NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

June 8, 2022

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

RE: Tower Share Application
299 Sheffield Street, Waterbury, CT 06704
Latitude: 41.593805
Longitude: -73.05083
Site #: CT02722-S_BOHVN00039A_SBA_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 299 Sheffield Street, Waterbury, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 158-foot level of the existing 158-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 B+T, dated May 3, 2022, Exhibit C. Also included is a structural analysis prepared by TES, dated April 21, 2022, confirming that the existing tower is structurally capable of supporting the proposed equipment at the 158' level (moved from the originally proposed 95' level). Attached as Exhibit D. The facility was approved by the City of Waterbury, on September 1, 2000. 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 Mayor Neil O'Leary and Robert Nerney, City Planner for the City of Waterbury, as well as the tower owner (SBA) and property owner (Level Development Corporation).

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 158-feet and the Dish Wireless LLC antennas will be located at a center line height of 158-feet.

2. The proposed modifications will not result in an increase of the site boundary as depicted on the attached site plan.

NORTHEAST 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 15.25% 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 Waterbury. 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 158-foot level of the existing 158-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 Waterbury.

Sincerely,

Denise Sabo

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Mayor Neil M. O'Leary
City Hall Building
235 Grand Street, 2nd floor
Waterbury, CT 06702

Robert Nerney, City Planner
City of Waterbury
185 South Main Street, 5th floor
Waterbury, CT 06706

Level Development Corporation – Property Owner
293 Sheffield Street
Waterbury, CT 06704

SBA - Tower Owner

Exhibit A

Original Facility Approval

BLDGPER1

THE CITY OF WATERBURY

DEPARTMENT OF INSPECTIONS
(203) 574-6832

PERMIT No. 0504D

Building Permit

Date: Sept. 1, 20 00

Applicant:

Name: SBA Inc.
Attn: Thomas L. Flynn III
Address: 49 Leavenworth St., Ste. 200
City: Waterbury State: CT Zip: 06702

Location of Work:
Address: 299 Sheffield Street

Location Owner:
Owner's Name: Jon-Mar LLC
Address: 822 Waterville Street
City: Waterbury State: CT

Leave is hereby granted to M. Thomas F. Flynn III

to erect a wireless telecommunications facility

as follows: Length ____ ft; Width ____ ft; No. of Stories ____; No. of Rooms ____

Building to be used as commercial

Construction Classification ____ Use Group ____

Designed Live Load: 1st ____ 2nd ____ 3rd ____ Roof ____

Remarks: ____

The conditions on which this permit is granted are, that the said building shall be erected in accordance with the laws of the State of Connecticut, and the ordinances of the City of Waterbury. And if any of the statements of said applicant be not true, or if any change is made in said plans or specifications without the consent of the building inspector or his duly appointed agents, this permit shall be revocable.

Limited to six months from date. This permit may be sooner revoked for any violation of any ordinance, statute or order of constituted authority. This pemit is subject to the condition that should there be any change in the ordinance or statutes or institution of proceedings to establish any building line or other improvements, before said building is completed, then no further work shall be done on said building thereafter conflicting with such new statute, order, ordinance, or institution of proceedings.

Lil Gravelin
Building Official

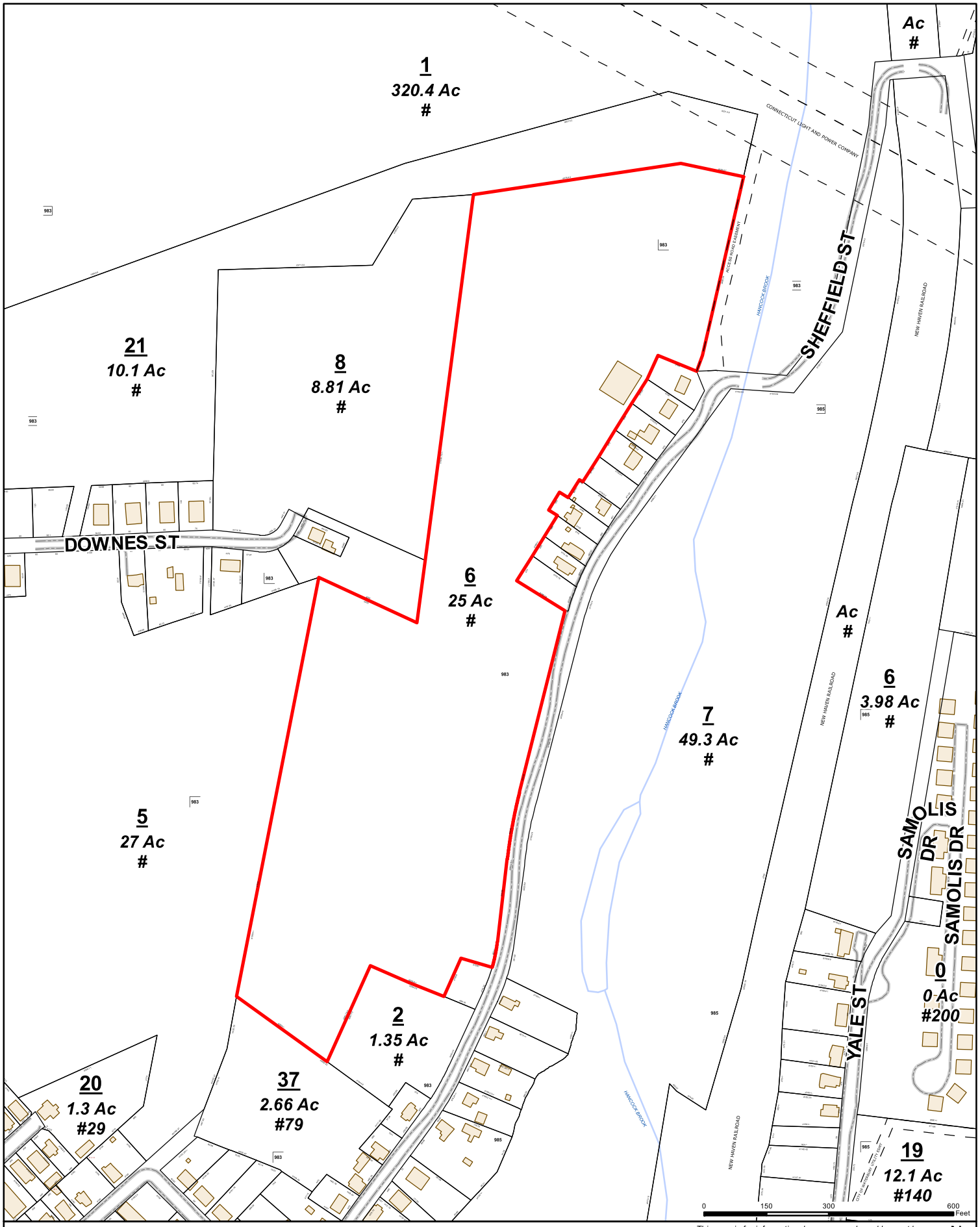
COST: $ 175,000.

FEE: $ 1,407.-5. State Ed. Fee $ 28.00

SEAL OF THE CITY OF WATERBURY CONN.

Exhibit B

Property Card



City of Waterbury
Public Works Department

MBL: **0047-0983-0006**

ADDRESS: SHEFFIELD ST

N

Location: SHEFFIELD ST **Owner:** LEVEL DEVELOPMENT CORPORATION

Property Information:

Map Block Lot:	0047-0983-0006	**Acres:**	25
Primary Use:	Com Vac Land (5-2)	**Zone:**	RL
Neighborhood:	41000-Bucks Hill	**Vol/Page:**	5739
Mailing Address:	LEVEL DEVELOPMENT CORPORATION 293 SHEFFIELD ST WATERBURY, CT 06704		

Property Values:

	Appraised Value	**Assessed Value (70%)**
Building	0	0
Land	459607	321730
OutBuilding	3060	2140
Total	462667	323870

Sales Information:

Sale Date	**Sale Price**	**Sale Type**	**Valid sale**
2006-04-25 00:00:00.000	0	Quit Claim	No

Outbuilding Information:

Type	**Area (sq.ft)**	**Year Built**	**Condition**
Frame Shed	240sq.ft	2002	Average

Special Features:

Permit Information:

Permit Date	**Permit Number**	**Permit Type**	**Click for Details**
08/09/2013	PR20130002197	BD - Electrical	Details
06/29/2012	PR20120001784	BD - Building	Details
05/13/2019	PR20190001129	BD - Electrical	Details
02/13/2013	PR20130000309	BD - Building	Details

Planning Application:

Application Date	**Application Number**	**Application Type**	**Click for Details**

Exhibit C

Construction Drawings

THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION REMOVAL AND/OR REPLACEMENT OF THE TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR 1.61000 (B)(7).

DISH Wireless L.L.C. SITE ID:

BOHVN00039A

DISH Wireless L.L.C. SITE ADDRESS:

299 SHEFFIELD STREET
WATERBURY, CT 06704

SCOPE OF WORK

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:

TOWER SCOPE OF WORK:
- 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

GROUND SCOPE OF WORK:
- 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 FIBER NID (IF REQUIRED)

SITE INFORMATION

PROPERTY OWNER:	LEVEL DEVELOPMENT CORPORATION
ADDRESS:	293 SHEFFIELD ST WATERBURY, CT 06704
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT02722-S
TOWER APP NUMBER:	168274
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 35' 37.8" N 41.593828
LONGITUDE (NAD 83):	73° 03' 03.1" W -73.050866
ZONING JURISDICTION:	CONNECTICUT SITTING COUNCIL
ZONING DISTRICT:	RESIDENTIAL
PARCEL NUMBER:	0047-0983-0006
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	SBA COMMUNICATAIONS CORP. 8051 CONGRESS AVENUE BOCA RATON, FL 33487 (800) 487-7483
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	RYAN LYNCH ryan.lynch@dish.com
CONST. MANAGER:	JAVIER SOTO javier.soto@dish.com
RF ENGINEER:	SYED ZAIDI syed.zaidi@dish.com

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM WATERBURY AIRPORT (N41):

HEAD SOUTH ON CT-262 TOWARD WHITESTONE CLIFFS TRAIL, TURN LEFT ONTO THOMASTON AVE, TURN LEFT ONTO SHEFFIELD ST, ARRIVE AT BOHVN00039A.

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
LS1	SITE SURVEY
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

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

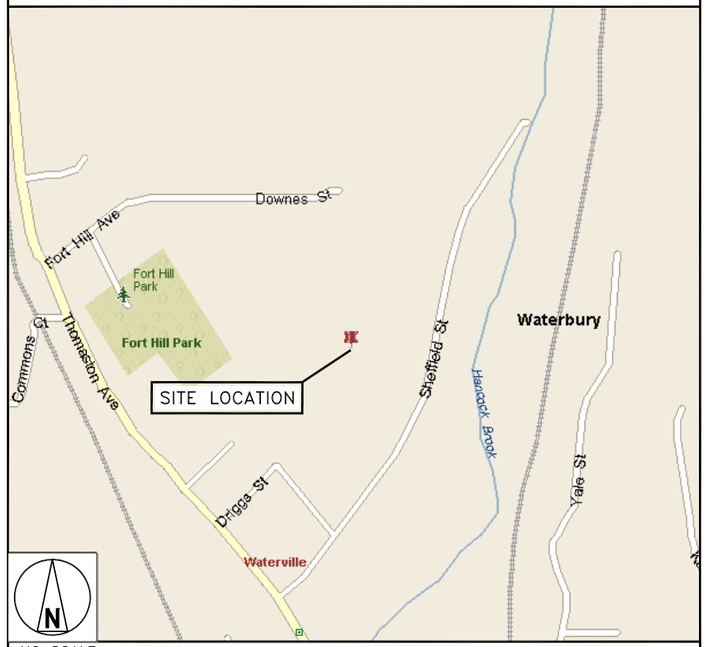
GENERAL NOTES

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.

VICINITY MAP



NO SCALE

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. LITTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

CT2722-S

NOTES
1. THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 thru 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS AN EASEMENT MAP, BASED ON AN INDEPENDENT RESURVEY CONFORMING TO A-2 HORIZONTAL ACCURACY AND T-2 TOPOGRAPHIC ACCURACY AND INTENDED TO DEPICT AND NOTE THE POSITION OF A PROPOSED LEASE PARCEL WITH RESPECT TO EXISTING STRUCTURES ON THE PARCEL.
2. NORTH IS BASED ON GRID NORTH CT NAD-83.
3. ELEVATIONS ARE BASED ON NAVD 88
4. BASE MAPPING PREPARED BY FIELD SURVEY ... 15, 2000.
5. UNDERGROUND UTILITIES SHOWN ... LOCATION IF POSSIBLE. THEIR EXACT LOCATION MAY DIFFER ... OTHERS MAY EXIST.
6. SUBJECT TO AN ACCURATE ...
7. SUBJECT TO ALL RIGHTS, ... TIONS OF RECORD.

TO MY KNOWLEDGE AND BELIEF, THIS MAP ... SUBSTANTIALLY CORRECT AS NOTED HEREON.

DAVID E. DICKINSON, L.S. REG. ...

STATE OF CONNECTICUT · DAVID E. DICKINSON · 17384 · REGISTERED · LAND SURVEYOR

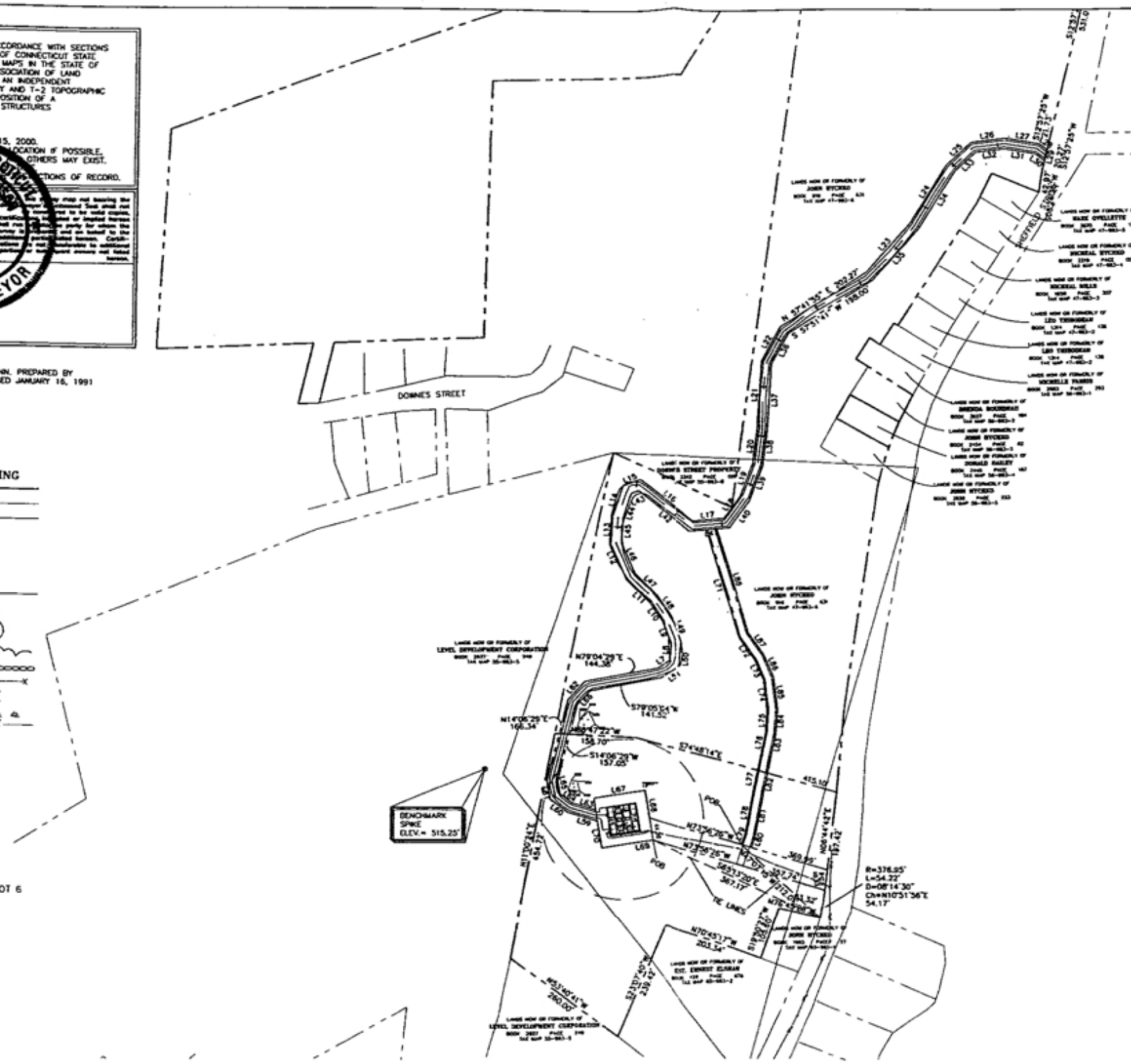
SURVEYORS CERTIFICATION

MAP REFERENCE:
MAP OF LANDS OF JOHN F. HYCHKO– WATERBURY CONN. PREPARED BY A.J. PATTON CO., DATED OCTOBER 1, 1987 LAST REVISED JANUARY 16, 1991

LEGEND

PROPOSED		EXISTING
	PROPERTY LINE	
	EASEMENT LINE	
	SETBACK	
	TOWER YARD AREA/ LEASE AREA	
	ACCESS DRIVE/ ACCESS & UTILITY EASEMENT	
744	CONTOUR	744
OHU	OVERHEAD UTILITY	ohu
	TREE >8"DBH	
	TREELINE	
	STONEWALL	
	FENCE LINE	x x
	DRAINAGE CULVERT	
	INLAND WETLAND BOUNDARY	WET

PROPERTY INFORMATION
1. PROPERTY ADDRESS
299 SHEFFIELD ST.
WATERBURY, CT. 06740
2. PROPERTY OWNER
JOHN F. HYCHKO
832 WATERVILLE ST.
WATERBURY, CT. 06704
DEED: VOLUME 916, PAGE 631
2. ASSESSORS DATA: MAP 47 BLOCK 983 LOT 6
3. ZONE IG
4. FEMA FIRM MAP: ZONE N/A
5. PROPERTY SIZE 35.5± ACRES



LINE TABLE		
LINE	LENGTH	BEARING
L7	27.86	N56°46'01"E
L8	34.96	N05°46'24"E
L9	48.99	N21°46'22"W
L10	43.68	N34°29'35"W
L11	63.21	N44°48'19"W
L12	79.20	N23°21'29"W
L13	58.23	N03°33'30"E
L14	63.47	N17°13'41"E
L15	36.13	N68°37'41"E
L16	135.35	N51°19'05"W
L17	62.39	N84°37'39"E
L18	55.49	N35°58'34"E
L19	70.21	N20°08'35"E
L20	67.33	N06°38'35"E
L21	139.75	N03°00'40"E
L22	77.91	N27°52'33"E
L23	130.25	N41°27'10"E
L24	136.37	N31°46'16"E
L25	64.69	N47°44'03"E
L26	65.15	N83°27'35"E
L27	69.58	N80°36'09"W
L28	19.50	N53°59'44"W
L29	21.73	N17°57'25"E
L30	23.28	N53°59'44"W
L31	62.06	N80°36'09"W
L32	55.90	N83°27'35"E
L33	55.85	N47°44'03"E
L34	134.43	N31°44'06"E
L35	136.46	N41°29'22"E
L36	69.04	N27°52'33"E
L37	135.98	N03°00'40"E
L38	70.33	N06°38'35"E
L39	75.36	N20°08'35"E
L40	67.31	N35°58'34"E
L41	79.52	N84°37'39"E
L42	131.88	N51°19'05"W
L43	14.94	N68°37'41"E
L44	51.45	N17°13'41"E
L45	49.05	N03°33'30"E
L46	70.63	N23°21'29"W
L47	61.22	N44°48'19"W
L48	49.71	N34°29'35"W
L49	56.13	N21°46'22"W
L50	49.41	N05°46'24"E
L51	41.59	N56°46'01"E
L54	40.53	N09°44'42"E
L59	80.56	N73°10'06"W
L60	43.54	S53°08'35"E
L61	39.43	S10°05'14"E
L62	48.25	S42°13'36"W
L63	47.29	N73°10'06"W
L64	32.12	S53°08'35"E
L65	27.25	S10°05'14"E
L66	36.46	S42°13'36"W
L67	100.00	N80°52'37"E
L68	100.00	S09°07'23"E
L69	100.00	S80°52'37"W
L70	100.00	N09°07'23"W
L71	227.44	N16°54'46"W
L72	54.85	N35°39'01"W
L73	44.10	N23°16'01"W
L74	58.82	N07°12'05"W
L75	48.02	N03°43'02"E
L76	43.47	N11°40'24"E
L77	80.13	N11°11'28"E
L78	82.34	N10°17'28"E
L79	22.62	N19°15'33"E
L80	23.07	N19°15'33"E
L81	83.75	N10°17'28"E
L82	79.89	N11°11'28"E
L83	44.77	N11°40'24"E
L84	51.33	N03°43'02"E
L85	63.55	N07°12'05"W
L86	49.09	N23°16'01"W
L87	53.72	N35°39'01"W
L88	220.05	N16°54'46"W

CT2722-S

WATERBURY 10125-046

N

SCALE: 1"=240'

240' 0' 120' 240' 480'

ERDMAN ANTHONY CONSULTING ENGINEERS
Rochester, NY – Mechanicsburg, PA – Boston, MA – Buffalo, NY – Albany, NY
Albany Office: 317 Brick Church Road, Troy N.Y. 12180 Tel: (518) 279-0505 Fax: (518) 279-0555

PROJ. NO. 17740.39 | PROJ. MGR. S.W.E. | DESIGN BY S.W.E. | CHECKED BY D.J.W. | DRAWN BY R.S.

REV.	DESCRIPTION	BY	DATE
04			
03			
02			
01			

CLIENT: SBA, Inc.
80 EASTERN BLVD.
GLASTONBURY, CT 06033
(860)659-9101
RANDY FRESCHUN
(860) 659-9101

PROJECT NAME: WATERBURY COMMUNICATIONS FACILITY

DRAWING TITLE: LEASE EXHIBIT

DATE: 08/10/00
SHEET NO. 1 of 1
DRAWING NO. L–1

dish wireless

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

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:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149441.001.01

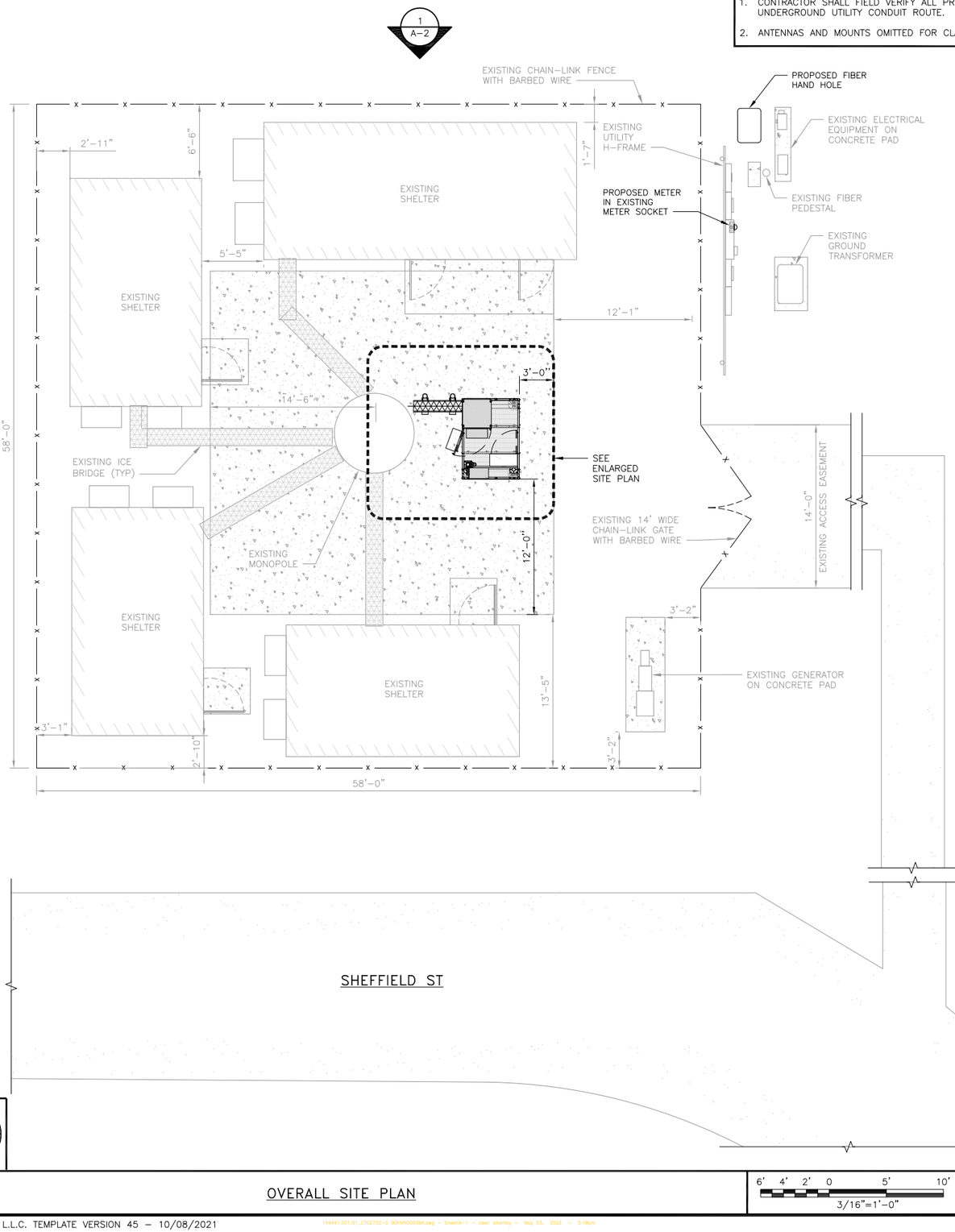
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE
SITE SURVEY

SHEET NUMBER
LS-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



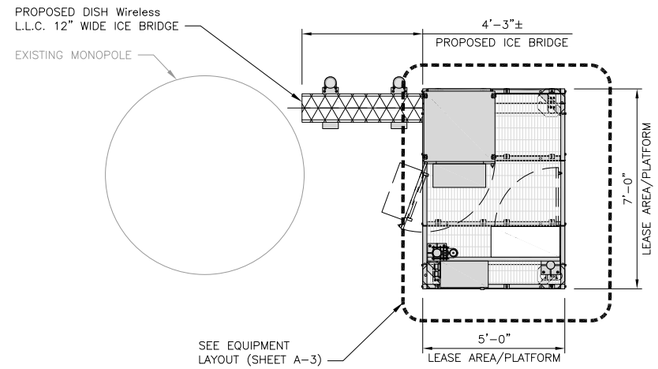
OVERALL SITE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1

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.



ENLARGED SITE PLAN

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

2

NOT USED

NO SCALE

3

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT CHAD E. BUTLER No. 23924 LICENSED PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

OVERALL AND ENLARGED SITE PLAN

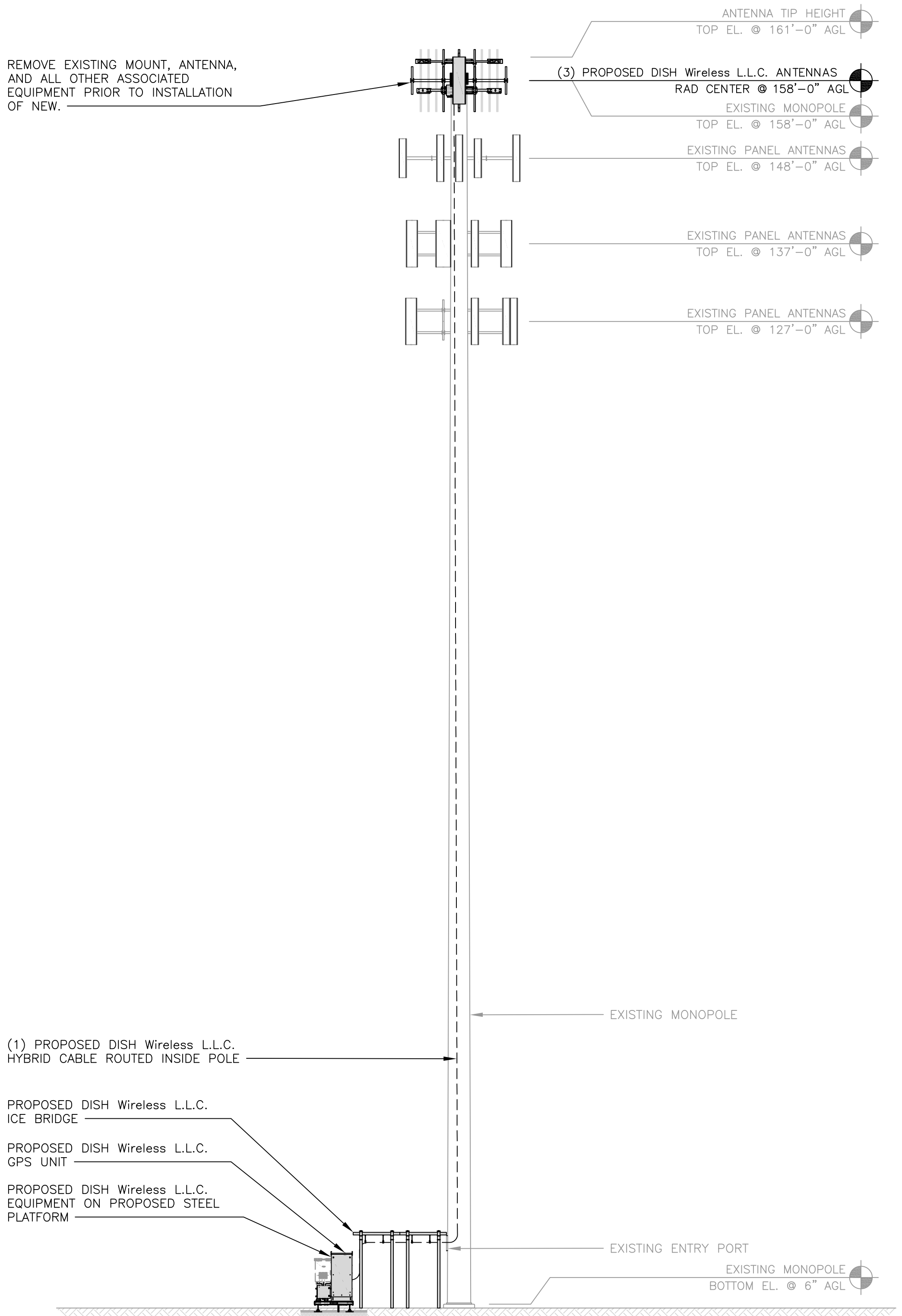
SHEET NUMBER

A-1

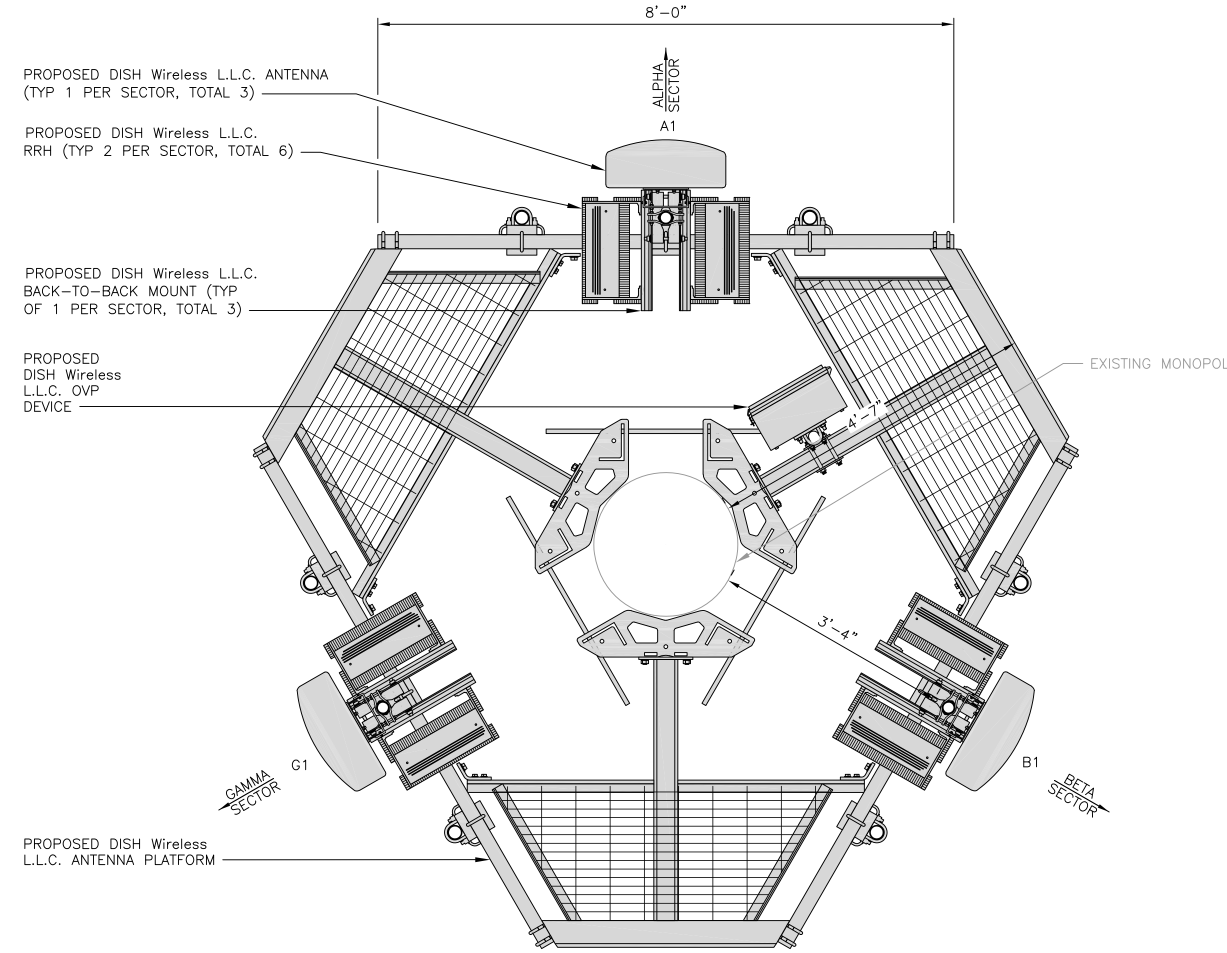
NOTES

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.

THE EXISTING LINES, ANTENNA, APPURTENANCES AND MOUNT RELATED TO THE PROPOSED RAD CENTER **158** FEET AGL SHALL BE REMOVED BY THE CONTRACTOR PRIOR TO INSTALLING THE PROPOSED INSTALLATION. FAILURE TO COMPLY WITH THE FOREGOING MAY RESULT IN ADDITIONAL CHARGES OR FEES.



PROPOSED WEST ELEVATION — 3/32"=1'-0" — 1



ANTENNA LAYOUT — 3/4"=1'-0" — 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 WIRELESS–MX08FRO665–21	5G	72" x 20"	0°	158'-0"	(1) HIGH-CAPACITY HYBRID CABLE (200' LONG)
BETA	B1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72" x 20"	120°	158'-0"	
GAMMA	G1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72" x 20"	240°	158'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025–B604	5G
	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

NOTES

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.

ANTENNA SCHEDULE — NO SCALE — 3

dish wireless
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

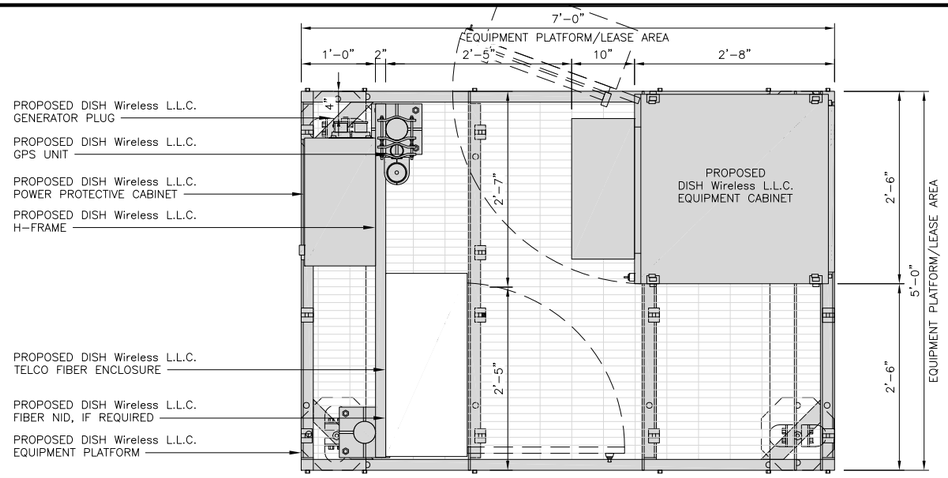
REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149441.001.01

DISH Wireless L.L.C. PROJECT INFORMATION
BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



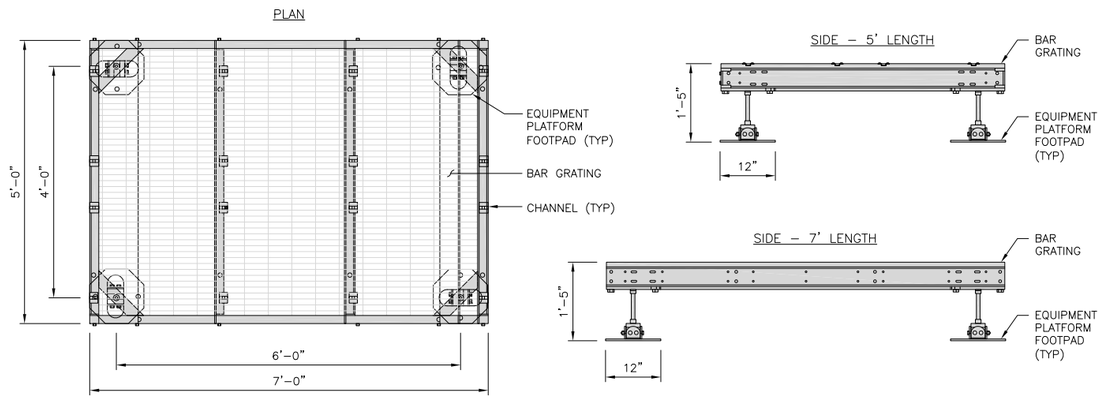
PLATFORM EQUIPMENT PLAN

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

1

COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



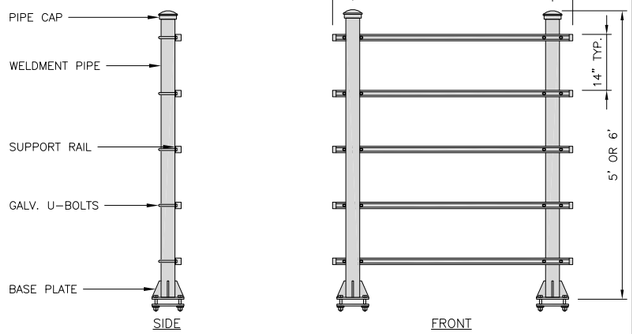
PLATFORM DETAIL

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

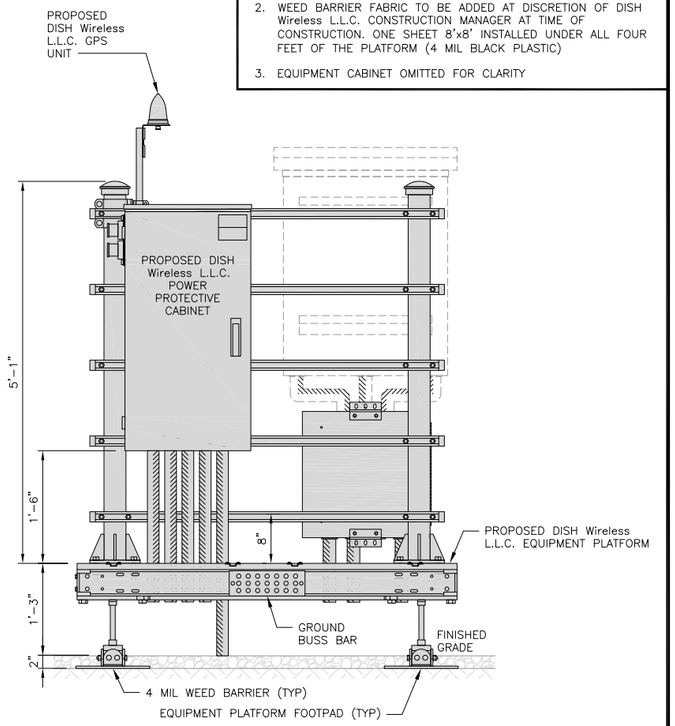
NOT USED

NO SCALE

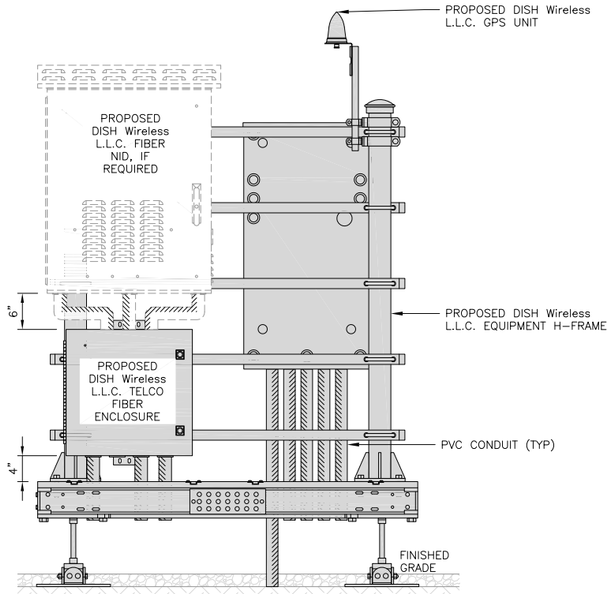
4

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



FRONT ELEVATION



BACK ELEVATION

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

5

H-FRAME EQUIPMENT ELEVATION

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. TYLER
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

