Filed by:
G. Scott Shepherd, Sr. Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - GShepherd@sbasite.com

November 15, 2021

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Tower Share Application**
93 Lake St., Manchester, CT
Latitude: 41.789083
Longitude: -72.482083
Dish Site# BOBDL00128A

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 93 Lake St., Manchester, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antennas and six (6) RRUs, at the 85-foot level of the existing 109-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7' x 5' lease area. Included are plans by B+T Group, dated December 9, 2021 Exhibit 10. Also included is a Structural Analysis prepared by TES, dated August 31, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit 8. This facility was approved by the Connecticut Siting Council, Docket No. 351 on May 8, 2008 and later by the Town of Manchester under Permit# 08002845 on July 7, 2008. Please see attached Exhibit 6.

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 Steve Stephanou, General Manager for the Town of Manchester, Eric Prause, Chairman Planning & Zoning Commission and to the property owner, Alan Rossetto. Separate notice is not being sent to the tower owner, as it belongs to SBA Properties, LLC.

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 tower is 109-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 85-feet.

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

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. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 16.34% as evidenced by Exhibit 7.

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 indicates 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 8.

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 support tower in East Granby. 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 Intent is included as Exhibit 2, 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 85-foot level of the existing 109-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 7, 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 Intent 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 guyed 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 East Granby.

Sincerely,

Scott Shepherd
Site Development Specialist II
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3807 + T
508.366.2610 + F
508.868.6000 + C
GShepherd@sbasite.com

Attachments:

cc: Steve Stephanou, General Manager / with attachments
Town of Manchester, 41 Main St., Manchester, CT 06040
Eric Prause, Chairman, Planning & Zoning Commission / with attachments
Town of Manchester, 41 Main St., Manchester, CT 06040
Alan Rossetto / with attachments
23 Longview Dr., Lancaster, NH 03584 (SBA address on file)

EXHIBIT LIST

Exhibit 1	Copy of Check	X
Exhibit 2	Letter of Intent to Allow Shared Use of the Existing SBA Telecommunications Site	X
Exhibit 3	Notification Receipts	x
Exhibit 4	Property Card	x
Exhibit 5	Property Map	x
Exhibit 6	Original Zoning Approval	Connecticut Siting Council Docket No. 351 (5/8/08), Town of Manchester Permit# 08002845 (7/7/08)
Exhibit 7	EME Report	EBI Consulting 12/20/21
Exhibit 8	Structural Analysis	TES 8/31/21
Exhibit 9	Mount Analysis	B+T Group 8/27/21
Exhibit 10	Construction Drawings	B+T Group 12/9/21

EXHIBIT 1

Copy of check

EXHIBIT 2
Letter of Intent

December 27, 2021

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

RE: **Notice of Intent to Allow Shared Use of the Existing SBA Telecommunications Site**
Location: **93 Lake St., Manchester, CT**
Dish Wireless Site No: BOBDL00128A
Site No: CT13529-A

Dear Ms. Bachman:

Please let the following serve as Evidence of Intent to allow Dish Wireless' shared use of the existing SBA telecommunications site at **93 Lake St., Manchester, CT**.

SBA Properties, LLC ("Owner") and Dish Wireless ("Tenant") are entering into a Site Lease Agreement. Tenant will be provided ground space within the existing site compound for its base station equipment and space at the height of 85' for antennas and associated equipment.

Thank you,

Rick Woods
Site Development Manager
SBA COMMUNICATIONS CORPORATION
134 Flanders Road, Suite 125
Westboro, MA 01581

508.251.0720 x3800 + T
508.366.2610 + F
508.614.0389 + C
rwoods@sbasite.com

EXHIBIT 3

Fedex Labels

Shipping Tracking Printing Services Locations Support

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

FedEx

TRACK ANOTHER SHIPMENT

775604095710

ADD NICKNAME

ON TIME

Scheduled delivery:
Tuesday, 12/28/2021 before 11:30 am

PICKED UP
FRAMINGHAM, MA

GET STATUS UPDATES

FROM
SBA COMMUNICATIONS CORPORATION
Rick Woods

134 Flanders Rd
Suite 125
WESTBOROUGH, MA US 01581
508-614-0389

TO
Melanie A. Bachman Exec. Dir
Connecticut Siting Council

Ten Franklin Square
NEW BRITAIN, CT US 06051
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Monday, December 27, 2021

2:46 PM	FRAMINGHAM, MA	Picked up
1:05 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
11:03 AM		Shipment information sent to FedEx

Expand History

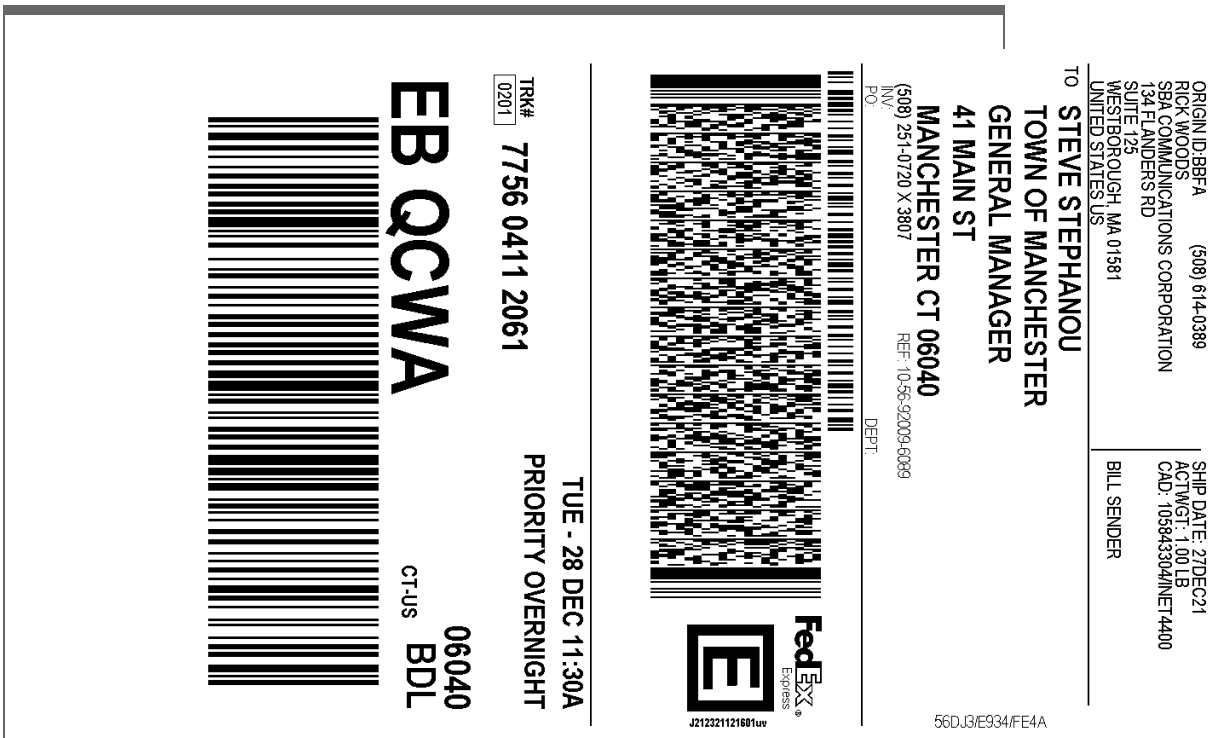
Shipment Facts

TRACKING NUMBER	SERVICE	WEIGHT

775604095710	FedEx Priority Overnight	2 lbs / 0.91 kgs
1	2 lbs / 0.91 kgs	Shipper
10-56-92009-6089	FedEx Box	Deliver Weekday
12/27/21	12/28/21 before 11:30 am	12/28/21 before 11:30 am

All (30) Inbound (8) Outbound (22) Watch list (0)

Shipping Tracking Printing Services Locations Support



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FedEx

TRACK ANOTHER SHIPMENT

775604112061

ADD NICKNAME

ON TIME

Scheduled delivery:
Tuesday, 12/28/2021 before 11:30 am

PICKED UP
FRAMINGHAM, MA

GET STATUS UPDATES

FROM
SBA COMMUNICATIONS CORPORATION
Rick Woods
134 Flanders Rd
Suite 125
WESTBOROUGH, MA US 01581
508-614-0389

TO
Steve Stephanou
Town of Manchester
General Manager
41 Main St
MANCHESTER, CT US 06040
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Monday, December 27, 2021

2:48 PM	FRAMINGHAM, MA	Picked up
1:05 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
11:04 AM		Shipment information sent to FedEx

Expand History

Shipment Facts

TRACKING NUMBER **SERVICE** **WEIGHT**

775604112061	FedEx Priority Overnight	1 lbs / 0.45 kgs
1	1 lbs / 0.45 kgs	Shipper
10-56-92009-6089	FedEx Pak	Deliver Weekday
12/27/21	12/28/21 before 11:30 am	12/28/21 before 11:30 am

All (30) Inbound (8) Outbound (22) Watch list (0)

Shipping Tracking Printing Services Locations Support

ORIGIN ID:BBFA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 27DEC21
ACTWGT: 1.00 LB
CAD: 105843304/INET4400

BILL SENDER

TO ERICS PRAUSE
TOWN OF MANCHESTER
PLANNING & ZONING CHARIMAN
41 MAIN ST
MANCHESTER CT 06040
(508) 251-0720 X 3807

INV:
PO:
REF: 10-56-92009-6089
DEPT:

J212321121601uv

56DJ3/E934/FE4A

TRK# 0201 7756 0412 4249

TUE - 28 DEC 11:30A
PRIORITY OVERNIGHT

EB QCWA

06040
BDL
CT-US

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FedEx

TRACK ANOTHER SHIPMENT

775604124249

ADD NICKNAME

ON TIME

Scheduled delivery:
Tuesday, 12/28/2021 before 11:30 am

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

FROM
SBA COMMUNICATIONS CORPORATION
Rick Woods
134 Flanders Rd
Suite 125
WESTBOROUGH, MA US 01581
508-614-0389

TO
Erics Prause
Town of Manchester
Planning & Zoning Chariman
41 Main St
MANCHESTER, CT US 06040
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Monday, December 27, 2021

1:05 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
11:05 AM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER	SERVICE	WEIGHT
775604124249	FedEx Priority Overnight	1 lbs / 0.45 kgs
TOTAL PIECES	**TOTAL SHIPMENT WEIGHT**	**TERMS**
1	1 lbs / 0.45 kgs	Shipper

Shipping Tracking Printing Services Locations Support

After printing this label:
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FedEx

TRACK ANOTHER SHIPMENT

775604140278

ADD NICKNAME

ON TIME

Scheduled delivery:
Tuesday, 12/28/2021 before 1:00 pm

PICKED UP
FRAMINGHAM, MA

GET STATUS UPDATES

FROM
SBA COMMUNICATIONS CORPORATION
Rick Woods
134 Flanders Rd
Suite 125
WESTBOROUGH, MA US 01581
508-614-0389

TO
Alan Rossetto
23 Longview Dr
LANCASTER, NH US 03584
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Monday, December 27, 2021

2:47 PM	FRAMINGHAM, MA	Picked up
1:05 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
11:07 AM		Shipment information sent to FedEx

Expand History

Shipment Facts

TRACKING NUMBER **SERVICE** **WEIGHT**

775604140278	FedEx Priority Overnight	0.5 lbs / 0.23 kgs
1	0.5 lbs / 0.23 kgs	Shipper
10-56-92009-6089	FedEx Envelope	Deliver Weekday
12/27/21	12/28/21 before 1:00 pm	12/28/21 before 1:00 pm

All (30) Inbound (8) Outbound (22) Watch list (0)

EXHIBIT 4

Property Card

93 LAKE STREET

Location	93 LAKE STREET	**Mblu**	135/ 3330/ 93/ /
Acct#	333000093R	**Owner**	ROSSETTO ALAN C & GAIL U
Assessment	$181,400	**Appraisal**	$259,100
PID	8968	**Building Count**	1
DISTRICT	T	**CONCRETE**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$178,200	$80,900	$259,100
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$124,800	$56,600	$181,400

Owner of Record

Owner ROSSETTO ALAN C & GAIL U
Address 23 LONGVIEW DRIVE
LANCASTER, NH 03584

Sale Price $0
Certificate
Book & Page 4566/0167
Sale Date 10/30/2018
Instrument 31

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ROSSETTO ALAN C & GAIL U	$0		4566/0167	31	10/30/2018
ROSSETTO ALAN C	$0		3432/0212	36	04/12/2007
ROSSETTO ALAN C TR	$0	C	0739/0164		05/21/1980

Building Information

Building 1 : Section 1

Year Built: 1913

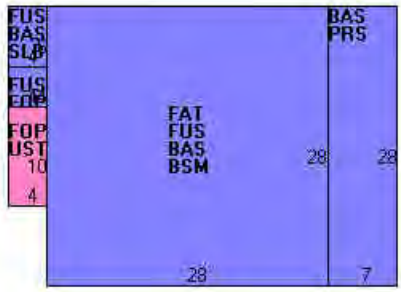
Building Photo

Living Area: 1,985
Replacement Cost: $235,780
Replacement Cost Less Depreciation: $143,800

Building Attributes	
Field	**Description**
Style:	Family Conver.
Model	Multi-Family
Grade:	Average
Stories:	2 Stories
Occupancy	2
Exterior Wall 1	Aluminum Sidin
Exterior Wall 2	
Roof Structure:	Hip/Truss
Roof Cover	Asphalt/Arch Shingle
Interior Wall 1	Plaster
Interior Wall 2	Plywood Panel
Interior Flr 1	Carpet
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	Partial
Total Bedrooms:	3 Bedrooms
Total Bthrms:	2
Total Half Baths:	0
Total Xtra Fixtrs:	
Total Rooms:	7
Bath Style:	Average
Kitchen Style:	Average
Extra Kitchens	
Whirlpool	
Fireplace	
Fin Basement	
Fin Bsmnt Qual	
Fin Bsmnt 2	
Fin Bsmnt2 Qual	
Bsmnt Garage	
Fireplaces	
Fndtn Level	
SFA Code	
Fndtn Cndtn	
Basement	

(http://images.vgsi.com/photos2/ManchesterCTPhotos//\00\01\33\66.jpg)

Building Layout



(http://images.vgsi.com/photos2/ManchesterCTPhotos//Sketches/8968_89

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,004	1,004
FUS	Upper Story, Finished	824	824
FAT	Attic, Finished	784	157
BSM	Basement	784	0
FOP	Porch, Open	56	0
PRS	Piers	196	0
SLB	Slab	24	0
UST	Utility, Storage, Unfinished	40	0
		3,712	1,985

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
A/C	Partial AC	1004.00 S.F.	$1,200	1

Land

Land Use

Use Code	102
Description	Two Family
Zone	RR
Neighborhood	60
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1
Frontage	0
Depth	0
Assessed Value	$56,600
Appraised Value	$80,900

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FGR4	Garage W Loft			528.00 S.F	$9,500	1
LNT	Lean To			288.00 S.F.	$1,400	1
BTH1	Cabana			60.00 S.F.	$900	1
FN4	Fence 8' Chain			280.00 L.F.	$8,000	1
PAV2	Paving Concrete			200.00 S.F.	$500	1
FN1	Fence 4' Chain			180.00 L.F.	$2,900	1
MISC	Miscellaneous			2.00 UNITS	$10,000	1

Valuation History

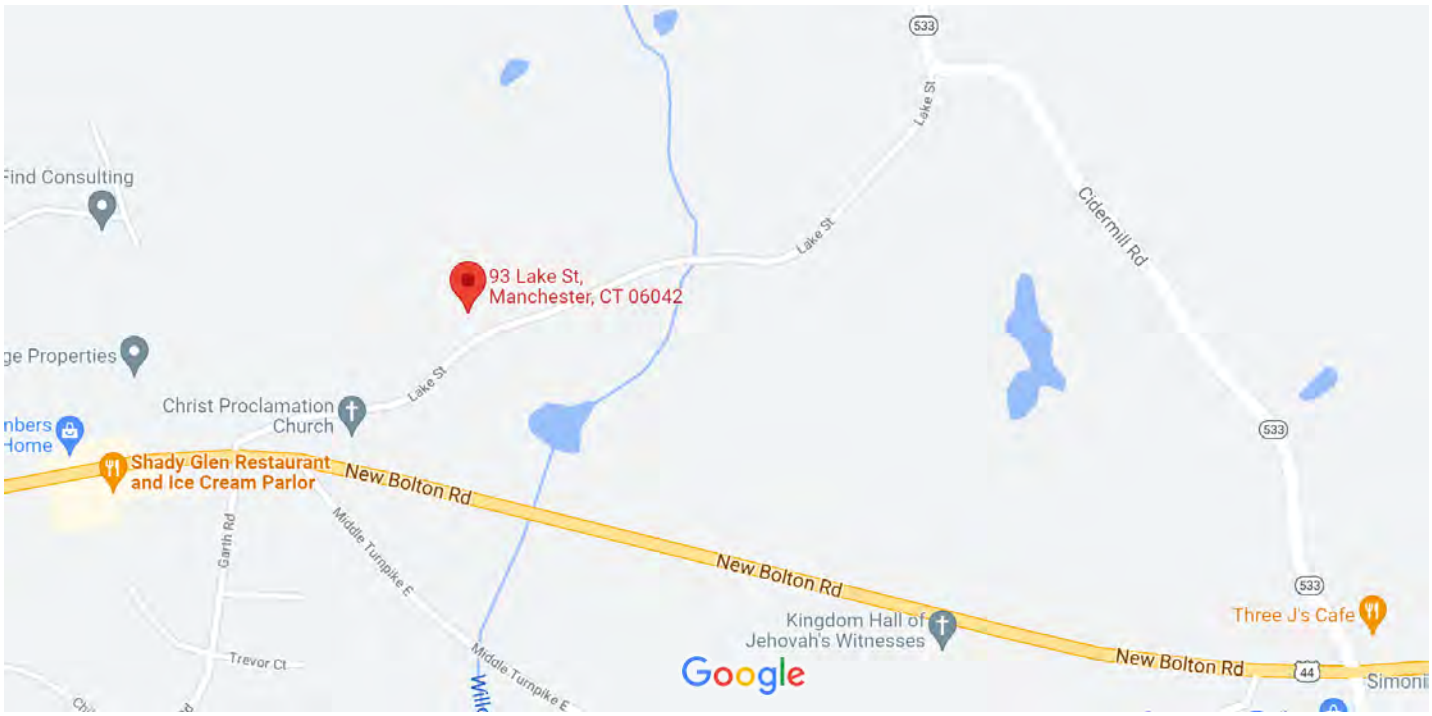
Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$157,100	$69,300	$226,400
2015	$111,700	$85,800	$197,500
2010	$159,600	$104,600	$264,200

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$110,000	$48,500	$158,500
2015	$78,200	$60,100	$138,300
2010	$111,800	$73,200	$185,000

EXHIBIT 5

Property Map

Google Maps 93 Lake St



Map data ©2021 500 ft

Google Maps 93 Lake St

Imagery ©2021 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 200 ft

EXHIBIT 6

Zoning Approval

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

May 13, 2008

Julie Kohler, Esq.
Carrie Larson, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604

RE: **DOCKET NO. 351** - Optasite Towers LLC and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 93 Lake Street, Manchester, Connecticut.

Dear Attorney. Kohler:

By its Decision and Order dated May 8, 2008, the Connecticut Siting Council (Council) granted a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance and operation of a telecommunications facility located at 93 Lake Street, Manchester, Connecticut.

Enclosed are the Council's Certificate, Findings of Fact, Opinion, and Decision and Order.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/DM/cm

Enclosures (4)

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

CERTIFICATE

OF

ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

DOCKET NO. 351

Pursuant to General Statutes § 16-50k, as amended, the Connecticut Siting Council hereby issues a Certificate of Environmental Compatibility and Public Need to Optasite Towers LLC for the construction, maintenance and operation of a telecommunications facility located at 93 Lake Street, Manchester, Connecticut. This Certificate is issued in accordance with and subject to the terms and conditions set forth in the Decision and Order of the Council on May 8, 2008.

By order of the Council,

Daniel F. Caruso, Chairman

May 8, 2008

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

May 13, 2008

TO: Parties and Intervenors

FROM: S. Derek Phelps, Executive Director

RE: **DOCKET NO. 351** - Optasite Towers LLC and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 93 Lake Street, Manchester, Connecticut.

By its Decision and Order dated May 8, 2008, the Connecticut Siting Council (Council) granted a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 93 Lake Street, Manchester, Connecticut.

Enclosed are the Council's Findings of Fact, Opinion, and Decision and Order.

SDP/DM/ cm

Enclosures (3)

c: State Documents Librarian

DOCKET NO. 351 - Optasite Towers LLC and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 93 Lake Street, Manchester, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		May 8, 2008

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Optasite Towers LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 93 Lake Street, Manchester, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Omnipoint Communications, Inc. and other entities, both public and private, but such tower shall not exceed a height of 110 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Manchester for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:

    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and

    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

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

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Manchester public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Manchester. Any proposed modifications to this Decision and Order shall likewise be so served.

9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

10. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND. 2187363

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

LIBERTY MUTUAL INSURANCE COMPANY
BOSTON, MASSACHUSETTS
POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS: That Liberty Mutual Insurance Company (the "Company"), a Massachusetts stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint

MARY ANN MARBURY, BRADLEY T. SENN, MICHAEL A. WALTER, DEBORAH B. BROWN, KENT M. PAGOOTA, BETH K. MCNELLIS, DAYNA M. BETZ, STEPHANIE D. FREEMAN, ALL OF THE CITY OF COLUMBIA, STATE OF MARYLAND

, each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding TWENTY FIVE MILLION AND 00/100********** DOLLARS ($ 25,000,000.00*****) each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article XIII, Section 5 of the By-Laws, Garnet W. Elliott, Assistant Secretary of Liberty Mutual Insurance Company, is hereby authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Liberty Mutual Insurance Company has been affixed thereto in Plymouth Meeting, Pennsylvania this 6th day of August, 2007.

LIBERTY MUTUAL INSURANCE COMPANY

By Garnet W. Elliott
Garnet W. Elliott, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 6th day of August, 2007, before me, a Notary Public, personally came Garnet W. Elliott, to me known, and acknowledged that he is an Assistant Secretary of Liberty Mutual Insurance Company; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Liberty Mutual Insurance Company thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires Mar. 23, 2009
Member, Pennsylvania Association of Notaries

By Teresa Pastella
Teresa Pastella, Notary Public

CERTIFICATE

I, the undersigned, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Assistant Secretary specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article XIII, Section 5 of the By-laws of Liberty Mutual Insurance Company.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Liberty Mutual Insurance Company at a meeting duly called and held on the 12th day of March, 1980.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 21st day of July, 2008.

