NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

January 13, 2023

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

RE: Tower Share Application
343 Old Colchester Road, Salem, CT 06420
Latitude: 41.502036
Longitude: -72.242880
Site #: CT22097-A_BOBOS00063A_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 343 Old Colchester Road, Salem, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 186-foot level of the existing 190-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 January 5, 2023, Exhibit C. Also included is a structural analysis prepared by TES, dated December 29, 2022, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Salem, on April 23, 2001. 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 Ed Chmielewski, First Selectman and Matt Allen, Zoning Enforcement Officer for the Town of Salem, as well as the tower owner (SBA) and property owner (John & Kimberly Diamantini).

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 190-feet and the Dish Wireless LLC antennas will be located at a center line height of 186-feet.

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

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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 1.05% 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 Salem. 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 186-foot level of the existing 190-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 Salem.

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: Ed Chmielewski, First Selectman
Town of Salem
270 Hartford Road
Salem, CT 06420

Matt Allen, Zoning Enforcement Officer
Town of Salem
270 Hartford Road
Salem, CT 06420

John & Kimberly Diamantini – Property Owners
40 Lakeview Ave
Salem, CT 06420

SBA - Tower Owner

Exhibit A

Original Facility Approval

Town of Salem
Building Department
270 Hartford Rd.
Phone: 859-3873 Ext. 5
Fax: 859-1184

Building / Trades Permit

Permit Number BP2001-017 Permit Date 4/23/01 Permit Type Building Permit Code C2

Job Street # 343 Job Location Old Colchester Road Map/Lot

Job Description Tower

Owner
Donald & Anne Bourdeau
Address 343 Old Colchester Road
City Salem State CT
Zip 06420 Telephone

Contractor
Nelson Communications Services, Inc.
Address P.O. Box 1936
City Conway State NH
Zip 03818 Telephone 603-447-8879
Lic/Reg Number MCO.901254
Lic/Reg Type Exp Date:

Use Group U Code 1996 BOCA Type Construction

Building Value	$86,250.00	Building Fee	$696.00
Plumbing Value	$0.00	Plumbing Fee	$0.00
Mechanical Value	$0.00	Mechanical Fee	$0.00
Electrical Value	$8,300.00	Electrical Fee	$72.00
Other Value	$0.00	Other Fee	$0.00
Total Values	$94,550.00	C/O Fee	$0.00
		Plan Review Fee	$0.00
		State Ed Fee	$15.13
		Total Fees	$783.13

Comments:

Building Official's Signature [signature] Date 4/23/01

It is the owners responsibility to schedule the following required inspections (minimum 24 hours notice required):

- ☑ Footings - prior to pouring concrete
- ☐ Backfill - footing drains and waterproofing
- ☐ Rough Framing
- ☑ Rough Electrical
- ☑ Electrical Service
- ☐ Rough Plumbing and leak test
- ☐ Gas piping - pressure test and installation
- ☐ Rough HVAC
- ☐ Fireplace Throat
- ☐ Fireplace Final
- ☐ Chimney - one flue above thimble
- ☐ Firestopping/draftstopping
- ☐ Insulation
- ☐ Pool bonding
- ☐ Final Inspection
- ☑ Certificate of Occupancy - PRIOR to use or occupancy

ZONING PERMIT

ZONING PERMIT NUMBER 01-30 OR ☐ N/A EXPIRATION DATE ____________

APPLICANT Message Center Management

APPLICANT'S ADDRESS 40 Woodland Street Hartford, CT 06105 TELEPHONE 860-418-5755

PROPERTY OWNER Donald + Anne Bordeau

LOCATION 343 Old Colchester Road LOT AREA 62.11 Acres ZONE Rural Zone IA

ASSESSOR'S MAP NUMBER 12 LOT NUMBER 23

~~BUILDING~~ TOWER HEIGHT 190' PROPOSED FLOOR AREA 70'x50'

NATURE OF REQUEST/PROPOSED USE Unmanned Wireless Telecommunications Tower/Facility

SKETCH ON REVERSE OR PROVIDE THREE (3) COPIES OF PLANS DRAWN TO A SCALE OF AT LEAST 1" = 40' SHOWING: DIMENSIONS OF THE LOT, THE SIZE, AREA, AND LOCATION OF EXISTING, PROPOSED, PRINCIPAL AND ACCESSORY STRUCTURES, DRIVEWAYS, SANITARY FACILITIES AND WATER SUPPLY, PARKING FACILITIES, AND ADJACENT STREETS; DISTANCES OF PROPOSED STRUCTURES FROM PROPERTY LINES. IN THE CASE OF FILL OR EXCAVATION REQUESTS (UNDER 500 CUBIC YARDS), DIMENSIONS OF FILL OR EXCAVATION AREA MUST BE INCLUDED. A PLAN PREPARED BY A CONNECTICUT REGISTERED LAND SURVEYOR MAY BE REQUIRED. THE PROPOSED USE SPECIFIED ABOVE SHALL NOT BE AUTHORIZED UNTIL AN ACTUAL CERTIFICATE OF COMPLIANCE IS ISSUED BY THE COMMISSION OR ITS APPOINTED AGENTS.

SKETCH PLAN OR GRADING PLAN	☐ YES	☐ N/A
SEPTIC REVIEW	☐ YES	☐ N/A
STATE HIGHWAY PERMIT	☐ YES	☐ N/A
WETLANDS PERMIT	☐ YES	☐ N/A
HAS A VARIANCE EVER BEEN GRANTED FOR THIS PROPERTY	☐ YES	☐ NO
HAS BOND BEEN FILED	☐ YES	☐ N/A

FEE PAID $60.00 10/24/01 Paid AP ☐ CASH ☑ CHECK # 1424 ☐ N/A

THE APPLICANT AGREES TO:

1. ADHERE TO ALL THE APPLICABLE REQUIREMENTS OF THE ZONING REGULATIONS.
2. NOTIFY THE COMMISSION OR ITS APPOINTED AGENT OF ANY ALTERATION IN THE PLANS.
3. **CALL FOR FINAL INSPECTION AND REQUEST CERTIFICATE OF COMPLIANCE BEFORE ISSUANCE OF C. O.**

APPLICANT'S SIGNATURE [signature] DATE: 12/18/00

[signature] 2/24/01 — George C Brown 10/16/01

COMMISSION AGENT — DATE — CERTIFICATE OF COMPLIANCE — DATE

THIS SIGNED PERMIT AUTHORIZES THE APPLICANT TO APPLY FOR ANY FURTHER REQUIRED PERMITS

CONTACT THE ZONING OFFICER (859-3885) AT LEAST 24 HOURS BEFORE CONSTRUCTION BEGINS TO ALLOW ZONING OFFICER TO INSPECT LOCATION.

(9/11/97 dat)

Town of Salem

Building Department

Certificate of Occupancy

This is to certify that the structure at: 343 Old Colchester Road

constructed as Tower / Facility

under Building Permit No. BP2001-017 conforms substantially to the requirements of the Building Code Ordinances and Zoning Regulations as adopted by the Town of Salem and the State of Connecticut and is hereby approved for use and occupancy under Use Group U of the 1996 BOCA Building Code of Connecticut.

Type Construction:

Owner: Donald and Anne Bourdeau

343 Old Colchester Road

Salem, CT 06420

Special Conditions: none

Building Official Signature

Date 10/22/01

REMOVAL BOND

KNOW TO ALL MEN BY THESE PRESENTS Bond # 08234385

That we, Message Center Management, Inc. as principals and Fidelity and Deposit Company of Maryland, a corporation duly organized and existing under and by virtue of the laws of the State of Maryland, as Surety, are held and firmly bound unto the Town of Salem, Connecticut in the sum of Twenty Thousand and 00/100ths ($20,000.00) lawful money of the United States of America, to be paid to the Town of Salem, Connecticut, for which payment well and truly to be made, we bind ourselves, our heirs, executors, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has been granted a Special Use Permit by the Town of Salem, Connecticut on or about October 17, 2000 to permit the use of the premises known as 343 Old Colchester Road, Salem, Connecticut and leased to Principal by Donald W. and Anne J. Bourdeau dated January 3,2000.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if Message Center Management shall faithfully perform its obligations under the Special Use Permit to remove alterations, additions or improvements made by it from the leased premises, to restore the premises to good condition, reasonable wear and tear excepted and in compliance with all applicable Federal, State and Municipal Codes, rules and regulations, then this obligation shall be null and void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, THAT THIS BOND IS EXECUTED BY THE PRINCIPAL AND SURETY AND ACCEPTED BY THE OBLIGEE SUBJECT TO THE FOLLOWING CONDITIONS:

1. The term of this bond shall be from February 28, 2003 to February 28, 2005.

2. The liability of the Surety shall in no event exceed Twenty Thousand ($20,000.00) dollars, in the aggregate, the penal sum of this bond.

3. No assignment shall be effective without the written consent of Surety.

4. All suits, actions against this bond must be brought within 180 days of the termination of the Lease or bond whichever shall occur first.

5. The Surety may cancel this bond at any time by filing with the Obligee Thirty (30) days written notice of its desire to be relieved of liability. The Surety shall not be discharged from any liability already accrued under this bond, or which shall accrue hereunder before the expiration of the thirty day notice.

SIGNED, SEALED AND DATED this 4th day of March 2003

Message Center Management, Inc.

By: _____
Maria A. Scotti, Director

Fidelity and Deposit Company of Maryland

By: _____
Terry Reynolds, Attorney-in-Fact

Power of Attorney
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

KNOW ALL MEN BY THESE PRESENTS: That the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, a corporation of the State of Maryland, by PAUL C. ROGERS, Vice President, and T. E. SMITH, Assistant Secretary, in pursuance of authority granted by Article VI, Section 2, of the By-Laws of said Company, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, does hereby nominate, constitute and appoint **Bradley T. SENN, Deborah B. BROWN, Mary Ann MARBURY, Michael A. WALTER, Terry D. REYNOLDS and Diana L. PARKER, all of Columbia, Maryland, EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings** And the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Company, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its office in Baltimore, Md., in their own proper persons. This power of attorney revokes that issued on behalf of Bradley T. SENN, Deborah B. BROWN, Mary Ann MARBURY, Michael A. WALTER, Terry D. REYNOLDS, Diana L. PARKER, dated November 11, 2002.

The said Assistant Secretary does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article VI, Section 2, of the By-Laws of said Company, and is now in force.

IN WITNESS WHEREOF, the said Vice-President and Assistant Secretary have hereunto subscribed their names and affixed the Corporate Seal of the said FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 24th day of December, A.D. 2002.

ATTEST:

FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By:

T. E. Smith *Assistant Secretary* *Paul C. Rogers* *Vice President*

State of Maryland }
City of Baltimore } ss:

On this 24th day of December, A.D. 2002, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, came PAUL C. ROGERS, Vice President, and T. E. SMITH, Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and they each acknowledged the execution of the same, and being by me duly sworn, severally and each for himself deposeth and saith, that they are the said officers of the Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Carol J. Fader *Notary Public*
My Commission Expires: August 1, 2004

March 12, 2003

VIA OVERNIGHT MAIL

Planning and Zoning Commission
Town of Salem
270 Hartford Road
Salem, CT 06420

Re: Removal Bond Renewal
Telecommunications Tower at 343 Old Colchester Road

Dear Chairman,

Enclosed please find the above referenced bond renewal pursuant to our Special Use Permit issued on or about October 17, 2000.

Please note that the bond is now issued by the Fidelity and Deposit Company, a division of Zurich North America, a global company with an A.M. Best rating of A (Excellent). The terms and conditions of the removal bond have not changed.

If you have any questions, please feel free to contact me directly at (860) 727-5790.

Very truly yours,

Virginia M. King
Project Manager

cc: Maria Scotti
Donald and Anne Bordeau

Message Center Management
40 Woodland Street Hartford, CT 06105-0623 1-888-973-SITE Fax: 860-727-5762

Exhibit B

Property Card

Town of Salem, CT

Property Listing Report

Map Block Lot	12-023-F00	Building #	1	PID	102006	Account	115

Property Information

Property Location	343R OLD COLCHESTER RD
Owner	DIAMANTINI, JOHN AND KIMBERLY
Co-Owner	na
Mailing Address	40 LAKEVIEW AVE SALEM CT 06420
Land Use	106 Land W Ob'S
Land Class	R
Zoning Code	B
Census Tract	

Neighborhood	
Acreage	60.3
Utilities	UNKNOWN
Lot Setting/Desc	UNKNOWN UNKNOWN
Book / Page	0271/0336
Additional Info	

Photo

Sketch

Primary Construction Details

Year Built	0
Building Desc.	Land W Ob'S
Building Style	UNKNOWN
Building Grade	
Stories	
Occupancy	
Exterior Walls	
Exterior Walls 2	NA
Roof Style	
Roof Cover	
Interior Walls	
Interior Walls 2	NA
Interior Floors 1	
Interior Floors 2	NA

Heating Fuel	
Heating Type	
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Rec Rm Area	NA
Rec Rm Quality	NA
Bsmt Gar	NA
Fireplaces	NA

(*Industrial / Commercial Details)

Building Use	Vacant
Building Condition	
Sprinkler %	NA
Heat / AC	NA
Frame Type	NA
Baths / Plumbing	NA
Ceiling / Wall	NA
Rooms / Prtns	NA
Wall Height	NA
First Floor Use	NA
Foundation	NA

Report Created On 1/13/2023

Town of Salem, CT

Property Listing Report | Map Block Lot 12-023-F00 | Building # 1 | PID 102006 | Account 115

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Improvements		
Outbuildings	308100	215900
Land	589600	412700
Total	897700	628600

Outbuilding and Extra Features

Type	Description
Shed Frame	2820 S.F.
Pole Barn	4156 S.F.
Comm Shed	1936 S.F.
Shed Frame	5320 S.F.
Pltry Hse 1 St	200 S.F.
Pltry Hse 1 St	120 S.F.
Pltry Hse 1 St	120 S.F.
Pltry Hse 1 St	288 S.F.
Pltry Hse 1 St	288 S.F.
Pltry Hse 1 St	288 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		0

Sales History

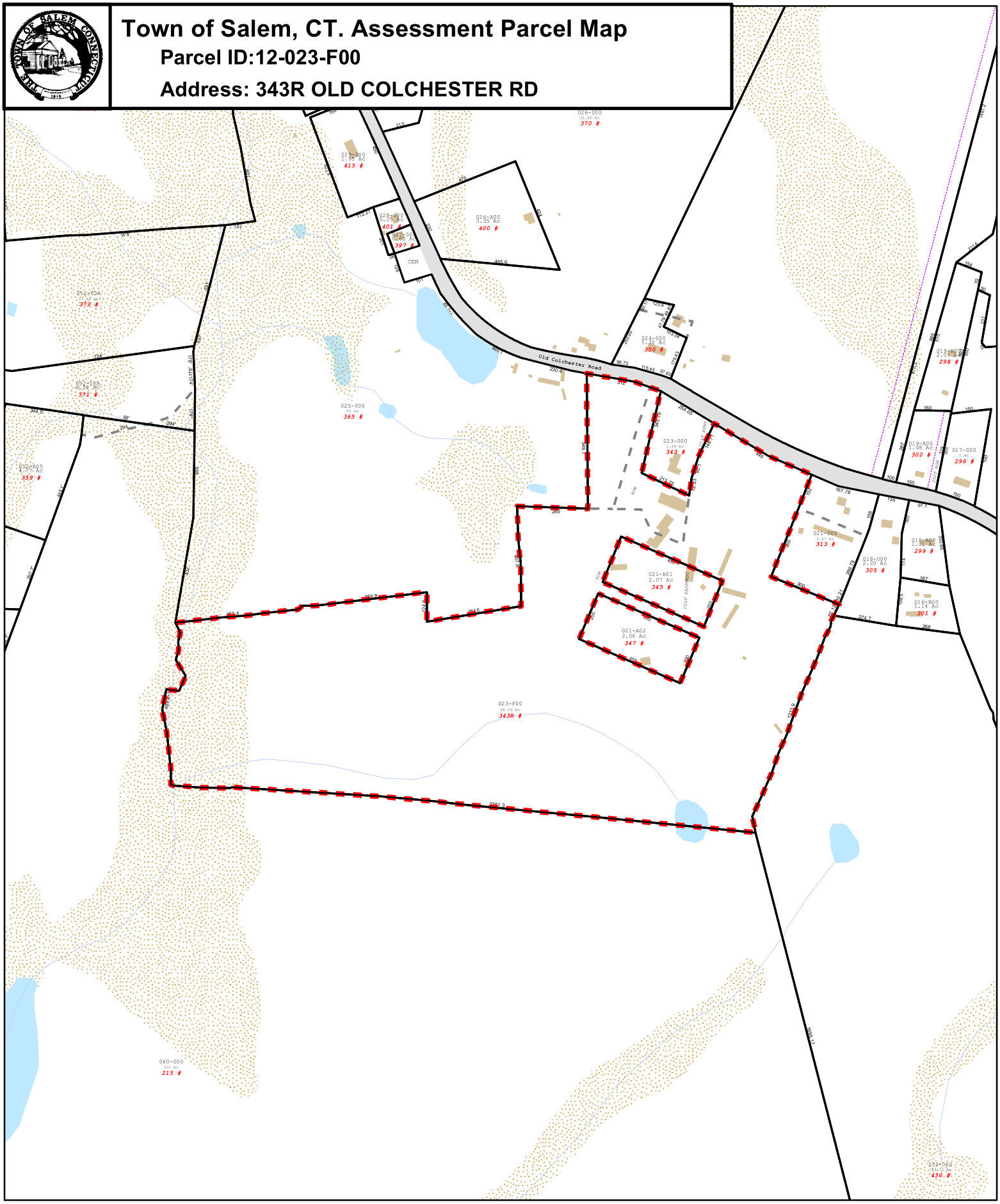
Owner of Record	Book/ Page	Sale Date	Sale Price
DIAMANTINI, JOHN AND KIMBERLY	0271/0336	2022-04-28	250000
BOURDEAU DONALD W JR	0266/0976	2021-04-27	0
BOURDEAU DONALD W ESTATE OF & BOURDEAU DONALD	0242/0492	2016-05-19	0
BOURDEAU ANNE J ESTATE OF & DONALD W	0242/0491	2016-03-22	0
BOURDEAU DONALD W & ANNE J	0012/0476	1961-04-25	0

Report Created On 1/13/2023

Town of Salem, CT. Assessment Parcel Map

Parcel ID:12-023-F00

Address: 343R OLD COLCHESTER RD



N W E S

200 0 200 400 600 800

Feet

Map Produced: May 2022

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

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBOS00063A

DISH Wireless L.L.C. SITE ADDRESS:

343 OLD COLCHESTER RD
SALEM, CT 06420

SBA APPROVED

By sroth at 6:44:25 PM, 1/5/2023

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 CONCRETE PAD
- 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:	NICHOLS DAVID & SARAH
ADDRESS:	343 OLD COLCHESTER RD SALEM, CT 06420
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT22097-A
TOWER APP NUMBER:	163276
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 30' 7.33" N 41.50203611
LONGITUDE (NAD 83):	72° 14' 34.37" W -72.24288022
ZONING JURISDICTION:	NEW LONDON COUNTY
ZONING DISTRICT:	R
PARCEL NUMBER:	12-023-000
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	T.B.D.

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:	DAVE EVANS devans@sbasite.com
CONST. MANAGER:	JAVIER SOTO javier.soto@dish.com
RF ENGINEER:	ARVIN SEBASTIAN arvin.sebastian@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	2021 IBC
MECHANICAL	2021 IMC
ELECTRICAL	2020 NEC

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT. SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT. CONTINUE STRAIGHT. CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON. CONTINUE ONTO CT-20 E/ BRADLEY INTERNATIONAL AIRPORT CON. TAKE THE EXIT ONTO I-91 S TOWARD HARTFORD. USE THE LEFT LANE TO TAKE EXIT 30 TO MERGE ONTO I-84 E. TAKE EXIT 55 FOR CT-2 E TOWARD NORWICH/NEW LONDON/I-84 E. CONTINUE ONTO CT-2 E. KEEP RIGHT AT THE FORK TO CONTINUE ON CT-11 S, FOLLOW SIGNS FOR NEW LONDON. TAKE EXIT 6 FOR LAKE HAYWARD RD TOWARD CT-85/CT-354. TURN LEFT ONTO LAKE HAYWARD RD. TURN RIGHT ONTO CT-354 E. ARRIVE AT BOBOS00063A.

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 PAD 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

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

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

01/05/23

MTS ENGINEERING, P.L.L.C.
PEN.0030985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	7/28/21	ISSUED FOR REVIEW
0	11/4/21	ISSUED FOR CONSTRUCTION
1	01/05/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149480.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

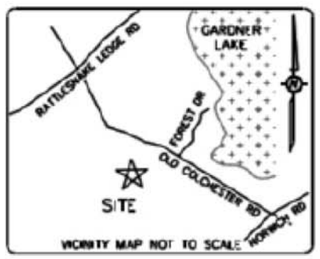
BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



FAA 2-C INFORMATION

LATITUDE	41°30'07.33" N.
LONGITUDE	72°14'34.37" W.
GROUND EL	587' NAVD88

PARENT PARCEL INFORMATION

PARCEL OWNER: UNKNOWN
PARCEL ID #12-023-F00
DEED/PAGE: UNKNOWN

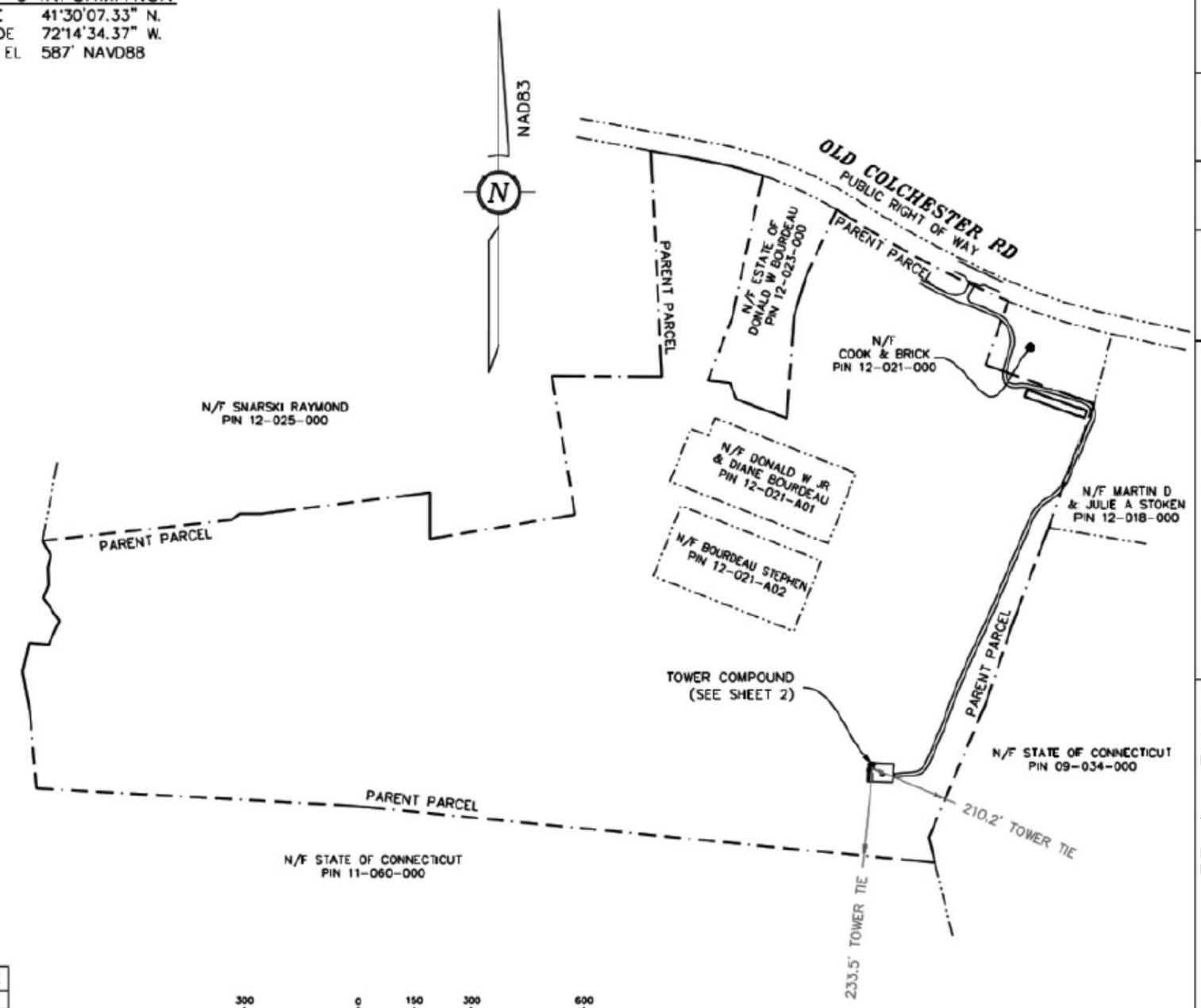
ZONING: RUA

THIS PARCEL OF LAND LIES WITHIN FLOOD ZONE X WHICH IS NOT A SPECIAL FLOOD HAZARD AREA AS PER F.I.R.M. PANEL NUMBER: 09011C0188G EFFECTIVE DATE: 07/18/2011

LEGEND

- ○ : FOUND 1/2" REBAR AS NOTED.
- ● : SET 1/2" REBAR AS NOTED.
- (___) : RECORD DESCRIPTION DATA.
- P.O.B. : POINT OF BEGINNING.
- P.O.C. : POINT OF COMMENCEMENT.
- —o— : FENCE AS NOTED.
- —OH— : OVER HEAD UTILITY LINES.
- : WOOD UTILITY POLE.
- E : ELECTRIC TRANSFORMER.
- T : TELCO PEDESTAL.
- WM : WATER METER.
- : POWER BOX
- HH : HAND HOLE
- N/A : NOT AVAILABLE

AREA	SQUARE FEET	ACRE
PARENT PARCEL	2817776	65
COMPOUND AREA	3400	0.08



SHEET 1 OF 2

AS-BUILT SURVEY

PREPARED FOR

SBA

SITE: Salem (Old Colchester Rd)
ID: CT22097-A
ADDRESS: 343 Old Colchester Road
Salem CT 06420
New London County

MACH Wireless

SURVEY WORK PERFORMED BY:

JONATHAN MURPHY
Professional Land Surveying
10505 Leafwood Place (919) 280-8188
Raleigh NC 27615 FAX 995-9616
E-MAIL : raleigh@murphygeomatics.com FIRM C-2757

SURVEYOR'S NOTES

1. BASIS OF BEARING: CT GRID NAD83
2. NO SUBSURFACE INVESTIGATION WAS PERFORMED TO LOCATE UNDERGROUND UTILITIES. UTILITIES SHOWN HEREON ARE LIMITED TO AND ARE PER OBSERVED EVIDENCE ONLY.
3. THIS SURVEY DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT PARCEL.
4. ALL VISIBLE TOWER EQUIPMENT AND IMPROVEMENTS ARE CONTAINED WITH IN THE DESCRIBED AREA.
5. AT THE TIME OF THE SURVEY THERE WERE NO VISIBLE ENCROACHMENT ONTO OR BEYOND THE SUBJECT PROPERTY

SURVEYOR'S CERTIFICATION

I HEREBY CERTIFY TO:
SBA TOWERS IX, L.L.C, A DELAWARE LIMITED LIABILITY COMPANY AND FIDELITY NATIONAL TITLE INSURANCE COMPANY.
MURPHY GEOMATICS

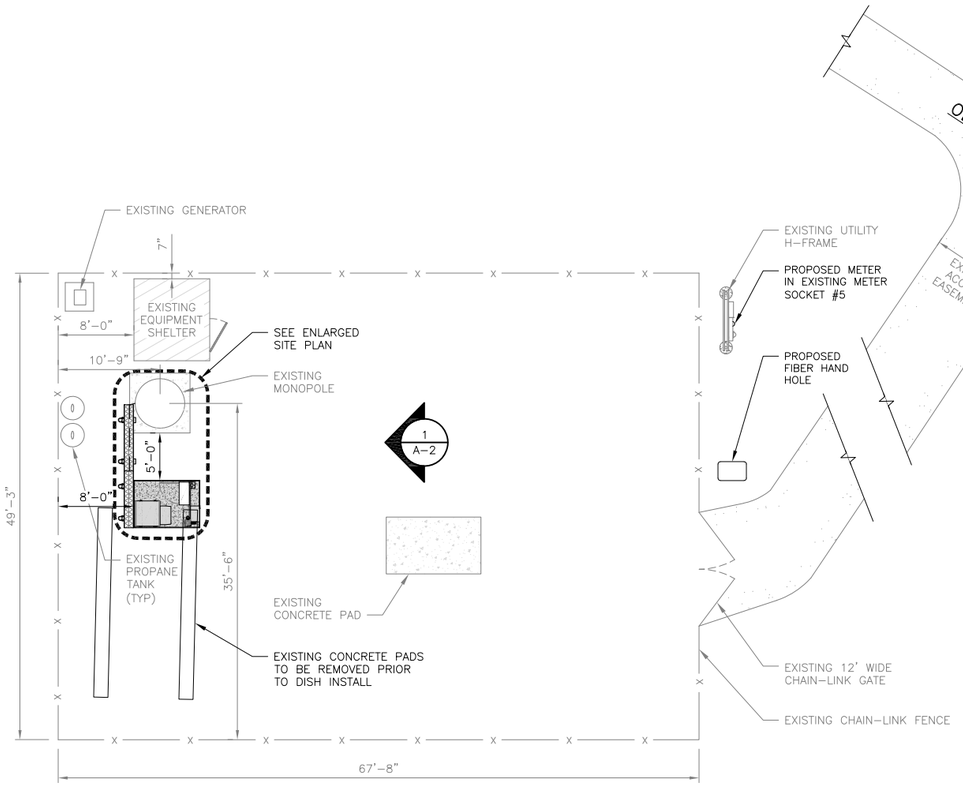
LAND SURVEYOR -
DATE: 4/10/2010

STATE OF CONNECTICUT
WILLIAM J. NAGLE, JR.
No. 70280
LICENSED
LAND SURVEYOR

NOTE: THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED UPON THEIR BEST KNOWLEDGE AND BELIEF AND DOES NOT CONSTITUTE A GUARANTEE OR WARRANTY.

NOTES

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



N

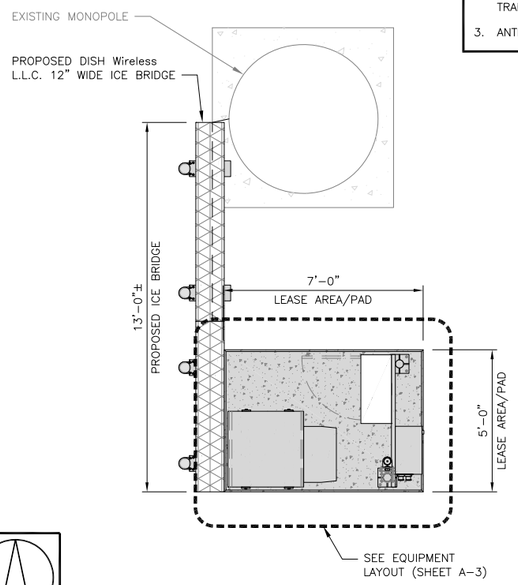
OVERALL SITE PLAN

8' 4' 0 8' 16'
1/8"=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.



N

ENLARGED SITE PLAN

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

2

NOT USED

NO SCALE

3

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5701 SOUTH SANTA FE DRIVE
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BOCA RATON, FL 33487

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

STATE OF CONNECTICUT
CHAD M. LITTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
01/05/23
MTS ENGINEERING, P.L.L.C.
PER.0030985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	7/28/21	ISSUED FOR REVIEW
0	11/4/21	ISSUED FOR CONSTRUCTION
1	01/05/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149480.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE

OVERALL AND ENLARGED SITE PLAN

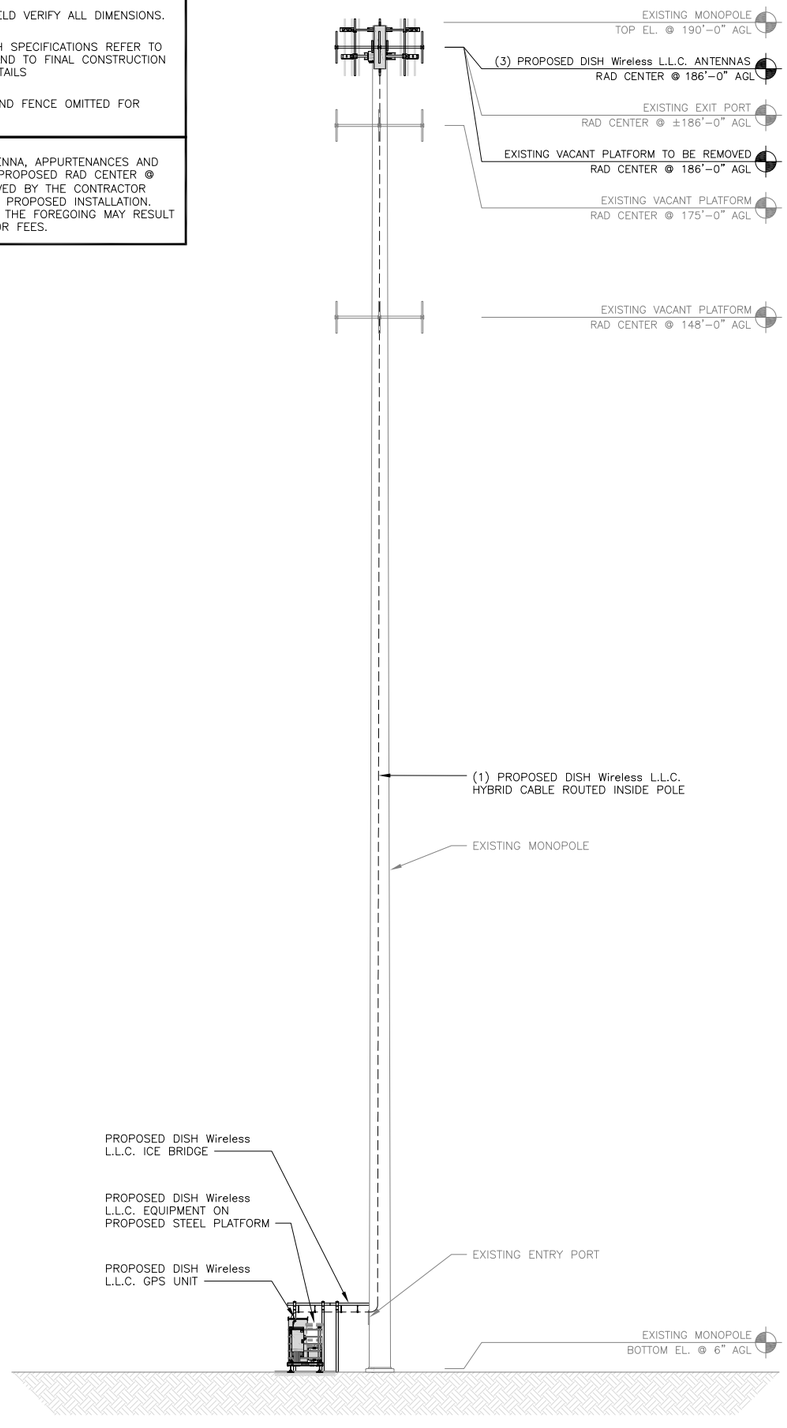
SHEET NUMBER

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 @ 186'–0" 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 EAST ELEVATION

12' 8' 4' 0 10' 20'
3/32"=1'-0"

1

ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
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	A2	PROPOSED	JMA – MX08FRO665–21	5G	72" x 20"	330°	186'–0"	(1) HIGH–CAPACITY HYBRID CABLE (225' LONG)
BETA	B2	PROPOSED	JMA – MX08FRO665–21	5G	72" x 20"	90°	186'–0"	
GAMMA	G2	PROPOSED	JMA – MX08FRO665–21	5G	72" x 20"	210°	186'–0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A2	FUJITSU – TA08025–B605	5G
	A2	FUJITSU – TA08025–B604	5G
BETA	B2	FUJITSU – TA08025–B605	5G
	B2	FUJITSU – TA08025–B604	5G
GAMMA	G2	FUJITSU – TA08025–B605	5G
	G2	FUJITSU – TA08025–B604	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

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No. 23924
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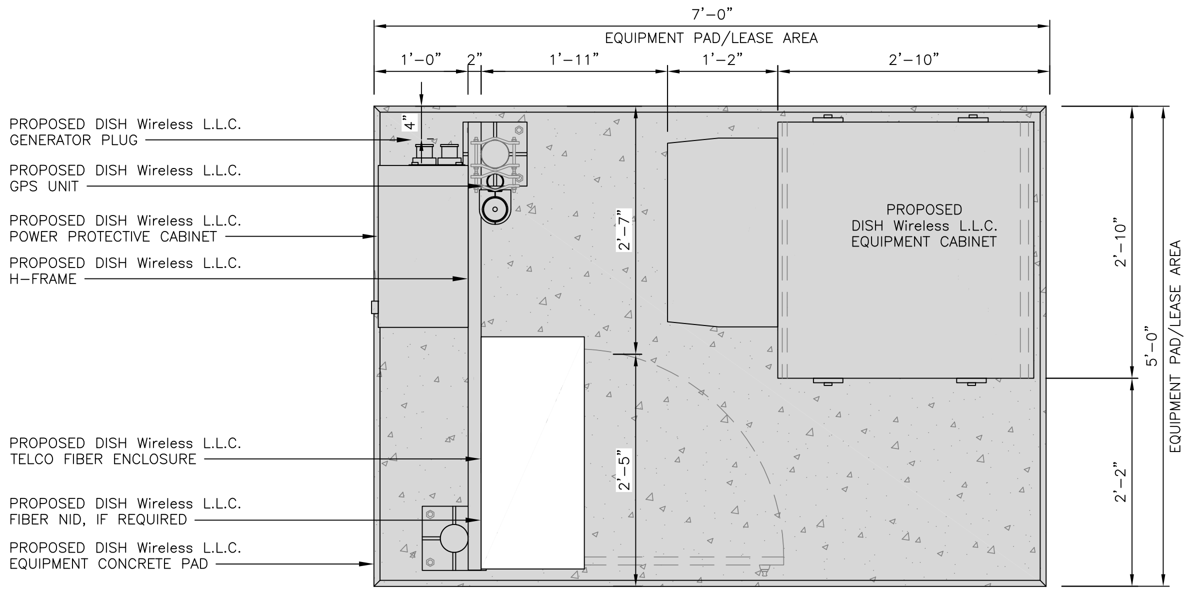
343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

