tension Rupture	68.4%	Pass
63 - 59.5	Pole + Reinf.	TP32.597x31.94x1.1875	Reinf. 8 Tension Rupture	70.2%	Pass
59.5 - 59.25	Pole + Reinf.	TP32.644x32.597x1.2375	Reinf. 8 Tension Rupture	67.8%	Pass
59.25 - 56.25	Pole + Reinf.	TP33.207x32.644x1.2125	Reinf. 8 Tension Rupture	69.3%	Pass
56.25 - 56	Pole + Reinf.	TP33.254x33.207x1.0625	Reinf. 6 Tension Rupture	72.1%	Pass
56 - 55.75	Pole + Reinf.	TP33.301x33.254x0.8375	Reinf. 16 Tension Rupture	88.5%	Pass
55.75 - 50.75	Pole + Reinf.	TP34.239x33.301x0.825	Reinf. 16 Tension Rupture	91.1%	Pass
50.75 - 50	Pole + Reinf.	TP35.38x34.239x0.8125	Reinf. 16 Tension Rupture	91.5%	Pass
50 - 43.67	Pole + Reinf.	TP34.942x33.754x0.875	Reinf. 16 Tension Rupture	90.0%	Pass
43.67 - 38.67	Pole + Reinf.	TP35.88x34.942x0.8625	Reinf. 16 Tension Rupture	92.0%	Pass
38.67 - 34.5	Pole + Reinf.	TP36.661x35.88x0.85	Reinf. 16 Tension Rupture	93.5%	Pass
34.5 - 34.25	Pole + Reinf.	TP36.708x36.661x1.1	Reinf. 16 Tension Rupture	73.4%	Pass
34.25 - 33	Pole + Reinf.	TP36.942x36.708x1.1	Reinf. 16 Tension Rupture	73.8%	Pass
33 - 32.75	Pole + Reinf.	TP36.989x36.942x1.1	Reinf. 15 Tension Rupture	73.9%	Pass
32.75 - 29.75	Pole + Reinf.	TP37.552x36.989x1.075	Reinf. 15 Tension Rupture	74.9%	Pass
29.75 - 29.5	Pole + Reinf.	TP37.598x37.552x1.125	Reinf. 15 Tension Rupture	72.5%	Pass
29.5 - 25	Pole + Reinf.	TP38.442x37.598x1.1	Reinf. 15 Tension Rupture	73.8%	Pass
25 - 24.75	Pole + Reinf.	TP38.489x38.442x0.8625	Reinf. 15 Tension Rupture	92.9%	Pass
24.75 - 19.75	Pole + Reinf.	TP39.427x38.489x0.85	Reinf. 15 Tension Rupture	94.4%	Pass
19.75 - 14.75	Pole + Reinf.	TP40.364x39.427x0.825	Reinf. 15 Tension Rupture	95.8%	Pass
14.75 - 14.5	Pole + Reinf.	TP40.411x40.364x0.825	Reinf. 15 Tension Rupture	95.8%	Pass
14.5 - 14.25	Pole + Reinf.	TP40.458x40.411x0.825	Reinf. 15 Tension Rupture	95.9%	Pass
14.25 - 12.25	Pole + Reinf.	TP40.833x40.458x0.825	Reinf. 15 Tension Rupture	96.4%	Pass
12.25 - 12	Pole + Reinf.	TP40.88x40.833x0.7875	Reinf. 14 Tension Rupture	97.4%	Pass
12 - 11.5	Pole + Reinf.	TP40.974x40.88x0.7875	Reinf. 14 Tension Rupture	97.5%	Pass
11.5 - 11.25	Pole + Reinf.	TP41.02x40.974x0.9	Reinf. 14 Tension Rupture	92.4%	Pass
11.25 - 9.25	Pole + Reinf.	TP41.396x41.02x0.8875	Reinf. 14 Tension Rupture	92.9%	Pass
9.25 - 9	Pole + Reinf.	TP41.442x41.396x0.85	Reinf. 13 Tension Rupture	93.7%	Pass
9 - 4.5	Pole + Reinf.	TP42.286x41.442x0.825	Reinf. 13 Tension Rupture	94.8%	Pass
4.5 - 4.25	Pole + Reinf.	TP42.333x42.286x0.85	Reinf. 1 Tension Rupture	87.8%	Pass
4.25 - 3	Pole + Reinf.	TP42.567x42.333x0.85	Reinf. 1 Tension Rupture	88.0%	Pass
3 - 2.75	Pole + Reinf.	TP42.614x42.567x0.8375	Reinf. 1 Tension Rupture	88.2%	Pass
2.75 - 0	Pole + Reinf.	TP43.13x42.614x0.825	Reinf. 1 Tension Rupture	88.8%	Pass
				Summary	
			Pole	76.8%	Pass
			Reinforcement	100.0%	Pass
			Overall	100.0%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*																				
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20
150 - 145	363	n/a	363	10.10	n/a	10.10	19.9%																				
145 - 140	427	n/a	427	10.66	n/a	10.66	36.4%																				
140 - 135	499	n/a	499	11.23	n/a	11.23	67.2%																				
135 - 133	529	n/a	529	11.45	n/a	11.45	76.8%																				
133 - 132.75	533	703	1236	11.48	13.50	24.98	32.4%																				53.5%
132.75 - 127.75	616	768	1384	12.05	13.50	25.55	43.3%																				69.9%
127.75 - 123.75	688	823	1511	12.50	13.50	26.00	53.4%																				84.8%
123.75 - 123.5	692	826	1519	12.53	13.50	26.03	54.0%																				85.7%
123.5 - 118.75	785	2166	2951	13.07	32.25	45.32	37.1%																				57.8%
118.75 - 118.5	790	3072	3863	13.09	45.75	58.84	28.8%																				44.8%
118.5 - 117	822	3147	3968	13.26	45.75	59.01	30.4%																				47.0%
117 - 116.75	827	2236	3063	13.29	32.25	45.54	39.9%																				
116.75 - 111.75	937	2416	3353	13.86	32.25	46.11	46.8%																				61.7%
111.75 - 106.75	1056	2604	3660	14.42	32.25	46.67	54.2%																				80.1%
106.75 - 101.75	1185	2798	3983	14.99	32.25	47.24	61.8%																				89.2%
101.75 - 99.5	1247	2888	4135	15.24	32.25	47.49	65.1%																				93.1%
99.5 - 94.5	2188	3010	5198	25.84	32.25	58.09	49.1%																				86.1%
94.5 - 93.75	2224	3041	5265	25.98	32.25	58.23	49.7%																				87.0%
93.75 - 93.5	2236	3876	6112	26.03	41.25	67.28	43.2%																				75.6%
93.5 - 92.75	2273	3915	6188	26.17	41.25	67.42	43.8%																				76.4%
92.75 - 92.5	2285	5208	7493	26.22	54.75	80.97	36.4%																				63.6%
92.5 - 91.25	2347	5296	7644	26.45	54.75	81.20	37.2%																				64.7%
91.25 - 91	2360	5314	7674	26.50	54.75	81.25	37.4%																				
91 - 89.25	2449	5440	7889	26.83	54.75	81.58	38.4%																				
89.25 - 89	2462	6244	8706	26.88	62.25	89.13	35.1%																				
89 - 85.75	2634	6514	9148	27.49	62.25	89.74	36.9%																				
85.75 - 85.5	2648	4213	6860	27.54	39.75	67.29	49.5%																				
85.5 - 80.5	2929	4486	7415	28.48	39.75	68.23	52.9%																				
80.5 - 75.5	3229	4769	7998	29.42	39.75	69.17	56.1%																				
75.5 - 70.5	3550	5060	8610	30.37	39.75	70.12	59.3%																				
70.5 - 68.08	3712	5204	8916	30.82	39.75	70.57	60.7%																				
68.08 - 67.83	3729	5812	9541	30.87	44.25	75.12	57.1%																				
67.83 - 67	3786	5868	9654	31.03	44.25	75.28	57.6%																				
67 - 66.75	3803	8750	12054	31.07	62.25	93.32	46.4%																				
66.75 - 63.25	4051	8584	12635	31.73	62.25	93.98	48.1%																				
63.25 - 63	4069	10451	14520	31.78	75.75	107.53	42.1%																				
63 - 59.5	4328	10866	15194	32.44	75.75	108.19	43.6%																				
59.5 - 59.25	4347	11461	15808	32.49	79.50	111.99	42.1%																				
59.25 - 56.25	4578	11842	16419	33.05	79.50	112.55	43.4%																				
56.25 - 56	4597	9882	14479	33.10	66.00	99.10	49.4%																				
56 - 55.75	4617	7233	11850	33.15	48.00	81.15	60.7%																				
55.75 - 50.75	5022	7627	12649	34.09	48.00	82.09	63.3%																				
50.75 - 50	5085	7686	12771	34.23	48.00	82.23	63.7%																				
50 - 43.67	6375	7928	14303	41.68	48.00	89.68	58.8%																				
43.67 - 38.67	6907	8340	15247	42.81	48.00	90.81	60.7%																				
38.67 - 34.5	7373	8691	16064	43.75	48.00	91.75	62.2%																				
34.5 - 34.25	7402	13146	20548	43.81	72.38	116.18	48.9%																				
34.25 - 33	7546	13307	20854	44.09	72.38	116.47	49.3%																				
33 - 32.75	7575	13340	20915	44.15	72.38	116.52	49.4%																				
32.75 - 29.75	7930	13731	21661	44.83	72.38	117.20	50.3%																				
29.75 - 29.5	7960	14506	22466	44.88	76.13	121.01	48.7%																				
29.5 - 25	8514	15135	23649	45.90	76.13	122.03	50.1%																				
25 - 24.75	8545	10315	18860	45.96	51.75	97.71	63.0%																				
24.75 - 19.75	9191	10801	19993	47.09	51.75	98.84	64.7%																				
19.75 - 14.75	9869	11299	21169	48.22	51.75	99.97	66.3%																				
14.75 - 14.5	9904	11325	21229	48.27	51.75	100.02	66.4%																				
14.5 - 14.25	9939	11350	21289	48.33	51.75	100.08	66.5%																				
14.25 - 12.25	10220	11553	21773	48.78	51.75	100.53	67.1%																				
12.25 - 12	10273	10673	20947	48.84	51.75	100.59	73.4%																				
12 - 11.5	10345	10720	21065	48.95	51.75	100.70	73.6%																				
11.5 - 11.25	10387	13354	23741	49.01	57.75	106.76	66.0%																				
11.25 - 9.25	10677	13586	24263	49.46	57.75	107.21	66.6%																				
9.25 - 9	10690	12521	23210	49.52	51.75	101.27	68.7%																				
9 - 4.5	11362	13008	24370	50.54	51.75	102.29	70.2%																				
4.5 - 4.25	11401	13451	24852	50.59	57.75	108.34	68.4%																				
4.25 - 3	11593	13589	25181	50.87	57.75	108.62	68.8%																				
3 - 2.75	11631	13579	25209	50.93	51.75	102.68	67.5%																				
2.75 - 0	12062	13884	25946	51.55	51.75	103.30	68.3%																				

Note: Section capacity checked using 5 degree increments.
Rating per TVA-222-H Section 15.5.

Monopole Base Plate Connection

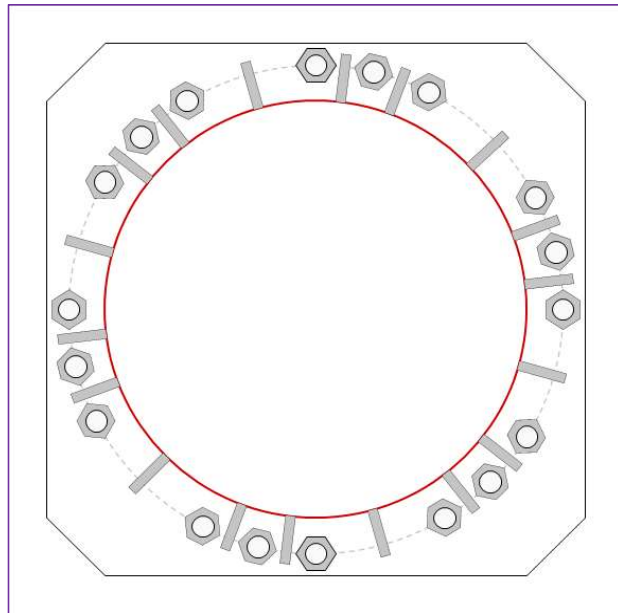


Site Info	
BU #	806361
Site Name	NHV 102 943127
Order #	553372 Rev 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	4606.67
Axial Force (kips)	64.16
Shear Force (kips)	39.55

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data

GROUP 1: (12) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 50.6" BC
pos. (deg): 62.8, 90, 121.4, 148.6, 242.8, 270, 301.4, 328.6, 0, 27.2, 1;

GROUP 2: (6) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 50.6" BC
pos. (deg): 76.4, 135, 256.4, 315, 13.6, 193.6

Base Plate Data

55.1" W x 2.5" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi); Clip: 6 in

Stiffener Data

(18) 18"H x 5"W x 1"T, Notch: 0.75"
plate: $F_y=50$ ksi ; weld: $F_y=70$ ksi
horiz. weld: 0.5" groove, 45° dbl bevel, 0.5" fillet
vert. weld: 0.5" fillet

Pole Data

43.13" x 0.375" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary		(units of kips, kip-in)
GROUP 1:		
$P_{u_t} = 242.55$	$\phi P_{n_t} = 243.75$	Stress Rating
$V_u = 3.3$	$\phi V_n = 149.1$	94.8%
$M_u = n/a$	$\phi M_n = n/a$	Pass
GROUP 2:		
$P_{u_t} = 245.71$	$\phi P_{n_t} = 243.75$	Stress Rating
$V_u = 0$	$\phi V_n = 149.1$	96.8%
$M_u = n/a$	$\phi M_n = n/a$	Pass

Base Plate Summary		
Max Stress (ksi):	35.08	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	61.9%	Pass

Stiffener Summary		
Horizontal Weld:	92.7%	Pass
Vertical Weld:	46.0%	Pass
Plate Flexure+Shear:	19.6%	Pass
Plate Tension+Shear:	93.6%	Pass
Plate Compression:	82.0%	Pass

Pole Summary		
Punching Shear:	14.6%	Pass

CCIplate

Elevation (ft) 0 (Base)

note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	No	No	Yes	No	No	

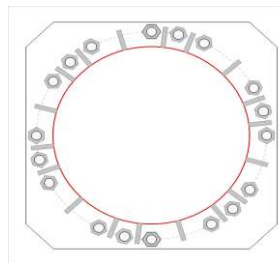
Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η _t	L _r (in):	Thread Type	Area Override, in ²	Tension Only
1	1	62.7600454	2.25	A615-75	50.6	0.5	0	N-Included		No
2	2	76.3800227	2.25	A615-75	50.6	0.5	0	N-Included		No
3	1	90	2.25	A615-75	50.6	0.5	0	N-Included		No
4	1	121.380023	2.25	A615-75	50.6	0.5	0	N-Included		No
5	2	135	2.25	A615-75	50.6	0.5	0	N-Included		No
6	1	148.619977	2.25	A615-75	50.6	0.5	0	N-Included		No
7	1	242.760045	2.25	A615-75	50.6	0.5	0	N-Included		No
8	2	256.380023	2.25	A615-75	50.6	0.5	0	N-Included		No
9	1	270	2.25	A615-75	50.6	0.5	0	N-Included		No
10	1	301.380023	2.25	A615-75	50.6	0.5	0	N-Included		No
11	2	315	2.25	A615-75	50.6	0.5	0	N-Included		No
12	1	328.619977	2.25	A615-75	50.6	0.5	0	N-Included		No
13	1	0	2.25	A615-75	50.6	0.5	0	N-Included		No
14	2	13.6199773	2.25	A615-75	50.6	0.5	0	N-Included		No
15	1	27.2399546	2.25	A615-75	50.6	0.5	0	N-Included		No
16	1	180	2.25	A615-75	50.6	0.5	0	N-Included		No
17	2	193.619977	2.25	A615-75	50.6	0.5	0	N-Included		No
18	1	207.239955	2.25	A615-75	50.6	0.5	0	N-Included		No