By David M. Carey
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Fee $ 50.00 Paid ☐ Cash ☒ Check # 5229

PERMIT # 2008184

Issue Date 7/18/08

Town of Manchester
Public Works Department

R.O.W. Permit Application

Engineering Division
494 Main Street
Manchester, CT 06045-0191
(860) 647-3152 Fax# (860) 647-3144
www.ci.manchester.ct.us

Permit Type ☐ Public Works Project (Fee Waived) ☐ Subdivision ☒ Private Development ☐ Utility ☑ Driveway ☐ Other

1-800-922-4455 **CBYD Request No.** 20082801978

Location of Work: St # 93 Street Lake St Working on Side Street? _____

Description of Work: Access to New telecommunications Facility

Start Date: / / (Must be within 30 days of issue Date) **Duration:** _____ (hours/days) **Completion Date** / /

Applicant Name: Eastern Communications ☐ Utility ☐ Engineer ☑ Contractor ☐ Other

Address: 166 Industrial Park Rd **City:** SACO **State:** ME **Zip Code:** 04072

Office # _____ **Fax#** _____ **email:** _____

Field Contact: Steve Slade **cell #** 2072834499 (24 hour Emergency # for response)

Sketch of proposed work or furnish pre-approved drawing

☑ Per Attached Plan

* permit is under Optasite Towers, LLC

Driveway Opening will be per Town Standards
(From edge of pavement to Streetline)
Driveway Apron will be bituminous concrete (4")

I have read the "Rules of ROW Permit" on the reverse side and understand them and agree to abide by them by signing of this Permit.

Applicant's Signature: Steve Slade **Date:** 7/18/08

For Office Use Only

- ☐ Stamped Plans (if needed)
- ☐ New Drive Opening Application Approved (if needed)
- ☐ Insurance on File
- ☐ Bond Amount Calculated (minimum $10,000) & on File
- ☐ All Fees & Fines Paid Up
- ☐ Perm. Pvmt. Repair Size ____ Lx ____ W
- ☐ Depth of Pavement: ____ inches

Approved by: MJC

THIS APPROVED PERMIT MUST ALWAYS BE AVAILABLE AT PERMIT SITE FOR REVIEW BY TOWN PERSONNEL

TOWN OF MANCHESTER
494 MAIN STREET -- P.O. BOX 191
MANCHESTER, CT 06045-0191
(860) 647-3052 FAX: (860) 647-3144

BUILDING PERMIT

PERMIT / APPLICATION NBR: 08002845
PERMIT TYPE: DISHBLDG

DATE APPLIED: 06/23/2008

DESCR OF WORK: Install T-Mobile antenna's - equipment - facility

DATE ISSUED: 07/07/2008

PERMIT NOTES:

PROPERTY ADDRESS: 93 LAKE ST A

OWNER NAME / ADDRESS:

ALAN C ROSSETTO
23 LONGVIEW DR
LANCASTER, NH 03584

NAME / ADDRESS
ERS COMMUNITCATIONS CO
STRAW PARK ROAD

VALUATION:

CB

PERMIT FEE: $2,413
AMOUNT PAID: $2,413.00
RECEIVED BY: gv_PZanetti

wman

THIS PERMIT SHALL BE A LICENSE TO PROCEED WITH THE WORK AND SHALL NOT BE CONSTRUED AS AUTHORITY TO VIOLATE, CANCEL OR SET ASIDE ANY OF THE PROVISIONS OF THIS CODE OR ANY OF THE ORDINANCES. VOID IF WORK NOT COMMENCED WITHIN 180 DAYS.

Daniel J. Loos

APPROVAL SIGNATURE

7/7/2008

DATE

EXHIBIT 7

EME Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00128A

BOBDL00128A
93 Lake Street
Manchester, Connecticut 06042

December 20, 2021

EBI Project Number: 6221007648

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**16.34%**

December 20, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00128A - BOBDL00128A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **93 Lake Street** in **Manchester, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 93 Lake Street in Manchester, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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

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

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

6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 85 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	85 feet	Height (AGL):	85 feet	Height (AGL):	85 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**3.79%**	Antenna B1 MPE %:	**3.79%**	Antenna C1 MPE %:	**3.79%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	3.79%
T-Mobile	6.65%
Clearwire	0.1%
Sprint	5.8%
Site Total MPE % :	16.34%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	3.79%
Dish Wireless Sector B Total:	3.79%
Dish Wireless Sector C Total:	3.79%
Site Total MPE % :	16.34%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	85.0	5.15	600 MHz n71	400	1.29%
Dish Wireless 1900 MHz n70	4	542.70	85.0	12.50	1900 MHz n70	1000	1.25%
Dish Wireless 2190 MHz n66	4	542.70	85.0	12.50	2190 MHz n66	1000	1.25%
						Total:	**3.79%**

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	3.79%
Sector B:	3.79%
Sector C:	3.79%
Dish Wireless Maximum MPE % (Sector A):	3.79%
Site Total:	16.34%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **16.34%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

EXHIBIT 8

Structural Analysis

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

Structural Analysis Report

Existing 109 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13529-A

Customer Site Name: Manchester 1

Carrier Name: Dish Wireless (App#: 167826-1)

Carrier Site ID / Name: BOBDL00128A / 0

Site Location: 93 Lake Street

Manchester, Connecticut

Hartford County

Latitude: 41.789083

Longitude: -72.482083

Exp.10/31/2021

08/31/2021

Analysis Result:

Max Structural Usage: 62.1% [Pass]

Max Foundation Usage: 67.0% [Pass]

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

Report Prepared By: Bishal Pandit

Introduction

The purpose of this report is to summarize the analysis results on the 109 ft SABRE 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	Sabre Towers & Poles (Project No. 09-06160) Structural Design Report dated June 17, 2008.
Foundation Drawing	Sabre Towers & Poles (Project No. 09-06160) Structural Design Report dated June 17, 2008.
Geotechnical Report	Terracon Consulting Engineers & Scientists (Project No. J2085152) Geotechnical Engineering Report dated June 6, 2008.
Modification Drawings	N/A
Mount Analysis	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.178, S_1 = 0.064

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	105.0	3	Ericsson Air 21 B2A/B4P - Panel	Platform w/ Handrails + (1) Kicker Support (MS-KI22-5) (1) Heavy Collar Mount (MS-H1436)	(4) 1 5/8" Fiber (9) 7/8"	T-Mobile
2		3	Ericsson AIR 21 B4A/B2P - Panel			
3		3	RFS APXVAALL24_43-U-NA20 - Panel			
4		3	Ericsson KRY 112 144/1 TMAs			
5		3	Ericsson ETW200VA12UB TMAs			
6		3	Ericsson 4449 B71+B85 RRUs			
7	95.0	3	Nokia AAHC - MIMO	Low Profile Platform w/ HRK (Sitepro RMQP-496-HK)	(2) 1/2" (3) 1-1/4" Fiber (1) 1.689" Fiber	Sprint Nextel
8		3	Commscope NNVV-65B-R4			
9		2	Andrew - VHLP2.5-11 - Dish			
10		3	ALU 1900 Mhz RRUs			
11		6	ALU 800 Mhz RRUs			
12		3	ALU TD-RRH8x20-25 RRUs			

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
13	85.0	3	JMA Wireless - MX08FRO665-21 - Panel	(1) Commscope MC-PK8-DSH (Platform w/ Handrails)	(1) 1.411" Hybrid	Dish Wireless
14		3	Fujitsu - TA08025-B605 - RRU			
15		3	Fujitsu - TA08025-B604 - RRU			
16		1	Raycap RDIDC-9181-PF-48			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**59.5%**	**62.1%**	**51.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	1913.7	22.9	29.4

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.8395 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 59.50% at 0.0ft

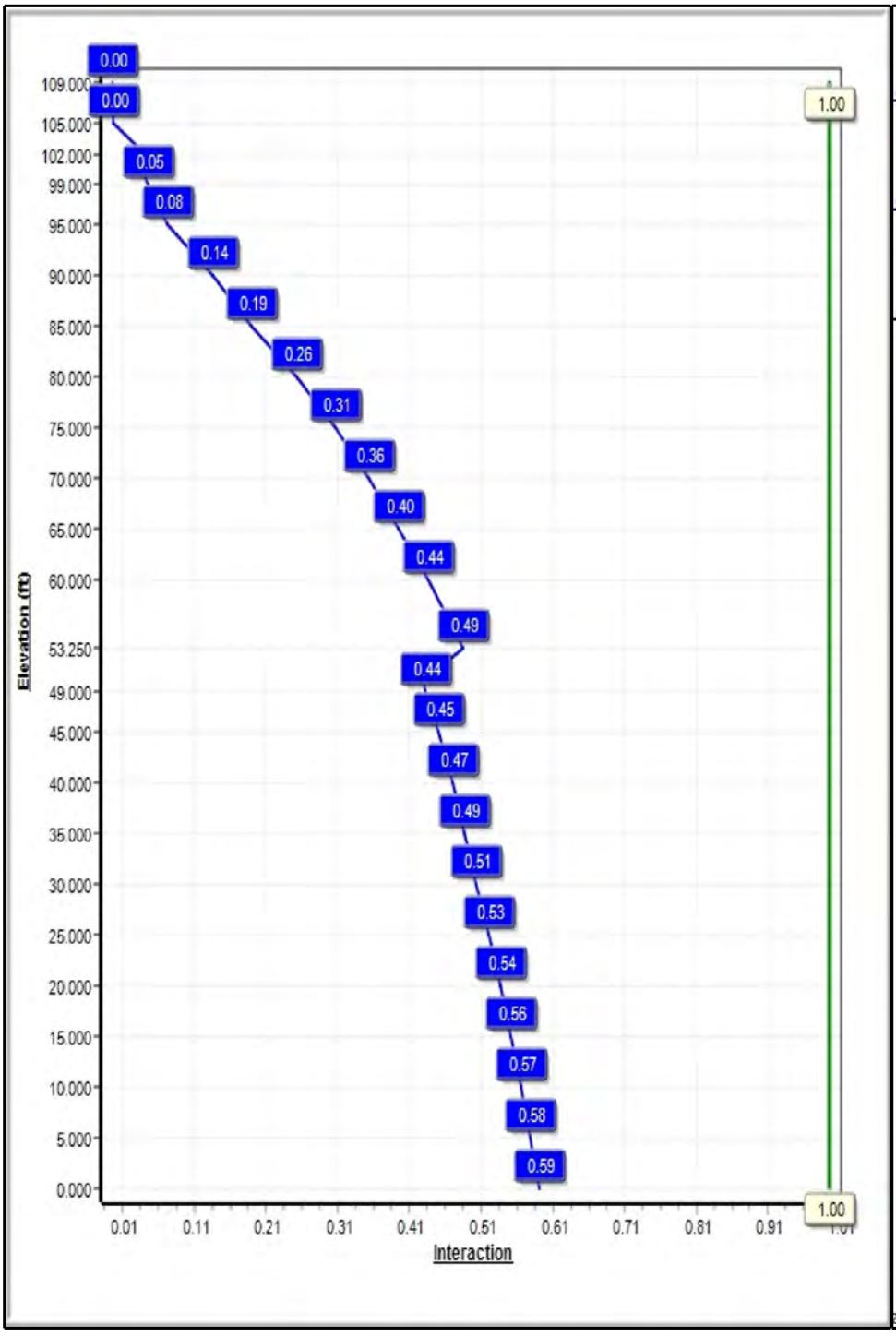
Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1	**Exposure:**	C	
Height:	109.00 (ft)	**Gh:**	1.1	
Base Elev:	1.000 (ft)			Page: 1

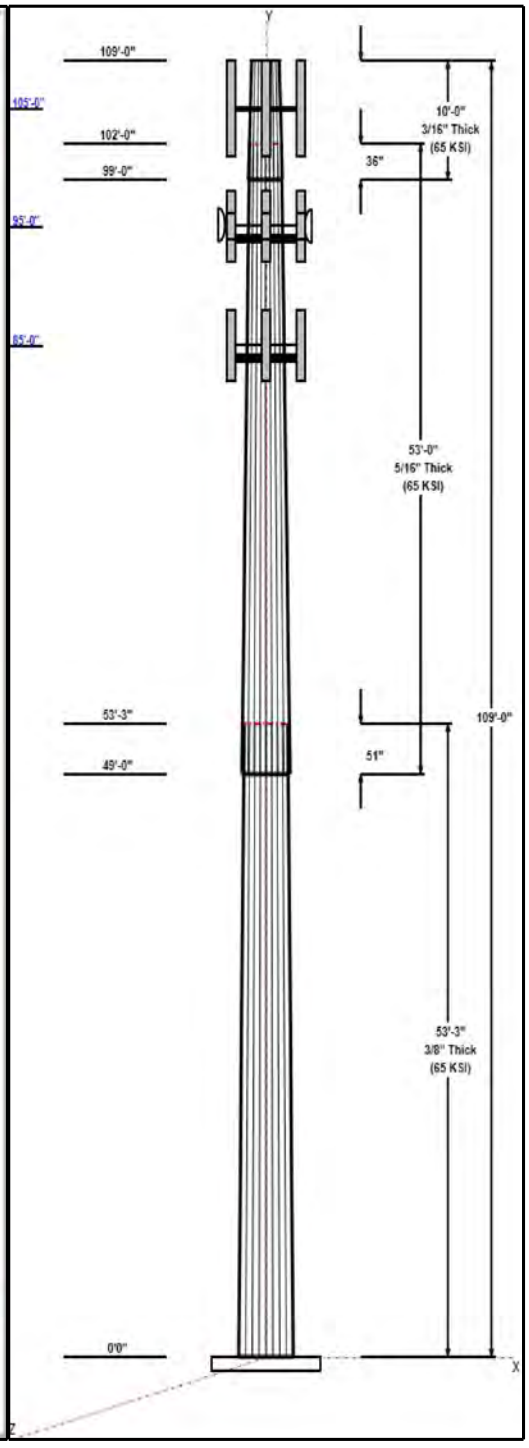
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 97 mph Wind

Iterations: 20





Structure: CT13529-A-SBA

Type: Tapered
Site Name: Manchester 1
Height: 109.00 (ft)
Base Elev: 1.00 (ft)

Base Shape: 18 Sided
Taper: 0.20697

8/31/2021

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	32.68	43.70	0.375		0.20697	65
2	53.00	23.21	34.18	0.313	Slip	0.20697	65
3	10.00	22.14	24.21	0.188	Slip	0.20697	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
105.00	105.00	3	Ericsson Air 21 B2A/B4P	T-Mobile
105.00	105.00	3	Ericsson AIR 21 B4A/B2P	T-Mobile
105.00	105.00	3	RFS	T-Mobile
105.00	105.00	3	Ericsson KRY 112 144/1	T-Mobile
105.00	105.00	3	Ericsson ETW200VA12UB	T-Mobile
105.00	105.00	3	Ericsson 4449 B71+B85	T-Mobile
105.00	105.00	1	Platform w/ Hand Rails	T-Mobile
105.00	105.00	1	MS-KI22-5 (Kickers w/	T-Mobile
95.00	95.00	2	VHLP2.5-11	Sprint Nextel
95.00	95.00	3	Nokia AAHC - MIMO	Sprint Nextel
95.00	95.00	3	Commscope	Sprint Nextel
95.00	95.00	1	RMQP-496-HK	Sprint Nextel
95.00	95.00	3	ALU 1900 Mhz RRUs	Sprint Nextel
95.00	95.00	6	ALU 800 Mhz RRUs	Sprint Nextel
95.00	95.00	3	ALU TD-RRH8x20-25	Sprint Nextel
85.00	85.00	3	MX08FRO665-21	Dish Wireless
85.00	85.00	1	MC-PK8-DSH	Dish Wireless
85.00	85.00	3	TA08025-B605	Dish Wireless
85.00	85.00	3	TA08025-B604	Dish Wireless
85.00	85.00	1	RDIDC-9181-PF-48	Dish Wireless

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	105.00	Inside	1 5/8" Fiber	T-Mobile
0.00	105.00	Inside	7/8" Coax	T-Mobile
0.00	95.00	Inside	1-1/4" fiber	Sprint Nextel
0.00	95.00	Inside	1.689" Fiber	Sprint Nextel
0.00	95.00	Inside	1/2"	Sprint Nextel
0.00	85.00	Inside	1.411" Hybrid	Dish Wireless

Anchor Bolts

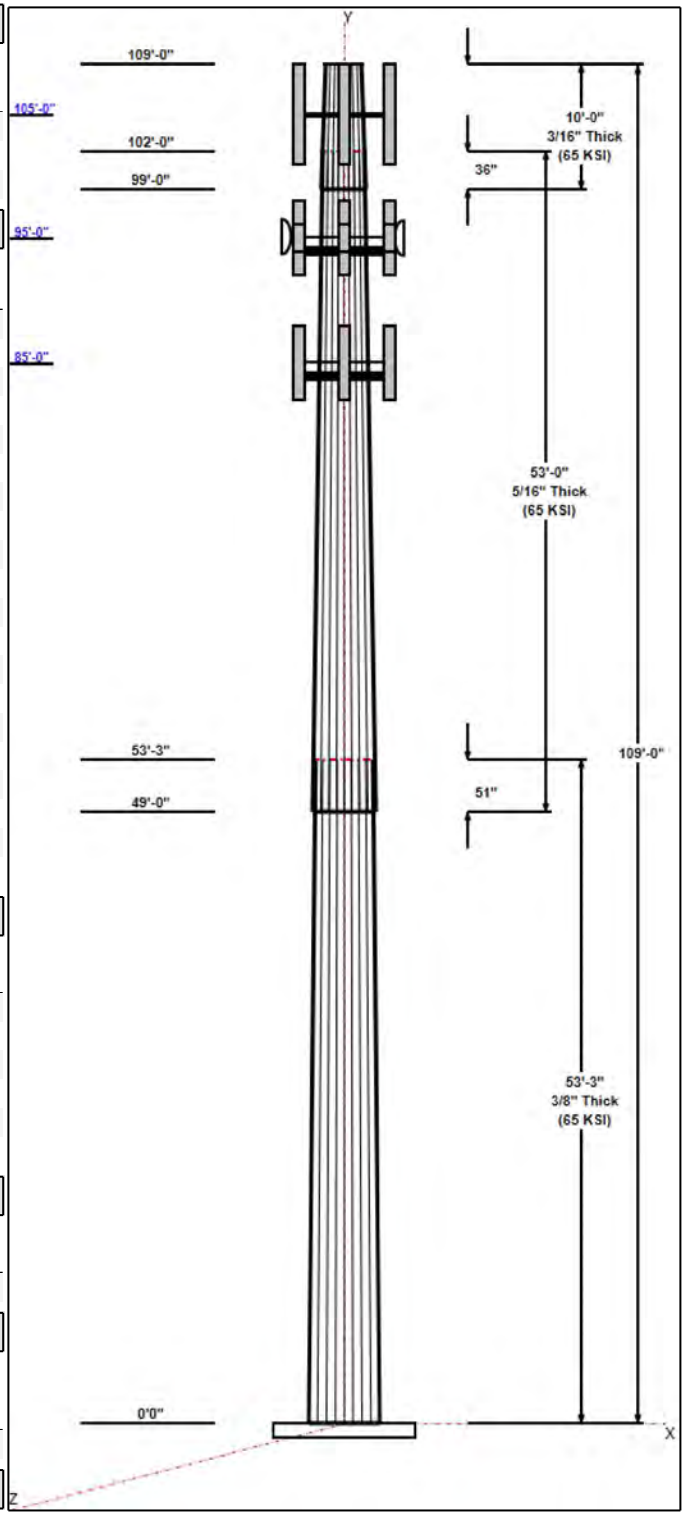
Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	49.0	60.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	1913.7	22.9	29.4
0.9D + 1.6W 97 mph Wind	1897.9	22.9	22.0
1.2D + 1.0Di + 1.0Wi 50 mph Wind	570.6	6.8	53.2

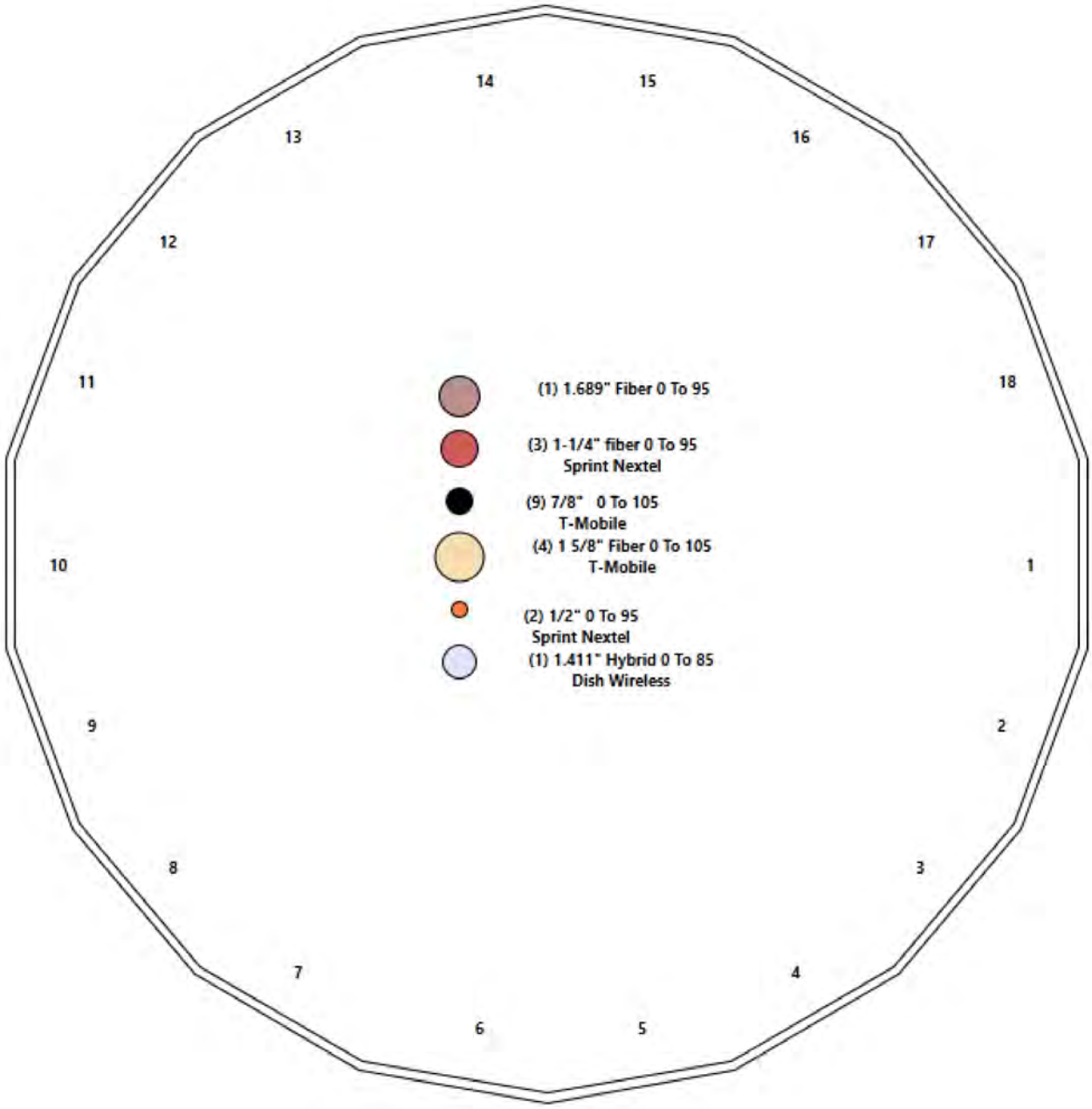


1.2D + 1.0E	127.4	1.4	29.5
0.9D + 1.0E	126.3	1.4	22.1
1.0D + 1.0W 60 mph Wind	455.4	5.5	24.5