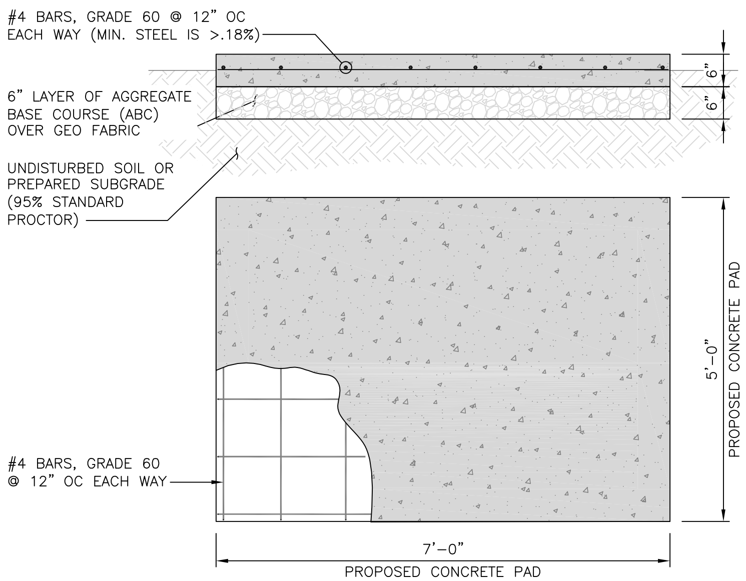
A-2



EQUIPMENT PLAN

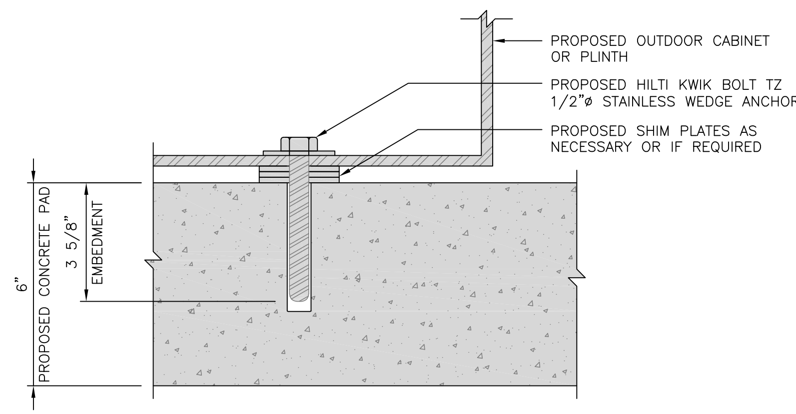
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

1



TYPICAL CONCRETE PAD DETAIL

2A

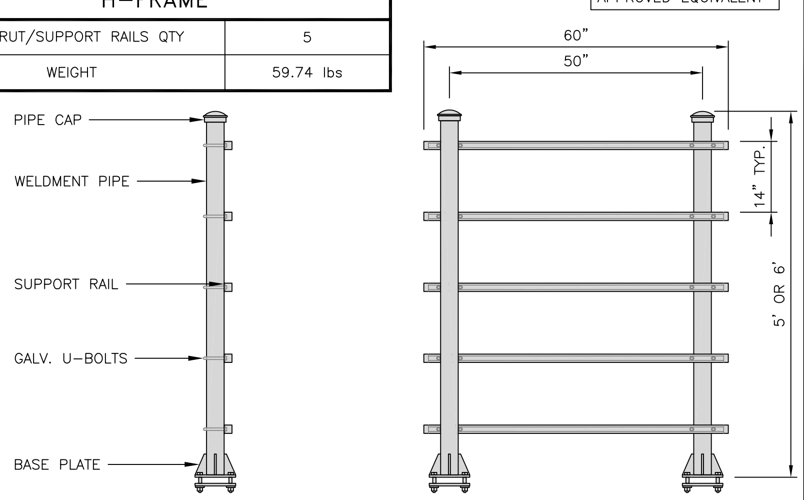


TYPICAL OUTDOOR EQUIPMENT TO CONCRETE SLAB ANCHORAGE

2B

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

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

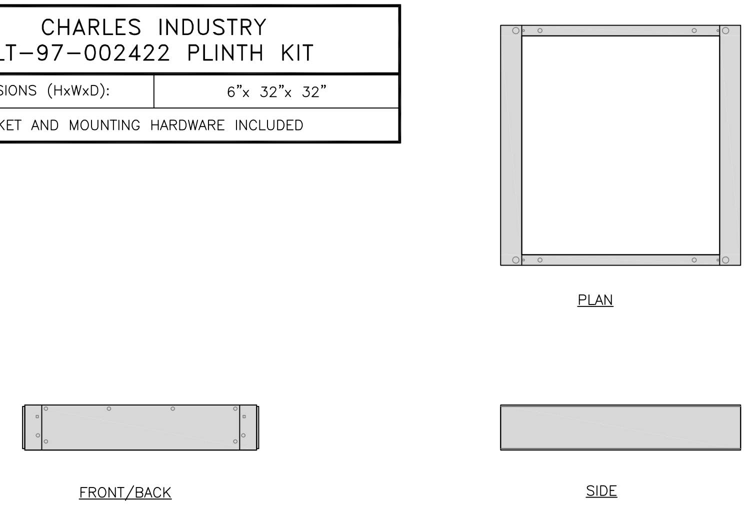


H-FRAME DETAIL

NO SCALE

3

CHARLES INDUSTRY LT-97-002422 PLINTH KIT	
DIMENSIONS (HxWxD):	6"x 32"x 32"
NOTE: GASKET AND MOUNTING HARDWARE INCLUDED	



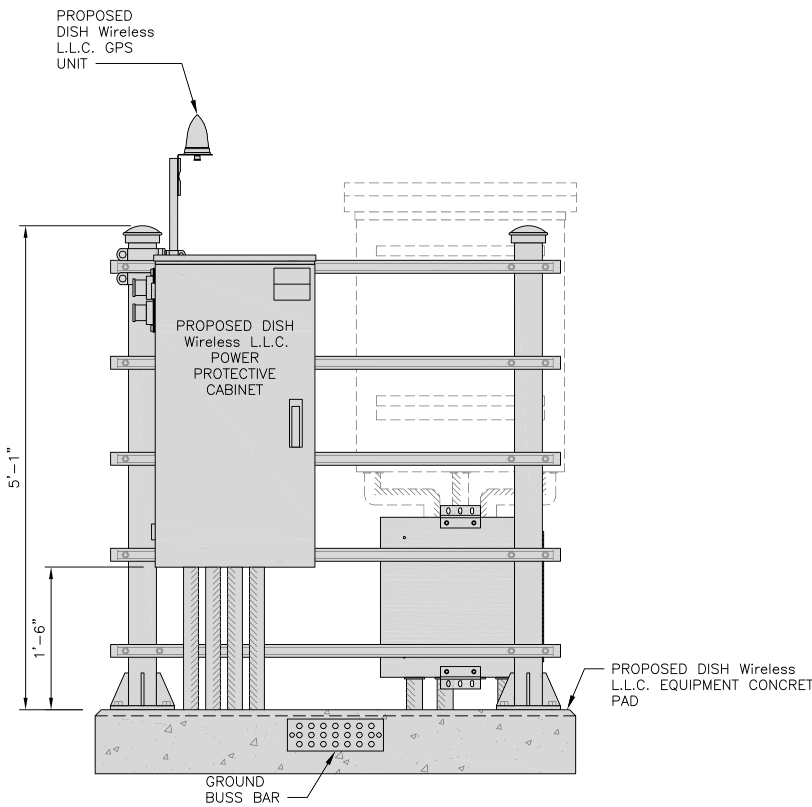
PLINTH DETAIL

NO SCALE

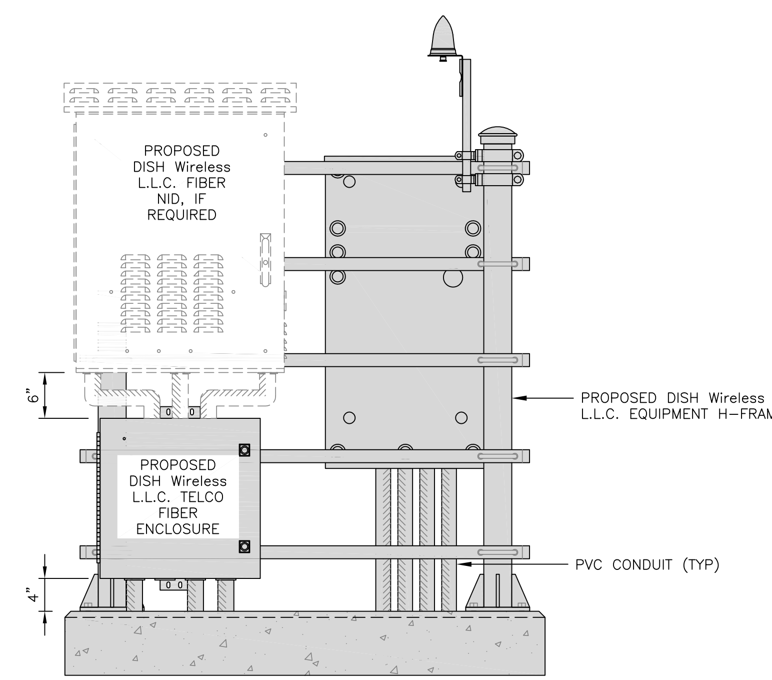
4

NOTES

1. EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED PROFESSIONAL ENGINEER
01/05/23
MTS ENGINEERING, L.L.C.
PEC.0001985
Expires 3/31/23

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 1

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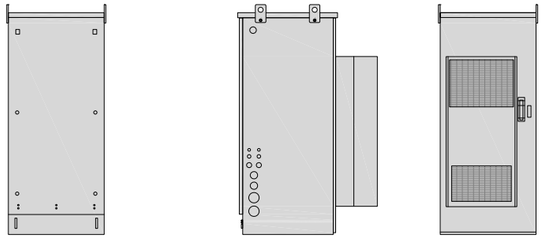
DISH Wireless L.L.C. PROJECT INFORMATION
BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE
EQUIPMENT PAD AND H-FRAME DETAILS

SHEET NUMBER
A-3

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

PLAN

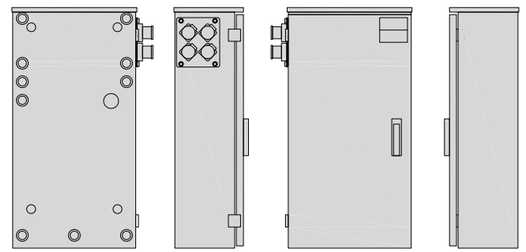


BACK SIDE FRONT

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

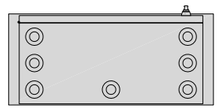


BACK SIDE FRONT SIDE

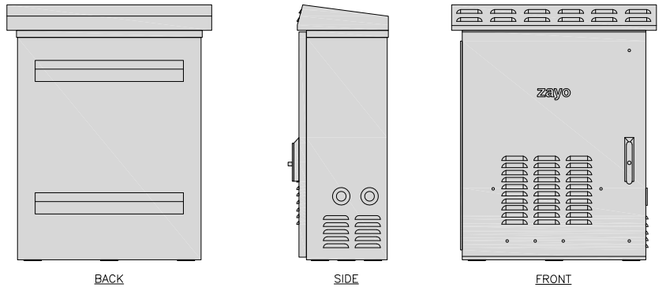
POWER PROTECTION CABINET (PPC) DETAIL — NO SCALE — 2

NOT USED — NO SCALE — 3

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs



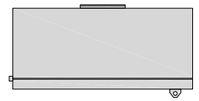
BOTTOM



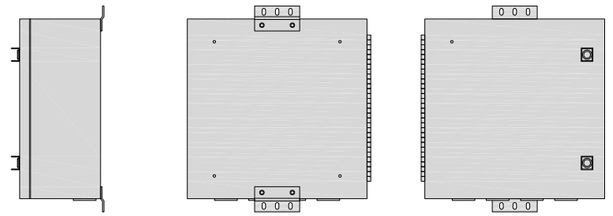
BACK SIDE FRONT

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

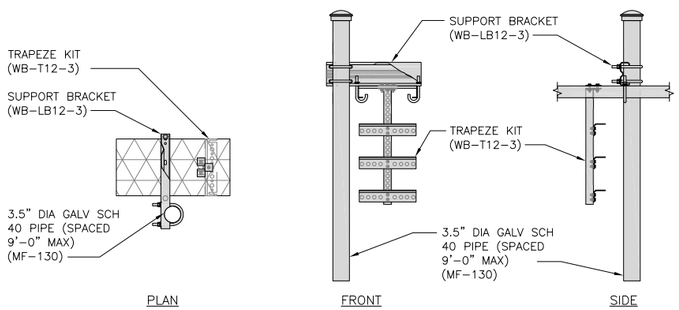


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL — NO SCALE — 6

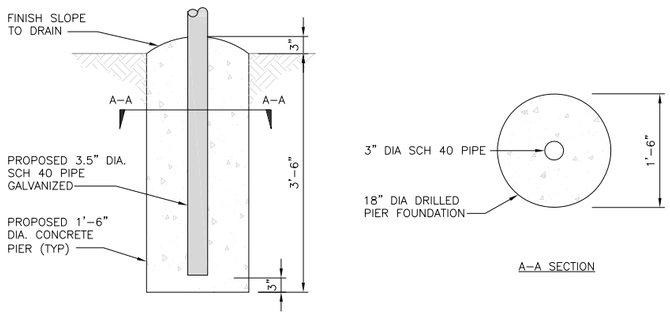
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



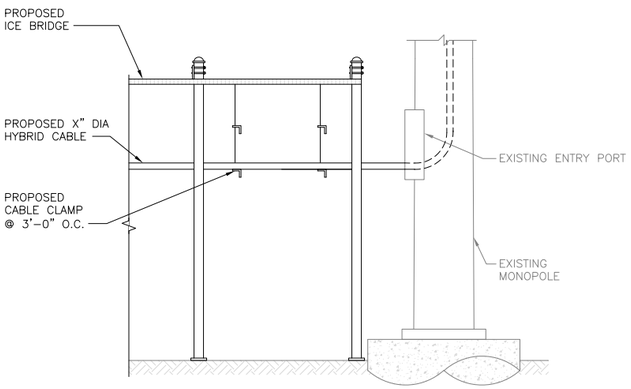
PLAN FRONT SIDE

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

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PH: (918) 587-4630

STATE OF CONNECTICUT — CHAD M. LITTLE — No. 23924 — LICENSED PROFESSIONAL ENGINEER

01/05/23

MTS ENGINEERING, P.L.L.C.
PEN.0030985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 1

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149480.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

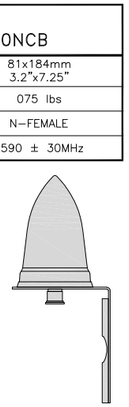
SHEET TITLE

EQUIPMENT DETAILS

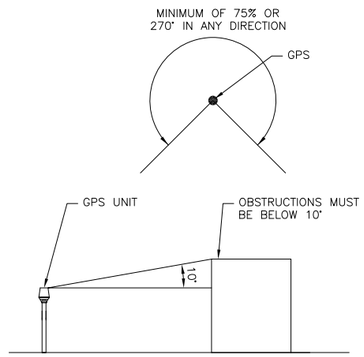
SHEET NUMBER

A-4

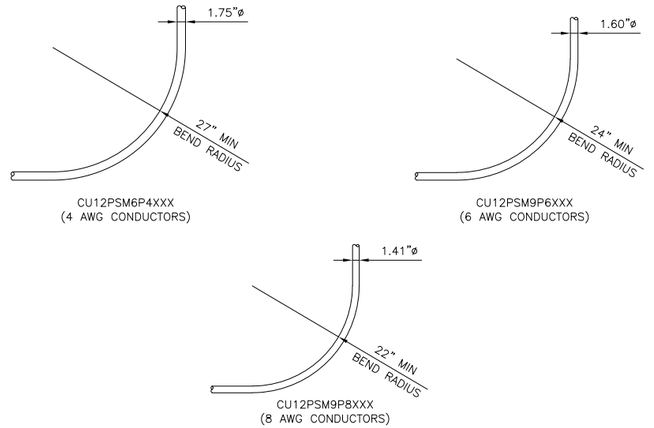
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



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

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PROJECT INFORMATION

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SALEM, CT 06420

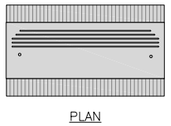
SHEET TITLE

EQUIPMENT DETAILS

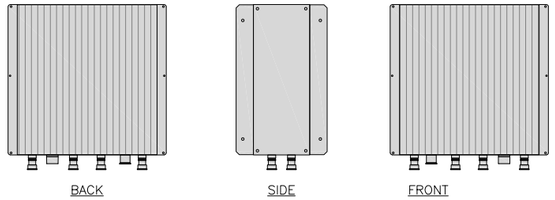
SHEET NUMBER

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



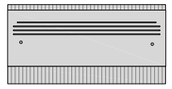
PLAN



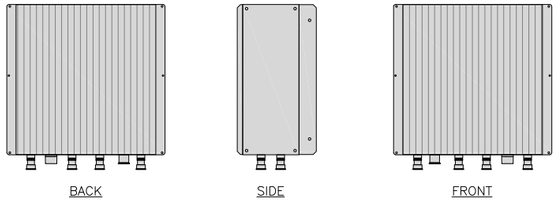
BACK SIDE FRONT

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



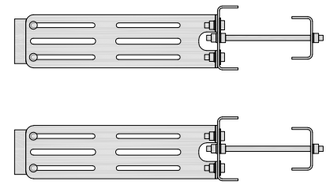
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

COMMSCOPE RR-FA2 LARGE STABILIZER	
DIMENSIONS (HxWxD)	16.4"x8.5"x18"
WEIGHT	39.2 lbs

DESIGN NOTES:
MOUNT WILL FIT LEGS UP TO:
- 5.6" ROUND
- 6.0" 60° ANGLE
- 4.5" 90° ANGLE

PLAN

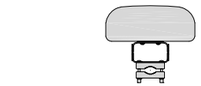


SIDE

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



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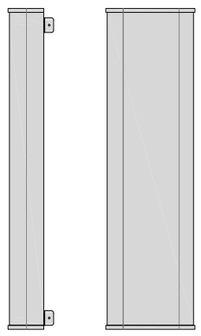


SIDE FRONT

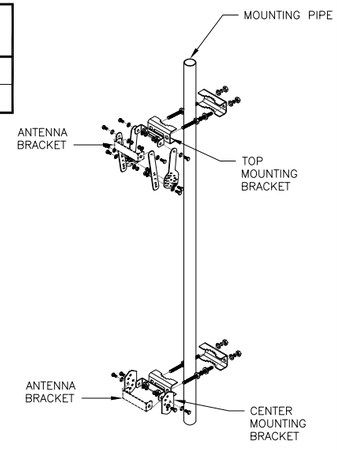
ANTENNA DETAIL | NO SCALE | 4

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

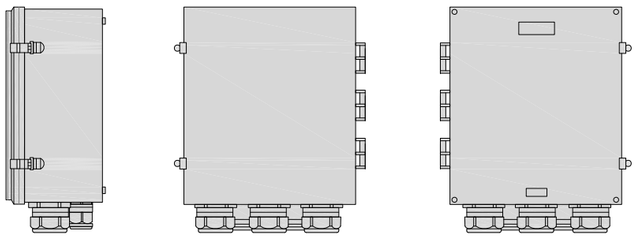


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

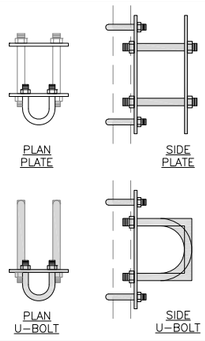


SIDE BACK FRONT

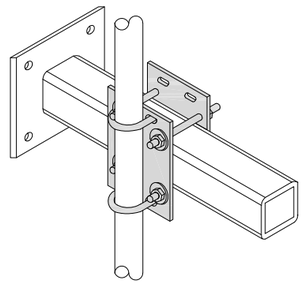
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

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

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



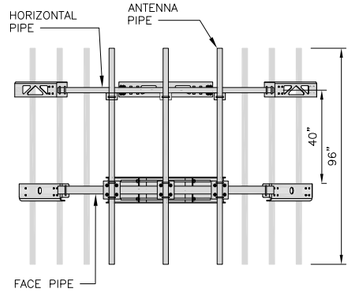
PLAN PLATE SIDE PLATE PLAN U-BOLT SIDE U-BOLT

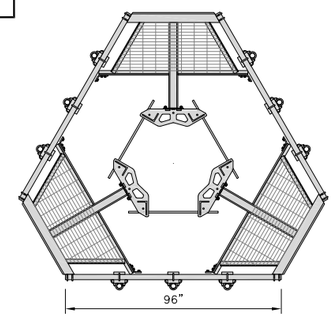


RRH/OVP MOUNT DETAIL | NO SCALE | 8

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

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STATE OF CONNECTICUT CHAD M. LITTLE No. 23924 LICENSED PROFESSIONAL ENGINEER
01/05/23
MTS ENGINEERING, P.L.L.C.
PE.0030985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 1

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A	7/28/21	ISSUED FOR REVIEW
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A&E PROJECT NUMBER

149480.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE

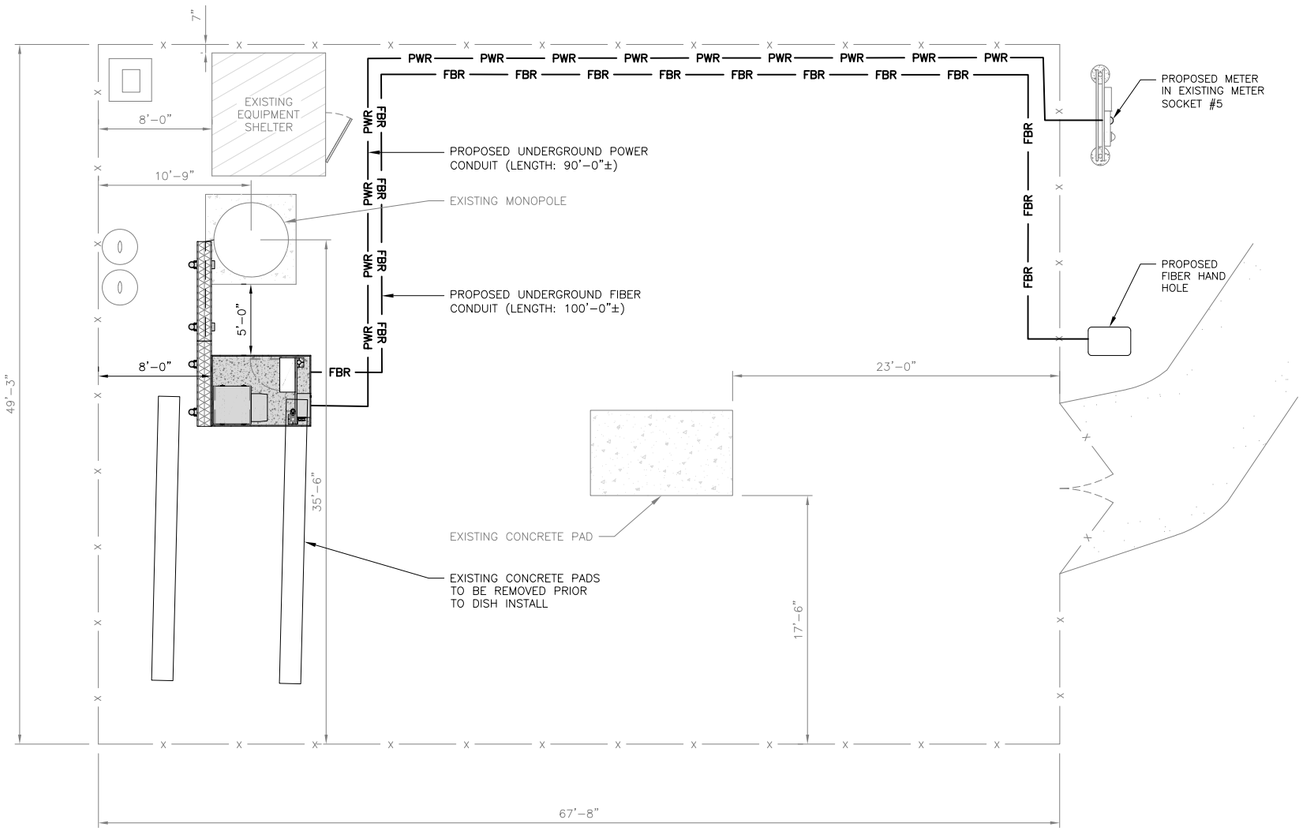
EQUIPMENT DETAILS

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.



N

UTILITY ROUTE PLAN

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

1

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

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

ELECTRICAL NOTES

NO SCALE

2

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STATE OF CONNECTICUT
CHAD M. LITTLE
No. 23924
LICENSED PROFESSIONAL ENGINEER
01/05/23
MTS ENGINEERING, P.L.L.C.
PER.0000985
Expires 3/31/23

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE

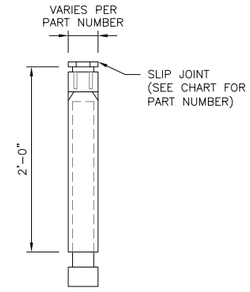
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

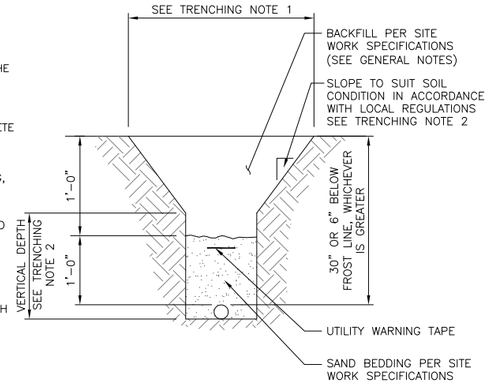


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

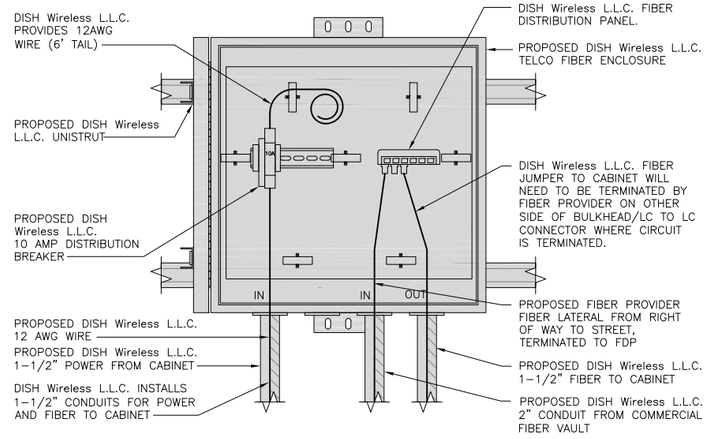
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

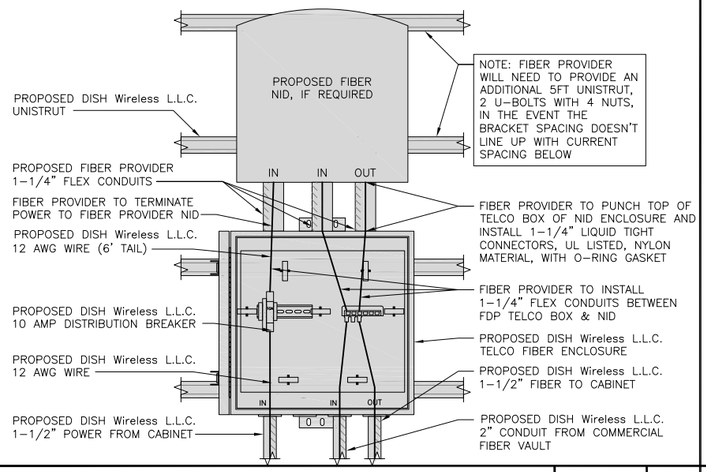
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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

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PER.0280985
Expires 3/31/23

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DISH Wireless L.L.C.
PROJECT INFORMATION

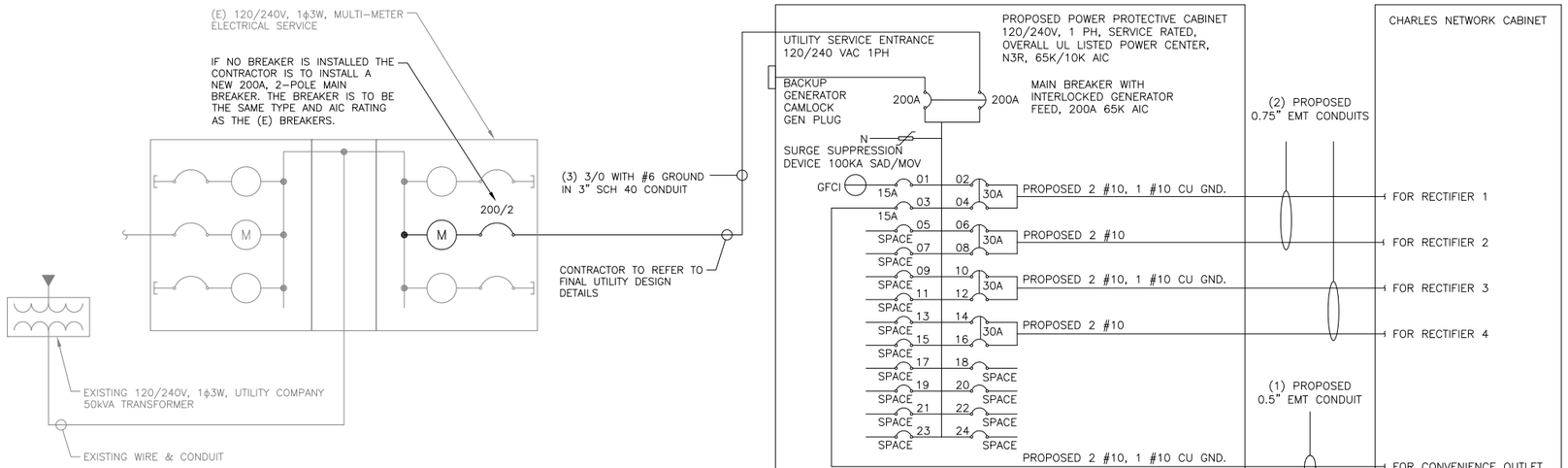
BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

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:
(4) 30A, 2P BREAKER - SQUARE D P/N:QO230
(1) 15A, 1P BREAKER - SQUARE D P/N:QO115

NOTES

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

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

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

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

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

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.

#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

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

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

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

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.

3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

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

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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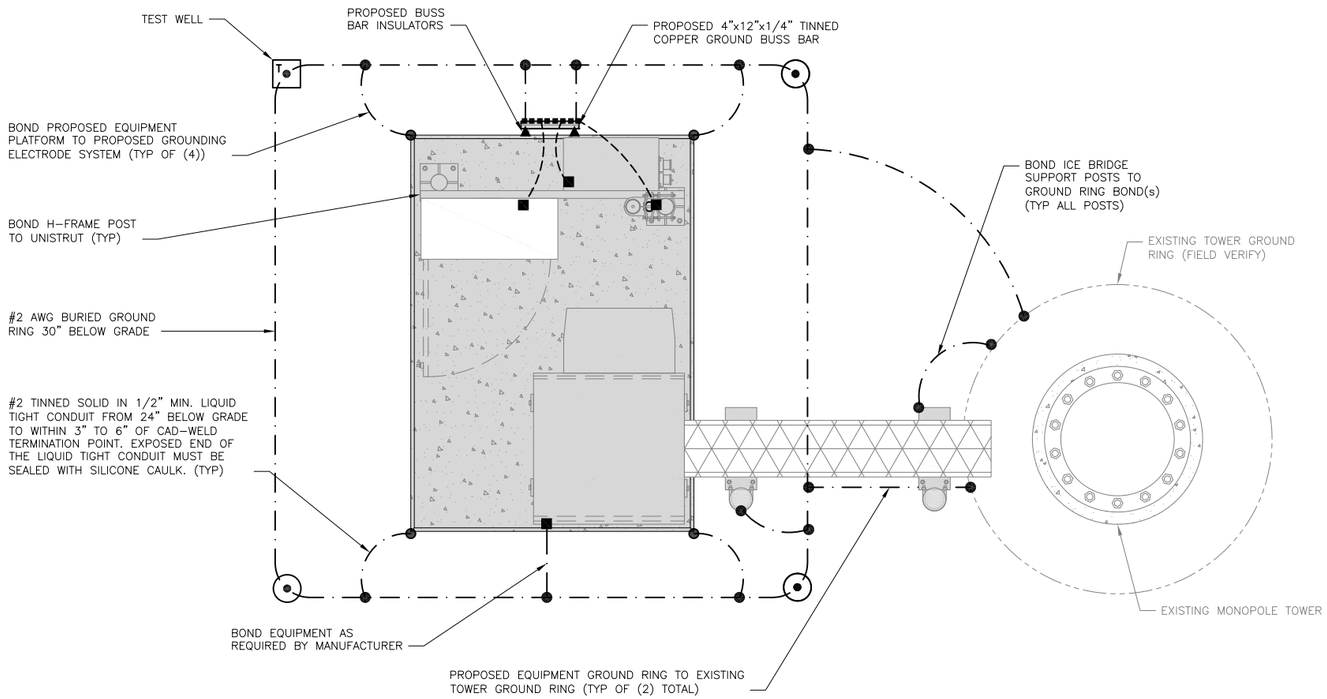
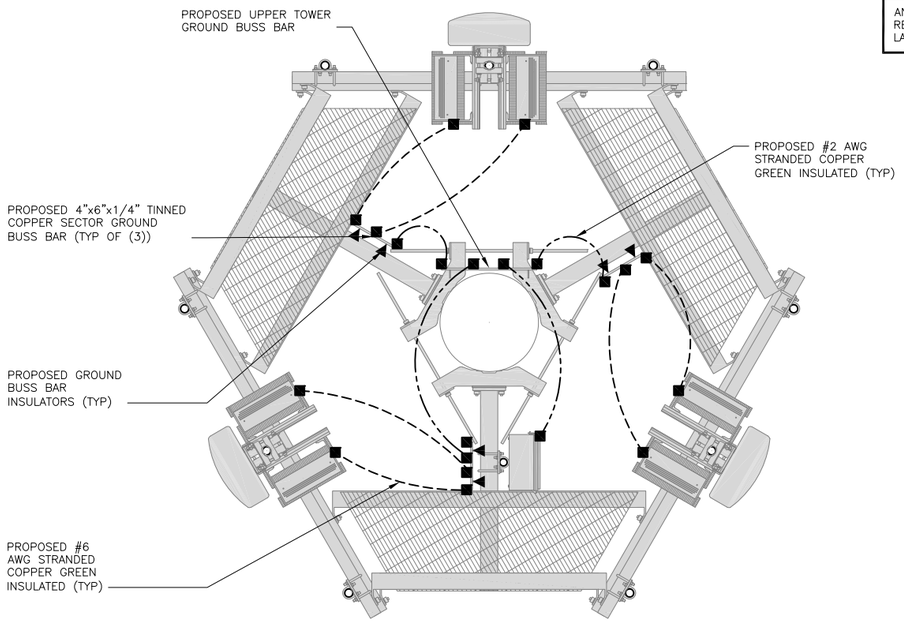
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

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

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MEH	RMC	RMC

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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
149480.001.01

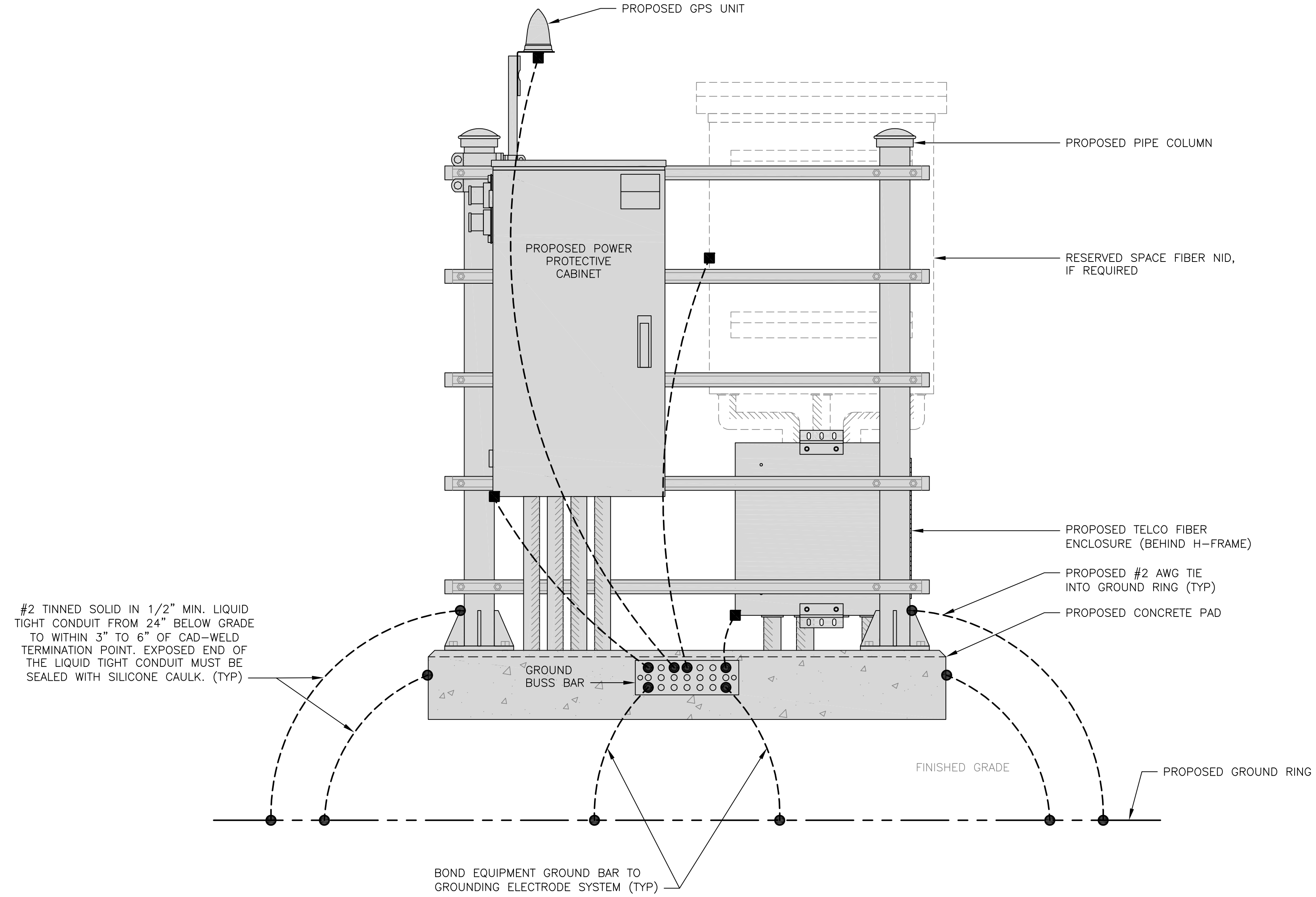
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE
GROUNDING PLANS AND NOTES