Custom Stiffener Connection

Stiffener	Stiffener Group ID	Location (deg.)	Width (in)	Height (in)	Thickness (in)	H. Notch (in)	V. Notch (in)	Grade (ksi)	Weld Type	Groove Depth (in)	Groove Angle (deg.)	H. Fillet Weld Size (in)	V. Fillet Weld Size (in)	Weld Strength (ksi)
1	1	6.809989	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
2	1	20.427767	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
3	1	69.5678344	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
4	1	83.1878124	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
5	1	105.690012	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
6	1	128.190011	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
7	1	141.809989	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
8	1	164.309989	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
9	1	186.807789	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
10	1	200.427767	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
11	1	225	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
12	1	249.570033	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
13	1	263.190011	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
14	1	308.190011	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
15	1	321.809989	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
16	1	344.309989	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
17	1	285.690012	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70
18	1	42.9299661	5	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.5	70

Plot Graphic



Drilled Pier Foundation

BU # :	806361
Site Name:	NHV 102 943127
Order Number:	553372 Rev 1
TIA-222 Revision:	H
Tower Type:	Monopole



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
	N/A
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input checked="" type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

Analysis Results

Soil Lateral Check	Compression	Uplift
D _{req} (ft from TOC)	7.60	-
Soil Safety Factor	5.10	-
Max Moment (kip-ft)	4904.48	-
Rating*	24.8%	-
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	418.46	-
End Bearing (kips)	783.03	-
Weight of Concrete (kips)	121.77	-
Total Capacity (kips)	1201.49	-
Axial (kips)	185.93	-
Rating*	14.7%	-
Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	7.44	-
Critical Moment (kip-ft)	4904.28	-
Critical Moment Capacity	6118.69	-
Rating*	76.3%	-
Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	28.71	-
Critical Shear (kip)	205.63	-
Critical Shear Capacity	543.98	-
Rating*	36.0%	-

Structural Foundation Rating*	76.3%
Soil Interaction Rating*	24.8%

*Rating per TIA-222-H Section 15.5

Shear-Friction Methodology is Applied

Applied Loads		Uplift
Comp.		
Moment (kip-ft)	4606.67	
Axial Force (kips)	64.16	
Shear Force (kips)	39.55	

Material Properties	
Concrete Strength, f _c :	3 ksi
Rebar Strength, F _y :	60 ksi
Tie Yield Strength, F _y t:	40 ksi

Pier Design Data	
Depth	33 ft
Ext. Above Grade	0.5 ft

Pier Section 1	
<i>From 0.5' above grade to 23' below grade</i>	
Pier Diameter	6 ft
Rebar Quantity	32
Rebar Size	11
Rebar Cage Diameter	61 in
Tie Size	4
Tie Spacing	in

Rebar & Pier Options
Embedded Pole Inputs
Bellied Pier Inputs

Pier Section 2	
<i>From 23' below grade to 33' below grade</i>	
Pier Diameter	6 ft
Rebar Quantity	16
Rebar Size	11
Rebar Cage Diameter	61 in
Tie Size	4
Tie Spacing	in

Soil Profile

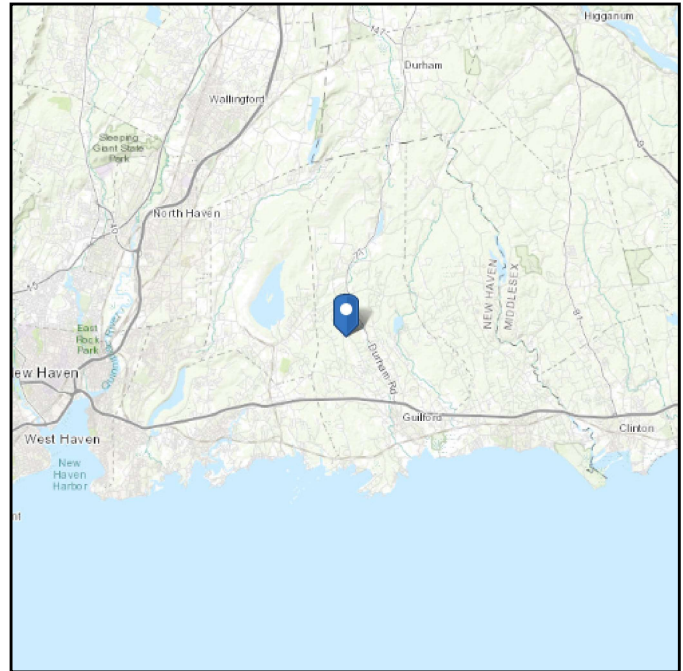
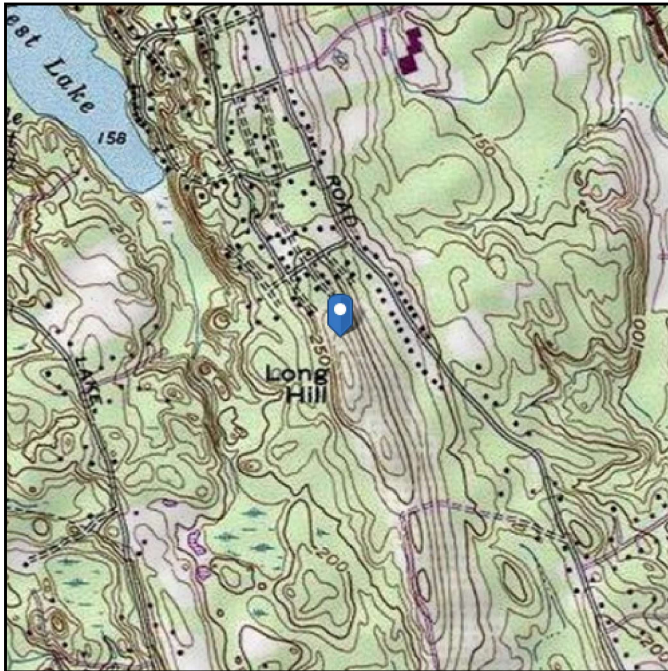
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
Groundwater Depth		10												
1	0	3.33	3.33	135	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.33	5	1.67	135	150	0	38	0.000	0.000	0.00	0.00			Cohesionless
3	5	10	5	135	150	0	38	0.000	0.000	0.80	0.80			Cohesionless
4	10	15	5	75	87.6	0	38	0.000	0.000	0.80	0.80			Cohesionless
5	15	33	18	75	87.6	0	38	0.000	0.000	1.20	1.20	36.92541		Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see
Section 11.4.3)

Elevation: 281.72 ft (NAVD 88)
Latitude: 41.330025
Longitude: -72.721808



Wind

Results:

Wind Speed:	122 Vmph	Wind Speed Rounded Up to 125 Vmph
10-year MRI	75 Vmph	
25-year MRI	85 Vmph	
50-year MRI	93 Vmph	
100-year MRI	99 Vmph	

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4

Date Accessed: Fri Jan 29 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 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 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

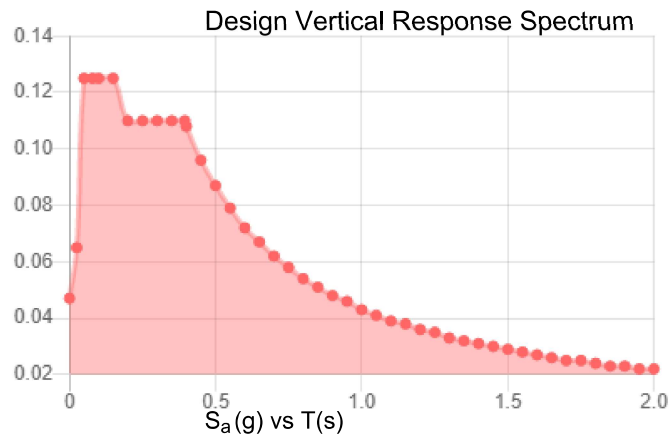
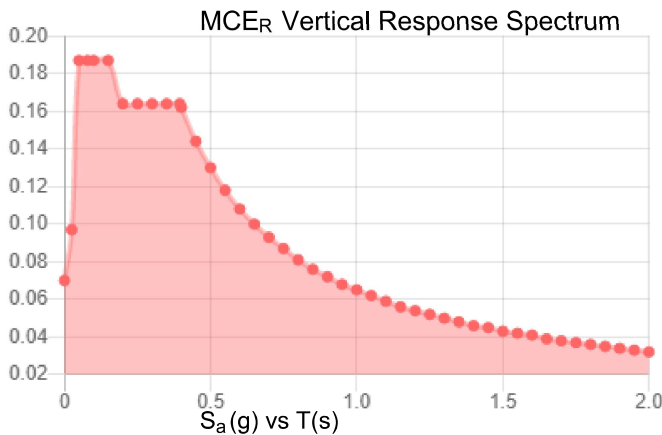
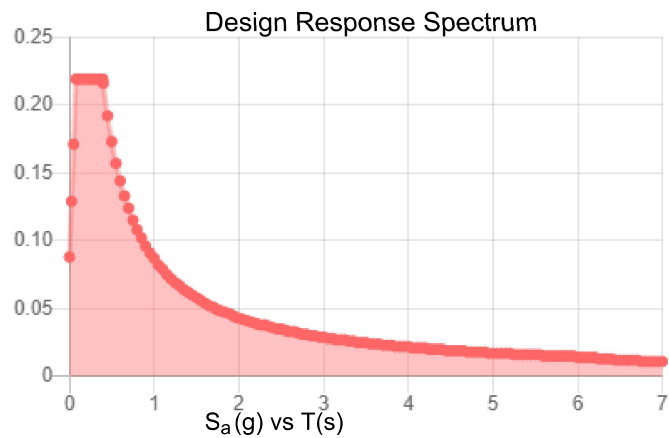
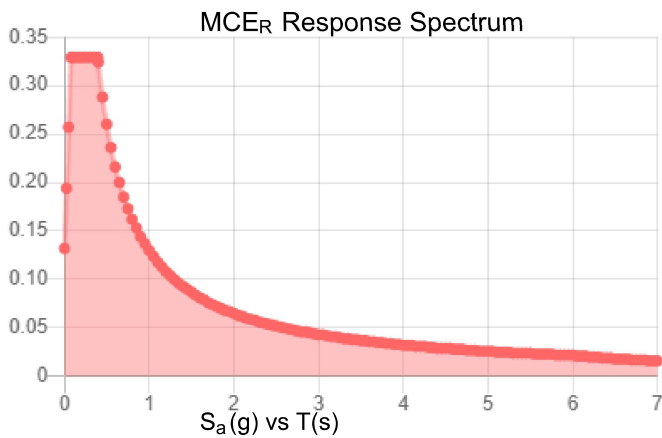
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_s :	0.206	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.115
F_v :	2.4	PGA _M :	0.181
S_{MS} :	0.329	F_{PGA} :	1.57
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.219	C_v :	0.711

Seismic Design Category B



Data Accessed:

Fri Jan 29 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Fri Jan 29 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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Exhibit E

Mount Analysis

Date: September 9, 2021



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

Subject: Mount Analysis Report

Carrier Designation: DISH Network Equipment Co-Locate
Carrier Site Number: BOHVN00154A
Carrier Site Name: CT-CCI-T-806361

Crown Castle Designation: BU Number: 806361
Site Name: NHV 102 943127
JDE Job Number: 645108
Order Number: 553372, Rev. 1

Engineering Firm Designation: B+T Group Report Designation: 137067.005.01

Site Data: 131 Manor Rd, Guilford, CT, New Haven County, 06437
Latitude 41° 19' 48.09" Longitude -72° 43' 18.51"

Structure Information: Tower Height & Type: 150 ft. Monopole
Mount Elevation: 110 ft.
Mount Type: 8 ft. Platform Mount

B+T Group is pleased to submit this "Mount Analysis Report" to determine the structural integrity of DISH Network'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

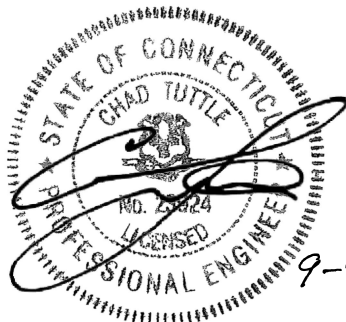
Sufficient

This analysis utilizes an ultimate 3-second gust wind speed of 122 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Chris Guidry

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2022

Chad E. Tuttle, P.E.



9-9-21

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- Additional Calculations

1) INTRODUCTION

This is a proposed 3 - sector 8' Platform Mount, designed by Commscope (Part# MC-PK8-DSH).

2) ANALYSIS CRITERIA

Building Code:	2018 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	122 mph
Exposure Category:	C
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.206
Seismic S₁:	0.054
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft.)	Antenna Centerline (ft.)	Qty.	Manufacturer	Model / Type	Mount / Modification Details
110	110	3	JMA Wireless	MX08FRO665-21	8' Platform Mount
		3	Fujitsu	TA08025-B604	
		3	Fujitsu	TA08025-B605	
		1	Raycap	RDIDC-9181-PF-48	

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Proposed Loading	Date: 04/27/2021	Crown Castle

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.4), 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 D). In addition, this analysis is in accordance with OTHER SOW.

Manufacturers drawing were used to create the model.

3.2) Assumptions

1. The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
3. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected members unless otherwise specified in this report.
4. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
5. 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.
6. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
7. 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.
8. 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 - Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Centerline (ft.)	Critical Member	% Capacity	Pass / Fail
1	Main Horizontals	110	66	8.8	Pass
	Support Rails	110	22	15.2	Pass
	Support Tubes	110	1	56.6	Pass
	Support Channels	110	31	36.4	Pass
	Support Angles	110	11	37.0	Pass
	Mount Pipes	110	70	17.0	Pass
	Connection Plates	110	36	19.9	Pass
	Connection Angles	110	90	25.9	Pass
2	Connection Bolts	110	XX	29.4	Pass

Structure Rating (max from all components) =	56.6%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) See additional documentation in "Appendix D - Additional Calculations" for calculations supporting the % capacity reported.