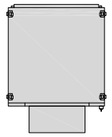
A&E PROJECT NUMBER
149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

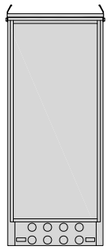
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

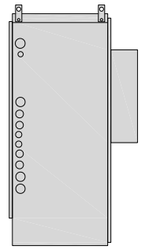
ENERSYS HVAC 2000005995	
DIMENSIONS (HxWxD)	73"x30"x32"
POWER SYSTEM	-48V ALPHA/600A
HVAC	600W
TOTAL WEIGHT (EMPTY)	371 lbs



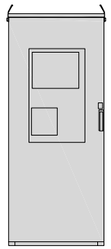
PLAN



BACK



SIDE



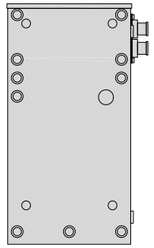
FRONT

CABINET DETAIL

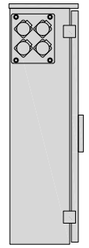
NO SCALE | 1

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

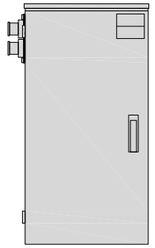
TOP



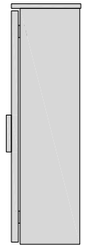
BACK



SIDE



FRONT



SIDE

POWER PROTECTION CABINET (PPC) DETAIL

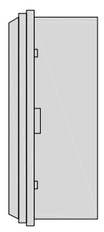
NO SCALE | 2

NOT USED

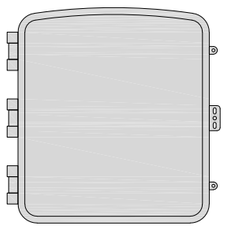
NO SCALE | 3

CIENA 3931 FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	17"x16.8"x7"
WEIGHT	28.6 lbs

TOP



SIDE

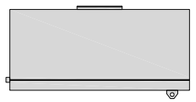


FRONT

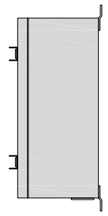
FIBER NID ENCLOSURE DETAIL

NO SCALE | 5

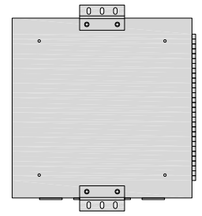
CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



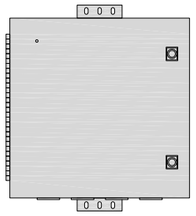
FRONT



SIDE



BACK



FRONT

FIBER TELCO ENCLOSURE DETAIL

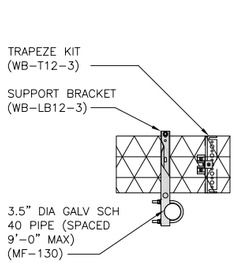
NO SCALE | 6

NOT USED

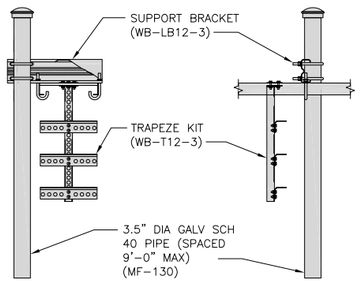
NO SCALE | 4

COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

INCLUDED PRODUCTS:	WB-T12-3 TRAPEZE KIT, 3 RUNGS
	WB-LB12-3 SUPPORT BRACKET
	MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



PLAN

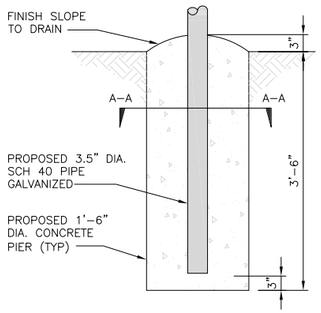


FRONT

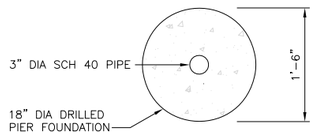
SIDE

ICE BRIDGE DETAIL

NO SCALE | 7



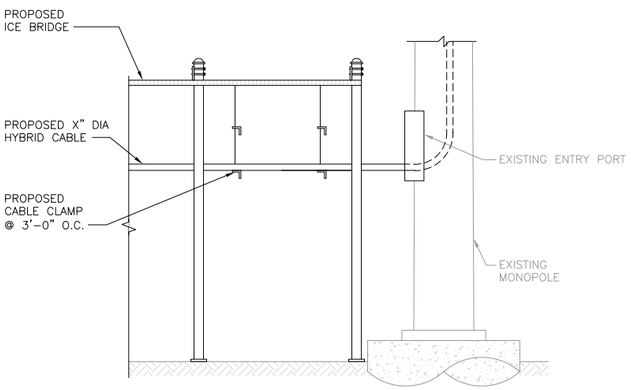
CONCRETE PIER



A-A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE | 8



HYBRID CABLE RUN

NO SCALE | 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP

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

5/3/22

STATE OF CONNECTICUT
CHAD E. BUTLER
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

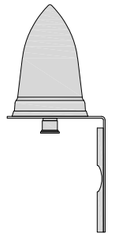
SHEET TITLE

EQUIPMENT DETAILS

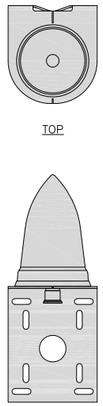
SHEET NUMBER

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



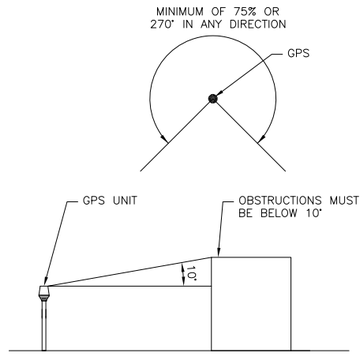
BACK



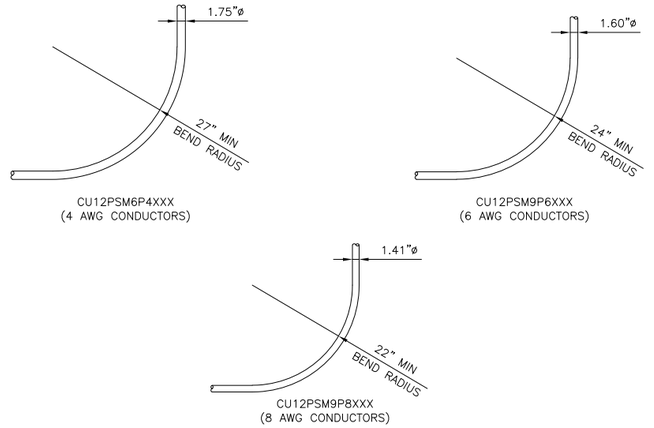
TOP

SIDE

GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES | NO SCALE | 3

NOT USED | 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

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

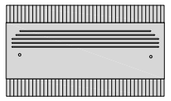
EQUIPMENT DETAILS

SHEET NUMBER

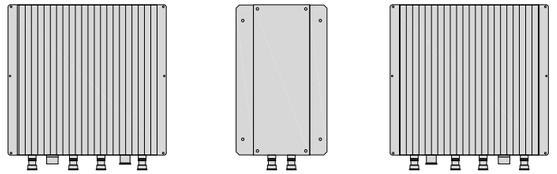
A-5

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

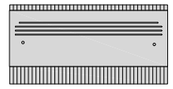


BACK SIDE FRONT

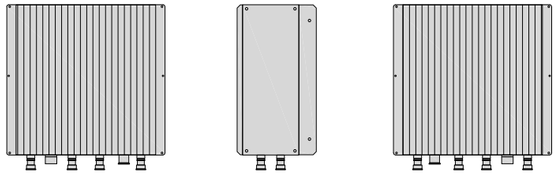
RRH DETAIL | NO SCALE | 1

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



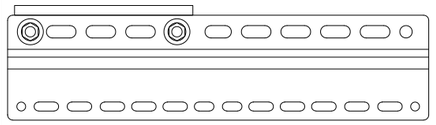
BACK SIDE FRONT

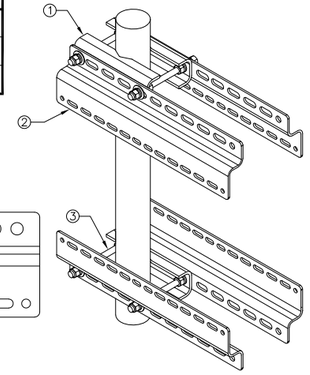
RRH DETAIL | NO SCALE | 2

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"



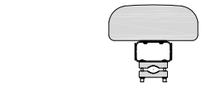


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

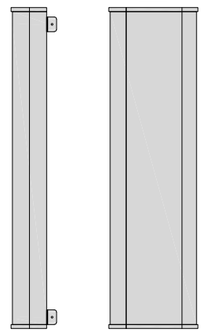
RRH MOUNT DETAIL | NO SCALE | 3

JMA MX08FRO665-21

DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



PLAN



SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

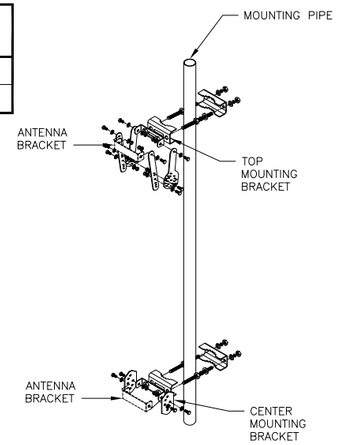
NOT USED | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318

TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

ANTENNA BRACKET NOT PART OF KIT



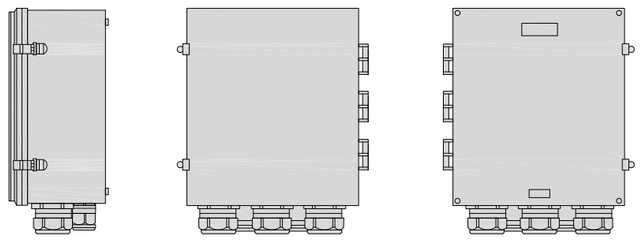
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)

DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS

PLAN



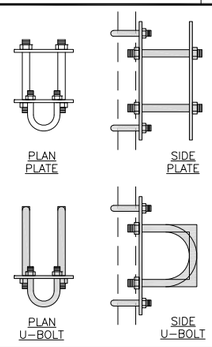
SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

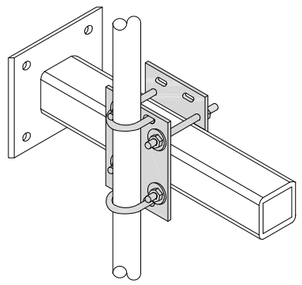
COMMSCOPE XP-2040 CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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



PLAN PLATE SIDE PLATE PLAN U-BOLT SIDE U-BOLT

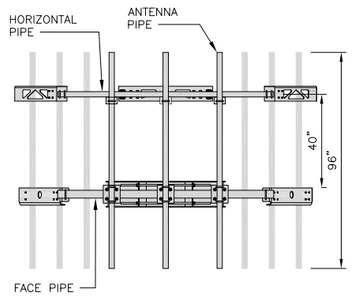


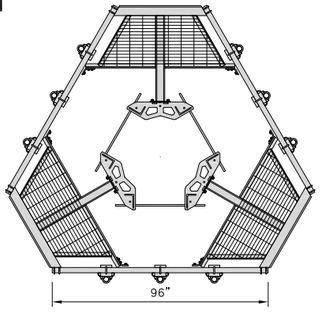
RRH/OVP MOUNT DETAIL | NO SCALE | 8

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

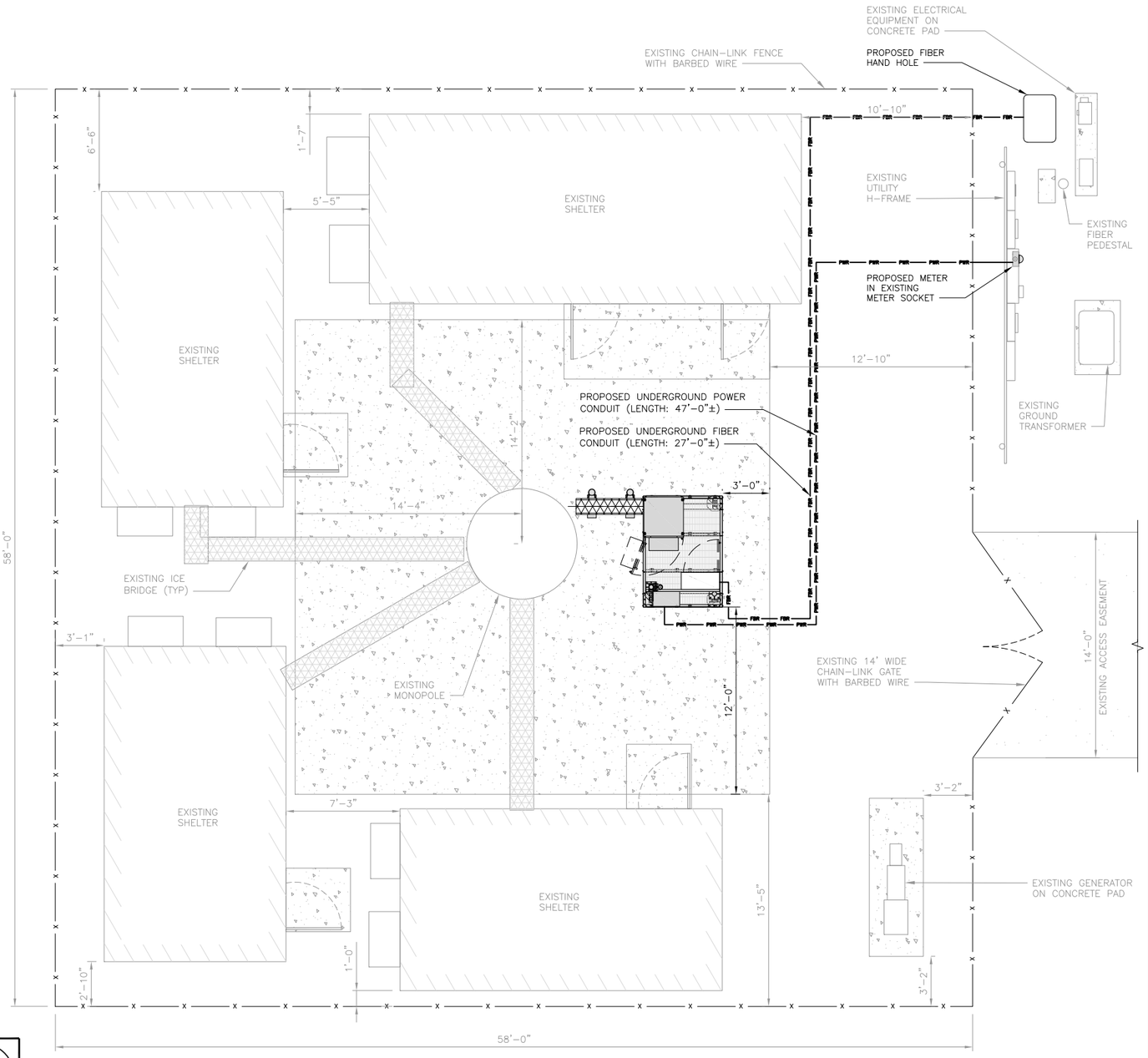
EQUIPMENT DETAILS

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.



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

UTILITY ROUTE PLAN

4' 2' 0 4' 8'
1/4"=1'-0"

1

ELECTRICAL NOTES

NO SCALE

2

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

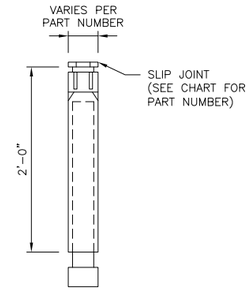
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

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"

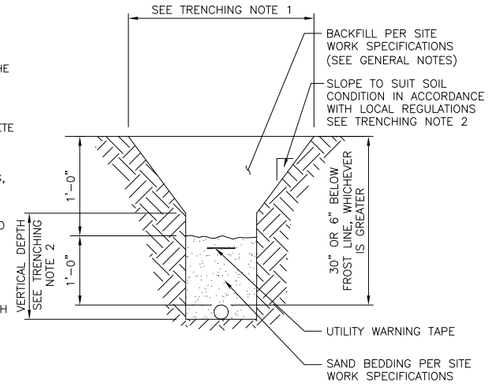


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

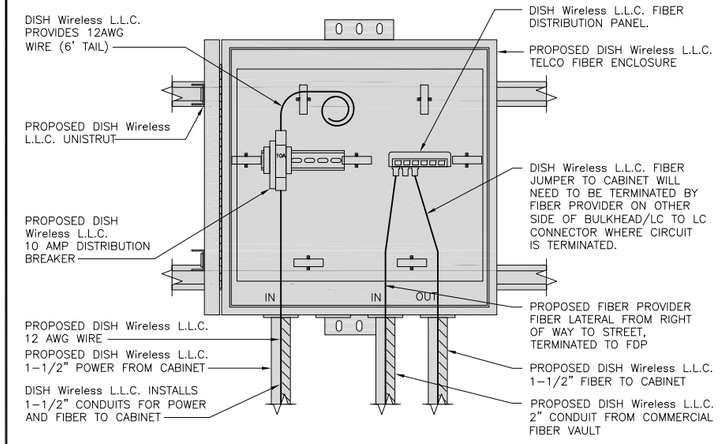
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

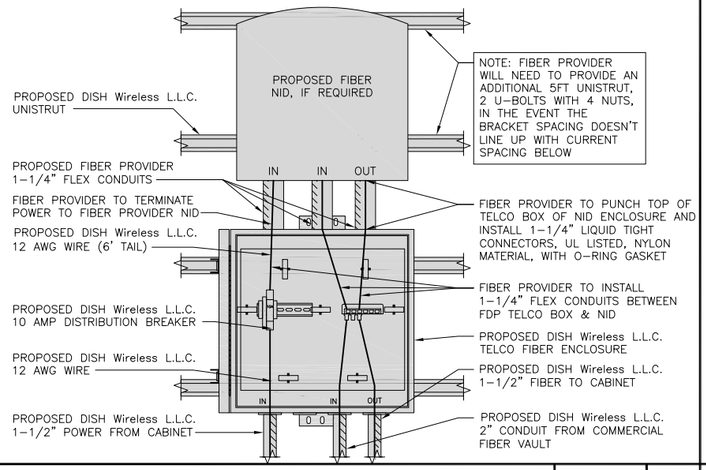
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
3. 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.



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



DARK TELCO BOX – INTERIOR WIRING LAYOUT | NO SCALE | 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) | 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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. TITLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

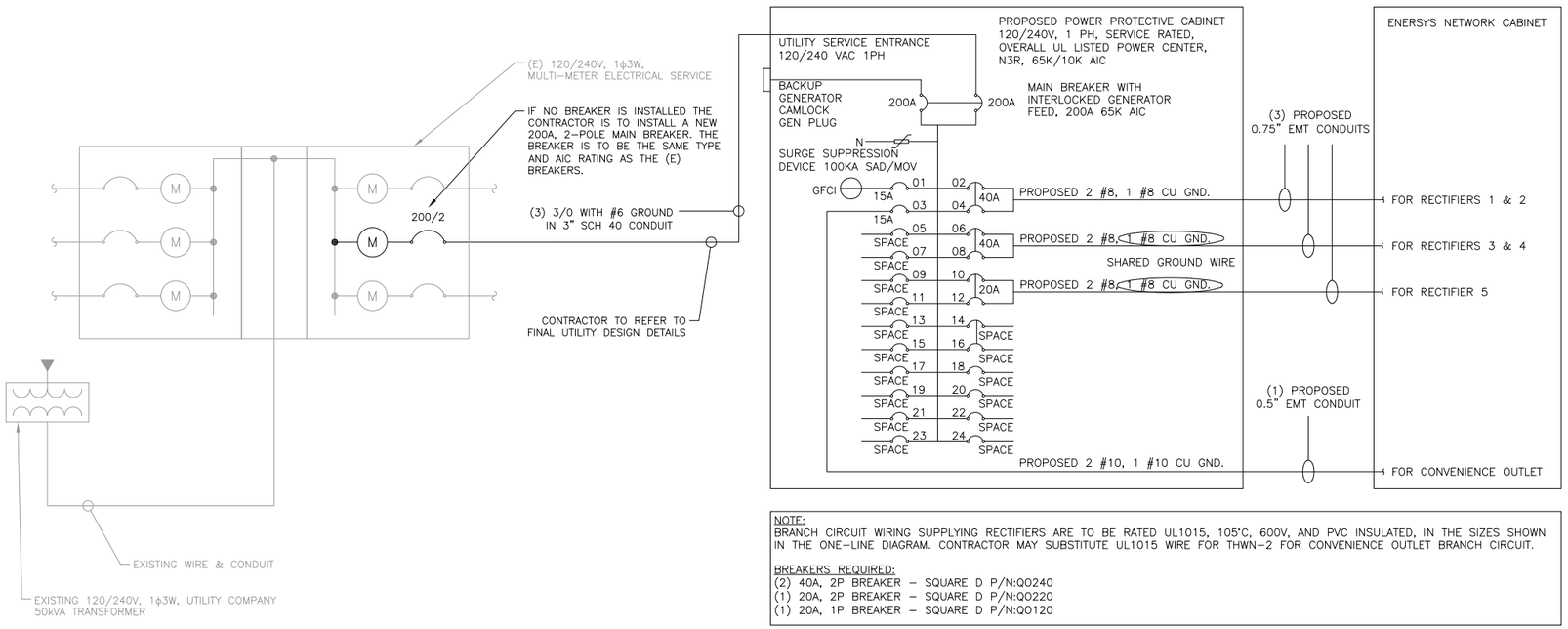
BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



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:
(2) 40A, 2P BREAKER - SQUARE D P/N:QO240
(1) 20A, 2P BREAKER - SQUARE D P/N:QO220
(1) 20A, 1P BREAKER - SQUARE D P/N:QO120

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.

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 (3 CONDUITS): USING UL1015, CU.

#8	- 0.0552 SQ. IN X 2 =	0.1103 SQ. IN
#8	- 0.0131 SQ. IN X 1 =	0.0131 SQ. IN <BARE GROUND
TOTAL		= 0.1234 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) 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

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED ENERSYS PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	40A	3840		ENERSYS ALPHA CORDEX
ENERSYS GFCI OUTLET		180	15A	3	B	4			3840	RECTIFIERS 1 & 2
-SPACE-				5	A	6	40A	3840		ENERSYS ALPHA CORDEX
-SPACE-				7	B	8			3840	RECTIFIER 3 & 4
-SPACE-				9	A	10	20A	1920		ENERSYS ALPHA CORDEX
-SPACE-				11	B	12			1920	RECTIFIER 5
-SPACE-				13	A	14				-SPACE-
-SPACE-				15	B	16				-SPACE-
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						9500	9500	

200A MCB, 1φ, 24 SPACE, 120/240V	L1	L2	
MB RATING: 65,000 AIC	9680	9680	VOLTAGE AMPS
	81	81	AMPS
	81		MAX AMPS
	102		MAX 125%

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. BUTLER
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

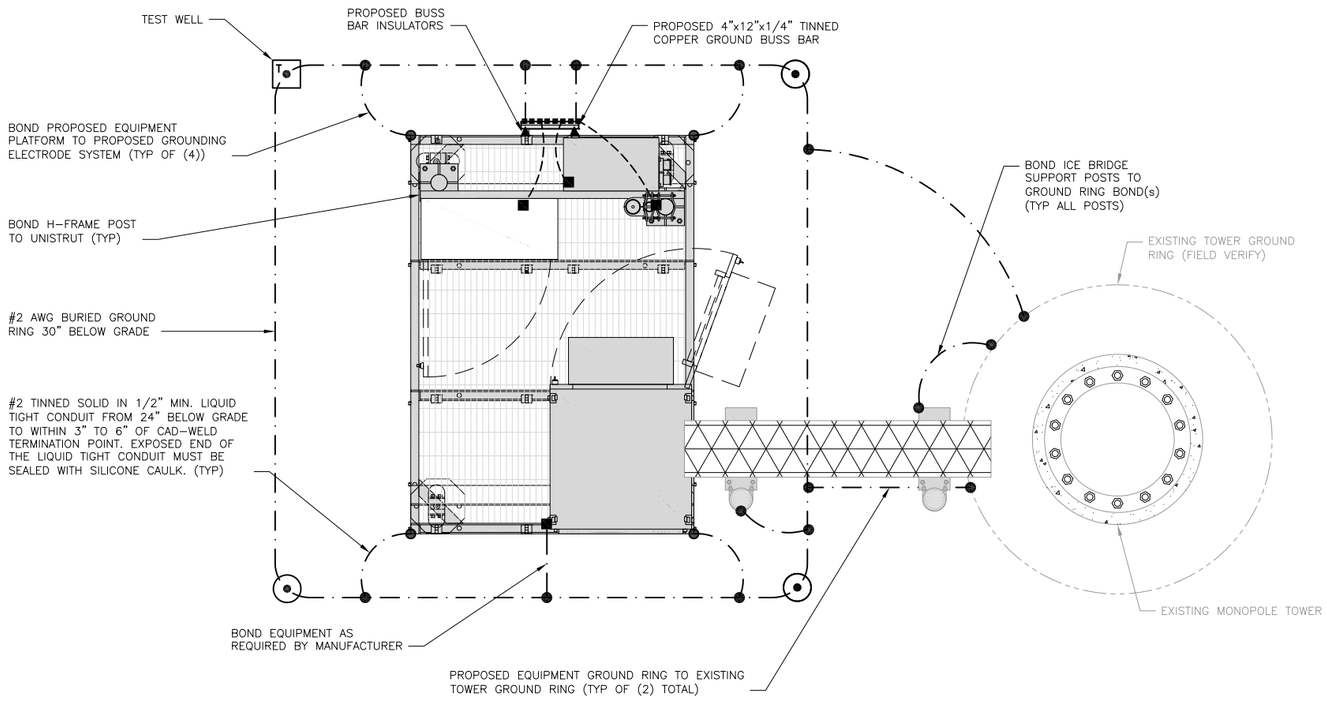
REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149441.001.01

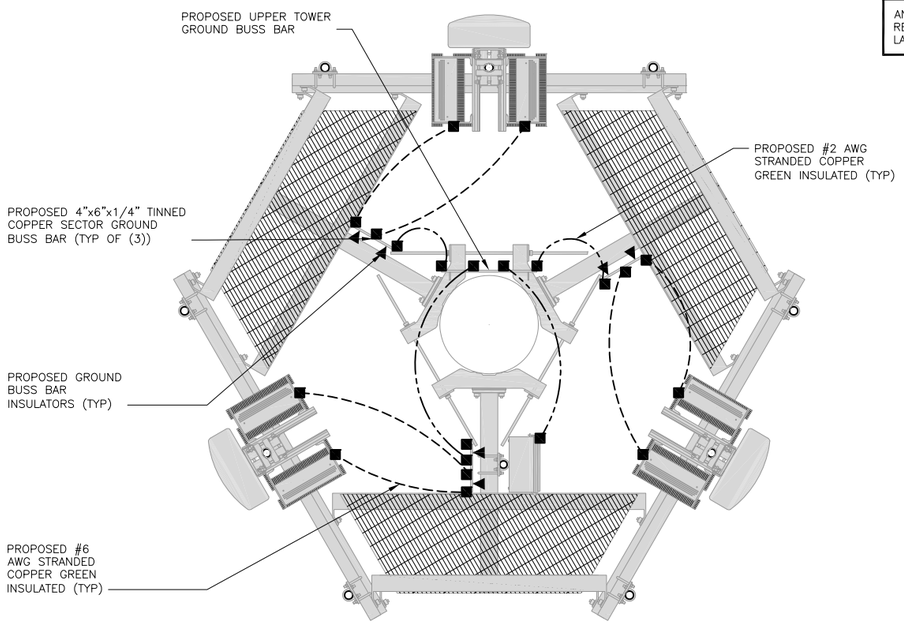
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

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

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

NOTES

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

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- GROUND BUS BAR
- GROUND ROD
- TEST GROUND ROD WITH INSPECTION SLEEVE
- #6 AWG STRANDED & INSULATED
- #2 AWG SOLID COPPER TINNED
- #2 AWG STRANDED & INSULATED
- BUSS BAR INSULATOR

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

(A) 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.

(B) 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.

(C) 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.

(D) 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.

(E) 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.

(F) 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.

(G) 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.

(H) 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.

(I) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

(J) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

(K) 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.

(L) 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.

(M) 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

(N) 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.

(O) 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

(P) 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

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22
STATE OF CONNECTICUT CHAD E. LITTLE No. 23924 LICENSED PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

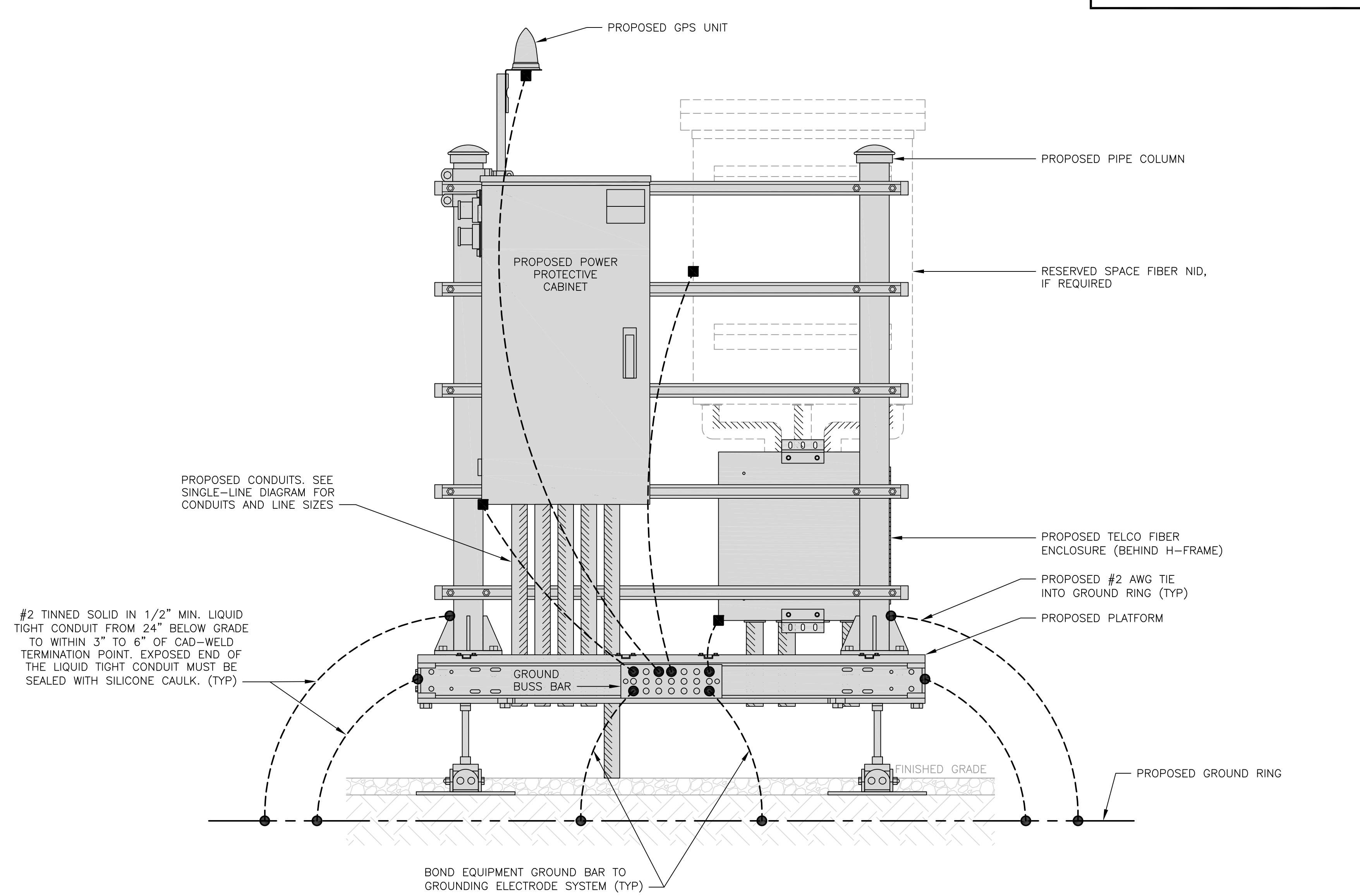
GROUNDING PLANS AND NOTES

SHEET NUMBER

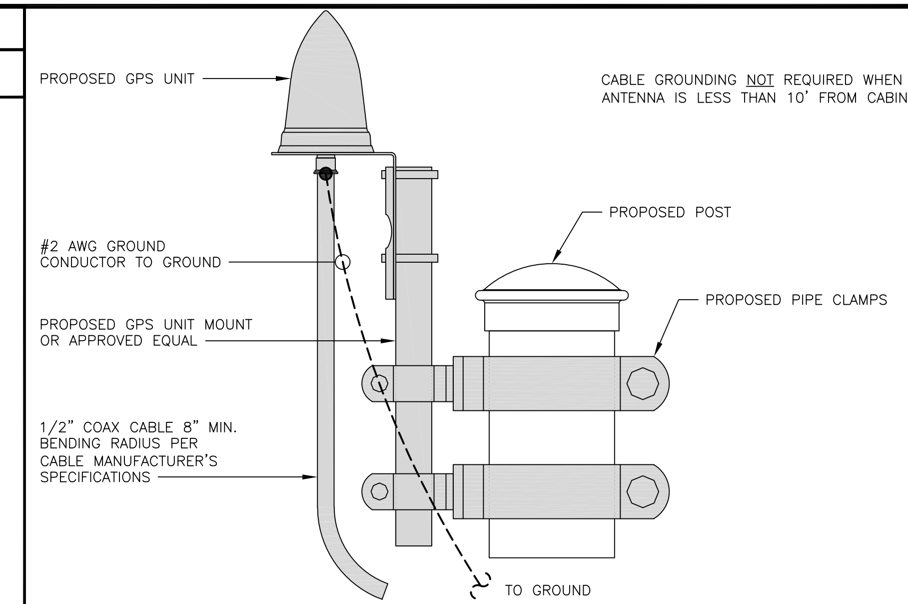
G-1

NOTES

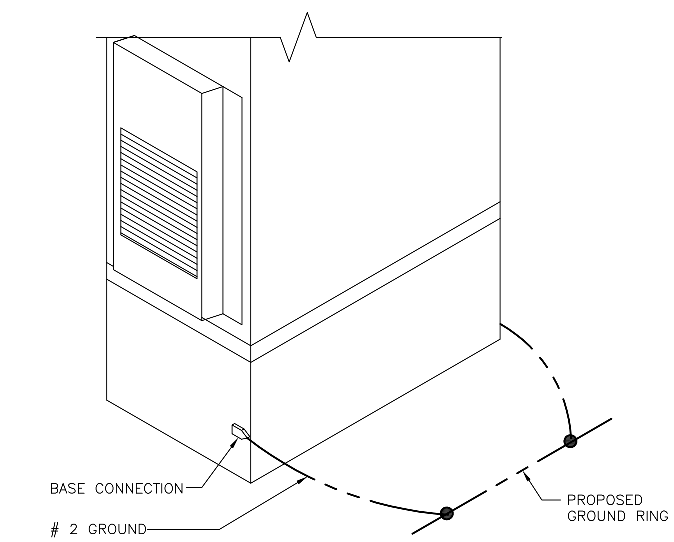
EQUIPMENT CABINET OMITTED FOR CLARITY



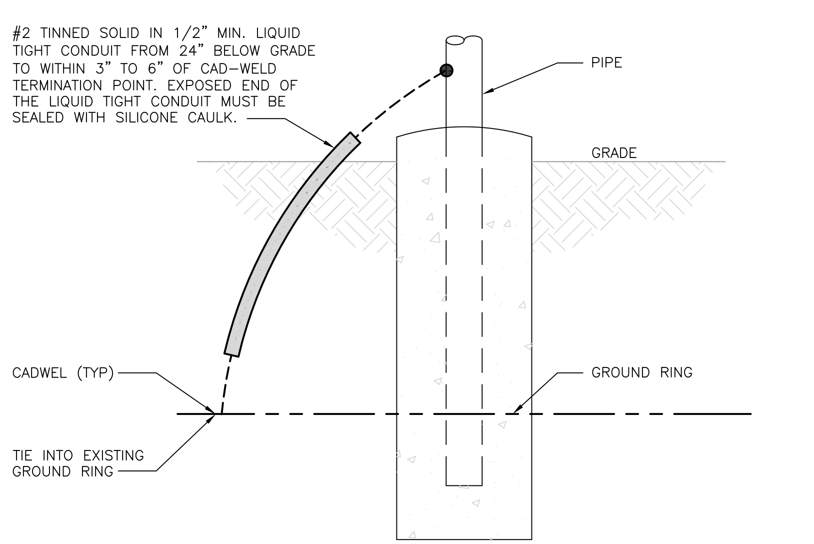
H-FRAME GROUNDING DETAIL — NO SCALE — 1



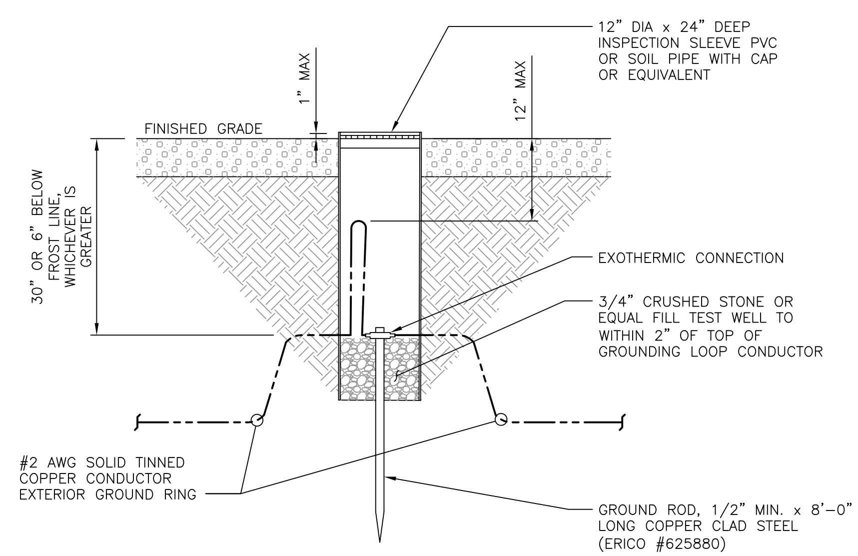
TYPICAL GPS UNIT GROUNDING — NO SCALE — 2



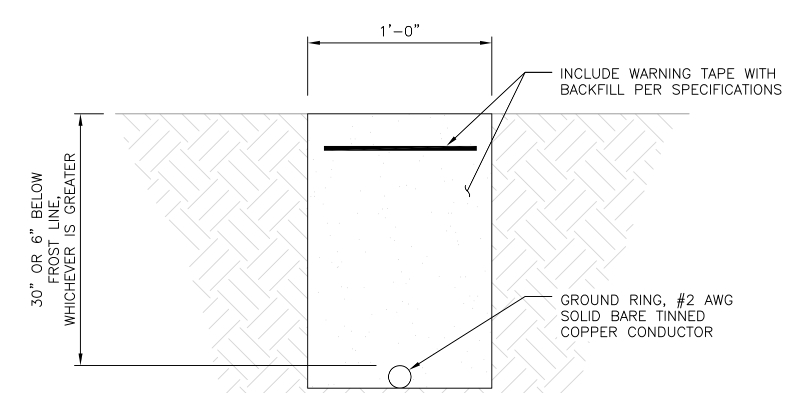
OUTDOOR CABINET GROUNDING — NO SCALE — 3



TRANSITIONING GROUND DETAIL — NO SCALE — 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE — NO SCALE — 5



TYPICAL GROUND RING TRENCH — NO SCALE — 6

dish wireless

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

No. 23924 LICENSED PROFESSIONAL ENGINEER

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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149441.001.01

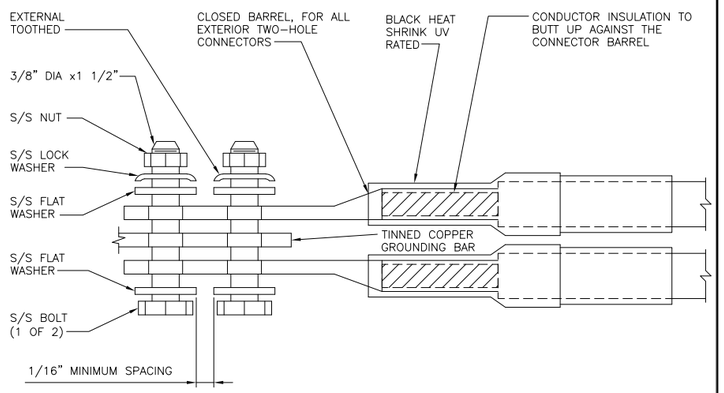
DISH Wireless L.L.C. PROJECT INFORMATION
BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE
GROUNDING DETAILS

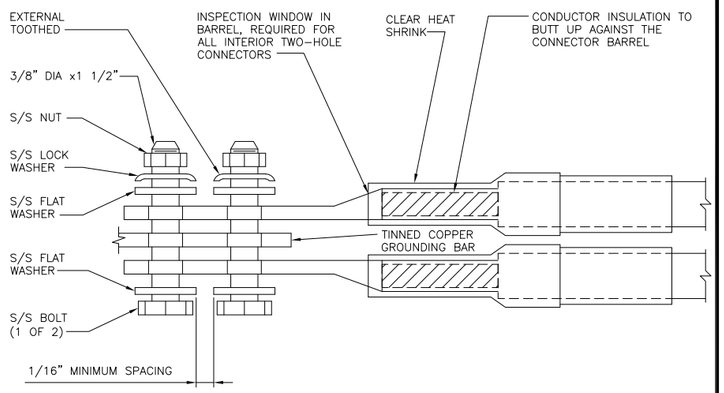
SHEET NUMBER
G-2

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).