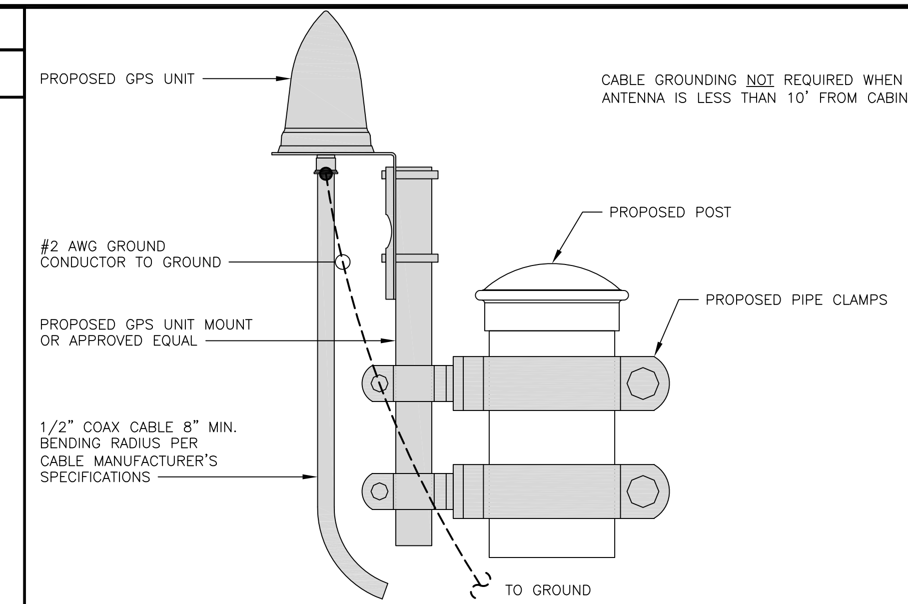
SHEET NUMBER
G-1

NOTES

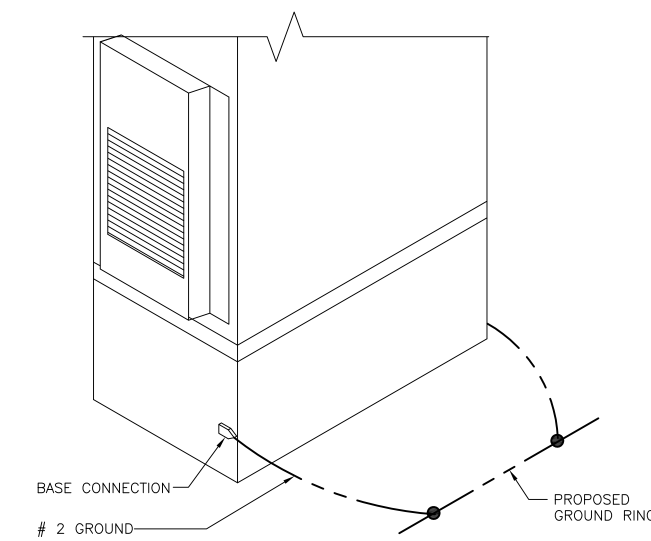
EQUIPMENT CABINET OMITTED FOR CLARITY



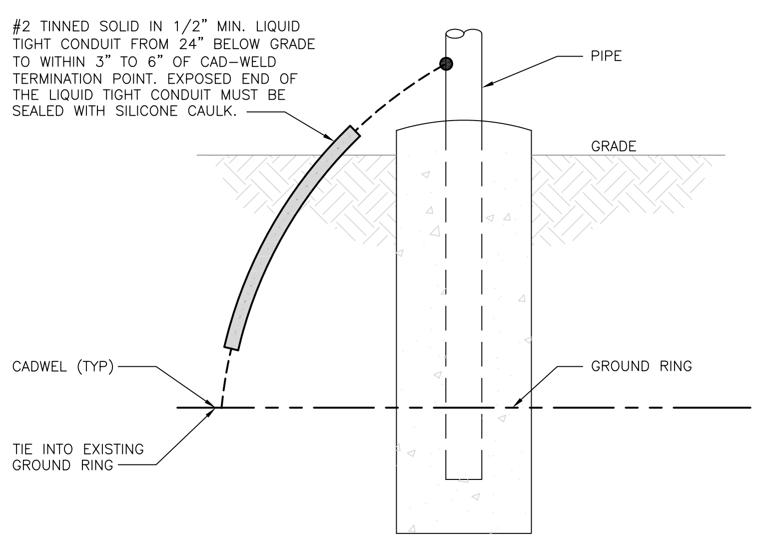
H-FRAME GROUNDING DETAIL | NO SCALE | 1



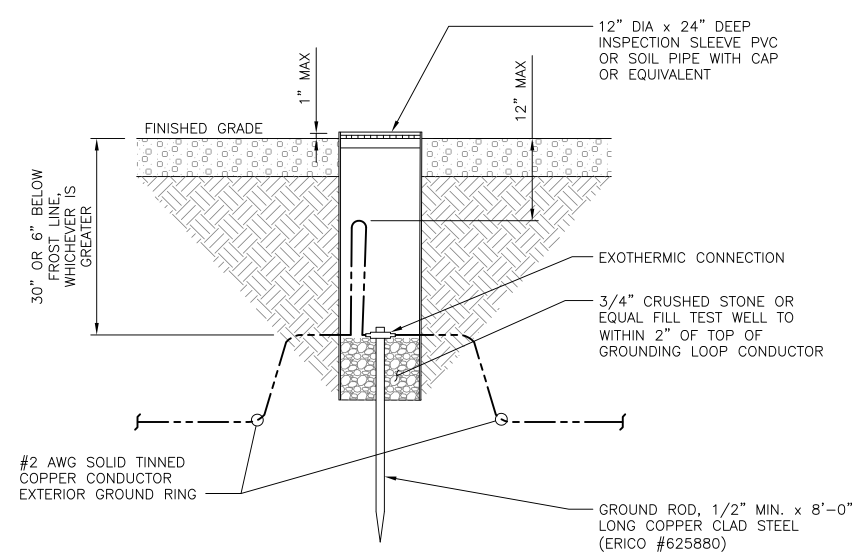
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



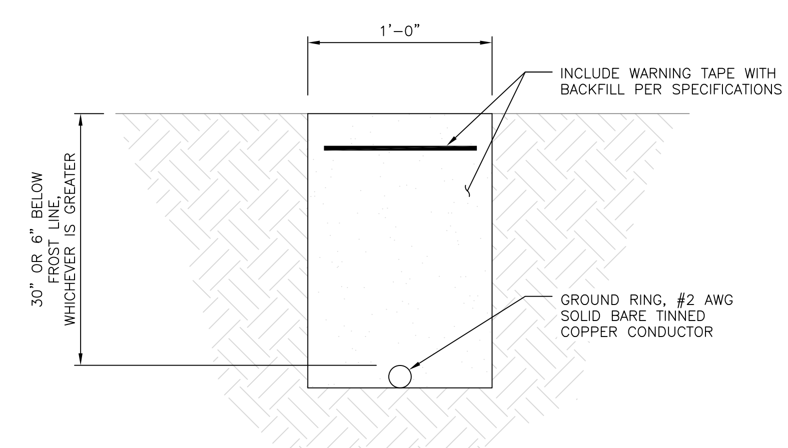
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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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.

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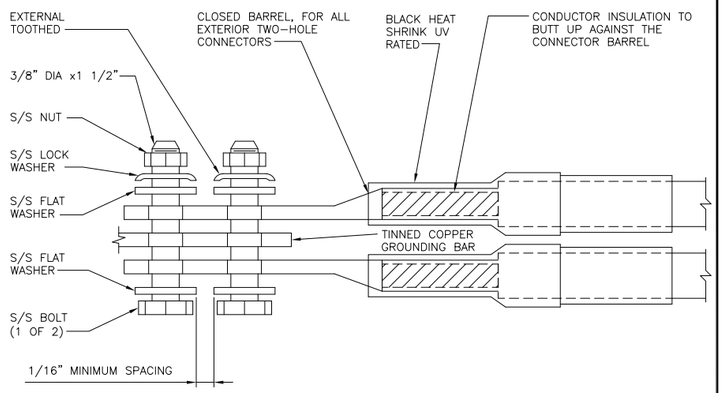
SHEET TITLE
GROUNDING DETAILS

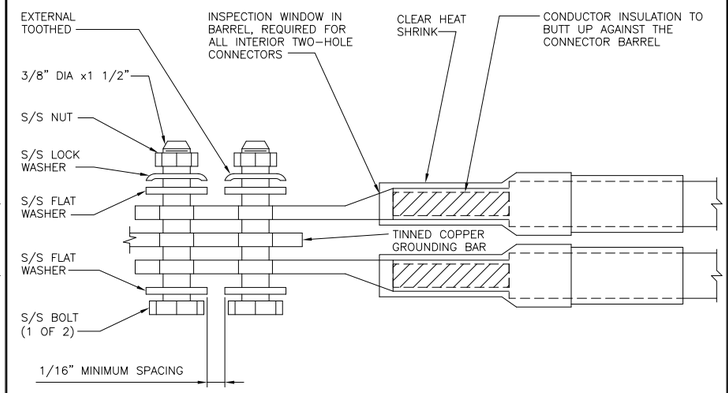
SHEET NUMBER
G-2

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

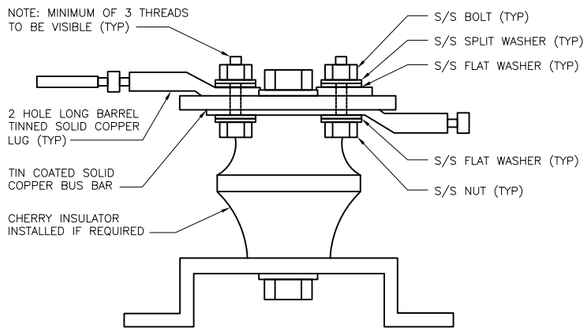
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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PROJECT INFORMATION

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343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

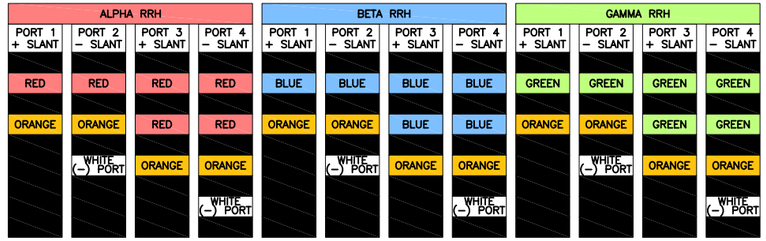
G-3

HYBRID/DISCREET CABLES

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

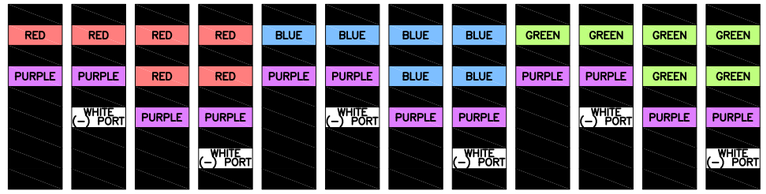
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) - OPTIONAL PER MARKET

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)



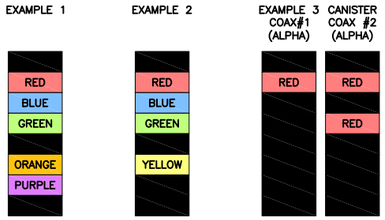
HYBRID/DISCREET CABLES

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.



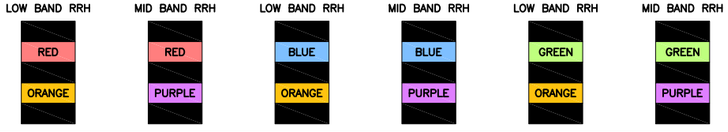
CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RD DETAILS. FINAL RFDS IS IN NEXSYSONE.

FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

POWER CABLES TO RRHs

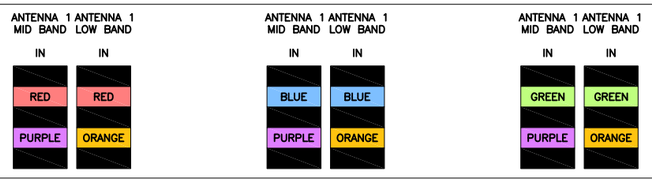
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

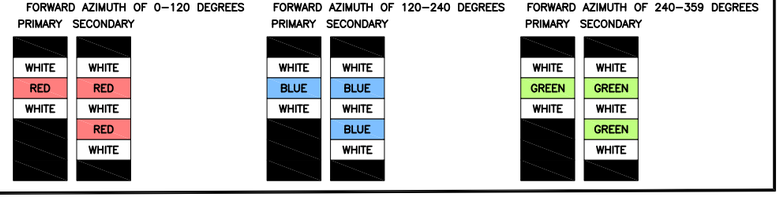
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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

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RFDS REV #: 1

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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION	
MECHANICAL CONNECTION	
BUSS BAR INSULATOR	
CHEMICAL ELECTROLYTIC GROUNDING SYSTEM	
TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM	T
EXOTHERMIC WITH INSPECTION SLEEVE	
GROUNDING BAR	
GROUND ROD	
TEST GROUND ROD WITH INSPECTION SLEEVE	T
SINGLE POLE SWITCH	$
DUPLEX RECEPTACLE	
DUPLEX GFCI RECEPTACLE	GFCI
FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8	F
SMOKE DETECTION (DC)	SD
EMERGENCY LIGHTING (DC)	
SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED–1–25A400/51K–SR4–120–PE–DDBTXD	
CHAIN LINK FENCE	x x x x
WOOD/WROUGHT IRON FENCE	
WALL STRUCTURE	
LEASE AREA	
PROPERTY LINE (PL)	
SETBACKS	
ICE BRIDGE	
CABLE TRAY	
WATER LINE	W W W W W
UNDERGROUND POWER	UGP UGP UGP UGP UGP
UNDERGROUND TELCO	UGT UGT UGT UGT UGT
OVERHEAD POWER	OHP OHP OHP OHP
OVERHEAD TELCO	OHT OHT OHT OHT
UNDERGROUND TELCO/POWER	UGT/P UGT/P UGT/P UGT/P
ABOVE GROUND POWER	AGP AGP AGP AGP AGP
ABOVE GROUND TELCO	AGT AGT AGT AGT AGT
ABOVE GROUND TELCO/POWER	AGT/P AGT/P AGT/P AGT/P
WORKPOINT	W.P.
SECTION REFERENCE	XX X–X
DETAIL REFERENCE	XX X–X

ABBREVIATIONS

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

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BER:2386985
Expires 3/31/23

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	7/28/21	ISSUED FOR REVIEW
0	11/4/21	ISSUED FOR CONSTRUCTION
1	01/05/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149480.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

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
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B+T GRP

1717 S. BOULDER
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STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
01/05/23

MTS ENGINEERING, P.L.L.C.
PEN.0030985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

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

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1717 S. BOULDER
SUITE 300
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STATE OF CONNECTICUT
CHAD TITLE
No. 23924
LICENSED PROFESSIONAL ENGINEER
01/05/23
MTS ENGINEERING, P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
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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

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1717 S. BOULDER
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STATE OF CONNECTICUT
CHAD M. LITTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

01/05/23

MTS ENGINEERING, P.L.L.C.
PER.0030985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	7/28/21	ISSUED FOR REVIEW
0	11/4/21	ISSUED FOR CONSTRUCTION
1	01/05/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149480.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00063A
343 OLD COLCHESTER RD
SALEM, CT 06420

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 189 ft PIROD Monopole
Customer Name: SBA Communications Corp
Customer Site Number: CT22097-A
Customer Site Name: Salem (Old Colchester Rd)
Carrier Name: Dish Wireless (App#: 163276-1)
Carrier Site ID / Name: BOBOS00063A / 0
Site Location: 343 Old Colchester Road
Salem, Connecticut
NEW LONDON County
Latitude: 41.502000
Longitude: -72.242900

Analysis Result:

Max Structural Usage: 72.8% [Pass]
Max Foundation Usage: 67.4% [Pass]
Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Jacob C. Ehrmann

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

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Report Prepared By: Jacob C. Ehrmann

Introduction

The purpose of this report is to summarize the analysis results on the 189 ft PIROD 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	Pirod Inc, Drawing # 155884-B dated 05/16/2001
Foundation Drawing	Pirod Inc, Drawing # 155884-B dated 05/16/2001
Geotechnical Report	BL Companies, project # 00C662-B dated 12/05/2000

Analysis Criteria

The comprehensive analysis was performed in accordance with the requirements and stipulations of the TIA-222-H**.** 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:	135.0 mph (3-Sec. Gust) (Ultimate wind speed)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Service Load Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	C
Risk Category:	III
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.205, S_1 = 0.055

This structural analysis is based upon the tower being classified as a Risk Category III; 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
5	148.0	1	Generic - 20' Dipole - Whip	Low Profile Platform-Round	(2) 1/2" (2) 7/8"	Quinebaug Valley Emergency Communication
6		1	Generic - 22' Dipole - Whip			
7		1	Generic - 16' Omni - Whip			
8		1	Andrew - DB230/74 - Yagi			

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	186.0	3	TA08025-B605	MC-PK8-DSH	(1) 1.75" Hybrid	Dish Wireless
2		3	JMA Wireless - MX08FRO665-21 - Panel			
3		3	TA08025-B604			
4		1	RDIDC-9181-OF-48			

All transmission lines are considered running inside of the pole shafts.

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:	**72.8%**	**59.4%**	**59.5%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	4228.4	36.8	48.1

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.

Service Load 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 1.0223 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.

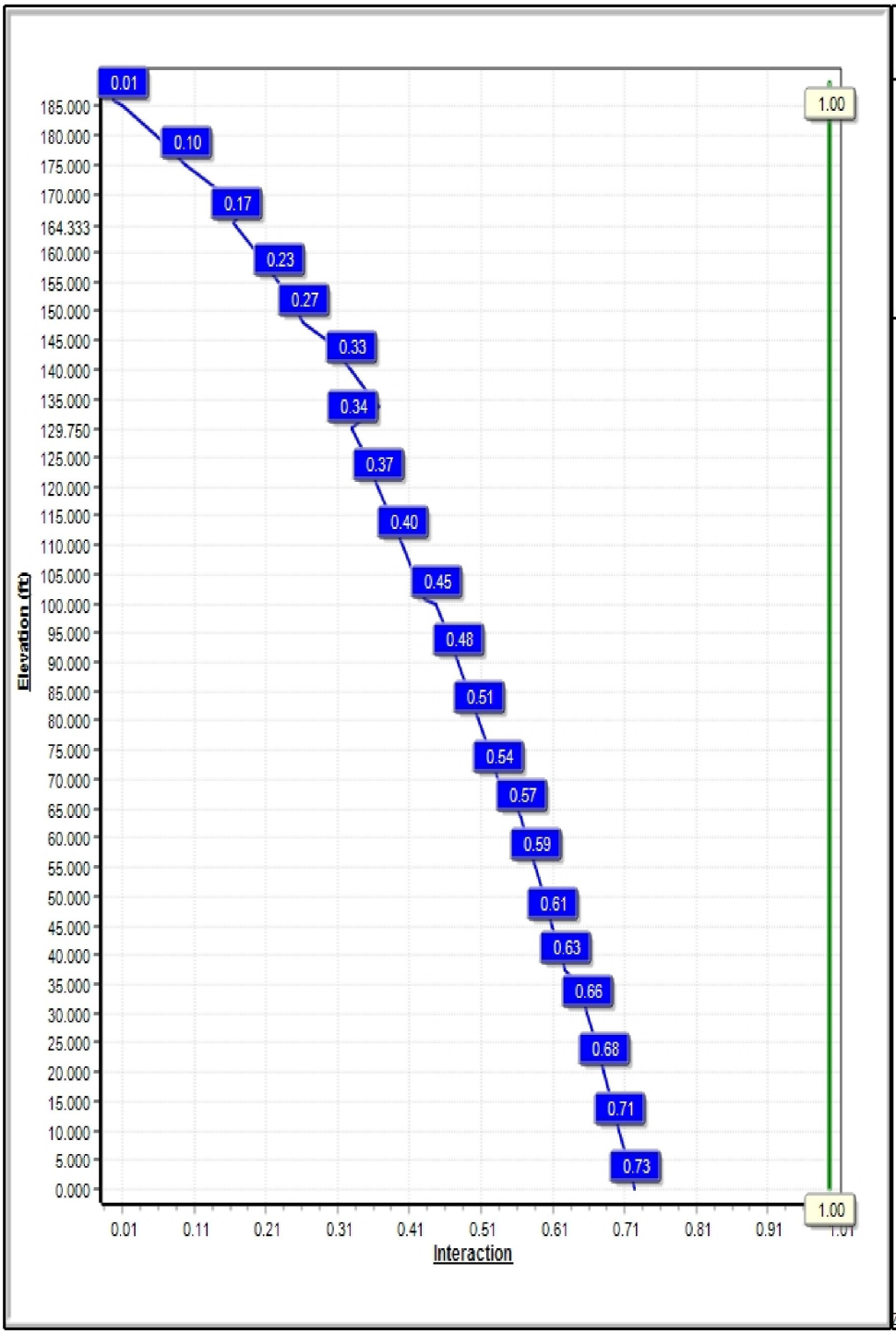
Usage Diagram - Max Ratio 72.81% at 0.0ft

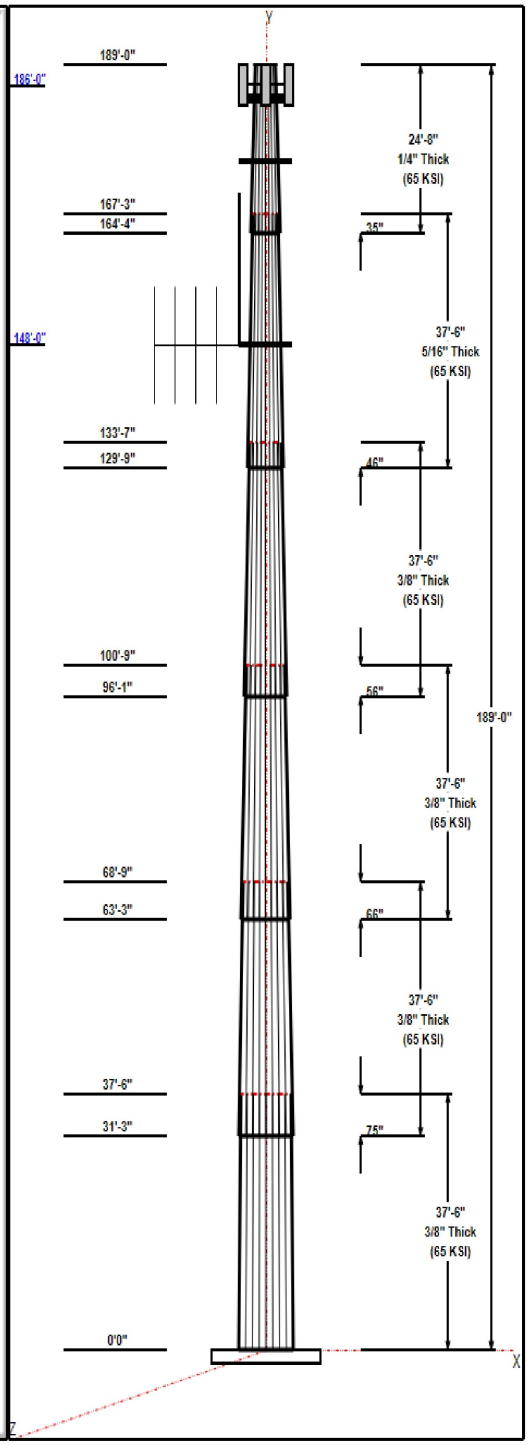
Structure:	CT22097-A-SBA	**Code:**	EIA/TIA-222-H	12/29/2022
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C	
Height:	189.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	27
Wind Load Factor:	1.00		

Load Case : 1.2D + 1.0W 135 mph Wind





Structure: CT22097-A-SBA

Type: Tapered
Site Name: Salem (Old Colchester Rd)
Height: 189.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.24531

12/29/2022

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	37.50	53.74	62.94	0.375		0.24531	65
2	37.50	46.82	56.02	0.375	Slip	0.24531	65
3	37.50	39.72	48.92	0.375	Slip	0.24531	65
4	37.50	32.42	41.62	0.375	Slip	0.24531	65
5	37.50	24.78	33.98	0.313	Slip	0.24531	65
6	24.67	19.95	26.00	0.250	Slip	0.24531	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
186.00	186.00	3	MX08FRO665-21	Dish Wireless
186.00	186.00	1	MC-PK8-DSH	Dish Wireless
186.00	186.00	3	TA08025-B604	Dish Wireless
186.00	186.00	1	RDIDC-9181-OF-48	Dish Wireless
186.00	186.00	3	TA08025-B605	Dish Wireless
175.00	175.00	1	Low Profile	N/A
148.00	158.00	1	20' Dipole	Quinebaug Valley
148.00	159.00	1	22' Dipole	Quinebaug Valley
148.00	156.00	1	16' Omni	Quinebaug Valley
148.00	148.00	1	DB230/74	Quinebaug Valley
148.00	148.00	1	Low Profile	Dish Wireless

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	186.00	Inside	1.75" Hybrid	Dish Wireless
3.00	148.00	Inside	1/2" Coax	Quinebaug Valley
3.00	148.00	Inside	7/8" Coax	Quinebaug Valley

Anchor Bolts

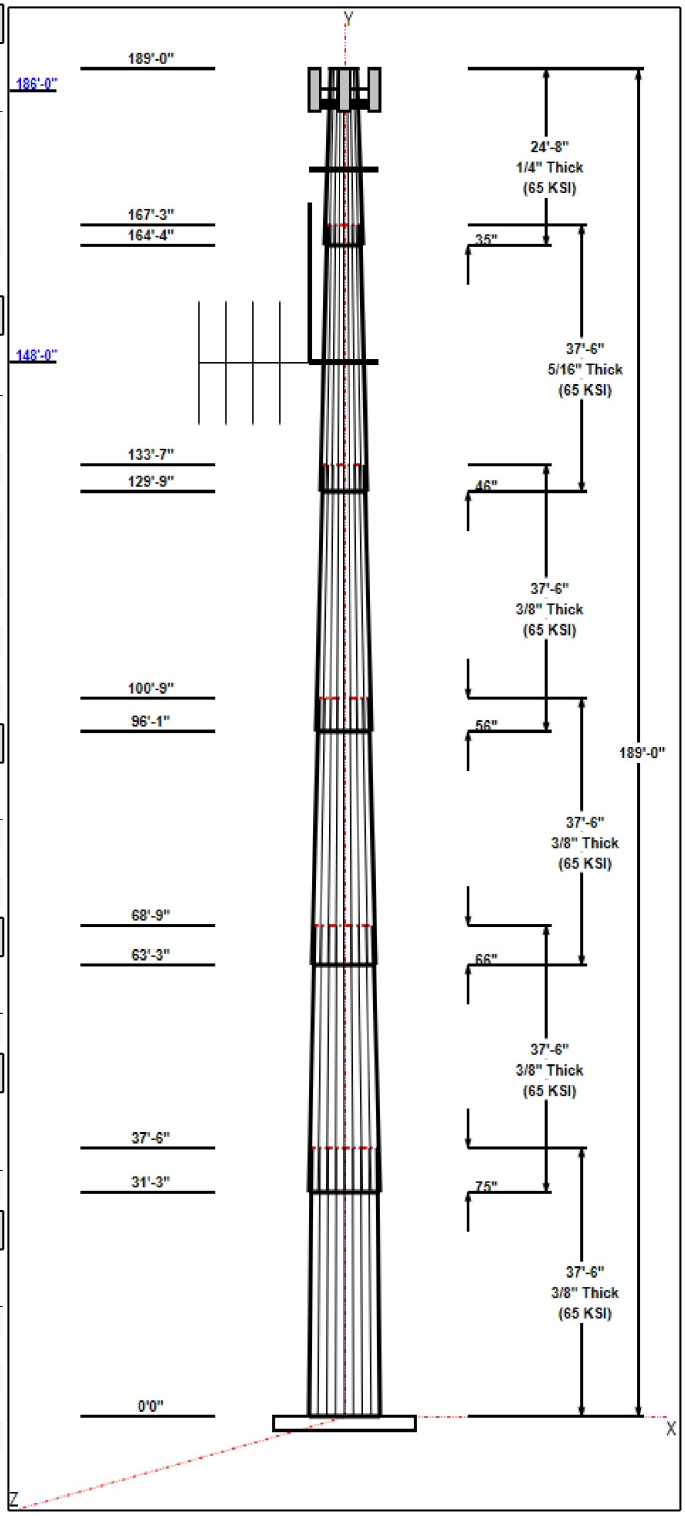
Qty	Specifications	Grade (ksi)	Arrangement
45	1.25" A687	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	71.0	50.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.0W 135 mph Wind	4228.4	36.8	48.1
0.9D + 1.0W 135 mph Wind	4186.5	36.7	36.1
1.2D + 1.0Di + 1.0W 50 mph Wind	1034.8	8.8	63.8
1.2D + 1.0Ev + 1.0Eh	149.1	0.9	49.9
0.9D + 1.0Ev + 1.0Eh	147.5	0.9	37.9
1.0D + 1.0W 60 mph Wind	743.1	6.5	40.1

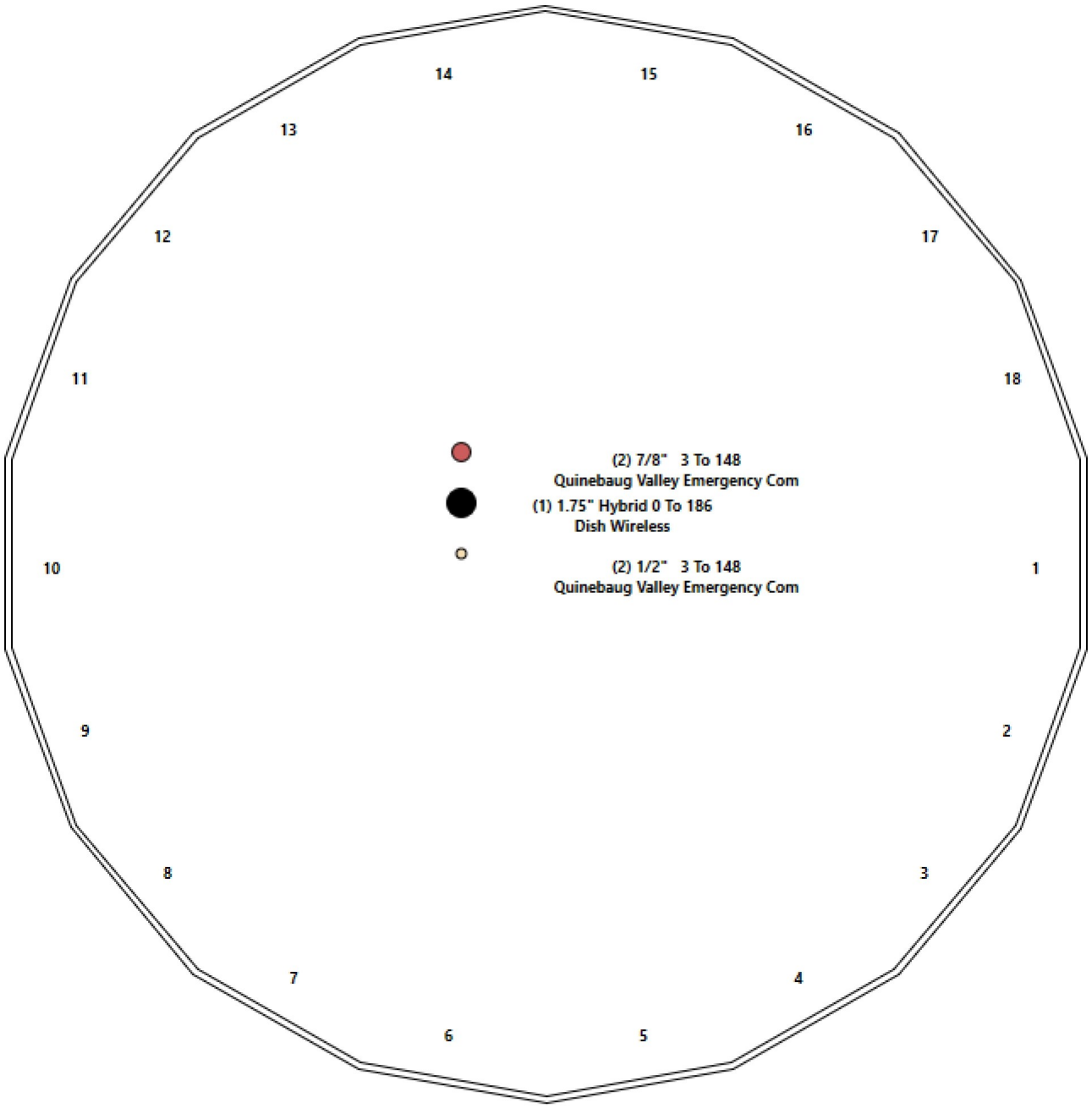


Structure: CT22097-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Salem (Old Colchester Rd)
Height: 189.00 (ft)

12/29/2022

Tower Engineering Solutions



Shaft Properties

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 4	

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	37.500	0.3750	65		0.00	8,803
2	18	37.500	0.3750	65	Slip	75.00	7,753
3	18	37.500	0.3750	65	Slip	66.00	6,674
4	18	37.500	0.3750	65	Slip	56.00	5,565
5	18	37.500	0.3125	65	Slip	46.00	3,679
6	18	24.667	0.2500	65	Slip	35.00	1,513
					Total Shaft Weight:		**33,988**

	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	62.94	0.00	74.46	36822.89	28.18	167.83	53.74	37.50	63.51	22851.0	23.86	143.3	0.245310
2	56.02	31.25	66.23	25911.41	24.93	149.39	46.82	68.75	55.28	15068.2	20.61	124.8	0.245310
3	48.92	63.25	57.78	17204.98	21.59	130.46	39.72	100.75	46.83	9160.71	17.27	105.9	0.245310
4	41.62	96.08	49.09	10548.86	18.16	110.98	32.42	133.58	38.14	4947.49	13.83	86.45	0.245310
5	33.98	129.7	33.40	4783.72	17.76	108.75	24.78	167.25	24.27	1836.55	12.57	79.31	0.245310
6	26.00	164.3	20.43	1711.65	16.93	104.00	19.95	189.00	15.63	766.33	12.66	79.80	0.245310

Load Summary

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 5	

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	186.00	MX08FRO665-21	3	64.50	12.49	0.74	292.35	13.637	0.76	0.00	0.00
2	186.00	MC-PK8-DSH	1	1727.00	37.59	1.00	3049.14	74.590	1.00	0.00	0.00
3	186.00	TA08025-B604	3	63.90	1.96	0.67	103.56	2.399	0.67	0.00	0.00
4	186.00	RDIDC-9181-OF-48	1	21.90	2.01	0.50	63.61	2.455	0.50	0.00	0.00
5	186.00	TA08025-B605	3	75.00	1.96	0.67	115.97	2.399	0.67	0.00	0.00
6	175.00	Low Profile Platform-Round	1	1500.00	30.25	1.00	2519.09	49.157	1.00	0.00	0.00
7	148.00	20' Dipole	1	60.00	7.52	1.00	229.77	16.620	1.00	0.00	10.00
8	148.00	22' Dipole	1	66.00	8.27	1.00	252.64	18.268	1.00	0.00	11.00
9	148.00	16' Omni	1	55.00	4.80	1.00	147.51	9.164	1.00	0.00	8.00
10	148.00	DB230/74	1	27.00	3.66	1.00	102.49	12.033	1.00	0.00	0.00
11	148.00	Low Profile Platform-Round	1	1500.00	24.55	1.00	2502.15	39.640	1.00	0.00	0.00
		Totals:	**17**	**5,567.10**			**10,402.06**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	186.00	(1) 1.75" Hybrid	0.00	Inside
3.00	148.00	(2) 1/2" Coax	0.00	Inside
3.00	148.00	(2) 7/8" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 6	