4.1) Recommendations

The Commscope mount (Part# MC-PK8-DSH) has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

B+T Group

MP

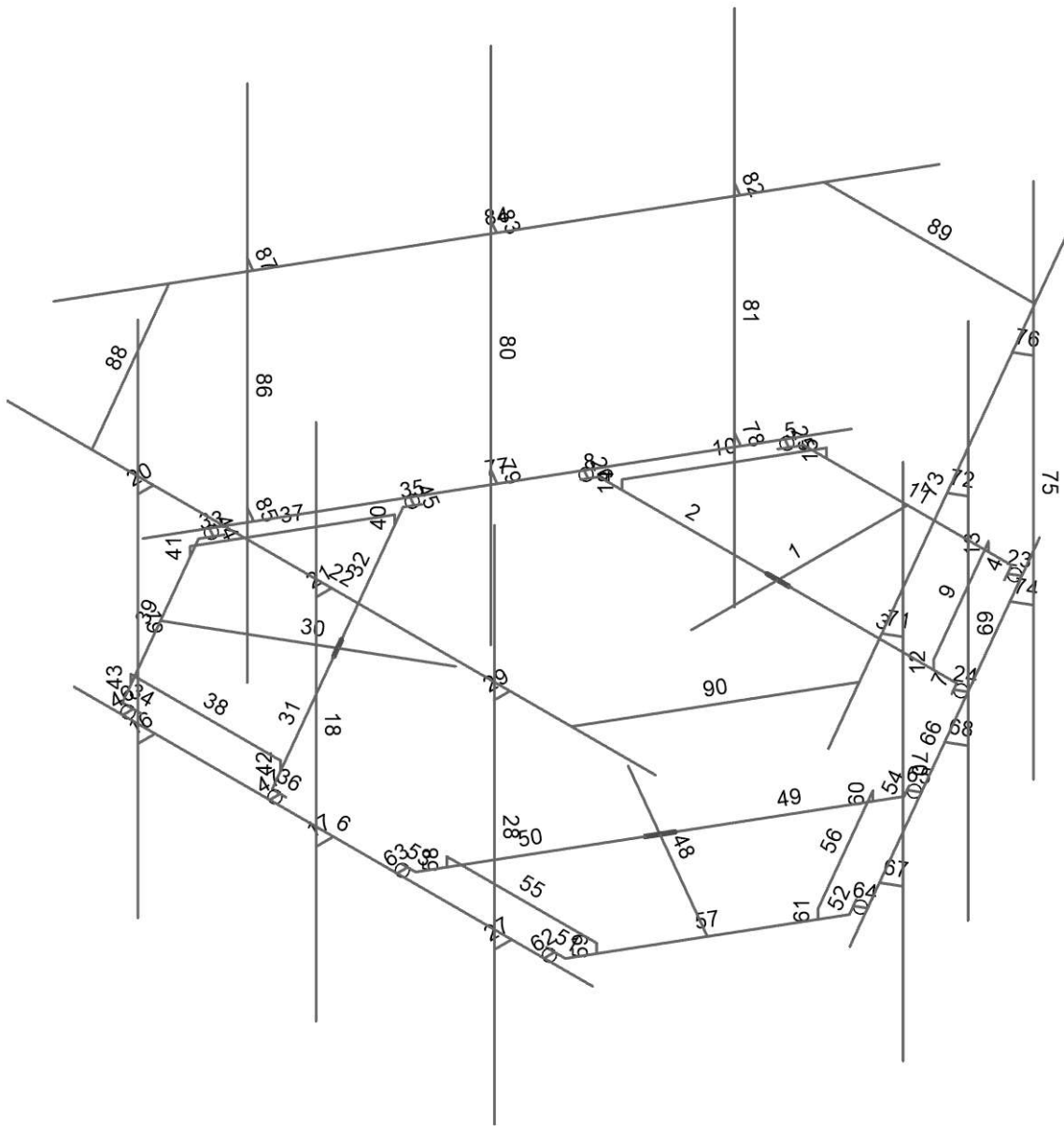
137067.005.01

806361 - NHV 102 943127

SK-2

Sep 09, 2021

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Envelope Only Solution

B+T Group

MP

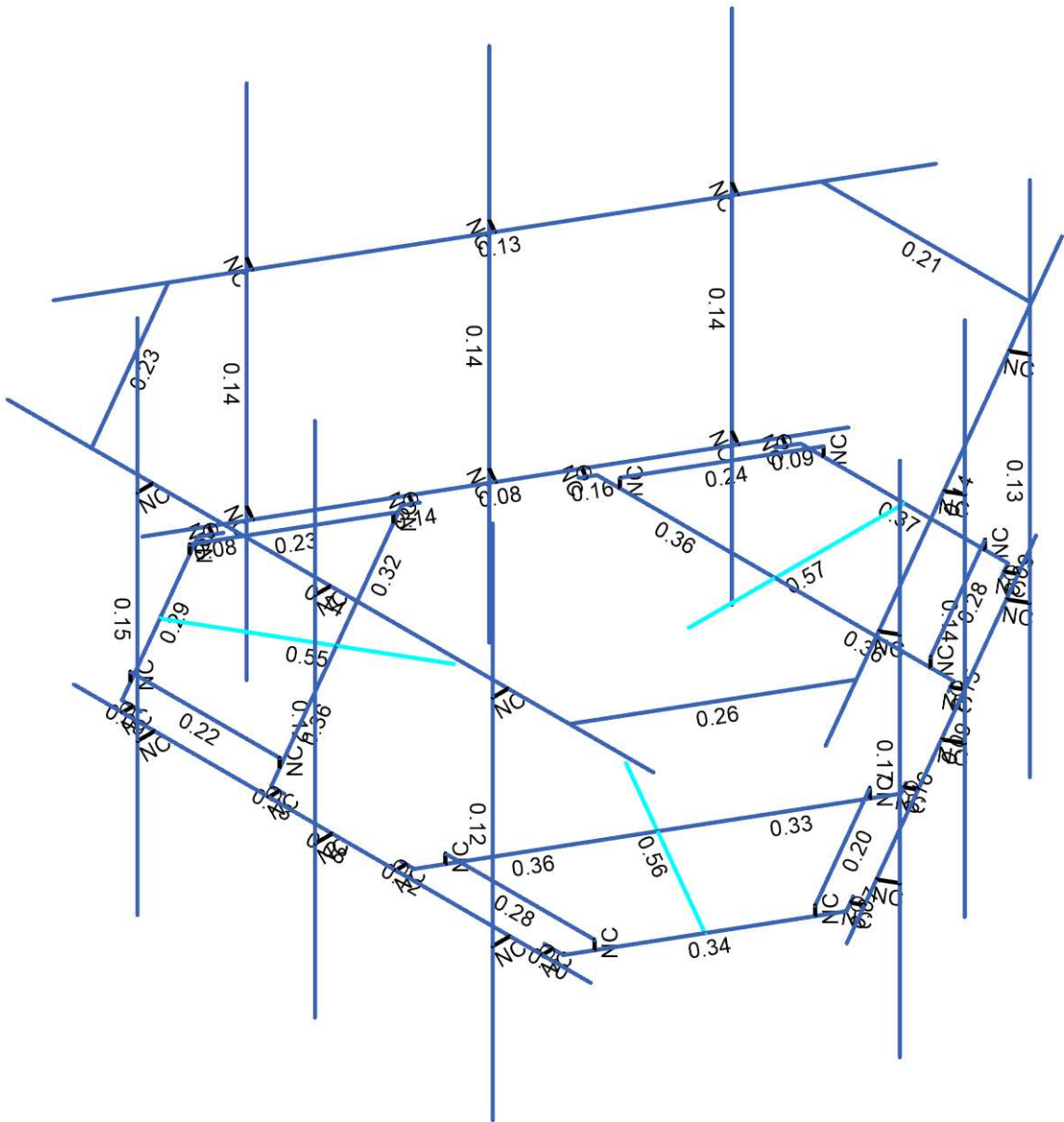
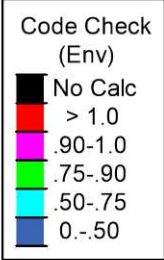
137067.005.01

806361 - NHV 102 943127

SK-3

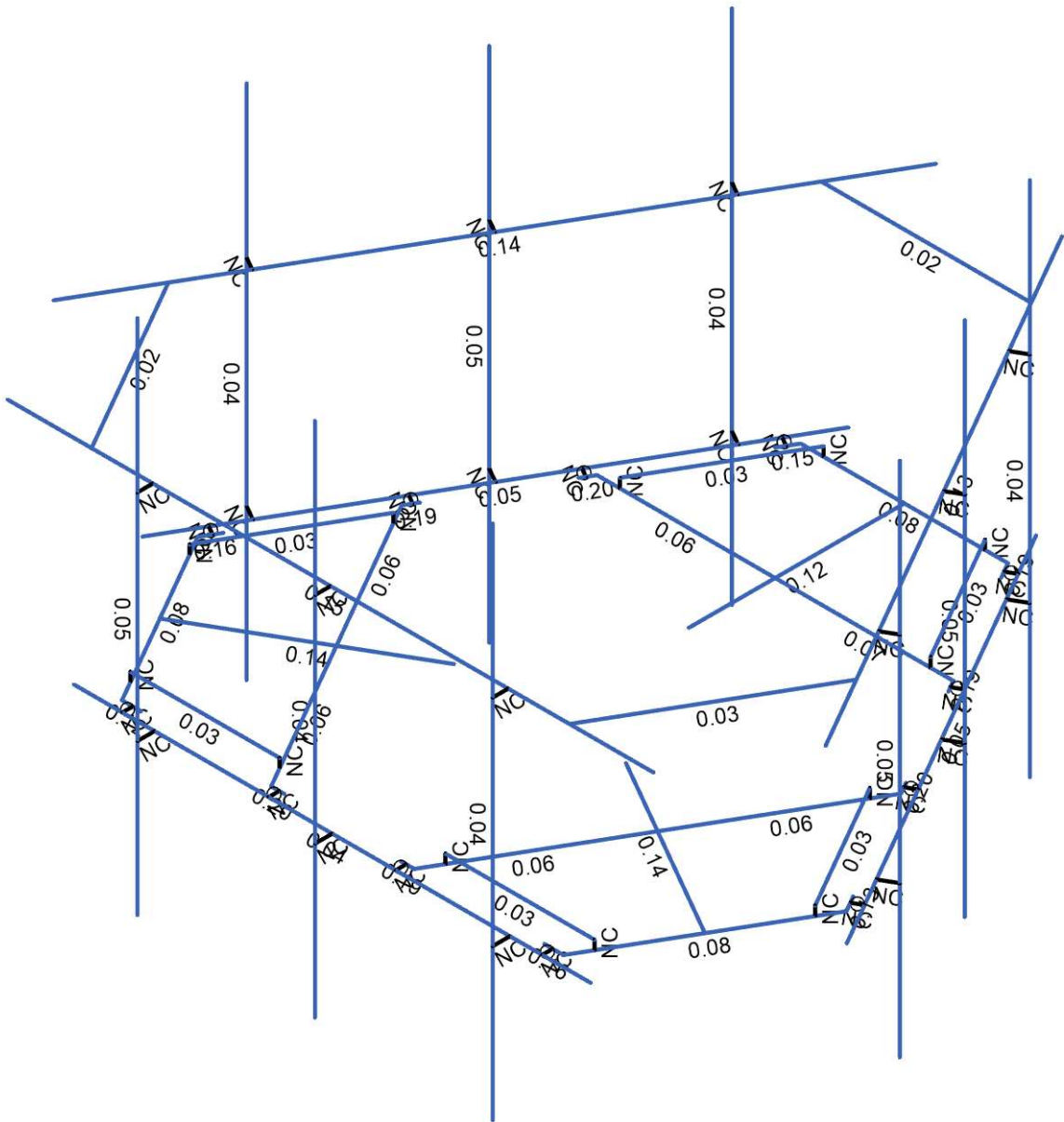
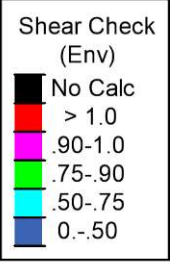
Sep 09, 2021

137067_005_01_NHV 102 94312...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	806361 - NHV 102 943127	SK-5
MP		Sep 09, 2021
137067.005.01		137067_005_01_NHV 102 94312...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group

806361 - NHV 102 943127

SK-6

MP

Sep 09, 2021

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137067_005_01_NHV 102 94312...

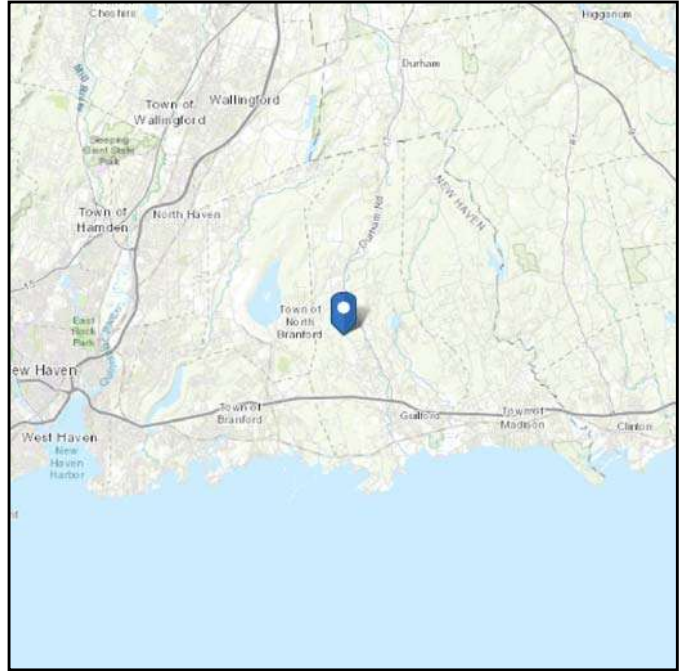
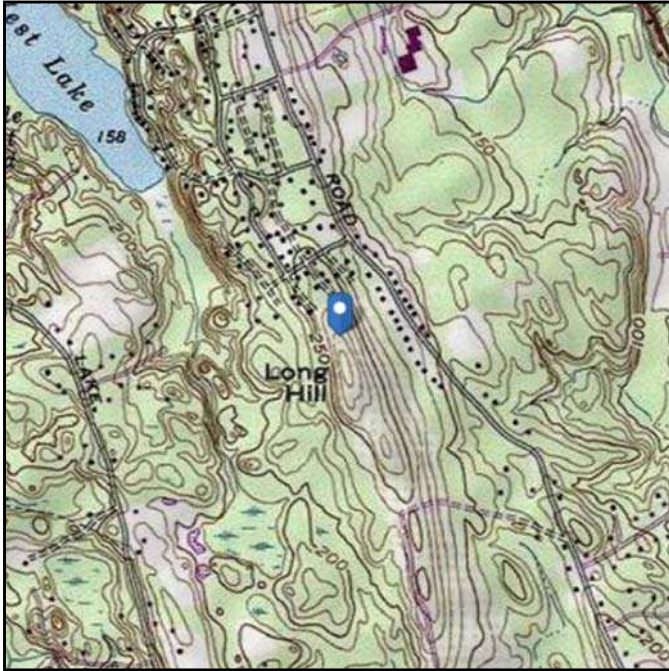
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see
Section 11.4.3)

Elevation: 281.72 ft (NAVD 88)
Latitude: 41.330025
Longitude: -72.721808



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	93 Vmph
100-year MRI	99 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Sep 08 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