Structure: CT13529-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Manchester 1
Height: 109.00 (ft)

8/31/2021



Shaft Properties

Structure:	CT13529-A-SBA		**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1		**Exposure:**	C	
Height:	109.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.250	0.3750	65		0.00	8,155
2	18	53.000	0.3125	65	Slip	51.00	5,078
3	18	10.000	0.1875	65	Slip	36.00	465
					Total Shaft Weight:		**13,698**

	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	43.70	0.00	51.57	12229.01	19.14	116.53	32.68	53.25	38.45	5069.13	13.96	87.14	0.206972
2	34.18	49.00	33.59	4869.37	17.88	109.39	23.21	102.00	22.71	1505.13	11.69	74.28	0.206972
3	24.21	99.00	14.30	1042.28	21.36	129.12	22.14	109.00	13.06	795.42	19.41	118.0	0.206972

Load Summary

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

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	105.00	Ericsson Air 21 B2A/B4P	3	91.50	6.09	0.86	321.29	7.530	0.86	0.00	0.00
2	105.00	Ericsson AIR 21 B4A/B2P	3	90.30	6.09	0.87	320.16	7.571	0.87	0.00	0.00
3	105.00	RFS APXVAALL24_43-U-NA20	3	128.00	20.24	0.70	686.09	22.713	0.70	0.00	0.00
4	105.00	Ericsson KRY 112 144/1 TMAs	3	11.00	0.41	0.70	24.88	1.022	0.70	0.00	0.00
5	105.00	Ericsson ETW200VA12UB TMAs	3	11.00	0.47	0.74	26.80	1.123	0.75	0.00	0.00
6	105.00	Ericsson 4449 B71+B85 RRUs	3	70.00	1.65	0.67	164.55	2.364	0.67	0.00	0.00
7	105.00	Platform w/ Hand Rails (flat)	1	2000.00	40.00	1.00	4697.06	66.971	1.00	0.00	0.00
8	105.00	MS-KI22-5 (Kickers w/ Collar)	1	146.00	8.00	1.00	408.51	18.788	1.00	0.00	0.00
9	95.00	VHLP2.5-11	2	47.60	8.43	1.00	267.80	10.606	1.00	0.00	0.00
10	95.00	Nokia AAHC - MIMO	3	104.00	4.20	0.75	277.57	5.279	0.75	0.00	0.00
11	95.00	Commscope NNVV-65B-R4	3	77.40	12.27	0.74	441.53	14.127	0.74	0.00	0.00
12	95.00	RMQP-496-HK	1	2449.00	48.00	1.00	5718.98	90.727	1.00	0.00	0.00
13	95.00	ALU 1900 Mhz RRUs	3	60.00	2.71	0.67	162.97	4.321	0.67	0.00	0.00
14	95.00	ALU 800 Mhz RRUs	6	53.00	2.49	0.67	147.31	3.948	0.67	0.00	0.00
15	95.00	ALU TD-RRH8x20-25 RRUs	3	70.00	4.05	0.67	219.07	5.109	0.67	0.00	0.00
16	85.00	MX08FRO665-21	3	64.50	12.49	0.74	431.34	14.337	0.74	0.00	0.00
17	85.00	MC-PK8-DSH	1	1727.00	37.59	1.00	3855.67	97.161	1.00	0.00	0.00
18	85.00	TA08025-B605	3	75.00	1.96	0.67	140.97	2.668	0.67	0.00	0.00
19	85.00	TA08025-B604	3	63.90	1.96	0.67	127.75	2.668	0.67	0.00	0.00
20	85.00	RDIDC-9181-PF-48	1	21.90	2.01	1.00	89.06	2.727	1.00	0.00	0.00
		Totals:	**52**	**9,506.90**			**26,223.69**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
0.00	105.00	(4) 1 5/8" Fiber	0.00	Inside
0.00	105.00	(9) 7/8" Coax	0.00	Inside
0.00	95.00	(3) 1-1/4" fiber	0.00	Inside
0.00	95.00	(1) 1.689" Fiber	0.00	Inside
0.00	95.00	(2) 1/2"	0.00	Inside
0.00	85.00	(1) 1.411" Hybrid	0.00	Inside

Shaft Section Properties

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

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	43.700	51.566	12229.0	19.14	116.53	78.9	551.2	0.0
5.00		0.3750	42.665	50.334	11373.5	18.65	113.77	79.5	525.1	866.9
10.00		0.3750	41.630	49.102	10558.8	18.16	111.01	80.0	499.6	845.9
15.00		0.3750	40.595	47.871	9784.0	17.68	108.25	80.6	474.7	824.9
20.00		0.3750	39.561	46.639	9048.0	17.19	105.49	81.2	450.5	804.0
25.00		0.3750	38.526	45.407	8349.9	16.70	102.74	81.8	426.9	783.0
30.00		0.3750	37.491	44.176	7688.7	16.22	99.98	82.3	403.9	762.1
35.00		0.3750	36.456	42.944	7063.3	15.73	97.22	82.6	381.6	741.1
40.00		0.3750	35.421	41.712	6472.8	15.24	94.46	82.6	359.9	720.2
45.00		0.3750	34.386	40.480	5916.2	14.76	91.70	82.6	338.9	699.2
49.00	Bot - Section 2	0.3750	33.558	39.495	5494.6	14.37	89.49	82.6	322.5	544.3
50.00		0.3750	33.351	39.249	5392.4	14.27	88.94	82.6	318.5	247.9
53.25	Top - Section 1	0.3125	33.304	32.722	4499.8	17.38	106.57	0.0	0.0	795.2
55.00		0.3125	32.942	32.363	4353.2	17.18	105.41	81.2	260.3	193.8
60.00		0.3125	31.907	31.336	3952.0	16.59	102.10	81.9	244.0	541.9
65.00		0.3125	30.872	30.310	3576.2	16.01	98.79	82.6	228.2	524.4
70.00		0.3125	29.837	29.283	3225.1	15.42	95.48	82.6	212.9	507.0
75.00		0.3125	28.802	28.257	2897.7	14.84	92.17	82.6	198.2	489.5
80.00		0.3125	27.767	27.231	2593.3	14.26	88.86	82.6	183.9	472.0
85.00		0.3125	26.732	26.204	2310.9	13.67	85.54	82.6	170.3	454.6
90.00		0.3125	25.697	25.178	2049.9	13.09	82.23	82.6	157.1	437.1
95.00		0.3125	24.663	24.151	1809.2	12.51	78.92	82.6	144.5	419.6
99.00	Bot - Section 3	0.3125	23.835	23.330	1630.9	12.04	76.27	82.6	134.8	323.1
100.00		0.3125	23.628	23.125	1588.2	11.92	75.61	82.6	132.4	127.5
102.00	Top - Section 2	0.1875	23.589	13.926	963.5	20.77	125.81	0.0	0.0	251.6
105.00		0.1875	22.968	13.557	888.9	20.19	122.50	77.7	76.2	140.3
109.00		0.1875	22.140	13.064	795.4	19.41	118.08	78.6	70.8	181.2
										13698.2

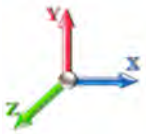
Wind Loading - Shaft

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	330.70	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	322.87	0.650	0.000	5.00	18.270	11.88	406.5	0.0	1040.2
10.00		1.00	0.85	19.450	21.40	315.03	0.650	0.000	5.00	17.832	11.59	396.8	0.0	1015.1
15.00		1.00	0.86	19.690	21.66	309.09	0.650	0.000	5.00	17.395	11.31	391.8	0.0	989.9
20.00		1.00	0.91	20.851	22.94	309.96	0.650	0.000	5.00	16.957	11.02	404.5	0.0	964.8
25.00		1.00	0.95	21.810	23.99	308.72	0.650	0.000	5.00	16.519	10.74	412.1	0.0	939.6
30.00		1.00	0.99	22.632	24.90	306.04	0.650	0.000	5.00	16.081	10.45	416.4	0.0	914.5
35.00		1.00	1.02	23.356	25.69	302.31	0.650	0.000	5.00	15.643	10.17	418.0	0.0	889.3
40.00		1.00	1.05	24.004	26.40	297.78	0.650	0.000	5.00	15.205	9.88	417.6	0.0	864.2
45.00		1.00	1.07	24.593	27.05	292.60	0.650	0.000	5.00	14.768	9.60	415.5	0.0	839.0
49.00	Bot - Section 2	1.00	1.09	25.029	27.53	288.07	0.650	0.000	4.00	11.499	7.47	329.2	0.0	653.1
50.00		1.00	1.10	25.133	27.65	286.89	0.650	0.000	1.00	2.884	1.87	82.9	0.0	297.5
53.25	Top - Section 1	1.00	1.11	25.462	28.01	282.94	0.650	0.000	3.25	9.251	6.01	269.5	0.0	954.2
55.00		1.00	1.12	25.633	28.20	286.17	0.650	0.000	1.75	4.905	3.19	143.8	0.0	232.5
60.00		1.00	1.14	26.099	28.71	279.69	0.650	0.000	5.00	13.718	8.92	409.6	0.0	650.3
65.00		1.00	1.16	26.535	29.19	272.87	0.650	0.000	5.00	13.281	8.63	403.1	0.0	629.3
70.00		1.00	1.18	26.946	29.64	265.76	0.650	0.000	5.00	12.843	8.35	395.9	0.0	608.3
75.00		1.00	1.19	27.335	30.07	258.39	0.650	0.000	5.00	12.405	8.06	387.9	0.0	587.4
80.00		1.00	1.21	27.704	30.47	250.78	0.650	0.000	5.00	11.967	7.78	379.3	0.0	566.4
85.00	Appurtenance(s)	1.00	1.23	28.056	30.86	242.96	0.650	0.000	5.00	11.529	7.49	370.0	0.0	545.5
90.00		1.00	1.24	28.391	31.23	234.95	0.650	0.000	5.00	11.091	7.21	360.2	0.0	524.5
95.00	Appurtenance(s)	1.00	1.25	28.713	31.58	226.76	0.650	0.000	5.00	10.654	6.92	349.9	0.0	503.6
99.00	Bot - Section 3	1.00	1.27	28.961	31.86	220.09	0.650	0.000	4.00	8.208	5.33	271.9	0.0	387.8
100.00		1.00	1.27	29.021	31.92	218.41	0.650	0.000	1.00	2.040	1.33	67.7	0.0	153.0
102.00	Top - Section 2	1.00	1.27	29.142	32.06	215.02	0.650	0.000	2.00	4.027	2.62	134.3	0.0	301.9
105.00	Appurtenance(s)	1.00	1.28	29.318	32.25	213.39	0.650	0.000	3.00	5.909	3.84	198.2	0.0	168.3
109.00		1.00	1.29	29.548	32.50	206.50	0.650	0.000	4.00	7.634	4.96	258.0	0.0	217.4
								Totals:	**109.00**			**8,490.8**		**16,437.9**

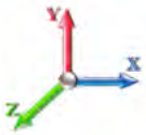
Discrete Appurtenance Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

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	105.00	Platform w/ Hand Rails	1	29.318	32.250	1.00	1.00	40.00	2400.00	0.000	0.000	2064.00	0.00	0.00
2	105.00	Ericsson 4449 B71+B85	3	29.318	32.250	0.50	0.75	2.49	252.00	0.000	0.000	128.35	0.00	0.00
3	105.00	Ericsson ETW200VA12UB	3	29.318	32.250	0.55	0.75	0.78	39.60	0.000	0.000	40.38	0.00	0.00
4	105.00	Ericsson KRY 112 144/1	3	29.318	32.250	0.52	0.75	0.65	39.60	0.000	0.000	33.32	0.00	0.00
5	105.00	RFS	3	29.318	32.250	0.52	0.75	31.88	460.80	0.000	0.000	1644.91	0.00	0.00
6	105.00	Ericsson AIR 21 B4A/B2P	3	29.318	32.250	0.65	0.75	11.92	325.08	0.000	0.000	615.13	0.00	0.00
7	105.00	Ericsson Air 21 B2A/B4P	3	29.318	32.250	0.65	0.75	11.78	329.40	0.000	0.000	608.06	0.00	0.00
8	105.00	MS-KI22-5 (Kickers w/	1	29.318	32.250	1.00	1.00	8.00	175.20	0.000	0.000	412.80	0.00	0.00
9	95.00	ALU 800 Mhz RRUs	6	28.713	31.584	0.50	0.75	7.51	381.60	0.000	0.000	379.38	0.00	0.00
10	95.00	ALU TD-RRH8x20-25	3	28.713	31.584	0.50	0.75	6.11	252.00	0.000	0.000	308.53	0.00	0.00
11	95.00	ALU 1900 Mhz RRUs	3	28.713	31.584	0.50	0.75	4.09	216.00	0.000	0.000	206.45	0.00	0.00
12	95.00	VHLP2.5-11	2	28.713	31.584	1.00	1.00	16.86	114.24	0.000	0.000	852.02	0.00	0.00
13	95.00	RMQP-496-HK	1	28.713	31.584	1.00	1.00	48.00	2938.80	0.000	0.000	2425.67	0.00	0.00
14	95.00	Commscope	3	28.713	31.584	0.55	0.75	20.43	278.64	0.000	0.000	1032.40	0.00	0.00
15	95.00	Nokia AAHC - MIMO	3	28.713	31.584	0.56	0.75	7.09	374.40	0.000	0.000	358.17	0.00	0.00
16	85.00	RDIDC-9181-PF-48	1	28.056	30.861	0.75	0.75	1.51	26.28	0.000	0.000	74.44	0.00	0.00
17	85.00	TA08025-B604	3	28.056	30.861	0.50	0.75	2.95	230.04	0.000	0.000	145.90	0.00	0.00
18	85.00	TA08025-B605	3	28.056	30.861	0.50	0.75	2.95	270.00	0.000	0.000	145.90	0.00	0.00
19	85.00	MC-PK8-DSH	1	28.056	30.861	1.00	1.00	37.59	2072.40	0.000	0.000	1856.12	0.00	0.00
20	85.00	MX08FRO665-21	3	28.056	30.861	0.55	0.75	20.80	232.20	0.000	0.000	1026.86	0.00	0.00
							Totals:		**11,408.28**			**14,358.78**		

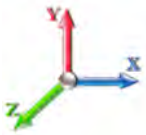
Total Applied Force Summary

Structure:	CT13529-A-SBA		**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1		**Exposure:**	C	
Height:	109.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

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		406.53	1119.91	0.00	0.00
10.00		396.79	1094.76	0.00	0.00
15.00		391.83	1069.61	0.00	0.00
20.00		404.47	1044.46	0.00	0.00
25.00		412.15	1019.32	0.00	0.00
30.00		416.36	994.17	0.00	0.00
35.00		417.98	969.02	0.00	0.00
40.00		417.56	943.88	0.00	0.00
45.00		415.48	918.73	0.00	0.00
49.00		329.24	716.88	0.00	0.00
50.00		82.92	313.46	0.00	0.00
53.25		269.48	1006.02	0.00	0.00
55.00		143.83	260.43	0.00	0.00
60.00		409.59	729.94	0.00	0.00
65.00		403.15	708.99	0.00	0.00
70.00		395.90	688.03	0.00	0.00
75.00		387.92	667.07	0.00	0.00
80.00		379.28	646.12	0.00	0.00
85.00	(11) attachments	3619.24	3456.08	0.00	0.00
90.00		360.25	597.37	0.00	0.00
95.00	(21) attachments	5912.56	5132.09	0.00	0.00
99.00		271.93	430.20	0.00	0.00
100.00		67.72	163.58	0.00	0.00
102.00		134.26	323.13	0.00	0.00
105.00	(20) attachments	5745.15	4221.84	0.00	0.00
109.00		258.05	217.40	0.00	0.00
	Totals:	**22,849.60**	**29,452.47**	**0.00**	**0.00**

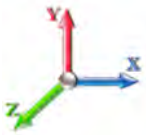
Calculated Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

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	-29.41	-22.91	0.00	-1913.7	0.00	1913.71	3661.29	1830.65	6512.81	3261.25	0.00	0.000	0.000	0.595
5.00	-28.20	-22.60	0.00	-1799.1	0.00	1799.19	3599.77	1799.88	6249.10	3129.20	0.12	-0.216	0.000	0.583
10.00	-27.03	-22.30	0.00	-1686.1	0.00	1686.17	3536.97	1768.49	5988.52	2998.71	0.46	-0.434	0.000	0.570
15.00	-25.88	-22.00	0.00	-1574.6	0.00	1574.65	3472.90	1736.45	5731.22	2869.87	1.03	-0.654	0.000	0.556
20.00	-24.75	-21.68	0.00	-1464.6	0.00	1464.64	3407.57	1703.79	5477.38	2742.76	1.84	-0.875	0.000	0.541
25.00	-23.66	-21.34	0.00	-1356.2	0.00	1356.25	3340.97	1670.48	5227.15	2617.46	2.87	-1.096	0.000	0.525
30.00	-22.59	-20.99	0.00	-1249.5	0.00	1249.55	3273.10	1636.55	4980.70	2494.05	4.14	-1.318	0.000	0.508
35.00	-21.55	-20.63	0.00	-1144.5	0.00	1144.59	3190.51	1595.26	4718.31	2362.66	5.64	-1.540	0.000	0.491
40.00	-20.55	-20.27	0.00	-1041.4	0.00	1041.43	3099.00	1549.50	4450.18	2228.40	7.37	-1.760	0.000	0.474
45.00	-19.57	-19.89	0.00	-940.09	0.00	940.09	3007.49	1503.75	4189.89	2098.06	9.33	-1.978	0.000	0.455
49.00	-18.83	-19.57	0.00	-860.54	0.00	860.54	2934.29	1467.14	3987.31	1996.62	11.06	-2.151	0.000	0.438
50.00	-18.49	-19.50	0.00	-840.97	0.00	840.97	2915.98	1457.99	3937.45	1971.65	11.52	-2.195	0.000	0.433
53.25	-17.46	-19.23	0.00	-777.58	0.00	777.58	2384.18	1192.09	3226.87	1615.83	13.06	-2.334	0.000	0.489
55.00	-17.16	-19.12	0.00	-743.94	0.00	743.94	2365.01	1182.50	3165.45	1585.08	13.93	-2.408	0.000	0.477
60.00	-16.37	-18.74	0.00	-648.34	0.00	648.34	2309.37	1154.68	2992.01	1498.23	16.57	-2.636	0.000	0.440
65.00	-15.62	-18.36	0.00	-554.64	0.00	554.64	2251.87	1125.94	2821.03	1412.61	19.45	-2.852	0.000	0.400
70.00	-14.89	-17.98	0.00	-462.83	0.00	462.83	2175.62	1087.81	2632.26	1318.09	22.55	-3.055	0.000	0.358
75.00	-14.19	-17.60	0.00	-372.92	0.00	372.92	2099.36	1049.68	2450.04	1226.84	25.85	-3.239	0.000	0.311
80.00	-13.52	-17.22	0.00	-284.92	0.00	284.92	2023.10	1011.55	2274.35	1138.87	29.33	-3.400	0.000	0.257
85.00	-10.27	-13.42	0.00	-198.83	0.00	198.83	1946.84	973.42	2105.20	1054.16	32.96	-3.533	0.000	0.194
90.00	-9.67	-13.04	0.00	-131.73	0.00	131.73	1870.59	935.29	1942.58	972.73	36.72	-3.635	0.000	0.141
95.00	-4.92	-6.81	0.00	-66.56	0.00	66.56	1794.33	897.16	1786.50	894.58	40.57	-3.704	0.000	0.077
99.00	-4.51	-6.51	0.00	-39.31	0.00	39.31	1733.32	866.66	1666.34	834.41	43.68	-3.737	0.000	0.050
100.00	-4.35	-6.44	0.00	-32.80	0.00	32.80	1718.07	859.04	1636.96	819.69	44.47	-3.743	0.000	0.043
102.00	-4.04	-6.28	0.00	-19.93	0.00	19.93	964.69	482.34	927.47	464.42	46.04	-3.753	0.000	0.047
105.00	-0.20	-0.27	0.00	-1.09	0.00	1.09	947.47	473.74	886.56	443.94	48.39	-3.759	0.000	0.003
109.00	0.00	-0.26	0.00	0.00	0.00	0.00	923.81	461.90	832.74	416.99	51.54	-3.759	0.000	0.000