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		0.3750	62.938	74.462	36822.9	28.18	167.83	68.3	1152.	0.0
5.00		0.3750	61.711	73.002	34699.3	27.61	164.56	68.9	1107.	1254.5
10.00		0.3750	60.484	71.543	32659.0	27.03	161.29	69.6	1063.	1229.6
15.00		0.3750	59.258	70.083	30700.3	26.45	158.02	70.3	1020.	1204.8
20.00		0.3750	58.031	68.623	28821.5	25.88	154.75	71.0	978.2	1180.0
25.00		0.3750	56.805	67.163	27020.9	25.30	151.48	71.6	936.9	1155.1
30.00		0.3750	55.578	65.703	25297.0	24.72	148.21	72.3	896.5	1130.3
31.25	Bot - Section 2	0.3750	55.272	65.338	24877.8	24.58	147.39	72.5	886.5	278.7
35.00		0.3750	54.352	64.243	23648.0	24.15	144.94	73.0	857.0	1664.9
37.50	Top - Section 1	0.3750	54.488	64.406	23828.1	24.21	145.30	0.0	0.0	1094.4
40.00		0.3750	53.875	63.676	23027.1	23.92	143.67	73.3	841.8	544.8
45.00		0.3750	52.649	62.216	21479.4	23.35	140.40	73.9	803.6	1071.0
50.00		0.3750	51.422	60.757	20002.6	22.77	137.13	74.6	766.2	1046.1
55.00		0.3750	50.195	59.297	18595.1	22.19	133.85	75.3	729.7	1021.3
60.00		0.3750	48.969	57.837	17255.3	21.61	130.58	76.0	694.0	996.4
63.25	Bot - Section 3	0.3750	48.172	56.888	16419.8	21.24	128.46	76.4	671.4	634.4
65.00		0.3750	47.742	56.377	15981.4	21.04	127.31	76.7	659.3	679.8
68.75	Top - Section 2	0.3750	47.572	56.175	15810.0	20.96	126.86	0.0	0.0	1436.2
70.00		0.3750	47.266	55.810	15503.8	20.81	126.04	76.9	646.1	238.2
75.00		0.3750	46.039	54.350	14318.8	20.24	122.77	77.6	612.6	937.1
80.00		0.3750	44.813	52.890	13195.7	19.66	119.50	78.3	580.0	912.3
85.00		0.3750	43.586	51.430	12132.9	19.08	116.23	79.0	548.3	887.4
90.00		0.3750	42.360	49.970	11128.8	18.51	112.96	79.6	517.5	862.6
95.00		0.3750	41.133	48.511	10181.6	17.93	109.69	80.3	487.5	837.8
96.08	Bot - Section 4	0.3750	40.867	48.194	9983.8	17.81	108.98	80.5	481.2	178.2
100.00		0.3750	39.907	47.051	9289.8	17.35	106.42	81.0	458.5	1281.3
100.75	Top - Section 3	0.3750	40.473	47.724	9694.6	17.62	107.93	0.0	0.0	241.9
105.00		0.3750	39.430	46.484	8957.9	17.13	105.15	81.3	447.5	681.2
110.00		0.3750	38.203	45.024	8140.1	16.55	101.88	81.9	419.7	778.4
115.00		0.3750	36.977	43.564	7373.7	15.98	98.61	82.5	392.8	753.6
120.00		0.3750	35.750	42.104	6657.0	15.40	95.33	82.5	366.8	728.8
125.00		0.3750	34.524	40.644	5988.3	14.82	92.06	82.5	341.6	703.9
129.75	Bot - Section 5	0.3750	33.359	39.257	5396.0	14.27	88.96	82.5	318.6	645.7
130.00		0.3750	33.297	39.184	5365.9	14.25	88.79	82.5	317.4	61.7
133.58	Top - Section 4	0.3125	33.043	32.464	4394.0	17.23	105.74	0.0	0.0	872.6
135.00		0.3125	32.696	32.119	4255.5	17.04	104.63	81.4	256.4	155.7
140.00		0.3125	31.469	30.902	3790.1	16.35	100.70	82.2	237.2	536.1
145.00		0.3125	30.243	29.686	3359.8	15.65	96.78	82.5	218.8	515.4
148.00		0.3125	29.507	28.956	3118.1	15.24	94.42	82.5	208.1	299.3
150.00		0.3125	29.016	28.469	2963.5	14.96	92.85	82.5	201.2	195.4
155.00		0.3125	27.790	27.253	2599.6	14.27	88.93	82.5	184.2	474.0
160.00		0.3125	26.563	26.036	2266.8	13.58	85.00	82.5	168.1	453.3
164.33	Bot - Section 6	0.3125	25.500	24.982	2002.4	12.98	81.60	82.5	154.7	376.1
165.00		0.3125	25.336	24.820	1963.6	12.89	81.08	82.5	152.7	102.7
167.25	Top - Section 5	0.2500	25.284	19.864	1572.9	16.42	101.14	0.0	0.0	341.7
170.00		0.2500	24.610	19.329	1449.1	15.95	98.44	82.5	116.0	183.4
175.00		0.2500	23.383	18.356	1241.1	15.08	93.53	82.5	104.5	320.6
180.00		0.2500	22.157	17.382	1054.0	14.22	88.63	82.5	93.7	304.0
185.00		0.2500	20.930	16.409	886.6	13.35	83.72	82.5	83.4	287.5
186.00		0.2500	20.685	16.215	855.5	13.18	82.74	82.5	81.5	55.5

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)
189.00		0.2500	19.949	15.631	766.3	12.66	79.80	82.5	75.7	162.5
										33988.4

Wind Loading - Shaft

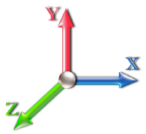
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 135 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 27

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	36.920	40.61	656.18	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	36.920	40.61	643.39	0.730	0.000	5.00	26.369	19.25	781.7	0.0	1505.4
10.00		1.00	0.85	36.920	40.61	630.60	0.730	0.000	5.00	25.850	18.87	766.4	0.0	1475.6
15.00		1.00	0.85	36.920	40.61	617.82	0.730	0.000	5.00	25.331	18.49	751.0	0.0	1445.8
20.00		1.00	0.90	39.173	43.09	623.22	0.730	0.000	5.00	24.812	18.11	780.5	0.0	1416.0
25.00		1.00	0.95	41.057	45.16	624.55	0.730	0.000	5.00	24.293	17.73	800.9	0.0	1386.1
30.00		1.00	0.98	42.664	46.93	622.90	0.730	0.000	5.00	23.774	17.36	814.5	0.0	1356.3
31.25	Bot - Section 2	1.00	0.99	43.032	47.34	622.13	0.730	0.000	1.25	5.862	4.28	202.6	0.0	334.4
35.00		1.00	1.01	44.071	48.48	619.12	0.730	0.000	3.75	17.631	12.87	623.9	0.0	1997.9
37.50	Top - Section 1	1.00	1.03	44.716	49.19	616.60	0.730	0.000	2.50	11.592	8.46	416.2	0.0	1313.3
40.00		1.00	1.04	45.328	49.86	622.38	0.730	0.000	2.50	11.462	8.37	417.2	0.0	653.8
45.00		1.00	1.07	46.466	51.11	615.80	0.730	0.000	5.00	22.535	16.45	840.8	0.0	1285.2
50.00		1.00	1.09	47.508	52.26	608.16	0.730	0.000	5.00	22.016	16.07	839.9	0.0	1255.3
55.00		1.00	1.12	48.471	53.32	599.64	0.730	0.000	5.00	21.497	15.69	836.7	0.0	1225.5
60.00		1.00	1.14	49.367	54.30	590.37	0.730	0.000	5.00	20.978	15.31	831.6	0.0	1195.7
63.25	Bot - Section 3	1.00	1.15	49.918	54.91	583.99	0.730	0.000	3.25	13.357	9.75	535.4	0.0	761.2
65.00		1.00	1.16	50.206	55.23	580.45	0.730	0.000	1.75	7.213	5.27	290.8	0.0	815.8
68.75	Top - Section 2	1.00	1.17	50.802	55.88	572.64	0.730	0.000	3.75	15.242	11.13	621.8	0.0	1723.4
70.00		1.00	1.17	50.995	56.09	579.16	0.730	0.000	1.25	5.016	3.66	205.4	0.0	285.8
75.00		1.00	1.19	51.741	56.92	568.24	0.730	0.000	5.00	19.738	14.41	820.1	0.0	1124.5
80.00		1.00	1.21	52.449	57.69	556.87	0.730	0.000	5.00	19.219	14.03	809.5	0.0	1094.7
85.00		1.00	1.22	53.123	58.44	545.10	0.730	0.000	5.00	18.701	13.65	797.7	0.0	1064.9
90.00		1.00	1.24	53.766	59.14	532.96	0.730	0.000	5.00	18.182	13.27	785.0	0.0	1035.1
95.00		1.00	1.25	54.381	59.82	520.48	0.730	0.000	5.00	17.663	12.89	771.3	0.0	1005.3
96.08	Bot - Section 4	1.00	1.26	54.511	59.96	517.73	0.730	0.000	1.08	3.759	2.74	164.5	0.0	213.9
100.00		1.00	1.27	54.972	60.47	507.69	0.730	0.000	3.92	13.634	9.95	601.8	0.0	1537.5
100.75	Top - Section 3	1.00	1.27	55.058	60.56	505.75	0.730	0.000	0.75	2.574	1.88	113.8	0.0	290.2
105.00		1.00	1.28	55.539	61.09	504.21	0.730	0.000	4.25	14.368	10.49	640.8	0.0	817.5
110.00		1.00	1.29	56.086	61.69	490.93	0.730	0.000	5.00	16.423	11.99	739.7	0.0	934.1
115.00		1.00	1.30	56.613	62.27	477.39	0.730	0.000	5.00	15.904	11.61	723.0	0.0	904.3
120.00		1.00	1.32	57.123	62.84	463.63	0.730	0.000	5.00	15.385	11.23	705.7	0.0	874.5
125.00		1.00	1.33	57.616	63.38	449.65	0.730	0.000	5.00	14.866	10.85	687.8	0.0	844.7
129.75	Bot - Section 5	1.00	1.34	58.070	63.88	436.18	0.730	0.000	4.75	13.642	9.96	636.1	0.0	774.9
130.00		1.00	1.34	58.094	63.90	435.47	0.730	0.000	0.25	0.718	0.52	33.5	0.0	74.1
133.58	Top - Section 4	1.00	1.35	58.427	64.27	425.19	0.730	0.000	3.58	10.153	7.41	476.3	0.0	1047.1
135.00		1.00	1.35	58.557	64.41	429.31	0.730	0.000	1.42	3.940	2.88	185.3	0.0	186.8
140.00		1.00	1.36	59.007	64.91	414.78	0.730	0.000	5.00	13.574	9.91	643.2	0.0	643.3
145.00		1.00	1.37	59.445	65.39	400.09	0.730	0.000	5.00	13.055	9.53	623.2	0.0	618.5
148.00	Appurtenance(s)	1.00	1.37	59.701	65.67	391.20	0.730	0.000	3.00	7.584	5.54	363.6	0.0	359.2
150.00		1.00	1.38	59.870	65.86	385.24	0.730	0.000	2.00	4.952	3.62	238.1	0.0	234.5
155.00		1.00	1.39	60.285	66.31	370.23	0.730	0.000	5.00	12.017	8.77	581.7	0.0	568.8
160.00		1.00	1.40	60.689	66.76	355.07	0.730	0.000	5.00	11.498	8.39	560.3	0.0	544.0
164.33	Bot - Section 6	1.00	1.41	61.032	67.14	341.82	0.730	0.000	4.33	9.545	6.97	467.8	0.0	451.4
165.00		1.00	1.41	61.084	67.19	339.78	0.730	0.000	0.67	1.462	1.07	71.7	0.0	123.2
167.25	Top - Section 5	1.00	1.41	61.258	67.38	332.85	0.730	0.000	2.25	4.867	3.55	239.4	0.0	410.0
170.00		1.00	1.42	61.469	67.62	331.07	0.730	0.000	2.75	5.805	4.24	286.5	0.0	220.1
175.00	Appurtenance(s)	1.00	1.42	61.845	68.03	315.53	0.730	0.000	5.00	10.153	7.41	504.2	0.0	384.7

Wind Loading - Shaft

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 9	

180.00		1.00	1.43	62.213	68.43	299.87	0.730	0.000	5.00	9.634	7.03	481.3	0.0	364.8
185.00		1.00	1.44	62.573	68.83	284.09	0.730	0.000	5.00	9.115	6.65	458.0	0.0	345.0
186.00	Appurtenance(s)	1.00	1.44	62.644	68.91	280.92	0.730	0.000	1.00	1.761	1.29	88.6	0.0	66.6
189.00		1.00	1.45	62.855	69.14	271.38	0.730	0.000	3.00	5.158	3.77	260.3	0.0	195.1
								Totals:	**189.00**			**26,917.1**		**40,786.1**

Discrete Appurtenance Forces

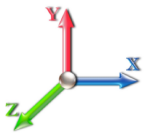
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 135 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 27

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	186.00	TA08025-B605	3	62.644	68.909	0.54	0.80	3.15	270.00	0.000	0.000	217.18	0.00	0.00
2	186.00	RDIDC-9181-OF-48	1	62.644	68.909	0.38	0.75	0.75	26.28	0.000	0.000	51.94	0.00	0.00
3	186.00	TA08025-B604	3	62.644	68.909	0.50	0.75	2.95	230.04	0.000	0.000	203.60	0.00	0.00
4	186.00	MC-PK8-DSH	1	62.644	68.909	1.00	1.00	37.59	2072.40	0.000	0.000	2590.27	0.00	0.00
5	186.00	MX08FRO665-21	3	62.644	68.909	0.55	0.75	20.80	232.20	0.000	0.000	1433.01	0.00	0.00
6	175.00	Low Profile	1	61.845	68.030	1.00	1.00	30.25	1800.00	0.000	0.000	2057.90	0.00	0.00
7	148.00	Low Profile	1	59.701	65.672	1.00	1.00	24.55	1800.00	0.000	0.000	1612.24	0.00	0.00
8	148.00	DB230/74	1	59.701	65.672	1.00	1.00	3.66	32.40	0.000	0.000	240.36	0.00	0.00
9	148.00	16' Omni	1	60.367	66.404	1.00	1.00	4.80	66.00	0.000	8.000	318.74	0.00	2549.90
10	148.00	22' Dipole	1	60.609	66.670	1.00	1.00	8.27	79.20	0.000	11.000	551.36	0.00	6065.00
11	148.00	20' Dipole	1	60.529	66.582	1.00	1.00	7.52	72.00	0.000	10.000	500.70	0.00	5006.96
							Totals:		**6,680.52**			**9,777.30**		

Total Applied Force Summary

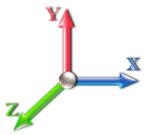
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 135 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 27

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		781.75	1520.58	0.00	0.00
10.00		766.36	1495.67	0.00	0.00
15.00		750.98	1465.87	0.00	0.00
20.00		780.49	1436.06	0.00	0.00
25.00		800.93	1406.26	0.00	0.00
30.00		814.49	1376.45	0.00	0.00
31.25		202.58	339.46	0.00	0.00
35.00		623.94	2012.97	0.00	0.00
37.50		416.22	1323.35	0.00	0.00
40.00		417.20	663.81	0.00	0.00
45.00		840.82	1305.26	0.00	0.00
50.00		839.88	1275.45	0.00	0.00
55.00		836.70	1245.65	0.00	0.00
60.00		831.60	1215.84	0.00	0.00
63.25		535.42	774.32	0.00	0.00
65.00		290.78	822.79	0.00	0.00
68.75		621.77	1738.53	0.00	0.00
70.00		205.39	290.82	0.00	0.00
75.00		820.10	1144.65	0.00	0.00
80.00		809.46	1114.85	0.00	0.00
85.00		797.72	1085.04	0.00	0.00
90.00		784.97	1055.24	0.00	0.00
95.00		771.30	1025.43	0.00	0.00
96.08		164.52	218.25	0.00	0.00
100.00		601.83	1553.28	0.00	0.00
100.75		113.82	293.26	0.00	0.00
105.00		640.77	834.54	0.00	0.00
110.00		739.65	954.24	0.00	0.00
115.00		723.01	924.44	0.00	0.00
120.00		705.72	894.63	0.00	0.00
125.00		687.80	864.83	0.00	0.00
129.75		636.15	793.98	0.00	0.00
130.00		33.51	75.10	0.00	0.00
133.58		476.33	1061.48	0.00	0.00
135.00		185.28	192.49	0.00	0.00
140.00		643.17	663.45	0.00	0.00
145.00		623.17	638.61	0.00	0.00
148.00	(5) attachments	3586.97	2420.84	0.00	13621.85
150.00		238.08	239.26	0.00	0.00
155.00		581.73	580.78	0.00	0.00
160.00		560.35	555.94	0.00	0.00
164.33		467.80	461.72	0.00	0.00
165.00		71.72	124.82	0.00	0.00
167.25		239.39	415.41	0.00	0.00
170.00		286.55	226.62	0.00	0.00
175.00	(1) attachments	2562.11	2196.64	0.00	0.00

Total Applied Force Summary

Structure:	CT22097-A-SBA		**Code:**	TIA-222-H	12/29/2022
Site Name:	Salem (Old Colchester Rd)		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	III	Page: 12

180.00		481.28	376.77	0.00	0.00
185.00		457.99	356.90	0.00	0.00
186.00	(11) attachments	4584.57	2899.92	0.00	0.00
189.00		260.32	195.05	0.00	0.00
	Totals:	**36,694.41**	**48,147.61**	**0.00**	**13,621.85**

Calculated Forces

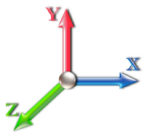
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 13	

IES Tower Engineering Solutions

Load Case: 1.2D + 1.0W 135 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 27

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	-48.09	-36.76	0.00	-4228.3	0.00	4228.35	4574.03	1306.81	6783.32	5898.90	0.00	0.000	0.000	0.728
5.00	-46.47	-36.11	0.00	-4044.5	0.00	4044.54	4528.92	1281.19	6519.95	5725.54	0.09	-0.160	0.000	0.717
10.00	-44.88	-35.46	0.00	-3864.0	0.00	3864.00	4482.03	1255.57	6261.80	5552.26	0.34	-0.322	0.000	0.707
15.00	-43.32	-34.83	0.00	-3686.6	0.00	3686.67	4433.36	1229.95	6008.86	5379.21	0.77	-0.486	0.000	0.696
20.00	-41.79	-34.16	0.00	-3512.5	0.00	3512.53	4382.91	1204.33	5761.13	5206.51	1.37	-0.653	0.000	0.685
25.00	-40.30	-33.46	0.00	-3341.7	0.00	3341.75	4330.67	1178.71	5518.62	5034.31	2.14	-0.822	0.000	0.674
30.00	-38.87	-32.69	0.00	-3174.4	0.00	3174.47	4276.65	1153.09	5281.33	4862.74	3.10	-0.994	0.000	0.663
31.25	-38.49	-32.55	0.00	-3133.6	0.00	3133.60	4262.87	1146.69	5222.82	4819.96	3.36	-1.038	0.000	0.660
35.00	-36.42	-31.95	0.00	-3011.5	0.00	3011.56	4220.85	1127.47	5049.24	4691.94	4.23	-1.170	0.000	0.651
37.50	-35.06	-31.56	0.00	-2931.6	0.00	2931.68	4227.16	1130.33	5074.86	4710.94	4.87	-1.259	0.000	0.631
40.00	-34.33	-31.21	0.00	-2852.7	0.00	2852.77	4198.69	1117.52	4960.48	4625.81	5.55	-1.349	0.000	0.626
45.00	-32.96	-30.44	0.00	-2696.7	0.00	2696.72	4140.41	1091.90	4735.64	4456.30	7.06	-1.521	0.000	0.614
50.00	-31.62	-29.66	0.00	-2544.5	0.00	2544.55	4080.35	1066.28	4516.01	4287.88	8.74	-1.694	0.000	0.602
55.00	-30.31	-28.88	0.00	-2396.2	0.00	2396.26	4018.51	1040.66	4301.60	4120.68	10.61	-1.870	0.000	0.590
60.00	-29.05	-28.08	0.00	-2251.8	0.00	2251.89	3954.88	1015.04	4092.40	3954.85	12.67	-2.048	0.000	0.578
63.25	-28.25	-27.56	0.00	-2160.6	0.00	2160.63	3912.57	998.38	3959.22	3847.86	14.10	-2.166	0.000	0.569
65.00	-27.39	-27.29	0.00	-2112.4	0.00	2112.41	3889.48	989.42	3888.42	3790.52	14.91	-2.231	0.000	0.565
68.75	-25.64	-26.64	0.00	-2010.0	0.00	2010.09	3880.27	985.87	3860.57	3767.88	16.72	-2.368	0.000	0.541
70.00	-25.31	-26.47	0.00	-1976.7	0.00	1976.79	3863.58	979.46	3810.57	3727.11	17.34	-2.415	0.000	0.538
75.00	-24.12	-25.67	0.00	-1844.4	0.00	1844.45	3795.70	953.84	3613.83	3565.09	19.97	-2.591	0.000	0.524
80.00	-22.97	-24.88	0.00	-1716.0	0.00	1716.09	3726.04	928.22	3422.30	3404.89	22.77	-2.768	0.000	0.511
85.00	-21.85	-24.10	0.00	-1591.6	0.00	1591.67	3654.59	902.60	3235.99	3246.65	25.77	-2.946	0.000	0.497
90.00	-20.76	-23.33	0.00	-1471.1	0.00	1471.17	3581.36	876.98	3054.89	3090.51	28.95	-3.125	0.000	0.483
95.00	-19.74	-22.54	0.00	-1354.5	0.00	1354.54	3506.35	851.36	2879.00	2936.60	32.32	-3.306	0.000	0.468
96.08	-19.49	-22.39	0.00	-1330.1	0.00	1330.12	3489.86	845.81	2841.58	2903.56	33.07	-3.347	0.000	0.464
100.00	-17.95	-21.72	0.00	-1242.4	0.00	1242.42	3429.56	825.74	2708.33	2785.06	35.87	-3.490	0.000	0.452
100.75	-17.63	-21.62	0.00	-1226.1	0.00	1226.13	3465.22	837.56	2786.44	2854.69	36.43	-3.519	0.000	0.435
105.00	-16.77	-20.98	0.00	-1134.2	0.00	1134.24	3399.24	815.79	2643.43	2726.85	39.63	-3.674	0.000	0.422
110.00	-15.81	-20.22	0.00	-1029.3	0.00	1029.35	3319.97	790.17	2480.00	2578.83	43.57	-3.846	0.000	0.405
115.00	-14.88	-19.48	0.00	-928.23	0.00	928.23	3236.58	764.55	2321.78	2431.73	47.68	-4.017	0.000	0.387
120.00	-13.98	-18.76	0.00	-830.81	0.00	830.81	3128.12	738.93	2168.78	2270.69	51.98	-4.187	0.000	0.371
125.00	-13.12	-18.04	0.00	-737.02	0.00	737.02	3019.66	713.30	2021.00	2115.16	56.45	-4.354	0.000	0.353
129.75	-12.35	-17.37	0.00	-651.31	0.00	651.31	2916.62	688.97	1885.43	1972.52	60.86	-4.511	0.000	0.335
130.00	-12.26	-17.34	0.00	-646.96	0.00	646.96	2911.20	687.68	1878.42	1965.15	61.09	-4.520	0.000	0.334
133.58	-11.22	-16.80	0.00	-584.83	0.00	584.83	2370.41	569.74	1547.19	1593.70	64.53	-4.637	0.000	0.373
135.00	-11.01	-16.62	0.00	-561.03	0.00	561.03	2351.91	563.69	1514.51	1564.31	65.91	-4.683	0.000	0.364
140.00	-10.35	-15.95	0.00	-477.94	0.00	477.94	2285.46	542.34	1401.96	1461.99	70.90	-4.857	0.000	0.332
145.00	-9.74	-15.30	0.00	-398.18	0.00	398.18	2205.51	520.99	1293.75	1354.75	76.07	-5.021	0.000	0.299
148.00	-7.63	-11.52	0.00	-338.66	0.00	338.66	2151.28	508.18	1230.91	1288.61	79.26	-5.117	0.000	0.267
150.00	-7.39	-11.28	0.00	-315.61	0.00	315.61	2115.13	499.64	1189.88	1245.44	81.41	-5.176	0.000	0.257
155.00	-6.84	-10.66	0.00	-259.23	0.00	259.23	2024.75	478.29	1090.37	1140.73	86.90	-5.314	0.000	0.231
160.00	-6.32	-10.06	0.00	-205.93	0.00	205.93	1934.36	456.94	995.19	1040.61	92.53	-5.442	0.000	0.202
164.33	-5.90	-9.56	0.00	-162.32	0.00	162.32	1856.03	438.43	916.22	957.56	97.51	-5.542	0.000	0.173
165.00	-5.77	-9.48	0.00	-155.95	0.00	155.95	1843.98	435.59	904.37	945.09	98.28	-5.557	0.000	0.169
167.25	-5.37	-9.20	0.00	-134.63	0.00	134.63	1467.48	348.62	724.10	754.31	100.91	-5.604	0.000	0.183
170.00	-5.17	-8.90	0.00	-109.31	0.00	109.31	1436.04	339.22	685.60	718.06	104.15	-5.656	0.000	0.157
175.00	-3.23	-6.14	0.00	-64.80	0.00	64.80	1363.73	322.14	618.30	647.22	110.11	-5.742	0.000	0.103
180.00	-2.90	-5.63	0.00	-34.10	0.00	34.10	1291.43	305.06	554.47	580.06	116.15	-5.798	0.000	0.061

Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C
Height:	189.00 (ft)	**Crest Height:**	0.00
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil
Gh:	1.1	**Topography:** 1	**Struct Class:** III

12/29/2022

Tower Engineering Solutions

185.00	-2.59	-5.13	0.00	-5.97	0.00	5.97	1219.12	287.98	494.12	516.58	122.23	-5.825	0.000	0.014
186.00	-0.17	-0.28	0.00	-0.84	0.00	0.84	1204.66	284.57	482.47	504.32	123.45	-5.826	0.000	0.002
189.00	0.00	-0.26	0.00	0.00	0.00	0.00	1161.27	274.32	448.34	468.44	127.10	-5.827	0.000	0.000

Wind Loading - Shaft

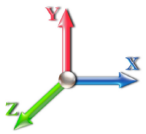
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 15	

TES Tower Engineering Solutions

Load Case: 0.9D + 1.0W 135 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 27

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	36.920	40.61	656.18	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	36.920	40.61	643.39	0.730	0.000	5.00	26.369	19.25	781.7	0.0	1129.0
10.00		1.00	0.85	36.920	40.61	630.60	0.730	0.000	5.00	25.850	18.87	766.4	0.0	1106.7
15.00		1.00	0.85	36.920	40.61	617.82	0.730	0.000	5.00	25.331	18.49	751.0	0.0	1084.3
20.00		1.00	0.90	39.173	43.09	623.22	0.730	0.000	5.00	24.812	18.11	780.5	0.0	1062.0
25.00		1.00	0.95	41.057	45.16	624.55	0.730	0.000	5.00	24.293	17.73	800.9	0.0	1039.6
30.00		1.00	0.98	42.664	46.93	622.90	0.730	0.000	5.00	23.774	17.36	814.5	0.0	1017.3
31.25	Bot - Section 2	1.00	0.99	43.032	47.34	622.13	0.730	0.000	1.25	5.862	4.28	202.6	0.0	250.8
35.00		1.00	1.01	44.071	48.48	619.12	0.730	0.000	3.75	17.631	12.87	623.9	0.0	1498.4
37.50	Top - Section 1	1.00	1.03	44.716	49.19	616.60	0.730	0.000	2.50	11.592	8.46	416.2	0.0	985.0
40.00		1.00	1.04	45.328	49.86	622.38	0.730	0.000	2.50	11.462	8.37	417.2	0.0	490.3
45.00		1.00	1.07	46.466	51.11	615.80	0.730	0.000	5.00	22.535	16.45	840.8	0.0	963.9
50.00		1.00	1.09	47.508	52.26	608.16	0.730	0.000	5.00	22.016	16.07	839.9	0.0	941.5
55.00		1.00	1.12	48.471	53.32	599.64	0.730	0.000	5.00	21.497	15.69	836.7	0.0	919.2
60.00		1.00	1.14	49.367	54.30	590.37	0.730	0.000	5.00	20.978	15.31	831.6	0.0	896.8
63.25	Bot - Section 3	1.00	1.15	49.918	54.91	583.99	0.730	0.000	3.25	13.357	9.75	535.4	0.0	570.9
65.00		1.00	1.16	50.206	55.23	580.45	0.730	0.000	1.75	7.213	5.27	290.8	0.0	611.8
68.75	Top - Section 2	1.00	1.17	50.802	55.88	572.64	0.730	0.000	3.75	15.242	11.13	621.8	0.0	1292.6
70.00		1.00	1.17	50.995	56.09	579.16	0.730	0.000	1.25	5.016	3.66	205.4	0.0	214.3
75.00		1.00	1.19	51.741	56.92	568.24	0.730	0.000	5.00	19.738	14.41	820.1	0.0	843.4
80.00		1.00	1.21	52.449	57.69	556.87	0.730	0.000	5.00	19.219	14.03	809.5	0.0	821.1
85.00		1.00	1.22	53.123	58.44	545.10	0.730	0.000	5.00	18.701	13.65	797.7	0.0	798.7
90.00		1.00	1.24	53.766	59.14	532.96	0.730	0.000	5.00	18.182	13.27	785.0	0.0	776.3
95.00		1.00	1.25	54.381	59.82	520.48	0.730	0.000	5.00	17.663	12.89	771.3	0.0	754.0
96.08	Bot - Section 4	1.00	1.26	54.511	59.96	517.73	0.730	0.000	1.08	3.759	2.74	164.5	0.0	160.4
100.00		1.00	1.27	54.972	60.47	507.69	0.730	0.000	3.92	13.634	9.95	601.8	0.0	1153.2
100.75	Top - Section 3	1.00	1.27	55.058	60.56	505.75	0.730	0.000	0.75	2.574	1.88	113.8	0.0	217.7
105.00		1.00	1.28	55.539	61.09	504.21	0.730	0.000	4.25	14.368	10.49	640.8	0.0	613.1
110.00		1.00	1.29	56.086	61.69	490.93	0.730	0.000	5.00	16.423	11.99	739.7	0.0	700.6
115.00		1.00	1.30	56.613	62.27	477.39	0.730	0.000	5.00	15.904	11.61	723.0	0.0	678.2
120.00		1.00	1.32	57.123	62.84	463.63	0.730	0.000	5.00	15.385	11.23	705.7	0.0	655.9
125.00		1.00	1.33	57.616	63.38	449.65	0.730	0.000	5.00	14.866	10.85	687.8	0.0	633.5
129.75	Bot - Section 5	1.00	1.34	58.070	63.88	436.18	0.730	0.000	4.75	13.642	9.96	636.1	0.0	581.2
130.00		1.00	1.34	58.094	63.90	435.47	0.730	0.000	0.25	0.718	0.52	33.5	0.0	55.6
133.58	Top - Section 4	1.00	1.35	58.427	64.27	425.19	0.730	0.000	3.58	10.153	7.41	476.3	0.0	785.3
135.00		1.00	1.35	58.557	64.41	429.31	0.730	0.000	1.42	3.940	2.88	185.3	0.0	140.1
140.00		1.00	1.36	59.007	64.91	414.78	0.730	0.000	5.00	13.574	9.91	643.2	0.0	482.5
145.00		1.00	1.37	59.445	65.39	400.09	0.730	0.000	5.00	13.055	9.53	623.2	0.0	463.9
148.00	Appurtenance(s)	1.00	1.37	59.701	65.67	391.20	0.730	0.000	3.00	7.584	5.54	363.6	0.0	269.4
150.00		1.00	1.38	59.870	65.86	385.24	0.730	0.000	2.00	4.952	3.62	238.1	0.0	175.9
155.00		1.00	1.39	60.285	66.31	370.23	0.730	0.000	5.00	12.017	8.77	581.7	0.0	426.6
160.00		1.00	1.40	60.689	66.76	355.07	0.730	0.000	5.00	11.498	8.39	560.3	0.0	408.0
164.33	Bot - Section 6	1.00	1.41	61.032	67.14	341.82	0.730	0.000	4.33	9.545	6.97	467.8	0.0	338.5
165.00		1.00	1.41	61.084	67.19	339.78	0.730	0.000	0.67	1.462	1.07	71.7	0.0	92.4
167.25	Top - Section 5	1.00	1.41	61.258	67.38	332.85	0.730	0.000	2.25	4.867	3.55	239.4	0.0	307.5
170.00		1.00	1.42	61.469	67.62	331.07	0.730	0.000	2.75	5.805	4.24	286.5	0.0	165.0
175.00	Appurtenance(s)	1.00	1.42	61.845	68.03	315.53	0.730	0.000	5.00	10.153	7.41	504.2	0.0	288.5

Wind Loading - Shaft

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 16	

180.00		1.00	1.43	62.213	68.43	299.87	0.730	0.000	5.00	9.634	7.03	481.3	0.0	273.6
185.00		1.00	1.44	62.573	68.83	284.09	0.730	0.000	5.00	9.115	6.65	458.0	0.0	258.7
186.00	Appurtenance(s)	1.00	1.44	62.644	68.91	280.92	0.730	0.000	1.00	1.761	1.29	88.6	0.0	50.0
189.00		1.00	1.45	62.855	69.14	271.38	0.730	0.000	3.00	5.158	3.77	260.3	0.0	146.3
								Totals:	**189.00**			**26,917.1**		**30,589.5**

Discrete Appurtenance Forces

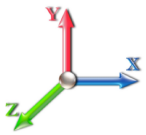
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 135 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 27

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	186.00	TA08025-B605	3	62.644	68.909	0.54	0.80	3.15	202.50	0.000	0.000	217.18	0.00	0.00
2	186.00	RDIDC-9181-OF-48	1	62.644	68.909	0.38	0.75	0.75	19.71	0.000	0.000	51.94	0.00	0.00
3	186.00	TA08025-B604	3	62.644	68.909	0.50	0.75	2.95	172.53	0.000	0.000	203.60	0.00	0.00
4	186.00	MC-PK8-DSH	1	62.644	68.909	1.00	1.00	37.59	1554.30	0.000	0.000	2590.27	0.00	0.00
5	186.00	MX08FRO665-21	3	62.644	68.909	0.55	0.75	20.80	174.15	0.000	0.000	1433.01	0.00	0.00
6	175.00	Low Profile	1	61.845	68.030	1.00	1.00	30.25	1350.00	0.000	0.000	2057.90	0.00	0.00
7	148.00	Low Profile	1	59.701	65.672	1.00	1.00	24.55	1350.00	0.000	0.000	1612.24	0.00	0.00
8	148.00	DB230/74	1	59.701	65.672	1.00	1.00	3.66	24.30	0.000	0.000	240.36	0.00	0.00
9	148.00	16' Omni	1	60.367	66.404	1.00	1.00	4.80	49.50	0.000	8.000	318.74	0.00	2549.90
10	148.00	22' Dipole	1	60.609	66.670	1.00	1.00	8.27	59.40	0.000	11.000	551.36	0.00	6065.00
11	148.00	20' Dipole	1	60.529	66.582	1.00	1.00	7.52	54.00	0.000	10.000	500.70	0.00	5006.96
							Totals:		**5,010.39**			**9,777.30**		

Total Applied Force Summary

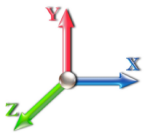
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 18	

IES Tower Engineering Solutions

Load Case: 0.9D + 1.0W 135 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 27

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		781.75	1140.44	0.00	0.00
10.00		766.36	1121.75	0.00	0.00
15.00		750.98	1099.40	0.00	0.00
20.00		780.49	1077.05	0.00	0.00
25.00		800.93	1054.69	0.00	0.00
30.00		814.49	1032.34	0.00	0.00
31.25		202.58	254.59	0.00	0.00
35.00		623.94	1509.73	0.00	0.00
37.50		416.22	992.51	0.00	0.00
40.00		417.20	497.86	0.00	0.00
45.00		840.82	978.94	0.00	0.00
50.00		839.88	956.59	0.00	0.00
55.00		836.70	934.24	0.00	0.00
60.00		831.60	911.88	0.00	0.00
63.25		535.42	580.74	0.00	0.00
65.00		290.78	617.09	0.00	0.00
68.75		621.77	1303.90	0.00	0.00
70.00		205.39	218.12	0.00	0.00
75.00		820.10	858.49	0.00	0.00
80.00		809.46	836.14	0.00	0.00
85.00		797.72	813.78	0.00	0.00
90.00		784.97	791.43	0.00	0.00
95.00		771.30	769.07	0.00	0.00
96.08		164.52	163.69	0.00	0.00
100.00		601.83	1164.96	0.00	0.00
100.75		113.82	219.95	0.00	0.00
105.00		640.77	625.91	0.00	0.00
110.00		739.65	715.68	0.00	0.00
115.00		723.01	693.33	0.00	0.00
120.00		705.72	670.97	0.00	0.00
125.00		687.80	648.62	0.00	0.00
129.75		636.15	595.48	0.00	0.00
130.00		33.51	56.33	0.00	0.00
133.58		476.33	796.11	0.00	0.00
135.00		185.28	144.37	0.00	0.00
140.00		643.17	497.59	0.00	0.00
145.00		623.17	478.96	0.00	0.00
148.00	(5) attachments	3586.97	1815.63	0.00	13621.85
150.00		238.08	179.45	0.00	0.00
155.00		581.73	435.58	0.00	0.00
160.00		560.35	416.95	0.00	0.00
164.33		467.80	346.29	0.00	0.00
165.00		71.72	93.62	0.00	0.00
167.25		239.39	311.55	0.00	0.00
170.00		286.55	169.97	0.00	0.00
175.00	(1) attachments	2562.11	1647.48	0.00	0.00

Total Applied Force Summary

Structure:	CT22097-A-SBA		**Code:**	TIA-222-H	12/29/2022
Site Name:	Salem (Old Colchester Rd)		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	III	Page: 19

Tower Engineering Solutions

180.00		481.28	282.58	0.00	0.00
185.00		457.99	267.68	0.00	0.00
186.00	(11) attachments	4584.57	2174.94	0.00	0.00
189.00		260.32	146.29	0.00	0.00
	Totals:	**36,694.41**	**36,110.71**	**0.00**	**13,621.85**

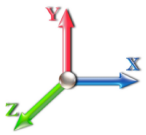
Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 20	

Load Case: 0.9D + 1.0W 135 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 27