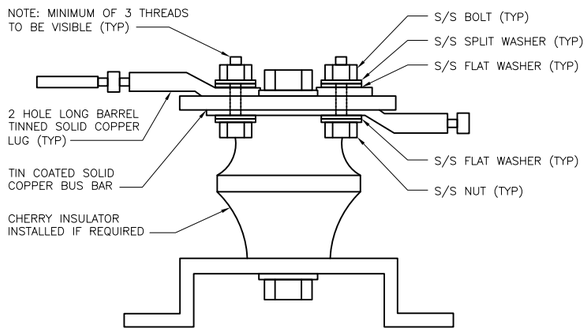
TYPICAL GROUNDING NOTES | NO SCALE | 1



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

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. TITLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

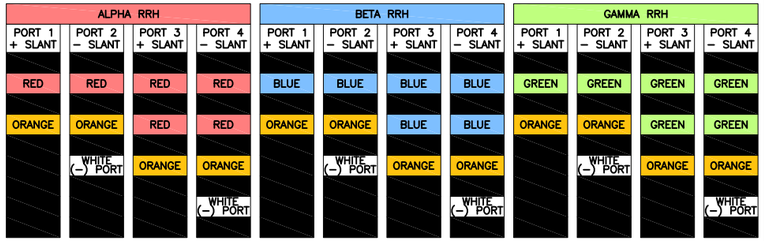
G-3

HYBRID/DISCREET CABLES

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

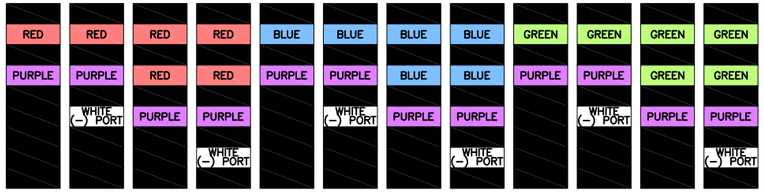
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID–BAND RRH
(AWS BANDS N66+N70)

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



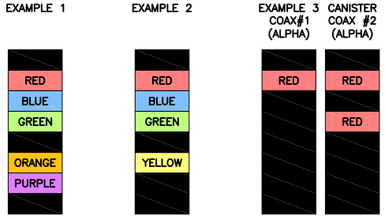
HYBRID/DISCREET CABLES

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.

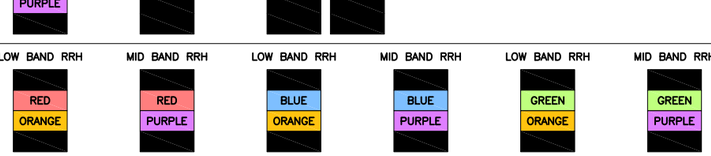
EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RD DETAILS. FINAL RFDS IS IN NEXSYSONE.

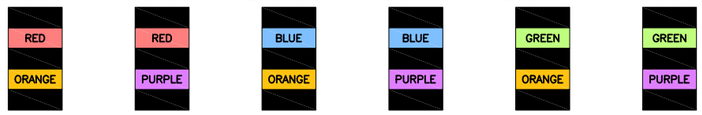
FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

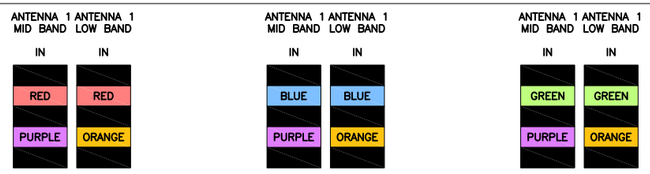
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID–BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

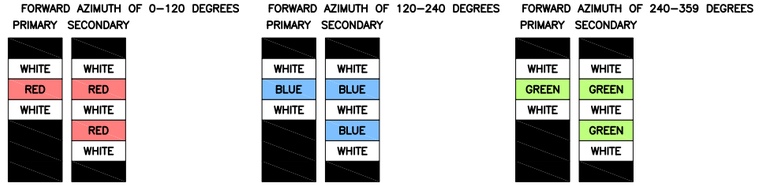
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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.



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

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. LITTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

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–DDBTXD

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

W.P.

SECTION REFERENCE

XX
X–X

DETAIL REFERENCE

XX
X–X

LEGEND

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

ABBREVIATIONS

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP

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

5/3/22

STATE OF CONNECTICUT
CHAD E. CASTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

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.

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD E. TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

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.

29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".

30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

dish wireless

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

5/3/22

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

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.

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP

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

5/3/22

STATE OF CONNECTICUT
CHAD E. LITTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RK	MRE	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/11/21	ISSUED FOR REVIEW
0	3/7/22	ISSUED FOR CONSTRUCTION
1	5/3/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149441.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00039A
299 SHEFFIELD STREET
WATERBURY, CT 06704

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 158 ft SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT02722-S

Customer Site Name: Waterbury

Carrier Name: Dish Wireless (App#: 168274-2)

Carrier Site ID / Name: BOHVN00039A / 0

Site Location: 299 Sheffield Street

Waterbury, Connecticut

New Haven County

Latitude: 41.594089

Longitude: -73.050567

Analysis Result:

Max Structural Usage: 83.2% [Pass]

Max Foundation Usage: 46.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Kevin Azisllari

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 158 ft SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT02722-S

Customer Site Name: Waterbury

Carrier Name: Dish Wireless (App#: 168274-2)

Carrier Site ID / Name: BOHVN00039A / 0

Site Location: 299 Sheffield Street

Waterbury, Connecticut

New Haven County

Latitude: 41.594089

Longitude: -73.050567

Analysis Result:

Max Structural Usage: 83.2% [Pass]

Max Foundation Usage: 46.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Kevin Azisllari

Introduction

The purpose of this report is to summarize the analysis results on the 158 ft SUMMIT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Summit Manufacturing, LLC. DWG.No. 9302-01, dated 08/23/2000.
Foundation Drawing	Summit Manufacturing, LLC. Job No. 9302-A530, dated 08/23/2000.
Geotechnical Report	JGI, Site# 10125-046, dated 04/28/2000
Modification Drawings	N/A
Mount Analysis	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.189, S_1 = 0.064

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	148.0	6	Andrew DB844G65ZAXY - Panel	Modified Low Profile Platform W/ (3) VZWSMART-PLK3, (15) VZWSMART-MSK1, (3) VZWSMART-PLK6, (1) VZWSMART-PLK7, (1) VZWSMART-MSK6, (1) VZWSMART-P40-238X048, (3) VZWSMART-P40-278X048 & (3) 36" Long, LL3X3x1/4	(11) 1-5/8" (2) 1-5/8" Hybrid	Verizon
2		3	Samsung MT6407-77A			
3		6	JMA Wireless MX06FRO660-03 - Panel			
4		6	RFS FD9R6004/2C-3L Diplexer			
5		3	Samsung RF4439D-25A			
6		3	Samsung RF4440D-13a			
7		1	Raycap RCMDC-6627-PF-48-OVP			
8	137.0	3	Quintel – QS66512-2 - Panel	(1) Platform w/ Hand Rails [MTC3607]	(12) 1-5/8" (2) 1/2" Fiber (4) 3/4" DC	AT&T
9		3	CCI - OPA-65R-LCUU-H6 - Panel			
10		3	KMW - AM-X-CD-16-65-00T-RET - Panel			
11		3	Kathrein Scala - 800 10965 - Panel			
12		6	CCI - DTMABP7819VG12A - TMA			
13		6	Kaelus - DBC0037F1V2-1 - Diplexer			
14		6	Ericsson - RRUS-11 - RRU			
15		6	Ericsson - RRUS-12 - RRU			
16		3	Ericsson - RRUS 32 B2 - RRU			
17		3	Ericsson - RRUS-32 - RRU			
18		3	Ericsson - B14 4478 - RRU			
19		3	Ericsson - RRU A2 - RRU			
20		6	Kaelus - DBC0061F1V51-2 - Combiners			
21		3	Raycap - DC6-48-60-18-8F - COVP			
22	127.0	3	Nokia - AAHC - Panel	(1) Low Profile Platform (1) Reinforcement kit [PRK-1245L] (1) Vertical brace kit [PRK-SFS-L]	(1) 1-5/8" Fiber (3) 1-1/4" Fiber (2) 1/2"	Sprint Nextel
23		3	Commscope - NNVV-65B-R4 - Panel			
24		2	DragonWave - A-ANT-23G-2-C - Dish			
25		3	ALU - 1900MHz - RRU			
26		6	ALU - 800 MHz - RRU			
27	122.0	1	Nokia CS72188.01 – Omni	Direct Mount	(1) 1/2" Coax	AT&T
28	95.0	3	JMA Wireless MX08FRO665-21 - Panel	Platform w/HRK Commscope MC-PK8-DSH	(1) 1.6" Hybrid	Dish Wireless
29		3	Fujitsu TA08025-B605 RRU			
30		3	Fujitsu TA08025-B604 RRU			
31		1	Raycap RDIDC-9181-PF-48-OVP			

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	158.0	3	JMA Wireless MX08FRO665-21 - Panel	Platform w/HRK Commscope MC-PK8-DSH	(1) 1.75" Hybrid	Dish Wireless
2		3	Fujitsu TA08025-B605 RRU			
3		3	Fujitsu TA08025-B604 RRU			
4		1	Raycap RDIDC-9181-PF-48-OVP			

See the attached coax layout for the line placement considered in the analysis.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**83.2%**	**75.5%**	**61.3%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	5234.4	43.2	90.8

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.5330 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222 Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 83.15% at 83.5ft

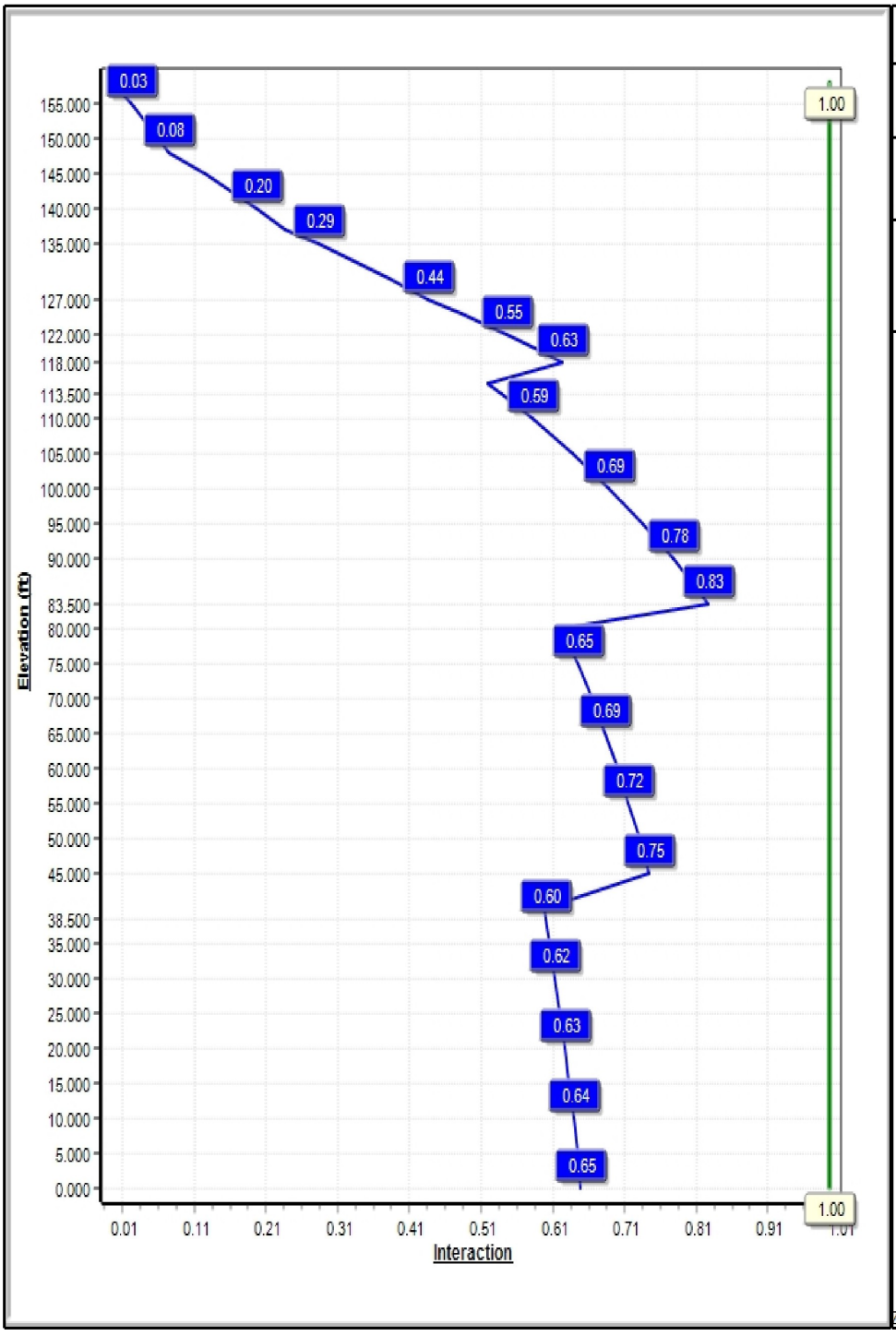
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	4/21/2022
Site Name:	Waterbury	**Exposure:**	C	
Height:	158.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

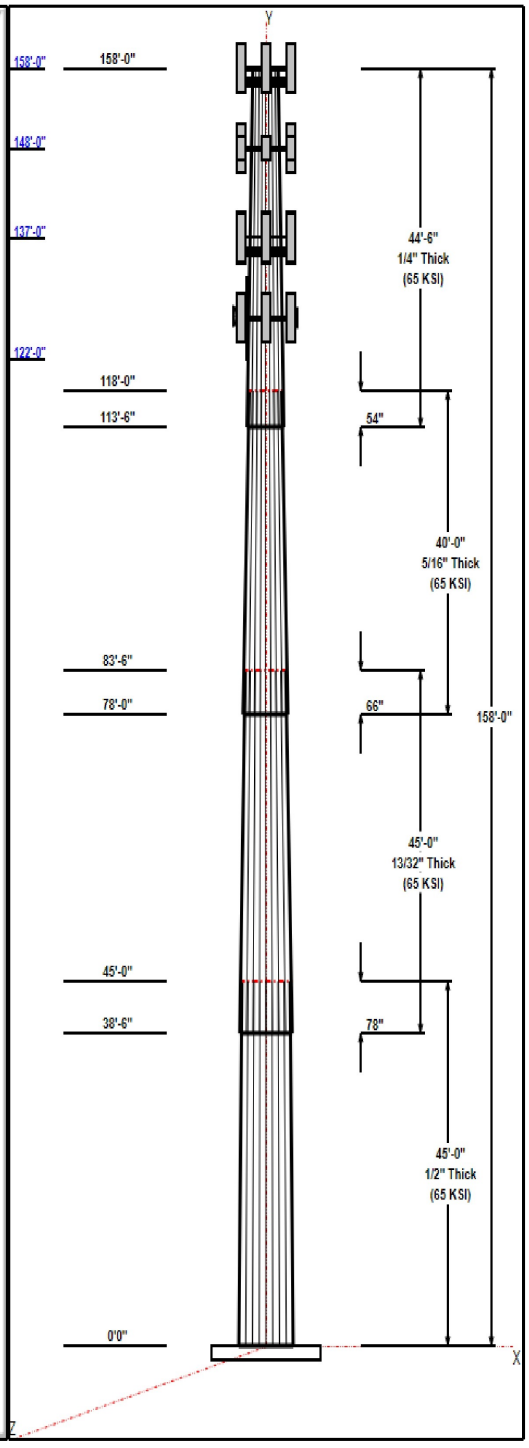
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 97 mph Wind

Iterations: 23





Structure: CT02722-S-SBA

Type: Tapered
Site Name: Waterbury
Height: 158.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23998

4/21/2022

Tower Engineering Solutions

Shaft Properties

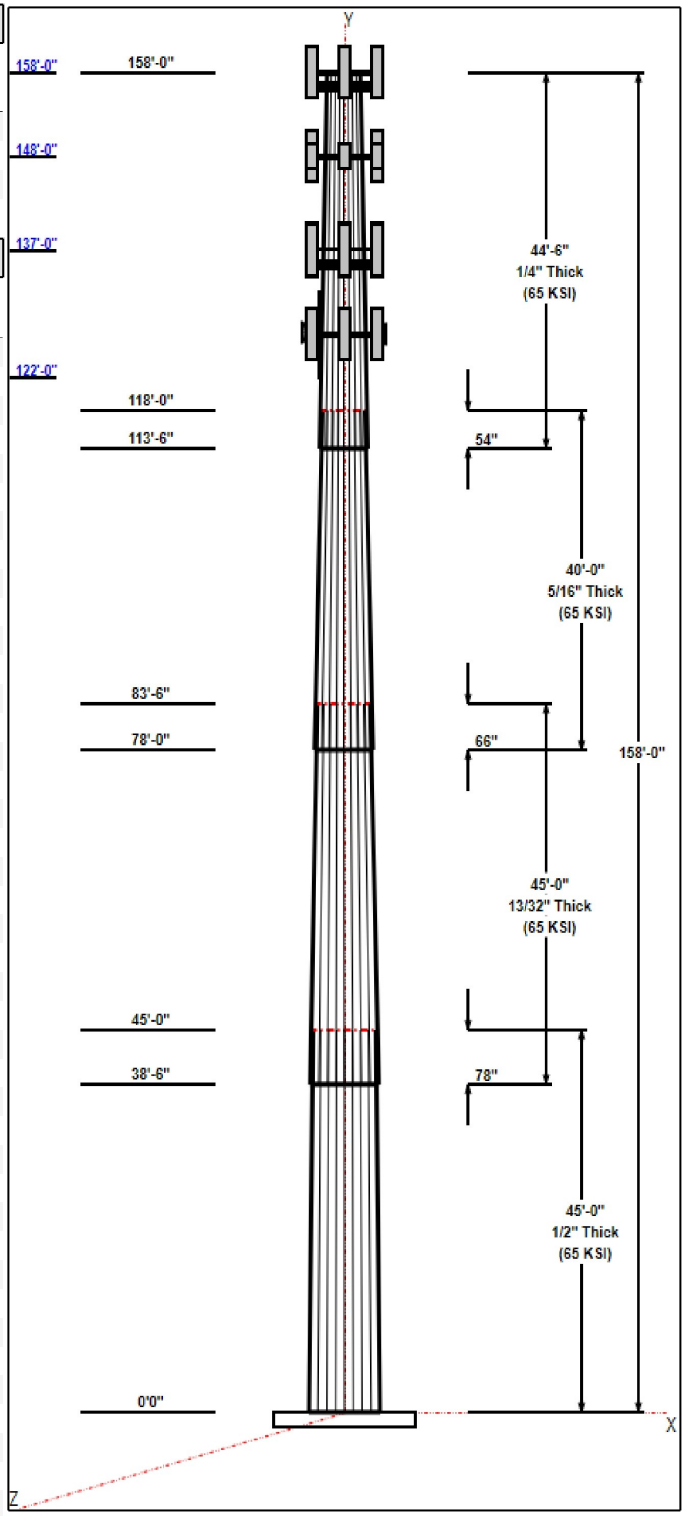
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	49.18	59.98	0.500		0.23998	65
2	45.00	40.75	51.55	0.406	Slip	0.23998	65
3	40.00	33.10	42.70	0.313	Slip	0.23998	65
4	44.50	24.00	34.68	0.250	Slip	0.23998	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
158.00	158.00	3	JMA Wireless	Dish Wireless
158.00	158.00	1	Commscope MC-PK8-DSH	Dish Wireless
158.00	158.00	3	Fujitsu TA08025-B605	Dish Wireless
158.00	158.00	3	Fujitsu TA08025-B604	Dish Wireless
158.00	158.00	1	Raycap	Dish Wireless
158.00	158.00	1	Low Profile Platform	-
148.00	148.00	6	DB844G65VTZASX	Verizon
148.00	148.00	3	MT6407-77A	Verizon
148.00	148.00	6	JMA Wireless	Verizon
148.00	148.00	3	RF4439D-25A	Verizon
148.00	148.00	3	RF4440D-13a	Verizon
148.00	148.00	1	Raycap	Verizon
148.00	148.00	6	RFS FD9R6004/2C-3L	Verizon
148.00	148.00	1	VZWSMART-PLK6	Verizon
148.00	148.00	1	Low Profile Platform	Verizon
148.00	148.00	1	VZWSMART-PLK7	Verizon
148.00	148.00	1	VZWSMART-PLK3	Verizon
137.00	137.00	3	CCI - OPA-65R-LCUU-H6	AT&T
137.00	137.00	3	KMW -	AT&T
137.00	137.00	3	Ericsson - RRUS 32 B2 -	AT&T
137.00	137.00	3	800 10965	AT&T
137.00	137.00	6	Kaelus - DBC0037F1V2-1	AT&T
137.00	137.00	3	Ericsson - B14 4478 - RRU	AT&T
137.00	137.00	6	Kaelus - DBC0061F1V51-2	AT&T
137.00	137.00	6	CCI -	AT&T
137.00	137.00	6	Ericsson - RRUS-11 - RRU	AT&T
137.00	137.00	6	Ericsson - RRUS-12 - RRU	AT&T
137.00	137.00	3	Ericsson - RRU A2 - RRU	AT&T
137.00	137.00	3	Ericsson - RRUS-32 - RRU	AT&T
137.00	137.00	3	Quintel - QS66512-2	AT&T
137.00	137.00	3	Raycap - DC6-48-60-18-8F	AT&T
137.00	137.00	1	Platform w/ Hand Rails	AT&T
127.00	127.00	2	A-ANT-23G-2-C	Sprint Nextel
127.00	127.00	3	ALU - 1900MHz - RRU	Sprint Nextel
127.00	127.00	6	ALU - 800 MHz - RRU	Sprint Nextel
127.00	127.00	3	AAHC	Sprint Nextel
127.00	127.00	3	NNVV-65B-R4	Sprint Nextel
127.00	127.00	1	PRK-1245 Reinforcement	Sprint Nextel
127.00	127.00	1	PRK-SFS-L Brace Kit	Sprint Nextel
127.00	127.00	1	Low Profile Platform	Sprint Nextel
122.00	127.00	1	CS72188.01 Omni	AT&T

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	158.00	Inside	1.75" Hybrid	Dish Wireless



0.00	148.00	Inside	1-5/8"	Verizon
0.00	148.00	Inside	1-5/8" Hybrid	Verizon
0.00	137.00	Inside	1-5/8" Coax	AT&T
0.00	137.00	Inside	1/2" Fiber	AT&T
0.00	137.00	Inside	3/4" DC	AT&T
0.00	127.00	Inside	1-1/4" Fiber	Sprint Nextel
0.00	127.00	Inside	1-5/8" Fiber	Sprint Nextel
0.00	127.00	Inside	1/2"	Sprint Nextel
0.00	122.00	Inside	1/2" Coax	AT&T

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
20	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.2500	66.0	50.0	Clipped

Reactions

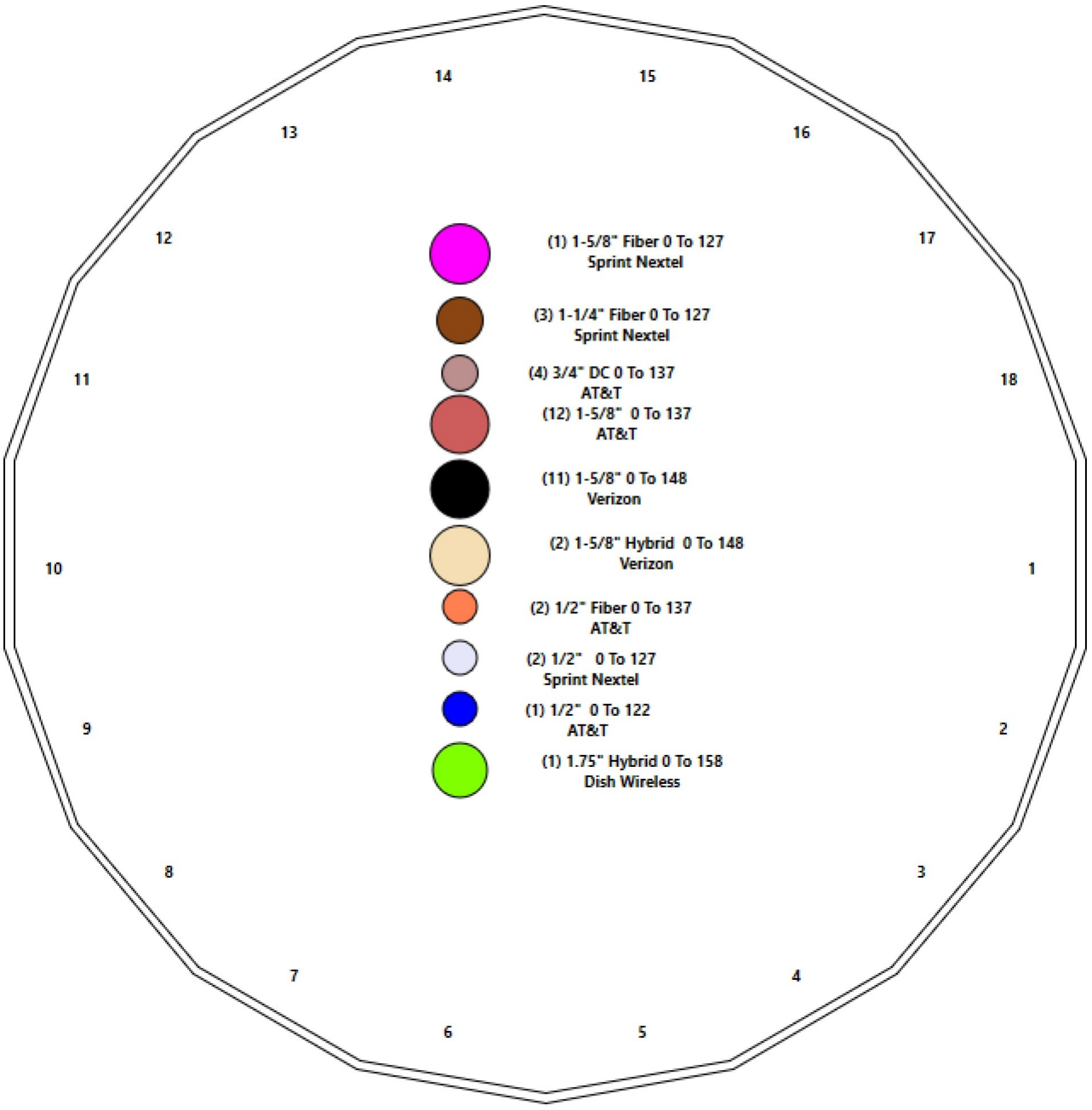
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	5234.4	43.2	60.2
0.9D + 1.6W 97 mph Wind	5178.0	43.1	45.2
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1495.6	12.3	90.8
1.2D + 1.0E	357.8	2.8	60.3
0.9D + 1.0E	353.6	2.8	45.2
1.0D + 1.0W 60 mph Wind	1244.7	10.3	50.2

Structure: CT02722-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Waterbury
Height: 158.00 (ft)

4/21/2022

Tower Engineering Solutions



Shaft Properties

Structure:	CT02722-S-SBA		**Code:**	TIA-222-G	4/21/2022
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.5000	65		0.00	13,142
2	18	45.000	0.4063	65	Slip	78.00	9,033
3	18	40.000	0.3125	65	Slip	66.00	5,074
4	18	44.500	0.2500	65	Slip	54.00	3,495
					Total Shaft Weight:		**30,744**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	59.98	0.00	94.39	42191.72	19.74	119.96	49.18	45.00	77.25	23130.4	15.93	98.36	0.239985
2	51.55	38.50	65.96	21799.61	20.96	126.88	40.75	83.50	52.03	10701.4	16.28	100.3	0.239985
3	42.70	78.00	42.04	9542.68	22.68	136.64	33.10	118.00	32.52	4416.67	17.27	105.9	0.239985
4	34.68	113.5	27.32	4091.38	23.05	138.72	24.00	158.00	18.84	1343.00	15.52	96.00	0.239985

Load Summary

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	158.00	JMA Wireless MX08FRO665-21	3	64.50	12.49	0.74	356.89	13.962	0.74	0.00	0.00
2	158.00	Commscope MC-PK8-DSH	1	1727.00	37.59	1.00	3423.63	85.070	1.00	0.00	0.00
3	158.00	Fujitsu TA08025-B605 RRU	3	75.00	1.96	0.67	127.58	2.524	0.67	0.00	0.00
4	158.00	Fujitsu TA08025-B604 RRU	3	63.90	1.96	0.67	114.79	2.524	0.67	0.00	0.00
5	158.00	Raycap RDIDC-9181-PF-48-OVP	1	21.90	2.01	1.00	75.43	2.581	1.00	0.00	0.00
6	158.00	Low Profile Platform	1	1200.00	25.00	1.00	2252.58	46.052	1.00	0.00	0.00
7	148.00	DB844G65VTZASX	6	12.00	4.33	0.93	167.80	6.312	0.93	0.00	0.00
8	148.00	MT6407-77A	3	79.40	4.69	0.70	198.75	5.636	0.70	0.00	0.00
9	148.00	JMA Wireless MX06FRO660-03	6	60.00	9.87	0.87	328.56	11.244	0.87	0.00	0.00
10	148.00	RF4439D-25A	3	84.40	1.88	0.67	135.59	2.430	0.67	0.00	0.00
11	148.00	RF4440D-13a	3	70.30	1.88	0.67	118.87	2.430	0.67	0.00	0.00
12	148.00	Raycap RCMDC-6627-PF-48-OVP	1	32.00	4.06	1.00	145.77	4.881	1.00	0.00	0.00
13	148.00	RFS FD9R6004/2C-3L Diplexer	6	3.10	0.37	0.50	11.12	0.825	0.50	0.00	0.00
14	148.00	VZWSMART-PLK6	1	329.00	10.00	1.00	787.72	20.457	1.00	0.00	0.00
15	148.00	Low Profile Platform	1	1200.00	35.00	1.00	2245.72	64.280	1.00	0.00	0.00
16	148.00	VZWSMART-PLK7	1	136.70	2.25	1.00	327.30	4.603	1.00	0.00	0.00
17	148.00	VZWSMART-PLK3	1	514.00	12.25	1.00	1123.17	24.206	1.00	0.00	0.00
18	137.00	CCI - OPA-65R-LCUU-H6	3	73.00	9.66	0.79	302.31	11.013	0.79	0.00	0.00
19	137.00	KMW - AM-X-CD-16-65-00T-RET	3	48.50	8.02	0.75	209.31	10.789	0.75	0.00	0.00
20	137.00	Ericsson - RRUS 32 B2 - RRU	3	53.00	2.74	0.67	140.02	3.462	0.67	0.00	0.00
21	137.00	800 10965	3	97.40	10.22	0.77	392.46	15.376	0.75	0.00	0.00
22	137.00	Kaelus - DBC0037F1V2-1 - Diplexer	6	6.60	0.38	0.67	16.58	0.832	0.67	0.00	0.00
23	137.00	Ericsson - B14 4478 - RRU	3	60.00	1.65	0.67	101.51	2.164	0.67	0.00	0.00
24	137.00	Kaelus - DBC0061F1V51-2 -	6	18.30	0.33	0.67	35.14	0.622	0.67	0.00	0.00
25	137.00	CCI - DTMABP7819VG12A	6	19.00	1.14	0.67	44.03	1.903	0.67	0.00	0.00
26	137.00	Ericsson - RRUS-11 - RRU	6	55.00	2.52	0.67	132.24	3.148	0.67	0.00	0.00
27	137.00	Ericsson - RRUS-12 - RRU	6	58.00	3.15	0.67	152.34	3.857	0.67	0.00	0.00
28	137.00	Ericsson - RRU A2 - RRU	3	22.00	1.86	0.67	59.14	2.825	0.67	0.00	0.00
29	137.00	Ericsson - RRUS-32 - RRU	3	77.00	3.87	0.67	189.35	4.098	0.67	0.00	0.00
30	137.00	Quintel - QS66512-2	3	111.00	8.13	0.90	327.77	9.412	0.90	0.00	0.00
31	137.00	Raycap - DC6-48-60-18-8F - COVP	3	32.80	1.47	0.80	95.99	2.163	0.80	0.00	0.00
32	137.00	Platform w/ Hand Rails [MTC3607]	1	2000.00	40.00	1.00	4075.36	60.754	1.00	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	12.30	8.43	1.00	56.17	10.108	1.00	0.00	0.00
34	127.00	ALU - 1900MHz - RRU	3	60.00	2.77	0.67	142.06	4.018	0.68	0.00	0.00
35	127.00	ALU - 800 MHz - RRU	6	53.00	2.49	0.67	125.74	3.615	0.67	0.00	0.00
36	127.00	AAHC	3	103.70	4.21	0.75	207.58	5.008	0.75	0.00	0.00
37	127.00	NNVV-65B-R4	3	84.70	12.27	0.74	392.03	13.702	0.75	0.00	0.00
38	127.00	PRK-1245 Reinforcement Kit	1	464.91	9.50	1.00	784.10	19.284	1.00	0.00	0.00
39	127.00	PRK-SFS-L Brace Kit	1	261.72	6.75	1.00	567.19	13.238	1.00	0.00	0.00
40	127.00	Low Profile Platform	1	1200.00	25.00	1.00	2229.84	45.597	1.00	0.00	0.00
41	122.00	CS72188.01 Omni	1	25.00	3.00	1.00	99.50	6.533	1.00	0.00	5.00
		Totals:	**123**	**14,628.63**			**35,166.84**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
0.00	158.00	(1) 1.75" Hybrid			0.00	Inside					
0.00	148.00	(11) 1-5/8"			0.00	Inside					
0.00	148.00	(2) 1-5/8" Hybrid			0.00	Inside					
0.00	137.00	(12) 1-5/8" Coax			0.00	Inside					
0.00	137.00	(2) 1/2" Fiber			0.00	Inside					
0.00	137.00	(4) 3/4" DC			0.00	Inside					
0.00	127.00	(3) 1-1/4" Fiber			0.00	Inside					
0.00	127.00	(1) 1-5/8" Fiber			0.00	Inside					
0.00	127.00	(2) 1/2"			0.00	Inside					
0.00	122.00	(1) 1/2" Coax			0.00	Inside					

Shaft Section Properties

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.5000	59.980	94.391	42191.7	19.74	119.96	78.2	1385.	0.0
5.00		0.5000	58.780	92.487	39689.4	19.32	117.56	78.7	1329.	1589.8
10.00		0.5000	57.580	90.583	37288.1	18.90	115.16	79.2	1275.	1557.4
15.00		0.5000	56.380	88.679	34985.6	18.47	112.76	79.7	1222.	1525.0
20.00		0.5000	55.180	86.775	32779.9	18.05	110.36	80.2	1170.	1492.6
25.00		0.5000	53.980	84.870	30668.9	17.63	107.96	80.7	1119.	1460.2
30.00		0.5000	52.780	82.966	28650.5	17.20	105.56	81.2	1069.	1427.8
35.00		0.5000	51.581	81.062	26722.7	16.78	103.16	81.7	1020.	1395.4
38.50	Bot - Section 2	0.5000	50.741	79.729	25426.0	16.48	101.48	82.0	987.0	957.5
40.00		0.5000	50.381	79.158	24883.4	16.36	100.76	82.2	972.8	741.0
45.00	Top - Section 1	0.4063	49.993	63.945	19865.3	20.29	123.05	0.0	0.0	2431.7
50.00		0.4063	48.793	62.398	18457.8	19.76	120.09	78.2	745.1	1074.8
55.00		0.4063	47.593	60.850	17118.4	19.24	117.14	78.8	708.4	1048.5
60.00		0.4063	46.394	59.303	15845.4	18.72	114.19	79.4	672.7	1022.1
65.00		0.4063	45.194	57.755	14637.1	18.20	111.23	80.0	637.9	995.8
70.00		0.4063	43.994	56.208	13491.9	17.68	108.28	80.6	604.0	969.5
75.00		0.4063	42.794	54.661	12408.0	17.16	105.33	81.2	571.1	943.2
78.00	Bot - Section 3	0.4063	42.074	53.732	11786.5	16.85	103.55	81.6	551.8	553.3
80.00		0.4063	41.594	53.113	11383.8	16.64	102.37	81.8	539.1	648.1
83.50	Top - Section 2	0.3125	41.379	40.731	8678.7	21.94	132.41	0.0	0.0	1116.2
85.00		0.3125	41.019	40.374	8452.4	21.73	131.26	75.8	405.9	207.0
90.00		0.3125	39.819	39.184	7726.8	21.06	127.42	76.6	382.2	676.8
95.00		0.3125	38.619	37.994	7043.9	20.38	123.58	77.4	359.2	656.5
100.00		0.3125	37.419	36.804	6402.5	19.70	119.74	78.2	337.0	636.3
105.00		0.3125	36.219	35.614	5801.2	19.03	115.90	79.0	315.5	616.1
110.00		0.3125	35.019	34.424	5238.9	18.35	112.06	79.8	294.7	595.8
113.50	Bot - Section 4	0.3125	34.179	33.590	4867.6	17.87	109.37	80.4	280.5	405.0
115.00		0.3125	33.819	33.233	4714.1	17.67	108.22	80.6	274.5	309.3
118.00	Top - Section 3	0.2500	33.599	26.462	3718.3	22.29	134.40	0.0	0.0	608.7
120.00		0.2500	33.119	26.081	3560.1	21.95	132.48	75.6	211.7	178.8
122.00		0.2500	32.639	25.700	3406.4	21.61	130.56	76.0	205.6	176.2
125.00		0.2500	31.919	25.129	3184.3	21.10	127.68	76.6	196.5	259.4
127.00		0.2500	31.440	24.748	3041.7	20.76	125.76	77.0	190.6	169.7
130.00		0.2500	30.720	24.177	2835.9	20.26	122.88	77.6	181.8	249.7
135.00		0.2500	29.520	23.225	2513.8	19.41	118.08	78.6	167.7	403.2
137.00		0.2500	29.040	22.844	2392.2	19.07	116.16	79.0	162.2	156.8
140.00		0.2500	28.320	22.273	2217.2	18.56	113.28	79.6	154.2	230.3
145.00		0.2500	27.120	21.320	1944.8	17.72	108.48	80.6	141.2	370.8
148.00		0.2500	26.400	20.749	1792.6	17.21	105.60	81.2	133.7	214.7
150.00		0.2500	25.920	20.368	1695.7	16.87	103.68	81.6	128.9	139.9
155.00		0.2500	24.720	19.416	1468.9	16.02	98.88	82.5	117.0	338.4
158.00		0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	195.3
										30744.2

Wind Loading - Shaft

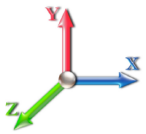
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	453.89	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	444.81	0.650	0.000	5.00	25.123	16.33	559.0	0.0	1907.7
10.00		1.00	0.85	19.450	21.40	435.73	0.650	0.000	5.00	24.616	16.00	547.7	0.0	1868.8
15.00		1.00	0.85	19.450	21.40	426.65	0.650	0.000	5.00	24.108	15.67	536.4	0.0	1830.0
20.00		1.00	0.90	20.638	22.70	430.13	0.650	0.000	5.00	23.600	15.34	557.2	0.0	1791.1
25.00		1.00	0.95	21.630	23.79	430.78	0.650	0.000	5.00	23.093	15.01	571.4	0.0	1752.2
30.00		1.00	0.98	22.477	24.72	429.36	0.650	0.000	5.00	22.585	14.68	580.7	0.0	1713.3
35.00		1.00	1.01	23.218	25.54	426.47	0.650	0.000	5.00	22.077	14.35	586.4	0.0	1674.5
38.50	Bot - Section 2	1.00	1.04	23.689	26.06	423.75	0.650	0.000	3.50	15.152	9.85	410.6	0.0	1149.0
40.00		1.00	1.04	23.880	26.27	422.44	0.650	0.000	1.50	6.521	4.24	178.1	0.0	889.2
45.00	Top - Section 1	1.00	1.07	24.479	26.93	417.52	0.650	0.000	5.00	21.406	13.91	599.5	0.0	2918.0
50.00		1.00	1.09	25.029	27.53	418.86	0.650	0.000	5.00	20.898	13.58	598.4	0.0	1289.7
55.00		1.00	1.12	25.536	28.09	412.67	0.650	0.000	5.00	20.390	13.25	595.7	0.0	1258.2
60.00		1.00	1.14	26.008	28.61	405.97	0.650	0.000	5.00	19.883	12.92	591.6	0.0	1226.6
65.00		1.00	1.16	26.450	29.09	398.82	0.650	0.000	5.00	19.375	12.59	586.3	0.0	1195.0
70.00		1.00	1.17	26.866	29.55	391.27	0.650	0.000	5.00	18.867	12.26	579.9	0.0	1163.4
75.00		1.00	1.19	27.259	29.98	383.37	0.650	0.000	5.00	18.360	11.93	572.5	0.0	1131.8
78.00	Bot - Section 3	1.00	1.20	27.485	30.23	378.48	0.650	0.000	3.00	10.772	7.00	338.7	0.0	663.9
80.00		1.00	1.21	27.632	30.39	375.16	0.650	0.000	2.00	7.186	4.67	227.1	0.0	777.7
83.50	Top - Section 2	1.00	1.22	27.882	30.67	369.25	0.650	0.000	3.50	12.379	8.05	394.9	0.0	1339.4
85.00		1.00	1.22	27.987	30.79	372.34	0.650	0.000	1.50	5.229	3.40	167.4	0.0	248.4
90.00		1.00	1.24	28.325	31.16	363.63	0.650	0.000	5.00	17.101	11.12	554.1	0.0	812.2
95.00		1.00	1.25	28.650	31.51	354.69	0.650	0.000	5.00	16.593	10.79	543.9	0.0	787.9
100.00		1.00	1.27	28.961	31.86	345.53	0.650	0.000	5.00	16.086	10.46	532.9	0.0	763.6
105.00		1.00	1.28	29.260	32.19	336.17	0.650	0.000	5.00	15.578	10.13	521.4	0.0	739.3
110.00		1.00	1.29	29.548	32.50	326.63	0.650	0.000	5.00	15.070	9.80	509.4	0.0	715.0
113.50	Bot - Section 4	1.00	1.30	29.743	32.72	319.85	0.650	0.000	3.50	10.247	6.66	348.7	0.0	486.0
115.00		1.00	1.30	29.826	32.81	316.92	0.650	0.000	1.50	4.379	2.85	149.4	0.0	371.1
118.00	Top - Section 3	1.00	1.31	29.988	32.99	311.01	0.650	0.000	3.00	8.621	5.60	295.7	0.0	730.4
120.00		1.00	1.32	30.094	33.10	311.75	0.650	0.000	2.00	5.646	3.67	194.4	0.0	214.5
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	307.77	0.650	0.000	2.00	5.564	3.62	192.2	0.0	211.4
125.00		1.00	1.33	30.354	33.39	301.75	0.650	0.000	3.00	8.194	5.33	284.5	0.0	311.3
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	297.71	0.650	0.000	2.00	5.361	3.48	186.8	0.0	203.7
130.00		1.00	1.34	30.605	33.67	291.61	0.650	0.000	3.00	7.890	5.13	276.2	0.0	299.7
135.00		1.00	1.35	30.850	33.93	281.33	0.650	0.000	5.00	12.743	8.28	449.7	0.0	483.9
137.00	Appurtenance(s)	1.00	1.35	30.945	34.04	277.19	0.650	0.000	2.00	4.955	3.22	175.4	0.0	188.1
140.00		1.00	1.36	31.087	34.20	270.93	0.650	0.000	3.00	7.281	4.73	258.9	0.0	276.3
145.00		1.00	1.37	31.317	34.45	260.41	0.650	0.000	5.00	11.728	7.62	420.2	0.0	445.0
148.00	Appurtenance(s)	1.00	1.37	31.452	34.60	254.05	0.650	0.000	3.00	6.793	4.42	244.4	0.0	257.7
150.00		1.00	1.38	31.541	34.70	249.78	0.650	0.000	2.00	4.427	2.88	159.7	0.0	167.9
155.00		1.00	1.39	31.760	34.94	239.04	0.650	0.000	5.00	10.713	6.96	389.2	0.0	406.1
158.00	Appurtenance(s)	1.00	1.39	31.888	35.08	232.55	0.650	0.000	3.00	6.184	4.02	225.6	0.0	234.3
								Totals:	**158.00**			**16,692.6**		**36,893.1**