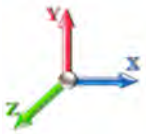
Wind Loading - Shaft

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	330.70	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	322.87	0.650	0.000	5.00	18.270	11.88	406.5	0.0	780.2
10.00		1.00	0.85	19.450	21.40	315.03	0.650	0.000	5.00	17.832	11.59	396.8	0.0	761.3
15.00		1.00	0.86	19.690	21.66	309.09	0.650	0.000	5.00	17.395	11.31	391.8	0.0	742.4
20.00		1.00	0.91	20.851	22.94	309.96	0.650	0.000	5.00	16.957	11.02	404.5	0.0	723.6
25.00		1.00	0.95	21.810	23.99	308.72	0.650	0.000	5.00	16.519	10.74	412.1	0.0	704.7
30.00		1.00	0.99	22.632	24.90	306.04	0.650	0.000	5.00	16.081	10.45	416.4	0.0	685.9
35.00		1.00	1.02	23.356	25.69	302.31	0.650	0.000	5.00	15.643	10.17	418.0	0.0	667.0
40.00		1.00	1.05	24.004	26.40	297.78	0.650	0.000	5.00	15.205	9.88	417.6	0.0	648.1
45.00		1.00	1.07	24.593	27.05	292.60	0.650	0.000	5.00	14.768	9.60	415.5	0.0	629.3
49.00	Bot - Section 2	1.00	1.09	25.029	27.53	288.07	0.650	0.000	4.00	11.499	7.47	329.2	0.0	489.8
50.00		1.00	1.10	25.133	27.65	286.89	0.650	0.000	1.00	2.884	1.87	82.9	0.0	223.1
53.25	Top - Section 1	1.00	1.11	25.462	28.01	282.94	0.650	0.000	3.25	9.251	6.01	269.5	0.0	715.7
55.00		1.00	1.12	25.633	28.20	286.17	0.650	0.000	1.75	4.905	3.19	143.8	0.0	174.4
60.00		1.00	1.14	26.099	28.71	279.69	0.650	0.000	5.00	13.718	8.92	409.6	0.0	487.7
65.00		1.00	1.16	26.535	29.19	272.87	0.650	0.000	5.00	13.281	8.63	403.1	0.0	472.0
70.00		1.00	1.18	26.946	29.64	265.76	0.650	0.000	5.00	12.843	8.35	395.9	0.0	456.3
75.00		1.00	1.19	27.335	30.07	258.39	0.650	0.000	5.00	12.405	8.06	387.9	0.0	440.5
80.00		1.00	1.21	27.704	30.47	250.78	0.650	0.000	5.00	11.967	7.78	379.3	0.0	424.8
85.00	Appurtenance(s)	1.00	1.23	28.056	30.86	242.96	0.650	0.000	5.00	11.529	7.49	370.0	0.0	409.1
90.00		1.00	1.24	28.391	31.23	234.95	0.650	0.000	5.00	11.091	7.21	360.2	0.0	393.4
95.00	Appurtenance(s)	1.00	1.25	28.713	31.58	226.76	0.650	0.000	5.00	10.654	6.92	349.9	0.0	377.7
99.00	Bot - Section 3	1.00	1.27	28.961	31.86	220.09	0.650	0.000	4.00	8.208	5.33	271.9	0.0	290.8
100.00		1.00	1.27	29.021	31.92	218.41	0.650	0.000	1.00	2.040	1.33	67.7	0.0	114.7
102.00	Top - Section 2	1.00	1.27	29.142	32.06	215.02	0.650	0.000	2.00	4.027	2.62	134.3	0.0	226.4
105.00	Appurtenance(s)	1.00	1.28	29.318	32.25	213.39	0.650	0.000	3.00	5.909	3.84	198.2	0.0	126.2
109.00		1.00	1.29	29.548	32.50	206.50	0.650	0.000	4.00	7.634	4.96	258.0	0.0	163.1
								Totals:	**109.00**			**8,490.8**		**12,328.4**

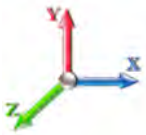
Discrete Appurtenance Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

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	105.00	Platform w/ Hand Rails	1	29.318	32.250	1.00	1.00	40.00	1800.00	0.000	0.000	2064.00	0.00	0.00
2	105.00	Ericsson 4449 B71+B85	3	29.318	32.250	0.50	0.75	2.49	189.00	0.000	0.000	128.35	0.00	0.00
3	105.00	Ericsson ETW200VA12UB	3	29.318	32.250	0.55	0.75	0.78	29.70	0.000	0.000	40.38	0.00	0.00
4	105.00	Ericsson KRY 112 144/1	3	29.318	32.250	0.52	0.75	0.65	29.70	0.000	0.000	33.32	0.00	0.00
5	105.00	RFS	3	29.318	32.250	0.52	0.75	31.88	345.60	0.000	0.000	1644.91	0.00	0.00
6	105.00	Ericsson AIR 21 B4A/B2P	3	29.318	32.250	0.65	0.75	11.92	243.81	0.000	0.000	615.13	0.00	0.00
7	105.00	Ericsson Air 21 B2A/B4P	3	29.318	32.250	0.65	0.75	11.78	247.05	0.000	0.000	608.06	0.00	0.00
8	105.00	MS-KI22-5 (Kickers w/	1	29.318	32.250	1.00	1.00	8.00	131.40	0.000	0.000	412.80	0.00	0.00
9	95.00	ALU 800 Mhz RRUs	6	28.713	31.584	0.50	0.75	7.51	286.20	0.000	0.000	379.38	0.00	0.00
10	95.00	ALU TD-RRH8x20-25	3	28.713	31.584	0.50	0.75	6.11	189.00	0.000	0.000	308.53	0.00	0.00
11	95.00	ALU 1900 Mhz RRUs	3	28.713	31.584	0.50	0.75	4.09	162.00	0.000	0.000	206.45	0.00	0.00
12	95.00	VHLP2.5-11	2	28.713	31.584	1.00	1.00	16.86	85.68	0.000	0.000	852.02	0.00	0.00
13	95.00	RMQP-496-HK	1	28.713	31.584	1.00	1.00	48.00	2204.10	0.000	0.000	2425.67	0.00	0.00
14	95.00	Commscope	3	28.713	31.584	0.55	0.75	20.43	208.98	0.000	0.000	1032.40	0.00	0.00
15	95.00	Nokia AAHC - MIMO	3	28.713	31.584	0.56	0.75	7.09	280.80	0.000	0.000	358.17	0.00	0.00
16	85.00	RDIDC-9181-PF-48	1	28.056	30.861	0.75	0.75	1.51	19.71	0.000	0.000	74.44	0.00	0.00
17	85.00	TA08025-B604	3	28.056	30.861	0.50	0.75	2.95	172.53	0.000	0.000	145.90	0.00	0.00
18	85.00	TA08025-B605	3	28.056	30.861	0.50	0.75	2.95	202.50	0.000	0.000	145.90	0.00	0.00
19	85.00	MC-PK8-DSH	1	28.056	30.861	1.00	1.00	37.59	1554.30	0.000	0.000	1856.12	0.00	0.00
20	85.00	MX08FRO665-21	3	28.056	30.861	0.55	0.75	20.80	174.15	0.000	0.000	1026.86	0.00	0.00
							Totals:		**8,556.21**			**14,358.78**		

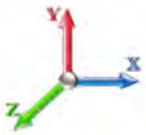
Total Applied Force Summary

Structure:	CT13529-A-SBA		**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1		**Exposure:**	C	
Height:	109.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

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		406.53	839.93	0.00	0.00
10.00		396.79	821.07	0.00	0.00
15.00		391.83	802.21	0.00	0.00
20.00		404.47	783.35	0.00	0.00
25.00		412.15	764.49	0.00	0.00
30.00		416.36	745.63	0.00	0.00
35.00		417.98	726.77	0.00	0.00
40.00		417.56	707.91	0.00	0.00
45.00		415.48	689.05	0.00	0.00
49.00		329.24	537.66	0.00	0.00
50.00		82.92	235.10	0.00	0.00
53.25		269.48	754.51	0.00	0.00
55.00		143.83	195.32	0.00	0.00
60.00		409.59	547.46	0.00	0.00
65.00		403.15	531.74	0.00	0.00
70.00		395.90	516.02	0.00	0.00
75.00		387.92	500.30	0.00	0.00
80.00		379.28	484.59	0.00	0.00
85.00	(11) attachments	3619.24	2592.06	0.00	0.00
90.00		360.25	448.02	0.00	0.00
95.00	(21) attachments	5912.56	3849.07	0.00	0.00
99.00		271.93	322.65	0.00	0.00
100.00		67.72	122.68	0.00	0.00
102.00		134.26	242.35	0.00	0.00
105.00	(20) attachments	5745.15	3166.38	0.00	0.00
109.00		258.05	163.05	0.00	0.00
	Totals:	**22,849.60**	**22,089.35**	**0.00**	**0.00**

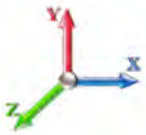
Calculated Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

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	-22.05	-22.89	0.00	-1897.9	0.00	1897.90	3661.29	1830.65	6512.81	3261.25	0.00	0.000	0.000	0.588
5.00	-21.12	-22.56	0.00	-1783.4	0.00	1783.44	3599.77	1799.88	6249.10	3129.20	0.12	-0.214	0.000	0.576
10.00	-20.22	-22.24	0.00	-1670.6	0.00	1670.63	3536.97	1768.49	5988.52	2998.71	0.46	-0.430	0.000	0.563
15.00	-19.34	-21.91	0.00	-1559.4	0.00	1559.45	3472.90	1736.45	5731.22	2869.87	1.02	-0.648	0.000	0.549
20.00	-18.48	-21.57	0.00	-1449.8	0.00	1449.89	3407.57	1703.79	5477.38	2742.76	1.82	-0.866	0.000	0.534
25.00	-17.64	-21.21	0.00	-1342.0	0.00	1342.05	3340.97	1670.48	5227.15	2617.46	2.84	-1.086	0.000	0.518
30.00	-16.82	-20.84	0.00	-1236.0	0.00	1236.00	3273.10	1636.55	4980.70	2494.05	4.10	-1.306	0.000	0.501
35.00	-16.03	-20.47	0.00	-1131.7	0.00	1131.78	3190.51	1595.26	4718.31	2362.66	5.59	-1.525	0.000	0.484
40.00	-15.26	-20.09	0.00	-1029.4	0.00	1029.44	3099.00	1549.50	4450.18	2228.40	7.30	-1.742	0.000	0.467
45.00	-14.51	-19.70	0.00	-929.00	0.00	929.00	3007.49	1503.75	4189.89	2098.06	9.24	-1.957	0.000	0.448
49.00	-13.95	-19.38	0.00	-850.20	0.00	850.20	2934.29	1467.14	3987.31	1996.62	10.95	-2.129	0.000	0.431
50.00	-13.69	-19.31	0.00	-830.82	0.00	830.82	2915.98	1457.99	3937.45	1971.65	11.40	-2.172	0.000	0.426
53.25	-12.91	-19.03	0.00	-768.07	0.00	768.07	2384.18	1192.09	3226.87	1615.83	12.93	-2.309	0.000	0.481
55.00	-12.67	-18.92	0.00	-734.76	0.00	734.76	2365.01	1182.50	3165.45	1585.08	13.79	-2.383	0.000	0.469
60.00	-12.07	-18.53	0.00	-640.19	0.00	640.19	2309.37	1154.68	2992.01	1498.23	16.41	-2.608	0.000	0.433
65.00	-11.50	-18.14	0.00	-547.55	0.00	547.55	2251.87	1125.94	2821.03	1412.61	19.26	-2.821	0.000	0.393
70.00	-10.94	-17.76	0.00	-456.84	0.00	456.84	2175.62	1087.81	2632.26	1318.09	22.32	-3.021	0.000	0.352
75.00	-10.41	-17.37	0.00	-368.05	0.00	368.05	2099.36	1049.68	2450.04	1226.84	25.58	-3.203	0.000	0.305
80.00	-9.91	-16.99	0.00	-281.19	0.00	281.19	2023.10	1011.55	2274.35	1138.87	29.02	-3.362	0.000	0.252
85.00	-7.51	-13.24	0.00	-196.23	0.00	196.23	1946.84	973.42	2105.20	1054.16	32.62	-3.493	0.000	0.190
90.00	-7.07	-12.86	0.00	-130.03	0.00	130.03	1870.59	935.29	1942.58	972.73	36.33	-3.594	0.000	0.138
95.00	-3.59	-6.72	0.00	-65.72	0.00	65.72	1794.33	897.16	1786.50	894.58	40.13	-3.662	0.000	0.076
99.00	-3.29	-6.43	0.00	-38.83	0.00	38.83	1733.32	866.66	1666.34	834.41	43.22	-3.695	0.000	0.048
100.00	-3.17	-6.36	0.00	-32.40	0.00	32.40	1718.07	859.04	1636.96	819.69	43.99	-3.701	0.000	0.041
102.00	-2.93	-6.21	0.00	-19.69	0.00	19.69	964.69	482.34	927.47	464.42	45.54	-3.710	0.000	0.046
105.00	-0.15	-0.27	0.00	-1.07	0.00	1.07	947.47	473.74	886.56	443.94	47.87	-3.716	0.000	0.003
109.00	0.00	-0.26	0.00	0.00	0.00	0.00	923.81	461.90	832.74	416.99	50.99	-3.717	0.000	0.000

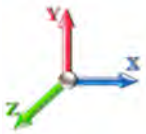
Wind Loading - Shaft

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	1.410	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.687	5.00	19.676	23.61	134.2	468.5	1508.7
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.792	5.00	19.326	23.19	131.8	487.3	1502.4
15.00		1.00	0.86	5.232	5.76	0.00	1.200	1.860	5.00	18.945	22.73	130.8	494.6	1484.6
20.00		1.00	0.91	5.540	6.09	0.00	1.200	1.912	5.00	18.550	22.26	135.7	496.5	1461.2
25.00		1.00	0.95	5.795	6.37	0.00	1.200	1.953	5.00	18.146	21.78	138.8	495.0	1434.7
30.00		1.00	0.99	6.013	6.61	0.00	1.200	1.988	5.00	17.737	21.28	140.8	491.3	1405.8
35.00		1.00	1.02	6.206	6.83	0.00	1.200	2.017	5.00	17.324	20.79	141.9	486.0	1375.4
40.00		1.00	1.05	6.378	7.02	0.00	1.200	2.044	5.00	16.909	20.29	142.4	479.5	1343.7
45.00		1.00	1.07	6.534	7.19	0.00	1.200	2.068	5.00	16.490	19.79	142.2	471.9	1311.0
49.00	Bot - Section 2	1.00	1.09	6.650	7.32	0.00	1.200	2.085	4.00	12.889	15.47	113.1	372.2	1025.3
50.00		1.00	1.10	6.678	7.35	0.00	1.200	2.089	1.00	3.232	3.88	28.5	94.3	391.9
53.25	Top - Section 1	1.00	1.11	6.765	7.44	0.00	1.200	2.102	3.25	10.390	12.47	92.8	302.9	1257.1
55.00		1.00	1.12	6.811	7.49	0.00	1.200	2.109	1.75	5.520	6.62	49.6	162.0	394.5
60.00		1.00	1.14	6.934	7.63	0.00	1.200	2.127	5.00	15.491	18.59	141.8	453.1	1103.4
65.00		1.00	1.16	7.050	7.76	0.00	1.200	2.144	5.00	15.067	18.08	140.2	443.1	1072.4
70.00		1.00	1.18	7.160	7.88	0.00	1.200	2.159	5.00	14.642	17.57	138.4	432.5	1040.9
75.00		1.00	1.19	7.263	7.99	0.00	1.200	2.174	5.00	14.217	17.06	136.3	421.6	1009.0
80.00		1.00	1.21	7.361	8.10	0.00	1.200	2.188	5.00	13.790	16.55	134.0	410.3	976.7
85.00	Appurtenance(s)	1.00	1.23	7.454	8.20	0.00	1.200	2.201	5.00	13.363	16.04	131.5	398.6	944.1
90.00		1.00	1.24	7.544	8.30	0.00	1.200	2.214	5.00	12.936	15.52	128.8	386.7	911.2
95.00	Appurtenance(s)	1.00	1.25	7.629	8.39	0.00	1.200	2.225	5.00	12.508	15.01	126.0	374.5	878.1
99.00	Bot - Section 3	1.00	1.27	7.695	8.46	0.00	1.200	2.234	4.00	9.697	11.64	98.5	291.7	679.4
100.00		1.00	1.27	7.711	8.48	0.00	1.200	2.237	1.00	2.413	2.90	24.6	73.5	226.4
102.00	Top - Section 2	1.00	1.27	7.743	8.52	0.00	1.200	2.241	2.00	4.774	5.73	48.8	144.9	446.8
105.00	Appurtenance(s)	1.00	1.28	7.790	8.57	0.00	1.200	2.248	3.00	7.033	8.44	72.3	212.8	381.1
109.00		1.00	1.29	7.851	8.64	0.00	1.200	2.256	4.00	9.138	10.97	94.7	275.5	492.9
								Totals:	**109.00**			**2,938.5**		**26,058.5**

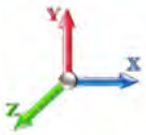
Discrete Appurtenance Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

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	105.00	Platform w/ Hand Rails	1	7.790	8.569	1.00	1.00	66.97	4497.06	0.000	0.000	573.87	0.00	0.00
2	105.00	Ericsson 4449 B71+B85	3	7.790	8.569	0.50	0.75	3.56	535.64	0.000	0.000	30.54	0.00	0.00
3	105.00	Ericsson ETW200VA12UB	3	7.790	8.569	0.56	0.75	1.90	76.51	0.000	0.000	16.24	0.00	0.00
4	105.00	Ericsson KRY 112 144/1	3	7.790	8.569	0.52	0.75	1.61	71.95	0.000	0.000	13.79	0.00	0.00
5	105.00	RFS	3	7.790	8.569	0.52	0.75	35.77	2135.06	0.000	0.000	306.54	0.00	0.00
6	105.00	Ericsson AIR 21 B4A/B2P	3	7.790	8.569	0.65	0.75	14.82	1014.66	0.000	0.000	126.99	0.00	0.00
7	105.00	Ericsson Air 21 B2A/B4P	3	7.790	8.569	0.65	0.75	14.57	1018.77	0.000	0.000	124.86	0.00	0.00
8	105.00	MS-KI22-5 (Kickers w/	1	7.790	8.569	1.00	1.00	18.79	373.71	0.000	0.000	161.00	0.00	0.00
9	95.00	ALU 800 Mhz RRUs	6	7.629	8.392	0.50	0.75	11.90	820.86	0.000	0.000	99.90	0.00	0.00
10	95.00	ALU TD-RRH8x20-25	3	7.629	8.392	0.50	0.75	7.70	699.22	0.000	0.000	64.63	0.00	0.00
11	95.00	ALU 1900 Mhz RRUs	3	7.629	8.392	0.50	0.75	6.51	455.62	0.000	0.000	54.67	0.00	0.00
12	95.00	VHLP2.5-11	2	7.629	8.392	1.00	1.00	21.21	455.85	0.000	0.000	178.01	0.00	0.00
13	95.00	RMQP-496-HK	1	7.629	8.392	1.00	1.00	90.73	5418.79	0.000	0.000	761.39	0.00	0.00
14	95.00	Commscope	3	7.629	8.392	0.55	0.75	23.52	1173.62	0.000	0.000	197.39	0.00	0.00
15	95.00	Nokia AAHC - MIMO	3	7.629	8.392	0.56	0.75	8.91	895.11	0.000	0.000	74.76	0.00	0.00
16	85.00	RDIDC-9181-PF-48	1	7.454	8.200	0.75	0.75	2.05	80.74	0.000	0.000	16.77	0.00	0.00
17	85.00	TA08025-B604	3	7.454	8.200	0.50	0.75	4.02	385.30	0.000	0.000	32.97	0.00	0.00
18	85.00	TA08025-B605	3	7.454	8.200	0.50	0.75	4.02	430.10	0.000	0.000	32.97	0.00	0.00
19	85.00	MC-PK8-DSH	1	7.454	8.200	1.00	1.00	97.16	3828.07	0.000	0.000	796.71	0.00	0.00
20	85.00	MX08FRO665-21	3	7.454	8.200	0.55	0.75	23.87	1131.13	0.000	0.000	195.75	0.00	0.00
							Totals:		**25,497.76**			**3,859.75**		

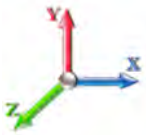
Total Applied Force Summary

Structure:	CT13529-A-SBA		**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1		**Exposure:**	C	
Height:	109.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 18

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

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		134.22	1588.38	0.00	0.00
10.00		131.84	1582.06	0.00	0.00
15.00		130.83	1564.23	0.00	0.00
20.00		135.65	1540.93	0.00	0.00
25.00		138.81	1514.33	0.00	0.00
30.00		140.80	1485.50	0.00	0.00
35.00		141.92	1455.05	0.00	0.00
40.00		142.35	1423.34	0.00	0.00
45.00		142.24	1390.64	0.00	0.00
49.00		113.14	1089.09	0.00	0.00
50.00		28.49	407.81	0.00	0.00
53.25		92.78	1308.88	0.00	0.00
55.00		49.62	422.38	0.00	0.00
60.00		141.79	1183.09	0.00	0.00
65.00		140.22	1152.04	0.00	0.00
70.00		138.38	1120.54	0.00	0.00
75.00		136.30	1088.63	0.00	0.00
80.00		133.99	1056.37	0.00	0.00
85.00	(11) attachments	1206.67	6879.12	0.00	0.00
90.00		128.81	984.06	0.00	0.00
95.00	(21) attachments	1556.72	10869.97	0.00	0.00
99.00		98.50	721.85	0.00	0.00
100.00		24.56	237.04	0.00	0.00
102.00		48.80	468.04	0.00	0.00
105.00	(20) attachments	1426.14	10136.33	0.00	0.00
109.00		94.70	492.92	0.00	0.00
	Totals:	**6,798.27**	**53,162.62**	**0.00**	**0.00**

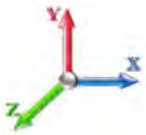
Calculated Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