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	-36.06	-36.75	0.00	-4186.4	0.00	4186.47	4574.03	1306.81	6783.32	5898.90	0.00	0.000	0.000	0.718
5.00	-34.82	-36.06	0.00	-4002.7	0.00	4002.75	4528.92	1281.19	6519.95	5725.54	0.09	-0.158	0.000	0.708
10.00	-33.60	-35.38	0.00	-3822.4	0.00	3822.45	4482.03	1255.57	6261.80	5552.26	0.34	-0.319	0.000	0.697
15.00	-32.41	-34.72	0.00	-3645.5	0.00	3645.55	4433.36	1229.95	6008.86	5379.21	0.76	-0.481	0.000	0.686
20.00	-31.24	-34.02	0.00	-3471.9	0.00	3471.97	4382.91	1204.33	5761.13	5206.51	1.35	-0.646	0.000	0.675
25.00	-30.10	-33.29	0.00	-3301.8	0.00	3301.89	4330.67	1178.71	5518.62	5034.31	2.12	-0.813	0.000	0.664
30.00	-29.02	-32.51	0.00	-3135.4	0.00	3135.44	4276.65	1153.09	5281.33	4862.74	3.06	-0.983	0.000	0.652
31.25	-28.72	-32.35	0.00	-3094.8	0.00	3094.80	4262.87	1146.69	5222.82	4819.96	3.33	-1.027	0.000	0.650
35.00	-27.16	-31.75	0.00	-2973.4	0.00	2973.48	4220.85	1127.47	5049.24	4691.94	4.18	-1.157	0.000	0.641
37.50	-26.13	-31.35	0.00	-2894.1	0.00	2894.11	4227.16	1130.33	5074.86	4710.94	4.81	-1.245	0.000	0.621
40.00	-25.57	-30.98	0.00	-2815.7	0.00	2815.73	4198.69	1117.52	4960.48	4625.81	5.49	-1.334	0.000	0.616
45.00	-24.52	-30.19	0.00	-2660.8	0.00	2660.82	4140.41	1091.90	4735.64	4456.30	6.98	-1.503	0.000	0.604
50.00	-23.50	-29.40	0.00	-2509.8	0.00	2509.87	4080.35	1066.28	4516.01	4287.88	8.64	-1.674	0.000	0.592
55.00	-22.51	-28.60	0.00	-2362.9	0.00	2362.90	4018.51	1040.66	4301.60	4120.68	10.49	-1.847	0.000	0.580
60.00	-21.55	-27.79	0.00	-2219.9	0.00	2219.90	3954.88	1015.04	4092.40	3954.85	12.52	-2.023	0.000	0.568
63.25	-20.95	-27.27	0.00	-2129.5	0.00	2129.58	3912.57	998.38	3959.22	3847.86	13.94	-2.139	0.000	0.560
65.00	-20.30	-26.99	0.00	-2081.8	0.00	2081.86	3889.48	989.42	3888.42	3790.52	14.73	-2.203	0.000	0.555
68.75	-18.98	-26.35	0.00	-1980.6	0.00	1980.65	3880.27	985.87	3860.57	3767.88	16.52	-2.339	0.000	0.531
70.00	-18.72	-26.17	0.00	-1947.7	0.00	1947.72	3863.58	979.46	3810.57	3727.11	17.14	-2.385	0.000	0.528
75.00	-17.82	-25.37	0.00	-1816.8	0.00	1816.88	3795.70	953.84	3613.83	3565.09	19.73	-2.558	0.000	0.515
80.00	-16.94	-24.57	0.00	-1690.0	0.00	1690.05	3726.04	928.22	3422.30	3404.89	22.50	-2.732	0.000	0.502
85.00	-16.10	-23.78	0.00	-1567.1	0.00	1567.19	3654.59	902.60	3235.99	3246.65	25.45	-2.907	0.000	0.488
90.00	-15.28	-23.01	0.00	-1448.2	0.00	1448.27	3581.36	876.98	3054.89	3090.51	28.59	-3.084	0.000	0.474
95.00	-14.51	-22.22	0.00	-1333.2	0.00	1333.24	3506.35	851.36	2879.00	2936.60	31.92	-3.262	0.000	0.459
96.08	-14.32	-22.07	0.00	-1309.1	0.00	1309.17	3489.86	845.81	2841.58	2903.56	32.66	-3.302	0.000	0.456
100.00	-13.16	-21.42	0.00	-1222.7	0.00	1222.73	3429.56	825.74	2708.33	2785.06	35.43	-3.443	0.000	0.444
100.75	-12.92	-21.31	0.00	-1206.6	0.00	1206.67	3465.22	837.56	2786.44	2854.69	35.97	-3.471	0.000	0.427
105.00	-12.27	-20.67	0.00	-1116.0	0.00	1116.09	3399.24	815.79	2643.43	2726.85	39.13	-3.625	0.000	0.414
110.00	-11.55	-19.92	0.00	-1012.7	0.00	1012.74	3319.97	790.17	2480.00	2578.83	43.02	-3.794	0.000	0.397
115.00	-10.85	-19.18	0.00	-913.14	0.00	913.14	3236.58	764.55	2321.78	2431.73	47.08	-3.962	0.000	0.379
120.00	-10.18	-18.46	0.00	-817.22	0.00	817.22	3128.12	738.93	2168.78	2270.69	51.31	-4.129	0.000	0.364
125.00	-9.53	-17.75	0.00	-724.92	0.00	724.92	3019.66	713.30	2021.00	2115.16	55.72	-4.294	0.000	0.346
129.75	-8.96	-17.09	0.00	-640.58	0.00	640.58	2916.62	688.97	1885.43	1972.52	60.07	-4.448	0.000	0.328
130.00	-8.89	-17.06	0.00	-636.31	0.00	636.31	2911.20	687.68	1878.42	1965.15	60.30	-4.456	0.000	0.327
133.58	-8.11	-16.53	0.00	-575.18	0.00	575.18	2370.41	569.74	1547.19	1593.70	63.69	-4.571	0.000	0.365
135.00	-7.95	-16.35	0.00	-551.76	0.00	551.76	2351.91	563.69	1514.51	1564.31	65.05	-4.617	0.000	0.357
140.00	-7.46	-15.69	0.00	-470.00	0.00	470.00	2285.46	542.34	1401.96	1461.99	69.97	-4.788	0.000	0.326
145.00	-7.00	-15.05	0.00	-391.54	0.00	391.54	2205.51	520.99	1293.75	1354.75	75.07	-4.949	0.000	0.293
148.00	-5.49	-11.32	0.00	-332.78	0.00	332.78	2151.28	508.18	1230.91	1288.61	78.21	-5.043	0.000	0.261
150.00	-5.32	-11.08	0.00	-310.14	0.00	310.14	2115.13	499.64	1189.88	1245.44	80.33	-5.102	0.000	0.252
155.00	-4.91	-10.47	0.00	-254.75	0.00	254.75	2024.75	478.29	1090.37	1140.73	85.74	-5.237	0.000	0.226
160.00	-4.53	-9.88	0.00	-202.40	0.00	202.40	1934.36	456.94	995.19	1040.61	91.29	-5.362	0.000	0.197
164.33	-4.22	-9.39	0.00	-159.57	0.00	159.57	1856.03	438.43	916.22	957.56	96.19	-5.461	0.000	0.169
165.00	-4.13	-9.31	0.00	-153.31	0.00	153.31	1843.98	435.59	904.37	945.09	96.96	-5.476	0.000	0.165
167.25	-3.83	-9.05	0.00	-132.37	0.00	132.37	1467.48	348.62	724.10	754.31	99.54	-5.522	0.000	0.179
170.00	-3.68	-8.75	0.00	-107.49	0.00	107.49	1436.04	339.22	685.60	718.06	102.74	-5.573	0.000	0.153
175.00	-2.28	-6.04	0.00	-63.75	0.00	63.75	1363.73	322.14	618.30	647.22	108.61	-5.657	0.000	0.101
180.00	-2.05	-5.53	0.00	-33.55	0.00	33.55	1291.43	305.06	554.47	580.06	114.56	-5.713	0.000	0.060

Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 21	

185.00	-1.82	-5.05	0.00	-5.87	0.00	5.87	1219.12	287.98	494.12	516.58	120.55	-5.740	0.000	0.013
186.00	-0.12	-0.27	0.00	-0.82	0.00	0.82	1204.66	284.57	482.47	504.32	121.75	-5.741	0.000	0.002
189.00	0.00	-0.26	0.00	0.00	0.00	0.00	1161.27	274.32	448.34	468.44	125.35	-5.741	0.000	0.000

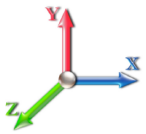
Wind Loading - Shaft

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 22	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	5.064	5.57	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.064	5.57	0.00	1.200	0.952	5.00	27.163	32.60	181.6	373.8	1879.2
10.00		1.00	0.85	5.064	5.57	0.00	1.200	1.021	5.00	26.701	32.04	178.5	393.3	1868.8
15.00		1.00	0.85	5.064	5.57	0.00	1.200	1.063	5.00	26.217	31.46	175.3	401.6	1847.4
20.00		1.00	0.90	5.374	5.91	0.00	1.200	1.094	5.00	25.724	30.87	182.5	405.2	1821.1
25.00		1.00	0.95	5.632	6.20	0.00	1.200	1.119	5.00	25.225	30.27	187.5	405.9	1792.0
30.00		1.00	0.98	5.852	6.44	0.00	1.200	1.139	5.00	24.724	29.67	191.0	404.7	1761.1
31.25	Bot - Section 2	1.00	0.99	5.903	6.49	0.00	1.200	1.144	1.25	6.101	7.32	47.5	101.1	435.5
35.00		1.00	1.01	6.045	6.65	0.00	1.200	1.157	3.75	18.354	22.02	146.5	305.8	2303.7
37.50	Top - Section 1	1.00	1.03	6.134	6.75	0.00	1.200	1.165	2.50	12.077	14.49	97.8	203.1	1516.3
40.00		1.00	1.04	6.218	6.84	0.00	1.200	1.172	2.50	11.950	14.34	98.1	202.1	855.9
45.00		1.00	1.07	6.374	7.01	0.00	1.200	1.186	5.00	23.523	28.23	197.9	400.1	1685.2
50.00		1.00	1.09	6.517	7.17	0.00	1.200	1.199	5.00	23.015	27.62	198.0	395.2	1650.5
55.00		1.00	1.12	6.649	7.31	0.00	1.200	1.210	5.00	22.505	27.01	197.5	389.7	1615.3
60.00		1.00	1.14	6.772	7.45	0.00	1.200	1.221	5.00	21.995	26.39	196.6	383.8	1579.6
63.25	Bot - Section 3	1.00	1.15	6.847	7.53	0.00	1.200	1.227	3.25	14.022	16.83	126.7	246.9	1008.1
65.00		1.00	1.16	6.887	7.58	0.00	1.200	1.231	1.75	7.572	9.09	68.8	134.2	949.9
68.75	Top - Section 2	1.00	1.17	6.969	7.67	0.00	1.200	1.238	3.75	16.015	19.22	147.3	283.8	2007.2
70.00		1.00	1.17	6.995	7.69	0.00	1.200	1.240	1.25	5.274	6.33	48.7	94.2	380.0
75.00		1.00	1.19	7.098	7.81	0.00	1.200	1.248	5.00	20.779	24.93	194.7	369.8	1494.3
80.00		1.00	1.21	7.195	7.91	0.00	1.200	1.256	5.00	20.267	24.32	192.5	362.6	1457.3
85.00		1.00	1.22	7.287	8.02	0.00	1.200	1.264	5.00	19.754	23.70	190.0	355.1	1420.1
90.00		1.00	1.24	7.375	8.11	0.00	1.200	1.271	5.00	19.241	23.09	187.3	347.5	1382.6
95.00		1.00	1.25	7.460	8.21	0.00	1.200	1.278	5.00	18.728	22.47	184.4	339.6	1344.9
96.08	Bot - Section 4	1.00	1.26	7.478	8.23	0.00	1.200	1.280	1.08	3.990	4.79	39.4	73.2	287.1
100.00		1.00	1.27	7.541	8.29	0.00	1.200	1.285	3.92	14.472	17.37	144.1	264.4	1801.9
100.75	Top - Section 3	1.00	1.27	7.553	8.31	0.00	1.200	1.286	0.75	2.735	3.28	27.3	50.4	340.7
105.00		1.00	1.28	7.619	8.38	0.00	1.200	1.291	4.25	15.282	18.34	153.7	279.9	1097.4
110.00		1.00	1.29	7.694	8.46	0.00	1.200	1.297	5.00	17.504	21.00	177.8	320.9	1255.1
115.00		1.00	1.30	7.766	8.54	0.00	1.200	1.303	5.00	16.990	20.39	174.2	312.4	1216.7
120.00		1.00	1.32	7.836	8.62	0.00	1.200	1.308	5.00	16.476	19.77	170.4	303.7	1178.2
125.00		1.00	1.33	7.903	8.69	0.00	1.200	1.314	5.00	15.961	19.15	166.5	294.9	1139.6
129.75	Bot - Section 5	1.00	1.34	7.966	8.76	0.00	1.200	1.319	4.75	14.686	17.62	154.4	272.1	1047.0
130.00		1.00	1.34	7.969	8.77	0.00	1.200	1.319	0.25	0.773	0.93	8.1	14.6	88.7
133.58	Top - Section 4	1.00	1.35	8.015	8.82	0.00	1.200	1.323	3.58	10.942	13.13	115.8	204.0	1251.1
135.00		1.00	1.35	8.033	8.84	0.00	1.200	1.324	1.42	4.253	5.10	45.1	79.9	266.7
140.00		1.00	1.36	8.094	8.90	0.00	1.200	1.329	5.00	14.681	17.62	156.9	272.9	916.3
145.00		1.00	1.37	8.154	8.97	0.00	1.200	1.333	5.00	14.166	17.00	152.5	263.7	882.2
148.00	Appurtenance(s)	1.00	1.37	8.190	9.01	0.00	1.200	1.336	3.00	8.252	9.90	89.2	154.9	514.0
150.00		1.00	1.38	8.213	9.03	0.00	1.200	1.338	2.00	5.398	6.48	58.5	101.7	336.2
155.00		1.00	1.39	8.270	9.10	0.00	1.200	1.342	5.00	13.136	15.76	143.4	244.9	813.7
160.00		1.00	1.40	8.325	9.16	0.00	1.200	1.347	5.00	12.620	15.14	138.7	235.4	779.4
164.33	Bot - Section 6	1.00	1.41	8.372	9.21	0.00	1.200	1.350	4.33	10.520	12.62	116.3	196.8	648.1
165.00		1.00	1.41	8.379	9.22	0.00	1.200	1.351	0.67	1.612	1.93	17.8	30.7	153.9
167.25	Top - Section 5	1.00	1.41	8.403	9.24	0.00	1.200	1.353	2.25	5.374	6.45	59.6	101.5	511.6
170.00		1.00	1.42	8.432	9.28	0.00	1.200	1.355	2.75	6.426	7.71	71.5	121.2	341.2
175.00	Appurtenance(s)	1.00	1.42	8.484	9.33	0.00	1.200	1.359	5.00	11.285	13.54	126.4	210.5	595.2

Wind Loading - Shaft

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 23	

180.00		1.00	1.43	8.534	9.39	0.00	1.200	1.363	5.00	10.769	12.92	121.3	200.7	565.5
185.00		1.00	1.44	8.583	9.44	0.00	1.200	1.366	5.00	10.254	12.30	116.2	190.7	535.7
186.00	Appurtenance(s)	1.00	1.44	8.593	9.45	0.00	1.200	1.367	1.00	1.989	2.39	22.6	37.7	104.4
189.00		1.00	1.45	8.622	9.48	0.00	1.200	1.369	3.00	5.842	7.01	66.5	109.6	304.7
								Totals:	**189.00**			**6,450.6**		**53,028.4**

Discrete Appurtenance Forces

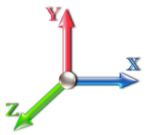
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 24	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	186.00	TA08025-B605	3	8.593	9.452	0.54	0.80	3.86	355.12	0.000	0.000	36.47	0.00	0.00
2	186.00	RDIDC-9181-OF-48	1	8.593	9.452	0.38	0.75	0.92	55.29	0.000	0.000	8.70	0.00	0.00
3	186.00	TA08025-B604	3	8.593	9.452	0.50	0.75	3.62	312.72	0.000	0.000	34.19	0.00	0.00
4	186.00	MC-PK8-DSH	1	8.593	9.452	1.00	1.00	74.59	3021.54	0.000	0.000	705.06	0.00	0.00
5	186.00	MX08FRO665-21	3	8.593	9.452	0.57	0.75	23.32	714.15	0.000	0.000	220.43	0.00	0.00
6	175.00	Low Profile	1	8.484	9.332	1.00	1.00	49.16	2519.09	0.000	0.000	458.73	0.00	0.00
7	148.00	Low Profile	1	8.190	9.008	1.00	1.00	39.64	2502.15	0.000	0.000	357.09	0.00	0.00
8	148.00	DB230/74	1	8.190	9.008	1.00	1.00	12.03	79.69	0.000	0.000	108.39	0.00	0.00
9	148.00	16' Omni	1	8.281	9.109	1.00	1.00	9.16	123.91	0.000	8.000	83.47	0.00	667.78
10	148.00	22' Dipole	1	8.314	9.145	1.00	1.00	18.27	196.04	0.000	11.000	167.07	0.00	1837.80
11	148.00	20' Dipole	1	8.303	9.133	1.00	1.00	16.62	178.27	0.000	10.000	151.79	0.00	1517.93
							Totals:		**10,057.98**			**2,331.42**		

Total Applied Force Summary

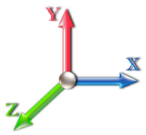
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 25	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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		181.58	1894.42	0.00	0.00
10.00		178.49	1888.93	0.00	0.00
15.00		175.26	1867.51	0.00	0.00
20.00		182.46	1841.23	0.00	0.00
25.00		187.53	1812.14	0.00	0.00
30.00		190.99	1781.19	0.00	0.00
31.25		47.54	440.51	0.00	0.00
35.00		146.46	2318.74	0.00	0.00
37.50		97.78	1526.40	0.00	0.00
40.00		98.08	865.95	0.00	0.00
45.00		197.91	1705.32	0.00	0.00
50.00		197.98	1670.63	0.00	0.00
55.00		197.52	1635.39	0.00	0.00
60.00		196.61	1599.69	0.00	0.00
63.25		126.74	1021.18	0.00	0.00
65.00		68.83	956.95	0.00	0.00
68.75		147.32	2022.33	0.00	0.00
70.00		48.70	385.00	0.00	0.00
75.00		194.67	1514.45	0.00	0.00
80.00		192.47	1477.44	0.00	0.00
85.00		190.01	1440.19	0.00	0.00
90.00		187.32	1402.70	0.00	0.00
95.00		184.41	1365.01	0.00	0.00
96.08		39.38	291.45	0.00	0.00
100.00		144.06	1817.69	0.00	0.00
100.75		27.27	343.71	0.00	0.00
105.00		153.69	1114.46	0.00	0.00
110.00		177.76	1275.17	0.00	0.00
115.00		174.16	1236.83	0.00	0.00
120.00		170.41	1198.34	0.00	0.00
125.00		166.52	1159.72	0.00	0.00
129.75		154.42	1066.07	0.00	0.00
130.00		8.13	89.66	0.00	0.00
133.58		115.76	1265.49	0.00	0.00
135.00		45.09	272.42	0.00	0.00
140.00		156.86	936.39	0.00	0.00
145.00		152.48	902.30	0.00	0.00
148.00	(5) attachments	957.03	3606.17	0.00	4023.51
150.00		58.52	341.00	0.00	0.00
155.00		143.39	825.67	0.00	0.00
160.00		138.69	791.30	0.00	0.00
164.33		116.26	658.48	0.00	0.00
165.00		17.83	155.48	0.00	0.00
167.25		59.61	516.93	0.00	0.00
170.00		71.53	347.77	0.00	0.00
175.00	(1) attachments	585.11	3126.23	0.00	0.00

Total Applied Force Summary

Structure:	CT22097-A-SBA		**Code:**	TIA-222-H	12/29/2022
Site Name:	Salem (Old Colchester Rd)		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	III	Page: 26

Tower Engineering Solutions

180.00		121.32	577.43	0.00	0.00
185.00		116.17	547.64	0.00	0.00
186.00	(11) attachments	1027.41	4565.57	0.00	0.00
189.00		66.49	304.70	0.00	0.00
	Totals:	**8,782.04**	**63,767.37**	**0.00**	**4,023.51**

Calculated Forces

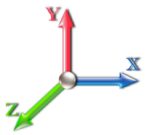
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 27	

IES Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	-63.76	-8.80	0.00	-1034.8	0.00	1034.82	4574.03	1306.81	6783.32	5898.90	0.00	0.000	0.000	0.189
5.00	-61.86	-8.66	0.00	-990.80	0.00	990.80	4528.92	1281.19	6519.95	5725.54	0.02	-0.039	0.000	0.187
10.00	-59.97	-8.53	0.00	-947.48	0.00	947.48	4482.03	1255.57	6261.80	5552.26	0.08	-0.079	0.000	0.184
15.00	-58.10	-8.39	0.00	-904.85	0.00	904.85	4433.36	1229.95	6008.86	5379.21	0.19	-0.119	0.000	0.181
20.00	-56.25	-8.24	0.00	-862.91	0.00	862.91	4382.91	1204.33	5761.13	5206.51	0.33	-0.160	0.000	0.179
25.00	-54.43	-8.09	0.00	-821.70	0.00	821.70	4330.67	1178.71	5518.62	5034.31	0.52	-0.202	0.000	0.176
30.00	-52.65	-7.91	0.00	-781.26	0.00	781.26	4276.65	1153.09	5281.33	4862.74	0.76	-0.244	0.000	0.173
31.25	-52.20	-7.89	0.00	-771.37	0.00	771.37	4262.87	1146.69	5222.82	4819.96	0.82	-0.255	0.000	0.172
35.00	-49.88	-7.75	0.00	-741.80	0.00	741.80	4220.85	1127.47	5049.24	4691.94	1.04	-0.287	0.000	0.170
37.50	-48.35	-7.66	0.00	-722.43	0.00	722.43	4227.16	1130.33	5074.86	4710.94	1.19	-0.309	0.000	0.165
40.00	-47.48	-7.59	0.00	-703.27	0.00	703.27	4198.69	1117.52	4960.48	4625.81	1.36	-0.331	0.000	0.163
45.00	-45.77	-7.41	0.00	-665.33	0.00	665.33	4140.41	1091.90	4735.64	4456.30	1.73	-0.374	0.000	0.160
50.00	-44.10	-7.24	0.00	-628.26	0.00	628.26	4080.35	1066.28	4516.01	4287.88	2.15	-0.417	0.000	0.157
55.00	-42.46	-7.06	0.00	-592.07	0.00	592.07	4018.51	1040.66	4301.60	4120.68	2.61	-0.460	0.000	0.154
60.00	-40.86	-6.88	0.00	-556.78	0.00	556.78	3954.88	1015.04	4092.40	3954.85	3.11	-0.504	0.000	0.151
63.25	-39.84	-6.76	0.00	-534.43	0.00	534.43	3912.57	998.38	3959.22	3847.86	3.47	-0.533	0.000	0.149
65.00	-38.88	-6.69	0.00	-522.61	0.00	522.61	3889.48	989.42	3888.42	3790.52	3.66	-0.549	0.000	0.148
68.75	-36.85	-6.54	0.00	-497.50	0.00	497.50	3880.27	985.87	3860.57	3767.88	4.11	-0.583	0.000	0.142
70.00	-36.47	-6.51	0.00	-489.33	0.00	489.33	3863.58	979.46	3810.57	3727.11	4.26	-0.595	0.000	0.141
75.00	-34.95	-6.32	0.00	-456.79	0.00	456.79	3795.70	953.84	3613.83	3565.09	4.91	-0.638	0.000	0.137
80.00	-33.47	-6.14	0.00	-425.18	0.00	425.18	3726.04	928.22	3422.30	3404.89	5.60	-0.682	0.000	0.134
85.00	-32.03	-5.96	0.00	-394.49	0.00	394.49	3654.59	902.60	3235.99	3246.65	6.34	-0.726	0.000	0.130
90.00	-30.62	-5.77	0.00	-364.71	0.00	364.71	3581.36	876.98	3054.89	3090.51	7.12	-0.771	0.000	0.127
95.00	-29.26	-5.58	0.00	-335.84	0.00	335.84	3506.35	851.36	2879.00	2936.60	7.96	-0.816	0.000	0.123
96.08	-28.96	-5.55	0.00	-329.79	0.00	329.79	3489.86	845.81	2841.58	2903.56	8.14	-0.826	0.000	0.122
100.00	-27.15	-5.39	0.00	-308.05	0.00	308.05	3429.56	825.74	2708.33	2785.06	8.83	-0.861	0.000	0.119
100.75	-26.80	-5.37	0.00	-304.00	0.00	304.00	3465.22	837.56	2786.44	2854.69	8.97	-0.868	0.000	0.114
105.00	-25.69	-5.22	0.00	-281.18	0.00	281.18	3399.24	815.79	2643.43	2726.85	9.76	-0.907	0.000	0.111
110.00	-24.41	-5.04	0.00	-255.09	0.00	255.09	3319.97	790.17	2480.00	2578.83	10.73	-0.949	0.000	0.106
115.00	-23.17	-4.86	0.00	-229.91	0.00	229.91	3236.58	764.55	2321.78	2431.73	11.75	-0.992	0.000	0.102
120.00	-21.97	-4.68	0.00	-205.61	0.00	205.61	3128.12	738.93	2168.78	2270.69	12.81	-1.034	0.000	0.098
125.00	-20.81	-4.51	0.00	-182.19	0.00	182.19	3019.66	713.30	2021.00	2115.16	13.92	-1.075	0.000	0.093
129.75	-19.75	-4.34	0.00	-160.77	0.00	160.77	2916.62	688.97	1885.43	1972.52	15.01	-1.114	0.000	0.088
130.00	-19.66	-4.34	0.00	-159.68	0.00	159.68	2911.20	687.68	1878.42	1965.15	15.07	-1.116	0.000	0.088
133.58	-18.39	-4.20	0.00	-144.14	0.00	144.14	2370.41	569.74	1547.19	1593.70	15.91	-1.145	0.000	0.098
135.00	-18.12	-4.16	0.00	-138.18	0.00	138.18	2351.91	563.69	1514.51	1564.31	16.26	-1.156	0.000	0.096
140.00	-17.19	-4.00	0.00	-117.37	0.00	117.37	2285.46	542.34	1401.96	1461.99	17.49	-1.199	0.000	0.088
145.00	-16.28	-3.84	0.00	-97.38	0.00	97.38	2205.51	520.99	1293.75	1354.75	18.77	-1.239	0.000	0.079
148.00	-12.70	-2.80	0.00	-81.85	0.00	81.85	2151.28	508.18	1230.91	1288.61	19.56	-1.263	0.000	0.069
150.00	-12.36	-2.74	0.00	-76.24	0.00	76.24	2115.13	499.64	1189.88	1245.44	20.09	-1.277	0.000	0.067
155.00	-11.53	-2.59	0.00	-62.53	0.00	62.53	2024.75	478.29	1090.37	1140.73	21.44	-1.310	0.000	0.061
160.00	-10.75	-2.44	0.00	-49.59	0.00	49.59	1934.36	456.94	995.19	1040.61	22.83	-1.341	0.000	0.053
164.33	-10.09	-2.31	0.00	-39.03	0.00	39.03	1856.03	438.43	916.22	957.56	24.06	-1.365	0.000	0.046
165.00	-9.93	-2.29	0.00	-37.50	0.00	37.50	1843.98	435.59	904.37	945.09	24.25	-1.369	0.000	0.045
167.25	-9.42	-2.22	0.00	-32.35	0.00	32.35	1467.48	348.62	724.10	754.31	24.90	-1.380	0.000	0.049
170.00	-9.07	-2.14	0.00	-26.26	0.00	26.26	1436.04	339.22	685.60	718.06	25.70	-1.393	0.000	0.043
175.00	-5.96	-1.48	0.00	-15.56	0.00	15.56	1363.73	322.14	618.30	647.22	27.17	-1.413	0.000	0.028
180.00	-5.39	-1.34	0.00	-8.16	0.00	8.16	1291.43	305.06	554.47	580.06	28.66	-1.427	0.000	0.018

Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 28	

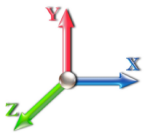
185.00	-4.84	-1.22	0.00	-1.44	0.00	1.44	1219.12	287.98	494.12	516.58	30.16	-1.433	0.000	0.007
186.00	-0.30	-0.07	0.00	-0.22	0.00	0.22	1204.66	284.57	482.47	504.32	30.46	-1.434	0.000	0.001
189.00	0.00	-0.07	0.00	0.00	0.00	0.00	1161.27	274.32	448.34	468.44	31.36	-1.434	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 29	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh



Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	24
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.20
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03	**S1**	0.06
						Seismic Importance Factor	1.25

Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	
5.00		1269.6	2.50	55.53	0.02	
10.00		1249.7	7.50	54.66	0.14	
15.00		1224.9	12.50	53.57	0.38	
20.00		1200.0	17.50	52.48	0.72	
25.00		1175.2	22.50	51.40	1.15	
30.00		1150.3	27.50	50.31	1.64	
31.25	Bot - Section 2	283.72	30.63	12.41	0.12	
35.00		1679.9	33.13	73.47	5.08	
37.50	Top - Section 1	1104.4	36.25	48.30	2.63	
40.00		554.85	38.75	24.27	0.76	
45.00		1091.0	42.50	47.72	3.53	
50.00		1066.2	47.50	46.63	4.21	
55.00		1041.3	52.50	45.54	4.90	
60.00		1016.5	57.50	44.46	5.60	
63.25	Bot - Section 3	647.44	61.63	28.31	2.61	
65.00		686.83	64.13	30.04	3.18	
68.75	Top - Section 2	1451.2	66.88	63.47	15.45	
70.00		243.19	69.38	10.64	0.47	
75.00		957.23	72.50	41.86	7.90	
80.00		932.39	77.50	40.78	8.56	
85.00		907.55	82.50	39.69	9.20	
90.00		882.72	87.50	38.60	9.79	
95.00		857.88	92.50	37.52	10.33	
96.08	Bot - Section 4	182.60	95.54	7.99	0.50	
100.00		1297.0	98.04	56.72	26.52	
100.75	Top - Section 3	244.89	100.38	10.71	0.99	
105.00		698.30	102.88	30.54	8.46	
110.00		798.55	107.50	34.92	12.09	
115.00		773.72	112.50	33.84	12.43	
120.00		748.88	117.50	32.75	12.70	
125.00		724.04	122.50	31.66	12.90	
129.75	Bot - Section 5	664.83	127.38	29.08	11.76	
130.00		62.75	129.88	2.74	0.11	
133.58	Top - Section 4	886.97	131.79	38.79	22.41	
135.00		161.36	134.29	7.06	0.77	
140.00		556.23	137.50	24.33	9.59	
145.00		535.53	142.50	23.42	9.55	
148.00	Appurtenance(s)	2019.3	146.50	88.31	143.56	
150.00		200.18	149.00	8.75	1.46	
155.00		485.97	152.50	21.25	9.01	
160.00		465.27	157.50	20.35	8.81	
164.33	Bot - Section 6	386.49	162.17	16.90	6.44	
165.00		104.28	164.67	4.56	0.48	
167.25	Top - Section 5	347.07	166.13	15.18	5.45	
170.00		189.95	168.63	8.31	1.68	

Seismic Segment Forces (Factored)

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 30	

Tower Engineering Solutions

175.00	Appurtenance(s)		1832.5	172.50	80.14	163.91		
180.00			315.97	177.50	13.82	5.16		
185.00			299.41	182.50	13.09	4.90		
186.00	Appurtenance(s)		2416.9	185.50	105.70	329.73		
189.00			162.54	187.50	7.11	1.52		
		Totals:	**40,236.5**		**1,759.7**	**921.3**	**Total Wind:**	**36,694.4**

Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 31	

IES Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh

Iterations 24

Gust Response Factor	1.10			**Sds**	0.22			**Ss**	0.20
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03			**Seismic Importance Factor**	1.25

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	-49.91	-0.92	0.00	-149.09	0.00	149.09	4574.03	1306.81	6783.32	5898.90		0.00	0.00	0.036
5.00	-48.33	-0.93	0.00	-144.48	0.00	144.48	4528.92	1281.19	6519.95	5725.54		0.00	-0.01	0.036
10.00	-46.78	-0.93	0.00	-139.84	0.00	139.84	4482.03	1255.57	6261.80	5552.26		0.01	-0.01	0.036
15.00	-45.26	-0.94	0.00	-135.18	0.00	135.18	4433.36	1229.95	6008.86	5379.21		0.03	-0.02	0.035
20.00	-43.77	-0.94	0.00	-130.50	0.00	130.50	4382.91	1204.33	5761.13	5206.51		0.05	-0.02	0.035
25.00	-42.31	-0.94	0.00	-125.80	0.00	125.80	4330.67	1178.71	5518.62	5034.31		0.08	-0.03	0.035
30.00	-40.89	-0.94	0.00	-121.09	0.00	121.09	4276.65	1153.09	5281.33	4862.74		0.11	-0.04	0.034
31.25	-40.54	-0.95	0.00	-119.91	0.00	119.91	4262.87	1146.69	5222.82	4819.96		0.12	-0.04	0.034
35.00	-38.45	-0.94	0.00	-116.37	0.00	116.37	4220.85	1127.47	5049.24	4691.94		0.15	-0.04	0.034
37.50	-37.08	-0.94	0.00	-114.01	0.00	114.01	4227.16	1130.33	5074.86	4710.94		0.18	-0.05	0.033
40.00	-36.39	-0.94	0.00	-111.66	0.00	111.66	4198.69	1117.52	4960.48	4625.81		0.20	-0.05	0.033
45.00	-35.04	-0.94	0.00	-106.95	0.00	106.95	4140.41	1091.90	4735.64	4456.30		0.26	-0.06	0.032
50.00	-33.71	-0.94	0.00	-102.25	0.00	102.25	4080.35	1066.28	4516.01	4287.88		0.32	-0.06	0.032
55.00	-32.42	-0.94	0.00	-97.55	0.00	97.55	4018.51	1040.66	4301.60	4120.68		0.39	-0.07	0.032
60.00	-31.16	-0.93	0.00	-92.86	0.00	92.86	3954.88	1015.04	4092.40	3954.85		0.47	-0.08	0.031
63.25	-30.36	-0.93	0.00	-89.83	0.00	89.83	3912.57	998.38	3959.22	3847.86		0.53	-0.08	0.031
65.00	-29.51	-0.93	0.00	-88.20	0.00	88.20	3889.48	989.42	3888.42	3790.52		0.56	-0.09	0.031
68.75	-27.70	-0.91	0.00	-84.71	0.00	84.71	3880.27	985.87	3860.57	3767.88		0.63	-0.09	0.030
70.00	-27.40	-0.91	0.00	-83.57	0.00	83.57	3863.58	979.46	3810.57	3727.11		0.65	-0.09	0.030
75.00	-26.22	-0.91	0.00	-79.00	0.00	79.00	3795.70	953.84	3613.83	3565.09		0.75	-0.10	0.029
80.00	-25.06	-0.90	0.00	-74.46	0.00	74.46	3726.04	928.22	3422.30	3404.89		0.86	-0.11	0.029
85.00	-23.94	-0.89	0.00	-69.95	0.00	69.95	3654.59	902.60	3235.99	3246.65		0.98	-0.12	0.028
90.00	-22.84	-0.88	0.00	-65.49	0.00	65.49	3581.36	876.98	3054.89	3090.51		1.11	-0.12	0.028
95.00	-21.78	-0.87	0.00	-61.07	0.00	61.07	3506.35	851.36	2879.00	2936.60		1.24	-0.13	0.027
96.08	-21.55	-0.87	0.00	-60.13	0.00	60.13	3489.86	845.81	2841.58	2903.56		1.27	-0.13	0.027
100.00	-19.94	-0.84	0.00	-56.71	0.00	56.71	3429.56	825.74	2708.33	2785.06		1.39	-0.14	0.026
100.75	-19.64	-0.84	0.00	-56.07	0.00	56.07	3465.22	837.56	2786.44	2854.69		1.41	-0.14	0.025
105.00	-18.77	-0.84	0.00	-52.49	0.00	52.49	3399.24	815.79	2643.43	2726.85		1.54	-0.15	0.025
110.00	-17.78	-0.82	0.00	-48.31	0.00	48.31	3319.97	790.17	2480.00	2578.83		1.70	-0.16	0.024
115.00	-16.83	-0.81	0.00	-44.19	0.00	44.19	3236.58	764.55	2321.78	2431.73		1.87	-0.17	0.023
120.00	-15.90	-0.80	0.00	-40.13	0.00	40.13	3128.12	738.93	2168.78	2270.69		2.04	-0.17	0.023
125.00	-15.00	-0.78	0.00	-36.14	0.00	36.14	3019.66	713.30	2021.00	2115.16		2.23	-0.18	0.022
129.75	-14.18	-0.77	0.00	-32.42	0.00	32.42	2916.62	688.97	1885.43	1972.52		2.42	-0.19	0.021
130.00	-14.10	-0.77	0.00	-32.22	0.00	32.22	2911.20	687.68	1878.42	1965.15		2.43	-0.19	0.021
133.58	-13.00	-0.75	0.00	-29.46	0.00	29.46	2370.41	569.74	1547.19	1593.70		2.57	-0.20	0.024
135.00	-12.80	-0.75	0.00	-28.40	0.00	28.40	2351.91	563.69	1514.51	1564.31		2.63	-0.20	0.024
140.00	-12.11	-0.74	0.00	-24.67	0.00	24.67	2285.46	542.34	1401.96	1461.99		2.84	-0.21	0.022
145.00	-11.45	-0.73	0.00	-20.99	0.00	20.99	2205.51	520.99	1293.75	1354.75		3.06	-0.22	0.021
148.00	-8.94	-0.57	0.00	-18.82	0.00	18.82	2151.28	508.18	1230.91	1288.61		3.20	-0.22	0.019
150.00	-8.69	-0.57	0.00	-17.67	0.00	17.67	2115.13	499.64	1189.88	1245.44		3.29	-0.22	0.018
155.00	-8.09	-0.56	0.00	-14.82	0.00	14.82	2024.75	478.29	1090.37	1140.73		3.53	-0.23	0.017
160.00	-7.52	-0.55	0.00	-12.01	0.00	12.01	1934.36	456.94	995.19	1040.61		3.78	-0.24	0.015
164.33	-7.04	-0.54	0.00	-9.63	0.00	9.63	1856.03	438.43	916.22	957.56		4.00	-0.24	0.014
165.00	-6.91	-0.54	0.00	-9.26	0.00	9.26	1843.98	435.59	904.37	945.09		4.03	-0.25	0.014
167.25	-6.48	-0.53	0.00	-8.04	0.00	8.04	1467.48	348.62	724.10	754.31		4.15	-0.25	0.015
170.00	-6.24	-0.53	0.00	-6.57	0.00	6.57	1436.04	339.22	685.60	718.06		4.29	-0.25	0.014
175.00	-3.97	-0.36	0.00	-3.91	0.00	3.91	1363.73	322.14	618.30	647.22		4.56	-0.26	0.009

Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 32	

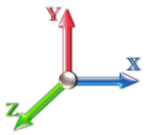
180.00	-3.58	-0.35	0.00	-2.11	0.00	2.11	1291.43	305.06	554.47	580.06	4.83	-0.26	0.006
185.00	-3.21	-0.35	0.00	-0.35	0.00	0.35	1219.12	287.98	494.12	516.58	5.10	-0.26	0.003
186.00	-0.20	0.00	0.00	-0.01	0.00	0.01	1204.66	284.57	482.47	504.32	5.16	-0.26	0.000
189.00	0.00	0.00	0.00	0.00	0.00	0.00	1161.27	274.32	448.34	468.44	5.32	-0.26	0.000

Seismic Segment Forces (Factored)

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 33	

Tower Engineering Solutions

Load Case: 0.9D + 1.0Ev + 1.0Eh



Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	24
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.20
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03	**S1**	0.06
						Seismic Importance Factor	1.25

Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	
5.00		1265.8	2.50	55.36	0.02	
10.00		1244.7	7.50	54.44	0.14	
15.00		1219.8	12.50	53.35	0.38	
20.00		1195.0	17.50	52.26	0.72	
25.00		1170.2	22.50	51.18	1.14	
30.00		1145.3	27.50	50.09	1.63	
31.25	Bot - Section 2	282.46	30.63	12.35	0.12	
35.00		1676.2	33.13	73.31	5.08	
37.50	Top - Section 1	1101.9	36.25	48.19	2.63	
40.00		552.33	38.75	24.16	0.75	
45.00		1086.0	42.50	47.50	3.51	
50.00		1061.2	47.50	46.41	4.19	
55.00		1036.3	52.50	45.32	4.88	
60.00		1011.5	57.50	44.24	5.57	
63.25	Bot - Section 3	644.17	61.63	28.17	2.60	
65.00		685.07	64.13	29.96	3.18	
68.75	Top - Section 2	1447.5	66.88	63.30	15.44	
70.00		241.93	69.38	10.58	0.46	
75.00		952.20	72.50	41.64	7.85	
80.00		927.36	77.50	40.56	8.51	
85.00		902.53	82.50	39.47	9.14	
90.00		877.69	87.50	38.38	9.72	
95.00		852.85	92.50	37.30	10.26	
96.08	Bot - Section 4	181.51	95.54	7.94	0.50	
100.00		1293.0	98.04	56.55	26.49	
100.75	Top - Section 3	244.14	100.38	10.68	0.99	
105.00		694.03	102.88	30.35	8.40	
110.00		793.53	107.50	34.70	11.99	
115.00		768.69	112.50	33.62	12.32	
120.00		743.85	117.50	32.53	12.59	
125.00		719.01	122.50	31.44	12.78	
129.75	Bot - Section 5	660.06	127.38	28.87	11.65	
130.00		62.50	129.88	2.73	0.11	
133.58	Top - Section 4	883.37	131.79	38.63	22.34	
135.00		159.94	134.29	6.99	0.76	
140.00		551.20	137.50	24.11	9.47	
145.00		530.50	142.50	23.20	9.42	
148.00	Appurtenance(s)	2016.3	146.50	88.18	143.80	
150.00		198.99	149.00	8.70	1.45	
155.00		482.98	152.50	21.12	8.94	
160.00		462.29	157.50	20.22	8.74	
164.33	Bot - Section 6	383.91	162.17	16.79	6.39	
165.00		103.89	164.67	4.54	0.48	
167.25	Top - Section 5	345.72	166.13	15.12	5.44	
170.00		188.30	168.63	8.24	1.66	

Seismic Segment Forces (Factored)

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 34	

175.00	Appurtenance(s)		1829.5	172.50	80.01	164.13		
180.00			312.98	177.50	13.69	5.09		
185.00			296.42	182.50	12.96	4.82		
186.00	Appurtenance(s)		2416.4	185.50	105.68	331.10		
189.00			162.54	187.50	7.11	1.53		
		Totals:	**40,066.3**		**1,752.2**	**921.3**	**Total Wind:**	**36,694.4**

Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 35	

Tower Engineering Solutions

Load Case: 0.9D + 1.0Ev + 1.0Eh

Iterations 24

Gust Response Factor	1.10			**Sds**	0.22			**Ss**	0.20
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03			**Seismic Importance Factor**	1.25

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	-37.86	-0.92	0.00	-147.52	0.00	147.52	4574.03	1306.81	6783.32	5898.90		0.00	0.00	0.033
5.00	-36.67	-0.93	0.00	-142.91	0.00	142.91	4528.92	1281.19	6519.95	5725.54		0.00	-0.01	0.033
10.00	-35.49	-0.93	0.00	-138.28	0.00	138.28	4482.03	1255.57	6261.80	5552.26		0.01	-0.01	0.033
15.00	-34.34	-0.93	0.00	-133.63	0.00	133.63	4433.36	1229.95	6008.86	5379.21		0.03	-0.02	0.033
20.00	-33.21	-0.93	0.00	-128.97	0.00	128.97	4382.91	1204.33	5761.13	5206.51		0.05	-0.02	0.032
25.00	-32.10	-0.94	0.00	-124.30	0.00	124.30	4330.67	1178.71	5518.62	5034.31		0.08	-0.03	0.032
30.00	-31.02	-0.94	0.00	-119.62	0.00	119.62	4276.65	1153.09	5281.33	4862.74		0.11	-0.04	0.032
31.25	-30.75	-0.94	0.00	-118.45	0.00	118.45	4262.87	1146.69	5222.82	4819.96		0.12	-0.04	0.032
35.00	-29.17	-0.93	0.00	-114.93	0.00	114.93	4220.85	1127.47	5049.24	4691.94		0.15	-0.04	0.031
37.50	-28.13	-0.93	0.00	-112.59	0.00	112.59	4227.16	1130.33	5074.86	4710.94		0.18	-0.05	0.031
40.00	-27.61	-0.93	0.00	-110.26	0.00	110.26	4198.69	1117.52	4960.48	4625.81		0.20	-0.05	0.030
45.00	-26.58	-0.93	0.00	-105.60	0.00	105.60	4140.41	1091.90	4735.64	4456.30		0.26	-0.06	0.030
50.00	-25.58	-0.93	0.00	-100.94	0.00	100.94	4080.35	1066.28	4516.01	4287.88		0.32	-0.06	0.030
55.00	-24.60	-0.93	0.00	-96.29	0.00	96.29	4018.51	1040.66	4301.60	4120.68		0.39	-0.07	0.029
60.00	-23.64	-0.92	0.00	-91.65	0.00	91.65	3954.88	1015.04	4092.40	3954.85		0.47	-0.08	0.029
63.25	-23.03	-0.92	0.00	-88.65	0.00	88.65	3912.57	998.38	3959.22	3847.86		0.52	-0.08	0.029
65.00	-22.39	-0.92	0.00	-87.04	0.00	87.04	3889.48	989.42	3888.42	3790.52		0.55	-0.08	0.029
68.75	-21.02	-0.90	0.00	-83.60	0.00	83.60	3880.27	985.87	3860.57	3767.88		0.62	-0.09	0.028
70.00	-20.79	-0.90	0.00	-82.47	0.00	82.47	3863.58	979.46	3810.57	3727.11		0.64	-0.09	0.028
75.00	-19.89	-0.90	0.00	-77.95	0.00	77.95	3795.70	953.84	3613.83	3565.09		0.74	-0.10	0.027
80.00	-19.01	-0.89	0.00	-73.47	0.00	73.47	3726.04	928.22	3422.30	3404.89		0.85	-0.11	0.027
85.00	-18.16	-0.88	0.00	-69.03	0.00	69.03	3654.59	902.60	3235.99	3246.65		0.97	-0.12	0.026
90.00	-17.33	-0.87	0.00	-64.63	0.00	64.63	3581.36	876.98	3054.89	3090.51		1.09	-0.12	0.026
95.00	-16.52	-0.86	0.00	-60.27	0.00	60.27	3506.35	851.36	2879.00	2936.60		1.23	-0.13	0.025
96.08	-16.35	-0.86	0.00	-59.34	0.00	59.34	3489.86	845.81	2841.58	2903.56		1.26	-0.13	0.025
100.00	-15.13	-0.83	0.00	-55.97	0.00	55.97	3429.56	825.74	2708.33	2785.06		1.37	-0.14	0.025
100.75	-14.90	-0.83	0.00	-55.34	0.00	55.34	3465.22	837.56	2786.44	2854.69		1.39	-0.14	0.024
105.00	-14.24	-0.82	0.00	-51.81	0.00	51.81	3399.24	815.79	2643.43	2726.85		1.52	-0.15	0.023
110.00	-13.49	-0.81	0.00	-47.69	0.00	47.69	3319.97	790.17	2480.00	2578.83		1.68	-0.16	0.023
115.00	-12.76	-0.80	0.00	-43.63	0.00	43.63	3236.58	764.55	2321.78	2431.73		1.84	-0.16	0.022
120.00	-12.06	-0.79	0.00	-39.63	0.00	39.63	3128.12	738.93	2168.78	2270.69		2.02	-0.17	0.021
125.00	-11.38	-0.77	0.00	-35.70	0.00	35.70	3019.66	713.30	2021.00	2115.16		2.20	-0.18	0.021
129.75	-10.76	-0.76	0.00	-32.02	0.00	32.02	2916.62	688.97	1885.43	1972.52		2.39	-0.19	0.020
130.00	-10.70	-0.76	0.00	-31.83	0.00	31.83	2911.20	687.68	1878.42	1965.15		2.40	-0.19	0.020
133.58	-9.86	-0.74	0.00	-29.11	0.00	29.11	2370.41	569.74	1547.19	1593.70		2.54	-0.19	0.022
135.00	-9.71	-0.74	0.00	-28.07	0.00	28.07	2351.91	563.69	1514.51	1564.31		2.60	-0.20	0.022
140.00	-9.19	-0.73	0.00	-24.39	0.00	24.39	2285.46	542.34	1401.96	1461.99		2.81	-0.20	0.021
145.00	-8.69	-0.72	0.00	-20.76	0.00	20.76	2205.51	520.99	1293.75	1354.75		3.02	-0.21	0.019
148.00	-6.78	-0.57	0.00	-18.61	0.00	18.61	2151.28	508.18	1230.91	1288.61		3.16	-0.22	0.018
150.00	-6.60	-0.56	0.00	-17.48	0.00	17.48	2115.13	499.64	1189.88	1245.44		3.25	-0.22	0.017
155.00	-6.14	-0.55	0.00	-14.66	0.00	14.66	2024.75	478.29	1090.37	1140.73		3.49	-0.23	0.016
160.00	-5.70	-0.54	0.00	-11.89	0.00	11.89	1934.36	456.94	995.19	1040.61		3.73	-0.24	0.014
164.33	-5.34	-0.54	0.00	-9.53	0.00	9.53	1856.03	438.43	916.22	957.56		3.95	-0.24	0.013
165.00	-5.24	-0.54	0.00	-9.17	0.00	9.17	1843.98	435.59	904.37	945.09		3.98	-0.24	0.013
167.25	-4.91	-0.53	0.00	-7.97	0.00	7.97	1467.48	348.62	724.10	754.31		4.10	-0.25	0.014
170.00	-4.74	-0.53	0.00	-6.51	0.00	6.51	1436.04	339.22	685.60	718.06		4.24	-0.25	0.012
175.00	-3.01	-0.36	0.00	-3.88	0.00	3.88	1363.73	322.14	618.30	647.22		4.50	-0.25	0.008

Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 36	

180.00	-2.71	-0.35	0.00	-2.10	0.00	2.10	1291.43	305.06	554.47	580.06	4.77	-0.26	0.006
185.00	-2.43	-0.34	0.00	-0.35	0.00	0.35	1219.12	287.98	494.12	516.58	5.04	-0.26	0.003
186.00	-0.15	0.00	0.00	-0.01	0.00	0.01	1204.66	284.57	482.47	504.32	5.10	-0.26	0.000
189.00	0.00	0.00	0.00	0.00	0.00	0.00	1161.27	274.32	448.34	468.44	5.26	-0.26	0.000

Wind Loading - Shaft

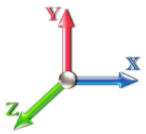
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 37	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	6.525	7.18	291.64	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	6.525	7.18	285.95	0.730	0.000	5.00	26.369	19.25	138.2	0.0	1254.5
10.00		1.00	0.85	6.525	7.18	280.27	0.730	0.000	5.00	25.850	18.87	135.4	0.0	1229.6
15.00		1.00	0.85	6.525	7.18	274.59	0.730	0.000	5.00	25.331	18.49	132.7	0.0	1204.8
20.00		1.00	0.90	6.923	7.62	276.99	0.730	0.000	5.00	24.812	18.11	137.9	0.0	1180.0
25.00		1.00	0.95	7.256	7.98	277.58	0.730	0.000	5.00	24.293	17.73	141.6	0.0	1155.1
30.00		1.00	0.98	7.540	8.29	276.85	0.730	0.000	5.00	23.774	17.36	144.0	0.0	1130.3
31.25	Bot - Section 2	1.00	0.99	7.605	8.37	276.50	0.730	0.000	1.25	5.862	4.28	35.8	0.0	278.7
35.00		1.00	1.01	7.789	8.57	275.17	0.730	0.000	3.75	17.631	12.87	110.3	0.0	1664.9
37.50	Top - Section 1	1.00	1.03	7.903	8.69	274.04	0.730	0.000	2.50	11.592	8.46	73.6	0.0	1094.4
40.00		1.00	1.04	8.011	8.81	276.61	0.730	0.000	2.50	11.462	8.37	73.7	0.0	544.8
45.00		1.00	1.07	8.212	9.03	273.69	0.730	0.000	5.00	22.535	16.45	148.6	0.0	1071.0
50.00		1.00	1.09	8.396	9.24	270.29	0.730	0.000	5.00	22.016	16.07	148.4	0.0	1046.1
55.00		1.00	1.12	8.567	9.42	266.51	0.730	0.000	5.00	21.497	15.69	147.9	0.0	1021.3
60.00		1.00	1.14	8.725	9.60	262.39	0.730	0.000	5.00	20.978	15.31	147.0	0.0	996.4
63.25	Bot - Section 3	1.00	1.15	8.822	9.70	259.55	0.730	0.000	3.25	13.357	9.75	94.6	0.0	634.4
65.00		1.00	1.16	8.873	9.76	257.98	0.730	0.000	1.75	7.213	5.27	51.4	0.0	679.8
68.75	Top - Section 2	1.00	1.17	8.979	9.88	254.51	0.730	0.000	3.75	15.242	11.13	109.9	0.0	1436.2
70.00		1.00	1.17	9.013	9.91	257.40	0.730	0.000	1.25	5.016	3.66	36.3	0.0	238.2
75.00		1.00	1.19	9.145	10.06	252.55	0.730	0.000	5.00	19.738	14.41	144.9	0.0	937.1
80.00		1.00	1.21	9.270	10.20	247.50	0.730	0.000	5.00	19.219	14.03	143.1	0.0	912.3
85.00		1.00	1.22	9.389	10.33	242.27	0.730	0.000	5.00	18.701	13.65	141.0	0.0	887.4
90.00		1.00	1.24	9.502	10.45	236.87	0.730	0.000	5.00	18.182	13.27	138.7	0.0	862.6
95.00		1.00	1.25	9.611	10.57	231.32	0.730	0.000	5.00	17.663	12.89	136.3	0.0	837.8
96.08	Bot - Section 4	1.00	1.26	9.634	10.60	230.10	0.730	0.000	1.08	3.759	2.74	29.1	0.0	178.2
100.00		1.00	1.27	9.716	10.69	225.64	0.730	0.000	3.92	13.634	9.95	106.4	0.0	1281.3
100.75	Top - Section 3	1.00	1.27	9.731	10.70	224.78	0.730	0.000	0.75	2.574	1.88	20.1	0.0	241.9
105.00		1.00	1.28	9.816	10.80	224.09	0.730	0.000	4.25	14.368	10.49	113.2	0.0	681.2
110.00		1.00	1.29	9.913	10.90	218.19	0.730	0.000	5.00	16.423	11.99	130.7	0.0	778.4
115.00		1.00	1.30	10.006	11.01	212.17	0.730	0.000	5.00	15.904	11.61	127.8	0.0	753.6
120.00		1.00	1.32	10.096	11.11	206.06	0.730	0.000	5.00	15.385	11.23	124.7	0.0	728.8
125.00		1.00	1.33	10.183	11.20	199.84	0.730	0.000	5.00	14.866	10.85	121.6	0.0	703.9
129.75	Bot - Section 5	1.00	1.34	10.263	11.29	193.86	0.730	0.000	4.75	13.642	9.96	112.4	0.0	645.7
130.00		1.00	1.34	10.267	11.29	193.54	0.730	0.000	0.25	0.718	0.52	5.9	0.0	61.7
133.58	Top - Section 4	1.00	1.35	10.326	11.36	188.97	0.730	0.000	3.58	10.153	7.41	84.2	0.0	872.6
135.00		1.00	1.35	10.349	11.38	190.80	0.730	0.000	1.42	3.940	2.88	32.7	0.0	155.7
140.00		1.00	1.36	10.429	11.47	184.35	0.730	0.000	5.00	13.574	9.91	113.7	0.0	536.1
145.00		1.00	1.37	10.506	11.56	177.82	0.730	0.000	5.00	13.055	9.53	110.1	0.0	515.4
148.00	Appurtenance(s)	1.00	1.37	10.552	11.61	173.87	0.730	0.000	3.00	7.584	5.54	64.3	0.0	299.3
150.00		1.00	1.38	10.581	11.64	171.22	0.730	0.000	2.00	4.952	3.62	42.1	0.0	195.4
155.00		1.00	1.39	10.655	11.72	164.55	0.730	0.000	5.00	12.017	8.77	102.8	0.0	474.0
160.00		1.00	1.40	10.726	11.80	157.81	0.730	0.000	5.00	11.498	8.39	99.0	0.0	453.3
164.33	Bot - Section 6	1.00	1.41	10.787	11.87	151.92	0.730	0.000	4.33	9.545	6.97	82.7	0.0	376.1
165.00		1.00	1.41	10.796	11.88	151.01	0.730	0.000	0.67	1.462	1.07	12.7	0.0	102.7
167.25	Top - Section 5	1.00	1.41	10.827	11.91	147.93	0.730	0.000	2.25	4.867	3.55	42.3	0.0	341.7
170.00		1.00	1.42	10.864	11.95	147.14	0.730	0.000	2.75	5.805	4.24	50.6	0.0	183.4
175.00	Appurtenance(s)	1.00	1.42	10.930	12.02	140.24	0.730	0.000	5.00	10.153	7.41	89.1	0.0	320.6

Wind Loading - Shaft

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 38	

180.00		1.00	1.43	10.995	12.09	133.28	0.730	0.000	5.00	9.634	7.03	85.1	0.0	304.0
185.00		1.00	1.44	11.059	12.16	126.26	0.730	0.000	5.00	9.115	6.65	80.9	0.0	287.5
186.00	Appurtenance(s)	1.00	1.44	11.072	12.18	124.85	0.730	0.000	1.00	1.761	1.29	15.7	0.0	55.5
189.00		1.00	1.45	11.109	12.22	120.61	0.730	0.000	3.00	5.158	3.77	46.0	0.0	162.5
								Totals:	**189.00**			**4,757.3**		**33,988.4**

Discrete Appurtenance Forces

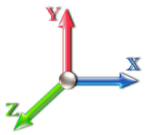
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 39	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	186.00	TA08025-B605	3	11.072	12.179	0.54	0.80	3.15	225.00	0.000	0.000	38.38	0.00	0.00
2	186.00	RDIDC-9181-OF-48	1	11.072	12.179	0.38	0.75	0.75	21.90	0.000	0.000	9.18	0.00	0.00
3	186.00	TA08025-B604	3	11.072	12.179	0.50	0.75	2.95	191.70	0.000	0.000	35.98	0.00	0.00
4	186.00	MC-PK8-DSH	1	11.072	12.179	1.00	1.00	37.59	1727.00	0.000	0.000	457.80	0.00	0.00
5	186.00	MX08FRO665-21	3	11.072	12.179	0.55	0.75	20.80	193.50	0.000	0.000	253.27	0.00	0.00
6	175.00	Low Profile	1	10.930	12.023	1.00	1.00	30.25	1500.00	0.000	0.000	363.71	0.00	0.00
7	148.00	Low Profile	1	10.552	11.607	1.00	1.00	24.55	1500.00	0.000	0.000	284.94	0.00	0.00
8	148.00	DB230/74	1	10.552	11.607	1.00	1.00	3.66	27.00	0.000	0.000	42.48	0.00	0.00
9	148.00	16' Omni	1	10.669	11.736	1.00	1.00	4.80	55.00	0.000	8.000	56.33	0.00	450.66
10	148.00	22' Dipole	1	10.712	11.783	1.00	1.00	8.27	66.00	0.000	11.000	97.45	0.00	1071.92
11	148.00	20' Dipole	1	10.698	11.768	1.00	1.00	7.52	60.00	0.000	10.000	88.49	0.00	884.92
							Totals:		**5,567.10**			**1,728.02**		

Total Applied Force Summary

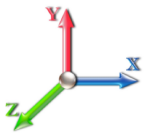
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 40	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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		138.16	1267.15	0.00	0.00
10.00		135.45	1246.39	0.00	0.00
15.00		132.73	1221.55	0.00	0.00
20.00		137.94	1196.72	0.00	0.00
25.00		141.55	1171.88	0.00	0.00
30.00		143.95	1147.04	0.00	0.00
31.25		35.80	282.88	0.00	0.00
35.00		110.27	1677.47	0.00	0.00
37.50		73.56	1102.79	0.00	0.00
40.00		73.73	553.17	0.00	0.00
45.00		148.60	1087.72	0.00	0.00
50.00		148.44	1062.88	0.00	0.00
55.00		147.88	1038.04	0.00	0.00
60.00		146.98	1013.20	0.00	0.00
63.25		94.63	645.26	0.00	0.00
65.00		51.39	685.66	0.00	0.00
68.75		109.89	1448.77	0.00	0.00
70.00		36.30	242.35	0.00	0.00
75.00		144.94	953.88	0.00	0.00
80.00		143.06	929.04	0.00	0.00
85.00		140.99	904.20	0.00	0.00
90.00		138.73	879.37	0.00	0.00
95.00		136.32	854.53	0.00	0.00
96.08		29.08	181.87	0.00	0.00
100.00		106.37	1294.40	0.00	0.00
100.75		20.12	244.39	0.00	0.00
105.00		113.25	695.45	0.00	0.00
110.00		130.72	795.20	0.00	0.00
115.00		127.78	770.36	0.00	0.00
120.00		124.73	745.53	0.00	0.00
125.00		121.56	720.69	0.00	0.00
129.75		112.43	661.65	0.00	0.00
130.00		5.92	62.59	0.00	0.00
133.58		84.19	884.57	0.00	0.00
135.00		32.75	160.41	0.00	0.00
140.00		113.67	552.87	0.00	0.00
145.00		110.14	532.18	0.00	0.00
148.00	(5) attachments	633.95	2017.37	0.00	2407.50
150.00		42.08	199.39	0.00	0.00
155.00		102.81	483.98	0.00	0.00
160.00		99.03	463.28	0.00	0.00
164.33		82.68	384.77	0.00	0.00
165.00		12.68	104.02	0.00	0.00
167.25		42.31	346.17	0.00	0.00
170.00		50.64	188.85	0.00	0.00
175.00	(1) attachments	452.82	1830.54	0.00	0.00

Total Applied Force Summary

Structure:	CT22097-A-SBA		**Code:**	TIA-222-H	12/29/2022
Site Name:	Salem (Old Colchester Rd)		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	III	Page: 41

Tower Engineering Solutions

180.00		85.06	313.98	0.00	0.00
185.00		80.94	297.42	0.00	0.00
186.00	(11) attachments	810.27	2416.60	0.00	0.00
189.00		46.01	162.54	0.00	0.00
	Totals:	**6,485.30**	**40,123.01**	**0.00**	**2,407.50**

Calculated Forces

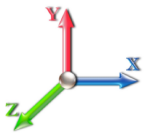
Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 42	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	-40.12	-6.49	0.00	-743.14	0.00	743.14	4574.03	1306.81	6783.32	5898.90	0.00	0.000	0.000	0.135
5.00	-38.85	-6.37	0.00	-710.67	0.00	710.67	4528.92	1281.19	6519.95	5725.54	0.02	-0.028	0.000	0.133
10.00	-37.60	-6.26	0.00	-678.80	0.00	678.80	4482.03	1255.57	6261.80	5552.26	0.06	-0.057	0.000	0.131
15.00	-36.38	-6.14	0.00	-647.51	0.00	647.51	4433.36	1229.95	6008.86	5379.21	0.13	-0.085	0.000	0.129
20.00	-35.18	-6.02	0.00	-616.81	0.00	616.81	4382.91	1204.33	5761.13	5206.51	0.24	-0.115	0.000	0.127
25.00	-34.00	-5.89	0.00	-586.71	0.00	586.71	4330.67	1178.71	5518.62	5034.31	0.38	-0.144	0.000	0.124
30.00	-32.85	-5.76	0.00	-557.24	0.00	557.24	4276.65	1153.09	5281.33	4862.74	0.54	-0.175	0.000	0.122
31.25	-32.57	-5.73	0.00	-550.05	0.00	550.05	4262.87	1146.69	5222.82	4819.96	0.59	-0.182	0.000	0.122
35.00	-30.89	-5.62	0.00	-528.56	0.00	528.56	4220.85	1127.47	5049.24	4691.94	0.74	-0.205	0.000	0.120
37.50	-29.79	-5.55	0.00	-514.51	0.00	514.51	4227.16	1130.33	5074.86	4710.94	0.86	-0.221	0.000	0.116
40.00	-29.23	-5.49	0.00	-500.62	0.00	500.62	4198.69	1117.52	4960.48	4625.81	0.98	-0.237	0.000	0.115
45.00	-28.14	-5.35	0.00	-473.17	0.00	473.17	4140.41	1091.90	4735.64	4456.30	1.24	-0.267	0.000	0.113
50.00	-27.08	-5.21	0.00	-446.42	0.00	446.42	4080.35	1066.28	4516.01	4287.88	1.54	-0.297	0.000	0.111
55.00	-26.04	-5.07	0.00	-420.36	0.00	420.36	4018.51	1040.66	4301.60	4120.68	1.86	-0.328	0.000	0.109
60.00	-25.02	-4.93	0.00	-394.99	0.00	394.99	3954.88	1015.04	4092.40	3954.85	2.22	-0.359	0.000	0.106
63.25	-24.38	-4.84	0.00	-378.97	0.00	378.97	3912.57	998.38	3959.22	3847.86	2.48	-0.380	0.000	0.105
65.00	-23.69	-4.79	0.00	-370.50	0.00	370.50	3889.48	989.42	3888.42	3790.52	2.62	-0.392	0.000	0.104
68.75	-22.24	-4.68	0.00	-352.54	0.00	352.54	3880.27	985.87	3860.57	3767.88	2.94	-0.416	0.000	0.099
70.00	-22.00	-4.65	0.00	-346.69	0.00	346.69	3863.58	979.46	3810.57	3727.11	3.05	-0.424	0.000	0.099
75.00	-21.04	-4.50	0.00	-323.46	0.00	323.46	3795.70	953.84	3613.83	3565.09	3.51	-0.455	0.000	0.096
80.00	-20.11	-4.37	0.00	-300.94	0.00	300.94	3726.04	928.22	3422.30	3404.89	4.00	-0.486	0.000	0.094
85.00	-19.21	-4.23	0.00	-279.11	0.00	279.11	3654.59	902.60	3235.99	3246.65	4.52	-0.517	0.000	0.091
90.00	-18.33	-4.09	0.00	-257.98	0.00	257.98	3581.36	876.98	3054.89	3090.51	5.08	-0.548	0.000	0.089
95.00	-17.47	-3.95	0.00	-237.53	0.00	237.53	3506.35	851.36	2879.00	2936.60	5.67	-0.580	0.000	0.086
96.08	-17.29	-3.93	0.00	-233.25	0.00	233.25	3489.86	845.81	2841.58	2903.56	5.81	-0.587	0.000	0.085
100.00	-15.99	-3.81	0.00	-217.88	0.00	217.88	3429.56	825.74	2708.33	2785.06	6.30	-0.612	0.000	0.083
100.75	-15.75	-3.79	0.00	-215.02	0.00	215.02	3465.22	837.56	2786.44	2854.69	6.40	-0.617	0.000	0.080
105.00	-15.05	-3.68	0.00	-198.91	0.00	198.91	3399.24	815.79	2643.43	2726.85	6.96	-0.645	0.000	0.077
110.00	-14.26	-3.55	0.00	-180.52	0.00	180.52	3319.97	790.17	2480.00	2578.83	7.65	-0.675	0.000	0.074
115.00	-13.49	-3.42	0.00	-162.79	0.00	162.79	3236.58	764.55	2321.78	2431.73	8.37	-0.705	0.000	0.071
120.00	-12.74	-3.29	0.00	-145.71	0.00	145.71	3128.12	738.93	2168.78	2270.69	9.13	-0.735	0.000	0.068
125.00	-12.02	-3.16	0.00	-129.27	0.00	129.27	3019.66	713.30	2021.00	2115.16	9.91	-0.764	0.000	0.065
129.75	-11.36	-3.04	0.00	-114.25	0.00	114.25	2916.62	688.97	1885.43	1972.52	10.69	-0.791	0.000	0.062
130.00	-11.30	-3.04	0.00	-113.49	0.00	113.49	2911.20	687.68	1878.42	1965.15	10.73	-0.793	0.000	0.062
133.58	-10.41	-2.95	0.00	-102.60	0.00	102.60	2370.41	569.74	1547.19	1593.70	11.33	-0.814	0.000	0.069
135.00	-10.25	-2.91	0.00	-98.42	0.00	98.42	2351.91	563.69	1514.51	1564.31	11.57	-0.822	0.000	0.067
140.00	-9.70	-2.80	0.00	-83.85	0.00	83.85	2285.46	542.34	1401.96	1461.99	12.45	-0.852	0.000	0.062
145.00	-9.17	-2.68	0.00	-69.86	0.00	69.86	2205.51	520.99	1293.75	1354.75	13.36	-0.881	0.000	0.056
148.00	-7.16	-2.02	0.00	-59.40	0.00	59.40	2151.28	508.18	1230.91	1288.61	13.92	-0.898	0.000	0.049
150.00	-6.96	-1.98	0.00	-55.36	0.00	55.36	2115.13	499.64	1189.88	1245.44	14.30	-0.908	0.000	0.048
155.00	-6.48	-1.87	0.00	-45.48	0.00	45.48	2024.75	478.29	1090.37	1140.73	15.26	-0.932	0.000	0.043
160.00	-6.02	-1.76	0.00	-36.14	0.00	36.14	1934.36	456.94	995.19	1040.61	16.25	-0.955	0.000	0.038
164.33	-5.63	-1.68	0.00	-28.49	0.00	28.49	1856.03	438.43	916.22	957.56	17.12	-0.972	0.000	0.033
165.00	-5.53	-1.66	0.00	-27.37	0.00	27.37	1843.98	435.59	904.37	945.09	17.26	-0.975	0.000	0.032
167.25	-5.18	-1.62	0.00	-23.63	0.00	23.63	1467.48	348.62	724.10	754.31	17.72	-0.983	0.000	0.035
170.00	-4.99	-1.56	0.00	-19.19	0.00	19.19	1436.04	339.22	685.60	718.06	18.29	-0.992	0.000	0.030
175.00	-3.17	-1.08	0.00	-11.38	0.00	11.38	1363.73	322.14	618.30	647.22	19.34	-1.007	0.000	0.020
180.00	-2.86	-0.99	0.00	-5.99	0.00	5.99	1291.43	305.06	554.47	580.06	20.40	-1.017	0.000	0.013

Calculated Forces

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 43	

185.00	-2.56	-0.90	0.00	-1.05	0.00	1.05	1219.12	287.98	494.12	516.58	21.47	-1.022	0.000	0.004
186.00	-0.16	-0.05	0.00	-0.15	0.00	0.15	1204.66	284.57	482.47	504.32	21.68	-1.022	0.000	0.000
189.00	0.00	-0.05	0.00	0.00	0.00	0.00	1161.27	274.32	448.34	468.44	22.33	-1.022	0.000	0.000

Final Analysis Summary

Structure:	CT22097-A-SBA	**Code:**	TIA-222-H	12/29/2022	
Site Name:	Salem (Old Colchester Rd)	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	III	Page: 44	

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 + 1.0W 135 mph Wind	36.8	0.00	48.09	0.00	0.00	4228.35
0.9D + 1.0W 135 mph Wind	36.7	0.00	36.06	0.00	0.00	4186.47
1.2D + 1.0Di + 1.0W 50 mph Wind	8.8	0.00	63.76	0.00	0.00	1034.82
1.2D + 1.0Ev + 1.0Eh	0.9	0.00	49.91	0.00	0.00	149.09
0.9D + 1.0Ev + 1.0Eh	0.9	0.00	37.86	0.00	0.00	147.52
1.0D + 1.0W 60 mph Wind	6.5	0.00	40.12	0.00	0.00	743.14

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 + 1.0W 135 mph Wind	-48.09	-36.76	0.00	-4228.3	0.00	-4228.3	4574.03	1306.8	6783.32	5898.90	0.00	0.728
0.9D + 1.0W 135 mph Wind	-36.06	-36.75	0.00	-4186.4	0.00	-4186.4	4574.03	1306.8	6783.32	5898.90	0.00	0.718
1.2D + 1.0Di + 1.0W 50 mph Wind	-63.76	-8.80	0.00	-1034.8	0.00	-1034.8	4574.03	1306.8	6783.32	5898.90	0.00	0.189
1.2D + 1.0Ev + 1.0Eh	-49.91	-0.92	0.00	-149.09	0.00	-149.09	4574.03	1306.8	6783.32	5898.90	0.00	0.036
0.9D + 1.0Ev + 1.0Eh	-37.86	-0.92	0.00	-147.52	0.00	-147.52	4574.03	1306.8	6783.32	5898.90	0.00	0.033
1.0D + 1.0W 60 mph Wind	-40.12	-6.49	0.00	-743.14	0.00	-743.14	4574.03	1306.8	6783.32	5898.90	0.00	0.135

Monopole Mat Foundation Design

				Date
				12/29/2022
Customer Name:	Dish Wireless	**TIA Standard:**	TIA-222-H
Site Name:		**Structure Height (Ft.):**	189
Site Number:	CT22097-A-SBA	**Engineer Name:**	J. Tibbetts
Engr. Number:	137373	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

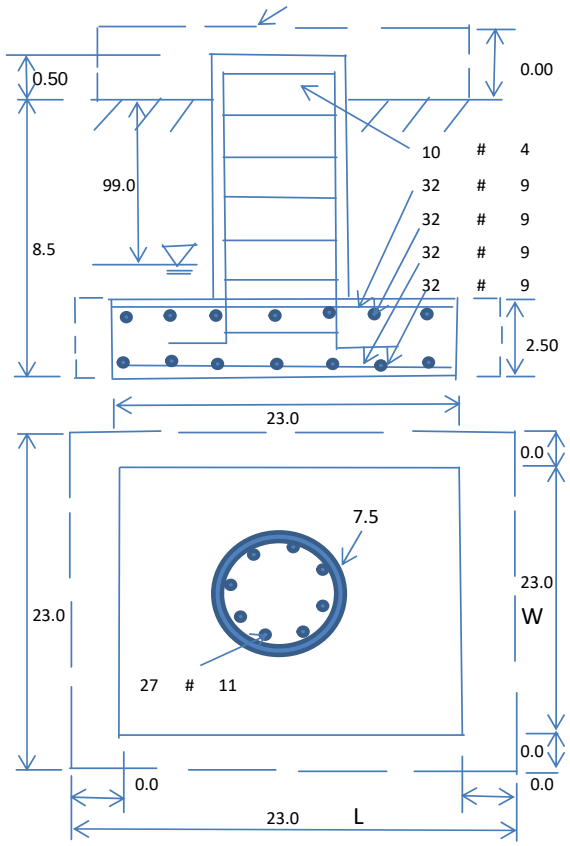
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	48.1	Shear Force (Kips):	36.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4228.4
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.5	Depth of Base BG (ft.):	8.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	23	Width of Pad (ft.):	23
Final Length of pad (ft)	23.0	Final width of pad (ft):	23.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	27	Tie Spacing (in):	12.0	
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):	32	Qty. of Rebar in Pad (W):	32	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	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):	20000	Ultimate Skin Friction:	425	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.:	Yes	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.):	2908.93	Total Dry Soil Weight (Kips):	319.98
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	319.98	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1609.66	Total Dry Concrete Weight (Kips):	241.45
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	241.45	Total Vertical Load on Base (Kips):	609.53

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	3980	<	Allowable Factored Soil Bearing (psf):	15000	0.27	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	6364.0	>	Design Factored Momont (kips-ft):	4290	0.67	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.48	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):	1.56		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	7305.3	>	Design Factored Moment (Mu, Kips-F	4467.6	0.61	OK!
Calculated Shear Capacity (Kips):	747.5	>	Design Factored Shear (Kips):	36.8	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	2274.5	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	11173.1	>	Design Factored Axial Load (Pu Kips):	48.1	0.00	OK!
Moment & Axial Strength Combination:	0.61	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.007		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	692.2	>	One-Way Factored Shear (L-D. Kips):	266.8	0.39	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	692.2	>	One-Way Factored Shear (W-D., Kips)	266.8	0.39	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	620.6	>	One-Way Factored Shear (C-C, Kips):	267.0	0.43	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0044	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0044		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3659.7	>	Moment at Bottom (L-Dir. K-Ft):	1240.6	0.34	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3659.7	>	Moment at Bottom (W-Dir. K-Ft):	1240.6	0.34	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	5113.1	>	Moment at Bottom (C-C Dir. K-Ft):	1754.5	0.34	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0044	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0044		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	3659.7	>	Moment at the top (L-Dir K-Ft):	578.3	0.16	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	3659.7	>	Moment at the top (W-Dir K-Ft):	578.3	0.16	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	5113.1	>	Moment at the top (C-C Dir. K-Ft):	546.9	0.11	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1691.3	k-ft.	Max. factored shear stress v_{u_CD}:		4.2	Psi
Max. factored shear stress v_{u_AB}:	12.3	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	12.3	Psi	Check Usage of Punching Shear Capacity:		0.06	OK!
(4).Check Bending Capacity of the Pad Within the Effective Slab Width:						
Overturning moment to be transferred by flexure:	1268.5	k-ft.	Effective Width for resisting OT moment:		15.0	ft.
Calculated number of Rebar in Effective width:	21		Actual number of Rebar in Effective width:		13	
Steel Pad Moment Capacity (L-Direc. Kips-ft):	1509.3	k-ft.	Check Usage of the Flexure Capacity:		0.84	OK!