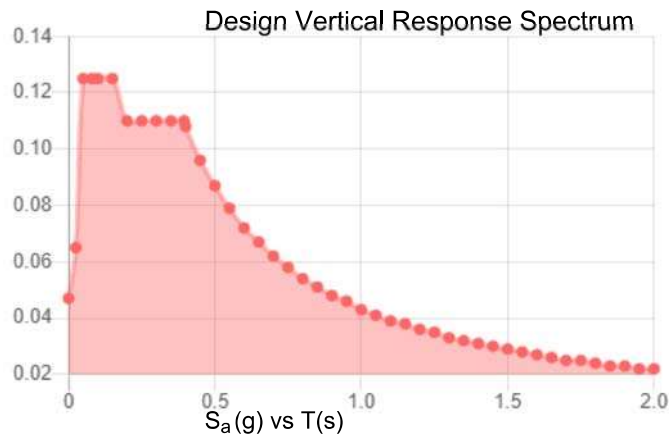
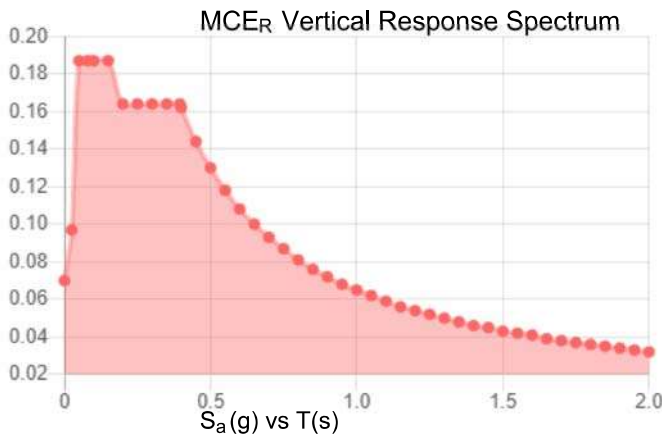
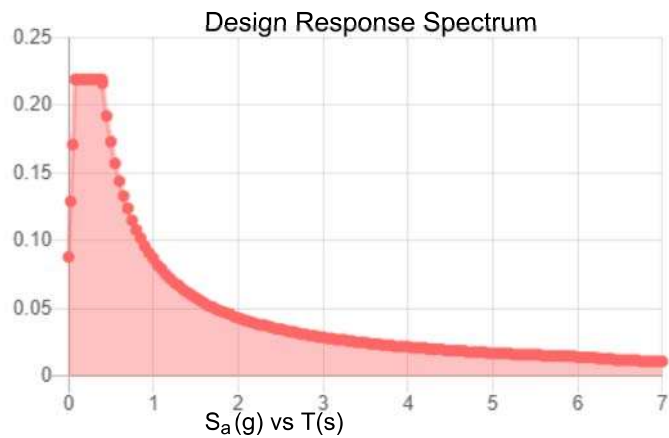
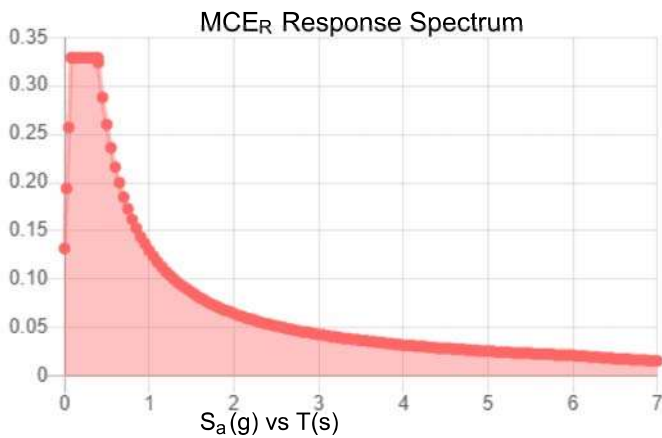
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_s :	0.206	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.115
F_v :	2.4	PGA _M :	0.181
S_{MS} :	0.329	F_{PGA} :	1.57
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.219	C_v :	0.711

Seismic Design Category B



Data Accessed:

Wed Sep 08 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Wed Sep 08 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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

PROJECT	137067.005.01 - NHV 102 94:	KSC
SUBJECT	Platform Mount Analysis	
DATE	09-09-21	PAGE OF

Tower Type	:	Monopole	
Ground Elevation	z_s	: 282	ft [ASCE7 Hazard Tool]
Tower Height		: 150.00	ft
Mount Elevation		: 110.00	ft
Antenna Elevation		: 110.00	ft
Crest Height		: 0	ft
Risk Category		: II	[Table 2-1]
Exposure Category		: C	[Sec. 2.6.5.1.2]
Topography Category		: 1.00	[Sec. 2.6.6.2]
Wind Velocity	V	: 122	mph [ASCE7 Hazard Tool]
Ice wind Velocity	V_i	: 50	mph [ASCE7 Hazard Tool]
Service Velocity	V_s	: 30	mph [ASCE7 Hazard Tool]
Base Ice thickness	t_i	: 1.00	in [ASCE7 Hazard Tool]
Seismic Design Cat.		: B	[ASCE7 Hazard Tool]
	S_s	: 0.21	
	S_1	: 0.05	
	S_{DS}	: 0.22	
	S_{D1}	: 0.09	
Gust Factor	G_h	: 1.00	[Sec. 16.6]
Pressure Coefficient	K_z	: 1.29	[Sec. 2.6.5.2]
Topography Factor	K_{zt}	: 1.00	[Sec. 2.6.6]
Elevation Factor	K_e	: 0.99	[Sec. 2.6.8]
Directionality Factor	K_d	: 0.95	[Sec. 16.6]
Shielding Factor	K_a	: 0.90	[Sec. 16.6]
Design Ice Thickness	t_z	: 1.13	in [Sec. 2.6.10]
Importance Factor	I_e	: 1	[Table 2-3]
Response Coefficient	C_s	: 0.110	[Sec. 2.7.7.1]
Amplification	A_s	: 1.933333	[Sec. 16.7]
	q_z	: 46.27	psf

PROJECT	137067.005.01 - NHV 102 94:	KSC
SUBJECT	Platform Mount Analysis	
DATE	09-09-21	PAGE OF

Manufacturer	Model	Qty	Aspect Ratio	C _a flat/round	EPA _N (ft ²)	EPA _T (ft ²)	EPA _{N-Ice} (ft ²)	EPA _{T-Ice} (ft ²)	F _{A No Ice (N)}	F _{A No Ice (T)}	F _{A Ice (N)}	F _{A Ice (T)}
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.19	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.19	0.07	0.04	0.02
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.15	1.35	0.08	0.05	0.01	0.01
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.15	1.21	0.08	0.04	0.01	0.01
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.19	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.19	0.07	0.04	0.02
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.15	1.35	0.08	0.05	0.01	0.01
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.15	1.21	0.08	0.04	0.01	0.01
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.19	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.19	0.07	0.04	0.02
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.15	1.35	0.08	0.05	0.01	0.01
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.15	1.21	0.08	0.04	0.01	0.01
RAYCAP	RDIDC-9181-PF-48	1	1.14	1.20	1.68	0.97	2.20	1.40	0.08	0.05	0.01	0.01

APPENDIX C
SOFTWARE ANALYSIS OUTPUT

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0.167	-1.537417	
2	2	0	0.167	-4.87075	
3	3	0	0.167	-2.87075	
4	4	2.758333	0.167	-2.87075	
5	5	-2.758333	0.167	-2.87075	
6	6	-1.603633	0.167	-4.87075	
7	7	1.603633	0.167	-4.87075	
8	8	1.749466	0.167	-4.61816	
9	9	-1.749466	0.167	-4.61816	
10	10	1.686966	0.167	-4.726413	
11	11	1.826823	0.167	-4.807159	
12	12	-1.686966	0.167	-4.726413	
13	13	-1.826823	0.167	-4.807159	
14	14	-3.999998	0.167	3.985655	
15	15	3.999998	0.167	3.985655	
16	16	2.8625	0.167	-2.690328	
17	17	2.820833	0.167	-2.762498	
18	18	2.96069	0.167	-2.843245	
19	19	-2.8625	0.167	-2.690328	
20	20	-2.820833	0.167	-2.762498	
21	21	-2.96069	0.167	-2.843245	
22	22	-1.25	0.307833	-4.87075	
23	23	-2.404701	0.307833	-2.87075	
24	24	2.404701	0.307833	-2.87075	
25	25	1.25	0.307833	-4.87075	
26	26	-1.25	0.167	-4.87075	
27	27	-2.404701	0.167	-2.87075	
28	28	2.404701	0.167	-2.87075	
29	29	1.25	0.167	-4.87075	
30	30	-2.749998	0.167	3.985655	
31	31	0.000002	0.167	3.985655	
32	32	-2.749998	0.167	4.25128	
33	33	0.000002	0.167	4.25128	
34	34	-2.749998	-2.1667	4.25128	
35	35	0.000002	-2.1667	4.25128	
36	36	-2.749998	5.8333	4.25128	
37	37	0.000002	5.8333	4.25128	
38	38	-2.749998	3.500227	4.25128	
39	39	0.000002	3.500227	4.25128	
40	40	-2.749998	3.500227	4.012155	
41	41	0.000002	3.500227	4.012155	
42	42	-5	3.500227	4.012155	
43	43	5	3.500227	4.012155	
44	44	2.749998	0.167	3.985655	
45	45	2.749998	0.167	4.25128	
46	46	2.749998	-2.1667	4.25128	
47	47	2.749998	5.8333	4.25128	
48	48	2.749998	3.500227	4.25128	
49	49	2.749998	3.500227	4.012155	
50	50	0	0.167	0	
51	51	-1.331442	0.167	0.768709	
52	52	-4.218194	0.167	2.435375	
53	53	-2.486143	0.167	1.435375	
54	54	-3.865309	0.167	-0.953412	
55	55	-1.106976	0.167	3.824162	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	56	-3.416377	0.167	3.824162	
57	57	-5.02001	0.167	1.046588	
58	58	-4.874177	0.167	0.793998	
59	59	-3.124711	0.167	3.824162	
60	60	-4.936677	0.167	0.902251	
61	61	-5.076534	0.167	0.821504	
62	62	-3.249711	0.167	3.824162	
63	63	-3.249711	0.167	3.985655	
64	64	-3.761143	0.167	-1.133833	
65	65	-3.80281	0.167	-1.061664	
66	66	-3.942667	0.167	-1.14241	
67	67	-0.898643	0.167	3.824162	
68	68	-0.981977	0.167	3.824162	
69	69	-0.981977	0.167	3.985655	
70	70	-3.593194	0.307833	3.517907	
71	71	-1.283793	0.307833	3.517907	
72	72	-3.688493	0.307833	-0.647157	
73	73	-4.843194	0.307833	1.352843	
74	74	-3.593194	0.167	3.517907	
75	75	-1.283793	0.167	3.517907	
76	76	-3.688493	0.167	-0.647157	
77	77	-4.843194	0.167	1.352843	
78	78	1.331442	0.167	0.768709	
79	79	4.218194	0.167	2.435375	
80	80	2.486143	0.167	1.435375	
81	81	1.106976	0.167	3.824162	
82	82	3.865309	0.167	-0.953412	
83	83	5.02001	0.167	1.046588	
84	84	3.416377	0.167	3.824162	
85	85	3.124711	0.167	3.824162	
86	86	4.874177	0.167	0.793998	
87	87	3.249711	0.167	3.824162	
88	88	3.249711	0.167	3.985655	
89	89	4.936677	0.167	0.902251	
90	90	5.076534	0.167	0.821504	
91	91	0.898643	0.167	3.824162	
92	92	0.981977	0.167	3.824162	
93	93	0.981977	0.167	3.985655	
94	94	3.761143	0.167	-1.133833	
95	95	3.80281	0.167	-1.061664	
96	96	3.942667	0.167	-1.14241	
97	97	4.843194	0.307833	1.352843	
98	98	3.688493	0.307833	-0.647157	
99	99	1.283793	0.307833	3.517907	
100	100	3.593194	0.307833	3.517907	
101	101	4.843194	0.167	1.352843	
102	102	3.688493	0.167	-0.647157	
103	103	1.283793	0.167	3.517907	
104	104	3.593194	0.167	3.517907	
105	105	5.451677	0.167	1.471273	
106	106	1.451679	0.167	-5.456927	
107	107	4.826677	0.167	0.388741	
108	108	3.451677	0.167	-1.992829	
109	109	5.056715	0.167	0.255928	
110	110	3.681715	0.167	-2.125642	



Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
111	111	5.056715	-2.1667	0.255928	
112	112	3.681715	-2.1667	-2.125642	
113	113	5.056715	5.8333	0.255928	
114	114	3.681715	5.8333	-2.125642	
115	115	5.056715	3.500227	0.255928	
116	116	3.681715	3.500227	-2.125642	
117	117	4.849627	3.500227	0.375491	
118	118	3.474627	3.500227	-2.006079	
119	119	5.974628	3.500227	2.32405	
120	120	0.974628	3.500227	-6.336205	
121	121	2.076679	0.167	-4.374396	
122	122	2.306717	0.167	-4.507208	
123	123	2.306717	-2.1667	-4.507208	
124	124	2.306717	5.8333	-4.507208	
125	125	2.306717	3.500227	-4.507208	
126	126	2.099629	3.500227	-4.387646	
127	127	-1.451679	0.167	-5.456927	
128	128	-5.451677	0.167	1.471273	
129	129	-2.076679	0.167	-4.374396	
130	130	-3.451679	0.167	-1.992826	
131	131	-2.306717	0.167	-4.507208	
132	132	-3.681717	0.167	-2.125638	
133	133	-2.306717	-2.1667	-4.507208	
134	134	-3.681717	-2.1667	-2.125638	
135	135	-2.306717	5.8333	-4.507208	
136	136	-3.681717	5.8333	-2.125638	
137	137	-2.306717	3.500227	-4.507208	
138	138	-3.681717	3.500227	-2.125638	
139	139	-2.099629	3.500227	-4.387646	
140	140	-3.474629	3.500227	-2.006076	
141	141	-0.974628	3.500227	-6.336205	
142	142	-5.974628	3.500227	2.32405	
143	143	-4.826677	0.167	0.388741	
144	144	-5.056715	0.167	0.255928	
145	145	-5.056715	-2.1667	0.255928	
146	146	-5.056715	5.8333	0.255928	
147	147	-5.056715	3.500227	0.255928	
148	148	-4.849627	3.500227	0.375491	
149	149	-3.69926	3.500227	4.012155	
150	150	3.69926	3.500227	4.012155	
151	151	5.324258	3.500227	1.197576	
152	152	1.624998	3.500227	-5.209731	
153	153	-1.624998	3.500227	-5.209731	
154	154	-5.324258	3.500227	1.197576	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	2						
3	3						
4	4						
5	5						
6	16						
7	17						
8	19						

Node Boundary Conditions (Continued)

Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
9	20					
10	22					
11	25					
12	26					
13	29					
14	51	Reaction	Reaction	Reaction	Reaction	Reaction
15	52					
16	53					
17	54					
18	55					
19	64					
20	65					
21	67					
22	68					
23	70					
24	73					
25	74					
26	77					
27	78	Reaction	Reaction	Reaction	Reaction	Reaction
28	79					
29	80					
30	81					
31	82					
32	91					
33	92					
34	94					
35	95					
36	97					
37	100					
38	101					
39	104					

Hot Rolled Steel Properties

Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e ⁶ F ⁻¹]	Density [k/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt	
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A500 Gr.C	29000	11154	0.3	0.65	0.49	46	1.4	62	1.3