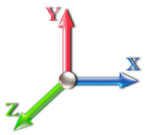
Discrete Appurtenance Forces

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Fujitsu TA08025-B604	3	31.888	35.077	0.50	0.75	2.95	230.04	0.000	0.000	165.83	0.00	0.00
2	158.00	Fujitsu TA08025-B605	3	31.888	35.077	0.50	0.75	2.95	270.00	0.000	0.000	165.83	0.00	0.00
3	158.00	Commscope	1	31.888	35.077	1.00	1.00	37.59	2072.40	0.000	0.000	2109.68	0.00	0.00
4	158.00	JMA Wireless	3	31.888	35.077	0.55	0.75	20.80	232.20	0.000	0.000	1167.14	0.00	0.00
5	158.00	Low Profile Platform	1	31.888	35.077	1.00	1.00	25.00	1440.00	0.000	0.000	1403.09	0.00	0.00
6	158.00	Raycap	1	31.888	35.077	1.00	1.00	2.01	26.28	0.000	0.000	112.81	0.00	0.00
7	148.00	RF4439D-25A	3	31.452	34.598	0.50	0.75	2.83	303.84	0.000	0.000	156.89	0.00	0.00
8	148.00	RF4440D-13a	3	31.452	34.598	0.50	0.75	2.83	253.08	0.000	0.000	156.89	0.00	0.00
9	148.00	Raycap	1	31.452	34.598	1.00	1.00	4.06	38.40	0.000	0.000	224.75	0.00	0.00
10	148.00	JMA Wireless	6	31.452	34.598	0.65	0.75	38.64	432.00	0.000	0.000	2139.03	0.00	0.00
11	148.00	MT6407-77A	3	31.452	34.598	0.52	0.75	7.39	285.84	0.000	0.000	408.90	0.00	0.00
12	148.00	VZWSMART-PLK7	1	31.452	34.598	1.00	1.00	2.25	164.04	0.000	0.000	124.55	0.00	0.00
13	148.00	RFS FD9R6004/2C-3L	6	31.452	34.598	0.38	0.75	0.83	22.32	0.000	0.000	46.08	0.00	0.00
14	148.00	VZWSMART-PLK6	1	31.452	34.598	1.00	1.00	10.00	394.80	0.000	0.000	553.56	0.00	0.00
15	148.00	VZWSMART-PLK3	1	31.452	34.598	1.00	1.00	12.25	616.80	0.000	0.000	678.11	0.00	0.00
16	148.00	DB844G65VTZASX	6	31.452	34.598	0.70	0.75	18.12	86.40	0.000	0.000	1003.11	0.00	0.00
17	148.00	Low Profile Platform	1	31.452	34.598	1.00	1.00	35.00	1440.00	0.000	0.000	1937.47	0.00	0.00
18	137.00	Kaelus -	6	30.945	34.040	0.54	0.80	1.06	131.76	0.000	0.000	57.80	0.00	0.00
19	137.00	Ericsson - B14 4478 -	3	30.945	34.040	0.54	0.80	2.65	216.00	0.000	0.000	144.50	0.00	0.00
20	137.00	Kaelus - DBC0037F1V2-1	6	30.945	34.040	0.54	0.80	1.22	47.52	0.000	0.000	66.56	0.00	0.00
21	137.00	800 10965	3	30.945	34.040	0.62	0.80	18.89	350.64	0.000	0.000	1028.63	0.00	0.00
22	137.00	Ericsson - RRUS-32 -	3	30.945	34.040	0.54	0.80	6.22	277.20	0.000	0.000	338.92	0.00	0.00
23	137.00	CCI -	6	30.945	34.040	0.54	0.80	3.67	136.80	0.000	0.000	199.68	0.00	0.00
24	137.00	Ericsson - RRUS-11 -	6	30.945	34.040	0.54	0.80	8.10	396.00	0.000	0.000	441.39	0.00	0.00
25	137.00	Ericsson - RRUS-12 -	6	30.945	34.040	0.54	0.80	10.13	417.60	0.000	0.000	551.74	0.00	0.00
26	137.00	Ericsson - RRU A2 - RRU	3	30.945	34.040	0.54	0.80	2.99	79.20	0.000	0.000	162.89	0.00	0.00
27	137.00	Ericsson - RRUS 32 B2 -	3	30.945	34.040	0.54	0.80	4.41	190.80	0.000	0.000	239.96	0.00	0.00
28	137.00	Raycap -	3	30.945	34.040	0.64	0.80	2.82	118.08	0.000	0.000	153.72	0.00	0.00
29	137.00	Platform w/ Hand Rails	1	30.945	34.040	1.00	1.00	40.00	2400.00	0.000	0.000	2178.54	0.00	0.00
30	137.00	CCI - OPA-65R-LCUU-H6	3	30.945	34.040	0.63	0.80	18.32	262.80	0.000	0.000	997.52	0.00	0.00
31	137.00	KMW -	3	30.945	34.040	0.60	0.80	14.44	174.60	0.000	0.000	786.24	0.00	0.00
32	137.00	Quintel - QS66512-2	3	30.945	34.040	0.72	0.80	17.56	399.60	0.000	0.000	956.42	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	30.455	33.501	1.00	1.00	16.86	29.52	0.000	0.000	903.72	0.00	0.00
34	127.00	ALU - 1900MHz - RRU	3	30.455	33.501	0.54	0.80	4.45	216.00	0.000	0.000	238.75	0.00	0.00
35	127.00	ALU - 800 MHz - RRU	6	30.455	33.501	0.54	0.80	8.01	381.60	0.000	0.000	429.23	0.00	0.00
36	127.00	Low Profile Platform	1	30.455	33.501	1.00	1.00	25.00	1440.00	0.000	0.000	1340.03	0.00	0.00
37	127.00	PRK-1245 Reinforcement	1	30.455	33.501	1.00	1.00	9.50	557.89	0.000	0.000	509.21	0.00	0.00
38	127.00	AAHC	3	30.455	33.501	0.60	0.80	7.58	373.32	0.000	0.000	406.19	0.00	0.00
39	127.00	NNVV-65B-R4	3	30.455	33.501	0.59	0.80	21.79	304.92	0.000	0.000	1168.06	0.00	0.00
40	127.00	PRK-SFS-L Brace Kit	1	30.455	33.501	1.00	1.00	6.75	314.06	0.000	0.000	361.81	0.00	0.00
41	122.00	CS72188.01 Omni	1	30.455	33.501	1.00	1.00	3.00	30.00	0.000	5.000	160.80	0.00	804.02
							Totals:		**17,554.36**			**26,376.04**		

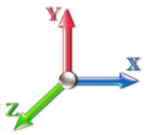
Total Applied Force Summary

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		559.02	2114.56	0.00	0.00
10.00		547.73	2075.68	0.00	0.00
15.00		536.43	2036.80	0.00	0.00
20.00		557.19	1997.92	0.00	0.00
25.00		571.43	1959.05	0.00	0.00
30.00		580.73	1920.17	0.00	0.00
35.00		586.40	1881.29	0.00	0.00
38.50		410.62	1293.77	0.00	0.00
40.00		178.14	951.20	0.00	0.00
45.00		599.46	3124.87	0.00	0.00
50.00		598.37	1496.58	0.00	0.00
55.00		595.66	1464.99	0.00	0.00
60.00		591.57	1433.40	0.00	0.00
65.00		586.26	1401.81	0.00	0.00
70.00		579.88	1370.22	0.00	0.00
75.00		572.53	1338.62	0.00	0.00
78.00		338.70	788.01	0.00	0.00
80.00		227.14	860.41	0.00	0.00
83.50		394.86	1484.20	0.00	0.00
85.00		167.43	310.44	0.00	0.00
90.00		554.15	1019.00	0.00	0.00
95.00		543.85	994.70	0.00	0.00
100.00		532.94	970.40	0.00	0.00
105.00		521.44	946.10	0.00	0.00
110.00		509.42	921.80	0.00	0.00
113.50		348.67	630.80	0.00	0.00
115.00		149.41	433.15	0.00	0.00
118.00		295.74	854.49	0.00	0.00
120.00		194.37	297.28	0.00	0.00
122.00	(1) attachments	353.04	324.17	0.00	804.02
125.00		284.55	434.85	0.00	0.00
127.00	(20) attachments	5543.80	3903.33	0.00	0.00
130.00		276.24	407.78	0.00	0.00
135.00		449.74	664.07	0.00	0.00
137.00	(58) attachments	8479.94	5858.79	0.00	0.00
140.00		258.92	332.61	0.00	0.00
145.00		420.18	538.80	0.00	0.00
148.00	(32) attachments	7673.77	4351.47	0.00	0.00
150.00		159.75	172.67	0.00	0.00
155.00		389.23	418.08	0.00	0.00
158.00	(12) attachments	5349.97	4512.44	0.00	0.00
	Totals:	**43,068.65**	**60,290.77**	**0.00**	**804.02**

Calculated Forces

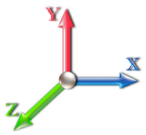
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-60.22	-43.16	0.00	-5234.4	0.00	5234.41	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.654
5.00	-57.98	-42.78	0.00	-5018.6	0.00	5018.61	6549.09	3274.55	15672.1	7847.74	0.09	-0.173	0.000	0.649
10.00	-55.78	-42.39	0.00	-4804.7	0.00	4804.74	6454.83	3227.41	15125.8	7574.18	0.37	-0.349	0.000	0.643
15.00	-53.61	-42.01	0.00	-4592.7	0.00	4592.79	6358.86	3179.43	14585.0	7303.35	0.83	-0.528	0.000	0.637
20.00	-51.49	-41.60	0.00	-4382.7	0.00	4382.75	6261.18	3130.59	14049.8	7035.38	1.48	-0.711	0.000	0.631
25.00	-49.40	-41.16	0.00	-4174.7	0.00	4174.77	6161.80	3080.90	13520.6	6770.39	2.33	-0.896	0.000	0.625
30.00	-47.36	-40.70	0.00	-3968.9	0.00	3968.98	6060.71	3030.36	12997.7	6508.52	3.37	-1.085	0.000	0.618
35.00	-45.37	-40.21	0.00	-3765.4	0.00	3765.47	5957.92	2978.96	12481.2	6249.90	4.61	-1.277	0.000	0.610
38.50	-44.02	-39.84	0.00	-3624.7	0.00	3624.75	5884.95	2942.47	12123.6	6070.85	5.59	-1.415	0.000	0.605
40.00	-42.98	-39.74	0.00	-3564.9	0.00	3564.99	5853.42	2926.71	11971.4	5994.64	6.05	-1.475	0.000	0.602
45.00	-39.74	-39.19	0.00	-3366.3	0.00	3366.30	4462.52	2231.26	9089.55	4551.53	7.70	-1.673	0.000	0.749
50.00	-38.11	-38.69	0.00	-3170.3	0.00	3170.34	4388.93	2194.47	8721.58	4367.27	9.56	-1.874	0.000	0.735
55.00	-36.51	-38.20	0.00	-2976.8	0.00	2976.88	4313.64	2156.82	8357.61	4185.02	11.65	-2.111	0.000	0.720
60.00	-34.94	-37.70	0.00	-2785.8	0.00	2785.89	4236.64	2118.32	7997.90	4004.90	13.99	-2.351	0.000	0.704
65.00	-33.41	-37.20	0.00	-2597.3	0.00	2597.39	4157.93	2078.96	7642.72	3827.04	16.58	-2.592	0.000	0.687
70.00	-31.92	-36.69	0.00	-2411.4	0.00	2411.42	4077.51	2038.76	7292.30	3651.57	19.43	-2.836	0.000	0.669
75.00	-30.48	-36.15	0.00	-2227.9	0.00	2227.99	3995.39	1997.70	6946.91	3478.62	22.53	-3.080	0.000	0.648
78.00	-29.64	-35.83	0.00	-2119.5	0.00	2119.54	3945.30	1972.65	6742.20	3376.11	24.51	-3.230	0.000	0.636
80.00	-28.71	-35.63	0.00	-2047.8	0.00	2047.87	3911.57	1955.78	6606.80	3308.31	25.89	-3.330	0.000	0.627
83.50	-27.17	-35.20	0.00	-1923.1	0.00	1923.18	2771.30	1385.65	4677.52	2342.24	28.39	-3.504	0.000	0.832
85.00	-26.76	-35.11	0.00	-1870.3	0.00	1870.38	2755.69	1377.84	4610.09	2308.47	29.50	-3.580	0.000	0.821
90.00	-25.60	-34.62	0.00	-1694.8	0.00	1694.85	2702.54	1351.27	4386.89	2196.71	33.41	-3.880	0.000	0.782
95.00	-24.47	-34.13	0.00	-1521.7	0.00	1521.75	2647.69	1323.84	4166.29	2086.24	37.63	-4.176	0.000	0.739
100.00	-23.37	-33.65	0.00	-1351.0	0.00	1351.09	2591.13	1295.56	3948.53	1977.20	42.16	-4.466	0.000	0.693
105.00	-22.31	-33.16	0.00	-1182.8	0.00	1182.86	2532.86	1266.43	3733.89	1869.72	46.99	-4.747	0.000	0.642
110.00	-21.31	-32.66	0.00	-1017.0	0.00	1017.07	2472.89	1236.44	3522.60	1763.92	52.10	-5.017	0.000	0.586
113.50	-20.64	-32.30	0.00	-902.78	0.00	902.78	2429.89	1214.95	3376.84	1690.93	55.84	-5.200	0.000	0.543
115.00	-20.16	-32.15	0.00	-854.33	0.00	854.33	2411.21	1205.60	3314.94	1659.93	57.49	-5.277	0.000	0.524
118.00	-19.27	-31.82	0.00	-757.88	0.00	757.88	1790.62	895.31	2454.63	1229.14	60.85	-5.423	0.000	0.629
120.00	-18.94	-31.63	0.00	-694.25	0.00	694.25	1774.20	887.10	2396.85	1200.21	63.14	-5.516	0.000	0.590
122.00	-18.58	-31.29	0.00	-630.19	0.00	630.19	1757.50	878.75	2339.36	1171.42	65.47	-5.622	0.000	0.550
125.00	-18.11	-31.00	0.00	-536.34	0.00	536.34	1731.94	865.97	2253.71	1128.53	69.05	-5.768	0.000	0.487
127.00	-14.74	-25.11	0.00	-474.34	0.00	474.34	1714.56	857.28	2197.01	1100.14	71.48	-5.858	0.000	0.441
130.00	-14.30	-24.83	0.00	-399.00	0.00	399.00	1687.98	843.99	2112.62	1057.88	75.19	-5.981	0.000	0.387
135.00	-13.64	-24.34	0.00	-274.84	0.00	274.84	1642.31	821.15	1973.86	988.40	81.54	-6.150	0.000	0.287
137.00	-8.71	-15.29	0.00	-226.15	0.00	226.15	1623.56	811.78	1919.06	960.96	84.13	-6.207	0.000	0.241
140.00	-8.39	-15.01	0.00	-180.28	0.00	180.28	1594.93	797.47	1837.67	920.20	88.05	-6.279	0.000	0.202
145.00	-7.88	-14.54	0.00	-105.24	0.00	105.24	1545.85	772.93	1704.31	853.42	94.66	-6.371	0.000	0.129
148.00	-4.41	-6.43	0.00	-61.61	0.00	61.61	1515.59	757.79	1625.76	814.09	98.67	-6.407	0.000	0.079
150.00	-4.26	-6.26	0.00	-48.75	0.00	48.75	1495.07	747.53	1574.03	788.19	101.35	-6.425	0.000	0.065
155.00	-3.88	-5.82	0.00	-17.47	0.00	17.47	1442.53	721.26	1447.04	724.60	108.09	-6.453	0.000	0.027
158.00	0.00	-5.35	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	112.14	-6.458	0.000	0.000

Wind Loading - Shaft

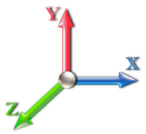
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	453.89	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	444.81	0.650	0.000	5.00	25.123	16.33	559.0	0.0	1430.8
10.00		1.00	0.85	19.450	21.40	435.73	0.650	0.000	5.00	24.616	16.00	547.7	0.0	1401.6
15.00		1.00	0.85	19.450	21.40	426.65	0.650	0.000	5.00	24.108	15.67	536.4	0.0	1372.5
20.00		1.00	0.90	20.638	22.70	430.13	0.650	0.000	5.00	23.600	15.34	557.2	0.0	1343.3
25.00		1.00	0.95	21.630	23.79	430.78	0.650	0.000	5.00	23.093	15.01	571.4	0.0	1314.2
30.00		1.00	0.98	22.477	24.72	429.36	0.650	0.000	5.00	22.585	14.68	580.7	0.0	1285.0
35.00		1.00	1.01	23.218	25.54	426.47	0.650	0.000	5.00	22.077	14.35	586.4	0.0	1255.8
38.50	Bot - Section 2	1.00	1.04	23.689	26.06	423.75	0.650	0.000	3.50	15.152	9.85	410.6	0.0	861.7
40.00		1.00	1.04	23.880	26.27	422.44	0.650	0.000	1.50	6.521	4.24	178.1	0.0	666.9
45.00	Top - Section 1	1.00	1.07	24.479	26.93	417.52	0.650	0.000	5.00	21.406	13.91	599.5	0.0	2188.5
50.00		1.00	1.09	25.029	27.53	418.86	0.650	0.000	5.00	20.898	13.58	598.4	0.0	967.3
55.00		1.00	1.12	25.536	28.09	412.67	0.650	0.000	5.00	20.390	13.25	595.7	0.0	943.6
60.00		1.00	1.14	26.008	28.61	405.97	0.650	0.000	5.00	19.883	12.92	591.6	0.0	919.9
65.00		1.00	1.16	26.450	29.09	398.82	0.650	0.000	5.00	19.375	12.59	586.3	0.0	896.2
70.00		1.00	1.17	26.866	29.55	391.27	0.650	0.000	5.00	18.867	12.26	579.9	0.0	872.5
75.00		1.00	1.19	27.259	29.98	383.37	0.650	0.000	5.00	18.360	11.93	572.5	0.0	848.8
78.00	Bot - Section 3	1.00	1.20	27.485	30.23	378.48	0.650	0.000	3.00	10.772	7.00	338.7	0.0	497.9
80.00		1.00	1.21	27.632	30.39	375.16	0.650	0.000	2.00	7.186	4.67	227.1	0.0	583.3
83.50	Top - Section 2	1.00	1.22	27.882	30.67	369.25	0.650	0.000	3.50	12.379	8.05	394.9	0.0	1004.6
85.00		1.00	1.22	27.987	30.79	372.34	0.650	0.000	1.50	5.229	3.40	167.4	0.0	186.3
90.00		1.00	1.24	28.325	31.16	363.63	0.650	0.000	5.00	17.101	11.12	554.1	0.0	609.1
95.00		1.00	1.25	28.650	31.51	354.69	0.650	0.000	5.00	16.593	10.79	543.9	0.0	590.9
100.00		1.00	1.27	28.961	31.86	345.53	0.650	0.000	5.00	16.086	10.46	532.9	0.0	572.7
105.00		1.00	1.28	29.260	32.19	336.17	0.650	0.000	5.00	15.578	10.13	521.4	0.0	554.4
110.00		1.00	1.29	29.548	32.50	326.63	0.650	0.000	5.00	15.070	9.80	509.4	0.0	536.2
113.50	Bot - Section 4	1.00	1.30	29.743	32.72	319.85	0.650	0.000	3.50	10.247	6.66	348.7	0.0	364.5
115.00		1.00	1.30	29.826	32.81	316.92	0.650	0.000	1.50	4.379	2.85	149.4	0.0	278.3
118.00	Top - Section 3	1.00	1.31	29.988	32.99	311.01	0.650	0.000	3.00	8.621	5.60	295.7	0.0	547.8
120.00		1.00	1.32	30.094	33.10	311.75	0.650	0.000	2.00	5.646	3.67	194.4	0.0	160.9
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	307.77	0.650	0.000	2.00	5.564	3.62	192.2	0.0	158.6
125.00		1.00	1.33	30.354	33.39	301.75	0.650	0.000	3.00	8.194	5.33	284.5	0.0	233.5
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	297.71	0.650	0.000	2.00	5.361	3.48	186.8	0.0	152.7
130.00		1.00	1.34	30.605	33.67	291.61	0.650	0.000	3.00	7.890	5.13	276.2	0.0	224.7
135.00		1.00	1.35	30.850	33.93	281.33	0.650	0.000	5.00	12.743	8.28	449.7	0.0	362.9
137.00	Appurtenance(s)	1.00	1.35	30.945	34.04	277.19	0.650	0.000	2.00	4.955	3.22	175.4	0.0	141.1
140.00		1.00	1.36	31.087	34.20	270.93	0.650	0.000	3.00	7.281	4.73	258.9	0.0	207.3
145.00		1.00	1.37	31.317	34.45	260.41	0.650	0.000	5.00	11.728	7.62	420.2	0.0	333.8
148.00	Appurtenance(s)	1.00	1.37	31.452	34.60	254.05	0.650	0.000	3.00	6.793	4.42	244.4	0.0	193.3
150.00		1.00	1.38	31.541	34.70	249.78	0.650	0.000	2.00	4.427	2.88	159.7	0.0	125.9
155.00		1.00	1.39	31.760	34.94	239.04	0.650	0.000	5.00	10.713	6.96	389.2	0.0	304.6
158.00	Appurtenance(s)	1.00	1.39	31.888	35.08	232.55	0.650	0.000	3.00	6.184	4.02	225.6	0.0	175.8
								Totals:	**158.00**			**16,692.6**		**27,669.8**

Discrete Appurtenance Forces

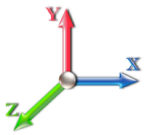
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Fujitsu TA08025-B604	3	31.888	35.077	0.50	0.75	2.95	172.53	0.000	0.000	165.83	0.00	0.00
2	158.00	Fujitsu TA08025-B605	3	31.888	35.077	0.50	0.75	2.95	202.50	0.000	0.000	165.83	0.00	0.00
3	158.00	Commscope	1	31.888	35.077	1.00	1.00	37.59	1554.30	0.000	0.000	2109.68	0.00	0.00
4	158.00	JMA Wireless	3	31.888	35.077	0.55	0.75	20.80	174.15	0.000	0.000	1167.14	0.00	0.00
5	158.00	Low Profile Platform	1	31.888	35.077	1.00	1.00	25.00	1080.00	0.000	0.000	1403.09	0.00	0.00
6	158.00	Raycap	1	31.888	35.077	1.00	1.00	2.01	19.71	0.000	0.000	112.81	0.00	0.00
7	148.00	RF4439D-25A	3	31.452	34.598	0.50	0.75	2.83	227.88	0.000	0.000	156.89	0.00	0.00
8	148.00	RF4440D-13a	3	31.452	34.598	0.50	0.75	2.83	189.81	0.000	0.000	156.89	0.00	0.00
9	148.00	Raycap	1	31.452	34.598	1.00	1.00	4.06	28.80	0.000	0.000	224.75	0.00	0.00
10	148.00	JMA Wireless	6	31.452	34.598	0.65	0.75	38.64	324.00	0.000	0.000	2139.03	0.00	0.00
11	148.00	MT6407-77A	3	31.452	34.598	0.52	0.75	7.39	214.38	0.000	0.000	408.90	0.00	0.00
12	148.00	VZWSMART-PLK7	1	31.452	34.598	1.00	1.00	2.25	123.03	0.000	0.000	124.55	0.00	0.00
13	148.00	RFS FD9R6004/2C-3L	6	31.452	34.598	0.38	0.75	0.83	16.74	0.000	0.000	46.08	0.00	0.00
14	148.00	VZWSMART-PLK6	1	31.452	34.598	1.00	1.00	10.00	296.10	0.000	0.000	553.56	0.00	0.00
15	148.00	VZWSMART-PLK3	1	31.452	34.598	1.00	1.00	12.25	462.60	0.000	0.000	678.11	0.00	0.00
16	148.00	DB844G65VTZASX	6	31.452	34.598	0.70	0.75	18.12	64.80	0.000	0.000	1003.11	0.00	0.00
17	148.00	Low Profile Platform	1	31.452	34.598	1.00	1.00	35.00	1080.00	0.000	0.000	1937.47	0.00	0.00
18	137.00	Kaelus -	6	30.945	34.040	0.54	0.80	1.06	98.82	0.000	0.000	57.80	0.00	0.00
19	137.00	Ericsson - B14 4478 -	3	30.945	34.040	0.54	0.80	2.65	162.00	0.000	0.000	144.50	0.00	0.00
20	137.00	Kaelus - DBC0037F1V2-1	6	30.945	34.040	0.54	0.80	1.22	35.64	0.000	0.000	66.56	0.00	0.00
21	137.00	800 10965	3	30.945	34.040	0.62	0.80	18.89	262.98	0.000	0.000	1028.63	0.00	0.00
22	137.00	Ericsson - RRUS-32 -	3	30.945	34.040	0.54	0.80	6.22	207.90	0.000	0.000	338.92	0.00	0.00
23	137.00	CCI -	6	30.945	34.040	0.54	0.80	3.67	102.60	0.000	0.000	199.68	0.00	0.00
24	137.00	Ericsson - RRUS-11 -	6	30.945	34.040	0.54	0.80	8.10	297.00	0.000	0.000	441.39	0.00	0.00
25	137.00	Ericsson - RRUS-12 -	6	30.945	34.040	0.54	0.80	10.13	313.20	0.000	0.000	551.74	0.00	0.00
26	137.00	Ericsson - RRU A2 - RRU	3	30.945	34.040	0.54	0.80	2.99	59.40	0.000	0.000	162.89	0.00	0.00
27	137.00	Ericsson - RRUS 32 B2 -	3	30.945	34.040	0.54	0.80	4.41	143.10	0.000	0.000	239.96	0.00	0.00
28	137.00	Raycap -	3	30.945	34.040	0.64	0.80	2.82	88.56	0.000	0.000	153.72	0.00	0.00
29	137.00	Platform w/ Hand Rails	1	30.945	34.040	1.00	1.00	40.00	1800.00	0.000	0.000	2178.54	0.00	0.00
30	137.00	CCI - OPA-65R-LCUU-H6	3	30.945	34.040	0.63	0.80	18.32	197.10	0.000	0.000	997.52	0.00	0.00
31	137.00	KMW -	3	30.945	34.040	0.60	0.80	14.44	130.95	0.000	0.000	786.24	0.00	0.00
32	137.00	Quintel - QS66512-2	3	30.945	34.040	0.72	0.80	17.56	299.70	0.000	0.000	956.42	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	30.455	33.501	1.00	1.00	16.86	22.14	0.000	0.000	903.72	0.00	0.00
34	127.00	ALU - 1900MHz - RRU	3	30.455	33.501	0.54	0.80	4.45	162.00	0.000	0.000	238.75	0.00	0.00
35	127.00	ALU - 800 MHz - RRU	6	30.455	33.501	0.54	0.80	8.01	286.20	0.000	0.000	429.23	0.00	0.00
36	127.00	Low Profile Platform	1	30.455	33.501	1.00	1.00	25.00	1080.00	0.000	0.000	1340.03	0.00	0.00
37	127.00	PRK-1245 Reinforcement	1	30.455	33.501	1.00	1.00	9.50	418.42	0.000	0.000	509.21	0.00	0.00
38	127.00	AAHC	3	30.455	33.501	0.60	0.80	7.58	279.99	0.000	0.000	406.19	0.00	0.00
39	127.00	NNVV-65B-R4	3	30.455	33.501	0.59	0.80	21.79	228.69	0.000	0.000	1168.06	0.00	0.00
40	127.00	PRK-SFS-L Brace Kit	1	30.455	33.501	1.00	1.00	6.75	235.55	0.000	0.000	361.81	0.00	0.00
41	122.00	CS72188.01 Omni	1	30.455	33.501	1.00	1.00	3.00	22.50	0.000	5.000	160.80	0.00	804.02
							Totals:		**13,165.77**			**26,376.04**		

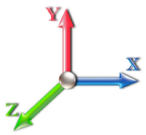
Total Applied Force Summary

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		559.02	1585.92	0.00	0.00
10.00		547.73	1556.76	0.00	0.00
15.00		536.43	1527.60	0.00	0.00
20.00		557.19	1498.44	0.00	0.00
25.00		571.43	1469.28	0.00	0.00
30.00		580.73	1440.13	0.00	0.00
35.00		586.40	1410.97	0.00	0.00
38.50		410.62	970.33	0.00	0.00
40.00		178.14	713.40	0.00	0.00
45.00		599.46	2343.65	0.00	0.00
50.00		598.37	1122.44	0.00	0.00
55.00		595.66	1098.74	0.00	0.00
60.00		591.57	1075.05	0.00	0.00
65.00		586.26	1051.36	0.00	0.00
70.00		579.88	1027.66	0.00	0.00
75.00		572.53	1003.97	0.00	0.00
78.00		338.70	591.01	0.00	0.00
80.00		227.14	645.31	0.00	0.00
83.50		394.86	1113.15	0.00	0.00
85.00		167.43	232.83	0.00	0.00
90.00		554.15	764.25	0.00	0.00
95.00		543.85	746.02	0.00	0.00
100.00		532.94	727.80	0.00	0.00
105.00		521.44	709.57	0.00	0.00
110.00		509.42	691.35	0.00	0.00
113.50		348.67	473.10	0.00	0.00
115.00		149.41	324.86	0.00	0.00
118.00		295.74	640.87	0.00	0.00
120.00		194.37	222.96	0.00	0.00
122.00	(1) attachments	353.04	243.13	0.00	804.02
125.00		284.55	326.14	0.00	0.00
127.00	(20) attachments	5543.80	2927.50	0.00	0.00
130.00		276.24	305.83	0.00	0.00
135.00		449.74	498.06	0.00	0.00
137.00	(58) attachments	8479.94	4394.09	0.00	0.00
140.00		258.92	249.46	0.00	0.00
145.00		420.18	404.10	0.00	0.00
148.00	(32) attachments	7673.77	3263.60	0.00	0.00
150.00		159.75	129.51	0.00	0.00
155.00		389.23	313.56	0.00	0.00
158.00	(12) attachments	5349.97	3384.33	0.00	0.00
	Totals:	**43,068.65**	**45,218.08**	**0.00**	**804.02**

Calculated Forces

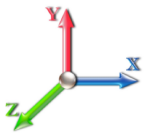
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-45.15	-43.14	0.00	-5178.0	0.00	5178.04	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.644
5.00	-43.44	-42.71	0.00	-4962.3	0.00	4962.36	6549.09	3274.55	15672.1	7847.74	0.09	-0.171	0.000	0.639
10.00	-41.75	-42.28	0.00	-4748.8	0.00	4748.83	6454.83	3227.41	15125.8	7574.18	0.36	-0.345	0.000	0.634
15.00	-40.10	-41.86	0.00	-4537.4	0.00	4537.43	6358.86	3179.43	14585.0	7303.35	0.82	-0.522	0.000	0.628
20.00	-38.48	-41.41	0.00	-4328.1	0.00	4328.14	6261.18	3130.59	14049.8	7035.38	1.47	-0.702	0.000	0.622
25.00	-36.88	-40.93	0.00	-4121.1	0.00	4121.12	6161.80	3080.90	13520.6	6770.39	2.30	-0.886	0.000	0.615
30.00	-35.32	-40.44	0.00	-3916.4	0.00	3916.45	6060.71	3030.36	12997.7	6508.52	3.33	-1.072	0.000	0.608
35.00	-33.81	-39.93	0.00	-3714.2	0.00	3714.23	5957.92	2978.96	12481.2	6249.90	4.55	-1.262	0.000	0.600
38.50	-32.78	-39.55	0.00	-3574.4	0.00	3574.49	5884.95	2942.47	12123.6	6070.85	5.53	-1.397	0.000	0.595
40.00	-31.99	-39.42	0.00	-3515.1	0.00	3515.17	5853.42	2926.71	11971.4	5994.64	5.98	-1.457	0.000	0.592
45.00	-29.53	-38.86	0.00	-3318.0	0.00	3318.05	4462.52	2231.26	9089.55	4551.53	7.61	-1.652	0.000	0.736
50.00	-28.28	-38.34	0.00	-3123.7	0.00	3123.74	4388.93	2194.47	8721.58	4367.27	9.44	-1.850	0.000	0.722
55.00	-27.05	-37.82	0.00	-2932.0	0.00	2932.06	4313.64	2156.82	8357.61	4185.02	11.51	-2.084	0.000	0.707
60.00	-25.84	-37.29	0.00	-2742.9	0.00	2742.98	4236.64	2118.32	7997.90	4004.90	13.82	-2.319	0.000	0.691
65.00	-24.66	-36.76	0.00	-2556.5	0.00	2556.54	4157.93	2078.96	7642.72	3827.04	16.37	-2.557	0.000	0.674
70.00	-23.51	-36.23	0.00	-2372.7	0.00	2372.72	4077.51	2038.76	7292.30	3651.57	19.18	-2.797	0.000	0.656
75.00	-22.42	-35.69	0.00	-2191.5	0.00	2191.56	3995.39	1997.70	6946.91	3478.62	22.24	-3.037	0.000	0.636
78.00	-21.77	-35.36	0.00	-2084.5	0.00	2084.50	3945.30	1972.65	6742.20	3376.11	24.19	-3.184	0.000	0.623
80.00	-21.05	-35.15	0.00	-2013.7	0.00	2013.77	3911.57	1955.78	6606.80	3308.31	25.55	-3.283	0.000	0.614
83.50	-19.89	-34.73	0.00	-1890.7	0.00	1890.75	2771.30	1385.65	4677.52	2342.24	28.02	-3.454	0.000	0.815
85.00	-19.56	-34.62	0.00	-1838.6	0.00	1838.65	2755.69	1377.84	4610.09	2308.47	29.12	-3.529	0.000	0.804
90.00	-18.66	-34.11	0.00	-1665.5	0.00	1665.57	2702.54	1351.27	4386.89	2196.71	32.97	-3.823	0.000	0.766
95.00	-17.78	-33.61	0.00	-1495.0	0.00	1495.03	2647.69	1323.84	4166.29	2086.24	37.13	-4.114	0.000	0.724
100.00	-16.93	-33.10	0.00	-1327.0	0.00	1327.00	2591.13	1295.56	3948.53	1977.20	41.59	-4.399	0.000	0.678
105.00	-16.11	-32.60	0.00	-1161.4	0.00	1161.49	2532.86	1266.43	3733.89	1869.72	46.34	-4.676	0.000	0.628
110.00	-15.34	-32.10	0.00	-998.48	0.00	998.48	2472.89	1236.44	3522.60	1763.92	51.38	-4.941	0.000	0.573
113.50	-14.83	-31.74	0.00	-886.14	0.00	886.14	2429.89	1214.95	3376.84	1690.93	55.06	-5.120	0.000	0.531
115.00	-14.46	-31.59	0.00	-838.53	0.00	838.53	2411.21	1205.60	3314.94	1659.93	56.68	-5.195	0.000	0.512
118.00	-13.79	-31.27	0.00	-743.75	0.00	743.75	1790.62	895.31	2454.63	1229.14	59.99	-5.338	0.000	0.614
120.00	-13.53	-31.07	0.00	-681.22	0.00	681.22	1774.20	887.10	2396.85	1200.21	62.24	-5.430	0.000	0.576
122.00	-13.25	-30.73	0.00	-618.27	0.00	618.27	1757.50	878.75	2339.36	1171.42	64.54	-5.534	0.000	0.537
125.00	-12.90	-30.44	0.00	-526.08	0.00	526.08	1731.94	865.97	2253.71	1128.53	68.06	-5.678	0.000	0.475
127.00	-10.49	-24.65	0.00	-465.20	0.00	465.20	1714.56	857.28	2197.01	1100.14	70.46	-5.766	0.000	0.430
130.00	-10.15	-24.37	0.00	-391.25	0.00	391.25	1687.98	843.99	2112.62	1057.88	74.11	-5.886	0.000	0.377
135.00	-9.66	-23.89	0.00	-269.40	0.00	269.40	1642.31	821.15	1973.86	988.40	80.36	-6.052	0.000	0.279
137.00	-6.17	-15.00	0.00	-221.62	0.00	221.62	1623.56	811.78	1919.06	960.96	82.91	-6.108	0.000	0.235
140.00	-5.93	-14.72	0.00	-176.62	0.00	176.62	1594.93	797.47	1837.67	920.20	86.76	-6.179	0.000	0.196
145.00	-5.56	-14.27	0.00	-103.01	0.00	103.01	1545.85	772.93	1704.31	853.42	93.27	-6.268	0.000	0.125
148.00	-3.16	-6.28	0.00	-60.20	0.00	60.20	1515.59	757.79	1625.76	814.09	97.22	-6.304	0.000	0.076
150.00	-3.04	-6.11	0.00	-47.64	0.00	47.64	1495.07	747.53	1574.03	788.19	99.86	-6.321	0.000	0.063
155.00	-2.77	-5.69	0.00	-17.07	0.00	17.07	1442.53	721.26	1447.04	724.60	106.48	-6.348	0.000	0.026
158.00	0.00	-5.35	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	110.46	-6.353	0.000	0.000

Wind Loading - Shaft

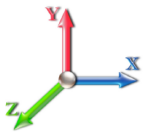
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	26.158	31.39	178.4	467.0	2374.8
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.725	30.87	175.5	491.3	2360.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	25.263	30.32	172.3	501.7	2331.6
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	24.789	29.75	179.4	505.9	2297.0
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.308	29.17	184.4	506.7	2258.9
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.823	28.59	187.8	505.1	2218.4
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.335	28.00	190.0	501.8	2176.2
38.50	Bot - Section 2	1.00	1.04	6.294	6.92	0.00	1.200	1.523	3.50	16.041	19.25	133.3	349.1	1498.1
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	1.50	6.903	8.28	57.8	151.5	1040.6
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	22.695	27.23	194.9	499.5	3417.5
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	5.00	22.201	26.64	194.9	493.2	1782.9
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	21.706	26.05	194.4	486.2	1744.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	21.210	25.45	193.5	478.6	1705.2
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	20.713	24.86	192.1	470.5	1665.5
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	20.215	24.26	190.5	462.0	1625.4
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	19.717	23.66	188.5	453.0	1584.8
78.00	Bot - Section 3	1.00	1.20	7.303	8.03	0.00	1.200	1.635	3.00	11.589	13.91	111.7	268.5	932.4
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	2.00	7.732	9.28	74.9	180.1	957.7
83.50	Top - Section 2	1.00	1.22	7.408	8.15	0.00	1.200	1.646	3.50	13.340	16.01	130.4	310.5	1649.9
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	1.50	5.642	6.77	55.4	132.2	380.6
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	18.483	22.18	183.6	430.8	1242.9
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	17.983	21.58	180.7	420.7	1208.5
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	17.482	20.98	177.6	410.3	1173.9
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	16.981	20.38	174.3	399.7	1139.0
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	16.480	19.78	170.8	389.0	1103.9
113.50	Bot - Section 4	1.00	1.30	7.903	8.69	0.00	1.200	1.697	3.50	11.237	13.48	117.2	266.9	752.9
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	1.50	4.804	5.76	50.3	115.0	486.1
118.00	Top - Section 3	1.00	1.31	7.968	8.76	0.00	1.200	1.704	3.00	9.473	11.37	99.6	226.0	956.4
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	2.00	6.215	7.46	65.6	148.9	363.4
122.00	Appurtenance(s)	1.00	1.32	8.024	8.83	0.00	1.200	1.710	2.00	6.134	7.36	65.0	147.1	358.5
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	3.00	9.051	10.86	96.4	216.5	527.9
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	1.716	2.00	5.934	7.12	63.4	142.5	346.2
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	8.750	10.50	93.9	209.7	509.3
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	14.183	17.02	153.5	337.9	821.8
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	1.729	2.00	5.532	6.64	60.0	133.3	321.4
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	3.00	8.147	9.78	88.8	195.7	472.0
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	13.178	15.81	144.7	314.3	759.3
148.00	Appurtenance(s)	1.00	1.37	8.357	9.19	0.00	1.200	1.743	3.00	7.665	9.20	84.6	184.3	441.9
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	2.00	5.009	6.01	55.4	120.9	288.8
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	5.00	12.172	14.61	135.6	290.2	696.3
158.00	Appurtenance(s)	1.00	1.39	8.473	9.32	0.00	1.200	1.754	3.00	7.061	8.47	79.0	169.7	404.1
								Totals:	**158.00**			**5,520.1**		**50,376.5**