Exhibit E

Mount Analysis

January 9, 2023

Sherri Knapik
SBA Network Services, LLC.
134 Flanders Road, Suite 125
Westborough, MA 01581
(508) 251-0720 x 3805

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:	BOBOS00063A
	Site Name:	N/A
SBA Network Services Designation:	**Site Number:**	CT22097-A
	Site Name:	Salem (Old Colchester Rd)
	Application Number:	163276, v1
Engineering Firm Designation:	**Project Number:**	149480.003.01 Rev 1
Site Data:	**343 Old Colchester Road, Salem, CT, 06420, New London County** **Latitude *41.50203*°, Longitude *-72.24288*°** **Monopole** **8 ft. Platform Mount**	

Dear Ms. Knapik,

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 63.8%)**

This analysis utilizes an ultimate 3-second gust wind speed of 124 mph as required by the 2022 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: Harrison Holmlund

Respectfully submitted by: MTS Engineering, P.L.L.C.
COA: BER: 2386985 Expires: 03/31/2023

Chad E. Tuttle, P.E.

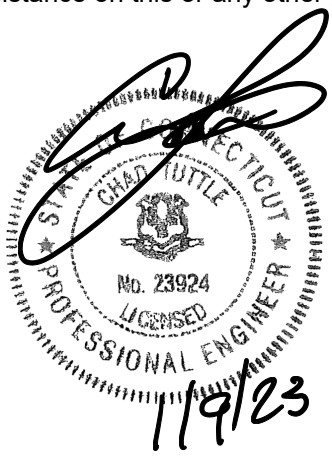


TABLE OF CONTENTS

1) INTRODUCTION

The appurtenance mount consists of Commscope platform mount, Part# MC-PK8-DSH at 186 ft., attached to monopole at 343 Old Colchester Road, Salem, CT, 06420, New London County. The proposed antenna loading information was obtained from SBA Network Services, LLC. All information provided to us 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 – Addendum 2 using a 3-second gust wind speed of 124 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	186	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	Existing Loading Proposed Loading	Date: 07/21/2022	SBA Network Services, LLC.
RFDS		Date: 06/14/2021	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 20.0.2), 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.
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

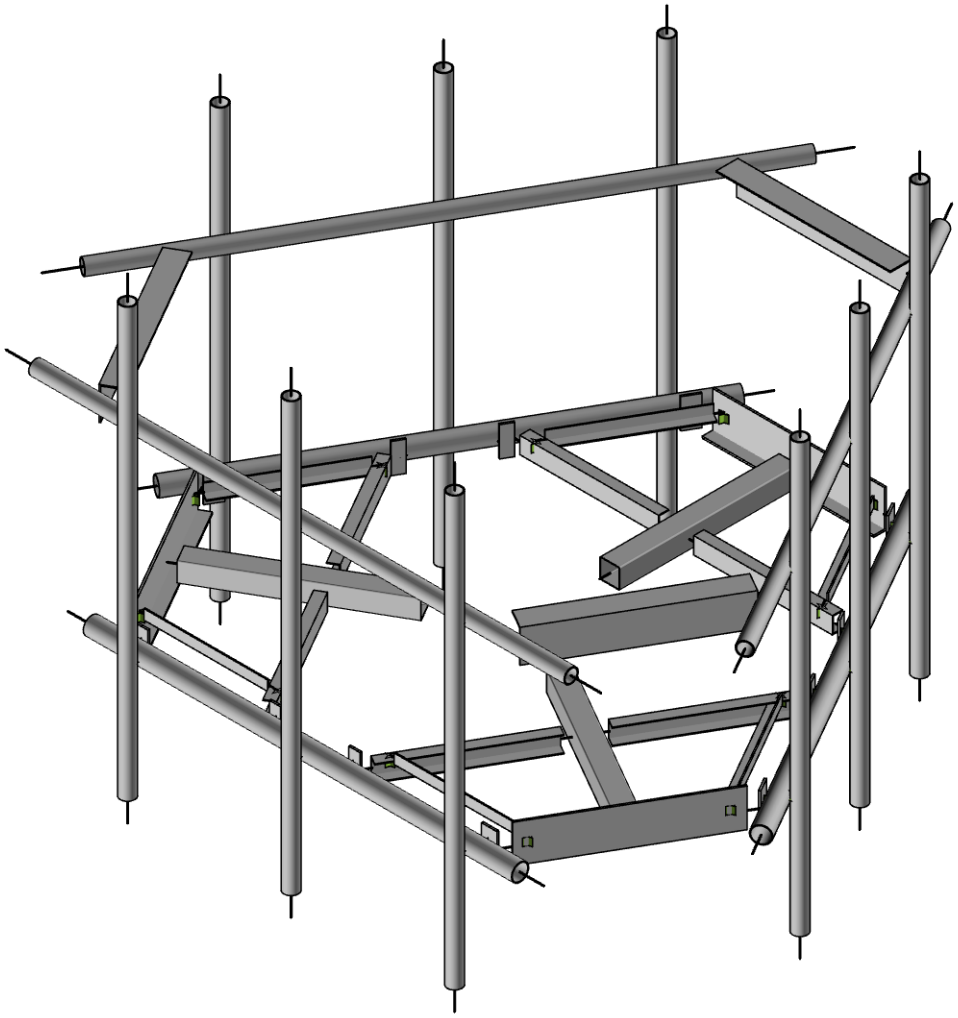
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Horizontals	186	10.7	Pass
-	Support Rails	186	19.0	Pass
-	Support Tubes	186	63.8	Pass
-	Support Channels	186	39.8	Pass
-	Support Angles	186	37.0	Pass
-	Mount Pipes	186	19.1	Pass
-	Connection Plates	186	21.4	Pass
-	Connection Angles	186	30.8	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)



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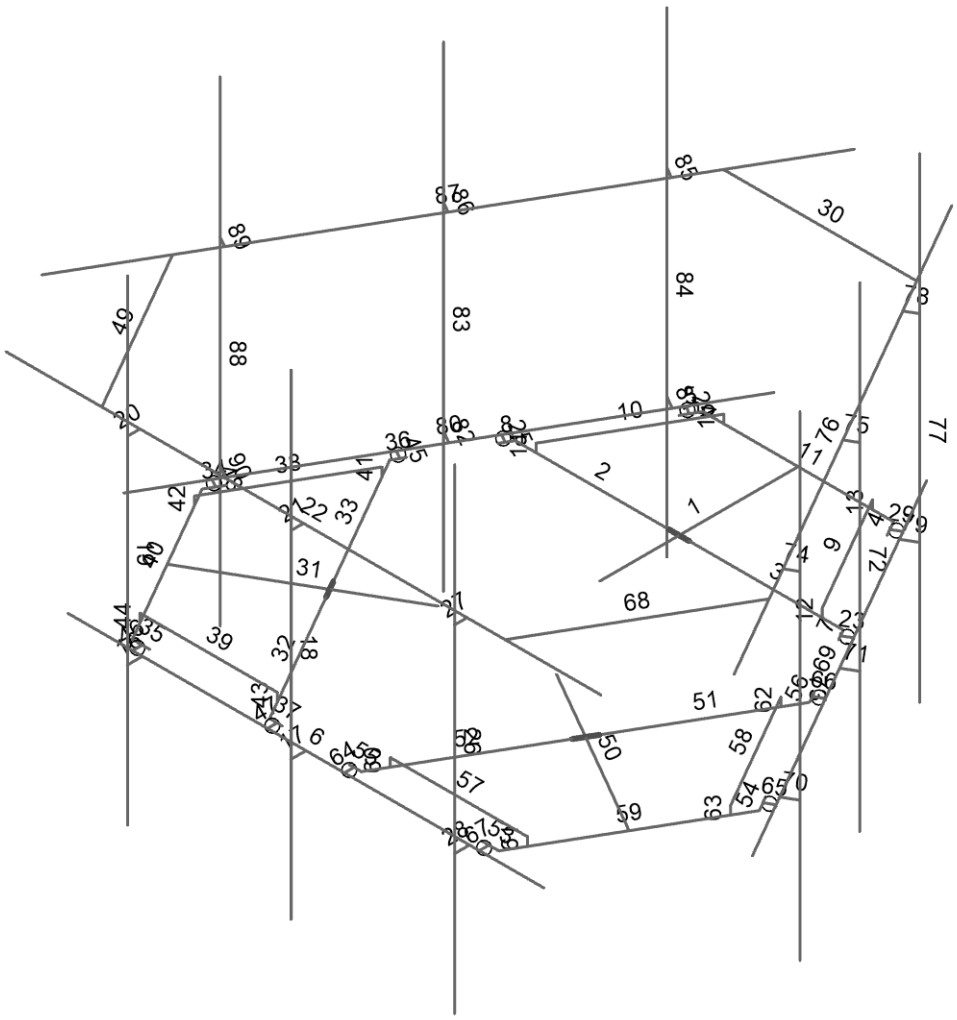

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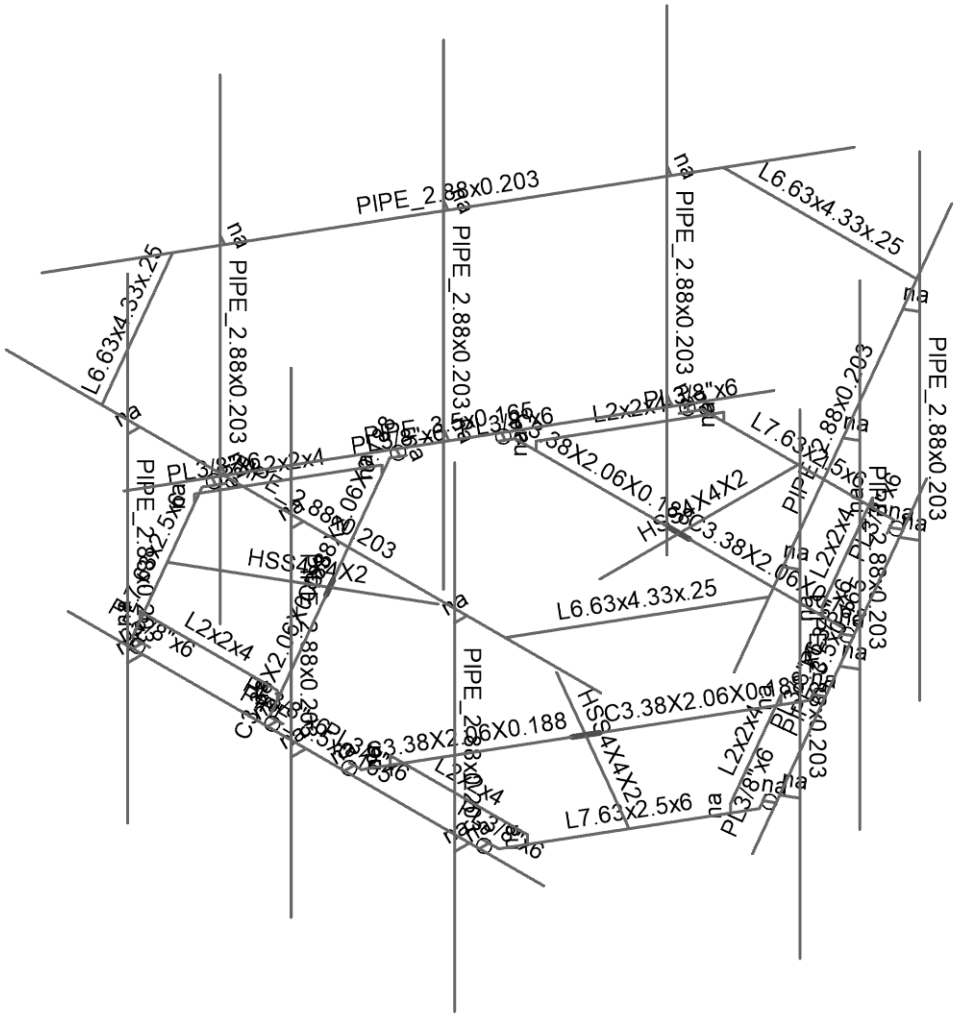

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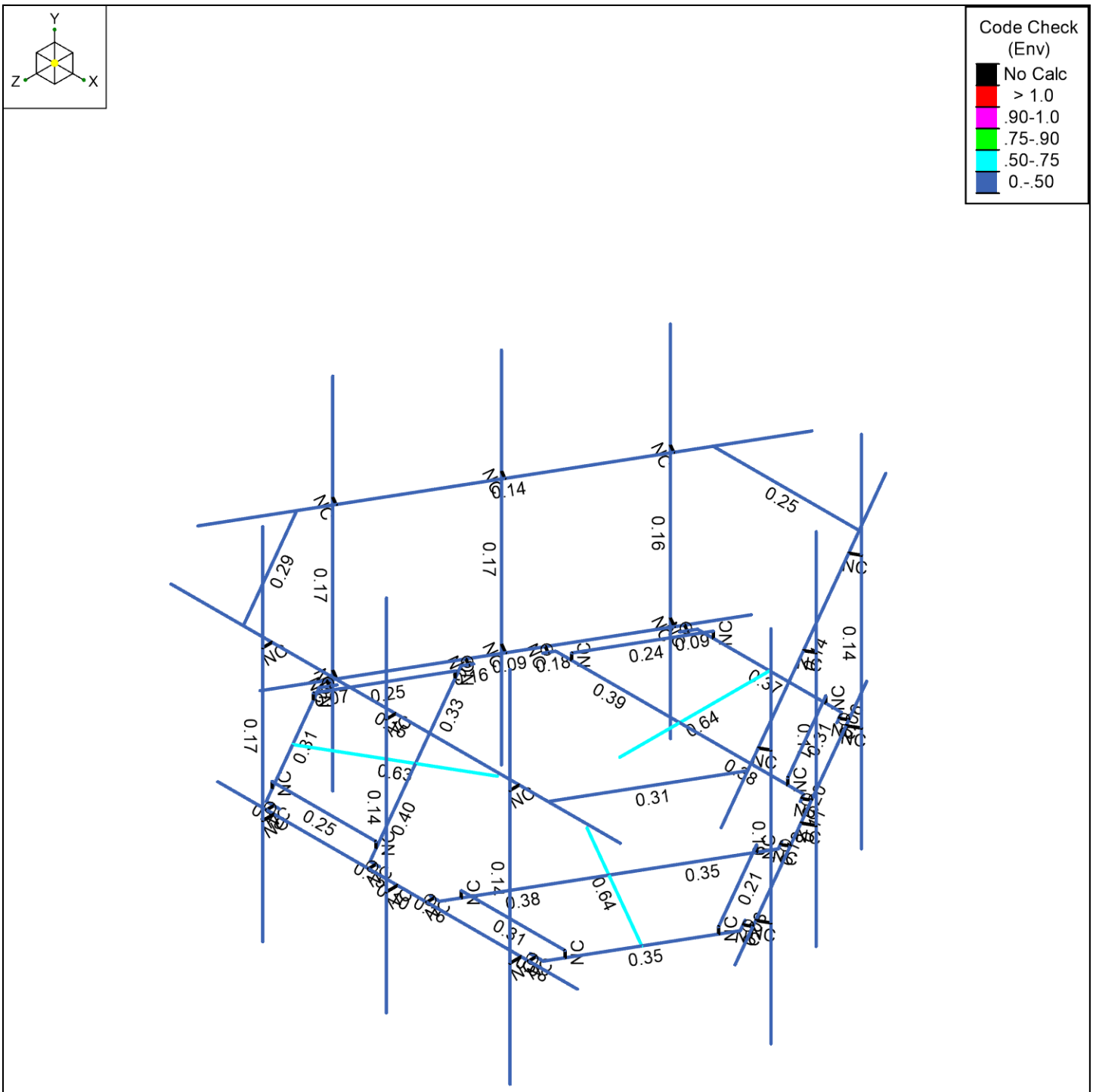

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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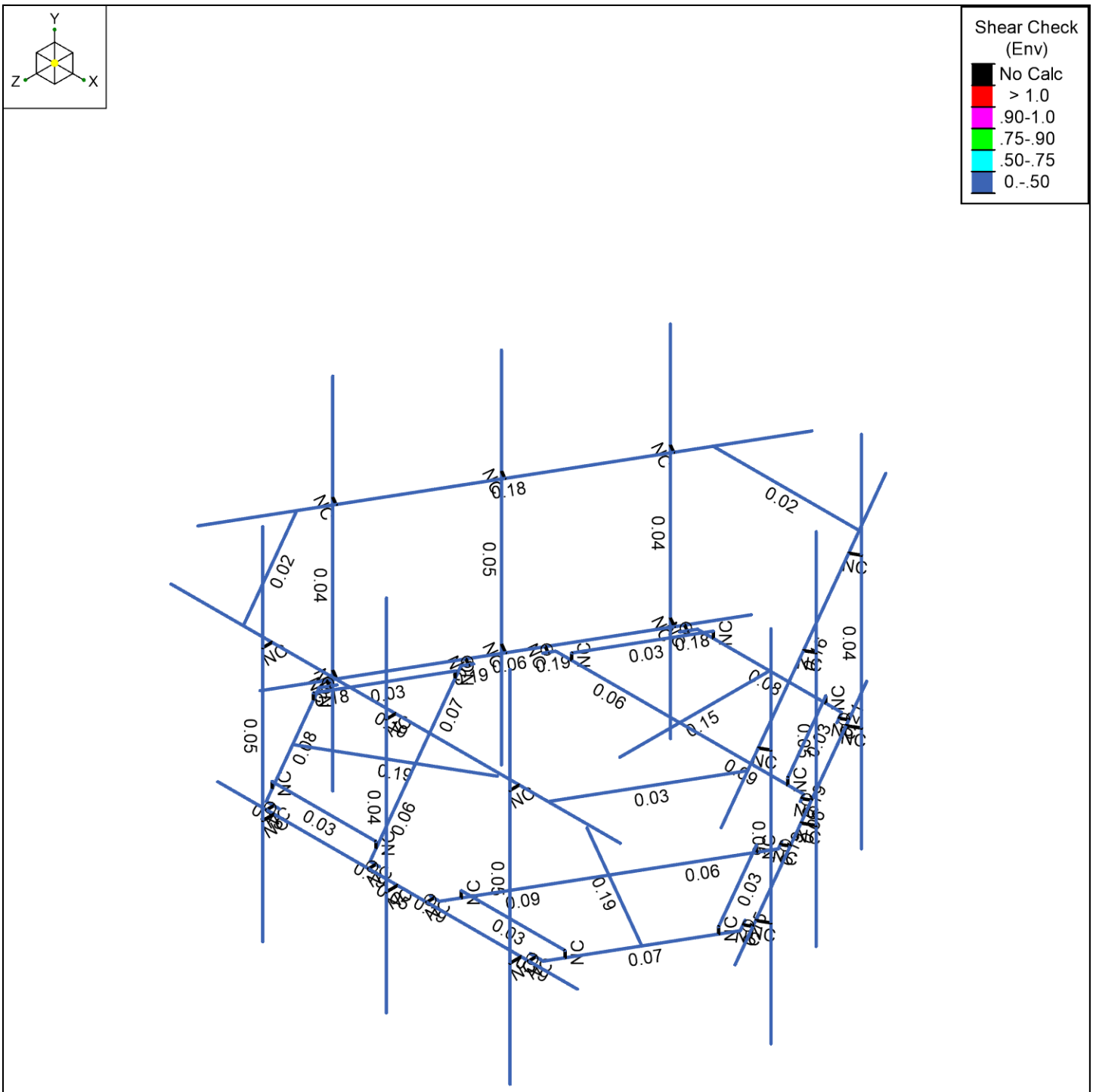

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0	-1.150815	
2	2	0	0	-4.484148	
3	3	0	0	-2.484148	
4	4	2.758333	0	-2.484148	
5	5	-2.758333	0	-2.484148	
6	6	-1.603633	0	-4.484148	
7	7	1.603633	0	-4.484148	
8	8	1.749466	0	-4.231558	
9	9	-1.749466	0	-4.231558	
10	10	1.686966	0	-4.339811	
11	11	-1.686966	0	-4.339811	
12	12	-1.826794	0	-4.42054	
13	13	-3.999998	0	3.79232	
14	14	3.999998	0	3.79232	
15	15	2.8625	0	-2.303726	
16	16	2.820833	0	-2.375896	
17	17	2.96066	0	-2.456625	
18	18	-2.8625	0	-2.303726	
19	19	-2.820833	0	-2.375896	
20	20	-2.96066	0	-2.456625	
21	21	-1.25	0.140833	-4.484148	
22	22	-2.404701	0.140833	-2.484148	
23	23	2.404701	0.140833	-2.484148	
24	24	1.25	0.140833	-4.484148	
25	25	-1.25	0	-4.484148	
26	26	-2.404701	0	-2.484148	
27	27	2.404701	0	-2.484148	
28	28	1.25	0	-4.484148	
29	29	-2.749998	0	3.79232	
30	30	0.000002	0	3.79232	
31	31	-2.749998	0	4.04232	
32	32	0.000002	0	4.04232	
33	33	-2.749998	5.666663	4.04232	
34	34	0.000002	5.666663	4.04232	
35	35	-2.749998	-2.333337	4.04232	
36	36	0.000002	-2.333337	4.04232	
37	37	-2.749998	3.33333	4.04232	
38	38	0.000002	3.33333	4.04232	
39	39	-2.749998	3.33333	3.833986	
40	40	0.000002	3.33333	3.833986	
41	41	-5	3.33333	3.833986	
42	42	5	3.33333	3.833986	
43	43	2.749998	5.666663	4.04232	
44	44	2.749998	-2.333337	4.04232	
45	45	2.749998	3.33333	4.04232	
46	46	2.749998	3.33333	3.833986	
47	47	0	0	0	
48	48	2.750002	0	3.79232	
49	49	2.749998	0	4.04232	
50	50	1.826794	0	-4.42054	
51	51	-1.625002	3.33333	-4.853387	
52	52	1.625002	3.33333	-4.853387	
53	53	-0.996635	0	0.575407	
54	54	-3.883386	0	2.242074	
55	55	-2.151336	0	1.242074	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	56	-3.530502	0	-1.146713	
57	57	-0.772169	0	3.630861	
58	58	-3.08157	0	3.630861	
59	59	-4.685203	0	0.853287	
60	60	-4.539369	0	0.600697	
61	61	-2.789903	0	3.630861	
62	62	-4.601869	0	0.70895	
63	63	-2.914903	0	3.630861	
64	64	-2.914903	0	3.79232	
65	65	-3.426336	0	-1.327135	
66	66	-3.468003	0	-1.254965	
67	67	-3.60783	0	-1.335694	
68	68	-0.563836	0	3.630861	
69	69	-0.64717	0	3.630861	
70	70	-0.64717	0	3.79232	
71	71	-3.258386	0.140833	3.324606	
72	72	-0.948985	0.140833	3.324606	
73	73	-3.353686	0.140833	-0.840458	
74	74	-4.508386	0.140833	1.159542	
75	75	-3.258386	0	3.324606	
76	76	-0.948985	0	3.324606	
77	77	-3.353686	0	-0.840458	
78	78	-4.508386	0	1.159542	
79	79	-4.741697	0	0.62822	
80	80	-3.390656	3.33333	3.833986	
81	81	-5.015657	3.33333	1.019401	
82	82	0.996635	0	0.575407	
83	83	3.883386	0	2.242074	
84	84	2.151336	0	1.242074	
85	85	0.772169	0	3.630861	
86	86	3.530502	0	-1.146713	
87	87	4.685203	0	0.853287	
88	88	3.08157	0	3.630861	
89	89	2.789903	0	3.630861	
90	90	4.539369	0	0.600697	
91	91	2.914903	0	3.630861	
92	92	4.601869	0	0.70895	
93	93	4.741697	0	0.62822	
94	94	0.563836	0	3.630861	
95	95	0.64717	0	3.630861	
96	96	0.64717	0	3.79232	
97	97	3.426336	0	-1.327135	
98	98	3.468003	0	-1.254965	
99	99	3.60783	0	-1.335694	
100	100	4.508386	0.140833	1.159542	
101	101	3.353686	0.140833	-0.840458	
102	102	0.948985	0.140833	3.324606	
103	103	3.258386	0.140833	3.324606	
104	104	4.508386	0	1.159542	
105	105	3.353686	0	-0.840458	
106	106	0.948985	0	3.324606	
107	107	3.258386	0	3.324606	
108	108	2.914903	0	3.79232	
109	109	5.015657	3.33333	1.019401	
110	110	3.390656	3.33333	3.833986	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
111	111	5.284244	0	1.56794	
112	112	1.284246	0	-5.36026	
113	113	4.659244	0	0.485408	
114	114	3.284244	0	-1.896162	
115	115	4.875751	0	0.360408	
116	116	3.500751	0	-2.021162	
117	117	4.875751	5.666663	0.360408	
118	118	3.500751	5.666663	-2.021162	
119	119	4.875751	-2.333337	0.360408	
120	120	3.500751	-2.333337	-2.021162	
121	121	4.875751	3.33333	0.360408	
122	122	3.500751	3.33333	-2.021162	
123	123	4.695329	3.33333	0.464575	
124	124	3.320329	3.33333	-1.916995	
125	125	5.82033	3.33333	2.413134	
126	126	0.82033	3.33333	-6.24712	
127	127	2.125753	5.666663	-4.402728	
128	128	2.125753	-2.333337	-4.402728	
129	129	2.125753	3.33333	-4.402728	
130	130	1.945331	3.33333	-4.298561	
131	131	1.909244	0	-4.277731	
132	132	2.125753	0	-4.402728	
133	133	-1.284246	0	-5.36026	
134	134	-5.284244	0	1.56794	
135	135	-1.909246	0	-4.277728	
136	136	-3.284246	0	-1.896158	
137	137	-2.125753	0	-4.402728	
138	138	-3.500753	0	-2.021158	
139	139	-2.125753	5.666663	-4.402728	
140	140	-3.500753	5.666663	-2.021158	
141	141	-2.125753	-2.333337	-4.402728	
142	142	-3.500753	-2.333337	-2.021158	
143	143	-2.125753	3.33333	-4.402728	
144	144	-3.500753	3.33333	-2.021158	
145	145	-1.945331	3.33333	-4.298561	
146	146	-3.320331	3.33333	-1.916992	
147	147	-0.82033	3.33333	-6.24712	
148	148	-5.82033	3.33333	2.413134	
149	149	-4.875751	5.666663	0.360408	
150	150	-4.875751	-2.333337	0.360408	
151	151	-4.875751	3.33333	0.360408	
152	152	-4.695329	3.33333	0.464575	
153	153	-4.659246	0	0.485412	
154	154	-4.875751	0	0.360408	

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	15						
7	16						
8	18						

Node Boundary Conditions (Continued)

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
9	19						
10	21						
11	24						
12	25						
13	28						
14	53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	54						
16	55						
17	56						
18	57						
19	65						
20	66						
21	68						
22	69						
23	71						
24	74						
25	75						
26	78						
27	82	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
28	83						
29	84						
30	85						
31	86						
32	94						
33	95						
34	97						
35	98						
36	100						
37	103						
38	104						
39	107						

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

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Fu [ksi]
1	A653 SS Gr33	29500	11346	0.3	0.65	0.49	33	45
2	A653 SS Gr50/1	29500	11346	0.3	0.65	0.49	50	65

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	1.707	1.538	1.538	3.076

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
3	SF-H1	HSS4X4X2	Beam	Tube	A500 Gr.B Rect	Typical	1.77	4.4	4.4	6.91
4	SF-H2	C3.38X2.06X0.188	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	1.707	1.538	1.538	3.076
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

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	CF1	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	0.581	0.057	4.41	0.00063

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	13	14		MF-H1	Beam	Pipe	A500 Gr.C	Typical
7	7	15	4		MF-CP1	Beam	RECT	A36 Gr.36	Typical
8	8	5	18		MF-CP1	Beam	RECT	A36 Gr.36	Typical
9	9	24	23		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
10	10	22	21		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
11	11	6	7		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
12	12	27	23		RIGID	None	None	RIGID	Typical
13	13	28	24		RIGID	None	None	RIGID	Typical
14	14	26	22		RIGID	None	None	RIGID	Typical
15	15	25	21		RIGID	None	None	RIGID	Typical
16	16	31	29		RIGID	None	None	RIGID	Typical
17	17	32	30		RIGID	None	None	RIGID	Typical
18	18	34	36		MF-P1	Column	Pipe	A500 Gr.C	Typical
19	19	33	35		MF-P1	Column	Pipe	A500 Gr.C	Typical
20	20	37	39		RIGID	None	None	RIGID	Typical
21	21	38	40		RIGID	None	None	RIGID	Typical
22	22	41	42		MF-H2	Beam	Pipe	A500 Gr.C	Typical
23	23	17	16		RIGID	None	None	RIGID	Typical
24	24	12	11		RIGID	None	None	RIGID	Typical
25	25	20	19		RIGID	None	None	RIGID	Typical
26	26	43	44		MF-P1	Column	Pipe	A500 Gr.C	Typical
27	27	45	46		RIGID	None	None	RIGID	Typical
28	28	48	49		RIGID	None	None	RIGID	Typical
29	29	10	50		RIGID	None	None	RIGID	Typical
30	30	52	51	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	65	56		MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	57	68		MF-CP1	Beam	RECT	A36 Gr.36	Typical
38	38	74	73		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
39	39	72	71		SF-H3	Beam	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
40	40	58	59		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
41	41	77	73		RIGID	None	None	RIGID	Typical
42	42	78	74		RIGID	None	None	RIGID	Typical
43	43	76	72		RIGID	None	None	RIGID	Typical
44	44	75	71		RIGID	None	None	RIGID	Typical
45	45	67	66		RIGID	None	None	RIGID	Typical
46	46	64	63		RIGID	None	None	RIGID	Typical
47	47	70	69		RIGID	None	None	RIGID	Typical
48	48	62	79		RIGID	None	None	RIGID	Typical
49	49	81	80	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	94	85		MF-CP1	Beam	RECT	A36 Gr.36	Typical
56	56	86	97		MF-CP1	Beam	RECT	A36 Gr.36	Typical
57	57	103	102		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
58	58	101	100		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
59	59	87	88		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
60	60	106	102		RIGID	None	None	RIGID	Typical
61	61	107	103		RIGID	None	None	RIGID	Typical
62	62	105	101		RIGID	None	None	RIGID	Typical
63	63	104	100		RIGID	None	None	RIGID	Typical
64	64	96	95		RIGID	None	None	RIGID	Typical
65	65	93	92		RIGID	None	None	RIGID	Typical
66	66	99	98		RIGID	None	None	RIGID	Typical
67	67	91	108		RIGID	None	None	RIGID	Typical
68	68	110	109	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	118	120		MF-P1	Column	Pipe	A500 Gr.C	Typical
73	73	117	119		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	127	128		MF-P1	Column	Pipe	A500 Gr.C	Typical
78	78	129	130		RIGID	None	None	RIGID	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	140	142		MF-P1	Column	Pipe	A500 Gr.C	Typical
84	84	139	141		MF-P1	Column	Pipe	A500 Gr.C	Typical
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	149	150		MF-P1	Column	Pipe	A500 Gr.C	Typical
89	89	151	152		RIGID	None	None	RIGID	Typical
90	90	153	154		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
1	1					Yes	N/A	None
2	2				2	Yes	N/A	None
3	3			2		Yes	N/A	None
4	4					Yes	Default	None
5	5					Yes	Default	None
6	6					Yes	N/A	None
7	7					Yes	Default	None
8	8					Yes	Default	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					Yes	** NA **	None
27	27					Yes	** NA **	None
28	28					Yes	** NA **	None
29	29		BenPIN			Yes	** NA **	None
30	30					Yes	Default	None
31	31					Yes	N/A	None
32	32				2	Yes	N/A	None
33	33			2		Yes	N/A	None
34	34					Yes	Default	None
35	35					Yes	Default	None
36	36					Yes	Default	None
37	37					Yes	Default	None
38	38					Yes	N/A	None
39	39					Yes	N/A	None
40	40					Yes	N/A	None
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		BenPIN			Yes	** NA **	None
49	49					Yes	Default	None
50	50					Yes	N/A	None
51	51				2	Yes	N/A	None
52	52			2		Yes	N/A	None
53	53					Yes	Default	None
54	54					Yes	Default	None
55	55					Yes	Default	None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
56	56					Yes	Default	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		BenPIN			Yes	** NA **	None
68	68					Yes	Default	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

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	1	SF-H1	3.333	Lbyy	Lateral
2	2	SF-H2	2.758	Lbyy	Lateral
3	3	SF-H2	2.758	Lbyy	Lateral
4	4	MF-CP1	0.292	Lbyy	Lateral
5	5	MF-CP1	0.292	Lbyy	Lateral
6	6	MF-H1	8	Lbyy	Lateral
7	7	MF-CP1	0.208	Lbyy	Lateral
8	8	MF-CP1	0.208	Lbyy	Lateral
9	9	SF-H3	2.309	Lbyy	Lateral
10	10	SF-H3	2.309	Lbyy	Lateral
11	11	SF-H4	3.207	Lbyy	Lateral
12	18	MF-P1	8	Lbyy	Lateral
13	19	MF-P1	8	Lbyy	Lateral
14	22	MF-H2	10	Lbyy	Lateral
15	26	MF-P1	8	Lbyy	Lateral
16	30	MF-H3	3.25	Lbyy	Lateral
17	31	SF-H1	3.333	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
18	32	SF-H2	2.758	Lbyy	Lateral
19	33	SF-H2	2.758	Lbyy	Lateral
20	34	MF-CP1	0.292	Lbyy	Lateral
21	35	MF-CP1	0.292	Lbyy	Lateral
22	36	MF-CP1	0.208	Lbyy	Lateral
23	37	MF-CP1	0.208	Lbyy	Lateral
24	38	SF-H3	2.309	Lbyy	Lateral
25	39	SF-H3	2.309	Lbyy	Lateral
26	40	SF-H4	3.207	Lbyy	Lateral
27	49	MF-H3	3.25	Lbyy	Lateral
28	50	SF-H1	3.333	Lbyy	Lateral
29	51	SF-H2	2.758	Lbyy	Lateral
30	52	SF-H2	2.758	Lbyy	Lateral
31	53	MF-CP1	0.292	Lbyy	Lateral
32	54	MF-CP1	0.292	Lbyy	Lateral
33	55	MF-CP1	0.208	Lbyy	Lateral
34	56	MF-CP1	0.208	Lbyy	Lateral
35	57	SF-H3	2.309	Lbyy	Lateral
36	58	SF-H3	2.309	Lbyy	Lateral
37	59	SF-H4	3.207	Lbyy	Lateral
38	68	MF-H3	3.25	Lbyy	Lateral
39	69	MF-H1	8	Lbyy	Lateral
40	72	MF-P1	8	Lbyy	Lateral
41	73	MF-P1	8	Lbyy	Lateral
42	76	MF-H2	10	Lbyy	Lateral
43	77	MF-P1	8	Lbyy	Lateral
44	80	MF-H1	8	Lbyy	Lateral
45	83	MF-P1	8	Lbyy	Lateral
46	84	MF-P1	8	Lbyy	Lateral
47	87	MF-H2	10	Lbyy	Lateral
48	88	MF-P1	8	Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	Y	-0.032	%15
2	26	Y	-0.032	%85
3	26	Y	-0.075	%20
4	26	Y	-0.064	%50
5	26	Y	0	0
6	88	Y	-0.032	%15
7	88	Y	-0.032	%85
8	88	Y	-0.075	%20
9	88	Y	-0.064	%50
10	88	Y	0	0
11	77	Y	-0.032	%15
12	77	Y	-0.032	%85
13	77	Y	-0.075	%20
14	77	Y	-0.064	%50
15	77	Y	0	0
16	31	Y	-0.022	%20
17	31	Y	0	0
18	31	Y	0	0
19	31	Y	0	0
20	31	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	Z	-0.212	%15
2	26	Z	-0.212	%85
3	26	Z	-0.093	%20
4	26	Z	-0.093	%50
5	26	Z	0	0
6	88	Z	-0.212	%15
7	88	Z	-0.212	%85
8	88	Z	-0.093	%20
9	88	Z	-0.093	%50
10	88	Z	0	0
11	77	Z	-0.212	%15
12	77	Z	-0.212	%85
13	77	Z	-0.093	%20
14	77	Z	-0.093	%50
15	77	Z	0	0
16	31	Z	-0.096	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	X	-0.085	%15
2	26	X	-0.085	%85
3	26	X	-0.057	%20
4	26	X	-0.049	%50
5	26	X	0	0
6	88	X	-0.085	%15
7	88	X	-0.085	%85
8	88	X	-0.057	%20
9	88	X	-0.049	%50
10	88	X	0	0
11	77	X	-0.085	%15
12	77	X	-0.085	%85
13	77	X	-0.057	%20
14	77	X	-0.049	%50
15	77	X	0	0
16	31	X	-0.054	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	Z	-0.039	%15
2	26	Z	-0.039	%85
3	26	Z	-0.015	%20
4	26	Z	-0.015	%50
5	26	Z	0	0
6	88	Z	-0.039	%15

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	88	Z	-0.039	%85
8	88	Z	-0.015	%20
9	88	Z	-0.015	%50
10	88	Z	0	0
11	77	Z	-0.039	%15
12	77	Z	-0.039	%85
13	77	Z	-0.015	%20
14	77	Z	-0.015	%50
15	77	Z	0	0
16	31	Z	-0.016	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	X	-0.018	%15
2	26	X	-0.018	%85
3	26	X	-0.009	%20
4	26	X	-0.008	%50
5	26	X	0	0
6	88	X	-0.018	%15
7	88	X	-0.018	%85
8	88	X	-0.009	%20
9	88	X	-0.008	%50
10	88	X	0	0
11	77	X	-0.018	%15
12	77	X	-0.018	%85
13	77	X	-0.009	%20
14	77	X	-0.008	%50
15	77	X	0	0
16	31	X	-0.009	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	Z	-0.012	%15
2	26	Z	-0.012	%85
3	26	Z	-0.006	%20
4	26	Z	-0.006	%50
5	26	Z	0	0
6	88	Z	-0.012	%15
7	88	Z	-0.012	%85
8	88	Z	-0.006	%20
9	88	Z	-0.006	%50
10	88	Z	0	0
11	77	Z	-0.012	%15
12	77	Z	-0.012	%85
13	77	Z	-0.006	%20