Hot Rolled Steel Section Sets

Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]	
1	MF-H1	PIPE 3.5x0.165	Beam	Pipe	A500 Gr.C	Typical	1.729	2.409	2.409	4.819
2	MF-H2	PIPE 2.88x0.203	Beam	Pipe	A500 Gr.C	Typical	1.704	1.53	1.53	3.059
3	SF-H1	HSS4X4X2	Beam	Tube	A500 Gr.B Rect	Typical	1.77	4.4	4.4	6.91
4	SF-H2	C3.38x2.06x.188	Beam	Channel	A36 Gr.36	Typical	1.339	0.562	2.4	0.015
5	SF-H3	L2x2x4	Beam	Single Angle	A36 Gr.36	Typical	0.944	0.346	0.346	0.021
6	SF-H4	L7.63x2.5x6	Beam	Single Angle	A36 Gr.36	Typical	3.658	1.307	22.092	0.163
7	MF-P1	PIPE 2.88x0.203	Column	Pipe	A500 Gr.C	Typical	1.704	1.53	1.53	3.059
8	MF-CP1	PL3/8"x6	Beam	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101



Company : B+T Group
 Designer : MP
 Job Number : 137067.005.01
 Model Name : 806361 - NHV 102 943127

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Hot Rolled Steel Section Sets (Continued)

Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
9	MF-H3	Beam	Single Angle	A36 Gr.36	Typical	2.678	4.383	12.502	0.054

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	1	2		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
2	2	5	3	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
3	3	3	4	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
4	4	7	8		MF-CP1	Beam	RECT	A36 Gr.36	Typical
5	5	6	9		MF-CP1	Beam	RECT	A36 Gr.36	Typical
6	6	14	15		MF-H1	Beam	Pipe	A500 Gr.C	Typical
7	7	16	4		MF-CP1	Beam	RECT	A36 Gr.36	Typical
8	8	5	19		MF-CP1	Beam	RECT	A36 Gr.36	Typical
9	9	25	24		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
10	10	23	22		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
11	11	6	7		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
12	12	28	24		RIGID	None	None	RIGID	Typical
13	13	29	25		RIGID	None	None	RIGID	Typical
14	14	27	23		RIGID	None	None	RIGID	Typical
15	15	26	22		RIGID	None	None	RIGID	Typical
16	16	32	30		RIGID	None	None	RIGID	Typical
17	17	33	31		RIGID	None	None	RIGID	Typical
18	18	37	35		MF-P1	Column	Pipe	A500 Gr.C	Typical
19	19	36	34		MF-P1	Column	Pipe	A500 Gr.C	Typical
20	20	38	40		RIGID	None	None	RIGID	Typical
21	21	39	41		RIGID	None	None	RIGID	Typical
22	22	42	43		MF-H2	Beam	Pipe	A500 Gr.C	Typical
23	23	11	10		RIGID	None	None	RIGID	Typical
24	24	18	17		RIGID	None	None	RIGID	Typical
25	25	13	12		RIGID	None	None	RIGID	Typical
26	26	21	20		RIGID	None	None	RIGID	Typical
27	27	45	44		RIGID	None	None	RIGID	Typical
28	28	47	46		MF-P1	Column	Pipe	A500 Gr.C	Typical
29	29	48	49		RIGID	None	None	RIGID	Typical
30	30	51	52		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
31	31	55	53	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
32	32	53	54	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
33	33	57	58		MF-CP1	Beam	RECT	A36 Gr.36	Typical
34	34	56	59		MF-CP1	Beam	RECT	A36 Gr.36	Typical
35	35	64	54		MF-CP1	Beam	RECT	A36 Gr.36	Typical
36	36	55	67		MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	73	72		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
38	38	71	70		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
39	39	56	57		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
40	40	76	72		RIGID	None	None	RIGID	Typical
41	41	77	73		RIGID	None	None	RIGID	Typical
42	42	75	71		RIGID	None	None	RIGID	Typical
43	43	74	70		RIGID	None	None	RIGID	Typical
44	44	61	60		RIGID	None	None	RIGID	Typical
45	45	66	65		RIGID	None	None	RIGID	Typical
46	46	63	62		RIGID	None	None	RIGID	Typical
47	47	69	68		RIGID	None	None	RIGID	Typical
48	48	78	79		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
49	49	82	80	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
50	50	80	81	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
51	51	84	85		MF-CP1	Beam	RECT	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
52	52	83	86		MF-CP1	Beam	RECT	A36 Gr.36	Typical
53	53	91	81		MF-CP1	Beam	RECT	A36 Gr.36	Typical
54	54	82	94		MF-CP1	Beam	RECT	A36 Gr.36	Typical
55	55	100	99		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
56	56	98	97		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
57	57	83	84		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
58	58	103	99		RIGID	None	None	RIGID	Typical
59	59	104	100		RIGID	None	None	RIGID	Typical
60	60	102	98		RIGID	None	None	RIGID	Typical
61	61	101	97		RIGID	None	None	RIGID	Typical
62	62	88	87		RIGID	None	None	RIGID	Typical
63	63	93	92		RIGID	None	None	RIGID	Typical
64	64	90	89		RIGID	None	None	RIGID	Typical
65	65	96	95		RIGID	None	None	RIGID	Typical
66	66	105	106		MF-H1	Beam	Pipe	A500 Gr.C	Typical
67	67	109	107		RIGID	None	None	RIGID	Typical
68	68	110	108		RIGID	None	None	RIGID	Typical
69	69	114	112		MF-P1	Column	Pipe	A500 Gr.C	Typical
70	70	113	111		MF-P1	Column	Pipe	A500 Gr.C	Typical
71	71	115	117		RIGID	None	None	RIGID	Typical
72	72	116	118		RIGID	None	None	RIGID	Typical
73	73	119	120		MF-H2	Beam	Pipe	A500 Gr.C	Typical
74	74	122	121		RIGID	None	None	RIGID	Typical
75	75	124	123		MF-P1	Column	Pipe	A500 Gr.C	Typical
76	76	125	126		RIGID	None	None	RIGID	Typical
77	77	127	128		MF-H1	Beam	Pipe	A500 Gr.C	Typical
78	78	131	129		RIGID	None	None	RIGID	Typical
79	79	132	130		RIGID	None	None	RIGID	Typical
80	80	136	134		MF-P1	Column	Pipe	A500 Gr.C	Typical
81	81	135	133		MF-P1	Column	Pipe	A500 Gr.C	Typical
82	82	137	139		RIGID	None	None	RIGID	Typical
83	83	138	140		RIGID	None	None	RIGID	Typical
84	84	141	142		MF-H2	Beam	Pipe	A500 Gr.C	Typical
85	85	144	143		RIGID	None	None	RIGID	Typical
86	86	146	145		MF-P1	Column	Pipe	A500 Gr.C	Typical
87	87	147	148		RIGID	None	None	RIGID	Typical
88	88	154	149	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
89	89	152	153	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
90	90	150	151	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
1	1				Yes	Default	None
2	2			2	Yes	N/A	None
3	3		2		Yes	N/A	None
4	4				Yes	N/A	None
5	5				Yes	N/A	None
6	6				Yes	N/A	None
7	7				Yes	N/A	None
8	8				Yes	N/A	None
9	9				Yes	N/A	None
10	10				Yes	N/A	None
11	11				Yes	N/A	None
12	12				Yes	** NA **	None
13	13				Yes	** NA **	None



Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
14	14				Yes	** NA **	None
15	15				Yes	** NA **	None
16	16				Yes	** NA **	None
17	17				Yes	** NA **	None
18	18				Yes	** NA **	None
19	19				Yes	** NA **	None
20	20				Yes	** NA **	None
21	21				Yes	** NA **	None
22	22				Yes	N/A	None
23	23	OOOOOX			Yes	** NA **	None
24	24	OOOOOX			Yes	** NA **	None
25	25	OOOOOX			Yes	** NA **	None
26	26	OOOOOX			Yes	** NA **	None
27	27				Yes	** NA **	None
28	28				Yes	** NA **	None
29	29				Yes	** NA **	None
30	30				Yes	Default	None
31	31			2	Yes	N/A	None
32	32		2		Yes	N/A	None
33	33				Yes	N/A	None
34	34				Yes	N/A	None
35	35				Yes	N/A	None
36	36				Yes	N/A	None
37	37				Yes	N/A	None
38	38				Yes	N/A	None
39	39				Yes	N/A	None
40	40				Yes	** NA **	None
41	41				Yes	** NA **	None
42	42				Yes	** NA **	None
43	43				Yes	** NA **	None
44	44	OOOOOX			Yes	** NA **	None
45	45	OOOOOX			Yes	** NA **	None
46	46	OOOOOX			Yes	** NA **	None
47	47	OOOOOX			Yes	** NA **	None
48	48				Yes	Default	None
49	49			2	Yes	N/A	None
50	50		2		Yes	N/A	None
51	51				Yes	N/A	None
52	52				Yes	N/A	None
53	53				Yes	N/A	None
54	54				Yes	N/A	None
55	55				Yes	N/A	None
56	56				Yes	N/A	None
57	57				Yes	N/A	None
58	58				Yes	** NA **	None
59	59				Yes	** NA **	None
60	60				Yes	** NA **	None
61	61				Yes	** NA **	None
62	62	OOOOOX			Yes	** NA **	None
63	63	OOOOOX			Yes	** NA **	None
64	64	OOOOOX			Yes	** NA **	None
65	65	OOOOOX			Yes	** NA **	None
66	66				Yes	N/A	None
67	67				Yes	** NA **	None
68	68				Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
69	69				Yes	** NA **	None
70	70				Yes	** NA **	None
71	71				Yes	** NA **	None
72	72				Yes	** NA **	None
73	73				Yes	N/A	None
74	74				Yes	** NA **	None
75	75				Yes	** NA **	None
76	76				Yes	** NA **	None
77	77				Yes	N/A	None
78	78				Yes	** NA **	None
79	79				Yes	** NA **	None
80	80				Yes	** NA **	None
81	81				Yes	** NA **	None
82	82				Yes	** NA **	None
83	83				Yes	** NA **	None
84	84				Yes	N/A	None
85	85				Yes	** NA **	None
86	86				Yes	** NA **	None
87	87				Yes	** NA **	None
88	88				Yes	N/A	None
89	89				Yes	N/A	None
90	90				Yes	N/A	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	1	SF-H1	3.333	Lbyy	Lateral
2	2	SF-H2	2.758	Lbyy	Lateral
3	3	SF-H2	2.758	Lbyy	Lateral
4	4	MF-CP1	0.292	Lbyy	Lateral
5	5	MF-CP1	0.292	Lbyy	Lateral
6	6	MF-H1	8	Lbyy	Lateral
7	7	MF-CP1	0.208	Lbyy	Lateral
8	8	MF-CP1	0.208	Lbyy	Lateral
9	9	SF-H3	2.309	Lbyy	Lateral
10	10	SF-H3	2.309	Lbyy	Lateral
11	11	SF-H4	3.207	Lbyy	Lateral
12	18	MF-P1	8	Lbyy	Lateral
13	19	MF-P1	8	Lbyy	Lateral
14	22	MF-H2	10	Lbyy	Lateral
15	28	MF-P1	8	Lbyy	Lateral
16	30	SF-H1	3.333	Lbyy	Lateral
17	31	SF-H2	2.758	Lbyy	Lateral
18	32	SF-H2	2.758	Lbyy	Lateral
19	33	MF-CP1	0.292	Lbyy	Lateral
20	34	MF-CP1	0.292	Lbyy	Lateral
21	35	MF-CP1	0.208	Lbyy	Lateral
22	36	MF-CP1	0.208	Lbyy	Lateral
23	37	SF-H3	2.309	Lbyy	Lateral
24	38	SF-H3	2.309	Lbyy	Lateral
25	39	SF-H4	3.207	Lbyy	Lateral
26	48	SF-H1	3.333	Lbyy	Lateral
27	49	SF-H2	2.758	Lbyy	Lateral
28	50	SF-H2	2.758	Lbyy	Lateral
29	51	MF-CP1	0.292	Lbyy	Lateral
30	52	MF-CP1	0.292	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
31	53	MF-CP1	0.208	Lbyy	Lateral
32	54	MF-CP1	0.208	Lbyy	Lateral
33	55	SF-H3	2.309	Lbyy	Lateral
34	56	SF-H3	2.309	Lbyy	Lateral
35	57	SF-H4	3.207	Lbyy	Lateral
36	66	MF-H1	8	Lbyy	Lateral
37	69	MF-P1	8	Lbyy	Lateral
38	70	MF-P1	8	Lbyy	Lateral
39	73	MF-H2	10	Lbyy	Lateral
40	75	MF-P1	8	Lbyy	Lateral
41	77	MF-H1	8	Lbyy	Lateral
42	80	MF-P1	8	Lbyy	Lateral
43	81	MF-P1	8	Lbyy	Lateral
44	84	MF-H2	10	Lbyy	Lateral
45	86	MF-P1	8	Lbyy	Lateral
46	88	MF-H3	3.25	Lbyy	Lateral
47	89	MF-H3	3.25	Lbyy	Lateral
48	90	MF-H3	3.25	Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Y	-0.041	%15
2	28	Y	-0.041	%85
3	28	Y	-0.075	%20
4	28	Y	-0.064	%50
5	28	Y	0	0
6	86	Y	-0.041	%15
7	86	Y	-0.041	%85
8	86	Y	-0.075	%20
9	86	Y	-0.064	%50
10	86	Y	0	0
11	75	Y	-0.041	%15
12	75	Y	-0.041	%85
13	75	Y	-0.075	%20
14	75	Y	-0.064	%50
15	75	Y	0	0
16	30	Y	-0.022	%20
17	30	Y	0	0
18	30	Y	0	0
19	30	Y	0	0
20	30	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.185	%15
2	28	Z	-0.185	%85
3	28	Z	-0.082	%20
4	28	Z	-0.082	%50
5	28	Z	0	0
6	86	Z	-0.185	%15
7	86	Z	-0.185	%85
8	86	Z	-0.082	%20
9	86	Z	-0.082	%50

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
10	86	Z	0	0
11	75	Z	-0.185	%15
12	75	Z	-0.185	%85
13	75	Z	-0.082	%20
14	75	Z	-0.082	%50
15	75	Z	0	0
16	30	Z	-0.084	%20
17	30	Z	0	0
18	30	Z	0	0
19	30	Z	0	0
20	30	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.074	%15
2	28	X	-0.074	%85
3	28	X	-0.047	%20
4	28	X	-0.041	%50
5	28	X	0	0
6	86	X	-0.074	%15
7	86	X	-0.074	%85
8	86	X	-0.047	%20
9	86	X	-0.041	%50
10	86	X	0	0
11	75	X	-0.074	%15
12	75	X	-0.074	%85
13	75	X	-0.047	%20
14	75	X	-0.041	%50
15	75	X	0	0
16	30	X	-0.049	%20
17	30	X	0	0
18	30	X	0	0
19	30	X	0	0
20	30	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.035	%15
2	28	Z	-0.035	%85
3	28	Z	-0.014	%20
4	28	Z	-0.014	%50
5	28	Z	0	0
6	86	Z	-0.035	%15
7	86	Z	-0.035	%85
8	86	Z	-0.014	%20
9	86	Z	-0.014	%50
10	86	Z	0	0
11	75	Z	-0.035	%15
12	75	Z	-0.035	%85
13	75	Z	-0.014	%20
14	75	Z	-0.014	%50
15	75	Z	0	0
16	30	Z	-0.014	%20