Discrete Appurtenance Forces

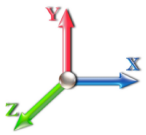
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Fujitsu TA08025-B604	3	8.473	9.320	0.50	0.75	3.80	346.42	0.000	0.000	35.46	0.00	0.00
2	158.00	Fujitsu TA08025-B605	3	8.473	9.320	0.50	0.75	3.80	389.93	0.000	0.000	35.46	0.00	0.00
3	158.00	Commscope	1	8.473	9.320	1.00	1.00	85.07	3396.03	0.000	0.000	792.86	0.00	0.00
4	158.00	JMA Wireless	3	8.473	9.320	0.55	0.75	23.25	907.76	0.000	0.000	216.67	0.00	0.00
5	158.00	Low Profile Platform	1	8.473	9.320	1.00	1.00	46.05	2192.58	0.000	0.000	429.21	0.00	0.00
6	158.00	Raycap	1	8.473	9.320	1.00	1.00	2.58	67.11	0.000	0.000	24.06	0.00	0.00
7	148.00	RF4439D-25A	3	8.357	9.193	0.50	0.75	3.66	351.81	0.000	0.000	33.68	0.00	0.00
8	148.00	RF4440D-13a	3	8.357	9.193	0.50	0.75	3.66	363.99	0.000	0.000	33.68	0.00	0.00
9	148.00	Raycap	1	8.357	9.193	1.00	1.00	4.88	126.97	0.000	0.000	44.87	0.00	0.00
10	148.00	JMA Wireless	6	8.357	9.193	0.65	0.75	44.02	2043.35	0.000	0.000	404.66	0.00	0.00
11	148.00	MT6407-77A	3	8.357	9.193	0.52	0.75	8.88	643.88	0.000	0.000	81.60	0.00	0.00
12	148.00	VZWSMART-PLK7	1	8.357	9.193	1.00	1.00	4.60	294.54	0.000	0.000	42.31	0.00	0.00
13	148.00	RFS FD9R6004/2C-3L	6	8.357	9.193	0.38	0.75	1.86	56.61	0.000	0.000	17.06	0.00	0.00
14	148.00	VZWSMART-PLK6	1	8.357	9.193	1.00	1.00	20.46	708.52	0.000	0.000	188.06	0.00	0.00
15	148.00	VZWSMART-PLK3	1	8.357	9.193	1.00	1.00	24.21	1739.97	0.000	0.000	222.52	0.00	0.00
16	148.00	DB844G65VTZASX	6	8.357	9.193	0.70	0.75	26.41	1021.17	0.000	0.000	242.82	0.00	0.00
17	148.00	Low Profile Platform	1	8.357	9.193	1.00	1.00	64.28	2185.72	0.000	0.000	590.91	0.00	0.00
18	137.00	Kaelus -	6	8.222	9.044	0.54	0.80	2.00	247.78	0.000	0.000	18.10	0.00	0.00
19	137.00	Ericsson - B14 4478 -	3	8.222	9.044	0.54	0.80	3.48	314.12	0.000	0.000	31.47	0.00	0.00
20	137.00	Kaelus - DBC0037F1V2-1	6	8.222	9.044	0.54	0.80	2.68	91.78	0.000	0.000	24.20	0.00	0.00
21	137.00	800 10965	3	8.222	9.044	0.60	0.80	27.68	1235.83	0.000	0.000	250.32	0.00	0.00
22	137.00	Ericsson - RRUS-32 -	3	8.222	9.044	0.54	0.80	6.59	614.27	0.000	0.000	59.61	0.00	0.00
23	137.00	CCI -	6	8.222	9.044	0.54	0.80	6.12	241.96	0.000	0.000	55.34	0.00	0.00
24	137.00	Ericsson - RRUS-11 -	6	8.222	9.044	0.54	0.80	10.12	787.43	0.000	0.000	91.55	0.00	0.00
25	137.00	Ericsson - RRUS-12 -	6	8.222	9.044	0.54	0.80	12.40	983.64	0.000	0.000	112.20	0.00	0.00
26	137.00	Ericsson - RRU A2 - RRU	3	8.222	9.044	0.54	0.80	4.54	162.41	0.000	0.000	41.09	0.00	0.00
27	137.00	Ericsson - RRUS 32 B2 -	3	8.222	9.044	0.54	0.80	5.57	451.87	0.000	0.000	50.34	0.00	0.00
28	137.00	Raycap -	3	8.222	9.044	0.64	0.80	4.15	257.56	0.000	0.000	37.57	0.00	0.00
29	137.00	Platform w/ Hand Rails	1	8.222	9.044	1.00	1.00	60.75	3875.36	0.000	0.000	549.48	0.00	0.00
30	137.00	CCI - OPA-65R-LCUU-H6	3	8.222	9.044	0.63	0.80	20.88	950.74	0.000	0.000	188.86	0.00	0.00
31	137.00	KMW -	3	8.222	9.044	0.60	0.80	19.42	517.54	0.000	0.000	175.64	0.00	0.00
32	137.00	Quintel - QS66512-2	3	8.222	9.044	0.72	0.80	20.33	998.92	0.000	0.000	183.88	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	8.092	8.901	1.00	1.00	20.22	-52.34	0.000	0.000	179.96	0.00	0.00
34	127.00	ALU - 1900MHz - RRU	3	8.092	8.901	0.54	0.80	6.56	390.47	0.000	0.000	58.36	0.00	0.00
35	127.00	ALU - 800 MHz - RRU	6	8.092	8.901	0.54	0.80	11.63	691.44	0.000	0.000	103.48	0.00	0.00
36	127.00	Low Profile Platform	1	8.092	8.901	1.00	1.00	45.60	2169.84	0.000	0.000	405.87	0.00	0.00
37	127.00	PRK-1245 Reinforcement	1	8.092	8.901	1.00	1.00	19.28	781.99	0.000	0.000	171.65	0.00	0.00
38	127.00	AAHC	3	8.092	8.901	0.60	0.80	9.01	609.95	0.000	0.000	80.24	0.00	0.00
39	127.00	NNVV-65B-R4	3	8.092	8.901	0.60	0.80	24.66	1051.42	0.000	0.000	219.54	0.00	0.00
40	127.00	PRK-SFS-L Brace Kit	1	8.092	8.901	1.00	1.00	13.24	315.29	0.000	0.000	117.84	0.00	0.00
41	122.00	CS72188.01 Omni	1	8.092	8.901	1.00	1.00	6.53	82.80	0.000	5.000	58.15	0.00	290.74
							Totals:		**34,608.43**			**6,700.62**		

Total Applied Force Summary

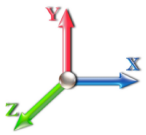
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		178.45	2581.59	0.00	0.00
10.00		175.49	2566.95	0.00	0.00
15.00		172.34	2538.45	0.00	0.00
20.00		179.43	2503.84	0.00	0.00
25.00		184.41	2465.70	0.00	0.00
30.00		187.80	2425.22	0.00	0.00
35.00		190.02	2383.06	0.00	0.00
38.50		133.27	1642.85	0.00	0.00
40.00		57.82	1102.70	0.00	0.00
45.00		194.85	3624.39	0.00	0.00
50.00		194.89	1989.79	0.00	0.00
55.00		194.40	1951.19	0.00	0.00
60.00		193.47	1912.01	0.00	0.00
65.00		192.15	1872.32	0.00	0.00
70.00		190.48	1832.19	0.00	0.00
75.00		188.50	1791.67	0.00	0.00
78.00		111.72	1056.52	0.00	0.00
80.00		74.93	1040.48	0.00	0.00
83.50		130.45	1794.66	0.00	0.00
85.00		55.38	442.62	0.00	0.00
90.00		183.62	1449.77	0.00	0.00
95.00		180.70	1415.36	0.00	0.00
100.00		177.57	1380.71	0.00	0.00
105.00		174.27	1345.84	0.00	0.00
110.00		170.79	1310.76	0.00	0.00
113.50		117.22	897.72	0.00	0.00
115.00		50.25	548.15	0.00	0.00
118.00		99.63	1080.50	0.00	0.00
120.00		65.59	446.16	0.00	0.00
122.00	(1) attachments	123.12	524.06	0.00	290.74
125.00		96.36	651.40	0.00	0.00
127.00	(20) attachments	1400.31	6386.61	0.00	0.00
130.00		93.92	617.45	0.00	0.00
135.00		153.45	1001.94	0.00	0.00
137.00	(58) attachments	1929.68	12124.66	0.00	0.00
140.00		88.83	528.29	0.00	0.00
145.00		144.74	853.06	0.00	0.00
148.00	(32) attachments	1986.72	10034.74	0.00	0.00
150.00		55.41	293.58	0.00	0.00
155.00		135.58	708.24	0.00	0.00
158.00	(12) attachments	1612.69	7711.05	0.00	0.00
	Totals:	**12,220.68**	**90,828.26**	**0.00**	**290.74**

Calculated Forces

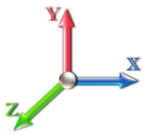
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-90.82	-12.26	0.00	-1495.5	0.00	1495.56	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.198
5.00	-88.23	-12.16	0.00	-1434.2	0.00	1434.26	6549.09	3274.55	15672.1	7847.74	0.03	-0.049	0.000	0.196
10.00	-85.65	-12.05	0.00	-1373.4	0.00	1373.47	6454.83	3227.41	15125.8	7574.18	0.11	-0.100	0.000	0.195
15.00	-83.10	-11.95	0.00	-1313.2	0.00	1313.20	6358.86	3179.43	14585.0	7303.35	0.24	-0.151	0.000	0.193
20.00	-80.59	-11.84	0.00	-1253.4	0.00	1253.44	6261.18	3130.59	14049.8	7035.38	0.42	-0.203	0.000	0.191
25.00	-78.11	-11.72	0.00	-1194.2	0.00	1194.25	6161.80	3080.90	13520.6	6770.39	0.66	-0.256	0.000	0.189
30.00	-75.68	-11.59	0.00	-1135.6	0.00	1135.66	6060.71	3030.36	12997.7	6508.52	0.96	-0.310	0.000	0.187
35.00	-73.29	-11.45	0.00	-1077.7	0.00	1077.72	5957.92	2978.96	12481.2	6249.90	1.32	-0.365	0.000	0.185
38.50	-71.64	-11.34	0.00	-1037.6	0.00	1037.66	5884.95	2942.47	12123.6	6070.85	1.60	-0.405	0.000	0.183
40.00	-70.53	-11.32	0.00	-1020.6	0.00	1020.65	5853.42	2926.71	11971.4	5994.64	1.73	-0.422	0.000	0.182
45.00	-66.90	-11.16	0.00	-964.07	0.00	964.07	4462.52	2231.26	9089.55	4551.53	2.20	-0.479	0.000	0.227
50.00	-64.90	-11.02	0.00	-908.27	0.00	908.27	4388.93	2194.47	8721.58	4367.27	2.73	-0.536	0.000	0.223
55.00	-62.93	-10.88	0.00	-853.17	0.00	853.17	4313.64	2156.82	8357.61	4185.02	3.33	-0.604	0.000	0.218
60.00	-61.01	-10.74	0.00	-798.77	0.00	798.77	4236.64	2118.32	7997.90	4004.90	4.00	-0.673	0.000	0.214
65.00	-59.13	-10.60	0.00	-745.08	0.00	745.08	4157.93	2078.96	7642.72	3827.04	4.74	-0.742	0.000	0.209
70.00	-57.29	-10.45	0.00	-692.10	0.00	692.10	4077.51	2038.76	7292.30	3651.57	5.56	-0.812	0.000	0.204
75.00	-55.49	-10.29	0.00	-639.85	0.00	639.85	3995.39	1997.70	6946.91	3478.62	6.45	-0.882	0.000	0.198
78.00	-54.43	-10.20	0.00	-608.99	0.00	608.99	3945.30	1972.65	6742.20	3376.11	7.01	-0.925	0.000	0.194
80.00	-53.38	-10.14	0.00	-588.60	0.00	588.60	3911.57	1955.78	6606.80	3308.31	7.41	-0.954	0.000	0.192
83.50	-51.58	-10.01	0.00	-553.11	0.00	553.11	2771.30	1385.65	4677.52	2342.24	8.13	-1.004	0.000	0.255
85.00	-51.13	-10.00	0.00	-538.09	0.00	538.09	2755.69	1377.84	4610.09	2308.47	8.45	-1.026	0.000	0.252
90.00	-49.67	-9.86	0.00	-488.11	0.00	488.11	2702.54	1351.27	4386.89	2196.71	9.57	-1.112	0.000	0.241
95.00	-48.25	-9.72	0.00	-438.80	0.00	438.80	2647.69	1323.84	4166.29	2086.24	10.78	-1.197	0.000	0.229
100.00	-46.86	-9.58	0.00	-390.19	0.00	390.19	2591.13	1295.56	3948.53	1977.20	12.08	-1.281	0.000	0.215
105.00	-45.50	-9.44	0.00	-342.28	0.00	342.28	2532.86	1266.43	3733.89	1869.72	13.46	-1.362	0.000	0.201
110.00	-44.18	-9.29	0.00	-295.07	0.00	295.07	2472.89	1236.44	3522.60	1763.92	14.93	-1.441	0.000	0.185
113.50	-43.28	-9.18	0.00	-262.56	0.00	262.56	2429.89	1214.95	3376.84	1690.93	16.01	-1.494	0.000	0.173
115.00	-42.73	-9.14	0.00	-248.80	0.00	248.80	2411.21	1205.60	3314.94	1659.93	16.48	-1.516	0.000	0.168
118.00	-41.65	-9.03	0.00	-221.39	0.00	221.39	1790.62	895.31	2454.63	1229.14	17.45	-1.559	0.000	0.203
120.00	-41.20	-8.98	0.00	-203.32	0.00	203.32	1774.20	887.10	2396.85	1200.21	18.11	-1.586	0.000	0.193
122.00	-40.67	-8.87	0.00	-185.08	0.00	185.08	1757.50	878.75	2339.36	1171.42	18.78	-1.617	0.000	0.181
125.00	-40.02	-8.77	0.00	-158.49	0.00	158.49	1731.94	865.97	2253.71	1128.53	19.81	-1.660	0.000	0.164
127.00	-33.67	-7.21	0.00	-140.94	0.00	140.94	1714.56	857.28	2197.01	1100.14	20.51	-1.687	0.000	0.148
130.00	-33.05	-7.12	0.00	-119.32	0.00	119.32	1687.98	843.99	2112.62	1057.88	21.58	-1.723	0.000	0.132
135.00	-32.05	-6.95	0.00	-83.72	0.00	83.72	1642.31	821.15	1973.86	988.40	23.42	-1.774	0.000	0.104
137.00	-19.99	-4.66	0.00	-69.81	0.00	69.81	1623.56	811.78	1919.06	960.96	24.16	-1.792	0.000	0.085
140.00	-19.46	-4.56	0.00	-55.84	0.00	55.84	1594.93	797.47	1837.67	920.20	25.30	-1.814	0.000	0.073
145.00	-18.62	-4.39	0.00	-33.05	0.00	33.05	1545.85	772.93	1704.31	853.42	27.21	-1.842	0.000	0.051
148.00	-8.65	-2.09	0.00	-19.87	0.00	19.87	1515.59	757.79	1625.76	814.09	28.38	-1.854	0.000	0.030
150.00	-8.36	-2.02	0.00	-15.70	0.00	15.70	1495.07	747.53	1574.03	788.19	29.15	-1.860	0.000	0.026
155.00	-7.65	-1.86	0.00	-5.59	0.00	5.59	1442.53	721.26	1447.04	724.60	31.11	-1.869	0.000	0.013
158.00	0.00	-1.61	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	32.28	-1.870	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

IES Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	21
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.35	**SA**	0.04	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1589.7	0.00	0.03	0.02	30.22	
10.00		1557.3	0.01	0.05	0.03	43.25	
15.00		1524.9	0.02	0.06	0.04	49.11	
20.00		1492.5	0.03	0.07	0.04	51.55	
25.00		1460.1	0.05	0.07	0.04	52.39	
30.00		1427.7	0.07	0.07	0.04	52.59	
35.00		1395.3	0.09	0.07	0.04	52.61	
38.50	Bot - Section 2	957.49	0.11	0.07	0.04	36.67	
40.00		740.96	0.12	0.07	0.03	28.57	
45.00	Top - Section 1	2431.7	0.15	0.07	0.03	95.55	
50.00		1074.7	0.19	0.06	0.02	42.61	
55.00		1048.4	0.23	0.06	0.02	41.05	
60.00		1022.1	0.27	0.05	0.01	38.04	
65.00		995.81	0.32	0.04	0.01	32.98	
70.00		969.48	0.37	0.03	0.01	25.39	
75.00		943.15	0.43	0.01	0.01	15.19	
78.00	Bot - Section 3	553.26	0.46	0.00	0.01	4.81	
80.00		648.06	0.48	-0.01	0.01	2.17	
83.50	Top - Section 2	1116.1	0.53	-0.03	0.01	-7.13	
85.00		206.99	0.55	-0.03	0.01	-2.18	
90.00		676.80	0.61	-0.06	0.02	-15.86	
95.00		656.55	0.68	-0.08	0.03	-21.84	
100.00		636.30	0.76	-0.10	0.04	-24.65	
105.00		616.05	0.83	-0.12	0.06	-24.24	
110.00		595.80	0.92	-0.12	0.09	-20.86	
113.50	Bot - Section 4	405.01	0.98	-0.12	0.12	-11.77	
115.00		309.25	1.00	-0.11	0.13	-7.98	
118.00	Top - Section 3	608.66	1.05	-0.09	0.16	-10.94	
120.00		178.79	1.09	-0.08	0.18	-2.11	
122.00	Appurtenance(s)	201.20	1.13	-0.05	0.20	-0.98	
125.00		259.44	1.18	-0.01	0.24	1.80	
127.00	Appurtenance(s)	3184.1	1.22	0.03	0.27	50.12	
130.00		249.72	1.28	0.09	0.32	7.59	
135.00		403.24	1.38	0.25	0.41	23.67	
137.00	Appurtenance(s)	4822.2	1.42	0.32	0.45	344.14	
140.00		230.28	1.48	0.46	0.52	21.15	
145.00		370.84	1.59	0.75	0.66	48.21	
148.00	Appurtenance(s)	3579.3	1.66	0.97	0.75	555.99	
150.00		139.91	1.70	1.14	0.82	24.24	
155.00		338.44	1.82	1.63	1.01	75.03	
158.00	Appurtenance(s)	3754.3	1.89	1.98	1.14	950.99	
	Totals:	**45,372.9**				**2,647.1**	**Total Wind:** **43,068.6**

Calculated Forces

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 21

Gust Response Factor	1.10			**Sds**	0.20			**Ss**	0.19
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.35	**SA**	0.04	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-60.29	-2.80	0.00	-357.75	0.00	357.75	6641.65	3320.83	16223.6	8123.90		0.00	0.00	0.053
5.00	-58.18	-2.78	0.00	-343.74	0.00	343.74	6549.09	3274.55	15672.1	7847.74		0.01	-0.01	0.053
10.00	-56.10	-2.75	0.00	-329.81	0.00	329.81	6454.83	3227.41	15125.8	7574.18		0.03	-0.02	0.052
15.00	-54.06	-2.71	0.00	-316.05	0.00	316.05	6358.86	3179.43	14585.0	7303.35		0.06	-0.04	0.052
20.00	-52.06	-2.67	0.00	-302.48	0.00	302.48	6261.18	3130.59	14049.8	7035.38		0.10	-0.05	0.051
25.00	-50.10	-2.63	0.00	-289.11	0.00	289.11	6161.80	3080.90	13520.6	6770.39		0.16	-0.06	0.051
30.00	-48.18	-2.59	0.00	-275.96	0.00	275.96	6060.71	3030.36	12997.7	6508.52		0.23	-0.07	0.050
35.00	-46.30	-2.54	0.00	-263.03	0.00	263.03	5957.92	2978.96	12481.2	6249.90		0.32	-0.09	0.050
38.50	-45.01	-2.51	0.00	-254.14	0.00	254.14	5884.95	2942.47	12123.6	6070.85		0.38	-0.10	0.050
40.00	-44.06	-2.48	0.00	-250.38	0.00	250.38	5853.42	2926.71	11971.4	5994.64		0.42	-0.10	0.049
45.00	-40.93	-2.39	0.00	-237.96	0.00	237.96	4462.52	2231.26	9089.55	4551.53		0.53	-0.12	0.061
50.00	-39.43	-2.36	0.00	-226.00	0.00	226.00	4388.93	2194.47	8721.58	4367.27		0.66	-0.13	0.061
55.00	-37.97	-2.32	0.00	-214.21	0.00	214.21	4313.64	2156.82	8357.61	4185.02		0.81	-0.15	0.060
60.00	-36.53	-2.29	0.00	-202.59	0.00	202.59	4236.64	2118.32	7997.90	4004.90		0.97	-0.16	0.059
65.00	-35.13	-2.27	0.00	-191.13	0.00	191.13	4157.93	2078.96	7642.72	3827.04		1.15	-0.18	0.058
70.00	-33.76	-2.25	0.00	-179.79	0.00	179.79	4077.51	2038.76	7292.30	3651.57		1.35	-0.20	0.058
75.00	-32.42	-2.24	0.00	-168.55	0.00	168.55	3995.39	1997.70	6946.91	3478.62		1.57	-0.22	0.057
78.00	-31.63	-2.23	0.00	-161.84	0.00	161.84	3945.30	1972.65	6742.20	3376.11		1.71	-0.23	0.056
80.00	-30.77	-2.23	0.00	-157.38	0.00	157.38	3911.57	1955.78	6606.80	3308.31		1.81	-0.24	0.055
83.50	-29.29	-2.23	0.00	-149.56	0.00	149.56	2771.30	1385.65	4677.52	2342.24		1.99	-0.25	0.074
85.00	-28.98	-2.24	0.00	-146.21	0.00	146.21	2755.69	1377.84	4610.09	2308.47		2.07	-0.26	0.074
90.00	-27.96	-2.25	0.00	-135.02	0.00	135.02	2702.54	1351.27	4386.89	2196.71		2.35	-0.28	0.072
95.00	-26.96	-2.25	0.00	-123.79	0.00	123.79	2647.69	1323.84	4166.29	2086.24		2.66	-0.30	0.070
100.00	-25.99	-2.26	0.00	-112.54	0.00	112.54	2591.13	1295.56	3948.53	1977.20		2.99	-0.33	0.067
105.00	-25.04	-2.26	0.00	-101.25	0.00	101.25	2532.86	1266.43	3733.89	1869.72		3.35	-0.35	0.064
110.00	-24.12	-2.26	0.00	-89.95	0.00	89.95	2472.89	1236.44	3522.60	1763.92		3.73	-0.38	0.061
113.50	-23.49	-2.26	0.00	-82.02	0.00	82.02	2429.89	1214.95	3376.84	1690.93		4.01	-0.39	0.058
115.00	-23.06	-2.27	0.00	-78.63	0.00	78.63	2411.21	1205.60	3314.94	1659.93		4.13	-0.40	0.057
118.00	-22.20	-2.26	0.00	-71.83	0.00	71.83	1790.62	895.31	2454.63	1229.14		4.39	-0.41	0.071
120.00	-21.90	-2.27	0.00	-67.30	0.00	67.30	1774.20	887.10	2396.85	1200.21		4.56	-0.42	0.068
122.00	-21.58	-2.27	0.00	-62.77	0.00	62.77	1757.50	878.75	2339.36	1171.42		4.74	-0.43	0.066
125.00	-21.14	-2.27	0.00	-55.97	0.00	55.97	1731.94	865.97	2253.71	1128.53		5.02	-0.45	0.062
127.00	-17.24	-2.19	0.00	-51.43	0.00	51.43	1714.56	857.28	2197.01	1100.14		5.21	-0.46	0.057
130.00	-16.83	-2.18	0.00	-44.86	0.00	44.86	1687.98	843.99	2112.62	1057.88		5.50	-0.47	0.052
135.00	-16.17	-2.16	0.00	-33.94	0.00	33.94	1642.31	821.15	1973.86	988.40		6.00	-0.49	0.044
137.00	-10.31	-1.77	0.00	-29.62	0.00	29.62	1623.56	811.78	1919.06	960.96		6.21	-0.50	0.037
140.00	-9.98	-1.74	0.00	-24.33	0.00	24.33	1594.93	797.47	1837.67	920.20		6.52	-0.51	0.033
145.00	-9.44	-1.69	0.00	-15.61	0.00	15.61	1545.85	772.93	1704.31	853.42		7.06	-0.52	0.024
148.00	-5.09	-1.10	0.00	-10.53	0.00	10.53	1515.59	757.79	1625.76	814.09		7.39	-0.52	0.016
150.00	-4.92	-1.07	0.00	-8.34	0.00	8.34	1495.07	747.53	1574.03	788.19		7.61	-0.53	0.014
155.00	-4.50	-0.99	0.00	-2.98	0.00	2.98	1442.53	721.26	1447.04	724.60		8.17	-0.53	0.007
158.00	0.00	-0.95	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38		8.50	-0.53	0.000

Seismic Segment Forces (Factored)

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

IES Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.35	**SA**	0.04	**S1**	0.06
						Seismic Importance Factor	1.00

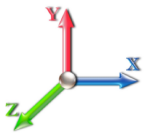
Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1589.7	0.00	0.03	0.02	30.22	
10.00		1557.3	0.01	0.05	0.03	43.25	
15.00		1524.9	0.02	0.06	0.04	49.11	
20.00		1492.5	0.03	0.07	0.04	51.55	
25.00		1460.1	0.05	0.07	0.04	52.39	
30.00		1427.7	0.07	0.07	0.04	52.59	
35.00		1395.3	0.09	0.07	0.04	52.61	
38.50	Bot - Section 2	957.49	0.11	0.07	0.04	36.67	
40.00		740.96	0.12	0.07	0.03	28.57	
45.00	Top - Section 1	2431.7	0.15	0.07	0.03	95.55	
50.00		1074.7	0.19	0.06	0.02	42.61	
55.00		1048.4	0.23	0.06	0.02	41.05	
60.00		1022.1	0.27	0.05	0.01	38.04	
65.00		995.81	0.32	0.04	0.01	32.98	
70.00		969.48	0.37	0.03	0.01	25.39	
75.00		943.15	0.43	0.01	0.01	15.19	
78.00	Bot - Section 3	553.26	0.46	0.00	0.01	4.81	
80.00		648.06	0.48	-0.01	0.01	2.17	
83.50	Top - Section 2	1116.1	0.53	-0.03	0.01	-7.13	
85.00		206.99	0.55	-0.03	0.01	-2.18	
90.00		676.80	0.61	-0.06	0.02	-15.86	
95.00		656.55	0.68	-0.08	0.03	-21.84	
100.00		636.30	0.76	-0.10	0.04	-24.65	
105.00		616.05	0.83	-0.12	0.06	-24.24	
110.00		595.80	0.92	-0.12	0.09	-20.86	
113.50	Bot - Section 4	405.01	0.98	-0.12	0.12	-11.77	
115.00		309.25	1.00	-0.11	0.13	-7.98	
118.00	Top - Section 3	608.66	1.05	-0.09	0.16	-10.94	
120.00		178.79	1.09	-0.08	0.18	-2.11	
122.00	Appurtenance(s)	201.20	1.13	-0.05	0.20	-0.98	
125.00		259.44	1.18	-0.01	0.24	1.80	
127.00	Appurtenance(s)	3184.1	1.22	0.03	0.27	50.12	
130.00		249.72	1.28	0.09	0.32	7.59	
135.00		403.24	1.38	0.25	0.41	23.67	
137.00	Appurtenance(s)	4822.2	1.42	0.32	0.45	344.14	
140.00		230.28	1.48	0.46	0.52	21.15	
145.00		370.84	1.59	0.75	0.66	48.21	
148.00	Appurtenance(s)	3579.3	1.66	0.97	0.75	555.99	
150.00		139.91	1.70	1.14	0.82	24.24	
155.00		338.44	1.82	1.63	1.01	75.03	
158.00	Appurtenance(s)	3754.3	1.89	1.98	1.14	950.99	
	Totals:	**45,372.9**				**2,647.1**	**Total Wind:** **43,068.6**

Calculated Forces

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.20			**Iterations**	21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.35	**SA**	0.04			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-45.22	-2.80	0.00	-353.59	0.00	353.59	6641.65	3320.83	16223.6	8123.90		0.00	0.00	0.050
5.00	-43.63	-2.78	0.00	-339.58	0.00	339.58	6549.09	3274.55	15672.1	7847.74		0.01	-0.01	0.050
10.00	-42.07	-2.75	0.00	-325.68	0.00	325.68	6454.83	3227.41	15125.8	7574.18		0.02	-0.02	0.050
15.00	-40.55	-2.70	0.00	-311.96	0.00	311.96	6358.86	3179.43	14585.0	7303.35		0.06	-0.04	0.049
20.00	-39.05	-2.66	0.00	-298.44	0.00	298.44	6261.18	3130.59	14049.8	7035.38		0.10	-0.05	0.049
25.00	-37.58	-2.61	0.00	-285.14	0.00	285.14	6161.80	3080.90	13520.6	6770.39		0.16	-0.06	0.048
30.00	-36.14	-2.57	0.00	-272.06	0.00	272.06	6060.71	3030.36	12997.7	6508.52		0.23	-0.07	0.048
35.00	-34.72	-2.52	0.00	-259.22	0.00	259.22	5957.92	2978.96	12481.2	6249.90		0.31	-0.09	0.047
38.50	-33.75	-2.49	0.00	-250.40	0.00	250.40	5884.95	2942.47	12123.6	6070.85		0.38	-0.10	0.047
40.00	-33.04	-2.46	0.00	-246.67	0.00	246.67	5853.42	2926.71	11971.4	5994.64		0.41	-0.10	0.047
45.00	-30.70	-2.37	0.00	-234.36	0.00	234.36	4462.52	2231.26	9089.55	4551.53		0.52	-0.11	0.058
50.00	-29.57	-2.33	0.00	-222.51	0.00	222.51	4388.93	2194.47	8721.58	4367.27		0.65	-0.13	0.058
55.00	-28.47	-2.30	0.00	-210.85	0.00	210.85	4313.64	2156.82	8357.61	4185.02		0.79	-0.15	0.057
60.00	-27.40	-2.26	0.00	-199.36	0.00	199.36	4236.64	2118.32	7997.90	4004.90		0.96	-0.16	0.056
65.00	-26.35	-2.24	0.00	-188.04	0.00	188.04	4157.93	2078.96	7642.72	3827.04		1.13	-0.18	0.055
70.00	-25.32	-2.22	0.00	-176.86	0.00	176.86	4077.51	2038.76	7292.30	3651.57		1.33	-0.20	0.055
75.00	-24.31	-2.20	0.00	-165.78	0.00	165.78	3995.39	1997.70	6946.91	3478.62		1.55	-0.22	0.054
78.00	-23.72	-2.20	0.00	-159.17	0.00	159.17	3945.30	1972.65	6742.20	3376.11		1.69	-0.23	0.053
80.00	-23.08	-2.20	0.00	-154.77	0.00	154.77	3911.57	1955.78	6606.80	3308.31		1.78	-0.23	0.053
83.50	-21.96	-2.20	0.00	-147.07	0.00	147.07	2771.30	1385.65	4677.52	2342.24		1.96	-0.25	0.071
85.00	-21.73	-2.20	0.00	-143.78	0.00	143.78	2755.69	1377.84	4610.09	2308.47		2.04	-0.25	0.070
90.00	-20.96	-2.21	0.00	-132.76	0.00	132.76	2702.54	1351.27	4386.89	2196.71		2.32	-0.28	0.068
95.00	-20.22	-2.21	0.00	-121.72	0.00	121.72	2647.69	1323.84	4166.29	2086.24		2.62	-0.30	0.066
100.00	-19.49	-2.22	0.00	-110.66	0.00	110.66	2591.13	1295.56	3948.53	1977.20		2.95	-0.32	0.063
105.00	-18.78	-2.22	0.00	-99.58	0.00	99.58	2532.86	1266.43	3733.89	1869.72		3.30	-0.35	0.061
110.00	-18.09	-2.22	0.00	-88.48	0.00	88.48	2472.89	1236.44	3522.60	1763.92		3.67	-0.37	0.057
113.50	-17.61	-2.22	0.00	-80.71	0.00	80.71	2429.89	1214.95	3376.84	1690.93		3.95	-0.39	0.055
115.00	-17.29	-2.22	0.00	-77.37	0.00	77.37	2411.21	1205.60	3314.94	1659.93		4.07	-0.39	0.054
118.00	-16.65	-2.22	0.00	-70.70	0.00	70.70	1790.62	895.31	2454.63	1229.14		4.32	-0.41	0.067
120.00	-16.42	-2.22	0.00	-66.26	0.00	66.26	1774.20	887.10	2396.85	1200.21		4.50	-0.41	0.064
122.00	-16.18	-2.22	0.00	-61.81	0.00	61.81	1757.50	878.75	2339.36	1171.42		4.67	-0.43	0.062
125.00	-15.85	-2.22	0.00	-55.14	0.00	55.14	1731.94	865.97	2253.71	1128.53		4.94	-0.44	0.058
127.00	-12.93	-2.15	0.00	-50.69	0.00	50.69	1714.56	857.28	2197.01	1100.14		5.13	-0.45	0.054
130.00	-12.62	-2.15	0.00	-44.23	0.00	44.23	1687.98	843.99	2112.62	1057.88		5.42	-0.46	0.049
135.00	-12.12	-2.12	0.00	-33.49	0.00	33.49	1642.31	821.15	1973.86	988.40		5.91	-0.48	0.041
137.00	-7.73	-1.74	0.00	-29.25	0.00	29.25	1623.56	811.78	1919.06	960.96		6.12	-0.49	0.035
140.00	-7.48	-1.72	0.00	-24.02	0.00	24.02	1594.93	797.47	1837.67	920.20		6.43	-0.50	0.031
145.00	-7.08	-1.67	0.00	-15.42	0.00	15.42	1545.85	772.93	1704.31	853.42		6.96	-0.51	0.023
148.00	-3.82	-1.08	0.00	-10.41	0.00	10.41	1515.59	757.79	1625.76	814.09		7.28	-0.52	0.015
150.00	-3.69	-1.06	0.00	-8.24	0.00	8.24	1495.07	747.53	1574.03	788.19		7.50	-0.52	0.013
155.00	-3.38	-0.98	0.00	-2.95	0.00	2.95	1442.53	721.26	1447.04	724.60		8.04	-0.52	0.006
158.00	0.00	-0.95	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38		8.37	-0.53	0.000

Wind Loading - Shaft

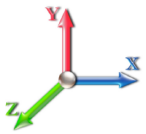
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	280.76	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	275.14	0.650	0.000	5.00	25.123	16.33	133.7	0.0	1589.8
10.00		1.00	0.85	7.442	8.19	269.53	0.650	0.000	5.00	24.616	16.00	131.0	0.0	1557.4
15.00		1.00	0.85	7.442	8.19	263.91	0.650	0.000	5.00	24.108	15.67	128.3	0.0	1525.0
20.00		1.00	0.90	7.896	8.69	266.06	0.650	0.000	5.00	23.600	15.34	133.2	0.0	1492.6
25.00		1.00	0.95	8.276	9.10	266.46	0.650	0.000	5.00	23.093	15.01	136.6	0.0	1460.2
30.00		1.00	0.98	8.600	9.46	265.58	0.650	0.000	5.00	22.585	14.68	138.9	0.0	1427.8
35.00		1.00	1.01	8.883	9.77	263.79	0.650	0.000	5.00	22.077	14.35	140.2	0.0	1395.4
38.50	Bot - Section 2	1.00	1.04	9.064	9.97	262.11	0.650	0.000	3.50	15.152	9.85	98.2	0.0	957.5
40.00		1.00	1.04	9.137	10.05	261.30	0.650	0.000	1.50	6.521	4.24	42.6	0.0	741.0
45.00	Top - Section 1	1.00	1.07	9.366	10.30	258.26	0.650	0.000	5.00	21.406	13.91	143.3	0.0	2431.7
50.00		1.00	1.09	9.576	10.53	259.09	0.650	0.000	5.00	20.898	13.58	143.1	0.0	1074.8
55.00		1.00	1.12	9.770	10.75	255.26	0.650	0.000	5.00	20.390	13.25	142.4	0.0	1048.5
60.00		1.00	1.14	9.951	10.95	251.12	0.650	0.000	5.00	19.883	12.92	141.5	0.0	1022.1
65.00		1.00	1.16	10.120	11.13	246.69	0.650	0.000	5.00	19.375	12.59	140.2	0.0	995.8
70.00		1.00	1.17	10.279	11.31	242.02	0.650	0.000	5.00	18.867	12.26	138.7	0.0	969.5
75.00		1.00	1.19	10.430	11.47	237.14	0.650	0.000	5.00	18.360	11.93	136.9	0.0	943.2
78.00	Bot - Section 3	1.00	1.20	10.516	11.57	234.11	0.650	0.000	3.00	10.772	7.00	81.0	0.0	553.3
80.00		1.00	1.21	10.572	11.63	232.06	0.650	0.000	2.00	7.186	4.67	54.3	0.0	648.1
83.50	Top - Section 2	1.00	1.22	10.668	11.73	228.40	0.650	0.000	3.50	12.379	8.05	94.4	0.0	1116.2
85.00		1.00	1.22	10.708	11.78	230.32	0.650	0.000	1.50	5.229	3.40	40.0	0.0	207.0
90.00		1.00	1.24	10.838	11.92	224.93	0.650	0.000	5.00	17.101	11.12	132.5	0.0	676.8
95.00		1.00	1.25	10.962	12.06	219.39	0.650	0.000	5.00	16.593	10.79	130.1	0.0	656.5
100.00		1.00	1.27	11.081	12.19	213.73	0.650	0.000	5.00	16.086	10.46	127.4	0.0	636.3
105.00		1.00	1.28	11.195	12.31	207.94	0.650	0.000	5.00	15.578	10.13	124.7	0.0	616.1
110.00		1.00	1.29	11.305	12.44	202.04	0.650	0.000	5.00	15.070	9.80	121.8	0.0	595.8
113.50	Bot - Section 4	1.00	1.30	11.380	12.52	197.84	0.650	0.000	3.50	10.247	6.66	83.4	0.0	405.0
115.00		1.00	1.30	11.412	12.55	196.03	0.650	0.000	1.50	4.379	2.85	35.7	0.0	309.3
118.00	Top - Section 3	1.00	1.31	11.474	12.62	192.38	0.650	0.000	3.00	8.621	5.60	70.7	0.0	608.7
120.00		1.00	1.32	11.514	12.67	192.84	0.650	0.000	2.00	5.646	3.67	46.5	0.0	178.8
122.00	Appurtenance(s)	1.00	1.32	11.554	12.71	190.37	0.650	0.000	2.00	5.564	3.62	46.0	0.0	176.2
125.00		1.00	1.33	11.614	12.78	186.65	0.650	0.000	3.00	8.194	5.33	68.0	0.0	259.4
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	184.15	0.650	0.000	2.00	5.361	3.48	44.7	0.0	169.7
130.00		1.00	1.34	11.710	12.88	180.38	0.650	0.000	3.00	7.890	5.13	66.1	0.0	249.7
135.00		1.00	1.35	11.803	12.98	174.02	0.650	0.000	5.00	12.743	8.28	107.5	0.0	403.2
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	171.46	0.650	0.000	2.00	4.955	3.22	41.9	0.0	156.8
140.00		1.00	1.36	11.894	13.08	167.59	0.650	0.000	3.00	7.281	4.73	61.9	0.0	230.3
145.00		1.00	1.37	11.982	13.18	161.08	0.650	0.000	5.00	11.728	7.62	100.5	0.0	370.8
148.00	Appurtenance(s)	1.00	1.37	12.034	13.24	157.14	0.650	0.000	3.00	6.793	4.42	58.5	0.0	214.7
150.00		1.00	1.38	12.068	13.27	154.50	0.650	0.000	2.00	4.427	2.88	38.2	0.0	139.9
155.00		1.00	1.39	12.152	13.37	147.86	0.650	0.000	5.00	10.713	6.96	93.1	0.0	338.4
158.00	Appurtenance(s)	1.00	1.39	12.201	13.42	143.84	0.650	0.000	3.00	6.184	4.02	53.9	0.0	195.3
								Totals:	**158.00**			**3,991.7**		**30,744.2**