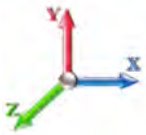
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-53.16	-6.83	0.00	-570.56	0.00	570.56	3661.29	1830.65	6512.81	3261.25	0.00	0.000	0.000	0.189
5.00	-51.56	-6.75	0.00	-536.41	0.00	536.41	3599.77	1799.88	6249.10	3129.20	0.03	-0.064	0.000	0.186
10.00	-49.97	-6.67	0.00	-502.66	0.00	502.66	3536.97	1768.49	5988.52	2998.71	0.14	-0.129	0.000	0.182
15.00	-48.40	-6.59	0.00	-469.29	0.00	469.29	3472.90	1736.45	5731.22	2869.87	0.31	-0.195	0.000	0.177
20.00	-46.85	-6.51	0.00	-436.32	0.00	436.32	3407.57	1703.79	5477.38	2742.76	0.55	-0.261	0.000	0.173
25.00	-45.33	-6.41	0.00	-403.79	0.00	403.79	3340.97	1670.48	5227.15	2617.46	0.86	-0.327	0.000	0.168
30.00	-43.84	-6.31	0.00	-371.73	0.00	371.73	3273.10	1636.55	4980.70	2494.05	1.23	-0.393	0.000	0.162
35.00	-42.38	-6.21	0.00	-340.17	0.00	340.17	3190.51	1595.26	4718.31	2362.66	1.68	-0.459	0.000	0.157
40.00	-40.95	-6.10	0.00	-309.13	0.00	309.13	3099.00	1549.50	4450.18	2228.40	2.20	-0.524	0.000	0.152
45.00	-39.56	-5.98	0.00	-278.63	0.00	278.63	3007.49	1503.75	4189.89	2098.06	2.78	-0.589	0.000	0.146
49.00	-38.47	-5.88	0.00	-254.69	0.00	254.69	2934.29	1467.14	3987.31	1996.62	3.30	-0.640	0.000	0.141
50.00	-38.05	-5.87	0.00	-248.81	0.00	248.81	2915.98	1457.99	3937.45	1971.65	3.43	-0.653	0.000	0.139
53.25	-36.74	-5.78	0.00	-229.75	0.00	229.75	2384.18	1192.09	3226.87	1615.83	3.89	-0.694	0.000	0.158
55.00	-36.32	-5.75	0.00	-219.64	0.00	219.64	2365.01	1182.50	3165.45	1585.08	4.15	-0.716	0.000	0.154
60.00	-35.13	-5.63	0.00	-190.88	0.00	190.88	2309.37	1154.68	2992.01	1498.23	4.93	-0.783	0.000	0.143
65.00	-33.97	-5.51	0.00	-162.71	0.00	162.71	2251.87	1125.94	2821.03	1412.61	5.79	-0.847	0.000	0.130
70.00	-32.85	-5.39	0.00	-135.13	0.00	135.13	2175.62	1087.81	2632.26	1318.09	6.71	-0.906	0.000	0.118
75.00	-31.76	-5.27	0.00	-108.18	0.00	108.18	2099.36	1049.68	2450.04	1226.84	7.69	-0.960	0.000	0.103
80.00	-30.70	-5.14	0.00	-81.85	0.00	81.85	2023.10	1011.55	2274.35	1138.87	8.72	-1.006	0.000	0.087
85.00	-23.84	-3.82	0.00	-56.17	0.00	56.17	1946.84	973.42	2105.20	1054.16	9.79	-1.044	0.000	0.066
90.00	-22.86	-3.68	0.00	-37.08	0.00	37.08	1870.59	935.29	1942.58	972.73	10.90	-1.073	0.000	0.050
95.00	-12.02	-1.92	0.00	-18.67	0.00	18.67	1794.33	897.16	1786.50	894.58	12.04	-1.092	0.000	0.028
99.00	-11.30	-1.81	0.00	-10.97	0.00	10.97	1733.32	866.66	1666.34	834.41	12.96	-1.101	0.000	0.020
100.00	-11.06	-1.78	0.00	-9.16	0.00	9.16	1718.07	859.04	1636.96	819.69	13.19	-1.103	0.000	0.018
102.00	-10.60	-1.73	0.00	-5.59	0.00	5.59	964.69	482.34	927.47	464.42	13.65	-1.106	0.000	0.023
105.00	-0.49	-0.10	0.00	-0.42	0.00	0.42	947.47	473.74	886.56	443.94	14.35	-1.108	0.000	0.001
109.00	0.00	-0.09	0.00	0.00	0.00	0.00	923.81	461.90	832.74	416.99	15.28	-1.108	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.19	**Iterations**	19
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.44	**SA**	0.05	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.01	0.01	0.00	
5.00		866.86	0.01	0.05	0.03	17.82	
10.00		845.90	0.02	0.06	0.04	22.56	
15.00		824.94	0.04	0.07	0.04	24.17	
20.00		803.99	0.07	0.07	0.04	24.70	
25.00		783.03	0.11	0.07	0.04	24.96	
30.00		762.08	0.15	0.07	0.03	25.06	
35.00		741.12	0.20	0.06	0.02	24.63	
40.00		720.16	0.26	0.05	0.02	23.03	
45.00		699.21	0.33	0.04	0.01	19.46	
49.00	Bot - Section 2	544.28	0.39	0.02	0.01	11.80	
50.00		247.94	0.41	0.02	0.01	4.89	
53.25	Top - Section 1	795.19	0.46	0.00	0.01	9.72	
55.00		193.79	0.49	-0.01	0.01	1.48	
60.00		541.88	0.58	-0.05	0.01	-3.50	
65.00		524.42	0.68	-0.08	0.03	-9.82	
70.00		506.96	0.79	-0.11	0.05	-12.82	
75.00		489.49	0.90	-0.12	0.09	-11.58	
80.00		472.03	1.02	-0.10	0.14	-6.04	
85.00	Appurtenance(s)	2813.6	1.16	-0.03	0.22	21.28	
90.00		437.10	1.29	0.11	0.33	16.40	
95.00	Appurtenance(s)	4216.0	1.44	0.36	0.47	325.37	
99.00	Bot - Section 3	323.14	1.56	0.67	0.62	37.48	
100.00		127.47	1.59	0.76	0.66	16.15	
102.00	Top - Section 2	251.60	1.66	0.97	0.75	37.57	
105.00	Appurtenance(s)	3491.6	1.76	1.34	0.90	650.53	
109.00		181.17	1.89	1.98	1.14	43.74	
	Totals:	**23,205.1**				**1,339.0**	**Total Wind:** **22,849.6**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13529-A-SBA		**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1		**Exposure:**	C	
Height:	109.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Load Case:	1.2D + 1.0E							**Iterations**	19
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.44		**SA**	0.05	**Seismic Importance Factor**		1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-29.45	-1.39	0.00	-127.37	0.00	127.37	3661.29	1830.65	6512.81	3261.25		0.00	0.00	0.047
5.00	-28.33	-1.38	0.00	-120.44	0.00	120.44	3599.77	1799.88	6249.10	3129.20		0.01	-0.01	0.046
10.00	-27.24	-1.36	0.00	-113.57	0.00	113.57	3536.97	1768.49	5988.52	2998.71		0.03	-0.03	0.046
15.00	-26.17	-1.34	0.00	-106.77	0.00	106.77	3472.90	1736.45	5731.22	2869.87		0.07	-0.04	0.045
20.00	-25.12	-1.32	0.00	-100.06	0.00	100.06	3407.57	1703.79	5477.38	2742.76		0.12	-0.06	0.044
25.00	-24.10	-1.30	0.00	-93.45	0.00	93.45	3340.97	1670.48	5227.15	2617.46		0.19	-0.07	0.043
30.00	-23.11	-1.28	0.00	-86.93	0.00	86.93	3273.10	1636.55	4980.70	2494.05		0.28	-0.09	0.042
35.00	-22.14	-1.26	0.00	-80.52	0.00	80.52	3190.51	1595.26	4718.31	2362.66		0.38	-0.10	0.041
40.00	-21.19	-1.24	0.00	-74.21	0.00	74.21	3099.00	1549.50	4450.18	2228.40		0.50	-0.12	0.040
45.00	-20.28	-1.23	0.00	-68.00	0.00	68.00	3007.49	1503.75	4189.89	2098.06		0.63	-0.14	0.039
49.00	-19.56	-1.22	0.00	-63.09	0.00	63.09	2934.29	1467.14	3987.31	1996.62		0.75	-0.15	0.038
50.00	-19.25	-1.21	0.00	-61.87	0.00	61.87	2915.98	1457.99	3937.45	1971.65		0.79	-0.15	0.038
53.25	-18.24	-1.20	0.00	-57.93	0.00	57.93	2384.18	1192.09	3226.87	1615.83		0.89	-0.16	0.044
55.00	-17.98	-1.20	0.00	-55.83	0.00	55.83	2365.01	1182.50	3165.45	1585.08		0.95	-0.17	0.043
60.00	-17.25	-1.21	0.00	-49.81	0.00	49.81	2309.37	1154.68	2992.01	1498.23		1.14	-0.19	0.041
65.00	-16.54	-1.21	0.00	-43.78	0.00	43.78	2251.87	1125.94	2821.03	1412.61		1.34	-0.20	0.038
70.00	-15.85	-1.21	0.00	-37.73	0.00	37.73	2175.62	1087.81	2632.26	1318.09		1.56	-0.22	0.036
75.00	-15.18	-1.21	0.00	-31.68	0.00	31.68	2099.36	1049.68	2450.04	1226.84		1.80	-0.23	0.033
80.00	-14.54	-1.21	0.00	-25.62	0.00	25.62	2023.10	1011.55	2274.35	1138.87		2.05	-0.25	0.030
85.00	-11.08	-1.18	0.00	-19.55	0.00	19.55	1946.84	973.42	2105.20	1054.16		2.32	-0.26	0.024
90.00	-10.48	-1.16	0.00	-13.66	0.00	13.66	1870.59	935.29	1942.58	972.73		2.59	-0.27	0.020
95.00	-5.35	-0.81	0.00	-7.86	0.00	7.86	1794.33	897.16	1786.50	894.58		2.88	-0.28	0.012
99.00	-4.92	-0.77	0.00	-4.61	0.00	4.61	1733.32	866.66	1666.34	834.41		3.12	-0.28	0.008
100.00	-4.76	-0.76	0.00	-3.84	0.00	3.84	1718.07	859.04	1636.96	819.69		3.18	-0.28	0.007
102.00	-4.44	-0.72	0.00	-2.33	0.00	2.33	964.69	482.34	927.47	464.42		3.29	-0.28	0.010
105.00	-0.22	-0.04	0.00	-0.18	0.00	0.18	947.47	473.74	886.56	443.94		3.47	-0.28	0.001
109.00	0.00	-0.04	0.00	0.00	0.00	0.00	923.81	461.90	832.74	416.99		3.71	-0.28	0.000

Seismic Segment Forces (Factored)

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

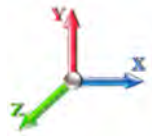
Load Case:	0.9D + 1.0E					**Iterations**	19
Gust Response Factor	1.10			**Sds**	0.19	**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.44	**SA**	0.05	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.01	0.01	0.00	
5.00		866.86	0.01	0.05	0.03	17.82	
10.00		845.90	0.02	0.06	0.04	22.56	
15.00		824.94	0.04	0.07	0.04	24.17	
20.00		803.99	0.07	0.07	0.04	24.70	
25.00		783.03	0.11	0.07	0.04	24.96	
30.00		762.08	0.15	0.07	0.03	25.06	
35.00		741.12	0.20	0.06	0.02	24.63	
40.00		720.16	0.26	0.05	0.02	23.03	
45.00		699.21	0.33	0.04	0.01	19.46	
49.00	Bot - Section 2	544.28	0.39	0.02	0.01	11.80	
50.00		247.94	0.41	0.02	0.01	4.89	
53.25	Top - Section 1	795.19	0.46	0.00	0.01	9.72	
55.00		193.79	0.49	-0.01	0.01	1.48	
60.00		541.88	0.58	-0.05	0.01	-3.50	
65.00		524.42	0.68	-0.08	0.03	-9.82	
70.00		506.96	0.79	-0.11	0.05	-12.82	
75.00		489.49	0.90	-0.12	0.09	-11.58	
80.00		472.03	1.02	-0.10	0.14	-6.04	
85.00	Appurtenance(s)	2813.6	1.16	-0.03	0.22	21.28	
90.00		437.10	1.29	0.11	0.33	16.40	
95.00	Appurtenance(s)	4216.0	1.44	0.36	0.47	325.37	
99.00	Bot - Section 3	323.14	1.56	0.67	0.62	37.48	
100.00		127.47	1.59	0.76	0.66	16.15	
102.00	Top - Section 2	251.60	1.66	0.97	0.75	37.57	
105.00	Appurtenance(s)	3491.6	1.76	1.34	0.90	650.53	
109.00		181.17	1.89	1.98	1.14	43.74	
	Totals:	**23,205.1**				**1,339.0**	**Total Wind:** **22,849.6**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	



Load Case:	0.9D + 1.0E							**Iterations**	19
Gust Response Factor	1.10			**Sds**	0.19			**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.44	**SA**	0.05	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-22.09	-1.39	0.00	-126.25	0.00	126.25	3661.29	1830.65	6512.81	3261.25		0.00	0.00	0.045
5.00	-21.25	-1.37	0.00	-119.33	0.00	119.33	3599.77	1799.88	6249.10	3129.20		0.01	-0.01	0.044
10.00	-20.43	-1.36	0.00	-112.46	0.00	112.46	3536.97	1768.49	5988.52	2998.71		0.03	-0.03	0.043
15.00	-19.62	-1.34	0.00	-105.69	0.00	105.69	3472.90	1736.45	5731.22	2869.87		0.07	-0.04	0.042
20.00	-18.84	-1.32	0.00	-99.01	0.00	99.01	3407.57	1703.79	5477.38	2742.76		0.12	-0.06	0.042
25.00	-18.08	-1.29	0.00	-92.44	0.00	92.44	3340.97	1670.48	5227.15	2617.46		0.19	-0.07	0.041
30.00	-17.33	-1.27	0.00	-85.97	0.00	85.97	3273.10	1636.55	4980.70	2494.05		0.28	-0.09	0.040
35.00	-16.60	-1.25	0.00	-79.61	0.00	79.61	3190.51	1595.26	4718.31	2362.66		0.38	-0.10	0.039
40.00	-15.90	-1.23	0.00	-73.35	0.00	73.35	3099.00	1549.50	4450.18	2228.40		0.49	-0.12	0.038
45.00	-15.21	-1.21	0.00	-67.20	0.00	67.20	3007.49	1503.75	4189.89	2098.06		0.63	-0.13	0.037
49.00	-14.67	-1.20	0.00	-62.34	0.00	62.34	2934.29	1467.14	3987.31	1996.62		0.75	-0.15	0.036
50.00	-14.43	-1.20	0.00	-61.14	0.00	61.14	2915.98	1457.99	3937.45	1971.65		0.78	-0.15	0.036
53.25	-13.68	-1.19	0.00	-57.24	0.00	57.24	2384.18	1192.09	3226.87	1615.83		0.88	-0.16	0.041
55.00	-13.48	-1.19	0.00	-55.16	0.00	55.16	2365.01	1182.50	3165.45	1585.08		0.94	-0.17	0.041
60.00	-12.93	-1.19	0.00	-49.22	0.00	49.22	2309.37	1154.68	2992.01	1498.23		1.13	-0.18	0.038
65.00	-12.40	-1.19	0.00	-43.26	0.00	43.26	2251.87	1125.94	2821.03	1412.61		1.33	-0.20	0.036
70.00	-11.89	-1.19	0.00	-37.29	0.00	37.29	2175.62	1087.81	2632.26	1318.09		1.54	-0.22	0.034
75.00	-11.39	-1.20	0.00	-31.32	0.00	31.32	2099.36	1049.68	2450.04	1226.84		1.78	-0.23	0.031
80.00	-10.90	-1.20	0.00	-25.34	0.00	25.34	2023.10	1011.55	2274.35	1138.87		2.03	-0.24	0.028
85.00	-8.31	-1.17	0.00	-19.36	0.00	19.36	1946.84	973.42	2105.20	1054.16		2.29	-0.26	0.023
90.00	-7.86	-1.15	0.00	-13.53	0.00	13.53	1870.59	935.29	1942.58	972.73		2.57	-0.27	0.018
95.00	-4.01	-0.80	0.00	-7.79	0.00	7.79	1794.33	897.16	1786.50	894.58		2.85	-0.27	0.011
99.00	-3.69	-0.77	0.00	-4.57	0.00	4.57	1733.32	866.66	1666.34	834.41		3.08	-0.28	0.008
100.00	-3.57	-0.75	0.00	-3.81	0.00	3.81	1718.07	859.04	1636.96	819.69		3.14	-0.28	0.007
102.00	-3.33	-0.71	0.00	-2.31	0.00	2.31	964.69	482.34	927.47	464.42		3.26	-0.28	0.008
105.00	-0.16	-0.04	0.00	-0.18	0.00	0.18	947.47	473.74	886.56	443.94		3.44	-0.28	0.001
109.00	0.00	-0.04	0.00	0.00	0.00	0.00	923.81	461.90	832.74	416.99		3.67	-0.28	0.000

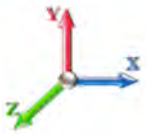
Wind Loading - Shaft

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	204.55	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	199.71	0.650	0.000	5.00	18.270	11.88	97.2	0.0	866.9
10.00		1.00	0.85	7.442	8.19	194.87	0.650	0.000	5.00	17.832	11.59	94.9	0.0	845.9
15.00		1.00	0.86	7.534	8.29	191.19	0.650	0.000	5.00	17.395	11.31	93.7	0.0	824.9
20.00		1.00	0.91	7.978	8.78	191.73	0.650	0.000	5.00	16.957	11.02	96.7	0.0	804.0
25.00		1.00	0.95	8.345	9.18	190.96	0.650	0.000	5.00	16.519	10.74	98.6	0.0	783.0
30.00		1.00	0.99	8.659	9.53	189.30	0.650	0.000	5.00	16.081	10.45	99.6	0.0	762.1
35.00		1.00	1.02	8.936	9.83	187.00	0.650	0.000	5.00	15.643	10.17	100.0	0.0	741.1
40.00		1.00	1.05	9.184	10.10	184.19	0.650	0.000	5.00	15.205	9.88	99.9	0.0	720.2
45.00		1.00	1.07	9.410	10.35	180.99	0.650	0.000	5.00	14.768	9.60	99.4	0.0	699.2
49.00	Bot - Section 2	1.00	1.09	9.576	10.53	178.19	0.650	0.000	4.00	11.499	7.47	78.7	0.0	544.3
50.00		1.00	1.10	9.616	10.58	177.46	0.650	0.000	1.00	2.884	1.87	19.8	0.0	247.9
53.25	Top - Section 1	1.00	1.11	9.742	10.72	175.02	0.650	0.000	3.25	9.251	6.01	64.4	0.0	795.2
55.00		1.00	1.12	9.807	10.79	177.01	0.650	0.000	1.75	4.905	3.19	34.4	0.0	193.8
60.00		1.00	1.14	9.986	10.98	173.00	0.650	0.000	5.00	13.718	8.92	97.9	0.0	541.9
65.00		1.00	1.16	10.153	11.17	168.79	0.650	0.000	5.00	13.281	8.63	96.4	0.0	524.4
70.00		1.00	1.18	10.310	11.34	164.39	0.650	0.000	5.00	12.843	8.35	94.7	0.0	507.0
75.00		1.00	1.19	10.459	11.50	159.83	0.650	0.000	5.00	12.405	8.06	92.8	0.0	489.5
80.00		1.00	1.21	10.600	11.66	155.12	0.650	0.000	5.00	11.967	7.78	90.7	0.0	472.0
85.00	Appurtenance(s)	1.00	1.23	10.734	11.81	150.28	0.650	0.000	5.00	11.529	7.49	88.5	0.0	454.6
90.00		1.00	1.24	10.863	11.95	145.33	0.650	0.000	5.00	11.091	7.21	86.1	0.0	437.1
95.00	Appurtenance(s)	1.00	1.25	10.986	12.08	140.26	0.650	0.000	5.00	10.654	6.92	83.7	0.0	419.6
99.00	Bot - Section 3	1.00	1.27	11.081	12.19	136.14	0.650	0.000	4.00	8.208	5.33	65.0	0.0	323.1
100.00		1.00	1.27	11.104	12.21	135.10	0.650	0.000	1.00	2.040	1.33	16.2	0.0	127.5
102.00	Top - Section 2	1.00	1.27	11.150	12.26	133.00	0.650	0.000	2.00	4.027	2.62	32.1	0.0	251.6
105.00	Appurtenance(s)	1.00	1.28	11.218	12.34	131.99	0.650	0.000	3.00	5.909	3.84	47.4	0.0	140.3
109.00		1.00	1.29	11.305	12.44	127.73	0.650	0.000	4.00	7.634	4.96	61.7	0.0	181.2
								Totals:	**109.00**			**2,030.4**		**13,698.2**

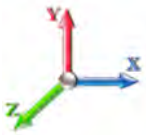
Discrete Appurtenance Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

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	105.00	Platform w/ Hand Rails	1	11.218	12.339	1.00	1.00	40.00	2000.00	0.000	0.000	493.57	0.00	0.00
2	105.00	Ericsson 4449 B71+B85	3	11.218	12.339	0.50	0.75	2.49	210.00	0.000	0.000	30.69	0.00	0.00
3	105.00	Ericsson ETW200VA12UB	3	11.218	12.339	0.55	0.75	0.78	33.00	0.000	0.000	9.66	0.00	0.00
4	105.00	Ericsson KRY 112 144/1	3	11.218	12.339	0.52	0.75	0.65	33.00	0.000	0.000	7.97	0.00	0.00
5	105.00	RFS	3	11.218	12.339	0.52	0.75	31.88	384.00	0.000	0.000	393.35	0.00	0.00
6	105.00	Ericsson AIR 21 B4A/B2P	3	11.218	12.339	0.65	0.75	11.92	270.90	0.000	0.000	147.10	0.00	0.00
7	105.00	Ericsson Air 21 B2A/B4P	3	11.218	12.339	0.65	0.75	11.78	274.50	0.000	0.000	145.41	0.00	0.00
8	105.00	MS-KI22-5 (Kickers w/	1	11.218	12.339	1.00	1.00	8.00	146.00	0.000	0.000	98.71	0.00	0.00
9	95.00	ALU 800 Mhz RRUs	6	10.986	12.085	0.50	0.75	7.51	318.00	0.000	0.000	90.72	0.00	0.00
10	95.00	ALU TD-RRH8x20-25	3	10.986	12.085	0.50	0.75	6.11	210.00	0.000	0.000	73.78	0.00	0.00
11	95.00	ALU 1900 Mhz RRUs	3	10.986	12.085	0.50	0.75	4.09	180.00	0.000	0.000	49.37	0.00	0.00
12	95.00	VHLP2.5-11	2	10.986	12.085	1.00	1.00	16.86	95.20	0.000	0.000	203.74	0.00	0.00
13	95.00	RMQP-496-HK	1	10.986	12.085	1.00	1.00	48.00	2449.00	0.000	0.000	580.06	0.00	0.00
14	95.00	Commscope	3	10.986	12.085	0.55	0.75	20.43	232.20	0.000	0.000	246.88	0.00	0.00
15	95.00	Nokia AAHC - MIMO	3	10.986	12.085	0.56	0.75	7.09	312.00	0.000	0.000	85.65	0.00	0.00
16	85.00	RDIDC-9181-PF-48	1	10.734	11.808	0.75	0.75	1.51	21.90	0.000	0.000	17.80	0.00	0.00
17	85.00	TA08025-B604	3	10.734	11.808	0.50	0.75	2.95	191.70	0.000	0.000	34.89	0.00	0.00
18	85.00	TA08025-B605	3	10.734	11.808	0.50	0.75	2.95	225.00	0.000	0.000	34.89	0.00	0.00
19	85.00	MC-PK8-DSH	1	10.734	11.808	1.00	1.00	37.59	1727.00	0.000	0.000	443.86	0.00	0.00
20	85.00	MX08FRO665-21	3	10.734	11.808	0.55	0.75	20.80	193.50	0.000	0.000	245.55	0.00	0.00
							Totals:		**9,506.90**			**3,433.65**		

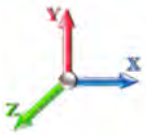
Total Applied Force Summary

Structure:	CT13529-A-SBA		**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1		**Exposure:**	C	
Height:	109.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