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
17	30	Z	0	0
18	30	Z	0	0
19	30	Z	0	0
20	30	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.016	%15
2	28	X	-0.016	%85
3	28	X	-0.008	%20
4	28	X	-0.007	%50
5	28	X	0	0
6	86	X	-0.016	%15
7	86	X	-0.016	%85
8	86	X	-0.008	%20
9	86	X	-0.007	%50
10	86	X	0	0
11	75	X	-0.016	%15
12	75	X	-0.016	%85
13	75	X	-0.008	%20
14	75	X	-0.007	%50
15	75	X	0	0
16	30	X	-0.008	%20
17	30	X	0	0
18	30	X	0	0
19	30	X	0	0
20	30	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.011	%15
2	28	Z	-0.011	%85
3	28	Z	-0.005	%20
4	28	Z	-0.005	%50
5	28	Z	0	0
6	86	Z	-0.011	%15
7	86	Z	-0.011	%85
8	86	Z	-0.005	%20
9	86	Z	-0.005	%50
10	86	Z	0	0
11	75	Z	-0.011	%15
12	75	Z	-0.011	%85
13	75	Z	-0.005	%20
14	75	Z	-0.005	%50
15	75	Z	0	0
16	30	Z	-0.005	%20
17	30	Z	0	0
18	30	Z	0	0
19	30	Z	0	0
20	30	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.005	%15
2	28	X	-0.005	%85
3	28	X	-0.003	%20
4	28	X	-0.003	%50
5	28	X	0	0
6	86	X	-0.005	%15
7	86	X	-0.005	%85
8	86	X	-0.003	%20
9	86	X	-0.003	%50
10	86	X	0	0
11	75	X	-0.005	%15
12	75	X	-0.005	%85
13	75	X	-0.003	%20
14	75	X	-0.003	%50
15	75	X	0	0
16	30	X	-0.003	%20
17	30	X	0	0
18	30	X	0	0
19	30	X	0	0
20	30	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Y	-0.118	%15
2	28	Y	-0.118	%85
3	28	Y	-0.033	%20
4	28	Y	-0.032	%50
5	28	Y	0	0
6	86	Y	-0.118	%15
7	86	Y	-0.118	%85
8	86	Y	-0.033	%20
9	86	Y	-0.032	%50
10	86	Y	0	0
11	75	Y	-0.118	%15
12	75	Y	-0.118	%85
13	75	Y	-0.033	%20
14	75	Y	-0.032	%50
15	75	Y	0	0
16	30	Y	-0.034	%20
17	30	Y	0	0
18	30	Y	0	0
19	30	Y	0	0
20	30	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.018	%15
2	28	Z	-0.018	%85
3	28	Z	-0.016	%20
4	28	Z	-0.014	%50
5	28	Z	0	0
6	86	Z	-0.018	%15

Member Point Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	86	Z	-0.018	%85
8	86	Z	-0.016	%20
9	86	Z	-0.014	%50
10	86	Z	0	0
11	75	Z	-0.018	%15
12	75	Z	-0.018	%85
13	75	Z	-0.016	%20
14	75	Z	-0.014	%50
15	75	Z	0	0
16	30	Z	-0.005	%20
17	30	Z	0	0
18	30	Z	0	0
19	30	Z	0	0
20	30	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.018	%15
2	28	X	-0.018	%85
3	28	X	-0.016	%20
4	28	X	-0.014	%50
5	28	X	0	0
6	86	X	-0.018	%15
7	86	X	-0.018	%85
8	86	X	-0.016	%20
9	86	X	-0.014	%50
10	86	X	0	0
11	75	X	-0.018	%15
12	75	X	-0.018	%85
13	75	X	-0.016	%20
14	75	X	-0.014	%50
15	75	X	0	0
16	30	X	-0.005	%20
17	30	X	0	0
18	30	X	0	0
19	30	X	0	0
20	30	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	22	Y	-0.25	%5

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%5

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	22	Y	-0.25	%95

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%95

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	84	Y	-0.25	%95

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	77	Y	-0.25	%95

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	84	Y	-0.25	%5

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	77	Y	-0.25	%5

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	73	Y	-0.25	%5

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	66	Y	-0.25	%5

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	73	Y	-0.25	%95

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	66	Y	-0.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	Y	-0.25	%95



Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.25	%95

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	48	Y	-0.25	%95

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.02	-0.02	0	%100
2	2	Z	-0.017	-0.017	0	%100
3	3	Z	-0.017	-0.017	0	%100
4	4	Z	-0.025	-0.025	0	%100
5	5	Z	-0.025	-0.025	0	%100
6	6	Z	-0.014	-0.014	0	%100
7	7	Z	-0.025	-0.025	0	%100
8	8	Z	-0.025	-0.025	0	%100
9	9	Z	-0.011	-0.011	0	%100
10	10	Z	-0.011	-0.011	0	%100
11	11	Z	-0.034	-0.034	0	%100
12	18	Z	-0.012	-0.012	0	%100
13	19	Z	-0.012	-0.012	0	%100
14	22	Z	-0.012	-0.012	0	%100
15	28	Z	-0.012	-0.012	0	%100
16	30	Z	-0.02	-0.02	0	%100
17	31	Z	-0.017	-0.017	0	%100
18	32	Z	-0.017	-0.017	0	%100
19	33	Z	-0.025	-0.025	0	%100
20	34	Z	-0.025	-0.025	0	%100
21	35	Z	-0.025	-0.025	0	%100
22	36	Z	-0.025	-0.025	0	%100
23	37	Z	-0.011	-0.011	0	%100
24	38	Z	-0.011	-0.011	0	%100
25	39	Z	-0.034	-0.034	0	%100
26	48	Z	-0.02	-0.02	0	%100
27	49	Z	-0.017	-0.017	0	%100
28	50	Z	-0.017	-0.017	0	%100
29	51	Z	-0.025	-0.025	0	%100
30	52	Z	-0.025	-0.025	0	%100
31	53	Z	-0.025	-0.025	0	%100
32	54	Z	-0.025	-0.025	0	%100
33	55	Z	-0.011	-0.011	0	%100
34	56	Z	-0.011	-0.011	0	%100
35	57	Z	-0.034	-0.034	0	%100
36	66	Z	-0.014	-0.014	0	%100
37	69	Z	-0.012	-0.012	0	%100
38	70	Z	-0.012	-0.012	0	%100
39	73	Z	-0.012	-0.012	0	%100
40	75	Z	-0.012	-0.012	0	%100
41	77	Z	-0.014	-0.014	0	%100
42	80	Z	-0.012	-0.012	0	%100
43	81	Z	-0.012	-0.012	0	%100
44	84	Z	-0.012	-0.012	0	%100



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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
45	86	Z	-0.012	-0.012	0	%100
46	88	Z	-0.03	-0.03	0	%100
47	89	Z	-0.03	-0.03	0	%100
48	90	Z	-0.03	-0.03	0	%100

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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.02	-0.02	0	%100
2	2	X	-0.017	-0.017	0	%100
3	3	X	-0.017	-0.017	0	%100
4	4	X	-0.025	-0.025	0	%100
5	5	X	-0.025	-0.025	0	%100
6	6	X	-0.014	-0.014	0	%100
7	7	X	-0.025	-0.025	0	%100
8	8	X	-0.025	-0.025	0	%100
9	9	X	-0.011	-0.011	0	%100
10	10	X	-0.011	-0.011	0	%100
11	11	X	-0.034	-0.034	0	%100
12	18	X	-0.012	-0.012	0	%100
13	19	X	-0.012	-0.012	0	%100
14	22	X	-0.012	-0.012	0	%100
15	28	X	-0.012	-0.012	0	%100
16	30	X	-0.02	-0.02	0	%100
17	31	X	-0.017	-0.017	0	%100
18	32	X	-0.017	-0.017	0	%100
19	33	X	-0.025	-0.025	0	%100
20	34	X	-0.025	-0.025	0	%100
21	35	X	-0.025	-0.025	0	%100
22	36	X	-0.025	-0.025	0	%100
23	37	X	-0.011	-0.011	0	%100
24	38	X	-0.011	-0.011	0	%100
25	39	X	-0.034	-0.034	0	%100
26	48	X	-0.02	-0.02	0	%100
27	49	X	-0.017	-0.017	0	%100
28	50	X	-0.017	-0.017	0	%100
29	51	X	-0.025	-0.025	0	%100
30	52	X	-0.025	-0.025	0	%100
31	53	X	-0.025	-0.025	0	%100
32	54	X	-0.025	-0.025	0	%100
33	55	X	-0.011	-0.011	0	%100
34	56	X	-0.011	-0.011	0	%100
35	57	X	-0.034	-0.034	0	%100
36	66	X	-0.014	-0.014	0	%100
37	69	X	-0.012	-0.012	0	%100
38	70	X	-0.012	-0.012	0	%100
39	73	X	-0.012	-0.012	0	%100
40	75	X	-0.012	-0.012	0	%100
41	77	X	-0.014	-0.014	0	%100
42	80	X	-0.012	-0.012	0	%100
43	81	X	-0.012	-0.012	0	%100
44	84	X	-0.012	-0.012	0	%100
45	86	X	-0.012	-0.012	0	%100
46	88	X	-0.03	-0.03	0	%100
47	89	X	-0.03	-0.03	0	%100
48	90	X	-0.03	-0.03	0	%100



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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.006	-0.006	0	%100
2	2	Z	-0.005	-0.005	0	%100
3	3	Z	-0.005	-0.005	0	%100
4	4	Z	-0.01	-0.01	0	%100
5	5	Z	-0.01	-0.01	0	%100
6	6	Z	-0.002	-0.002	0	%100
7	7	Z	-0.011	-0.011	0	%100
8	8	Z	-0.011	-0.011	0	%100
9	9	Z	-0.004	-0.004	0	%100
10	10	Z	-0.004	-0.004	0	%100
11	11	Z	-0.008	-0.008	0	%100
12	18	Z	-0.002	-0.002	0	%100
13	19	Z	-0.002	-0.002	0	%100
14	22	Z	-0.002	-0.002	0	%100
15	28	Z	-0.002	-0.002	0	%100
16	30	Z	-0.006	-0.006	0	%100
17	31	Z	-0.005	-0.005	0	%100
18	32	Z	-0.005	-0.005	0	%100
19	33	Z	-0.01	-0.01	0	%100
20	34	Z	-0.01	-0.01	0	%100
21	35	Z	-0.011	-0.011	0	%100
22	36	Z	-0.011	-0.011	0	%100
23	37	Z	-0.004	-0.004	0	%100
24	38	Z	-0.004	-0.004	0	%100
25	39	Z	-0.008	-0.008	0	%100
26	48	Z	-0.006	-0.006	0	%100
27	49	Z	-0.005	-0.005	0	%100
28	50	Z	-0.005	-0.005	0	%100
29	51	Z	-0.01	-0.01	0	%100
30	52	Z	-0.01	-0.01	0	%100
31	53	Z	-0.011	-0.011	0	%100
32	54	Z	-0.011	-0.011	0	%100
33	55	Z	-0.004	-0.004	0	%100
34	56	Z	-0.004	-0.004	0	%100
35	57	Z	-0.008	-0.008	0	%100
36	66	Z	-0.002	-0.002	0	%100
37	69	Z	-0.002	-0.002	0	%100
38	70	Z	-0.002	-0.002	0	%100
39	73	Z	-0.002	-0.002	0	%100
40	75	Z	-0.002	-0.002	0	%100
41	77	Z	-0.002	-0.002	0	%100
42	80	Z	-0.002	-0.002	0	%100
43	81	Z	-0.002	-0.002	0	%100
44	84	Z	-0.002	-0.002	0	%100
45	86	Z	-0.002	-0.002	0	%100
46	88	Z	-0.007	-0.007	0	%100
47	89	Z	-0.007	-0.007	0	%100
48	90	Z	-0.007	-0.007	0	%100

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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.006	-0.006	0	%100
2	2	X	-0.005	-0.005	0	%100
3	3	X	-0.005	-0.005	0	%100



Company : B+T Group
 Designer : MP
 Job Number : 137067.005.01
 Model Name : 806361 - NHV 102 943127

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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
4	4	X	-0.01	-0.01	0	%100
5	5	X	-0.01	-0.01	0	%100
6	6	X	-0.002	-0.002	0	%100
7	7	X	-0.011	-0.011	0	%100
8	8	X	-0.011	-0.011	0	%100
9	9	X	-0.004	-0.004	0	%100
10	10	X	-0.004	-0.004	0	%100
11	11	X	-0.008	-0.008	0	%100
12	18	X	-0.002	-0.002	0	%100
13	19	X	-0.002	-0.002	0	%100
14	22	X	-0.002	-0.002	0	%100
15	28	X	-0.002	-0.002	0	%100
16	30	X	-0.006	-0.006	0	%100
17	31	X	-0.005	-0.005	0	%100
18	32	X	-0.005	-0.005	0	%100
19	33	X	-0.01	-0.01	0	%100
20	34	X	-0.01	-0.01	0	%100
21	35	X	-0.011	-0.011	0	%100
22	36	X	-0.011	-0.011	0	%100
23	37	X	-0.004	-0.004	0	%100
24	38	X	-0.004	-0.004	0	%100
25	39	X	-0.008	-0.008	0	%100
26	48	X	-0.006	-0.006	0	%100
27	49	X	-0.005	-0.005	0	%100
28	50	X	-0.005	-0.005	0	%100
29	51	X	-0.01	-0.01	0	%100
30	52	X	-0.01	-0.01	0	%100
31	53	X	-0.011	-0.011	0	%100
32	54	X	-0.011	-0.011	0	%100
33	55	X	-0.004	-0.004	0	%100
34	56	X	-0.004	-0.004	0	%100
35	57	X	-0.008	-0.008	0	%100
36	66	X	-0.002	-0.002	0	%100
37	69	X	-0.002	-0.002	0	%100
38	70	X	-0.002	-0.002	0	%100
39	73	X	-0.002	-0.002	0	%100
40	75	X	-0.002	-0.002	0	%100
41	77	X	-0.002	-0.002	0	%100
42	80	X	-0.002	-0.002	0	%100
43	81	X	-0.002	-0.002	0	%100
44	84	X	-0.002	-0.002	0	%100
45	86	X	-0.002	-0.002	0	%100
46	88	X	-0.007	-0.007	0	%100
47	89	X	-0.007	-0.007	0	%100
48	90	X	-0.007	-0.007	0	%100

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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.001	-0.001	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.0004	-0.0004	0	%100
7	7	Z	-0.002	-0.002	0	%100



Company : B+T Group
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 Model Name : 806361 - NHV 102 943127

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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.0007	-0.0007	0	%100
10	10	Z	-0.0007	-0.0007	0	%100
11	11	Z	-0.002	-0.002	0	%100
12	18	Z	-0.0004	-0.0004	0	%100
13	19	Z	-0.0004	-0.0004	0	%100
14	22	Z	-0.0004	-0.0004	0	%100
15	28	Z	-0.0004	-0.0004	0	%100
16	30	Z	-0.001	-0.001	0	%100
17	31	Z	-0.001	-0.001	0	%100
18	32	Z	-0.001	-0.001	0	%100
19	33	Z	-0.002	-0.002	0	%100
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.0007	-0.0007	0	%100
24	38	Z	-0.0007	-0.0007	0	%100
25	39	Z	-0.002	-0.002	0	%100
26	48	Z	-0.001	-0.001	0	%100
27	49	Z	-0.001	-0.001	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.002	-0.002	0	%100
30	52	Z	-0.002	-0.002	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.0007	-0.0007	0	%100
34	56	Z	-0.0007	-0.0007	0	%100
35	57	Z	-0.002	-0.002	0	%100
36	66	Z	-0.0004	-0.0004	0	%100
37	69	Z	-0.0004	-0.0004	0	%100
38	70	Z	-0.0004	-0.0004	0	%100
39	73	Z	-0.0004	-0.0004	0	%100
40	75	Z	-0.0004	-0.0004	0	%100
41	77	Z	-0.0004	-0.0004	0	%100
42	80	Z	-0.0004	-0.0004	0	%100
43	81	Z	-0.0004	-0.0004	0	%100
44	84	Z	-0.0004	-0.0004	0	%100
45	86	Z	-0.0004	-0.0004	0	%100
46	88	Z	-0.002	-0.002	0	%100
47	89	Z	-0.002	-0.002	0	%100
48	90	Z	-0.002	-0.002	0	%100