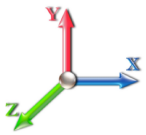
Discrete Appurtenance Forces

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Fujitsu TA08025-B604	3	12.201	13.421	0.50	0.75	2.95	191.70	0.000	0.000	39.65	0.00	0.00
2	158.00	Fujitsu TA08025-B605	3	12.201	13.421	0.50	0.75	2.95	225.00	0.000	0.000	39.65	0.00	0.00
3	158.00	Commscope	1	12.201	13.421	1.00	1.00	37.59	1727.00	0.000	0.000	504.49	0.00	0.00
4	158.00	JMA Wireless	3	12.201	13.421	0.55	0.75	20.80	193.50	0.000	0.000	279.10	0.00	0.00
5	158.00	Low Profile Platform	1	12.201	13.421	1.00	1.00	25.00	1200.00	0.000	0.000	335.52	0.00	0.00
6	158.00	Raycap	1	12.201	13.421	1.00	1.00	2.01	21.90	0.000	0.000	26.98	0.00	0.00
7	148.00	RF4439D-25A	3	12.034	13.238	0.50	0.75	2.83	253.20	0.000	0.000	37.52	0.00	0.00
8	148.00	RF4440D-13a	3	12.034	13.238	0.50	0.75	2.83	210.90	0.000	0.000	37.52	0.00	0.00
9	148.00	Raycap	1	12.034	13.238	1.00	1.00	4.06	32.00	0.000	0.000	53.74	0.00	0.00
10	148.00	JMA Wireless	6	12.034	13.238	0.65	0.75	38.64	360.00	0.000	0.000	511.51	0.00	0.00
11	148.00	MT6407-77A	3	12.034	13.238	0.52	0.75	7.39	238.20	0.000	0.000	97.78	0.00	0.00
12	148.00	VZWSMART-PLK7	1	12.034	13.238	1.00	1.00	2.25	136.70	0.000	0.000	29.78	0.00	0.00
13	148.00	RFS FD9R6004/2C-3L	6	12.034	13.238	0.38	0.75	0.83	18.60	0.000	0.000	11.02	0.00	0.00
14	148.00	VZWSMART-PLK6	1	12.034	13.238	1.00	1.00	10.00	329.00	0.000	0.000	132.38	0.00	0.00
15	148.00	VZWSMART-PLK3	1	12.034	13.238	1.00	1.00	12.25	514.00	0.000	0.000	162.16	0.00	0.00
16	148.00	DB844G65VTZASX	6	12.034	13.238	0.70	0.75	18.12	72.00	0.000	0.000	239.88	0.00	0.00
17	148.00	Low Profile Platform	1	12.034	13.238	1.00	1.00	35.00	1200.00	0.000	0.000	463.31	0.00	0.00
18	137.00	Kaelus -	6	11.840	13.024	0.54	0.80	1.06	109.80	0.000	0.000	13.82	0.00	0.00
19	137.00	Ericsson - B14 4478 -	3	11.840	13.024	0.54	0.80	2.65	180.00	0.000	0.000	34.56	0.00	0.00
20	137.00	Kaelus - DBC0037F1V2-1	6	11.840	13.024	0.54	0.80	1.22	39.60	0.000	0.000	15.92	0.00	0.00
21	137.00	800 10965	3	11.840	13.024	0.62	0.80	18.89	292.20	0.000	0.000	245.98	0.00	0.00
22	137.00	Ericsson - RRUS-32 -	3	11.840	13.024	0.54	0.80	6.22	231.00	0.000	0.000	81.05	0.00	0.00
23	137.00	CCI -	6	11.840	13.024	0.54	0.80	3.67	114.00	0.000	0.000	47.75	0.00	0.00
24	137.00	Ericsson - RRUS-11 -	6	11.840	13.024	0.54	0.80	8.10	330.00	0.000	0.000	105.55	0.00	0.00
25	137.00	Ericsson - RRUS-12 -	6	11.840	13.024	0.54	0.80	10.13	348.00	0.000	0.000	131.94	0.00	0.00
26	137.00	Ericsson - RRU A2 - RRU	3	11.840	13.024	0.54	0.80	2.99	66.00	0.000	0.000	38.95	0.00	0.00
27	137.00	Ericsson - RRUS 32 B2 -	3	11.840	13.024	0.54	0.80	4.41	159.00	0.000	0.000	57.38	0.00	0.00
28	137.00	Raycap -	3	11.840	13.024	0.64	0.80	2.82	98.40	0.000	0.000	36.76	0.00	0.00
29	137.00	Platform w/ Hand Rails	1	11.840	13.024	1.00	1.00	40.00	2000.00	0.000	0.000	520.96	0.00	0.00
30	137.00	CCI - OPA-65R-LCUU-H6	3	11.840	13.024	0.63	0.80	18.32	219.00	0.000	0.000	238.54	0.00	0.00
31	137.00	KMW -	3	11.840	13.024	0.60	0.80	14.44	145.50	0.000	0.000	188.01	0.00	0.00
32	137.00	Quintel - QS66512-2	3	11.840	13.024	0.72	0.80	17.56	333.00	0.000	0.000	228.71	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	11.653	12.818	1.00	1.00	16.86	24.60	0.000	0.000	216.11	0.00	0.00
34	127.00	ALU - 1900MHz - RRU	3	11.653	12.818	0.54	0.80	4.45	180.00	0.000	0.000	57.09	0.00	0.00
35	127.00	ALU - 800 MHz - RRU	6	11.653	12.818	0.54	0.80	8.01	318.00	0.000	0.000	102.64	0.00	0.00
36	127.00	Low Profile Platform	1	11.653	12.818	1.00	1.00	25.00	1200.00	0.000	0.000	320.45	0.00	0.00
37	127.00	PRK-1245 Reinforcement	1	11.653	12.818	1.00	1.00	9.50	464.91	0.000	0.000	121.77	0.00	0.00
38	127.00	AAHC	3	11.653	12.818	0.60	0.80	7.58	311.10	0.000	0.000	97.13	0.00	0.00
39	127.00	NNVV-65B-R4	3	11.653	12.818	0.59	0.80	21.79	254.10	0.000	0.000	279.32	0.00	0.00
40	127.00	PRK-SFS-L Brace Kit	1	11.653	12.818	1.00	1.00	6.75	261.72	0.000	0.000	86.52	0.00	0.00
41	122.00	CS72188.01 Omni	1	11.653	12.818	1.00	1.00	3.00	25.00	0.000	5.000	38.45	0.00	192.27
							Totals:		**14,628.63**			**6,307.38**		

Total Applied Force Summary

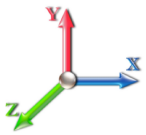
Structure:	CT02722-S-SBA		**Code:**	TIA-222-G	4/21/2022
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 27

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		133.68	1762.13	0.00	0.00
10.00		130.98	1729.73	0.00	0.00
15.00		128.28	1697.33	0.00	0.00
20.00		133.24	1664.94	0.00	0.00
25.00		136.65	1632.54	0.00	0.00
30.00		138.87	1600.14	0.00	0.00
35.00		140.23	1567.74	0.00	0.00
38.50		98.19	1078.14	0.00	0.00
40.00		42.60	792.67	0.00	0.00
45.00		143.35	2604.06	0.00	0.00
50.00		143.09	1247.15	0.00	0.00
55.00		142.44	1220.83	0.00	0.00
60.00		141.46	1194.50	0.00	0.00
65.00		140.19	1168.17	0.00	0.00
70.00		138.67	1141.85	0.00	0.00
75.00		136.91	1115.52	0.00	0.00
78.00		80.99	656.67	0.00	0.00
80.00		54.32	717.01	0.00	0.00
83.50		94.43	1236.83	0.00	0.00
85.00		40.04	258.70	0.00	0.00
90.00		132.51	849.16	0.00	0.00
95.00		130.05	828.91	0.00	0.00
100.00		127.44	808.67	0.00	0.00
105.00		124.69	788.42	0.00	0.00
110.00		121.82	768.17	0.00	0.00
113.50		83.38	525.67	0.00	0.00
115.00		35.73	360.96	0.00	0.00
118.00		70.72	712.08	0.00	0.00
120.00		46.48	247.74	0.00	0.00
122.00	(1) attachments	84.42	270.15	0.00	192.27
125.00		68.04	362.38	0.00	0.00
127.00	(20) attachments	1325.70	3252.78	0.00	0.00
130.00		66.06	339.81	0.00	0.00
135.00		107.55	553.40	0.00	0.00
137.00	(58) attachments	2027.83	4882.32	0.00	0.00
140.00		61.92	277.17	0.00	0.00
145.00		100.48	449.00	0.00	0.00
148.00	(32) attachments	1835.05	3626.22	0.00	0.00
150.00		38.20	143.90	0.00	0.00
155.00		93.08	348.40	0.00	0.00
158.00	(12) attachments	1279.35	3760.36	0.00	0.00
	Totals:	**10,299.12**	**50,242.31**	**0.00**	**192.27**

Calculated Forces

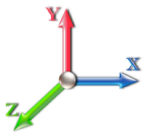
Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-50.24	-10.32	0.00	-1244.7	0.00	1244.75	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.161
5.00	-48.47	-10.22	0.00	-1193.1	0.00	1193.16	6549.09	3274.55	15672.1	7847.74	0.02	-0.041	0.000	0.159
10.00	-46.73	-10.12	0.00	-1142.0	0.00	1142.08	6454.83	3227.41	15125.8	7574.18	0.09	-0.083	0.000	0.158
15.00	-45.03	-10.02	0.00	-1091.4	0.00	1091.48	6358.86	3179.43	14585.0	7303.35	0.20	-0.126	0.000	0.157
20.00	-43.36	-9.92	0.00	-1041.3	0.00	1041.37	6261.18	3130.59	14049.8	7035.38	0.35	-0.169	0.000	0.155
25.00	-41.72	-9.81	0.00	-991.79	0.00	991.79	6161.80	3080.90	13520.6	6770.39	0.55	-0.213	0.000	0.153
30.00	-40.11	-9.69	0.00	-942.75	0.00	942.75	6060.71	3030.36	12997.7	6508.52	0.80	-0.258	0.000	0.151
35.00	-38.53	-9.57	0.00	-894.28	0.00	894.28	5957.92	2978.96	12481.2	6249.90	1.09	-0.303	0.000	0.150
38.50	-37.45	-9.48	0.00	-860.78	0.00	860.78	5884.95	2942.47	12123.6	6070.85	1.33	-0.336	0.000	0.148
40.00	-36.66	-9.46	0.00	-846.56	0.00	846.56	5853.42	2926.71	11971.4	5994.64	1.44	-0.351	0.000	0.147
45.00	-34.05	-9.32	0.00	-799.28	0.00	799.28	4462.52	2231.26	9089.55	4551.53	1.83	-0.398	0.000	0.183
50.00	-32.79	-9.20	0.00	-752.66	0.00	752.66	4388.93	2194.47	8721.58	4367.27	2.27	-0.445	0.000	0.180
55.00	-31.56	-9.08	0.00	-706.66	0.00	706.66	4313.64	2156.82	8357.61	4185.02	2.77	-0.502	0.000	0.176
60.00	-30.36	-8.96	0.00	-661.26	0.00	661.26	4236.64	2118.32	7997.90	4004.90	3.32	-0.558	0.000	0.172
65.00	-29.18	-8.83	0.00	-616.48	0.00	616.48	4157.93	2078.96	7642.72	3827.04	3.94	-0.616	0.000	0.168
70.00	-28.04	-8.71	0.00	-572.31	0.00	572.31	4077.51	2038.76	7292.30	3651.57	4.62	-0.673	0.000	0.164
75.00	-26.91	-8.58	0.00	-528.75	0.00	528.75	3995.39	1997.70	6946.91	3478.62	5.35	-0.732	0.000	0.159
78.00	-26.25	-8.51	0.00	-503.00	0.00	503.00	3945.30	1972.65	6742.20	3376.11	5.82	-0.767	0.000	0.156
80.00	-25.53	-8.46	0.00	-485.99	0.00	485.99	3911.57	1955.78	6606.80	3308.31	6.15	-0.791	0.000	0.153
83.50	-24.29	-8.36	0.00	-456.39	0.00	456.39	2771.30	1385.65	4677.52	2342.24	6.75	-0.832	0.000	0.204
85.00	-24.03	-8.33	0.00	-443.85	0.00	443.85	2755.69	1377.84	4610.09	2308.47	7.01	-0.850	0.000	0.201
90.00	-23.17	-8.22	0.00	-402.19	0.00	402.19	2702.54	1351.27	4386.89	2196.71	7.94	-0.921	0.000	0.192
95.00	-22.34	-8.10	0.00	-361.11	0.00	361.11	2647.69	1323.84	4166.29	2086.24	8.94	-0.992	0.000	0.182
100.00	-21.52	-7.98	0.00	-320.62	0.00	320.62	2591.13	1295.56	3948.53	1977.20	10.02	-1.060	0.000	0.170
105.00	-20.73	-7.87	0.00	-280.70	0.00	280.70	2532.86	1266.43	3733.89	1869.72	11.17	-1.127	0.000	0.158
110.00	-19.95	-7.75	0.00	-241.37	0.00	241.37	2472.89	1236.44	3522.60	1763.92	12.38	-1.191	0.000	0.145
113.50	-19.42	-7.66	0.00	-214.25	0.00	214.25	2429.89	1214.95	3376.84	1690.93	13.27	-1.234	0.000	0.135
115.00	-19.06	-7.63	0.00	-202.76	0.00	202.76	2411.21	1205.60	3314.94	1659.93	13.66	-1.253	0.000	0.130
118.00	-18.35	-7.55	0.00	-179.87	0.00	179.87	1790.62	895.31	2454.63	1229.14	14.46	-1.287	0.000	0.157
120.00	-18.10	-7.51	0.00	-164.77	0.00	164.77	1774.20	887.10	2396.85	1200.21	15.00	-1.310	0.000	0.148
122.00	-17.83	-7.43	0.00	-149.56	0.00	149.56	1757.50	878.75	2339.36	1171.42	15.56	-1.335	0.000	0.138
125.00	-17.46	-7.36	0.00	-127.28	0.00	127.28	1731.94	865.97	2253.71	1128.53	16.41	-1.369	0.000	0.123
127.00	-14.24	-5.96	0.00	-112.57	0.00	112.57	1714.56	857.28	2197.01	1100.14	16.99	-1.391	0.000	0.111
130.00	-13.90	-5.89	0.00	-94.69	0.00	94.69	1687.98	843.99	2112.62	1057.88	17.87	-1.420	0.000	0.098
135.00	-13.34	-5.78	0.00	-65.21	0.00	65.21	1642.31	821.15	1973.86	988.40	19.38	-1.460	0.000	0.074
137.00	-8.51	-3.63	0.00	-53.65	0.00	53.65	1623.56	811.78	1919.06	960.96	20.00	-1.473	0.000	0.061
140.00	-8.24	-3.56	0.00	-42.77	0.00	42.77	1594.93	797.47	1837.67	920.20	20.93	-1.491	0.000	0.052
145.00	-7.79	-3.45	0.00	-24.95	0.00	24.95	1545.85	772.93	1704.31	853.42	22.50	-1.512	0.000	0.034
148.00	-4.21	-1.52	0.00	-14.59	0.00	14.59	1515.59	757.79	1625.76	814.09	23.46	-1.521	0.000	0.021
150.00	-4.07	-1.48	0.00	-11.55	0.00	11.55	1495.07	747.53	1574.03	788.19	24.09	-1.525	0.000	0.017
155.00	-3.72	-1.38	0.00	-4.14	0.00	4.14	1442.53	721.26	1447.04	724.60	25.70	-1.532	0.000	0.008
158.00	0.00	-1.28	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	26.66	-1.533	0.000	0.000

Final Analysis Summary

Structure:	CT02722-S-SBA	**Code:**	TIA-222-G	4/21/2022	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

IES Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	43.2	0.00	60.22	0.00	0.00	5234.41
0.9D + 1.6W 97 mph Wind	43.1	0.00	45.15	0.00	0.00	5178.04
1.2D + 1.0Di + 1.0Wi 50 mph Wind	12.3	0.00	90.82	0.00	0.00	1495.56
1.2D + 1.0E	2.8	0.00	60.29	0.00	0.00	357.75
0.9D + 1.0E	2.8	0.00	45.22	0.00	0.00	353.59
1.0D + 1.0W 60 mph Wind	10.3	0.00	50.24	0.00	0.00	1244.75

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-27.17	-35.20	0.00	-1923.1	0.00	-1923.1	2771.30	1385.6	4677.52	2342.24	83.50	0.832
0.9D + 1.6W 97 mph Wind	-19.89	-34.73	0.00	-1890.7	0.00	-1890.7	2771.30	1385.6	4677.52	2342.24	83.50	0.815
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-51.58	-10.01	0.00	-553.11	0.00	-553.11	2771.30	1385.6	4677.52	2342.24	83.50	0.255
1.2D + 1.0E	-29.29	-2.23	0.00	-149.56	0.00	-149.56	2771.30	1385.6	4677.52	2342.24	83.50	0.074
0.9D + 1.0E	-21.96	-2.20	0.00	-147.07	0.00	-147.07	2771.30	1385.6	4677.52	2342.24	83.50	0.071
1.0D + 1.0W 60 mph Wind	-24.29	-8.36	0.00	-456.39	0.00	-456.39	2771.30	1385.6	4677.52	2342.24	83.50	0.204

Base Plate Summary

Structure:	CT02722-S-SB		**Code:**	TIA-222-G	4/21/2022
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 30

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	5150.00
Axial (kip):	41.00
Shear (kip):	44.00
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	5234.41
Axial (kip):	60.22
Shear (kip):	43.16

Base Plate	
Yield (ksi):	50.00
Width (in):	66.00
Style:	Clipped
Polygon Sides:	4.00
Clip Length (in):	12.00
Effective Len (in):	9.25
Moment (kip-in):	674.07
Allow Stress (ksi):	67.50
Applied Stress (ksi):	41.17
Stress Ratio:	0.61

Anchor Bolts	
Bolt Circle:	67.00
Number Bolts:	20.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	5.00
Start Angle (deg):	45.00
Compression	
Force (kip):	192.04
Allowable (kip):	260.00
Ratio:	0.76
Tension	
Force (kip):	182.96
Allowable (kip):	260.00
Ratio:	0.72

Monopole Mat Foundation Design

				Date
				4/21/2022
Customer Name:	Dish Wireless	**TIA Standard:**	TIA-222-G
Site Name:		**Structure Height (Ft.):**	158
Site Number:	CT02722-S-SBA	**Engineer Name:**	K. Azisllari
Engr. Number:	128063	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

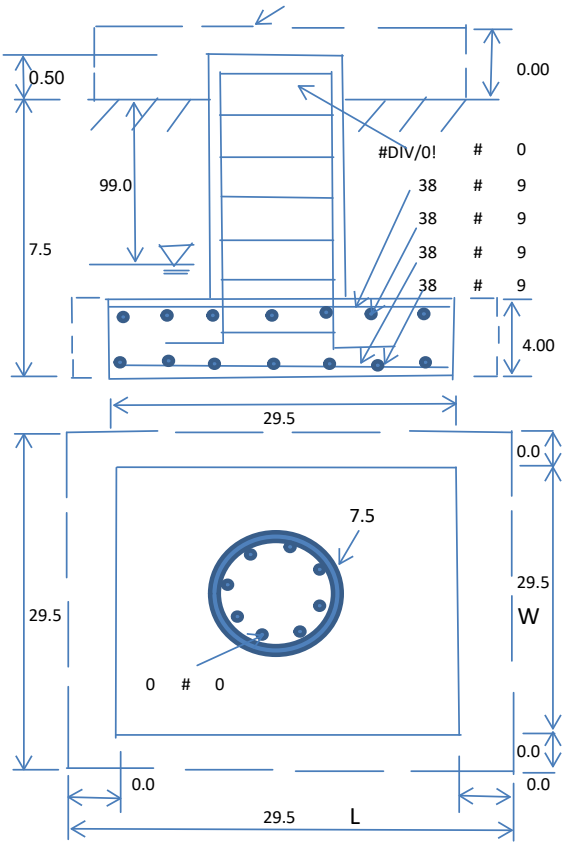
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	60.2	Shear Force (Kips):	43.2
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5234.4
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.5	Depth of Base BG (ft.):	7.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	29.5	Width of Pad (ft.):	29.5
Final Length of pad (ft)	29.5	Final width of pad (ft):	29.5



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:		Tie / Stirrup Size #:		
Qty. of Vertical Rebars:		Tie Spacing (in):		
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	38	Qty. of Rebar in Pad (W):	38	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	38	Qty. of Rebar in Pad (W):	38	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	40000	Ultimate Skin Friction:		Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	2891.25	Total Dry Soil Weight (Kips):	289.12
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	289.12	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3657.71	Total Dry Concrete Weight (Kips):	548.66
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	548.66	Total Vertical Load on Base (Kips):	897.98

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2510	<	Allowable Factored Soil Bearing (psf): 30000	0.08	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	12009.5	>	Design Factored Momont (kips-ft): 5580	0.46	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.15	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	#N/A		Tie / Stirrup Area (sq. in./each):	#N/A		
Calculated Moment Capacity (Mn,Kips-Ft):	#N/A	#N/A	Design Factored Moment (Mu, Kips-F	5407.2	#N/A	####
Calculated Shear Capacity (Kips):	#N/A	#N/A	Design Factored Shear (Kips):	43.2	#N/A	####
Calculated Tension Capacity (Tn, Kips):	#N/A	#N/A	Design Factored Tension (Tu Kips):	0.0	#N/A	####
Calculated Compression Capacity (Pn, Kips):	#N/A	#N/A	Design Factored Axial Load (Pu Kips):	60.2	#N/A	####
Moment & Axial Strength Combination:	#N/A	#N/A	Check Tie Spacing (Design/Required):		######	####
Pier Reinforcement Ratio:	#N/A		#N/A			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1292.4	>	One-Way Factored Shear (L-D. Kips):	324.0	0.25	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1292.4	>	One-Way Factored Shear (W-D., Kips)	324.0	0.25	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1174.7	>	One-Way Factored Shear (C-C, Kips):	306.8	0.26	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0024	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0024		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	7382.9	>	Moment at Bottom (L-Dir. K-Ft):	2294.3	0.31	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	7382.9	>	Moment at Bottom (W-Dir. K-Ft):	2294.3	0.31	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	10374.0	>	Moment at Bottom (C-C Dir. K-Ft):	3244.7	0.31	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0024	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0024		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	7382.9	>	Moment at the top (L-Dir K-Ft):	945.3	0.13	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	7382.9	>	Moment at the top (W-Dir K-Ft):	945.3	0.13	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	10374.0	>	Moment at the top (C-C Dir. K-Ft):	884.3	0.09	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	2093.8	k-ft.	Max. factored shear stress v_{u_CD}:		4.1	Psi
Max. factored shear stress v_{u_AB}:	8.9	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	8.9	Psi	Check Usage of Punching Shear Capacity:		0.05	OK!

Exhibit E

Mount Analysis

May 31, 2022

David Evans
SBA Network Services, LLC.
470 Davidson Road
Pittsburgh, PA 15239
(412) 515 - 0111 x 2410

MTS Engineering, P.L.L.C.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Appurtenance Mount Analysis Report**	
Carrier Designation:	***Dish Wireless* Co-Locate**	
	Site Number:	BOHVN00039A
	Site Name:	N/A
SBA Network Services Designation:	**Site Number:**	CT02722-S-06
	Site Name:	Waterbury
	Application Number:	168274, v2
Engineering Firm Designation:	**Project Number:**	149441.004.01
Site Data:	**299 Sheffield Street, Waterbury, CT, 06704, New Haven County**	
	Latitude *41.59408*°, Longitude *-73.05056*°	
	Monopole	
	8 ft. Platform Mount	

Dear Ms. Evans,

We are pleased to submit this **"Appurtenance Mount Analysis Report"** to determine the structural integrity of the antenna mount on the above-mentioned structure.

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 for the mount under the following load case to be:

Proposed Equipment Note: See Table 1 for the final loading configuration	**Sufficient Capacity** **(Passing at 52.3%)**

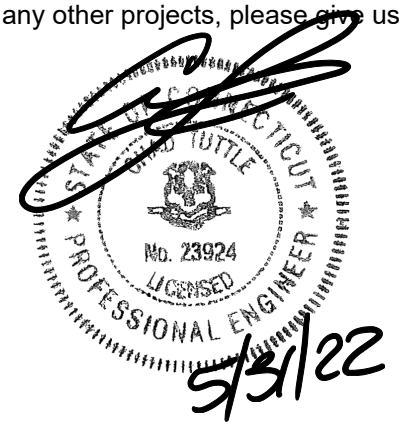
This analysis utilizes an ultimate 3-second gust wind speed of 117 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

All the equipment proposed in this report shall be installed in accordance with the drawings for the determined available structural capacity to be effective.

We appreciate the opportunity of providing our continuing professional services to you and *SBA Network Services, LLC*. If you have any questions or need further assistance on this or any other projects, please give us a call.

Mount structural analysis prepared by: Erika Ruiz

Respectfully submitted by: MTS Engineering, P.L.L.C.
COA: BER:2386985 Expires: 02/01/2023



Chad E. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

The appurtenance mount consists of Commscope platform mount (Part #MC-PK8-DSH) at 158 ft., attached to monopole at 299 Sheffield Street, Waterbury, CT, 06704, New Haven County. The proposed antenna loading information was obtained from SBA Network Services, LLC. All information provided to us was assumed accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures using a 3-second gust wind speed of 117 mph with no ice and 50 mph with 1 inch escalated ice thickness Exposure Category C & Topographic Category 1 and Risk Category II were used in the analysis. In addition, the platform mount has been analyzed for various live loading conditions consisting of a 250-lb man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 500-pound man live load applied individually at mount pipe locations using a 3-second gust of 30mph. The mount was analyzed under 30º increments in the wind direction. The analyzed loading is detailed in Table 1.

Table 1 – Proposed Equipment Information

Loading	RAD Center Elev. (ft.)	Position	Qty.	Description	Note
Proposed	158	1	3	JMA Wireless MX08FRO665-21	1
			3	Fujitsu TA08025-B605	2
			3	Fujitsu TA08025-B604	
		-	1	Raycap RDIDC-9181-PF-48	3

Note:
1) Proposed Antenna to be installed on the Proposed Mount Pipe.
2) Proposed Equipment to be installed directly behind the Antenna
3) Proposed Equipment to be installed on Mount.

Table 2 - Documents Provided

Documents	Remarks	Reference	Source
SBA Application	Proposed Loading	Date: 05/17/2022	SBA Network Services, LLC.
RFDS		Date: 07/23/2021	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 20.0.1), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses and deflections for various loading cases. Selected output from the analysis is included in Appendix A.

Manufacturer's drawings were used to create the model.

3.2) Assumptions

1. The mount was built in accordance with the manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas and other appurtenances are as specified in Table 1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
   The following assumptions have been included in the analysis of the mount

Component	Section	Length	Note
Proposed RRU Pipes	2.875” x 0.203” Pipe	5’-0”	On Stand-offs All Sectors

5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
8. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
9. The 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. MTS Engineering, P.L.L.C. 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

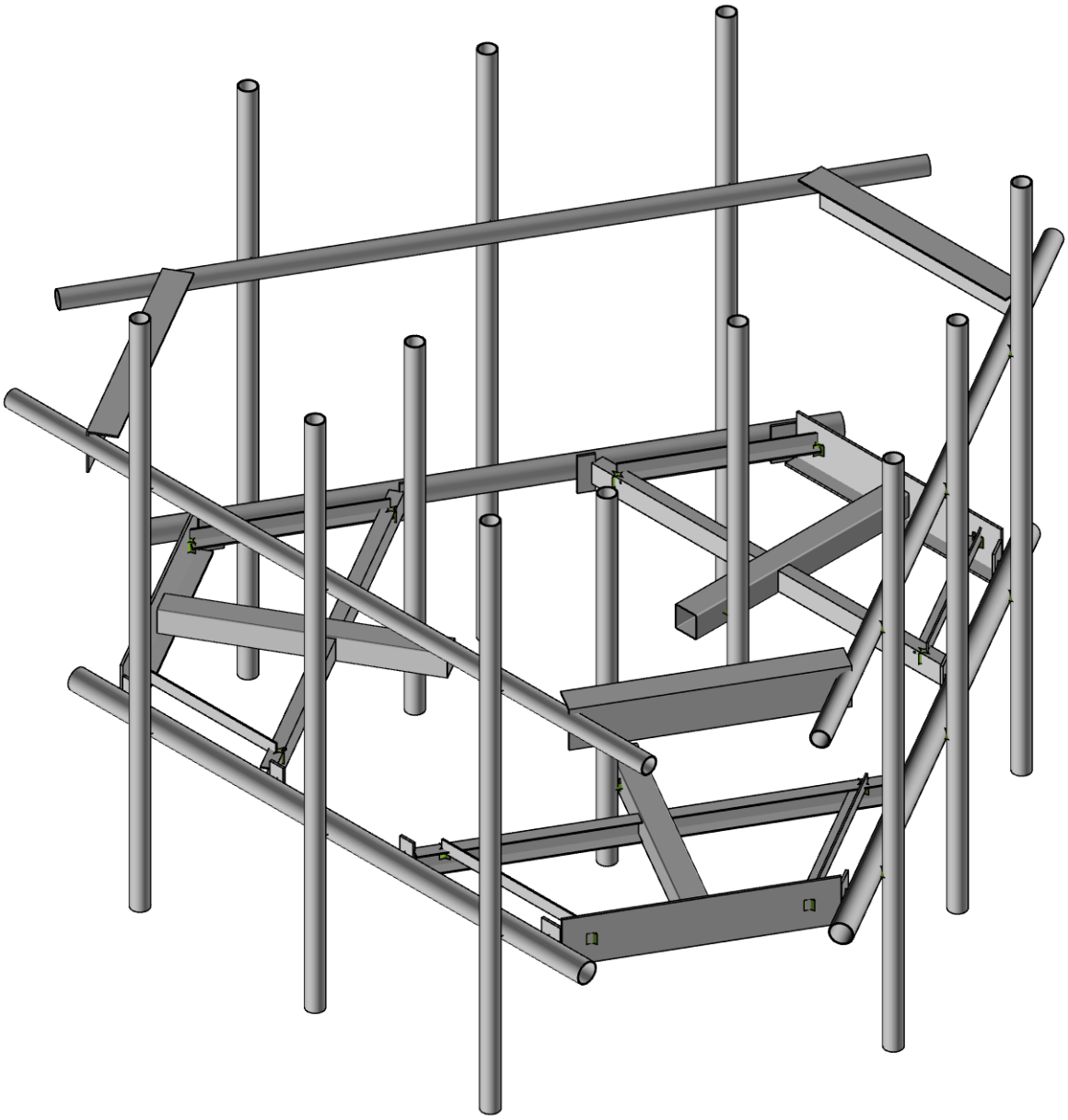
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Horizontals	158	6.4	Pass
-	Support Rails	158	10.0	Pass
-	Support Tubes	158	52.3	Pass
-	Support Channels	158	29.9	Pass
-	Support Angles	158	29.0	Pass
-	Mount Pipes	158	12.7	Pass
-	Connection Plates	158	17.6	Pass
-	Connection Angles	158	18.8	Pass

5) RECOMMENDATIONS

The Commscope platform mount, Part #MC-PK8-DSH has sufficient capacity to carry the proposed loads and is in compliance with the ANSI/TIA-222-H standard for the proposed loading. (Refer to the RISA output for the specific members).

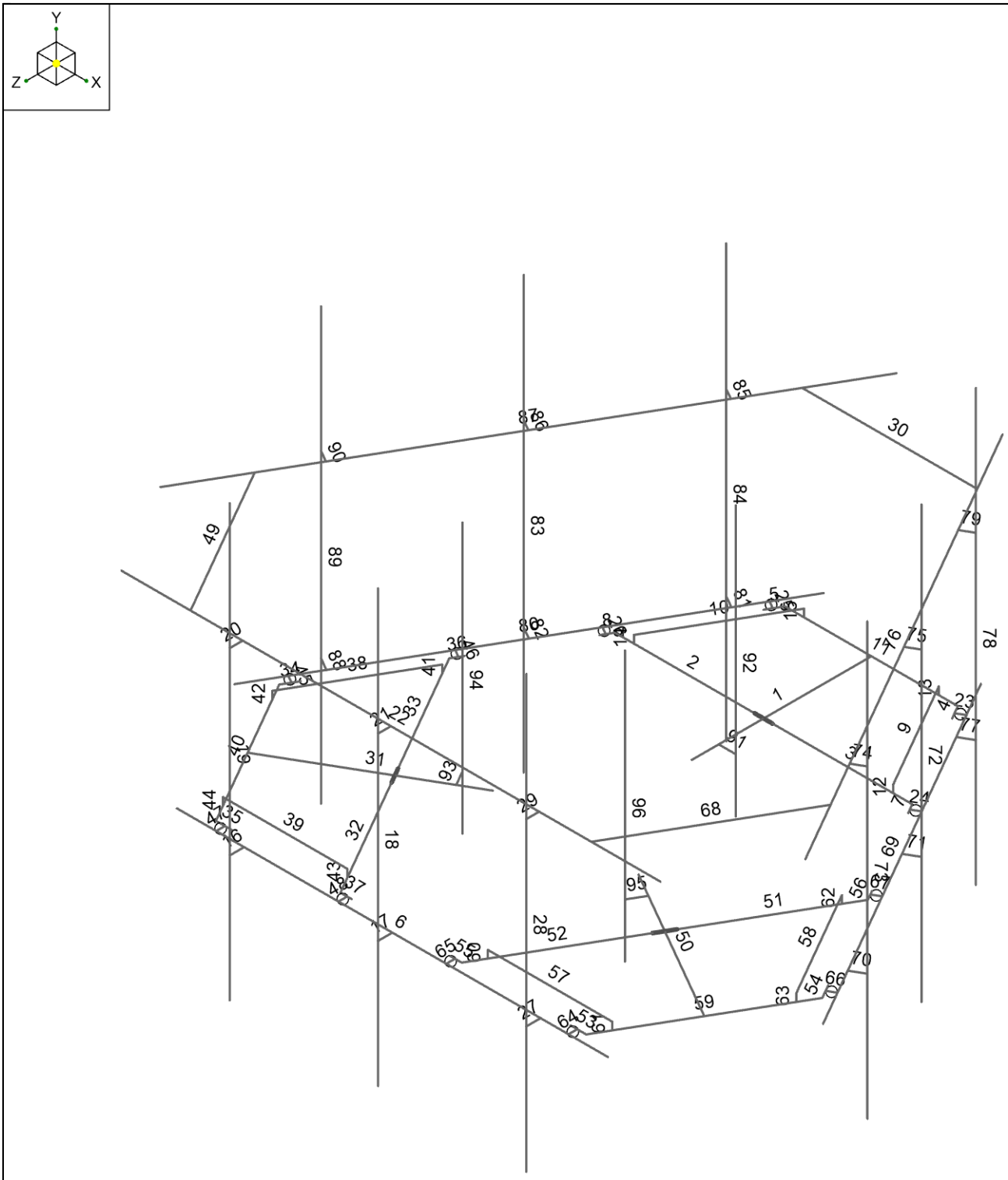
APPENDIX A

(RISA-3D Output)



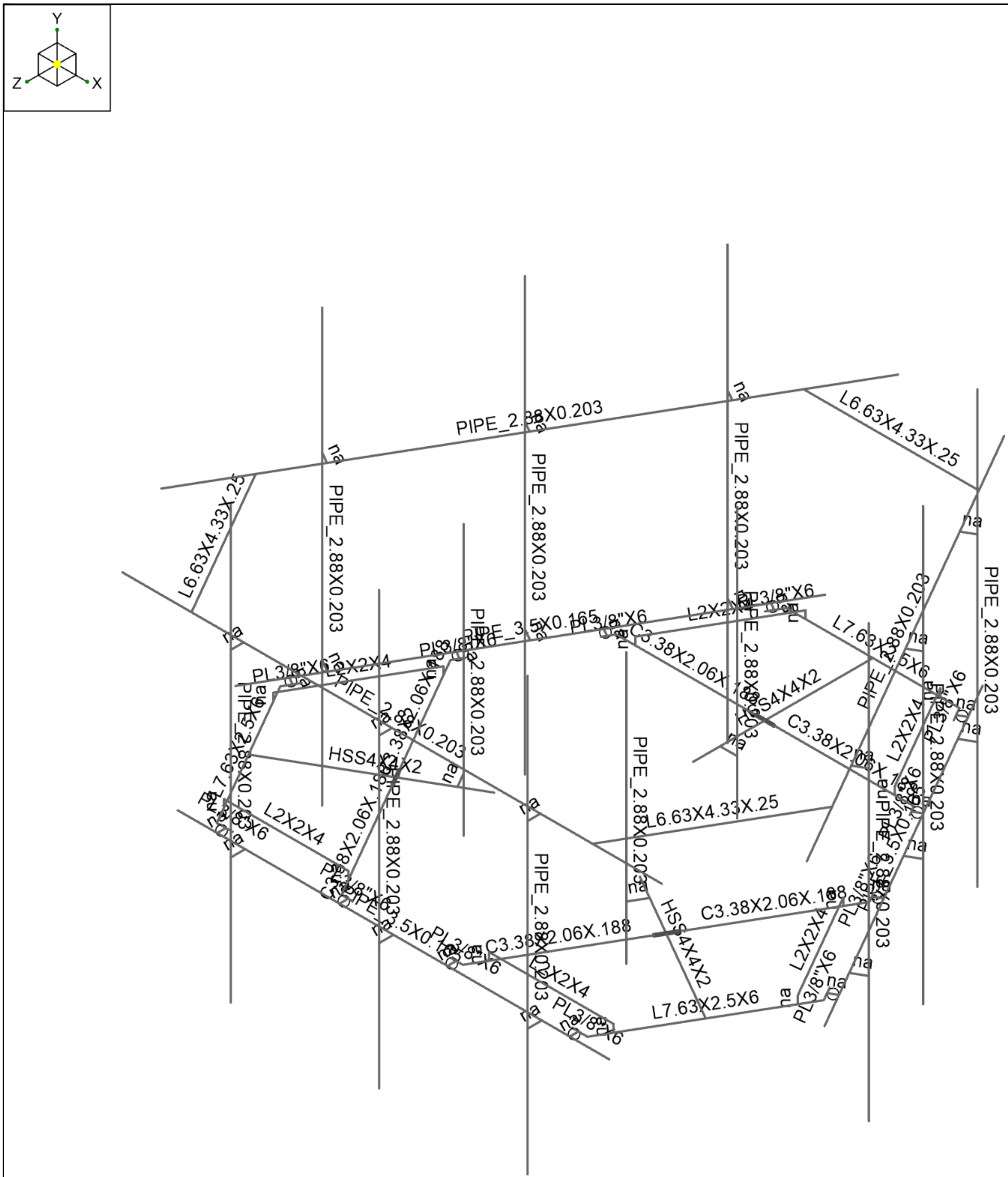
Envelope Only Solution

MTS Engineering, P.L.L.C.	CT02722-S-06 - Waterbury	SK-1
MP		May 28, 2022
149441.004.01		149441_004_01_Waterbury_CT.R3D



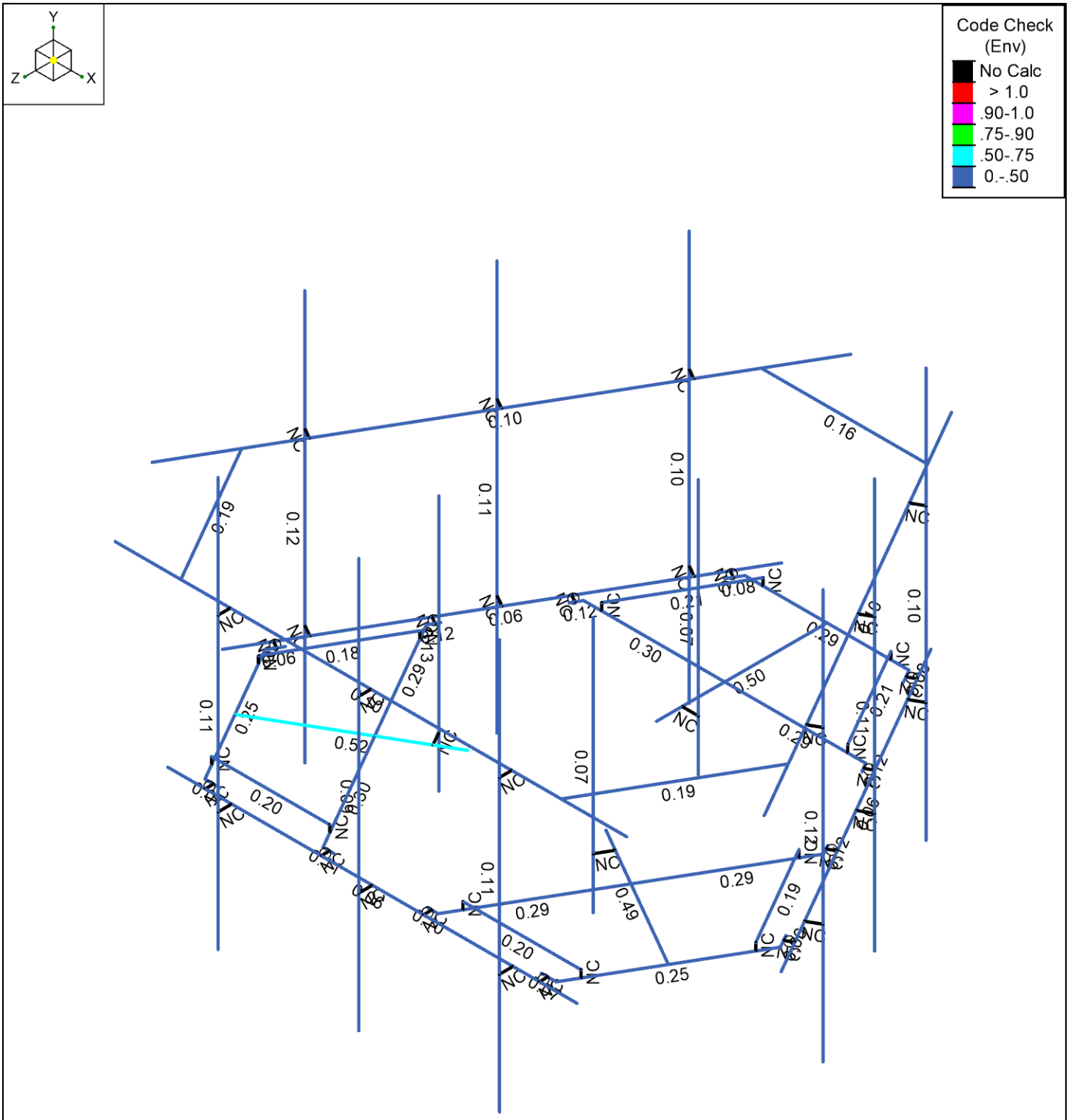
Envelope Only Solution

MTS Engineering, P.L.L.C.	CT02722-S-06 - Waterbury	SK-2
MP		May 28, 2022
149441.004.01		149441_004_01_Waterbury_CT.R3D