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
14	77	Z	-0.006	%50
15	77	Z	0	0
16	31	Z	-0.006	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	X	-0.005	%15
2	26	X	-0.005	%85
3	26	X	-0.003	%20
4	26	X	-0.003	%50
5	26	X	0	0
6	88	X	-0.005	%15
7	88	X	-0.005	%85
8	88	X	-0.003	%20
9	88	X	-0.003	%50
10	88	X	0	0
11	77	X	-0.005	%15
12	77	X	-0.005	%85
13	77	X	-0.003	%20
14	77	X	-0.003	%50
15	77	X	0	0
16	31	X	-0.003	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	Y	-0.118	%15
2	26	Y	-0.118	%85
3	26	Y	-0.036	%20
4	26	Y	-0.035	%50
5	26	Y	0	0
6	88	Y	-0.118	%15
7	88	Y	-0.118	%85
8	88	Y	-0.036	%20
9	88	Y	-0.035	%50
10	88	Y	0	0
11	77	Y	-0.118	%15
12	77	Y	-0.118	%85
13	77	Y	-0.036	%20
14	77	Y	-0.035	%50
15	77	Y	0	0
16	31	Y	-0.036	%20
17	31	Y	0	0
18	31	Y	0	0
19	31	Y	0	0
20	31	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	Z	-0.02	%15
2	26	Z	-0.02	%85
3	26	Z	-0.024	%20
4	26	Z	-0.02	%50
5	26	Z	0	0
6	88	Z	-0.02	%15
7	88	Z	-0.02	%85
8	88	Z	-0.024	%20
9	88	Z	-0.02	%50
10	88	Z	0	0
11	77	Z	-0.02	%15
12	77	Z	-0.02	%85
13	77	Z	-0.024	%20
14	77	Z	-0.02	%50
15	77	Z	0	0
16	31	Z	-0.007	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	26	X	-0.02	%15
2	26	X	-0.02	%85
3	26	X	-0.024	%20
4	26	X	-0.02	%50
5	26	X	0	0
6	88	X	-0.02	%15
7	88	X	-0.02	%85
8	88	X	-0.024	%20
9	88	X	-0.02	%50
10	88	X	0	0
11	77	X	-0.02	%15
12	77	X	-0.02	%85
13	77	X	-0.024	%20
14	77	X	-0.02	%50
15	77	X	0	0
16	31	X	-0.007	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	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	69	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	22	Y	-0.25	%5

Member Point Loads (BLC 19 : Maint LL 5)

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

Member Point Loads (BLC 20 : Maint LL 6)

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

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	50	Y	-0.25	%95

Member Point Loads (BLC 22 : Maint LL 8)

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

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	31	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	-0.023	-0.023	0	%100
2	2	Z	-0.02	-0.02	0	%100
3	3	Z	-0.02	-0.02	0	%100
4	4	Z	-0.029	-0.029	0	%100
5	5	Z	-0.029	-0.029	0	%100
6	6	Z	-0.015	-0.015	0	%100
7	7	Z	-0.029	-0.029	0	%100
8	8	Z	-0.029	-0.029	0	%100
9	9	Z	-0.013	-0.013	0	%100
10	10	Z	-0.013	-0.013	0	%100
11	11	Z	-0.039	-0.039	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, %)]
12	18	Z	-0.014	-0.014	0	%100
13	19	Z	-0.014	-0.014	0	%100
14	22	Z	-0.014	-0.014	0	%100
15	26	Z	-0.014	-0.014	0	%100
16	30	Z	-0.035	-0.035	0	%100
17	31	Z	-0.023	-0.023	0	%100
18	32	Z	-0.02	-0.02	0	%100
19	33	Z	-0.02	-0.02	0	%100
20	34	Z	-0.029	-0.029	0	%100
21	35	Z	-0.029	-0.029	0	%100
22	36	Z	-0.029	-0.029	0	%100
23	37	Z	-0.029	-0.029	0	%100
24	38	Z	-0.013	-0.013	0	%100
25	39	Z	-0.013	-0.013	0	%100
26	40	Z	-0.039	-0.039	0	%100
27	49	Z	-0.035	-0.035	0	%100
28	50	Z	-0.023	-0.023	0	%100
29	51	Z	-0.02	-0.02	0	%100
30	52	Z	-0.02	-0.02	0	%100
31	53	Z	-0.029	-0.029	0	%100
32	54	Z	-0.029	-0.029	0	%100
33	55	Z	-0.029	-0.029	0	%100
34	56	Z	-0.029	-0.029	0	%100
35	57	Z	-0.013	-0.013	0	%100
36	58	Z	-0.013	-0.013	0	%100
37	59	Z	-0.039	-0.039	0	%100
38	68	Z	-0.035	-0.035	0	%100
39	69	Z	-0.015	-0.015	0	%100
40	72	Z	-0.014	-0.014	0	%100
41	73	Z	-0.014	-0.014	0	%100
42	76	Z	-0.014	-0.014	0	%100
43	77	Z	-0.014	-0.014	0	%100
44	80	Z	-0.015	-0.015	0	%100
45	83	Z	-0.014	-0.014	0	%100
46	84	Z	-0.014	-0.014	0	%100
47	87	Z	-0.014	-0.014	0	%100
48	88	Z	-0.014	-0.014	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	-0.023	-0.023	0	%100
2	2	X	-0.02	-0.02	0	%100
3	3	X	-0.02	-0.02	0	%100
4	4	X	-0.029	-0.029	0	%100
5	5	X	-0.029	-0.029	0	%100
6	6	X	-0.015	-0.015	0	%100
7	7	X	-0.029	-0.029	0	%100
8	8	X	-0.029	-0.029	0	%100
9	9	X	-0.013	-0.013	0	%100
10	10	X	-0.013	-0.013	0	%100
11	11	X	-0.039	-0.039	0	%100
12	18	X	-0.014	-0.014	0	%100
13	19	X	-0.014	-0.014	0	%100
14	22	X	-0.014	-0.014	0	%100
15	26	X	-0.014	-0.014	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, %)]
16	30	X	-0.035	-0.035	0	%100
17	31	X	-0.023	-0.023	0	%100
18	32	X	-0.02	-0.02	0	%100
19	33	X	-0.02	-0.02	0	%100
20	34	X	-0.029	-0.029	0	%100
21	35	X	-0.029	-0.029	0	%100
22	36	X	-0.029	-0.029	0	%100
23	37	X	-0.029	-0.029	0	%100
24	38	X	-0.013	-0.013	0	%100
25	39	X	-0.013	-0.013	0	%100
26	40	X	-0.039	-0.039	0	%100
27	49	X	-0.035	-0.035	0	%100
28	50	X	-0.023	-0.023	0	%100
29	51	X	-0.02	-0.02	0	%100
30	52	X	-0.02	-0.02	0	%100
31	53	X	-0.029	-0.029	0	%100
32	54	X	-0.029	-0.029	0	%100
33	55	X	-0.029	-0.029	0	%100
34	56	X	-0.029	-0.029	0	%100
35	57	X	-0.013	-0.013	0	%100
36	58	X	-0.013	-0.013	0	%100
37	59	X	-0.039	-0.039	0	%100
38	68	X	-0.035	-0.035	0	%100
39	69	X	-0.015	-0.015	0	%100
40	72	X	-0.014	-0.014	0	%100
41	73	X	-0.014	-0.014	0	%100
42	76	X	-0.014	-0.014	0	%100
43	77	X	-0.014	-0.014	0	%100
44	80	X	-0.015	-0.015	0	%100
45	83	X	-0.014	-0.014	0	%100
46	84	X	-0.014	-0.014	0	%100
47	87	X	-0.014	-0.014	0	%100
48	88	X	-0.014	-0.014	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	-0.011	-0.011	0	%100
5	5	Z	-0.011	-0.011	0	%100
6	6	Z	-0.002	-0.002	0	%100
7	7	Z	-0.013	-0.013	0	%100
8	8	Z	-0.013	-0.013	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	26	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

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, %)]
20	34	Z	-0.011	-0.011	0	%100
21	35	Z	-0.011	-0.011	0	%100
22	36	Z	-0.013	-0.013	0	%100
23	37	Z	-0.013	-0.013	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
31	53	Z	-0.011	-0.011	0	%100
32	54	Z	-0.011	-0.011	0	%100
33	55	Z	-0.013	-0.013	0	%100
34	56	Z	-0.013	-0.013	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	77	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	88	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	-0.011	-0.011	0	%100
5	5	X	-0.011	-0.011	0	%100
6	6	X	-0.002	-0.002	0	%100
7	7	X	-0.013	-0.013	0	%100
8	8	X	-0.013	-0.013	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	26	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	-0.011	-0.011	0	%100
21	35	X	-0.011	-0.011	0	%100
22	36	X	-0.013	-0.013	0	%100
23	37	X	-0.013	-0.013	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, %)]
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	-0.011	-0.011	0	%100
32	54	X	-0.011	-0.011	0	%100
33	55	X	-0.013	-0.013	0	%100
34	56	X	-0.013	-0.013	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	77	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	88	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	26	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

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, %)]
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
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	77	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	88	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	26	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

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, %)]
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	-0.0007	-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	77	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	88	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	26	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
35	57	Y	-0.006	-0.006	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
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	77	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	88	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	26	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
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

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, %)]
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	77	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	88	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	26	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
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	77	X	-0.002	-0.002	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, %)]
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	88	X	-0.002	-0.002	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	10	Y	-0.01	-0.02	0.231	2.309
2	38	Y	-0.035	-0.016	0	1.155
3	38	Y	-0.016	0.0006164	1.155	2.309
4	39	Y	-0.018	-0.016	0.231	2.309
5	57	Y	-0.018	-0.016	0	2.078
6	58	Y	0.0006163	-0.016	0	1.155
7	58	Y	-0.016	-0.035	1.155	2.309
8	9	Y	-0.026	-0.02	0	1.039
9	9	Y	-0.02	-0.014	1.039	2.078

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	-0.022	-0.017	0	1.039
2	9	Y	-0.017	-0.012	1.039	2.078
3	10	Y	-0.009	-0.017	0.231	2.309
4	38	Y	-0.028	-0.013	0	1.155
5	38	Y	-0.013	0.0004931	1.155	2.309
6	39	Y	-0.014	-0.013	0.231	2.309
7	57	Y	-0.014	-0.013	0	2.078
8	58	Y	0.0004931	-0.013	0	1.155
9	58	Y	-0.013	-0.028	1.155	2.309

Basic Load Cases

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

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL					
25	Maint LL 11	LL					
26	Maint LL 12	LL					
27	Maint LL 13	LL					
28	Maint LL 14	LL					
29	Maint LL 15	LL					
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

Load Combinations (Continued)

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

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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	1.629	5	1.988	2	1.287	2	4.77	2	1.627	11	0.546	11
2		min	-1.643	11	-0.411	8	-1.395	8	-1.65	8	-1.643	5	-0.445	5
3	53	max	1.228	5	1.838	18	1.997	2	0.75	13	1.99	3	0.855	12
4		min	-1.314	11	-0.164	12	-1.929	8	-2.252	7	-2.004	9	-3.631	6
5	82	max	1.29	5	1.786	22	1.91	2	0.776	3	1.967	7	3.57	10
6		min	-1.19	11	-0.187	4	-1.87	8	-2.427	9	-1.982	13	-0.889	4
7	Totals:	max	4.147	5	4.886	17	5.194	2						
8		min	-4.147	11	2.396	11	-5.194	8						

Envelope AISC 13TH (360-05): 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	0.638	0	13	0.153	0	z	11	70.173	73.278	8.24	8.24	1.939	H1-1b
2	2	C3.38X2.06X0.188	0.389	2.592	3	0.059	0.351	y	63	38.433	43.394	1.694	4.483	1.594	H1-1b
3	3	C3.38X2.06X0.188	0.378	0	13	0.089	2.241	z	7	38.433	43.394	1.694	4.483	1.596	H1-1b
4	4	PL3/8"x6	0.055	0	5	0.214	0	y	2	68.856	72.9	0.57	9.113	2.539	H1-1b
5	5	PL3/8"x6	0.09	0	3	0.178	0	y	2	68.856	72.9	0.57	9.113	2.352	H1-1b
6	6	PIPE_3.5x0.165	0.095	3.333	9	0.051	4.583		11	45.872	71.57	6.336	6.336	1.753	H1-1b
7	7	PL3/8"x6	0.198	0.208	8	0.187	0.208	y	61	70.733	72.9	0.57	9.113	1.316	H1-1b
8	8	PL3/8"x6	0.177	0	13	0.194	0	y	51	70.733	72.9	0.57	9.113	2.985	H1-1b
9	9	L2x2x4	0.309	0	7	0.029	2.309	y	47	23.349	30.586	0.691	1.577	1.5	H2-1
10	10	L2x2x4	0.244	2.309	9	0.033	0	y	64	23.349	30.586	0.691	1.577	1.5	H2-1
11	11	L7.63x2.5x6	0.37	1.604	8	0.077	1.604	z	3	73.845	118.523	1.798	13.749	1.248	H2-1
12	18	PIPE_2.88x0.203	0.139	5.667	5	0.041	5.667		6	35.519	70.68	5.029	5.029	3	H1-1b
13	19	PIPE_2.88x0.203	0.17	2.333	9	0.049	5.667		9	35.519	70.68	5.029	5.029	3	H1-1b
14	22	PIPE_2.88x0.203	0.148	7.812	13	0.19	8.333		13	24.131	70.68	5.029	5.029	2.489	H1-1b
15	26	PIPE_2.88x0.203	0.144	2.333	7	0.047	2.333		8	35.519	70.68	5.029	5.029	3	H1-1b
16	30	L6.63x4.33x.25	0.25	3.25	6	0.02	3.25	y	6	49.975	86.751	2.311	6.976	1.5	H2-1
17	31	HSS4X4X2	0.632	0	7	0.187	0	z	3	70.173	73.278	8.24	8.24	1.964	H1-1b
18	32	C3.38X2.06X0.188	0.398	2.592	8	0.059	0.351	y	68	38.433	43.394	1.694	4.483	1.598	H1-1b
19	33	C3.38X2.06X0.188	0.331	0	5	0.072	2.241	z	11	38.433	43.394	1.694	4.483	1.598	H1-1b
20	34	PL3/8"x6	0.07	0	9	0.179	0	y	6	68.856	72.9	0.57	9.113	2.663	H1-1b
21	35	PL3/8"x6	0.102	0	8	0.152	0	y	6	68.856	72.9	0.57	9.113	1.986	H1-1b
22	36	PL3/8"x6	0.16	0.208	12	0.187	0.208	y	53	70.733	72.9	0.57	9.113	1.562	H1-1b
23	37	PL3/8"x6	0.147	0	5	0.193	0	y	55	70.733	72.9	0.57	9.113	3	H1-1b
24	38	L2x2x4	0.252	0	11	0.029	2.309	y	39	23.349	30.586	0.691	1.577	1.5	H2-1
25	39	L2x2x4	0.247	2.309	13	0.033	0	y	68	23.349	30.586	0.691	1.577	1.5	H2-1
26	40	L7.63x2.5x6	0.305	1.604	13	0.076	1.604	z	7	73.845	118.523	1.798	13.746	1.247	H2-1
27	49	L6.63x4.33x.25	0.292	0	3	0.024	3.25	y	9	49.975	86.751	2.311	6.976	1.5	H2-1
28	50	HSS4X4X2	0.638	0	9	0.188	0	z	7	70.173	73.278	8.24	8.24	1.942	H1-1b
29	51	C3.38X2.06X0.188	0.349	2.592	11	0.059	0.351	y	72	38.433	43.394	1.694	4.483	1.597	H1-1b
30	52	C3.38X2.06X0.188	0.38	0	9	0.087	2.241	z	3	38.433	43.394	1.694	4.483	1.595	H1-1b
31	53	PL3/8"x6	0.075	0	2	0.185	0	y	10	68.856	72.9	0.57	9.113	2.696	H1-1b
32	54	PL3/8"x6	0.082	0	12	0.15	0	y	10	68.856	72.9	0.57	9.113	1.845	H1-1b
33	55	PL3/8"x6	0.162	0.208	4	0.187	0.208	y	57	70.733	72.9	0.57	9.113	1.459	H1-1b
34	56	PL3/8"x6	0.181	0	9	0.194	0	y	59	70.733	72.9	0.57	9.113	3	H1-1b
35	57	L2x2x4	0.313	0	3	0.029	2.309	y	43	23.349	30.586	0.691	1.577	1.5	H2-1

Envelope AISC 13TH (360-05): 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
36	58	L2x2x4	0.211	2.309	5	0.033	2.309	y	24	23.349	30.586	0.691	1.577	1.5	H2-1
37	59	L7.63x2.5x6	0.349	1.604	3	0.073	0.334	y	71	73.845	118.523	1.798	13.83	1.266	H2-1
38	68	L6.63x4.33x.25	0.308	0	7	0.027	3.25	y	13	49.975	86.751	2.311	6.976	1.5	H2-1
39	69	PIPE_3.5x0.165	0.107	1.25	2	0.065	4		9	45.872	71.57	6.336	6.336	1.643	H1-1b
40	72	PIPE_2.88x0.203	0.17	5.667	9	0.047	5.667		9	35.519	70.68	5.029	5.029	3	H1-1b
41	73	PIPE_2.88x0.203	0.191	2.333	2	0.053	5.667		13	35.519	70.68	5.029	5.029	2.907	H1-1b
42	76	PIPE_2.88x0.203	0.142	7.708	8	0.164	2.188		13	24.131	70.68	5.029	5.029	1.444	H1-1b
43	77	PIPE_2.88x0.203	0.144	5.667	9	0.043	2.333		13	35.519	70.68	5.029	5.029	3	H1-1b
44	80	PIPE_3.5x0.165	0.093	6.75	2	0.062	3.417		13	45.872	71.57	6.336	6.336	1.443	H1-1b
45	83	PIPE_2.88x0.203	0.169	5.667	13	0.052	5.667		13	35.519	70.68	5.029	5.029	3	H1-1b
46	84	PIPE_2.88x0.203	0.157	2.333	6	0.041	5.667		5	35.519	70.68	5.029	5.029	3	H1-1b
47	87	PIPE_2.88x0.203	0.14	7.813	9	0.183	8.333		9	24.131	70.68	5.029	5.029	2.428	H1-1b
48	88	PIPE_2.88x0.203	0.169	5.667	2	0.042	5.667		3	35.519	70.68	5.029	5.029	3	H1-1b

APPENDIX B
(Additional Calculations)

PROJECT	**149480.003.01 - Salem (Old Colchest KSC**
SUBJECT	**Platform Mount Analysis**
DATE	**01/09/23**

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

Tower Type		:	Monopole		
Ground Elevation	z_s	:	559	ft	[ASCE7 Hazard Tool]
Tower Height		:	190.00	ft	
Mount Elevation		:	186.00	ft	
Antenna Elevation		:	186.00	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	:	124	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	:	0.20		
	S_1	:	0.06		
	S_{DS}	:	0.22		
	S_{D1}	:	0.09		
Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.44		[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}	:	1.19	in	[Sec. 2.6.10]
Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.109		[Sec. 2.7.7.1]
Amplification	A_s	:	2.915789		[Sec. 16.7]
	q_z	:	52.85	psf	

PROJECT	149480.003.01 - Salem (Old Colchest KSC
SUBJECT	**Platform Mount Analysis**
DATE	**01/09/23**

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

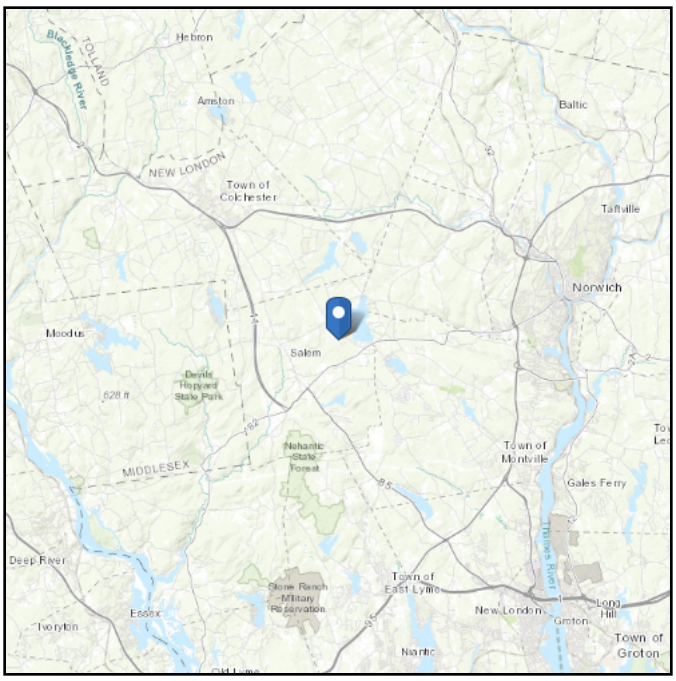
Manufacturer	Model	Qty	Height (in^2)	Width (in^2)	Depth (in^2)	Weight (lbs)	C_aA_a (N) (ft^2)	C_aA_a (T) (ft^2)	C_aA_a (N) Ice (ft^2)	C_aA_a (T) Ice (ft^2)	$F_{A\ (N)}$ (k)	$F_{A\ (T)}$ (k)	$F_{A\ (N)}$ Ice (k)	$F_{A\ (T)}$ Ice (k)
JMA WIRELESS	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	4.01	1.61	4.53	2.06	0.21	0.08	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5					4.01	1.61	4.53	2.06	0.21	0.08	0.04	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.62	1.73	0.09	0.06	0.02	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.62	1.55	0.09	0.05	0.02	0.01
JMA WIRELESS	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	4.01	1.61	4.53	2.06	0.21	0.08	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5					4.01	1.61	4.53	2.06	0.21	0.08	0.04	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.62	1.73	0.09	0.06	0.02	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.62	1.55	0.09	0.05	0.02	0.01
JMA WIRELESS	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	4.01	1.61	4.53	2.06	0.21	0.08	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5					4.01	1.61	4.53	2.06	0.21	0.08	0.04	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.62	1.73	0.09	0.06	0.02	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.62	1.55	0.09	0.05	0.02	0.01
RAYCAP	RDIDC-9181-PF-48	1	16.6	14.6	8.2	21.9	2.01	1.13	2.68	1.66	0.10	0.05	0.02	0.01

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 41.50203
Longitude: -72.24288
Elevation: 559.38 ft (NAVD 88)



Wind

Results:

Wind Speed	124 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	95 Vmph
100-year MRI	101 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: Mon Jan 09 2023

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

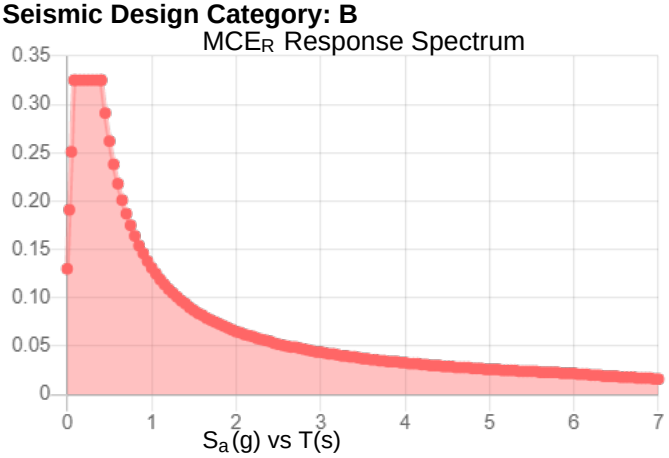
D - Stiff Soil

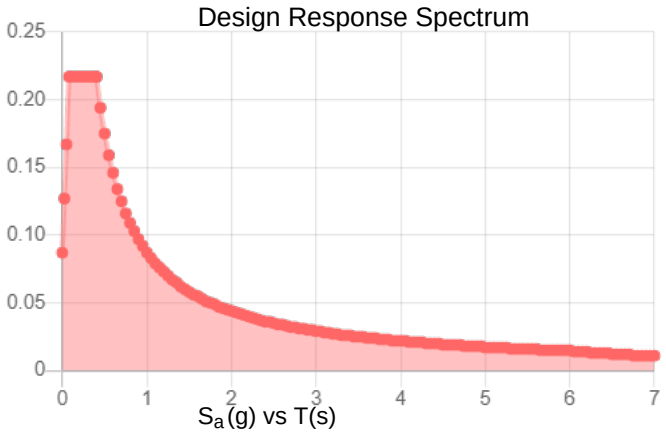
Site Soil Class:

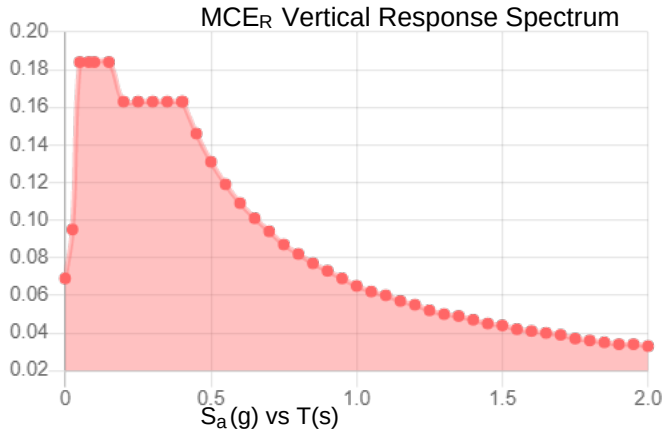
Results:

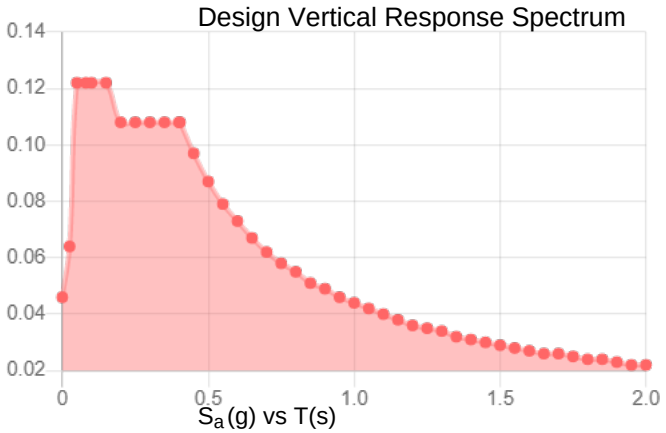
S_S :	0.203	S_{D1} :	0.087
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA_M :	0.178
S_{MS} :	0.325	F_{PGA} :	1.574
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.217	C_v :	0.706

Seismic Design Category: B









Data Accessed: **Mon Jan 09 2023**

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:	Mon Jan 09 2023

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.

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

Site ID: BOBOS00063A

SBA - Old Colchester Road
343 Old Colchester Road
Salem, CT 06420

December 14, 2022

Fox Hill Telecom Project Number: 222027

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**1.05 %**

Fox Hill Telecom

December 14, 2022

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBOS00063A – SBA - Old Colchester Road**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **343 Old Colchester Road, Salem, 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 upgrades to the T-MOBILE antenna facility located at **343 Old Colchester Road, Salem, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the Far Field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **Far Field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors Considered, the worst case **Far Field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4\ ERP}{R^2}$$

S = Power Density (in μw/cm^2)
ERP = Effective Radiated Power from antenna (watts)
R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

For each Dish 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 **Dish** 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 Dish regarding anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	186
B	1	JMA MX08FRO665-21	186
C	1	JMA MX08FRO665-21	186

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)	12.15 / 15.95 / 16.25	12	566	17,079.80	1.05
						Sector A Composite MPE%	**1.05**
Antenna B1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	1.05
						Sector B Composite MPE%	**1.05**
Antenna C1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	1.05
						Sector C Composite MPE%	**1.05**

Table 3: Dish Emissions Levels

The Following table (*Table 4*) shows all additional carriers on site and their emissions contribution estimates, along with the newly calculated **Dish** far field emissions 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 emissions 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 emissions value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**1.05 %**
No Additional Carriers on Site	NA
Site Total MPE %:	**1.05 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	1.05 %
Dish Sector B Total:	1.05 %
Dish Sector C Total:	1.05 %
Site Total:	1.05 %

Table 5: Site MPE Summary

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	1,008.96	186	2.76	n71 (600 MHz)	400	0.69%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,574.20	186	1.80	n70 (AWS-4 / 1995-2020)	1000	0.18%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,686.79	186	1.80	n66 (AWS-4 / 2180-2200)	1000	0.18%
						Total:	**1.05%**

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:	1.05 %
Sector B:	1.05 %
Sector C:	1.05 %
Dish Maximum Total (per sector):	1.05 %
Site Total:	1.05 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite emissions value for this site, assuming all carriers present, is **1.05 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

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
Worcester, MA 01609
(978)660-3998

Exhibit F

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

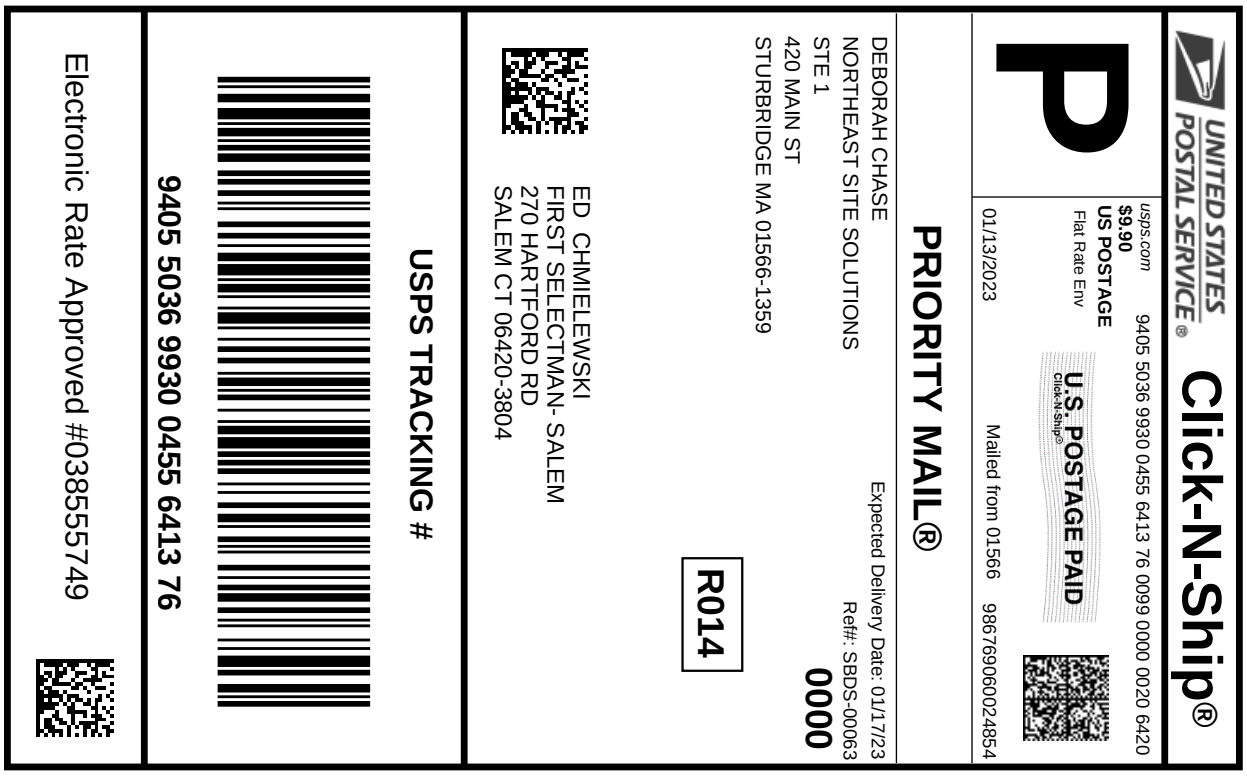
SBA COMMUNICATIONS CORPORATION hereby authorizes DISH Wireless LLC, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CONNECTICUT SITING COUNCIL for existing wireless communications towers.

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

SBA
By: _____ Date: 3-30-22

Exhibit F

Recipient Mailings



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Total:	**$9.90**

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420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: SBDS-00063

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FIRST SELECTMAN- SALEM
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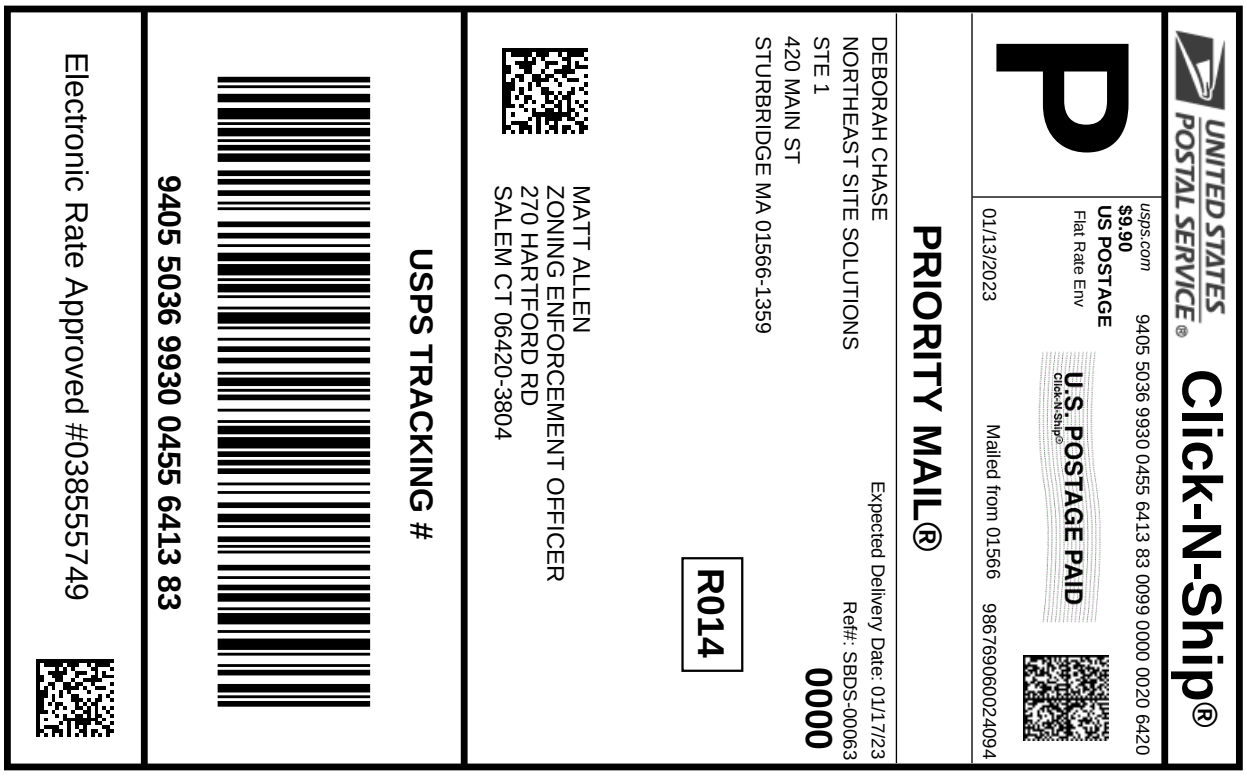

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Ref#: SBDS-00063

To: MATT ALLEN
ZONING ENFORCEMENT OFFICER
270 HARTFORD RD
SALEM CT 06420-3804

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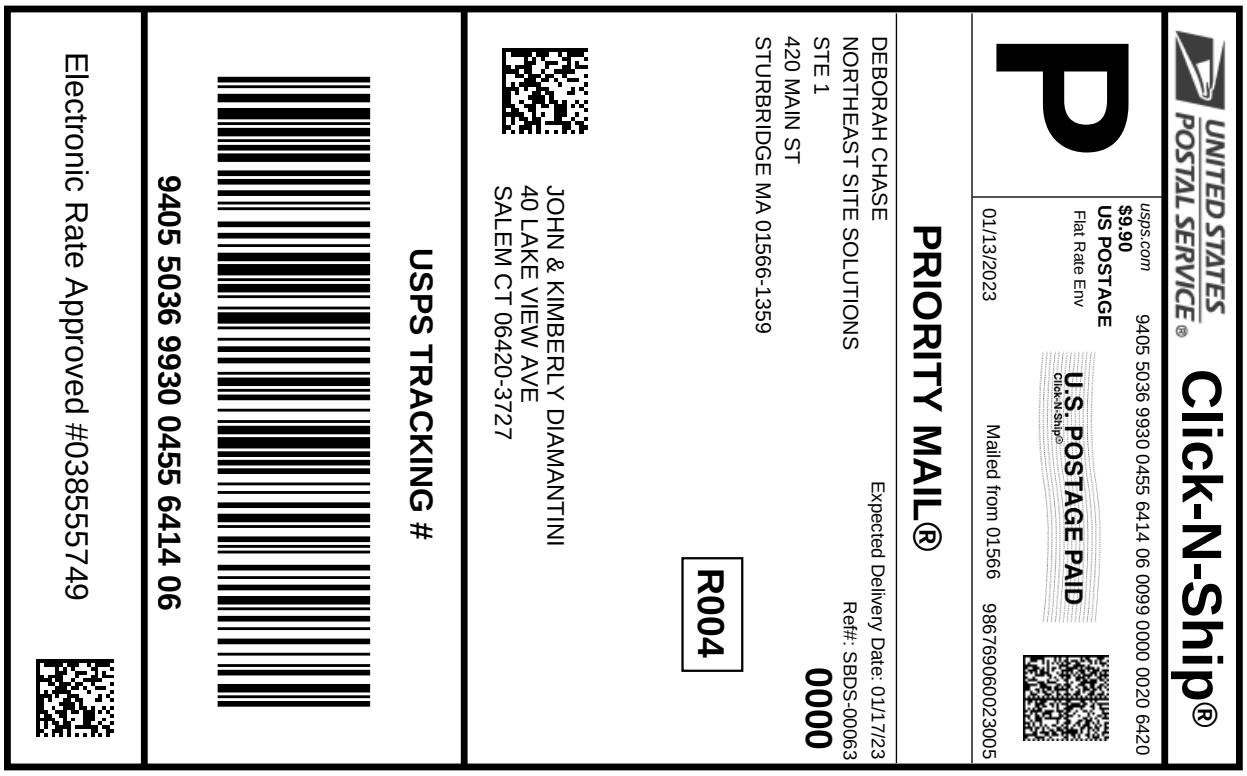

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Ship Date:	01/13/2023
Expected Delivery Date:	01/17/2023

Priority Mail® Postage:	**$9.90**
Total:	**$9.90**

From: DEBORAH CHASE
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420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: SBDS-00063

To: JOHN & KIMBERLY DIAMANTINI
40 LAKE VIEW AVE
SALEM CT 06420-3727

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SBA COMMUNICATIONS CORPORATION
STE 125
13 FLANDERS RD
WESTBOROUGH MA 01581

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STURBRIDGE MA 01566-1359

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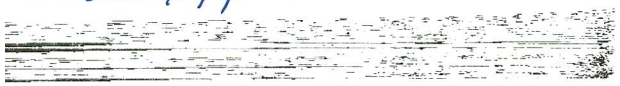
[redacted] - SBA DISH
BOBOS000103



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WORCESTER, MA 01605-1925
(800)275-8777

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Prepaid Mail Westborough, MA 01581 Weight: 0 lb 2.10 oz Acceptance Date: Fri 01/13/2023 Tracking #: 9405 5036 9930 0455 6414 20	1		$0.00
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