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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.001	-0.001	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.0004	-0.0004	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.0007	-0.0007	0	%100
10	10	X	-0.0007	-0.0007	0	%100
11	11	X	-0.002	-0.002	0	%100



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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
12	18	X	-0.0004	-0.0004	0	%100
13	19	X	-0.0004	-0.0004	0	%100
14	22	X	-0.0004	-0.0004	0	%100
15	28	X	-0.0004	-0.0004	0	%100
16	30	X	-0.001	-0.001	0	%100
17	31	X	-0.001	-0.001	0	%100
18	32	X	-0.001	-0.001	0	%100
19	33	X	-0.002	-0.002	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.0007	-0.0007	0	%100
24	38	X	-0.0007	-0.0007	0	%100
25	39	X	-0.002	-0.002	0	%100
26	48	X	-0.001	-0.001	0	%100
27	49	X	-0.001	-0.001	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.002	-0.002	0	%100
30	52	X	-0.002	-0.002	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.0007	-0.0007	0	%100
34	56	X	-0.0007	-0.0007	0	%100
35	57	X	-0.002	-0.002	0	%100
36	66	X	-0.0004	-0.0004	0	%100
37	69	X	-0.0004	-0.0004	0	%100
38	70	X	-0.0004	-0.0004	0	%100
39	73	X	-0.0004	-0.0004	0	%100
40	75	X	-0.0004	-0.0004	0	%100
41	77	X	-0.0004	-0.0004	0	%100
42	80	X	-0.0004	-0.0004	0	%100
43	81	X	-0.0004	-0.0004	0	%100
44	84	X	-0.0004	-0.0004	0	%100
45	86	X	-0.0004	-0.0004	0	%100
46	88	X	-0.002	-0.002	0	%100
47	89	X	-0.002	-0.002	0	%100
48	90	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 8 : Ice)

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.009	-0.009	0	%100
2	2	Y	-0.007	-0.007	0	%100
3	3	Y	-0.007	-0.007	0	%100
4	4	Y	-0.01	-0.01	0	%100
5	5	Y	-0.01	-0.01	0	%100
6	6	Y	-0.006	-0.006	0	%100
7	7	Y	-0.01	-0.01	0	%100
8	8	Y	-0.01	-0.01	0	%100
9	9	Y	-0.005	-0.005	0	%100
10	10	Y	-0.005	-0.005	0	%100
11	11	Y	-0.013	-0.013	0	%100
12	18	Y	-0.006	-0.006	0	%100
13	19	Y	-0.006	-0.006	0	%100
14	22	Y	-0.006	-0.006	0	%100
15	28	Y	-0.006	-0.006	0	%100



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

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
16	30	Y	-0.009	-0.009	0	%100
17	31	Y	-0.007	-0.007	0	%100
18	32	Y	-0.007	-0.007	0	%100
19	33	Y	-0.01	-0.01	0	%100
20	34	Y	-0.01	-0.01	0	%100
21	35	Y	-0.01	-0.01	0	%100
22	36	Y	-0.01	-0.01	0	%100
23	37	Y	-0.005	-0.005	0	%100
24	38	Y	-0.005	-0.005	0	%100
25	39	Y	-0.013	-0.013	0	%100
26	48	Y	-0.009	-0.009	0	%100
27	49	Y	-0.007	-0.007	0	%100
28	50	Y	-0.007	-0.007	0	%100
29	51	Y	-0.01	-0.01	0	%100
30	52	Y	-0.01	-0.01	0	%100
31	53	Y	-0.01	-0.01	0	%100
32	54	Y	-0.01	-0.01	0	%100
33	55	Y	-0.005	-0.005	0	%100
34	56	Y	-0.005	-0.005	0	%100
35	57	Y	-0.013	-0.013	0	%100
36	66	Y	-0.006	-0.006	0	%100
37	69	Y	-0.006	-0.006	0	%100
38	70	Y	-0.006	-0.006	0	%100
39	73	Y	-0.006	-0.006	0	%100
40	75	Y	-0.006	-0.006	0	%100
41	77	Y	-0.006	-0.006	0	%100
42	80	Y	-0.006	-0.006	0	%100
43	81	Y	-0.006	-0.006	0	%100
44	84	Y	-0.006	-0.006	0	%100
45	86	Y	-0.006	-0.006	0	%100
46	88	Y	-0.012	-0.012	0	%100
47	89	Y	-0.012	-0.012	0	%100
48	90	Y	-0.012	-0.012	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.0009	-0.0009	0	%100
3	3	Z	-0.0009	-0.0009	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.001	-0.001	0	%100
7	7	Z	-0.002	-0.002	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.0007	-0.0007	0	%100
10	10	Z	-0.0007	-0.0007	0	%100
11	11	Z	-0.003	-0.003	0	%100
12	18	Z	-0.001	-0.001	0	%100
13	19	Z	-0.001	-0.001	0	%100
14	22	Z	-0.001	-0.001	0	%100
15	28	Z	-0.001	-0.001	0	%100
16	30	Z	-0.001	-0.001	0	%100
17	31	Z	-0.0009	-0.0009	0	%100
18	32	Z	-0.0009	-0.0009	0	%100
19	33	Z	-0.002	-0.002	0	%100



Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.0007	-0.0007	0	%100
24	38	Z	-0.0007	-0.0007	0	%100
25	39	Z	-0.003	-0.003	0	%100
26	48	Z	-0.001	-0.001	0	%100
27	49	Z	-0.0009	-0.0009	0	%100
28	50	Z	-0.0009	-0.0009	0	%100
29	51	Z	-0.002	-0.002	0	%100
30	52	Z	-0.002	-0.002	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.0007	-0.0007	0	%100
34	56	Z	-0.0007	-0.0007	0	%100
35	57	Z	-0.003	-0.003	0	%100
36	66	Z	-0.001	-0.001	0	%100
37	69	Z	-0.001	-0.001	0	%100
38	70	Z	-0.001	-0.001	0	%100
39	73	Z	-0.001	-0.001	0	%100
40	75	Z	-0.001	-0.001	0	%100
41	77	Z	-0.001	-0.001	0	%100
42	80	Z	-0.001	-0.001	0	%100
43	81	Z	-0.001	-0.001	0	%100
44	84	Z	-0.001	-0.001	0	%100
45	86	Z	-0.001	-0.001	0	%100
46	88	Z	-0.002	-0.002	0	%100
47	89	Z	-0.002	-0.002	0	%100
48	90	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.0009	-0.0009	0	%100
3	3	X	-0.0009	-0.0009	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.001	-0.001	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.0007	-0.0007	0	%100
10	10	X	-0.0007	-0.0007	0	%100
11	11	X	-0.003	-0.003	0	%100
12	18	X	-0.001	-0.001	0	%100
13	19	X	-0.001	-0.001	0	%100
14	22	X	-0.001	-0.001	0	%100
15	28	X	-0.001	-0.001	0	%100
16	30	X	-0.001	-0.001	0	%100
17	31	X	-0.0009	-0.0009	0	%100
18	32	X	-0.0009	-0.0009	0	%100
19	33	X	-0.002	-0.002	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.0007	-0.0007	0	%100



Member Distributed Loads (BLC 10 : 90 Seismic) (Continued)

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
24	38	X	-0.0007	-0.0007	0	%100
25	39	X	-0.003	-0.003	0	%100
26	48	X	-0.001	-0.001	0	%100
27	49	X	-0.0009	-0.0009	0	%100
28	50	X	-0.0009	-0.0009	0	%100
29	51	X	-0.002	-0.002	0	%100
30	52	X	-0.002	-0.002	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.0007	-0.0007	0	%100
34	56	X	-0.0007	-0.0007	0	%100
35	57	X	-0.003	-0.003	0	%100
36	66	X	-0.001	-0.001	0	%100
37	69	X	-0.001	-0.001	0	%100
38	70	X	-0.001	-0.001	0	%100
39	73	X	-0.001	-0.001	0	%100
40	75	X	-0.001	-0.001	0	%100
41	77	X	-0.001	-0.001	0	%100
42	80	X	-0.001	-0.001	0	%100
43	81	X	-0.001	-0.001	0	%100
44	84	X	-0.001	-0.001	0	%100
45	86	X	-0.001	-0.001	0	%100
46	88	X	-0.002	-0.002	0	%100
47	89	X	-0.002	-0.002	0	%100
48	90	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 30 : BLC 1 Transient Area Loads)

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	10	Y	-0.02	-0.026	1.27	2.309
2	37	Y	-0.014	-0.02	0	2.078
3	38	Y	0.0006164	-0.016	0	1.155
4	38	Y	-0.016	-0.035	1.155	2.309
5	55	Y	-0.035	-0.016	0	1.155
6	55	Y	-0.016	0.0006163	1.155	2.309
7	56	Y	-0.018	-0.016	0.231	2.309
8	9	Y	-0.015	-0.015	0	2.078
9	10	Y	-0.014	-0.02	0.231	1.27

Member Distributed Loads (BLC 31 : BLC 8 Transient Area Loads)

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	9	Y	-0.008	-0.008	0	2.078
2	10	Y	-0.008	-0.011	0.231	1.27
3	10	Y	-0.011	-0.014	1.27	2.309
4	37	Y	-0.006	-0.011	0	2.078
5	38	Y	0.0003082	-0.008	0	1.155
6	38	Y	-0.008	-0.017	1.155	2.309
7	55	Y	-0.017	-0.008	0	1.155
8	55	Y	-0.008	0.0003082	1.155	2.309
9	56	Y	-0.009	-0.008	0.231	2.309

Member Area Loads (BLC 1 : Dead)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	23	22	25	24	Y	Two Way	-0.01
2	71	70	73	72	Y	Two Way	-0.01
3	98	97	100	99	Y	Two Way	-0.01

Member Area Loads (BLC 8 : Ice)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	23	22	25	24	Y	Two Way	-0.005
2	71	70	73	72	Y	Two Way	-0.005
3	98	97	100	99	Y	Two Way	-0.005

Node Loads and Enforced Displacements (BLC 11 : Live Load a)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s ² /ft, k*s ² *ft)]
1	30	L	Y	-0.5
2	129	L	Y	-0.5
3	107	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 12 : Live Load b)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s ² /ft, k*s ² *ft)]
1	31	L	Y	-0.5
2	130	L	Y	-0.5
3	108	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 13 : Live Load c)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s ² /ft, k*s ² *ft)]
1	143	L	Y	-0.5
2	44	L	Y	-0.5
3	121	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		20		3
2	0 Wind - No Ice	WLZ			20	48	
3	90 Wind - No Ice	WLX			20	48	
4	0 Wind - Ice	WLZ			20	48	
5	90 Wind - Ice	WLX			20	48	
6	0 Wind - Service	WLZ			20	48	
7	90 Wind - Service	WLX			20	48	
8	Ice	OL1			20	48	3
9	0 Seismic	ELZ			20	48	
10	90 Seismic	ELX			20	48	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			
14	Live Load d	LL					
15	Maint LL 1	LL			1		
16	Maint LL 2	LL			1		
17	Maint LL 3	LL			1		
18	Maint LL 4	LL			1		

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
19	Maint LL 5	LL			1		
20	Maint LL 6	LL			1		
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL			1		
25	Maint LL 11	LL			1		
26	Maint LL 12	LL			1		
27	Maint LL 13	LL			1		
28	Maint LL 14	LL			1		
29	Maint LL 15	LL			1		
30	BLC 1 Transient Area Loads	None				9	
31	BLC 8 Transient Area Loads	None				9	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
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	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
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	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
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	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
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	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	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	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	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	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	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	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5

Envelope Node Reactions

Node Label	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC		
1	1	max	1.28	5	1.819	2	1.317	2	4.226	2	1.286	11	0.371	11
2		min	-1.287	11	-0.196	8	-1.447	8	-1.032	8	-1.293	5	-0.251	5
3	51	max	1.185	5	1.791	18	1.591	2	0.411	13	1.563	3	0.398	12
4		min	-1.293	11	0.023	12	-1.521	8	-1.914	7	-1.571	9	-3.272	6
5	78	max	1.18	5	1.726	22	1.665	2	0.398	3	1.56	7	3.169	10
6		min	-1.065	11	-0.009	4	-1.605	8	-2.118	9	-1.568	13	-0.472	4
7	Totals:	max	3.645	5	4.809	18	4.573	2						
8		min	-3.645	11	2.46	12	-4.573	8						

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn	
1	1	HSS4X4X2	0.566	0	13	0.117	0	y	13	70.173	73.278	8.24	8.24	1.976	H1-1b
2	2	C3.38x2.06x.188	0.363	2.592	3	0.06	0.351	y	63	35.669	43.384	1.694	4.482	1.599	H1-1b
3	3	C3.38x2.06x.188	0.364	0	13	0.07	2.241	z	8	35.669	43.384	1.694	4.482	1.596	H1-1b
4	4	PL3/8"x6	0.091	0.164	7	0.185	0	y	2	68.997	72.9	0.57	9.113	2.092	H1-1b
5	5	PL3/8"x6	0.088	0	3	0.145	0	y	2	68.997	72.9	0.57	9.113	2.049	H1-1b
6	6	PIPE 3.5x0.165	0.08	6.75	7	0.042	3.083		5	45.872	71.57	6.336	6.336	1.869	H1-1b
7	7	PL3/8"x6	0.155	0.208	8	0.192	0.208	y	61	70.882	72.9	0.57	9.113	1.44	H1-1b
8	8	PL3/8"x6	0.155	0	13	0.197	0	y	51	70.882	72.9	0.57	9.113	2.962	H1-1b
9	9	L2x2x4	0.285	0	7	0.03	2.309	y	48	23.349	30.586	0.691	1.577	1.5	H2-1
10	10	L2x2x4	0.238	2.309	8	0.035	0	y	64	23.349	30.586	0.691	1.577	1.5	H2-1
11	11	L7.63x2.5x6	0.37	1.604	8	0.077	0.334	y	63	75.414	118.523	1.798	13.788	1.251	H2-1
12	18	PIPE 2.88x0.203	0.118	5.583	5	0.041	5.583		6	35.361	70.548	5.01	5.01	3	H1-1b
13	19	PIPE 2.88x0.203	0.147	2.333	9	0.046	5.583		9	35.361	70.548	5.01	5.01	3	H1-1b
14	22	PIPE 2.88x0.203	0.141	7.812	13	0.152	8.646		2	23.996	70.548	5.01	5.01	2.431	H1-1b
15	28	PIPE 2.88x0.203	0.121	2.333	7	0.041	5.583		8	35.361	70.548	5.01	5.01	3	H1-1b
16	30	HSS4X4X2	0.549	0	7	0.138	0	z	3	70.173	73.278	8.24	8.24	2.002	H1-1b
17	31	C3.38x2.06x.188	0.364	2.592	7	0.06	0.351	y	68	35.669	43.384	1.694	4.482	1.598	H1-1b
18	32	C3.38x2.06x.188	0.321	0	56	0.064	2.241	y	48	35.669	43.384	1.704	4.482	1.621	H1-1b
19	33	PL3/8"x6	0.078	0.164	10	0.158	0	y	6	68.997	72.9	0.57	9.113	1.558	H1-1b
20	34	PL3/8"x6	0.09	0	7	0.125	0	y	42	68.997	72.9	0.57	9.113	1.966	H1-1b
21	35	PL3/8"x6	0.136	0.208	13	0.19	0.208	y	53	70.882	72.9	0.57	9.113	1.95	H1-1b
22	36	PL3/8"x6	0.129	0	5	0.199	0	y	55	70.882	72.9	0.57	9.113	3	H1-1b
23	37	L2x2x4	0.23	0	11	0.03	2.309	y	39	23.349	30.586	0.691	1.577	1.5	H2-1
24	38	L2x2x4	0.224	2.309	13	0.034	0	y	68	23.349	30.586	0.691	1.577	1.5	H2-1
25	39	L7.63x2.5x6	0.289	1.604	12	0.077	0.334	y	67	75.414	118.523	1.798	13.873	1.27	H2-1
26	48	HSS4X4X2	0.562	0	9	0.141	0	z	7	70.173	73.278	8.24	8.24	1.979	H1-1b
27	49	C3.38x2.06x.188	0.332	2.592	23	0.06	0.351	y	73	35.669	43.384	1.694	4.482	1.63	H1-1b
28	50	C3.38x2.06x.188	0.363	0	9	0.064	2.241	y	39	35.669	43.384	1.694	4.482	1.595	H1-1b
29	51	PL3/8"x6	0.103	0.164	2	0.157	0	y	10	68.997	72.9	0.57	9.113	1.595	H1-1b
30	52	PL3/8"x6	0.073	0	11	0.126	0	y	46	68.997	72.9	0.57	9.113	1.95	H1-1b
31	53	PL3/8"x6	0.124	0.208	4	0.192	0.208	y	57	70.882	72.9	0.57	9.113	1.62	H1-1b
32	54	PL3/8"x6	0.157	0	9	0.196	0	y	59	70.882	72.9	0.57	9.113	2.982	H1-1b
33	55	L2x2x4	0.285	0	3	0.03	2.309	y	43	23.349	30.586	0.691	1.577	1.5	H2-1