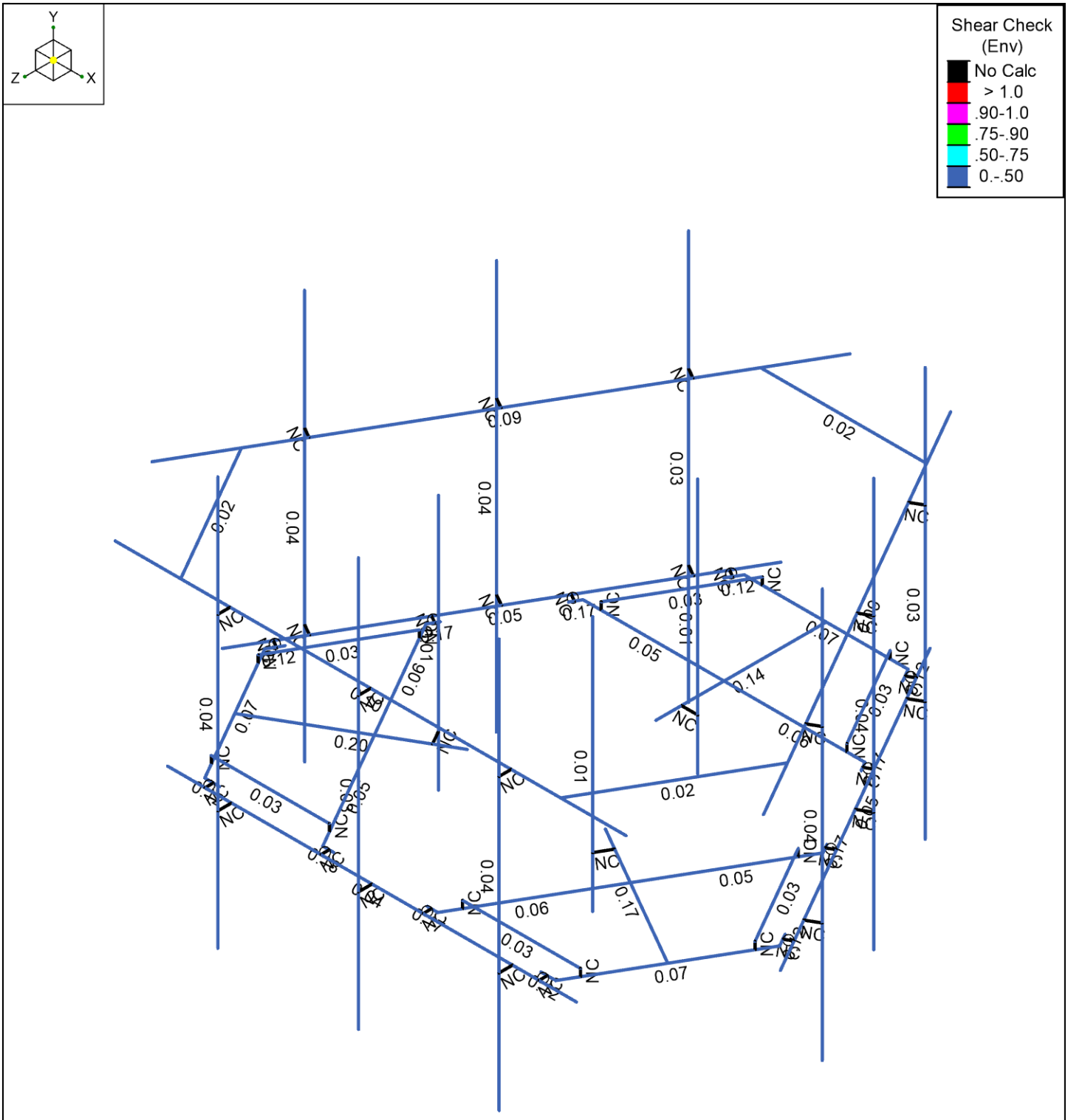
Envelope Only Solution

MTS Engineering, P.L.L.C.	CT02722-S-06 - Waterbury	SK-3
MP		May 28, 2022
149441.004.01		149441_004_01_Waterbury_CT.R3D



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

MTS Engineering, P.L.L.C.	CT02722-S-06 - Waterbury	SK-4
MP		May 28, 2022
149441.004.01		149441_004_01_Waterbury_CT.R3D



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

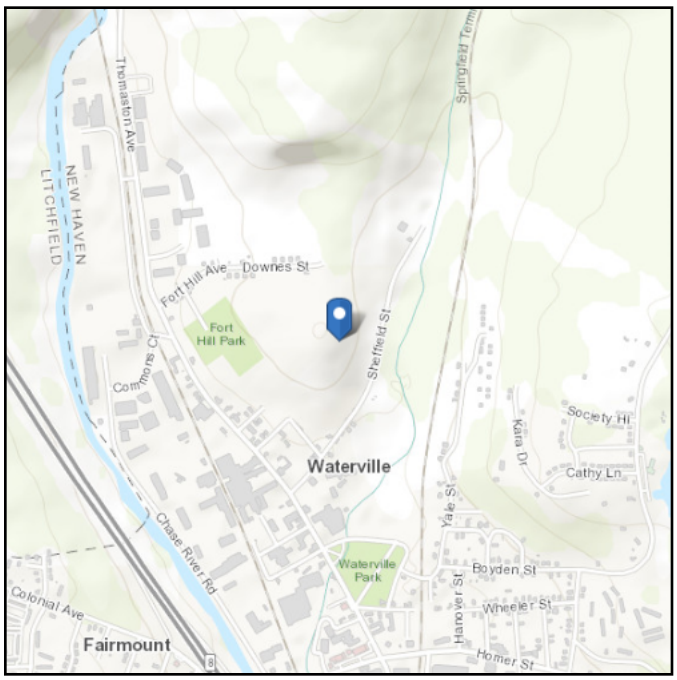
MTS Engineering, P.L.L.C.	CT02722-S-06 - Waterbury	SK-5
MP		May 28, 2022
149441.004.01		149441_004_01_Waterbury_CT.R3D

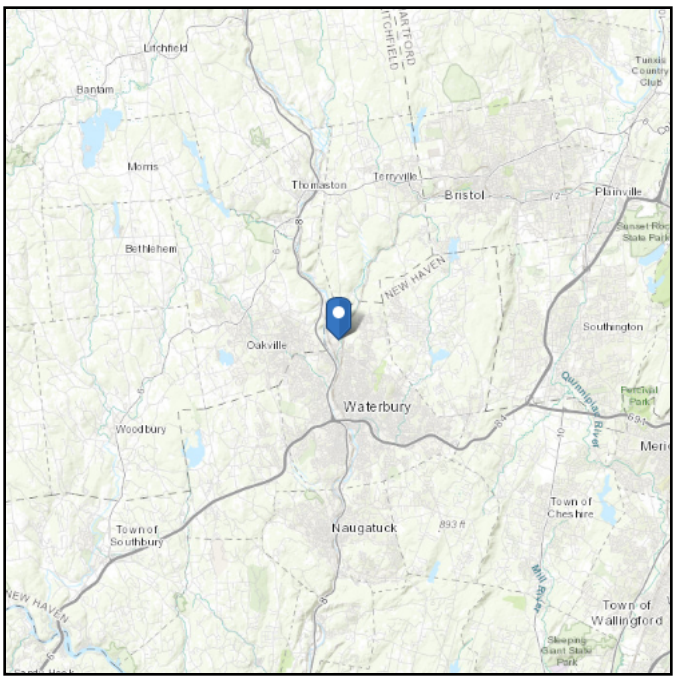
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 504.08 ft (NAVD 88)
Latitude: 41.594089
Longitude: -73.050567





Wind

Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	96 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: Fri May 27 2022

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.

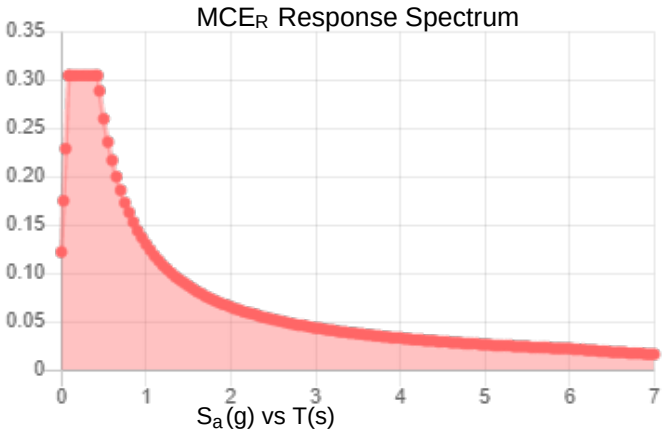
Seismic

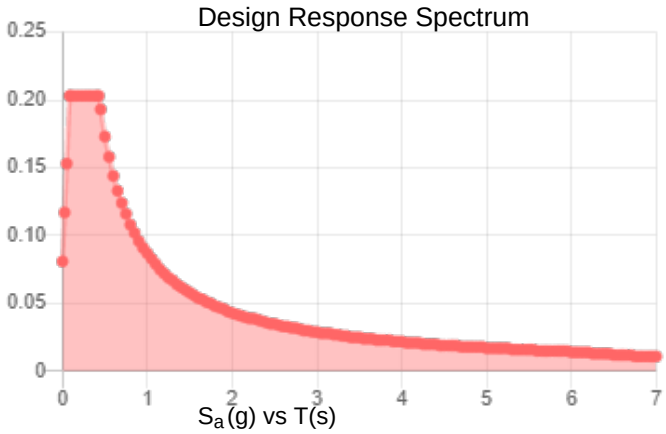
Site Soil Class: D - Default (see Section 11.4.3)

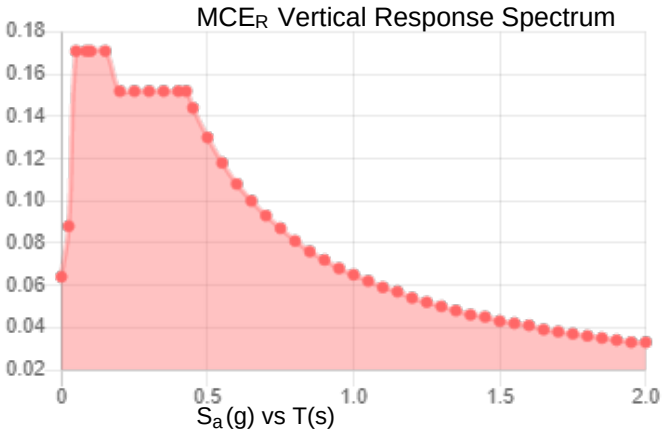
Results:

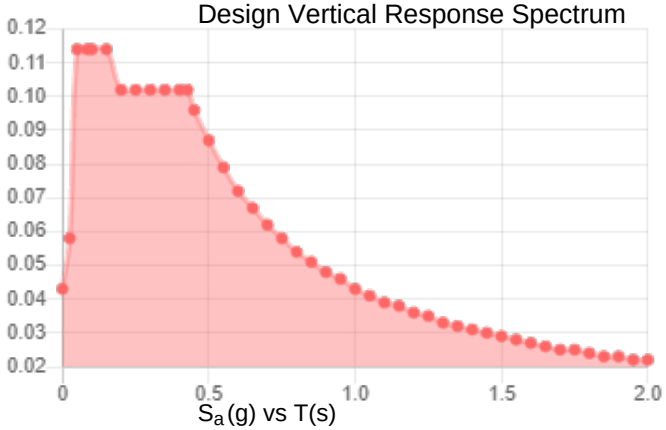
S_S :	0.19	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.104
F_v :	2.4	PGA_M :	0.166
S_{MS} :	0.305	F_{PGA} :	1.591
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.203	C_v :	0.7

Seismic Design Category B









Data Accessed: **Fri May 27 2022**

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 May 27 2022

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.

PROJECT	**149441.004.01 - Waterbury, CT**	**KSC**
SUBJECT	**Platform Mount Analysis**	
DATE	**05/31/22**	

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

Tower Type		:	Monopole		
Ground Elevation	z_s	:	504	ft	[ASCE7 Hazard Tool]
Tower Height		:	158.00	ft	
Mount Elevation		:	158.00	ft	
Antenna Elevation		:	158.00	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	:	117	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	:	0.19		
	S_1	:	0.05		
	S_{DS}	:	0.20		
	S_{D1}	:	0.09		
Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.39		[Sec. 2.6.5.2]
Topography Facto	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	0.98		[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_{iz}	:	1.17	in	[Sec. 2.6.10]
Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.102		[Sec. 2.7.7.1]
Amplification	A_s	:	3		[Sec. 16.7]
	q_z	:	45.55	psf	

PROJECT	**149441.004.01 - Waterbury, CT**	**KSC**
SUBJECT	**Platform Mount Analysis**	
DATE	**05/31/22**	

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

Manufacturer	Model	Qty	Height (in^2)	Width (in^2)	Depth (in^2)	Weight (lbs)	C_aA_a (N) (ft^2)	C_aA_a (T) (ft^2)	C_aA_a (N) Ice (ft^2)	C_aA_a (T) Ice (ft^2)	$F_{A (N)}$ (k)	$F_{A (T)}$ (k)	$F_{A (N)}$ Ice (k)	$F_{A (T)}$ Ice (k)
JMA	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	4.01	1.61	4.53	2.06	0.18	0.07	0.04	0.02
JMA	MX08FRO665-21	0.5					4.01	1.61	4.53	2.06	0.18	0.07	0.04	0.02
JMA	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	4.01	1.61	4.53	2.06	0.18	0.07	0.04	0.02
JMA	MX08FRO665-21	0.5					4.01	1.61	4.53	2.06	0.18	0.07	0.04	0.02
JMA	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	4.01	1.61	4.53	2.06	0.18	0.07	0.04	0.02
JMA	MX08FRO665-21	0.5					4.01	1.61	4.53	2.06	0.18	0.07	0.04	0.02
Raycap	RDIDC-9181-PF-48	1	16.6	14.6	8.2	21.9	2.01	1.13	2.66	1.65	0.08	0.05	0.02	0.01
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.61	1.72	0.08	0.05	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.61	1.54	0.08	0.04	0.01	0.01
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.61	1.72	0.08	0.05	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.61	1.54	0.08	0.04	0.01	0.01
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.61	1.72	0.08	0.05	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.61	1.54	0.08	0.04	0.01	0.01

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0.167	-1.558354	
2	2	0	0.167	-4.891687	
3	3	0	0.167	-2.891687	
4	4	2.758333	0.167	-2.891687	
5	5	-2.758333	0.167	-2.891687	
6	6	-1.603633	0.167	-4.891687	
7	7	1.603633	0.167	-4.891687	
8	8	1.749466	0.167	-4.639096	
9	9	-1.749466	0.167	-4.639096	
10	10	1.686966	0.167	-4.74735	
11	11	1.826838	0.167	-4.828105	
12	12	-1.686966	0.167	-4.74735	
13	13	-1.826838	0.167	-4.828105	
14	14	-3.999998	0.167	3.996141	
15	15	3.999998	0.167	3.996141	
16	16	2.8625	0.167	-2.711265	
17	17	2.820833	0.167	-2.783435	
18	18	2.960705	0.167	-2.86419	
19	19	-2.8625	0.167	-2.711265	
20	20	-2.820833	0.167	-2.783435	
21	21	-2.960705	0.167	-2.86419	
22	22	-1.25	0.307833	-4.891687	
23	23	-2.404701	0.307833	-2.891687	
24	24	2.404701	0.307833	-2.891687	
25	25	1.25	0.307833	-4.891687	
26	26	-1.25	0.167	-4.891687	
27	27	-2.404701	0.167	-2.891687	
28	28	2.404701	0.167	-2.891687	
29	29	1.25	0.167	-4.891687	
30	30	-2.749998	0.167	3.996141	
31	31	0.000002	0.167	3.996141	
32	32	-2.749998	0.167	4.261766	
33	33	0.000002	0.167	4.261766	
34	34	-2.749998	-2.1667	4.261766	
35	35	0.000002	-2.1667	4.261766	
36	36	-2.749998	5.8333	4.261766	
37	37	0.000002	5.8333	4.261766	
38	38	-2.749998	3.500227	4.261766	
39	39	0.000002	3.500227	4.261766	
40	40	-2.749998	3.500227	4.022641	
41	41	0.000002	3.500227	4.022641	
42	42	-5	3.500227	4.022641	
43	43	5	3.500227	4.022641	
44	44	2.749998	0.167	3.996141	
45	45	2.749998	0.167	4.261766	
46	46	2.749998	-2.1667	4.261766	
47	47	2.749998	5.8333	4.261766	
48	48	2.749998	3.500227	4.261766	
49	49	2.749998	3.500227	4.022641	
50	50	0	0.167	0	
51	51	1.625019	3.500227	-5.230667	
52	52	-1.625019	3.500227	-5.230667	
53	53	-1.349574	0.167	0.779177	
54	54	-4.236325	0.167	2.445844	
55	55	-2.504275	0.167	1.445844	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	56	-3.883441	0.167	-0.942943	
57	57	-1.125108	0.167	3.83463	
58	58	-3.434509	0.167	3.83463	
59	59	-5.038142	0.167	1.057057	
60	60	-4.892308	0.167	0.804466	
61	61	-3.142842	0.167	3.83463	
62	62	-4.954808	0.167	0.912719	
63	63	-5.094681	0.167	0.831964	
64	64	-3.267842	0.167	3.83463	
65	65	-3.267842	0.167	3.996141	
66	66	-3.779275	0.167	-1.123365	
67	67	-3.820942	0.167	-1.051195	
68	68	-3.960814	0.167	-1.131951	
69	69	-0.916775	0.167	3.83463	
70	70	-1.000109	0.167	3.83463	
71	71	-1.000109	0.167	3.996141	
72	72	-3.611325	0.307833	3.528375	
73	73	-1.301924	0.307833	3.528375	
74	74	-3.706625	0.307833	-0.636688	
75	75	-4.861325	0.307833	1.363312	
76	76	-3.611325	0.167	3.528375	
77	77	-1.301924	0.167	3.528375	
78	78	-3.706625	0.167	-0.636688	
79	79	-4.861325	0.167	1.363312	
80	80	-5.3424	3.500227	1.208026	
81	81	-3.717382	3.500227	4.022641	
82	82	1.349574	0.167	0.779177	
83	83	4.236325	0.167	2.445844	
84	84	2.504275	0.167	1.445844	
85	85	1.125108	0.167	3.83463	
86	86	3.883441	0.167	-0.942943	
87	87	5.038142	0.167	1.057057	
88	88	3.434509	0.167	3.83463	
89	89	3.142842	0.167	3.83463	
90	90	4.892308	0.167	0.804466	
91	91	3.267842	0.167	3.83463	
92	92	3.267842	0.167	3.996141	
93	93	4.954808	0.167	0.912719	
94	94	5.094681	0.167	0.831964	
95	95	0.916775	0.167	3.83463	
96	96	1.000109	0.167	3.83463	
97	97	1.000109	0.167	3.996141	
98	98	3.779275	0.167	-1.123365	
99	99	3.820942	0.167	-1.051195	
100	100	3.960814	0.167	-1.131951	
101	101	4.861325	0.307833	1.363312	
102	102	3.706625	0.307833	-0.636688	
103	103	1.301924	0.307833	3.528375	
104	104	3.611325	0.307833	3.528375	
105	105	4.861325	0.167	1.363312	
106	106	3.706625	0.167	-0.636688	
107	107	1.301924	0.167	3.528375	
108	108	3.611325	0.167	3.528375	
109	109	3.717382	3.500227	4.022641	
110	110	5.3424	3.500227	1.208026	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
111	111	5.460758	0.167	1.46603	
112	112	1.46076	0.167	-5.46217	
113	113	4.835758	0.167	0.383498	
114	114	3.460758	0.167	-1.998072	
115	115	5.065796	0.167	0.250685	
116	116	3.690796	0.167	-2.130885	
117	117	5.065796	-2.1667	0.250685	
118	118	3.690796	-2.1667	-2.130885	
119	119	5.065796	5.8333	0.250685	
120	120	3.690796	5.8333	-2.130885	
121	121	5.065796	3.500227	0.250685	
122	122	3.690796	3.500227	-2.130885	
123	123	4.858708	3.500227	0.370248	
124	124	3.483708	3.500227	-2.011322	
125	125	5.983709	3.500227	2.318807	
126	126	0.983709	3.500227	-6.341448	
127	127	2.08576	0.167	-4.379639	
128	128	2.315798	0.167	-4.512451	
129	129	2.315798	-2.1667	-4.512451	
130	130	2.315798	5.8333	-4.512451	
131	131	2.315798	3.500227	-4.512451	
132	132	2.10871	3.500227	-4.392889	
133	133	-1.46076	0.167	-5.46217	
134	134	-5.460758	0.167	1.46603	
135	135	-2.08576	0.167	-4.379639	
136	136	-3.46076	0.167	-1.998069	
137	137	-2.315798	0.167	-4.512451	
138	138	-3.690798	0.167	-2.130881	
139	139	-2.315798	-2.1667	-4.512451	
140	140	-3.690798	-2.1667	-2.130881	
141	141	-2.315798	5.8333	-4.512451	
142	142	-3.690798	5.8333	-2.130881	
143	143	-2.315798	3.500227	-4.512451	
144	144	-3.690798	3.500227	-2.130881	
145	145	-2.10871	3.500227	-4.392889	
146	146	-3.48371	3.500227	-2.011319	
147	147	-0.983709	3.500227	-6.341448	
148	148	-5.983709	3.500227	2.318807	
149	149	-4.835758	0.167	0.383498	
150	150	-5.065796	0.167	0.250685	
151	151	-5.065796	-2.1667	0.250685	
152	152	-5.065796	5.8333	0.250685	
153	153	-5.065796	3.500227	0.250685	
154	154	-4.858708	3.500227	0.370248	
155	155	0	0.167	-2.058354	
156	156	0.317	0.167	-2.058354	
157	157	0.317	4.167	-2.058354	
158	158	0.317	-0.833	-2.058354	
159	159	-1.782587	0.167	1.029177	
160	160	-1.941087	0.167	0.754647	
161	161	-1.941087	4.167	0.754647	
162	162	-1.941087	-0.833	0.754647	
163	163	1.782587	0.167	1.029177	
164	164	1.624087	0.167	1.303707	
165	165	1.624087	4.167	1.303707	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
166	166	1.624087	-0.833	1.303707	

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						
9	20						
10	22						
11	25						
12	26						
13	29						
14	53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	54						
16	55						
17	56						
18	57						
19	66						
20	67						
21	69						
22	70						
23	72						
24	75						
25	76						
26	79						
27	82	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
28	83						
29	84						
30	85						
31	86						
32	95						
33	96						
34	98						
35	99						
36	101						
37	104						
38	105						
39	108						
40	155						
41	156						
42	157						
43	158						
44	159						
45	160						
46	161						
47	162						
48	163						
49	164						
50	165						
51	166						

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	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 [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
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
9	MF-H3	L6.63X4.33X.25	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

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
30	30	51	52	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
31	31	53	54		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
32	32	57	55	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
33	33	55	56	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
34	34	59	60		MF-CP1	Beam	RECT	A36 Gr.36	Typical
35	35	58	61		MF-CP1	Beam	RECT	A36 Gr.36	Typical
36	36	66	56		MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	57	69		MF-CP1	Beam	RECT	A36 Gr.36	Typical
38	38	75	74		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
39	39	73	72		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
40	40	58	59		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
41	41	78	74		RIGID	None	None	RIGID	Typical
42	42	79	75		RIGID	None	None	RIGID	Typical
43	43	77	73		RIGID	None	None	RIGID	Typical
44	44	76	72		RIGID	None	None	RIGID	Typical
45	45	63	62		RIGID	None	None	RIGID	Typical
46	46	68	67		RIGID	None	None	RIGID	Typical
47	47	65	64		RIGID	None	None	RIGID	Typical
48	48	71	70		RIGID	None	None	RIGID	Typical
49	49	80	81	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
50	50	82	83		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
51	51	86	84	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
52	52	84	85	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
53	53	88	89		MF-CP1	Beam	RECT	A36 Gr.36	Typical
54	54	87	90		MF-CP1	Beam	RECT	A36 Gr.36	Typical
55	55	95	85		MF-CP1	Beam	RECT	A36 Gr.36	Typical
56	56	86	98		MF-CP1	Beam	RECT	A36 Gr.36	Typical
57	57	104	103		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
58	58	102	101		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
59	59	87	88		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
60	60	107	103		RIGID	None	None	RIGID	Typical
61	61	108	104		RIGID	None	None	RIGID	Typical
62	62	106	102		RIGID	None	None	RIGID	Typical
63	63	105	101		RIGID	None	None	RIGID	Typical
64	64	92	91		RIGID	None	None	RIGID	Typical
65	65	97	96		RIGID	None	None	RIGID	Typical
66	66	94	93		RIGID	None	None	RIGID	Typical
67	67	100	99		RIGID	None	None	RIGID	Typical
68	68	109	110	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
69	69	111	112		MF-H1	Beam	Pipe	A500 Gr.C	Typical
70	70	115	113		RIGID	None	None	RIGID	Typical
71	71	116	114		RIGID	None	None	RIGID	Typical
72	72	120	118		MF-P1	Column	Pipe	A500 Gr.C	Typical
73	73	119	117		MF-P1	Column	Pipe	A500 Gr.C	Typical
74	74	121	123		RIGID	None	None	RIGID	Typical
75	75	122	124		RIGID	None	None	RIGID	Typical
76	76	125	126		MF-H2	Beam	Pipe	A500 Gr.C	Typical
77	77	128	127		RIGID	None	None	RIGID	Typical
78	78	130	129		MF-P1	Column	Pipe	A500 Gr.C	Typical
79	79	131	132		RIGID	None	None	RIGID	Typical
80	80	133	134		MF-H1	Beam	Pipe	A500 Gr.C	Typical
81	81	137	135		RIGID	None	None	RIGID	Typical
82	82	138	136		RIGID	None	None	RIGID	Typical
83	83	142	140		MF-P1	Column	Pipe	A500 Gr.C	Typical
84	84	141	139		MF-P1	Column	Pipe	A500 Gr.C	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
85	85	143	145		RIGID	None	None	RIGID	Typical
86	86	144	146		RIGID	None	None	RIGID	Typical
87	87	147	148		MF-H2	Beam	Pipe	A500 Gr.C	Typical
88	88	150	149		RIGID	None	None	RIGID	Typical
89	89	152	151		MF-P1	Column	Pipe	A500 Gr.C	Typical
90	90	153	154		RIGID	None	None	RIGID	Typical
91	91	155	156		RIGID	None	None	RIGID	Typical
92	92	157	158		MF-P1	Column	Pipe	A500 Gr.C	Typical
93	93	159	160		RIGID	None	None	RIGID	Typical
94	94	161	162		MF-P1	Column	Pipe	A500 Gr.C	Typical
95	95	163	164		RIGID	None	None	RIGID	Typical
96	96	165	166		MF-P1	Column	Pipe	A500 Gr.C	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
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	N/A	None
31	31				Yes	Default	None
32	32			2	Yes	N/A	None
33	33		2		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	N/A	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
41	41				Yes	** NA **	None
42	42				Yes	** NA **	None
43	43				Yes	** NA **	None
44	44				Yes	** NA **	None
45	45	OOOOOX			Yes	** NA **	None
46	46	OOOOOX			Yes	** NA **	None
47	47	OOOOOX			Yes	** NA **	None
48	48	OOOOOX			Yes	** NA **	None
49	49				Yes	N/A	None
50	50				Yes	Default	None
51	51			2	Yes	N/A	None
52	52		2		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	N/A	None
59	59				Yes	N/A	None
60	60				Yes	** NA **	None
61	61				Yes	** NA **	None
62	62				Yes	** NA **	None
63	63				Yes	** NA **	None
64	64	OOOOOX			Yes	** NA **	None
65	65	OOOOOX			Yes	** NA **	None
66	66	OOOOOX			Yes	** NA **	None
67	67	OOOOOX			Yes	** NA **	None
68	68				Yes	N/A	None
69	69				Yes	N/A	None
70	70				Yes	** NA **	None
71	71				Yes	** NA **	None
72	72				Yes	** NA **	None
73	73				Yes	** NA **	None
74	74				Yes	** NA **	None
75	75				Yes	** NA **	None
76	76				Yes	N/A	None
77	77				Yes	** NA **	None
78	78				Yes	** NA **	None
79	79				Yes	** NA **	None
80	80				Yes	N/A	None
81	81				Yes	** NA **	None
82	82				Yes	** NA **	None
83	83				Yes	** NA **	None
84	84				Yes	** NA **	None
85	85				Yes	** NA **	None
86	86				Yes	** NA **	None
87	87				Yes	N/A	None
88	88				Yes	** NA **	None
89	89				Yes	** NA **	None
90	90				Yes	** NA **	None
91	91				Yes	** NA **	None
92	92				Yes	** NA **	None
93	93				Yes	** NA **	None
94	94				Yes	** NA **	None
95	95				Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
96	96				Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	1	SF-H1	3.333	Lbyy	N/A	N/A	Lateral
2	2	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
3	3	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
4	4	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
5	5	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
6	6	MF-H1	8	Lbyy	N/A	N/A	Lateral
7	7	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
8	8	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
9	9	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
10	10	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
11	11	SF-H4	3.207	Lbyy	N/A	N/A	Lateral
12	18	MF-P1	8	Lbyy	N/A	N/A	Lateral
13	19	MF-P1	8	Lbyy	N/A	N/A	Lateral
14	22	MF-H2	10	Lbyy	N/A	N/A	Lateral
15	28	MF-P1	8	Lbyy	N/A	N/A	Lateral
16	30	MF-H3	3.25	Lbyy	N/A	N/A	Lateral
17	31	SF-H1	3.333	Lbyy	N/A	N/A	Lateral
18	32	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
19	33	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
20	34	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
21	35	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
22	36	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
23	37	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
24	38	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
25	39	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
26	40	SF-H4	3.207	Lbyy	N/A	N/A	Lateral
27	49	MF-H3	3.25	Lbyy	N/A	N/A	Lateral
28	50	SF-H1	3.333	Lbyy	N/A	N/A	Lateral
29	51	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
30	52	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
31	53	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
32	54	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
33	55	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
34	56	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
35	57	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
36	58	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
37	59	SF-H4	3.207	Lbyy	N/A	N/A	Lateral
38	68	MF-H3	3.25	Lbyy	N/A	N/A	Lateral
39	69	MF-H1	8	Lbyy	N/A	N/A	Lateral
40	72	MF-P1	8	Lbyy	N/A	N/A	Lateral
41	73	MF-P1	8	Lbyy	N/A	N/A	Lateral
42	76	MF-H2	10	Lbyy	N/A	N/A	Lateral
43	78	MF-P1	8	Lbyy	N/A	N/A	Lateral
44	80	MF-H1	8	Lbyy	N/A	N/A	Lateral
45	83	MF-P1	8	Lbyy	N/A	N/A	Lateral
46	84	MF-P1	8	Lbyy	N/A	N/A	Lateral
47	87	MF-H2	10	Lbyy	N/A	N/A	Lateral
48	89	MF-P1	8	Lbyy	N/A	N/A	Lateral
49	92	MF-P1	5	Lbyy	N/A	N/A	Lateral
50	94	MF-P1	5	Lbyy	N/A	N/A	Lateral
51	96	MF-P1	5	Lbyy	N/A	N/A	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Y	-0.032	%15
2	18	Y	-0.032	%85
3	18	Y	0	0
4	18	Y	0	0
5	18	Y	0	0
6	83	Y	-0.032	%15
7	83	Y	-0.032	%85
8	83	Y	0	0
9	83	Y	0	0
10	83	Y	0	0
11	72	Y	-0.032	%15
12	72	Y	-0.032	%85
13	72	Y	0	0
14	72	Y	0	0
15	72	Y	0	0
16	94	Y	-0.022	%15
17	94	Y	-0.075	%25
18	94	Y	-0.064	%65
19	94	Y	0	0
20	94	Y	0	0
21	92	Y	-0.075	%25
22	92	Y	-0.064	%65
23	92	Y	0	0
24	92	Y	0	0
25	92	Y	0	0
26	96	Y	-0.075	%25
27	96	Y	-0.064	%65
28	96	Y	0	0
29	96	Y	0	0
30	96	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Z	-0.182	%15
2	18	Z	-0.182	%85
3	18	Z	0	0
4	18	Z	0	0
5	18	Z	0	0
6	83	Z	-0.182	%15
7	83	Z	-0.182	%85
8	83	Z	0	0
9	83	Z	0	0
10	83	Z	0	0
11	72	Z	-0.182	%15
12	72	Z	-0.182	%85
13	72	Z	0	0
14	72	Z	0	0
15	72	Z	0	0
16	94	Z	-0.083	%15
17	94	Z	-0.081	%25
18	94	Z	-0.081	%65
19	94	Z	0	0
20	94	Z	0	0
21	92	Z	-0.081	%25

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
22	92	Z	-0.081	%65
23	92	Z	0	0
24	92	Z	0	0
25	92	Z	0	0
26	96	Z	-0.081	%25
27	96	Z	-0.081	%65
28	96	Z	0	0
29	96	Z	0	0
30	96	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	X	-0.073	%15
2	18	X	-0.073	%85
3	18	X	0	0
4	18	X	0	0
5	18	X	0	0
6	83	X	-0.073	%15
7	83	X	-0.073	%85
8	83	X	0	0
9	83	X	0	0
10	83	X	0	0
11	72	X	-0.073	%15
12	72	X	-0.073	%85
13	72	X	0	0
14	72	X	0	0
15	72	X	0	0
16	94	X	-0.046	%15
17	94	X	-0.049	%25
18	94	X	-0.042	%65
19	94	X	0	0
20	94	X	0	0
21	92	X	-0.049	%25
22	92	X	-0.042	%65
23	92	X	0	0
24	92	X	0	0
25	92	X	0	0
26	96	X	-0.049	%25
27	96	X	-0.042	%65
28	96	X	0	0
29	96	X	0	0
30	96	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Z	-0.038	%15
2	18	Z	-0.038	%85
3	18	Z	0	0
4	18	Z	0	0
5	18	Z	0	0
6	83	Z	-0.038	%15
7	83	Z	-0.038	%85
8	83	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
9	83	Z	0	0
10	83	Z	0	0
11	72	Z	-0.038	%15
12	72	Z	-0.038	%85
13	72	Z	0	0
14	72	Z	0	0
15	72	Z	0	0
16	94	Z	-0.015	%15
17	94	Z	-0.015	%25
18	94	Z	-0.015	%65
19	94	Z	0	0
20	94	Z	0	0
21	92	Z	-0.015	%25
22	92	Z	-0.015	%65
23	92	Z	0	0
24	92	Z	0	0
25	92	Z	0	0
26	96	Z	-0.015	%25
27	96	Z	-0.015	%65
28	96	Z	0	0
29	96	Z	0	0
30	96	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	X	-0.017	%15
2	18	X	-0.017	%85
3	18	X	0	0
4	18	X	0	0
5	18	X	0	0
6	83	X	-0.017	%15
7	83	X	-0.017	%85
8	83	X	0	0
9	83	X	0	0
10	83	X	0	0
11	72	X	-0.017	%15
12	72	X	-0.017	%85
13	72	X	0	0
14	72	X	0	0
15	72	X	0	0
16	94	X	-0.008	%15
17	94	X	-0.009	%25
18	94	X	-0.008	%65
19	94	X	0	0
20	94	X	0	0
21	92	X	-0.009	%25
22	92	X	-0.008	%65
23	92	X	0	0
24	92	X	0	0
25	92	X	0	0
26	96	X	-0.009	%25
27	96	X	-0.008	%65
28	96	X	0	0
29	96	X	0	0
30	96	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Z	-0.012	%15
2	18	Z	-0.012	%85
3	18	Z	0	0
4	18	Z	0	0
5	18	Z	0	0
6	83	Z	-0.012	%15
7	83	Z	-0.012	%85
8	83	Z	0	0
9	83	Z	0	0
10	83	Z	0	0
11	72	Z	-0.012	%15
12	72	Z	-0.012	%85
13	72	Z	0	0
14	72	Z	0	0
15	72	Z	0	0
16	94	Z	-0.005	%15
17	94	Z	-0.005	%25
18	94	Z	-0.005	%65
19	94	Z	0	0
20	94	Z	0	0
21	92	Z	-0.005	%25
22	92	Z	-0.005	%65
23	92	Z	0	0
24	92	Z	0	0
25	92	Z	0	0
26	96	Z	-0.005	%25
27	96	Z	-0.005	%65
28	96	Z	0	0
29	96	Z	0	0
30	96	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	X	-0.005	%15
2	18	X	-0.005	%85
3	18	X	0	0
4	18	X	0	0
5	18	X	0	0
6	83	X	-0.005	%15
7	83	X	-0.005	%85
8	83	X	0	0
9	83	X	0	0
10	83	X	0	0
11	72	X	-0.005	%15
12	72	X	-0.005	%85
13	72	X	0	0
14	72	X	0	0
15	72	X	0	0
16	94	X	-0.003	%15
17	94	X	-0.003	%25
18	94	X	-0.003	%65
19	94	X	0	0
20	94	X	0	0
21	92	X	-0.003	%25

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
22	92	X	-0.003	%65
23	92	X	0	0
24	92	X	0	0
25	92	X	0	0
26	96	X	-0.003	%25
27	96	X	-0.003	%65
28	96	X	0	0
29	96	X	0	0
30	96	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Y	-0.118	%15
2	18	Y	-0.118	%85
3	18	Y	0	0
4	18	Y	0	0
5	18	Y	0	0
6	83	Y	-0.118	%15
7	83	Y	-0.118	%85
8	83	Y	0	0
9	83	Y	0	0
10	83	Y	0	0
11	72	Y	-0.118	%15
12	72	Y	-0.118	%85
13	72	Y	0	0
14	72	Y	0	0
15	72	Y	0	0
16	94	Y	-0.035	%15
17	94	Y	-0.035	%25
18	94	Y	-0.034	%65
19	94	Y	0	0
20	94	Y	0	0
21	92	Y	-0.035	%25
22	92	Y	-0.034	%65
23	92	Y	0	0
24	92	Y	0	0
25	92	Y	0	0
26	96	Y	-0.035	%25
27	96	Y	-0.034	%65
28	96	Y	0	0
29	96	Y	0	0
30	96	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Z	-0.02	%15
2	18	Z	-0.02	%85
3	18	Z	0	0
4	18	Z	0	0
5	18	Z	0	0
6	83	Z	-0.02	%15
7	83	Z	-0.02	%85
8	83	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
9	83	Z	0	0
10	83	Z	0	0
11	72	Z	-0.02	%15
12	72	Z	-0.02	%85
13	72	Z	0	0
14	72	Z	0	0
15	72	Z	0	0
16	94	Z	-0.007	%15
17	94	Z	-0.023	%25
18	94	Z	-0.02	%65
19	94	Z	0	0
20	94	Z	0	0
21	92	Z	-0.023	%25
22	92	Z	-0.02	%65
23	92	Z	0	0
24	92	Z	0	0
25	92	Z	0	0
26	96	Z	-0.023	%25
27	96	Z	-0.02	%65
28	96	Z	0	0
29	96	Z	0	0
30	96	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	X	-0.02	%15
2	18	X	-0.02	%85
3	18	X	0	0
4	18	X	0	0
5	18	X	0	0
6	83	X	-0.02	%15
7	83	X	-0.02	%85
8	83	X	0	0
9	83	X	0	0
10	83	X	0	0
11	72	X	-0.02	%15
12	72	X	-0.02	%85
13	72	X	0	0
14	72	X	0	0
15	72	X	0	0
16	94	X	-0.007	%15
17	94	X	-0.023	%25
18	94	X	-0.02	%65
19	94	X	0	0
20	94	X	0	0
21	92	X	-0.023	%25
22	92	X	-0.02	%65
23	92	X	0	0
24	92	X	0	0
25	92	X	0	0
26	96	X	-0.023	%25
27	96	X	-0.02	%65
28	96	X	0	0
29	96	X	0	0
30	96	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

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

Member Point Loads (BLC 16 : Maint LL 2)

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

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%5

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	87	Y	-0.25	%5

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	69	Y	-0.25	%5

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	76	Y	-0.25	%5

Member Point Loads (BLC 21 : Maint LL 7)

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

Member Point Loads (BLC 22 : Maint LL 8)

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

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%95

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	87	Y	-0.25	%95

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	69	Y	-0.25	%95

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	76	Y	-0.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	31	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	50	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	-0.03	-0.03	0	%100
17	31	Z	-0.02	-0.02	0	%100
18	32	Z	-0.017	-0.017	0	%100
19	33	Z	-0.017	-0.017	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	-0.025	-0.025	0	%100
24	38	Z	-0.011	-0.011	0	%100
25	39	Z	-0.011	-0.011	0	%100
26	40	Z	-0.034	-0.034	0	%100
27	49	Z	-0.03	-0.03	0	%100
28	50	Z	-0.02	-0.02	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, %)]
29	51	Z	-0.017	-0.017	0	%100
30	52	Z	-0.017	-0.017	0	%100
31	53	Z	-0.025	-0.025	0	%100
32	54	Z	-0.025	-0.025	0	%100
33	55	Z	-0.025	-0.025	0	%100
34	56	Z	-0.025	-0.025	0	%100
35	57	Z	-0.011	-0.011	0	%100
36	58	Z	-0.011	-0.011	0	%100
37	59	Z	-0.034	-0.034	0	%100
38	68	Z	-0.03	-0.03	0	%100
39	69	Z	-0.014	-0.014	0	%100
40	72	Z	-0.012	-0.012	0	%100
41	73	Z	-0.012	-0.012	0	%100
42	76	Z	-0.012	-0.012	0	%100
43	78	Z	-0.012	-0.012	0	%100
44	80	Z	-0.014	-0.014	0	%100
45	83	Z	-0.012	-0.012	0	%100
46	84	Z	-0.012	-0.012	0	%100
47	87	Z	-0.012	-0.012	0	%100
48	89	Z	-0.012	-0.012	0	%100
49	92	Z	-0.011	-0.011	0	%100
50	94	Z	-0.011	-0.011	0	%100
51	96	Z	-0.011	-0.011	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	-0.03	-0.03	0	%100
17	31	X	-0.02	-0.02	0	%100
18	32	X	-0.017	-0.017	0	%100
19	33	X	-0.017	-0.017	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	-0.025	-0.025	0	%100
24	38	X	-0.011	-0.011	0	%100
25	39	X	-0.011	-0.011	0	%100
26	40	X	-0.034	-0.034	0	%100
27	49	X	-0.03	-0.03	0	%100
28	50	X	-0.02	-0.02	0	%100
29	51	X	-0.017	-0.017	0	%100