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		97.22	933.26	0.00	0.00
10.00		94.89	912.30	0.00	0.00
15.00		93.70	891.34	0.00	0.00
20.00		96.72	870.39	0.00	0.00
25.00		98.56	849.43	0.00	0.00
30.00		99.57	828.48	0.00	0.00
35.00		99.95	807.52	0.00	0.00
40.00		99.85	786.56	0.00	0.00
45.00		99.35	765.61	0.00	0.00
49.00		78.73	597.40	0.00	0.00
50.00		19.83	261.22	0.00	0.00
53.25		64.44	838.35	0.00	0.00
55.00		34.39	217.03	0.00	0.00
60.00		97.95	608.28	0.00	0.00
65.00		96.41	590.82	0.00	0.00
70.00		94.67	573.36	0.00	0.00
75.00		92.76	555.89	0.00	0.00
80.00		90.70	538.43	0.00	0.00
85.00	(11) attachments	865.48	2880.07	0.00	0.00
90.00		86.15	497.80	0.00	0.00
95.00	(21) attachments	1413.89	4276.74	0.00	0.00
99.00		65.03	358.50	0.00	0.00
100.00		16.20	136.31	0.00	0.00
102.00		32.11	269.28	0.00	0.00
105.00	(20) attachments	1373.85	3518.20	0.00	0.00
109.00		61.71	181.17	0.00	0.00
	Totals:	**5,464.09**	**24,543.73**	**0.00**	**0.00**

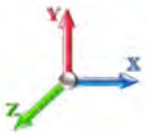
Calculated Forces

Structure:	CT13529-A-SBA	**Code:**	EIA/TIA-222-G	8/31/2021	
Site Name:	Manchester 1	**Exposure:**	C		
Height:	109.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

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	-24.54	-5.47	0.00	-455.37	0.00	455.37	3661.29	1830.65	6512.81	3261.25	0.00	0.000	0.000	0.146
5.00	-23.60	-5.40	0.00	-428.00	0.00	428.00	3599.77	1799.88	6249.10	3129.20	0.03	-0.051	0.000	0.143
10.00	-22.69	-5.32	0.00	-401.01	0.00	401.01	3536.97	1768.49	5988.52	2998.71	0.11	-0.103	0.000	0.140
15.00	-21.79	-5.25	0.00	-374.40	0.00	374.40	3472.90	1736.45	5731.22	2869.87	0.25	-0.155	0.000	0.137
20.00	-20.92	-5.17	0.00	-348.17	0.00	348.17	3407.57	1703.79	5477.38	2742.76	0.44	-0.208	0.000	0.133
25.00	-20.06	-5.08	0.00	-322.34	0.00	322.34	3340.97	1670.48	5227.15	2617.46	0.68	-0.261	0.000	0.129
30.00	-19.23	-5.00	0.00	-296.92	0.00	296.92	3273.10	1636.55	4980.70	2494.05	0.98	-0.313	0.000	0.125
35.00	-18.42	-4.91	0.00	-271.94	0.00	271.94	3190.51	1595.26	4718.31	2362.66	1.34	-0.366	0.000	0.121
40.00	-17.63	-4.82	0.00	-247.39	0.00	247.39	3099.00	1549.50	4450.18	2228.40	1.75	-0.418	0.000	0.117
45.00	-16.86	-4.73	0.00	-223.29	0.00	223.29	3007.49	1503.75	4189.89	2098.06	2.22	-0.470	0.000	0.112
49.00	-16.26	-4.65	0.00	-204.38	0.00	204.38	2934.29	1467.14	3987.31	1996.62	2.63	-0.511	0.000	0.108
50.00	-16.00	-4.64	0.00	-199.73	0.00	199.73	2915.98	1457.99	3937.45	1971.65	2.74	-0.522	0.000	0.107
53.25	-15.16	-4.57	0.00	-184.66	0.00	184.66	2384.18	1192.09	3226.87	1615.83	3.11	-0.555	0.000	0.121
55.00	-14.94	-4.54	0.00	-176.67	0.00	176.67	2365.01	1182.50	3165.45	1585.08	3.31	-0.572	0.000	0.118
60.00	-14.33	-4.45	0.00	-153.95	0.00	153.95	2309.37	1154.68	2992.01	1498.23	3.94	-0.626	0.000	0.109
65.00	-13.73	-4.36	0.00	-131.69	0.00	131.69	2251.87	1125.94	2821.03	1412.61	4.63	-0.678	0.000	0.099
70.00	-13.16	-4.27	0.00	-109.89	0.00	109.89	2175.62	1087.81	2632.26	1318.09	5.36	-0.726	0.000	0.089
75.00	-12.60	-4.18	0.00	-88.54	0.00	88.54	2099.36	1049.68	2450.04	1226.84	6.15	-0.770	0.000	0.078
80.00	-12.06	-4.09	0.00	-67.65	0.00	67.65	2023.10	1011.55	2274.35	1138.87	6.97	-0.808	0.000	0.065
85.00	-9.19	-3.19	0.00	-47.21	0.00	47.21	1946.84	973.42	2105.20	1054.16	7.84	-0.839	0.000	0.050
90.00	-8.69	-3.10	0.00	-31.29	0.00	31.29	1870.59	935.29	1942.58	972.73	8.73	-0.864	0.000	0.037
95.00	-4.44	-1.62	0.00	-15.81	0.00	15.81	1794.33	897.16	1786.50	894.58	9.64	-0.880	0.000	0.020
99.00	-4.08	-1.55	0.00	-9.34	0.00	9.34	1733.32	866.66	1666.34	834.41	10.39	-0.888	0.000	0.014
100.00	-3.95	-1.53	0.00	-7.79	0.00	7.79	1718.07	859.04	1636.96	819.69	10.57	-0.889	0.000	0.012
102.00	-3.68	-1.49	0.00	-4.74	0.00	4.74	964.69	482.34	927.47	464.42	10.95	-0.892	0.000	0.014
105.00	-0.18	-0.06	0.00	-0.26	0.00	0.26	947.47	473.74	886.56	443.94	11.51	-0.893	0.000	0.001
109.00	0.00	-0.06	0.00	0.00	0.00	0.00	923.81	461.90	832.74	416.99	12.25	-0.893	0.000	0.000

Final Analysis Summary

Structure:	CT13529-A-SBA		**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1		**Exposure:**	C	
Height:	109.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 28

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	22.9	0.00	29.41	0.00	0.00	1913.71
0.9D + 1.6W 97 mph Wind	22.9	0.00	22.05	0.00	0.00	1897.90
1.2D + 1.0Di + 1.0Wi 50 mph Wind	6.8	0.00	53.16	0.00	0.00	570.56
1.2D + 1.0E	1.4	0.00	29.45	0.00	0.00	127.37
0.9D + 1.0E	1.4	0.00	22.09	0.00	0.00	126.25
1.0D + 1.0W 60 mph Wind	5.5	0.00	24.54	0.00	0.00	455.37

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-29.41	-22.91	0.00	-1913.7	0.00	-1913.7	3661.29	1830.6	6512.81	3261.25	0.00	0.595
0.9D + 1.6W 97 mph Wind	-22.05	-22.89	0.00	-1897.9	0.00	-1897.9	3661.29	1830.6	6512.81	3261.25	0.00	0.588
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-53.16	-6.83	0.00	-570.56	0.00	-570.56	3661.29	1830.6	6512.81	3261.25	0.00	0.189
1.2D + 1.0E	-29.45	-1.39	0.00	-127.37	0.00	-127.37	3661.29	1830.6	6512.81	3261.25	0.00	0.047
0.9D + 1.0E	-22.09	-1.39	0.00	-126.25	0.00	-126.25	3661.29	1830.6	6512.81	3261.25	0.00	0.045
1.0D + 1.0W 60 mph Wind	-24.54	-5.47	0.00	-455.37	0.00	-455.37	3661.29	1830.6	6512.81	3261.25	0.00	0.146

Base Plate Summary

Structure:	CT13529-A-SB		**Code:**	EIA/TIA-222-G	8/31/2021
Site Name:	Manchester 1		**Exposure:**	C	
Height:	109.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Reactions	
Original Design	
Moment (kip-ft):	2581.67
Axial (kip):	41.24
Shear (kip):	27.34
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	1913.71
Axial (kip):	29.41
Shear (kip):	22.91

Base Plate	
Yield (ksi):	60.00
Width (in):	49.00
Style:	Clipped
Polygon Sides:	4.00
Clip Length (in):	6.00
Effective Len (in):	9.37
Moment (kip-in):	496.21
Allow Stress (ksi):	81.00
Applied Stress (ksi):	42.12
Stress Ratio:	0.52

Anchor Bolts	
Bolt Circle:	50.00
Number Bolts:	12.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	6.00
Start Angle (deg):	45.00
Compression	
Force (kip):	157.53
Allowable (kip):	260.00
Ratio:	0.62
Tension	
Force (kip):	148.67
Allowable (kip):	260.00
Ratio:	0.59

Monopole Mat Foundation Design

			Date: 8/31/2021
Customer Name:	Dish Wireless	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	109
Site Number:	CT13529-A-SBA	**Engineer Name:**	T. Alajaj
Engr. Number:	114611	**Engineer Login ID:**	

Foundation Info Obtained from: Mapping Operation

Structure Type: Monopole

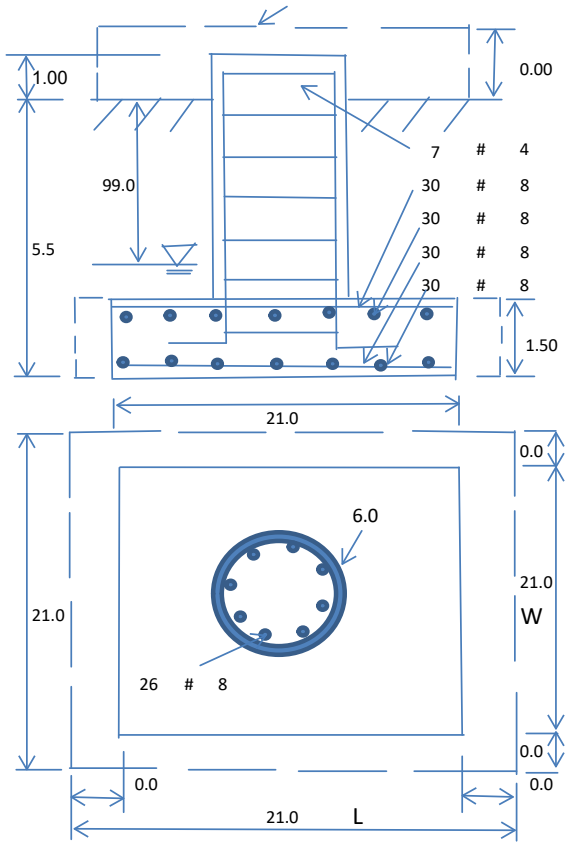
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	29.4	Shear Force (Kips):	22.9
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1913.7
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	6.0	Depth of Base BG (ft.):	5.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	1.50
Length of Pad (ft.):	21	Width of Pad (ft.):	21
Final Length of pad (ft)	21.0	Final width of pad (ft):	21.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4500	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	26	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
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):	30	Qty. of Rebar in Pad (W):	30

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	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):	12000	Ultimate Skin Friction:	175	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	Yes		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

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

Total Dry Soil Volume (cu. Ft.):	1650.90	Total Dry Soil Weight (Kips):	198.11
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	198.11	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	802.87	Total Dry Concrete Weight (Kips):	120.43
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	120.43	Total Vertical Load on Base (Kips):	347.94

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2322	<	Allowable Factored Soil Bearing (psf):	9000	0.26	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3318.9	>	Design Factored Momont (kips-ft):	2063	0.62	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.61	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):	0.79		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	3009.3	>	Design Factored Moment (Mu, Kips-F	2028.2	0.67	OK!
Calculated Shear Capacity (Kips):	524.9	>	Design Factored Shear (Kips):	22.9	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1109.2	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	8057.4	>	Design Factored Axial Load (Pu Kips):	29.4	0.00	OK!
Moment & Axial Strength Combination:	0.67	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.005		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	367.7	>	One-Way Factored Shear (L-D. Kips):	158.3	0.43	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	367.7	>	One-Way Factored Shear (W-D., Kips)	158.3	0.43	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	372.6	>	One-Way Factored Shear (C-C, Kips):	162.5	0.44	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0065	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0065		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	1465.4	>	Moment at Bottom (L-Dir. K-Ft):	645.3	0.44	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	1465.4	>	Moment at Bottom (W-Dir. K-Ft):	645.3	0.44	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	2043.3	>	Moment at Bottom (C-C Dir. K-Ft):	912.6	0.45	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0065	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0065		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	1465.4	>	Moment at the top (L-Dir K-Ft):	310.5	0.21	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	1465.4	>	Moment at the top (W-Dir K-Ft):	310.5	0.21	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	2043.3	>	Moment at the top (C-C Dir. K-Ft):	291.6	0.14	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	765.5	k-ft.	Max. factored shear stress v_{u_CD}:		3.0	Psi
Max. factored shear stress v_{u_AB}:	15.7	Psi	Factored shear Strength ϕv_n:		201.2	Psi
Max. factored shear stress v_u:	15.7	Psi	Check Usage of Punching Shear Capacity:		0.08	OK!

EXHIBIT 9

Antenna Mount Analysis

August 26, 2021

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

B+T Group
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:	BOBDL00128A
	Site Name:	N/A
SBA Network Services Designation:	**Site Number:**	CT13529-A
	Site Name:	Manchester 1
	Application Number:	167826, v1
Engineering Firm Designation:	**B+T Group Project Number:**	149468.003.01
Site Data:	**93 Lake Street, Manchester, CT, 06042, Hartford County** **Latitude *41.78908*°, Longitude *-72.48208*°** **Monopole** **8 ft. Platform Mount**	

Dear Mr. Evans,

B+T Group is 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 69.3%)**

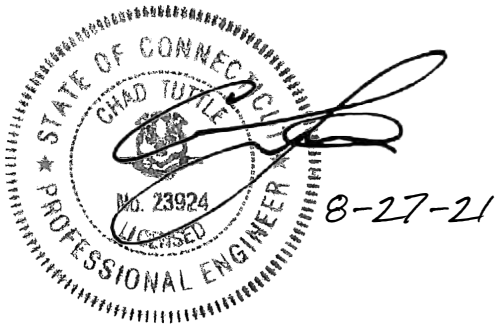
This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

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 at *B+T Group* 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: Massood Sattari, EIT

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



Chad E. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

The appurtenance mount consists of Commscope platform mount, Part# MC-PK8-DSH at 85 ft., attached to monopole at 93 Lake Street, Manchester, CT, 06042, Hartford County. The proposed antenna loading information was obtained from SBA Network Services, LLC. All information provided to B+T Group was assumed accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-G-2-2005 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 using a 3-second gust wind speed of 97 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	85	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: 08/02/2021	SBA Network Services, LLC.
RFDS		Date: 07/23/2021	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the 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. B+T Group should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

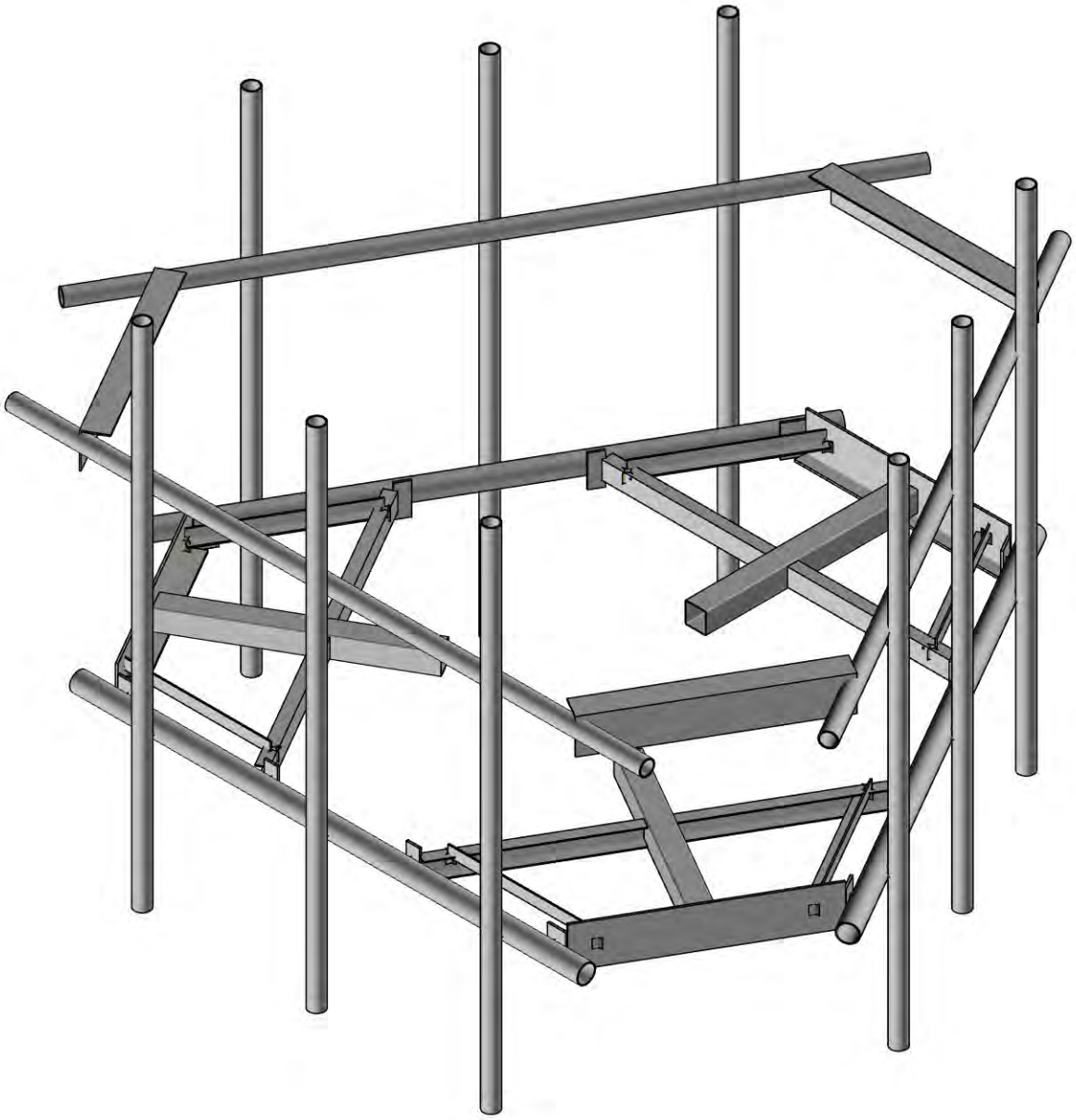
Table 3 – Mount Component Stresses vs. Capacity

Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Horizontals	85	10.2	Pass
-	Support Rails	85	17.4	Pass
-	Support Tubes	85	69.3	Pass
-	Support Channels	85	51.4	Pass
-	Support Angles	85	46.1	Pass
-	Mount Pipes	85	19.6	Pass
-	Connection Plates	85	28.5	Pass
-	Connection Angles	85	30.8	Pass
-	Connection Bolt		47.69	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-G standard for the proposed loading. (Refer to the RISA output for the specific members).

APPENDIX A
(RISA-3D Output)



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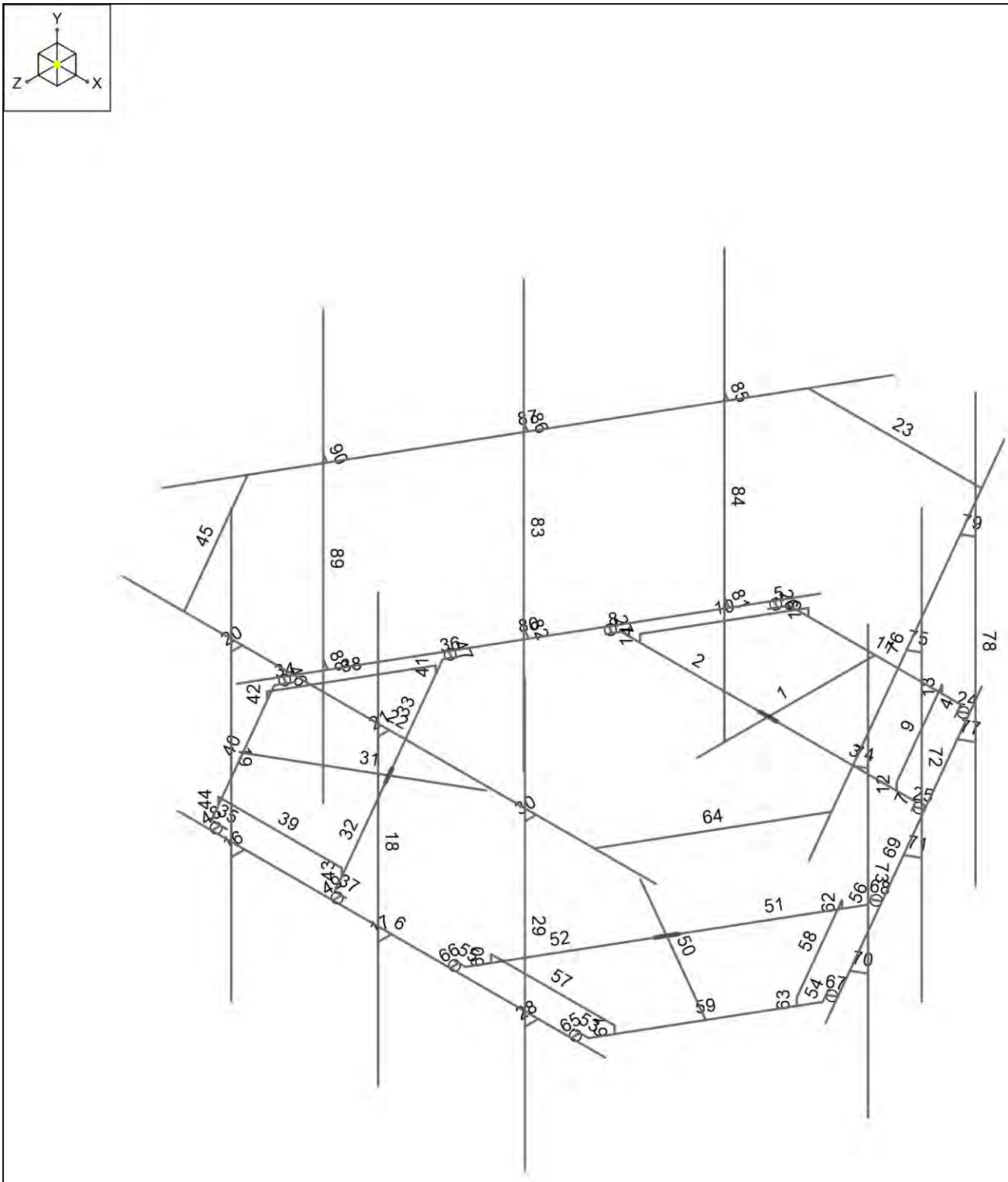