Company : B+T Group
 Designer : MP
 Job Number : 137067.005.01
 Model Name : 806361 - NHV 102 943127

9/9/2021
 8:55:37 AM
 Checked By : _____

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	Cphi*	Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
34	56	L2x2x4	0.2	2.309	4	0.035	0	y	72	23.349	30.586	0.691	1.577	1.5 H2-1
35	57	L7.63x2.5x6	0.34	1.604	3	0.078	0.334	y	71	75.414	118.523	1.798	14.083	1.318 H2-1
36	66	PIPE_3.5x0.165	0.088	1.25	2	0.053	4	y	9	45.872	71.57	6.336	6.336	1.732 H1-1b
37	69	PIPE_2.88x0.203	0.144	5.583	9	0.047	5.583	y	9	35.361	70.548	5.01	5.01	3 H1-1b
38	70	PIPE_2.88x0.203	0.17	2.333	2	0.047	5.583	y	13	35.361	70.548	5.01	5.01	2.973 H1-1b
39	73	PIPE_2.88x0.203	0.136	2.188	13	0.131	2.188	y	13	23.996	70.548	5.01	5.01	2.254 H1-1b
40	75	PIPE_2.88x0.203	0.125	5.583	9	0.036	5.583	y	2	35.361	70.548	5.01	5.01	3 H1-1b
41	77	PIPE_3.5x0.165	0.08	6.75	2	0.051	3.083	y	13	45.872	71.57	6.336	6.336	1.507 H1-1b
42	80	PIPE_2.88x0.203	0.143	5.583	13	0.052	5.583	y	13	35.361	70.548	5.01	5.01	3 H1-1b
43	81	PIPE_2.88x0.203	0.139	2.333	6	0.036	5.583	y	5	35.361	70.548	5.01	5.01	3 H1-1b
44	84	PIPE_2.88x0.203	0.132	7.813	9	0.143	8.646	y	9	23.996	70.548	5.01	5.01	2.472 H1-1b
45	86	PIPE_2.88x0.203	0.143	5.583	2	0.036	5.583	y	3	35.361	70.548	5.01	5.01	3 H1-1b
46	88	L6.63x4.33x.25	0.233	0	3	0.024	3.25	y	9	51.794	86.751	2.311	6.976	1.5 H2-1
47	89	L6.63x4.33x.25	0.211	3.25	6	0.022	3.25	z	12	51.794	86.751	2.311	6.976	1.5 H2-1
48	90	L6.63x4.33x.25	0.259	3.25	2	0.027	3.25	y	13	51.794	86.751	2.311	6.976	1.5 H2-1

APPENDIX D
ADDITIONAL CALCULATIONS

PROJECT	137067.005.01 - NHV 102 943127, CT KSC		
SUBJECT	Platform Mount Analysis		
DATE	09/09/21	PAGE	1 OF 1

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	1.398	k
Vertical Shear	:	1.847	k
Horizontal Shear	:	1.329	k
Torsion	:	0.379	k.ft
Moment from Horizontal Forces	:	1.312	k.ft
Moment from Vertical Forces	:	4.247	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in ²
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1.5	in
Bolt edge distance, plate width	:	1.5	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	2.28	k
Force from Horz. Moment	:	2.38	k
Force from Vert. Moment	:	7.69	k
Shear Load / Bolt	:	0.57	k
Tension Load / Bolt	:	0.35	k
Resultant from Moments / Bolt	:	4.03	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	21.11%		OKAY
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	8.31%		OKAY
Unity Check, Combined	:	29.42%		OKAY
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	1.64%		OKAY

Exhibit F

Power Density/RF Emissions Report

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

Dish Wireless Existing Facility

Site ID: BOHVN00154A

806361

131 Manor Road

Guilford, Connecticut 06437

November 18, 2021

EBI Project Number: 6221007191

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	26.76%

November 18, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00154A - 806361

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **131 Manor Road** in **Guilford, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless antenna facility located at 131 Manor Road in Guilford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 6) The antennas used in this modeling are the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline of the proposed antennas is 110 feet above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 9) All calculations were done with respect to uncontrolled / general population threshold limits.

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	110 feet	Height (AGL):	110 feet	Height (AGL):	110 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna AI MPE %:	2.19%	Antenna BI MPE %:	2.19%	Antenna CI MPE %:	2.19%

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	2.19%
AT&T	5.92%
T-Mobile	16.45%
Verizon	2.2%
Site Total MPE % :	26.76%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	2.19%
Dish Wireless Sector B Total:	2.19%
Dish Wireless Sector C Total:	2.19%
Site Total MPE % :	26.76%

Dish Wireless Maximum MPE Power Values (Sector A)							
Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	110.0	2.97	600 MHz n71	400	0.74%
Dish Wireless 1900 MHz n70	4	542.70	110.0	7.22	1900 MHz n70	1000	0.72%
Dish Wireless 2190 MHz n66	4	542.70	110.0	7.22	2190 MHz n66	1000	0.72%
						Total:	2.19%

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

Summary

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

The anticipated maximum composite contributions from the Dish Wireless facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Dish Wireless Sector	Power Density Value (%)
Sector A:	2.19%
Sector B:	2.19%
Sector C:	2.19%
Dish Wireless Maximum MPE % (Sector A):	2.19%
Site Total:	26.76%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **26.76%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization



4545 E River Rd, Suite 320
West Henrietta, NY 14586

Phone: (585) 445-5896
Fax: (724) 416-4461
www.crowncastle.com

Crown Castle Letter of Authorization

CT - CONNECTICUT SITING COUNCIL

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

Re: Tower Share Application
Crown Castle telecommunications site at:
131 MANOR RD, GUILFORD, CT 06437

CROWN ATLANTIC COMPANY LLC ("Crown Castle") hereby authorizes DISH Wireless LLC, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:


Crown Site ID/Name: 806361/NHV 102 943127
Customer Site ID: BOHVN00154A/CT-CCI-T-806361
Site Address: 131 Manor Rd, GUILFORD, CT 06437

Crown Castle

By:  _____ Date: 3/7/22
Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



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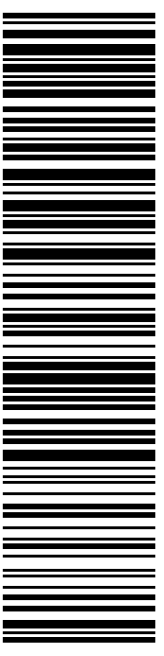
03/09/2022 Mailed from 01566

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 03/12/22
 Ref#: DS-806361
0006

SHIP TO: RICH ZAJAC
 CROWN CASTLE
 4545 E RIVER RD
 STE 320
 W HENRIETTA NY 14586-9024

USPS TRACKING #



9405 5036 9930 0188 3541 61

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Trans. #: 558444254	Priority Mail® Postage: \$8.95
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Ship Date: 03/09/2022	
Expected Delivery Date: 03/12/2022	

From: DEBORAH CHASE
 NORTHEAST SITE SOLUTIONS
 420 MAIN ST
 STE 1
 STURBRIDGE MA 01566-1359

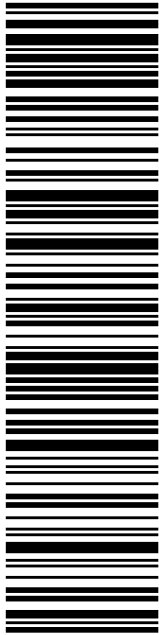
Ref#: DS-806361

To: RICH ZAJAC
 CROWN CASTLE
 4545 E RIVER RD
 STE 320
 W HENRIETTA NY 14586-9024

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FIRST SELECTMAN
31 PARK ST
GUILFORD CT 06437-2629

P

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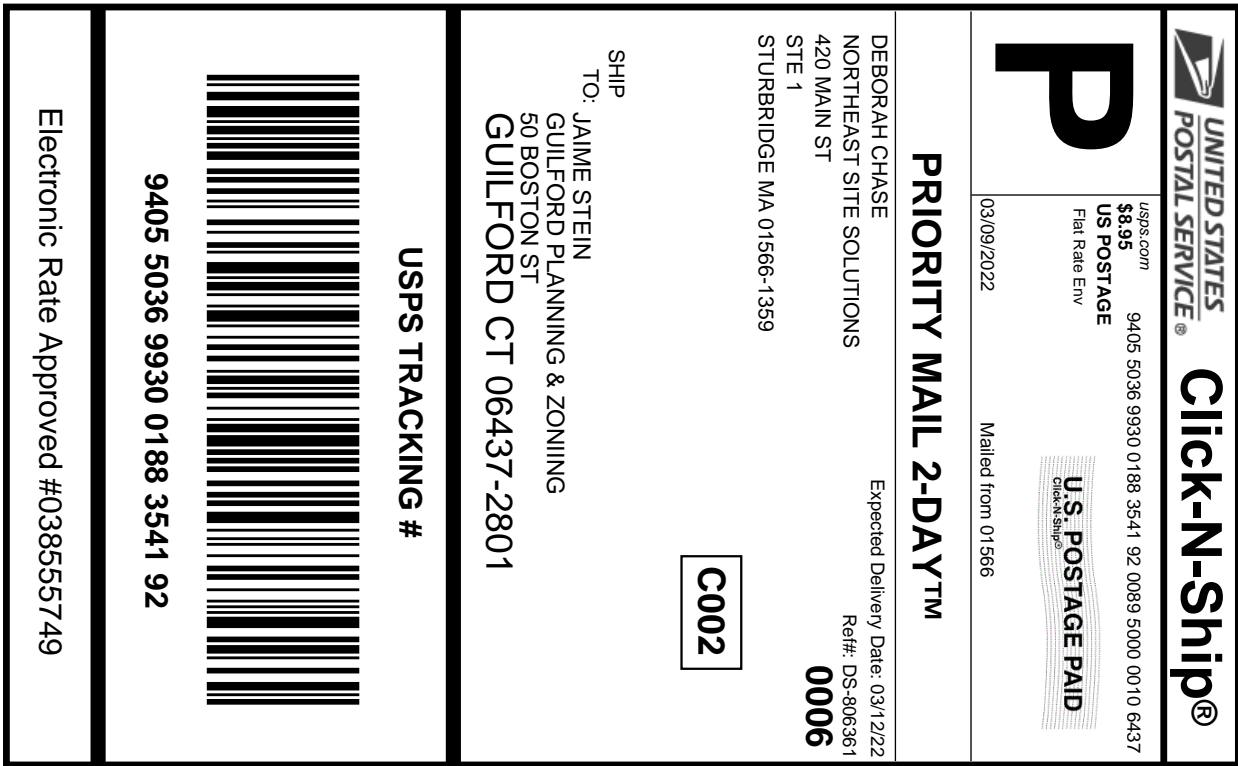
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Print Date: 03/09/2022	Total: \$8.95				
Ship Date: 03/09/2022					
Expected Delivery Date: 03/12/2022					
<table style="width: 100%;"> <tr> <td style="width: 60%;">From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359</td> <td style="width: 40%;">Ref#: DS-806361</td> </tr> <tr> <td colspan="2" style="padding: 10px;">To: MATTHEW T HOEY III FIRST SELECTMAN 31 PARK ST GUILFORD CT 06437-2629</td> </tr> </table>		From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Ref#: DS-806361	To: MATTHEW T HOEY III FIRST SELECTMAN 31 PARK ST GUILFORD CT 06437-2629	
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Ref#: DS-806361				
To: MATTHEW T HOEY III FIRST SELECTMAN 31 PARK ST GUILFORD CT 06437-2629					
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To:	JAIME STEIN GUILFORD PLANNING & ZONING 50 BOSTON ST GUILFORD CT 06437-2801
Ref#:	DS-806361

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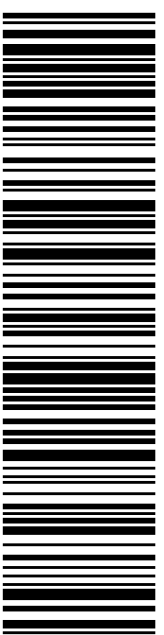
Expected Delivery Date: 03/12/22
 Ref#: DS-806361
0006

DEBORAH CHASE
 NORTHEAST SITE SOLUTIONS
 420 MAIN ST
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 STURBRIDGE MA 01566-1359

R015

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 BW BISHOP & SONS INC
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 GUILFORD CT 06437-2318

USPS TRACKING #



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Trans. #: 558444254	Priority Mail® Postage: \$8.95
Print Date: 03/09/2022	Total: \$8.95
Ship Date: 03/09/2022	
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Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Fri 03/11/2022 Tracking #: 9405 5036 9930 0188 3541 61	1		\$0.00
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 8.30 oz Acceptance Date: Fri 03/11/2022 Tracking #: 9405 5036 9930 0188 3541 85	1		\$0.00
Prepaid Mail Guilford, CT 06437 Weight: 1 lb 0.50 oz Acceptance Date: Fri 03/11/2022 Tracking #: 9405 5036 9930 0188 3541 92	1		\$0.00
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 8.30 oz Acceptance Date: Fri 03/11/2022 Tracking #: 9405 5036 9930 0188 3542 08	1		\$0.00

Grand Total: \$0.00

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