Member Distributed Loads (BLC 3 : 90 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, %)]
30	52	X	-0.017	-0.017	0	%100
31	53	X	-0.025	-0.025	0	%100
32	54	X	-0.025	-0.025	0	%100
33	55	X	-0.025	-0.025	0	%100
34	56	X	-0.025	-0.025	0	%100
35	57	X	-0.011	-0.011	0	%100
36	58	X	-0.011	-0.011	0	%100
37	59	X	-0.034	-0.034	0	%100
38	68	X	-0.03	-0.03	0	%100
39	69	X	-0.014	-0.014	0	%100
40	72	X	-0.012	-0.012	0	%100
41	73	X	-0.012	-0.012	0	%100
42	76	X	-0.012	-0.012	0	%100
43	78	X	-0.012	-0.012	0	%100
44	80	X	-0.014	-0.014	0	%100
45	83	X	-0.012	-0.012	0	%100
46	84	X	-0.012	-0.012	0	%100
47	87	X	-0.012	-0.012	0	%100
48	89	X	-0.012	-0.012	0	%100
49	92	X	-0.011	-0.011	0	%100
50	94	X	-0.011	-0.011	0	%100
51	96	X	-0.011	-0.011	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	-0.006	-0.006	0	%100
3	3	Z	-0.006	-0.006	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	-0.012	-0.012	0	%100
8	8	Z	-0.012	-0.012	0	%100
9	9	Z	-0.005	-0.005	0	%100
10	10	Z	-0.005	-0.005	0	%100
11	11	Z	-0.009	-0.009	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	-0.008	-0.008	0	%100
17	31	Z	-0.006	-0.006	0	%100
18	32	Z	-0.006	-0.006	0	%100
19	33	Z	-0.006	-0.006	0	%100
20	34	Z	-0.01	-0.01	0	%100
21	35	Z	-0.01	-0.01	0	%100
22	36	Z	-0.012	-0.012	0	%100
23	37	Z	-0.012	-0.012	0	%100
24	38	Z	-0.005	-0.005	0	%100
25	39	Z	-0.005	-0.005	0	%100
26	40	Z	-0.009	-0.009	0	%100
27	49	Z	-0.008	-0.008	0	%100
28	50	Z	-0.006	-0.006	0	%100
29	51	Z	-0.006	-0.006	0	%100
30	52	Z	-0.006	-0.006	0	%100

Member Distributed Loads (BLC 4 : 0 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, %)]
31	53	Z	-0.01	-0.01	0	%100
32	54	Z	-0.01	-0.01	0	%100
33	55	Z	-0.012	-0.012	0	%100
34	56	Z	-0.012	-0.012	0	%100
35	57	Z	-0.005	-0.005	0	%100
36	58	Z	-0.005	-0.005	0	%100
37	59	Z	-0.009	-0.009	0	%100
38	68	Z	-0.008	-0.008	0	%100
39	69	Z	-0.002	-0.002	0	%100
40	72	Z	-0.002	-0.002	0	%100
41	73	Z	-0.002	-0.002	0	%100
42	76	Z	-0.002	-0.002	0	%100
43	78	Z	-0.002	-0.002	0	%100
44	80	Z	-0.002	-0.002	0	%100
45	83	Z	-0.002	-0.002	0	%100
46	84	Z	-0.002	-0.002	0	%100
47	87	Z	-0.002	-0.002	0	%100
48	89	Z	-0.002	-0.002	0	%100
49	92	Z	-0.002	-0.002	0	%100
50	94	Z	-0.002	-0.002	0	%100
51	96	Z	-0.002	-0.002	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	-0.006	-0.006	0	%100
3	3	X	-0.006	-0.006	0	%100
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	-0.012	-0.012	0	%100
8	8	X	-0.012	-0.012	0	%100
9	9	X	-0.005	-0.005	0	%100
10	10	X	-0.005	-0.005	0	%100
11	11	X	-0.009	-0.009	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	-0.008	-0.008	0	%100
17	31	X	-0.006	-0.006	0	%100
18	32	X	-0.006	-0.006	0	%100
19	33	X	-0.006	-0.006	0	%100
20	34	X	-0.01	-0.01	0	%100
21	35	X	-0.01	-0.01	0	%100
22	36	X	-0.012	-0.012	0	%100
23	37	X	-0.012	-0.012	0	%100
24	38	X	-0.005	-0.005	0	%100
25	39	X	-0.005	-0.005	0	%100
26	40	X	-0.009	-0.009	0	%100
27	49	X	-0.008	-0.008	0	%100
28	50	X	-0.006	-0.006	0	%100
29	51	X	-0.006	-0.006	0	%100
30	52	X	-0.006	-0.006	0	%100
31	53	X	-0.01	-0.01	0	%100

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, %)]
32	54	X	-0.01	-0.01	0	%100
33	55	X	-0.012	-0.012	0	%100
34	56	X	-0.012	-0.012	0	%100
35	57	X	-0.005	-0.005	0	%100
36	58	X	-0.005	-0.005	0	%100
37	59	X	-0.009	-0.009	0	%100
38	68	X	-0.008	-0.008	0	%100
39	69	X	-0.002	-0.002	0	%100
40	72	X	-0.002	-0.002	0	%100
41	73	X	-0.002	-0.002	0	%100
42	76	X	-0.002	-0.002	0	%100
43	78	X	-0.002	-0.002	0	%100
44	80	X	-0.002	-0.002	0	%100
45	83	X	-0.002	-0.002	0	%100
46	84	X	-0.002	-0.002	0	%100
47	87	X	-0.002	-0.002	0	%100
48	89	X	-0.002	-0.002	0	%100
49	92	X	-0.002	-0.002	0	%100
50	94	X	-0.002	-0.002	0	%100
51	96	X	-0.002	-0.002	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	-0.0005	-0.0005	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	-0.002	-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	-0.002	-0.002	0	%100
17	31	Z	-0.001	-0.001	0	%100
18	32	Z	-0.001	-0.001	0	%100
19	33	Z	-0.001	-0.001	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	-0.002	-0.002	0	%100
24	38	Z	-0.0007	-0.0007	0	%100
25	39	Z	-0.0007	-0.0007	0	%100
26	40	Z	-0.002	-0.002	0	%100
27	49	Z	-0.002	-0.002	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.001	-0.001	0	%100
30	52	Z	-0.001	-0.001	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100

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, %)]
33	55	Z	-0.002	-0.002	0	%100
34	56	Z	-0.002	-0.002	0	%100
35	57	Z	-0.0007	-0.0007	0	%100
36	58	Z	-0.0007	-0.0007	0	%100
37	59	Z	-0.002	-0.002	0	%100
38	68	Z	-0.002	-0.002	0	%100
39	69	Z	-0.0005	-0.0005	0	%100
40	72	Z	-0.0004	-0.0004	0	%100
41	73	Z	-0.0004	-0.0004	0	%100
42	76	Z	-0.0004	-0.0004	0	%100
43	78	Z	-0.0004	-0.0004	0	%100
44	80	Z	-0.0005	-0.0005	0	%100
45	83	Z	-0.0004	-0.0004	0	%100
46	84	Z	-0.0004	-0.0004	0	%100
47	87	Z	-0.0004	-0.0004	0	%100
48	89	Z	-0.0004	-0.0004	0	%100
49	92	Z	-0.0004	-0.0004	0	%100
50	94	Z	-0.0004	-0.0004	0	%100
51	96	Z	-0.0004	-0.0004	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	-0.0005	-0.0005	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
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	-0.002	-0.002	0	%100
17	31	X	-0.001	-0.001	0	%100
18	32	X	-0.001	-0.001	0	%100
19	33	X	-0.001	-0.001	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	-0.002	-0.002	0	%100
24	38	X	-0.0007	-0.0007	0	%100
25	39	X	-0.0007	-0.0007	0	%100
26	40	X	-0.002	-0.002	0	%100
27	49	X	-0.002	-0.002	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.001	-0.001	0	%100
30	52	X	-0.001	-0.001	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	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, %)]
34	56	X	-0.002	-0.002	0	%100
35	57	X	-0.0007	-0.0007	0	%100
36	58	X	-0.0007	-0.0007	0	%100
37	59	X	-0.002	-0.002	0	%100
38	68	X	-0.002	-0.002	0	%100
39	69	X	-0.0005	-0.0005	0	%100
40	72	X	-0.0004	-0.0004	0	%100
41	73	X	-0.0004	-0.0004	0	%100
42	76	X	-0.0004	-0.0004	0	%100
43	78	X	-0.0004	-0.0004	0	%100
44	80	X	-0.0005	-0.0005	0	%100
45	83	X	-0.0004	-0.0004	0	%100
46	84	X	-0.0004	-0.0004	0	%100
47	87	X	-0.0004	-0.0004	0	%100
48	89	X	-0.0004	-0.0004	0	%100
49	92	X	-0.0004	-0.0004	0	%100
50	94	X	-0.0004	-0.0004	0	%100
51	96	X	-0.0004	-0.0004	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	-0.01	-0.01	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	-0.007	-0.007	0	%100
7	7	Y	-0.01	-0.01	0	%100
8	8	Y	-0.01	-0.01	0	%100
9	9	Y	-0.006	-0.006	0	%100
10	10	Y	-0.006	-0.006	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
16	30	Y	-0.013	-0.013	0	%100
17	31	Y	-0.01	-0.01	0	%100
18	32	Y	-0.007	-0.007	0	%100
19	33	Y	-0.007	-0.007	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	-0.01	-0.01	0	%100
24	38	Y	-0.006	-0.006	0	%100
25	39	Y	-0.006	-0.006	0	%100
26	40	Y	-0.013	-0.013	0	%100
27	49	Y	-0.013	-0.013	0	%100
28	50	Y	-0.01	-0.01	0	%100
29	51	Y	-0.007	-0.007	0	%100
30	52	Y	-0.007	-0.007	0	%100
31	53	Y	-0.01	-0.01	0	%100
32	54	Y	-0.01	-0.01	0	%100
33	55	Y	-0.01	-0.01	0	%100
34	56	Y	-0.01	-0.01	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, %)]
35	57	Y	-0.006	-0.006	0	%100
36	58	Y	-0.006	-0.006	0	%100
37	59	Y	-0.013	-0.013	0	%100
38	68	Y	-0.013	-0.013	0	%100
39	69	Y	-0.007	-0.007	0	%100
40	72	Y	-0.006	-0.006	0	%100
41	73	Y	-0.006	-0.006	0	%100
42	76	Y	-0.006	-0.006	0	%100
43	78	Y	-0.006	-0.006	0	%100
44	80	Y	-0.007	-0.007	0	%100
45	83	Y	-0.006	-0.006	0	%100
46	84	Y	-0.006	-0.006	0	%100
47	87	Y	-0.006	-0.006	0	%100
48	89	Y	-0.006	-0.006	0	%100
49	92	Y	-0.006	-0.006	0	%100
50	94	Y	-0.006	-0.006	0	%100
51	96	Y	-0.006	-0.006	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	-0.002	-0.002	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	-0.002	-0.002	0	%100
7	7	Z	-0.002	-0.002	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.001	-0.001	0	%100
10	10	Z	-0.001	-0.001	0	%100
11	11	Z	-0.004	-0.004	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	-0.003	-0.003	0	%100
17	31	Z	-0.002	-0.002	0	%100
18	32	Z	-0.001	-0.001	0	%100
19	33	Z	-0.001	-0.001	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	-0.002	-0.002	0	%100
24	38	Z	-0.001	-0.001	0	%100
25	39	Z	-0.001	-0.001	0	%100
26	40	Z	-0.004	-0.004	0	%100
27	49	Z	-0.003	-0.003	0	%100
28	50	Z	-0.002	-0.002	0	%100
29	51	Z	-0.001	-0.001	0	%100
30	52	Z	-0.001	-0.001	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.002	-0.002	0	%100
34	56	Z	-0.002	-0.002	0	%100
35	57	Z	-0.001	-0.001	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, %)]
36	58	Z	-0.001	-0.001	0	%100
37	59	Z	-0.004	-0.004	0	%100
38	68	Z	-0.003	-0.003	0	%100
39	69	Z	-0.002	-0.002	0	%100
40	72	Z	-0.002	-0.002	0	%100
41	73	Z	-0.002	-0.002	0	%100
42	76	Z	-0.002	-0.002	0	%100
43	78	Z	-0.002	-0.002	0	%100
44	80	Z	-0.002	-0.002	0	%100
45	83	Z	-0.002	-0.002	0	%100
46	84	Z	-0.002	-0.002	0	%100
47	87	Z	-0.002	-0.002	0	%100
48	89	Z	-0.002	-0.002	0	%100
49	92	Z	-0.002	-0.002	0	%100
50	94	Z	-0.002	-0.002	0	%100
51	96	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	-0.002	-0.002	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	-0.002	-0.002	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.001	-0.001	0	%100
10	10	X	-0.001	-0.001	0	%100
11	11	X	-0.004	-0.004	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	-0.003	-0.003	0	%100
17	31	X	-0.002	-0.002	0	%100
18	32	X	-0.001	-0.001	0	%100
19	33	X	-0.001	-0.001	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	-0.002	-0.002	0	%100
24	38	X	-0.001	-0.001	0	%100
25	39	X	-0.001	-0.001	0	%100
26	40	X	-0.004	-0.004	0	%100
27	49	X	-0.003	-0.003	0	%100
28	50	X	-0.002	-0.002	0	%100
29	51	X	-0.001	-0.001	0	%100
30	52	X	-0.001	-0.001	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.002	-0.002	0	%100
34	56	X	-0.002	-0.002	0	%100
35	57	X	-0.001	-0.001	0	%100
36	58	X	-0.001	-0.001	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, %)]
37	59	X	-0.004	-0.004	0	%100
38	68	X	-0.003	-0.003	0	%100
39	69	X	-0.002	-0.002	0	%100
40	72	X	-0.002	-0.002	0	%100
41	73	X	-0.002	-0.002	0	%100
42	76	X	-0.002	-0.002	0	%100
43	78	X	-0.002	-0.002	0	%100
44	80	X	-0.002	-0.002	0	%100
45	83	X	-0.002	-0.002	0	%100
46	84	X	-0.002	-0.002	0	%100
47	87	X	-0.002	-0.002	0	%100
48	89	X	-0.002	-0.002	0	%100
49	92	X	-0.002	-0.002	0	%100
50	94	X	-0.002	-0.002	0	%100
51	96	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	57	Y	-0.035	-0.016	0	1.155
2	57	Y	-0.016	0.0006163	1.155	2.309
3	58	Y	-0.018	-0.016	0.231	2.309
4	9	Y	-0.015	-0.015	0	2.078
5	10	Y	-0.014	-0.02	0.231	1.27
6	10	Y	-0.02	-0.026	1.27	2.309
7	38	Y	-0.014	-0.02	0	2.078
8	39	Y	0.0006164	-0.016	0	1.155
9	39	Y	-0.016	-0.035	1.155	2.309

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	38	Y	-0.009	-0.011	0	2.078
5	39	Y	0.0003698	-0.009	0	1.155
6	39	Y	-0.009	-0.021	1.155	2.309
7	57	Y	-0.021	-0.009	0	1.155
8	57	Y	-0.009	0.0003698	1.155	2.309
9	58	Y	-0.011	-0.009	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	73	72	75	74	Y	Two Way	-0.01
3	102	101	104	103	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	-0.006
2	73	72	75	74	Y	Two Way	-0.006

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

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
3	102	101	104	103	Y	Two Way	-0.006

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

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	30	L	Y	-0.5
2	113	L	Y	-0.5
3	135	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*s²/ft, k*s²*ft)]
1	31	L	Y	-0.5
2	114	L	Y	-0.5
3	136	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*s²/ft, k*s²*ft)]
1	44	L	Y	-0.5
2	127	L	Y	-0.5
3	149	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		30		3
2	0 Wind - No Ice	WLZ			30	51	
3	90 Wind - No Ice	WLX			30	51	
4	0 Wind - Ice	WLZ			30	51	
5	90 Wind - Ice	WLX			30	51	
6	0 Wind - Service	WLZ			30	51	
7	90 Wind - Service	WLX			30	51	
8	Ice	OL1			30	51	3
9	0 Seismic	ELZ			30	51	
10	90 Seismic	ELX			30	51	
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		
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		

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
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
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

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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
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	1.326	5	1.812	14	1.345	2	3.74	2	1.231	11	0.525	11
2		min	-1.327	11	0.021	8	-1.433	8	-1.153	8	-1.23	5	-0.444	5
3	53	max	1.207	5	1.855	18	1.695	2	0.855	13	1.483	3	0.683	12
4		min	-1.282	11	0.177	12	-1.652	8	-2.072	7	-1.484	9	-3.009	6
5	82	max	1.229	5	1.789	22	1.625	2	0.591	3	1.434	7	2.825	10
6		min	-1.153	11	0.14	4	-1.58	8	-1.971	9	-1.434	13	-0.637	4
7	Totals:	max	3.762	5	5.024	23	4.664	2						
8		min	-3.762	11	2.5	5	-4.664	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	0.501	0	3	0.136	0	z	11	70.173	73.278	8.24	8.24	2.152	H1-1b
2	2	C3.38X2.06X.188	0.299	2.592	3	0.052	0.351	y	63	35.676	43.394	1.694	4.483	1.601	H1-1b
3	3	C3.38X2.06X.188	0.293	0	13	0.059	2.241	y	45	35.676	43.394	1.694	4.483	1.6	H1-1b
4	4	PL3/8"X6	0.076	0	13	0.123	0	y	62	68.997	72.9	0.57	9.113	2.24	H1-1b
5	5	PL3/8"X6	0.075	0	3	0.122	0	y	38	68.997	72.9	0.57	9.113	2.267	H1-1b
6	6	PIPE_3.5X0.165	0.056	6.75	6	0.039	3		4	45.872	71.57	6.336	6.336	1	H1-1b
7	7	PL3/8"X6	0.119	0.208	3	0.173	0.208	y	61	70.882	72.9	0.57	9.113	2.907	H1-1b
8	8	PL3/8"X6	0.12	0	13	0.174	0	y	51	70.882	72.9	0.57	9.113	2.906	H1-1b
9	9	L2X2X4	0.211	0	7	0.03	2.309	y	48	23.349	30.586	0.691	1.577	1.5	H2-1
10	10	L2X2X4	0.214	2.309	9	0.03	0	y	64	23.349	30.586	0.691	1.577	1.5	H2-1
11	11	L7.63X2.5X6	0.29	1.604	8	0.066	2.873	y	38	75.414	118.523	1.798	13.559	1.202	H2-1
12	18	PIPE_2.88X0.203	0.093	5.583	5	0.034	5.583		5	35.361	70.548	5.01	5.01	1	H1-1b
13	19	PIPE_2.88X0.203	0.107	2.333	9	0.039	5.583		9	35.361	70.548	5.01	5.01	1	H1-1b
14	22	PIPE_2.88X0.203	0.1	7.813	7	0.1	8.646		13	23.996	70.548	5.01	5.01	1	H1-1b
15	28	PIPE_2.88X0.203	0.108	2.333	7	0.039	5.583		7	35.361	70.548	5.01	5.01	1	H1-1b
16	30	L6.63X4.33X.25	0.156	0	10	0.018	0	y	11	51.794	86.751	2.311	6.976	1.5	H2-1
17	31	HSS4X4X2	0.523	0	7	0.198	0	z	3	70.173	73.278	8.24	8.24	2.232	H1-1b
18	32	C3.38X2.06X.188	0.297	2.592	7	0.053	0.351	y	68	35.676	43.394	1.694	4.483	1.599	H1-1b
19	33	C3.38X2.06X.188	0.288	0	56	0.06	2.241	y	48	35.676	43.394	1.703	4.483	1.622	H1-1b
20	34	PL3/8"X6	0.063	0	5	0.122	0	y	66	68.997	72.9	0.57	9.113	2.121	H1-1b
21	35	PL3/8"X6	0.073	0	7	0.12	0	y	42	68.997	72.9	0.57	9.113	2.147	H1-1b
22	36	PL3/8"X6	0.123	0.208	7	0.171	0.208	y	54	70.882	72.9	0.57	9.113	2.954	H1-1b
23	37	PL3/8"X6	0.106	0	5	0.176	0	y	55	70.882	72.9	0.57	9.113	2.949	H1-1b
24	38	L2X2X4	0.183	0	12	0.03	2.309	y	40	23.349	30.586	0.691	1.577	1.5	H2-1
25	39	L2X2X4	0.201	2.309	13	0.03	2.309	y	68	23.349	30.586	0.691	1.577	1.5	H2-1
26	40	L7.63X2.5X6	0.25	1.604	12	0.065	3.207	z	43	75.414	118.523	1.798	13.474	1.185	H2-1
27	49	L6.63X4.33X.25	0.186	0	2	0.022	3.25	y	9	51.794	86.751	2.311	6.976	1.5	H2-1
28	50	HSS4X4X2	0.49	0	9	0.169	0	z	7	70.173	73.278	8.24	8.24	2.151	H1-1b
29	51	C3.38X2.06X.188	0.289	2.592	56	0.052	0.351	y	72	35.676	43.394	1.703	4.483	1.622	H1-1b
30	52	C3.38X2.06X.188	0.295	0	9	0.06	2.241	y	42	35.676	43.394	1.694	4.483	1.6	H1-1b
31	53	PL3/8"X6	0.073	0	9	0.12	0	y	70	68.997	72.9	0.57	9.113	2.16	H1-1b
32	54	PL3/8"X6	0.063	0	11	0.122	0	y	46	68.997	72.9	0.57	9.113	2.129	H1-1b
33	55	PL3/8"X6	0.104	0.208	11	0.173	0.208	y	57	70.882	72.9	0.57	9.113	2.939	H1-1b
34	56	PL3/8"X6	0.124	0	9	0.173	0	y	59	70.882	72.9	0.57	9.113	2.937	H1-1b
35	57	L2X2X4	0.202	0	3	0.029	0	y	44	23.349	30.586	0.691	1.577	1.5	H2-1
36	58	L2X2X4	0.186	2.309	4	0.03	0	y	73	23.349	30.586	0.691	1.577	1.5	H2-1
37	59	L7.63X2.5X6	0.251	1.604	4	0.065	0	z	69	75.414	118.523	1.798	13.454	1.181	H2-1
38	68	L6.63X4.33X.25	0.188	3.25	2	0.022	3.25	y	13	51.794	86.751	2.311	6.976	1.5	H2-1
39	69	PIPE_3.5X0.165	0.064	1.25	2	0.046	3		8	45.872	71.57	6.336	6.336	1	H1-1b
40	72	PIPE_2.88X0.203	0.112	5.583	9	0.041	5.583		9	35.361	70.548	5.01	5.01	1	H1-1b
41	73	PIPE_2.88X0.203	0.125	2.333	2	0.036	5.583		13	35.361	70.548	5.01	5.01	1	H1-1b
42	76	PIPE_2.88X0.203	0.1	2.188	13	0.094	1.354		7	23.996	70.548	5.01	5.01	1	H1-1b
43	78	PIPE_2.88X0.203	0.104	2.333	10	0.03	5.583		12	35.361	70.548	5.01	5.01	1	H1-1b

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

	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
44	80	PIPE_3.5X0.165	0.063	6.75	2	0.046	5		8	45.872	71.57	6.336	6.336	1	H1-1b
45	83	PIPE_2.88X0.203	0.112	5.583	7	0.041	5.583		7	35.361	70.548	5.01	5.01	1	H1-1b
46	84	PIPE_2.88X0.203	0.104	2.333	6	0.031	5.583		5	35.361	70.548	5.01	5.01	1	H1-1b
47	87	PIPE_2.88X0.203	0.098	7.813	3	0.093	8.646		9	23.996	70.548	5.01	5.01	1	H1-1b
48	89	PIPE_2.88X0.203	0.122	2.333	2	0.036	5.583		3	35.361	70.548	5.01	5.01	1	H1-1b
49	92	PIPE_2.88X0.203	0.074	3.958	2	0.01	3.958		2	53.866	70.548	5.01	5.01	1	H1-1b
50	94	PIPE_2.88X0.203	0.127	3.958	8	0.014	3.958		8	53.866	70.548	5.01	5.01	1	H1-1b
51	96	PIPE_2.88X0.203	0.074	3.958	8	0.01	3.958		8	53.866	70.548	5.01	5.01	1	H1-1b

APPENDIX B

(Additional Calculations)

PROJECT	**149441.004.01 - Waterbury, CT**				**KSC**
SUBJECT	**Platform Mount Analysis**				
DATE	**05/31/22**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	1.433	k
Vertical Shear	:	1.813	k
Horizontal Shear	:	1.327	k
Torsion	:	0.525	k.ft
Moment from Horizontal Forces	:	1.231	k.ft
Moment from Vertical Forces	:	3.74	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	:	2.25	k
Force from Horz. Moment	:	2.23	k
Force from Vert. Moment	:	6.77	k
Shear Load / Bolt	:	0.56	k
Tension Load / Bolt	:	0.36	k
Resultant from Moments / Bolt	:	3.57	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	:	**18.94%**		**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	:	**8.32%**		**OKAY**
Unity Check, Combined	:	**27.26%**		**OKAY**
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	**1.62%**		**OKAY**

PROJECT	**149441.004.01 - Waterbury, CT**				**KSC**
SUBJECT	**Platform Mount Analysis**				
DATE	**05/31/22**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Connecting Member Parameters

Plate Yield Strength, F_y	:	36.00	ksi	[AISC Table 2-5]
Plate Tensile Strength, F_u	:	58.00	ksi	[AISC Table 2-5]
Plate Height	:	9.00	in	
Plate Width	:	9.00	in	
Plate Thickness	:	0.50	in	
Edge Distance	:	1.06	in	
Gross Tension Area, A_{gt}	:	4.50	in^2	
Gross Shear Area, A_{gv}	:	0.75	in^2	
Net Area for tension, A_{nv}	:	4.16	in^2	
Net Area for shear, A_{nt}	:	3.00	in^2	

Plate Check

Available Tensile Yield	:	145.80	k	[Eq. J4-1]
Available Tensile Rupture	:	180.80	k	[Eq. J4-2]
Unity Check, Plate Tension	:	**2.69%**		**OKAY**
Available Shear Yield	:	16.20	k	[Eq. J4-3]
Available Shear Rupture	:	104.40	k	[Eq. J4-4]
Unity Check, Plate Shear	:	**13.87%**		**OKAY**
Available Block Shear, ΦRn	:	77.40	k	[Eq. J4-5]
Unity Check, Block Shear	:	**2.90%**		**OKAY**

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

Site ID: BOHVN00039A

SBA - Sheffield Street
299 Sheffield Street
Waterbury, CT 06704

May 20, 2022

Fox Hill Telecom Project Number: 221168

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**15.25 %**

Fox Hill Telecom

May 20, 2022

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOHVN00039A – SBA - Sheffield Street**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **299 Sheffield Street, Waterbury, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS / AWS-4) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed radio system installation for **Dish** on the subject site located at **299 Sheffield Street, Waterbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since **Dish** 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	n71 (600 MHz)	4	61.5
5G	n70 (AWS-4 / 1995-2020)	4	40
5G	n66 (AWS-4 / 2180-2200)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz (n71) frequency band, and the 2100 MHz (AWS 4) frequency bands at 1995-2020 MHz (n70) and 2180-2200 MHz (n66). This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	158
B	1	JMA MX08FRO665-21	158
C	1	JMA MX08FRO665-21	158

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.52
						Sector A Composite MPE%	**3.52**
Antenna B1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.52
						Sector B Composite MPE%	**3.52**
Antenna C1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.52
						Sector C Composite MPE%	**3.52**

Table 3: Dish Emissions Levels

The Following table (*Table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum **Dish** MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each **Dish** Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**3.52 %**
AT&T	5.04 %
MetroPCS	0.53 %
Verizon Wireless	2.03 %
Sprint	3.14 %
Clearwire	0.05 %
Nextel	0.94 %
Site Total MPE %:	**15.25 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	3.52 %
Dish Sector B Total:	3.52 %
Dish Sector C Total:	3.52 %
Site Total:	15.25 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	858.77	158	5.35	n71 (600 MHz)	400	1.34%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,648.39	158	10.26	n70 (AWS-4 / 1995-2020)	1000	1.03%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,849.52	158	11.51	n66 (AWS-4 / 2180-2200)	1000	1.15%
						Total:	**3.52%**

Table 6: Dish Maximum Sector MPE Power Values

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 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 Sector	Power Density Value (%)
Sector A:	3.52 %
Sector B:	3.52 %
Sector C:	3.52 %
Dish Maximum Total (per sector):	3.52 %
Site Total:	15.25 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.25 %** 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.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Letter of Authorization

SBA 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

SBA COMMUNICATIONS CORPORATION 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 CONNECTICUT SITING COUNCIL for existing wireless communications towers.

Kri Pelletier
Site Development Manager
SBA COMMUNICATIONS CORPORATION
134 Flanders Road, Suite 125
Westboro, MA 01581

Exhibit H

Recipient Mailings

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

9405 5036 9930 0270 0650 29 0089 5000 0010 1581

usps.com
$8.95
US POSTAGE
Flat Rate Env

06/10/2022 Mailed from 01566

U.S. POSTAGE PAID
Click-N-Ship®

PRIORITY MAIL 1-DAY™

Expected Delivery Date: 06/11/22
Ref#: SBDS-00039

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

0006

R005

SBA COMMUNICATIONS CORPORATION
13 FLANDERS RD
STE 125
WESTBOROUGH MA 01581

USPS TRACKING #

9405 5036 9930 0270 0650 29

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0270 0650 29

Trans. #:	565321487
Print Date:	06/10/2022
Ship Date:	06/10/2022
Expected Delivery Date:	06/11/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

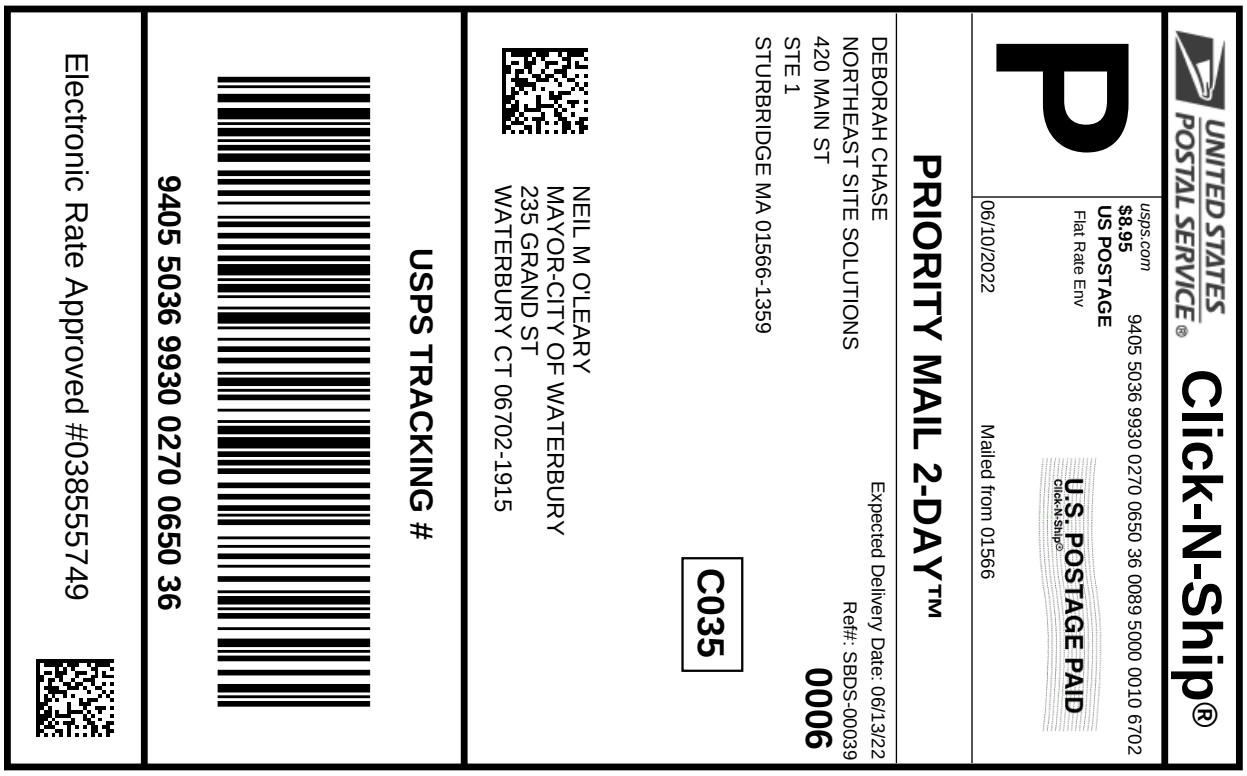
Ref#: SBDS-00039

To: SBA COMMUNICATIONS CORPORATION
13 FLANDERS RD
STE 125
WESTBOROUGH MA 01581

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

UNITED STATES POSTAL SERVICE®

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0270 0650 36

Trans. #:	565321487
Print Date:	06/10/2022
Ship Date:	06/10/2022
Expected Delivery Date:	06/13/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

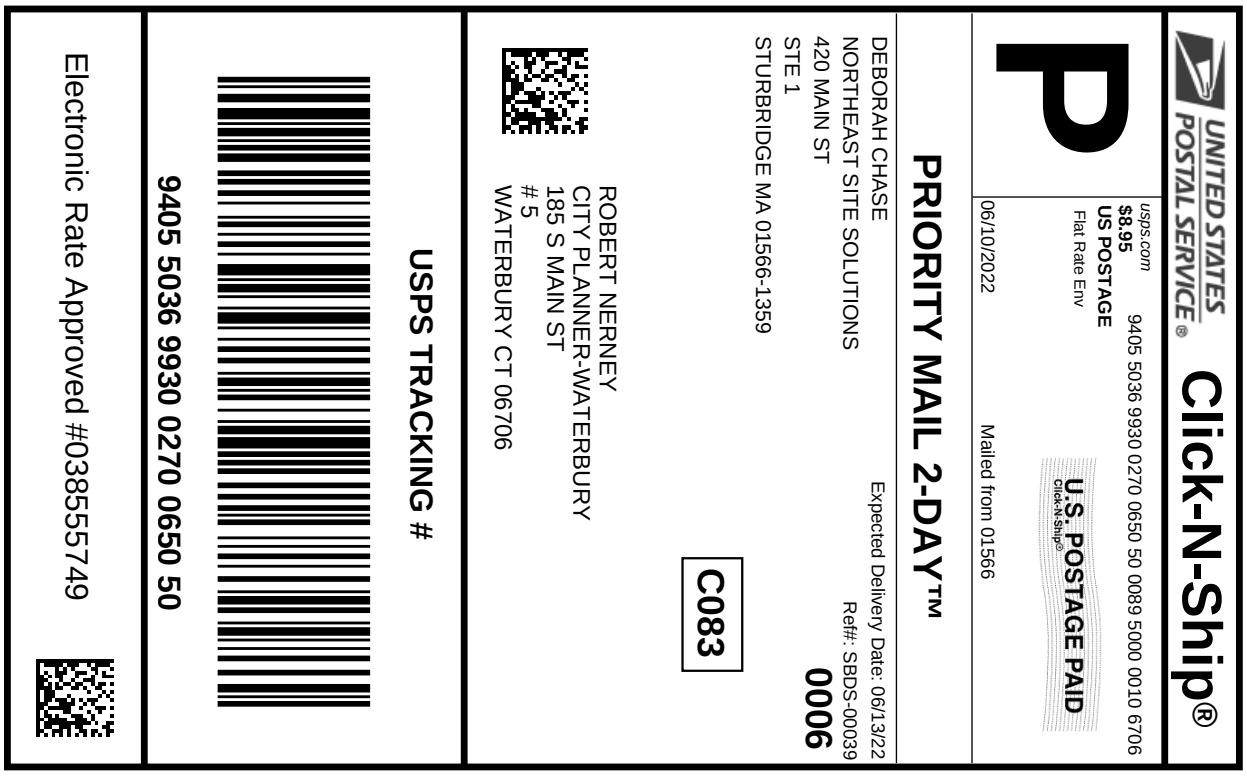
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: SBDS-00039

To: NEIL M O'LEARY
MAYOR-CITY OF WATERBURY
235 GRAND ST
WATERBURY CT 06702-1915

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0270 0650 50

Trans. #:	565321487
Print Date:	06/10/2022
Ship Date:	06/10/2022
Expected Delivery Date:	06/13/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

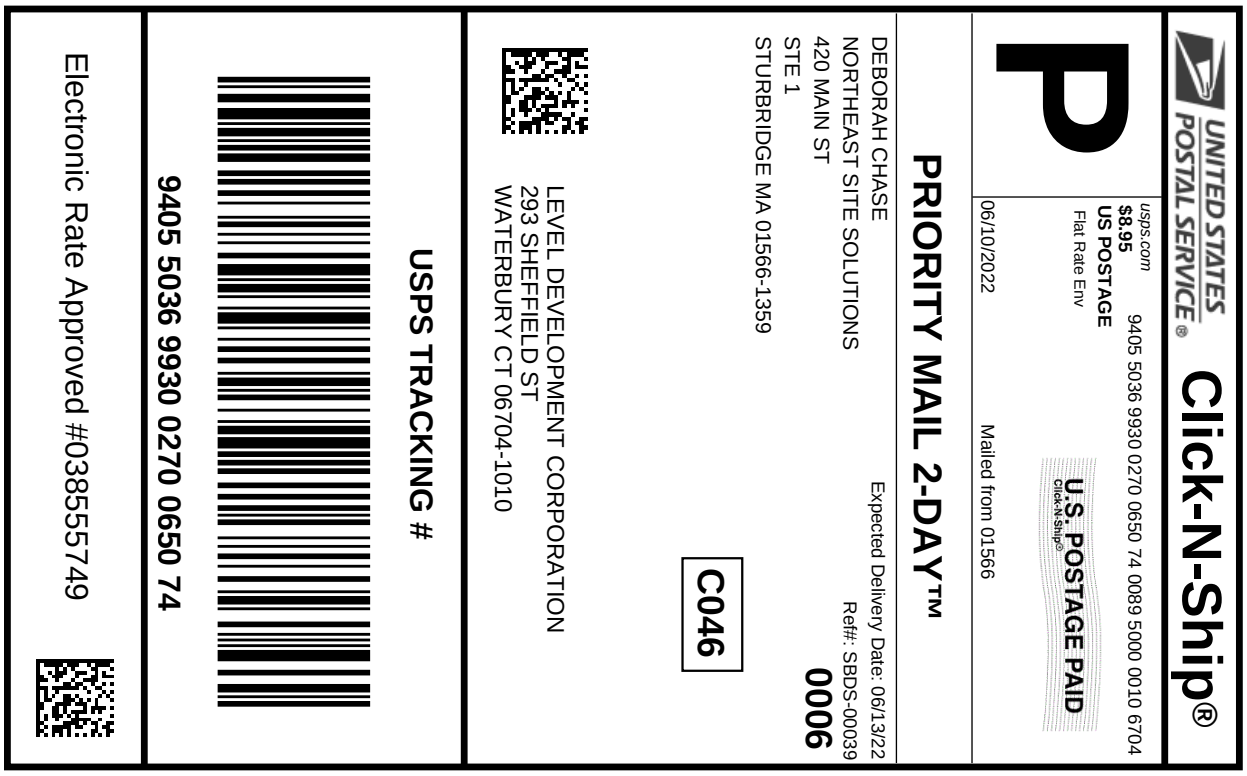
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: SBDS-00039

To: ROBERT NERNEY
CITY PLANNER-WATERBURY
185 S MAIN ST
5
WATERBURY CT 06706

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0270 0650 74

Trans. #:	565321487
Print Date:	06/10/2022
Ship Date:	06/10/2022
Expected Delivery Date:	06/13/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: SBDS-00039

To: LEVEL DEVELOPMENT CORPORATION
293 SHEFFIELD ST
WATERBURY CT 06704-1010

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

BOHVN00039A

SBA - DISH

UNITED STATES POSTAL SERVICE.

FARMINGTON
210 MAIN ST
FARMINGTON, CT 06032-9998
(800)275-8777

06/10/2022 11:58 AM

Product	Qty	Unit Price	Price
Prepaid Mail Westborough, MA 01581 Weight: 0 lb 2.00 oz Acceptance Date: Fri 06/10/2022 Tracking #: 9405 5036 9930 0270 0650 29	1		$0.00
Prepaid Mail Waterbury, CT 06704 Weight: 0 lb 10.00 oz Acceptance Date: Fri 06/10/2022 Tracking #: 9405 5036 9930 0270 0650 74	1		$0.00
Prepaid Mail Waterbury, CT 06702 Weight: 0 lb 10.00 oz Acceptance Date: Fri 06/10/2022 Tracking #: 9405 5036 9930 0270 0650 36	1		$0.00
Prepaid Mail Waterbury, CT 06706 Weight: 0 lb 10.00 oz Acceptance Date: Fri 06/10/2022 Tracking #: 9405 5036 9930 0270 0650 50	1		$0.00
Grand Total:			$0.00

****
Every household in the U.S. is now
eligible to receive a third set
of 8 free test kits.
Go to www.covidtests.gov
****

Preview your Mail
Track your Packages
Sign up for FREE @
https://informeddelivery.usps.com

All sales final on stamps and postage.
Refunds for guaranteed services only.
Thank you for your business.

Tell us about your experience.
Go to: https://postalexperience.com/Pos
or scan this code with your mobile device,