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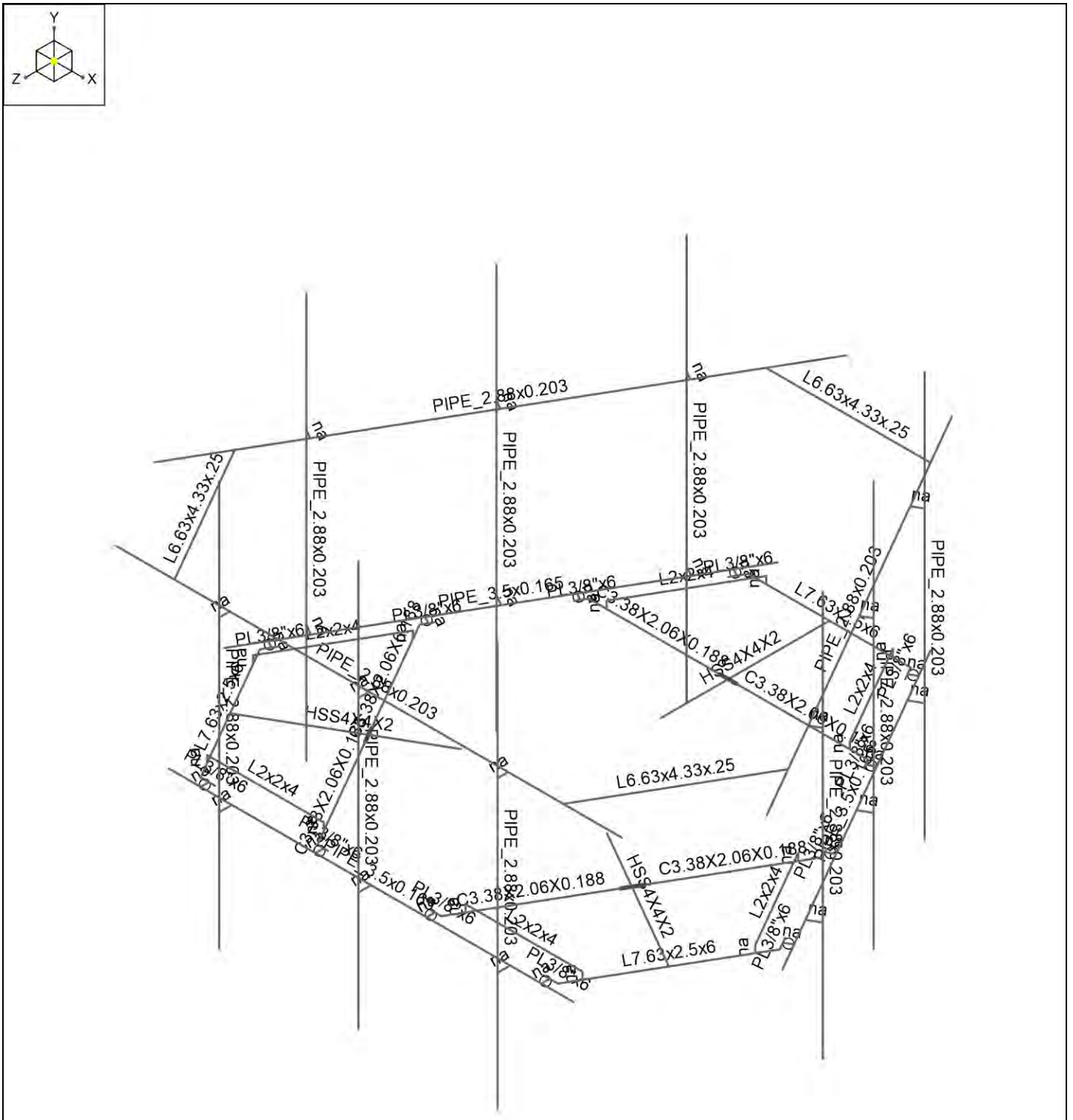

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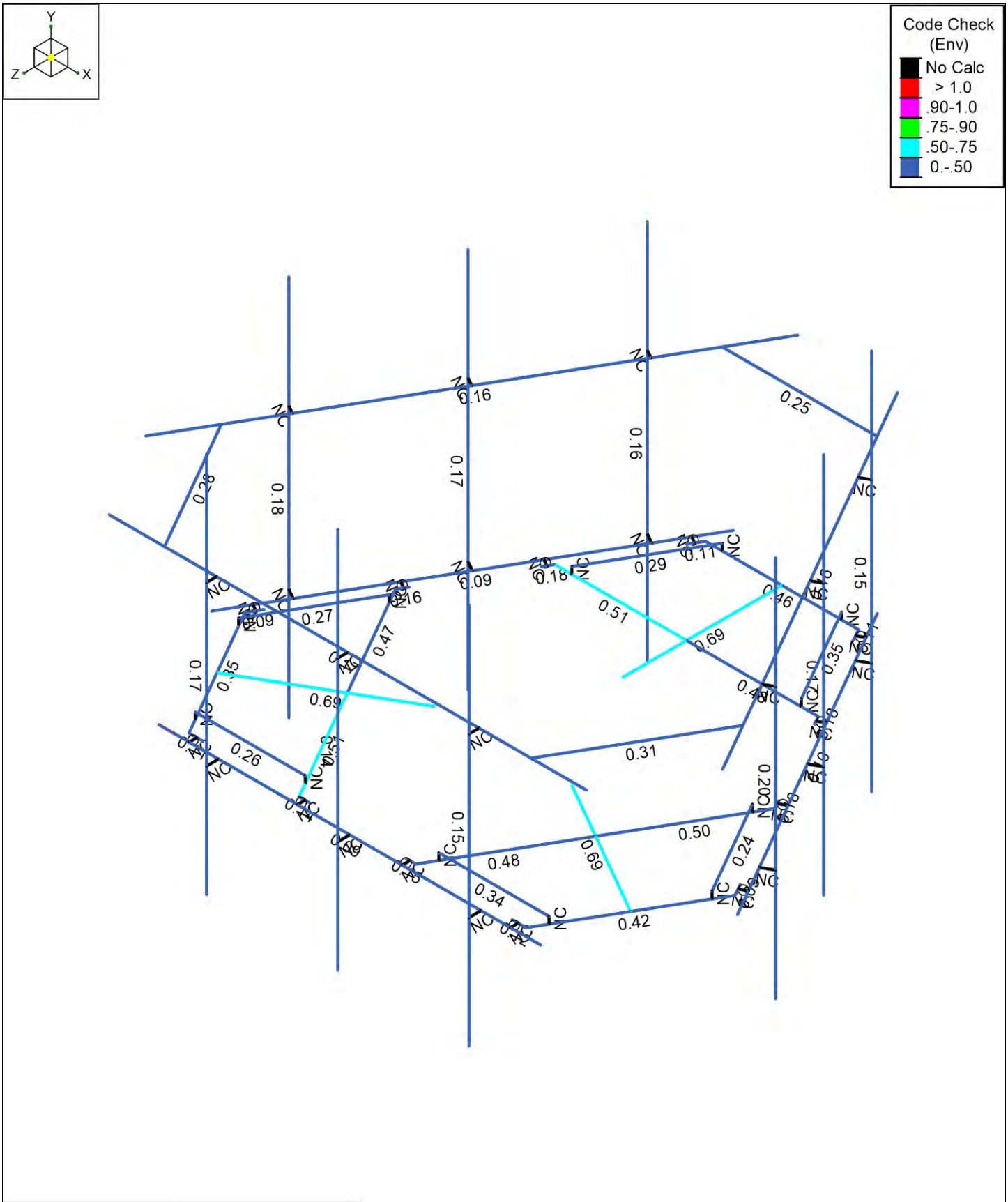

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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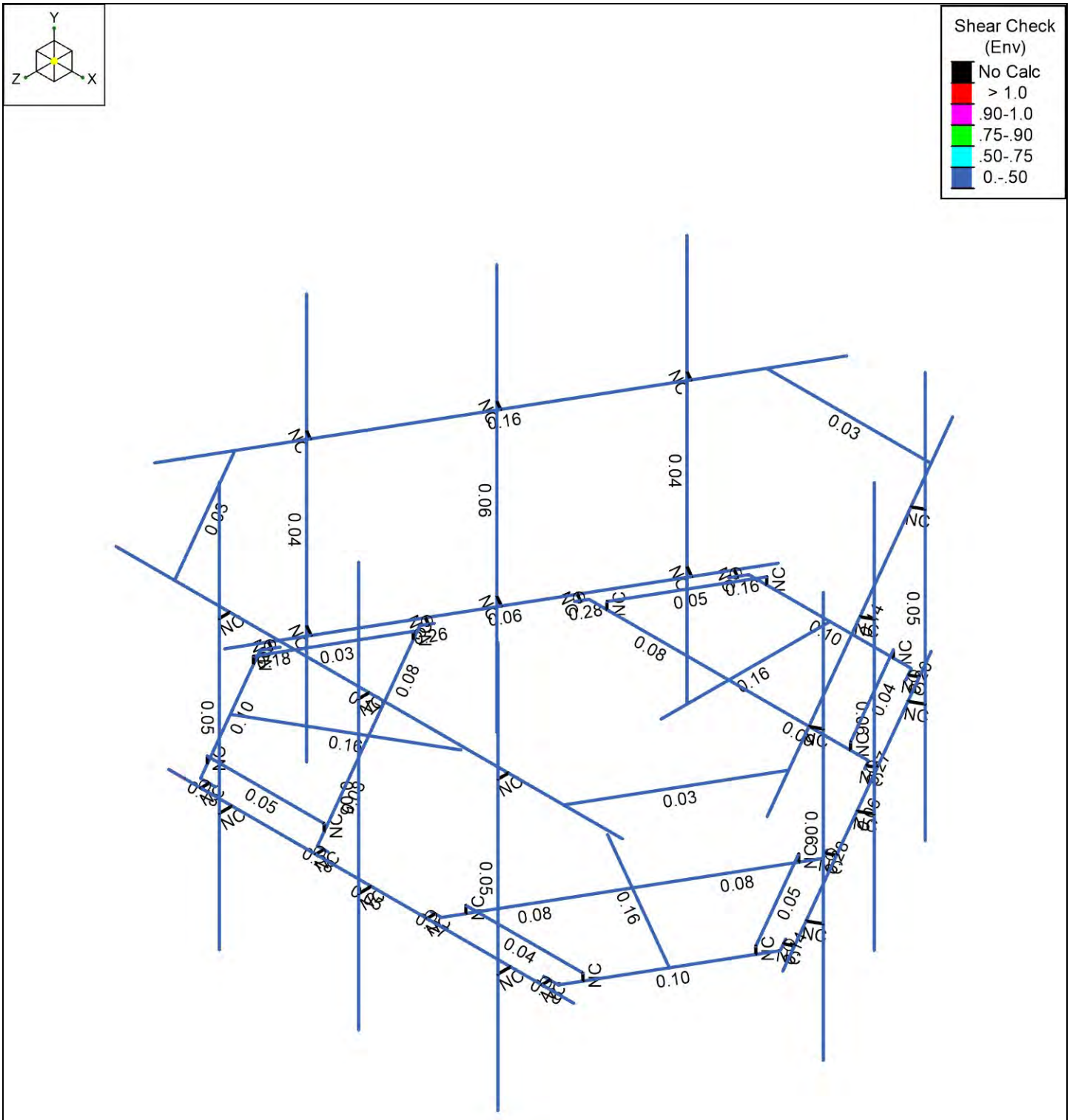

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	-0.	-1.671665	
2	2	0	-0.	-5.004998	
3	3	0	-0.	-3.004998	
4	4	2.758333	-0.	-3.004998	
5	5	-2.758333	-0.	-3.004998	
6	6	-1.603633	-0.	-5.004998	
7	7	1.603633	-0.	-5.004998	
8	8	1.749466	-0.	-4.752408	
9	9	-1.749466	-0.	-4.752408	
10	10	1.686966	-0.	-4.860661	
11	11	1.826792	-0.	-4.941389	
12	12	-1.686966	-0.	-4.860661	
13	13	-1.826792	-0.	-4.941389	
14	14	-3.999998	-0.	4.053075	
15	15	3.999998	-0.	4.053075	
16	16	2.8625	-0.	-2.824576	
17	17	2.820833	-0.	-2.896746	
18	18	2.960659	-0.	-2.977475	
19	19	-2.8625	-0.	-2.824576	
20	20	-2.820833	-0.	-2.896746	
21	21	-2.960659	-0.	-2.977475	
22	22	-1.25	0.140833	-5.004998	
23	23	-2.404701	0.140833	-3.004998	
24	24	2.404701	0.140833	-3.004998	
25	25	1.25	0.140833	-5.004998	
26	26	-1.25	-0.	-5.004998	
27	27	-2.404701	-0.	-3.004998	
28	28	2.404701	-0.	-3.004998	
29	29	1.25	-0.	-5.004998	
30	30	-2.749998	-0.	4.053075	
31	31	0.000002	-0.	4.053075	
32	32	-2.749998	-0.	4.303075	
33	33	0.000002	-0.	4.303075	
34	34	-2.749998	5.666663	4.303075	
35	35	0.000002	5.666663	4.303075	
36	36	-2.749998	-2.333337	4.303075	
37	37	0.000002	-2.333337	4.303075	
38	38	-2.749998	3.33333	4.303075	
39	39	0.000002	3.33333	4.303075	
40	40	-2.749998	3.33333	4.094741	
41	41	0.000002	3.33333	4.094741	
42	42	-5	3.33333	4.094741	
43	43	5	3.33333	4.094741	
44	44	1.625	3.33333	-5.374237	
45	45	-1.625	3.33333	-5.374237	
46	46	2.749998	-0.	4.053075	
47	47	2.749998	-0.	4.303075	
48	48	2.749998	5.666663	4.303075	
49	49	2.749998	-2.333337	4.303075	
50	50	2.749998	3.33333	4.303075	
51	51	2.749998	3.33333	4.094741	
52	52	0	-0.	0	
53	53	-1.447704	-0.	0.835832	
54	54	-4.334456	-0.	2.502499	
55	55	-2.602405	-0.	1.502499	
56	56	-3.981572	-0.	-0.886288	
57	57	-1.223238	-0.	3.891286	
58	58	-3.532639	-0.	3.891286	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
59	59	-5.136272	-0.	1.113712	
60	60	-4.990439	-0.	0.861122	
61	61	-3.240973	-0.	3.891286	
62	62	-5.052939	-0.	0.969375	
63	63	-5.192765	-0.	0.888646	
64	64	-3.365973	-0.	3.891286	
65	65	-3.365973	-0.	4.052743	
66	66	-3.877405	-0.	-1.06671	
67	67	-3.919072	-0.	-0.99454	
68	68	-4.058898	-0.	-1.075268	
69	69	-1.014905	-0.	3.891286	
70	70	-1.098239	-0.	3.891286	
71	71	-1.098239	-0.	4.052743	
72	72	-3.709456	0.140833	3.585031	
73	73	-1.400055	0.140833	3.585031	
74	74	-3.804755	0.140833	-0.580033	
75	75	-4.959456	0.140833	1.419967	
76	76	-3.709456	-0.	3.585031	
77	77	-1.400055	-0.	3.585031	
78	78	-3.804755	-0.	-0.580033	
79	79	-4.959456	-0.	1.419967	
80	80	-5.466725	3.33333	1.279827	
81	81	-3.841725	3.33333	4.09441	
82	82	1.447704	-0.	0.835832	
83	83	4.334456	-0.	2.502499	
84	84	2.602405	-0.	1.502499	
85	85	1.223238	-0.	3.891286	
86	86	3.981572	-0.	-0.886288	
87	87	5.136272	-0.	1.113712	
88	88	3.532639	-0.	3.891286	
89	89	3.240973	-0.	3.891286	
90	90	4.990439	-0.	0.861122	
91	91	3.365973	-0.	3.891286	
92	92	3.365973	-0.	4.052743	
93	93	5.052939	-0.	0.969375	
94	94	5.192765	-0.	0.888646	
95	95	1.014905	-0.	3.891286	
96	96	1.098239	-0.	3.891286	
97	97	1.098239	-0.	4.052743	
98	98	3.877405	-0.	-1.06671	
99	99	3.919072	-0.	-0.99454	
100	100	4.058898	-0.	-1.075268	
101	101	4.959456	0.140833	1.419967	
102	102	3.804755	0.140833	-0.580033	
103	103	1.400055	0.140833	3.585031	
104	104	3.709456	0.140833	3.585031	
105	105	4.959456	-0.	1.419967	
106	106	3.804755	-0.	-0.580033	
107	107	1.400055	-0.	3.585031	
108	108	3.709456	-0.	3.585031	
109	109	3.841725	3.33333	4.09441	
110	110	5.466725	3.33333	1.279827	
111	111	5.510065	-0.	1.437563	
112	112	1.510067	-0.	-5.490637	
113	113	4.885065	-0.	0.355031	
114	114	3.510065	-0.	-2.026539	
115	115	5.101571	-0.	0.230031	
116	116	3.726571	-0.	-2.151539	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
117	117	5.101571	5.666663	0.230031	
118	118	3.726571	5.666663	-2.151539	
119	119	5.101571	-2.333337	0.230031	
120	120	3.726571	-2.333337	-2.151539	
121	121	5.101571	3.33333	0.230031	
122	122	3.726571	3.33333	-2.151539	
123	123	4.921149	3.33333	0.334197	
124	124	3.546149	3.33333	-2.047372	
125	125	6.04615	3.33333	2.282756	
126	126	1.04615	3.33333	-6.377498	
127	127	2.135067	-0.	-4.408106	
128	128	2.351573	-0.	-4.533106	
129	129	2.351573	5.666663	-4.533106	
130	130	2.351573	-2.333337	-4.533106	
131	131	2.351573	3.33333	-4.533106	
132	132	2.171151	3.33333	-4.428939	
133	133	-1.510067	-0.	-5.490637	
134	134	-5.510065	-0.	1.437563	
135	135	-2.135067	-0.	-4.408106	
136	136	-3.510067	-0.	-2.026536	
137	137	-2.351573	-0.	-4.533106	
138	138	-3.726573	-0.	-2.151536	
139	139	-2.351573	5.666663	-4.533106	
140	140	-3.726573	5.666663	-2.151536	
141	141	-2.351573	-2.333337	-4.533106	
142	142	-3.726573	-2.333337	-2.151536	
143	143	-2.351573	3.33333	-4.533106	
144	144	-3.726573	3.33333	-2.151536	
145	145	-2.171151	3.33333	-4.428939	
146	146	-3.546151	3.33333	-2.047369	
147	147	-1.04615	3.33333	-6.377498	
148	148	-6.04615	3.33333	2.282756	
149	149	-4.885065	-0.	0.355031	
150	150	-5.101571	-0.	0.230031	
151	151	-5.101571	5.666663	0.230031	
152	152	-5.101571	-2.333337	0.230031	
153	153	-5.101571	3.33333	0.230031	
154	154	-4.921149	3.33333	0.334197	

Node Boundary Conditions

	Y [k/in]	X Rot [k-ft/rad]	X [k/in]	Z Rot [k-ft/rad]	Z [k/in]	Node Label	Y Rot [k-ft/rad]
1	Reaction	Reaction	Reaction	Reaction	Reaction	1	Reaction
2						2	
3						3	
4						4	
5						5	
6						16	
7						17	
8						19	
9						20	
10						22	
11						25	
12						26	
13						29	
14	Reaction	Reaction	Reaction	Reaction	Reaction	53	Reaction
15						54	
16						55	
17						56	

Node Boundary Conditions (Continued)

	Y [k/in]	X Rot [k-ft/rad]	X [k/in]	Z Rot [k-ft/rad]	Z [k/in]	Node Label	Y Rot [k-ft/rad]
18						57	
19						66	
20						67	
21						69	
22						70	
23						72	
24						75	
25						76	
26						79	
27	Reaction	Reaction	Reaction	Reaction	Reaction	82	Reaction
28						83	
29						84	
30						85	
31						86	
32						95	
33						96	
34						98	
35						99	
36						101	
37						104	
38						105	
39						108	

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

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
54	54	87	90		MF-CP1	Beam	RECT	A36 Gr.36	Typical
55	55	95	85		MF-CP1	Beam	RECT	A36 Gr.36	Typical
56	56	86	98		MF-CP1	Beam	RECT	A36 Gr.36	Typical
57	57	104	103		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
58	58	102	101		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
59	59	87	88		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
60	60	107	103		RIGID	None	None	RIGID	Typical
61	61	108	104		RIGID	None	None	RIGID	Typical
62	62	106	102		RIGID	None	None	RIGID	Typical
63	63	105	101		RIGID	None	None	RIGID	Typical
64	64	109	110	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
65	65	92	91		RIGID	None	None	RIGID	Typical
66	66	97	96		RIGID	None	None	RIGID	Typical
67	67	94	93		RIGID	None	None	RIGID	Typical
68	68	100	99		RIGID	None	None	RIGID	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	128	127		RIGID	None	None	RIGID	Typical
78	78	129	130		MF-P1	Column	Pipe	A500 Gr.C	Typical
79	79	131	132		RIGID	None	None	RIGID	Typical
80	80	133	134		MF-H1	Beam	Pipe	A500 Gr.C	Typical
81	81	137	135		RIGID	None	None	RIGID	Typical
82	82	138	136		RIGID	None	None	RIGID	Typical
83	83	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	150	149		RIGID	None	None	RIGID	Typical
89	89	151	152		MF-P1	Column	Pipe	A500 Gr.C	Typical
90	90	153	154		RIGID	None	None	RIGID	Typical

Member Advanced Data

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

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
19	19				Yes	** NA **	None
20	20				Yes	** NA **	None
21	21				Yes	** NA **	None
22	22				Yes		None
23	23				Yes	Default	None
24	24	OOOOOX			Yes	** NA **	None
25	25	OOOOOX			Yes	** NA **	None
26	26	OOOOOX			Yes	** NA **	None
27	27	OOOOOX			Yes	** NA **	None
28	28				Yes	** NA **	None
29	29				Yes	** NA **	None
30	30				Yes	** NA **	None
31	31				Yes		None
32	32			2	Yes		None
33	33		2		Yes		None
34	34				Yes	Default	None
35	35				Yes	Default	None
36	36				Yes	Default	None
37	37				Yes	Default	None
38	38				Yes		None
39	39				Yes		None
40	40				Yes		None
41	41				Yes	** NA **	None
42	42				Yes	** NA **	None
43	43				Yes	** NA **	None
44	44				Yes	** NA **	None
45	45				Yes	Default	None
46	46	OOOOOX			Yes	** NA **	None
47	47	OOOOOX			Yes	** NA **	None
48	48	OOOOOX			Yes	** NA **	None
49	49	OOOOOX			Yes	** NA **	None
50	50				Yes		None
51	51			2	Yes		None
52	52		2		Yes		None
53	53				Yes	Default	None
54	54				Yes	Default	None
55	55				Yes	Default	None
56	56				Yes	Default	None
57	57				Yes		None
58	58				Yes		None
59	59				Yes		None
60	60				Yes	** NA **	None
61	61				Yes	** NA **	None
62	62				Yes	** NA **	None
63	63				Yes	** NA **	None
64	64				Yes	Default	None
65	65	OOOOOX			Yes	** NA **	None
66	66	OOOOOX			Yes	** NA **	None
67	67	OOOOOX			Yes	** NA **	None
68	68	OOOOOX			Yes	** NA **	None
69	69				Yes		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		None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
77	77				Yes	** NA **	None
78	78				Yes	** NA **	None
79	79				Yes	** NA **	None
80	80				Yes		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		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	23	MF-H3	3.25	Lbyy	Lateral
16	29	MF-P1	8	Lbyy	Lateral
17	31	SF-H1	3.333	Lbyy	Lateral
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	45	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	64	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

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
42	76	MF-H2	10	Lbyy	Lateral
43	78	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	89	MF-P1	8	Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Y	-0.032	%15
2	29	Y	-0.032	%85
3	29	Y	-0.075	%20
4	29	Y	-0.064	%50
5	29	Y	0	0
6	89	Y	-0.032	%15
7	89	Y	-0.032	%85
8	89	Y	-0.075	%20
9	89	Y	-0.064	%50
10	89	Y	0	0
11	78	Y	-0.032	%15
12	78	Y	-0.032	%85
13	78	Y	-0.075	%20
14	78	Y	-0.064	%50
15	78	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	29	Z	-0.175	%15
2	29	Z	-0.175	%85
3	29	Z	-0.055	%20
4	29	Z	-0.055	%50
5	29	Z	0	0
6	89	Z	-0.175	%15
7	89	Z	-0.175	%85
8	89	Z	-0.055	%20
9	89	Z	-0.055	%50
10	89	Z	0	0
11	78	Z	-0.175	%15
12	78	Z	-0.175	%85
13	78	Z	-0.055	%20
14	78	Z	-0.055	%50
15	78	Z	0	0
16	31	Z	-0.056	%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	29	X	-0.07	%15
2	29	X	-0.07	%85
3	29	X	-0.033	%20
4	29	X	-0.029	%50
5	29	X	0	0
6	89	X	-0.07	%15
7	89	X	-0.07	%85
8	89	X	-0.033	%20
9	89	X	-0.029	%50
10	89	X	0	0
11	78	X	-0.07	%15
12	78	X	-0.07	%85
13	78	X	-0.033	%20
14	78	X	-0.029	%50
15	78	X	0	0
16	31	X	-0.032	%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	29	Z	-0.06	%15
2	29	Z	-0.06	%85
3	29	Z	-0.024	%20
4	29	Z	-0.024	%50
5	29	Z	0	0
6	89	Z	-0.06	%15
7	89	Z	-0.06	%85
8	89	Z	-0.024	%20
9	89	Z	-0.024	%50
10	89	Z	0	0
11	78	Z	-0.06	%15
12	78	Z	-0.06	%85
13	78	Z	-0.024	%20
14	78	Z	-0.024	%50
15	78	Z	0	0
16	31	Z	-0.025	%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	29	X	-0.03	%15
2	29	X	-0.03	%85
3	29	X	-0.017	%20
4	29	X	-0.015	%50
5	29	X	0	0
6	89	X	-0.03	%15
7	89	X	-0.03	%85
8	89	X	-0.017	%20
9	89	X	-0.015	%50

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
10	89	X	0	0
11	78	X	-0.03	%15
12	78	X	-0.03	%85
13	78	X	-0.017	%20
14	78	X	-0.015	%50
15	78	X	0	0
16	31	X	-0.016	%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	29	Z	-0.017	%15
2	29	Z	-0.017	%85
3	29	Z	-0.005	%20
4	29	Z	-0.005	%50
5	29	Z	0	0
6	89	Z	-0.017	%15
7	89	Z	-0.017	%85
8	89	Z	-0.005	%20
9	89	Z	-0.005	%50
10	89	Z	0	0
11	78	Z	-0.017	%15
12	78	Z	-0.017	%85
13	78	Z	-0.005	%20
14	78	Z	-0.005	%50
15	78	Z	0	0
16	31	Z	-0.005	%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	29	X	-0.007	%15
2	29	X	-0.007	%85
3	29	X	-0.003	%20
4	29	X	-0.003	%50
5	29	X	0	0
6	89	X	-0.007	%15
7	89	X	-0.007	%85
8	89	X	-0.003	%20
9	89	X	-0.003	%50
10	89	X	0	0
11	78	X	-0.007	%15
12	78	X	-0.007	%85
13	78	X	-0.003	%20
14	78	X	-0.003	%50
15	78	X	0	0
16	31	X	-0.003	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
20	31	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Y	-0.191	%15
2	29	Y	-0.191	%85
3	29	Y	-0.069	%20
4	29	Y	-0.067	%50
5	29	Y	0	0
6	89	Y	-0.191	%15
7	89	Y	-0.191	%85
8	89	Y	-0.069	%20
9	89	Y	-0.067	%50
10	89	Y	0	0
11	78	Y	-0.191	%15
12	78	Y	-0.191	%85
13	78	Y	-0.069	%20
14	78	Y	-0.067	%50
15	78	Y	0	0
16	31	Y	-0.07	%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 13 : Maint LL 1)

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

Member Point Loads (BLC 14 : Maint LL 2)

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

Member Point Loads (BLC 15 : Maint LL 3)

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

Member Point Loads (BLC 16 : Maint LL 4)

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

Member Point Loads (BLC 17 : Maint LL 5)

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

Member Point Loads (BLC 18 : Maint LL 6)

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

Member Point Loads (BLC 19 : Maint LL 7)

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

Member Point Loads (BLC 20 : Maint LL 8)

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

Member Point Loads (BLC 21 : Maint LL 9)

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

Member Point Loads (BLC 22 : Maint LL 10)

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

Member Point Loads (BLC 23 : Maint LL 11)

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

Member Point Loads (BLC 24 : Maint LL 12)

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

Member Point Loads (BLC 25 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	31	Y	-0.25	%95

Member Point Loads (BLC 26 : Maint LL 14)

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

Member Point Loads (BLC 27 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	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	-0.014	-0.014	0	%100
2	2	Z	-0.012	-0.012	0	%100
3	3	Z	-0.012	-0.012	0	%100
4	4	Z	-0.017	-0.017	0	%100
5	5	Z	-0.017	-0.017	0	%100
6	6	Z	-0.01	-0.01	0	%100
7	7	Z	-0.017	-0.017	0	%100
8	8	Z	-0.017	-0.017	0	%100
9	9	Z	-0.008	-0.008	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, %)]
10	10	Z	-0.008	-0.008	0	%100
11	11	Z	-0.023	-0.023	0	%100
12	18	Z	-0.008	-0.008	0	%100
13	19	Z	-0.008	-0.008	0	%100
14	22	Z	-0.008	-0.008	0	%100
15	23	Z	-0.02	-0.02	0	%100
16	29	Z	-0.008	-0.008	0	%100
17	31	Z	-0.014	-0.014	0	%100
18	32	Z	-0.012	-0.012	0	%100
19	33	Z	-0.012	-0.012	0	%100
20	34	Z	-0.017	-0.017	0	%100
21	35	Z	-0.017	-0.017	0	%100
22	36	Z	-0.017	-0.017	0	%100
23	37	Z	-0.017	-0.017	0	%100
24	38	Z	-0.008	-0.008	0	%100
25	39	Z	-0.008	-0.008	0	%100
26	40	Z	-0.023	-0.023	0	%100
27	45	Z	-0.02	-0.02	0	%100
28	50	Z	-0.014	-0.014	0	%100
29	51	Z	-0.012	-0.012	0	%100
30	52	Z	-0.012	-0.012	0	%100
31	53	Z	-0.017	-0.017	0	%100
32	54	Z	-0.017	-0.017	0	%100
33	55	Z	-0.017	-0.017	0	%100
34	56	Z	-0.017	-0.017	0	%100
35	57	Z	-0.008	-0.008	0	%100
36	58	Z	-0.008	-0.008	0	%100
37	59	Z	-0.023	-0.023	0	%100
38	64	Z	-0.02	-0.02	0	%100
39	69	Z	-0.01	-0.01	0	%100
40	72	Z	-0.008	-0.008	0	%100
41	73	Z	-0.008	-0.008	0	%100
42	76	Z	-0.008	-0.008	0	%100
43	78	Z	-0.008	-0.008	0	%100
44	80	Z	-0.01	-0.01	0	%100
45	83	Z	-0.008	-0.008	0	%100
46	84	Z	-0.008	-0.008	0	%100
47	87	Z	-0.008	-0.008	0	%100
48	89	Z	-0.008	-0.008	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	-0.014	-0.014	0	%100
2	2	X	-0.012	-0.012	0	%100
3	3	X	-0.012	-0.012	0	%100
4	4	X	-0.017	-0.017	0	%100
5	5	X	-0.017	-0.017	0	%100
6	6	X	-0.01	-0.01	0	%100
7	7	X	-0.017	-0.017	0	%100
8	8	X	-0.017	-0.017	0	%100
9	9	X	-0.008	-0.008	0	%100
10	10	X	-0.008	-0.008	0	%100
11	11	X	-0.023	-0.023	0	%100
12	18	X	-0.008	-0.008	0	%100
13	19	X	-0.008	-0.008	0	%100
14	22	X	-0.008	-0.008	0	%100
15	23	X	-0.02	-0.02	0	%100
16	29	X	-0.008	-0.008	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, %)]
17	31	X	-0.014	-0.014	0	%100
18	32	X	-0.012	-0.012	0	%100
19	33	X	-0.012	-0.012	0	%100
20	34	X	-0.017	-0.017	0	%100
21	35	X	-0.017	-0.017	0	%100
22	36	X	-0.017	-0.017	0	%100
23	37	X	-0.017	-0.017	0	%100
24	38	X	-0.008	-0.008	0	%100
25	39	X	-0.008	-0.008	0	%100
26	40	X	-0.023	-0.023	0	%100
27	45	X	-0.02	-0.02	0	%100
28	50	X	-0.014	-0.014	0	%100
29	51	X	-0.012	-0.012	0	%100
30	52	X	-0.012	-0.012	0	%100
31	53	X	-0.017	-0.017	0	%100
32	54	X	-0.017	-0.017	0	%100
33	55	X	-0.017	-0.017	0	%100
34	56	X	-0.017	-0.017	0	%100
35	57	X	-0.008	-0.008	0	%100
36	58	X	-0.008	-0.008	0	%100
37	59	X	-0.023	-0.023	0	%100
38	64	X	-0.02	-0.02	0	%100
39	69	X	-0.01	-0.01	0	%100
40	72	X	-0.008	-0.008	0	%100
41	73	X	-0.008	-0.008	0	%100
42	76	X	-0.008	-0.008	0	%100
43	78	X	-0.008	-0.008	0	%100
44	80	X	-0.01	-0.01	0	%100
45	83	X	-0.008	-0.008	0	%100
46	84	X	-0.008	-0.008	0	%100
47	87	X	-0.008	-0.008	0	%100
48	89	X	-0.008	-0.008	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	-0.009	-0.009	0	%100
2	2	Z	-0.008	-0.008	0	%100
3	3	Z	-0.008	-0.008	0	%100
4	4	Z	-0.017	-0.017	0	%100
5	5	Z	-0.017	-0.017	0	%100
6	6	Z	-0.003	-0.003	0	%100
7	7	Z	-0.021	-0.021	0	%100
8	8	Z	-0.021	-0.021	0	%100
9	9	Z	-0.007	-0.007	0	%100
10	10	Z	-0.007	-0.007	0	%100
11	11	Z	-0.011	-0.011	0	%100
12	18	Z	-0.003	-0.003	0	%100
13	19	Z	-0.003	-0.003	0	%100
14	22	Z	-0.003	-0.003	0	%100
15	23	Z	-0.01	-0.01	0	%100
16	29	Z	-0.003	-0.003	0	%100
17	31	Z	-0.009	-0.009	0	%100
18	32	Z	-0.008	-0.008	0	%100
19	33	Z	-0.008	-0.008	0	%100
20	34	Z	-0.017	-0.017	0	%100
21	35	Z	-0.017	-0.017	0	%100
22	36	Z	-0.021	-0.021	0	%100
23	37	Z	-0.021	-0.021	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, %)]
24	38	Z	-0.007	-0.007	0	%100
25	39	Z	-0.007	-0.007	0	%100
26	40	Z	-0.011	-0.011	0	%100
27	45	Z	-0.01	-0.01	0	%100
28	50	Z	-0.009	-0.009	0	%100
29	51	Z	-0.008	-0.008	0	%100
30	52	Z	-0.008	-0.008	0	%100
31	53	Z	-0.017	-0.017	0	%100
32	54	Z	-0.017	-0.017	0	%100
33	55	Z	-0.021	-0.021	0	%100
34	56	Z	-0.021	-0.021	0	%100
35	57	Z	-0.007	-0.007	0	%100
36	58	Z	-0.007	-0.007	0	%100
37	59	Z	-0.011	-0.011	0	%100
38	64	Z	-0.01	-0.01	0	%100
39	69	Z	-0.003	-0.003	0	%100
40	72	Z	-0.003	-0.003	0	%100
41	73	Z	-0.003	-0.003	0	%100
42	76	Z	-0.003	-0.003	0	%100
43	78	Z	-0.003	-0.003	0	%100
44	80	Z	-0.003	-0.003	0	%100
45	83	Z	-0.003	-0.003	0	%100
46	84	Z	-0.003	-0.003	0	%100
47	87	Z	-0.003	-0.003	0	%100
48	89	Z	-0.003	-0.003	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	-0.009	-0.009	0	%100
2	2	X	-0.008	-0.008	0	%100
3	3	X	-0.008	-0.008	0	%100
4	4	X	-0.017	-0.017	0	%100
5	5	X	-0.017	-0.017	0	%100
6	6	X	-0.003	-0.003	0	%100
7	7	X	-0.021	-0.021	0	%100
8	8	X	-0.021	-0.021	0	%100
9	9	X	-0.007	-0.007	0	%100
10	10	X	-0.007	-0.007	0	%100
11	11	X	-0.011	-0.011	0	%100
12	18	X	-0.003	-0.003	0	%100
13	19	X	-0.003	-0.003	0	%100
14	22	X	-0.003	-0.003	0	%100
15	23	X	-0.01	-0.01	0	%100
16	29	X	-0.003	-0.003	0	%100
17	31	X	-0.009	-0.009	0	%100
18	32	X	-0.008	-0.008	0	%100
19	33	X	-0.008	-0.008	0	%100
20	34	X	-0.017	-0.017	0	%100
21	35	X	-0.017	-0.017	0	%100
22	36	X	-0.021	-0.021	0	%100
23	37	X	-0.021	-0.021	0	%100
24	38	X	-0.007	-0.007	0	%100
25	39	X	-0.007	-0.007	0	%100
26	40	X	-0.011	-0.011	0	%100
27	45	X	-0.01	-0.01	0	%100
28	50	X	-0.009	-0.009	0	%100
29	51	X	-0.008	-0.008	0	%100
30	52	X	-0.008	-0.008	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, %)]
31	53	X	-0.017	-0.017	0	%100
32	54	X	-0.017	-0.017	0	%100
33	55	X	-0.021	-0.021	0	%100
34	56	X	-0.021	-0.021	0	%100
35	57	X	-0.007	-0.007	0	%100
36	58	X	-0.007	-0.007	0	%100
37	59	X	-0.011	-0.011	0	%100
38	64	X	-0.01	-0.01	0	%100
39	69	X	-0.003	-0.003	0	%100
40	72	X	-0.003	-0.003	0	%100
41	73	X	-0.003	-0.003	0	%100
42	76	X	-0.003	-0.003	0	%100
43	78	X	-0.003	-0.003	0	%100
44	80	X	-0.003	-0.003	0	%100
45	83	X	-0.003	-0.003	0	%100
46	84	X	-0.003	-0.003	0	%100
47	87	X	-0.003	-0.003	0	%100
48	89	X	-0.003	-0.003	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	23	Z	-0.002	-0.002	0	%100
16	29	Z	-0.0004	-0.0004	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	45	Z	-0.002	-0.002	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.001	-0.001	0	%100
30	52	Z	-0.001	-0.001	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
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

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, %)]
38	64	Z	-0.002	-0.002	0	%100
39	69	Z	-0.0005	-0.0005	0	%100
40	72	Z	-0.0004	-0.0004	0	%100
41	73	Z	-0.0004	-0.0004	0	%100
42	76	Z	-0.0004	-0.0004	0	%100
43	78	Z	-0.0004	-0.0004	0	%100
44	80	Z	-0.0005	-0.0005	0	%100
45	83	Z	-0.0004	-0.0004	0	%100
46	84	Z	-0.0004	-0.0004	0	%100
47	87	Z	-0.0004	-0.0004	0	%100
48	89	Z	-0.0004	-0.0004	0	%100

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	23	X	-0.002	-0.002	0	%100
16	29	X	-0.0004	-0.0004	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	45	X	-0.002	-0.002	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.001	-0.001	0	%100
30	52	X	-0.001	-0.001	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.002	-0.002	0	%100
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	64	X	-0.002	-0.002	0	%100
39	69	X	-0.0005	-0.0005	0	%100
40	72	X	-0.0004	-0.0004	0	%100
41	73	X	-0.0004	-0.0004	0	%100
42	76	X	-0.0004	-0.0004	0	%100
43	78	X	-0.0004	-0.0004	0	%100
44	80	X	-0.0005	-0.0005	0	%100

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, %)]
45	83	X	-0.0004	-0.0004	0	%100
46	84	X	-0.0004	-0.0004	0	%100
47	87	X	-0.0004	-0.0004	0	%100
48	89	X	-0.0004	-0.0004	0	%100

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	-0.021	-0.021	0	%100
2	2	Y	-0.017	-0.017	0	%100
3	3	Y	-0.017	-0.017	0	%100
4	4	Y	-0.022	-0.022	0	%100
5	5	Y	-0.022	-0.022	0	%100
6	6	Y	-0.015	-0.015	0	%100
7	7	Y	-0.022	-0.022	0	%100
8	8	Y	-0.022	-0.022	0	%100
9	9	Y	-0.013	-0.013	0	%100
10	10	Y	-0.013	-0.013	0	%100
11	11	Y	-0.027	-0.027	0	%100
12	18	Y	-0.014	-0.014	0	%100
13	19	Y	-0.014	-0.014	0	%100
14	22	Y	-0.014	-0.014	0	%100
15	23	Y	-0.027	-0.027	0	%100
16	29	Y	-0.014	-0.014	0	%100
17	31	Y	-0.021	-0.021	0	%100
18	32	Y	-0.017	-0.017	0	%100
19	33	Y	-0.017	-0.017	0	%100
20	34	Y	-0.022	-0.022	0	%100
21	35	Y	-0.022	-0.022	0	%100
22	36	Y	-0.022	-0.022	0	%100
23	37	Y	-0.022	-0.022	0	%100
24	38	Y	-0.013	-0.013	0	%100
25	39	Y	-0.013	-0.013	0	%100
26	40	Y	-0.027	-0.027	0	%100
27	45	Y	-0.027	-0.027	0	%100
28	50	Y	-0.021	-0.021	0	%100
29	51	Y	-0.017	-0.017	0	%100
30	52	Y	-0.017	-0.017	0	%100
31	53	Y	-0.022	-0.022	0	%100
32	54	Y	-0.022	-0.022	0	%100
33	55	Y	-0.022	-0.022	0	%100
34	56	Y	-0.022	-0.022	0	%100
35	57	Y	-0.013	-0.013	0	%100
36	58	Y	-0.013	-0.013	0	%100
37	59	Y	-0.027	-0.027	0	%100
38	64	Y	-0.027	-0.027	0	%100
39	69	Y	-0.015	-0.015	0	%100
40	72	Y	-0.014	-0.014	0	%100
41	73	Y	-0.014	-0.014	0	%100
42	76	Y	-0.014	-0.014	0	%100
43	78	Y	-0.014	-0.014	0	%100
44	80	Y	-0.015	-0.015	0	%100
45	83	Y	-0.014	-0.014	0	%100
46	84	Y	-0.014	-0.014	0	%100
47	87	Y	-0.014	-0.014	0	%100
48	89	Y	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 28 : 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	9	Y	-0.026	-0.02	0	1.039
2	9	Y	-0.02	-0.014	1.039	2.078
3	10	Y	-0.01	-0.02	0.231	2.309
4	38	Y	-0.035	-0.016	0	1.155
5	38	Y	-0.016	0.0006164	1.155	2.309
6	39	Y	-0.018	-0.016	0.231	2.309
7	57	Y	-0.018	-0.016	0	2.078
8	58	Y	0.0006163	-0.016	0	1.155
9	58	Y	-0.016	-0.035	1.155	2.309

Member Distributed Loads (BLC 29 : 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	-0.027	-0.021	0	1.039
2	9	Y	-0.021	-0.015	1.039	2.078
3	10	Y	-0.011	-0.021	0.231	2.309
4	38	Y	-0.035	-0.016	0	1.155
5	38	Y	-0.016	0.0006164	1.155	2.309
6	39	Y	-0.018	-0.016	0.231	2.309
7	57	Y	-0.018	-0.016	0	2.078
8	58	Y	0.0006163	-0.016	0	1.155
9	58	Y	-0.016	-0.035	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	Live Load a	LL		3			
10	Live Load b	LL		3			
11	Live Load c	LL		3			
12	Live Load d	LL					
13	Maint LL 1	LL			1		
14	Maint LL 2	LL			1		
15	Maint LL 3	LL			1		
16	Maint LL 4	LL			1		
17	Maint LL 5	LL			1		
18	Maint LL 6	LL			1		
19	Maint LL 7	LL			1		
20	Maint LL 8	LL			1		
21	Maint LL 9	LL			1		
22	Maint LL 10	LL			1		
23	Maint LL 11	LL			1		
24	Maint LL 12	LL			1		
25	Maint LL 13	LL			1		
26	Maint LL 14	LL			1		
27	Maint LL 15	LL			1		
28	BLC 1 Transient Area Loads	None				9	
29	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	0.9 D + 1.6 - 0 W	Yes	Y	1	0.9	2	1.6				
3	0.9 D + 1.6 - 30 W	Yes	Y	1	0.9	2	1.386	3	0.8		
4	0.9 D + 1.6 - 60 W	Yes	Y	1	0.9	3	1.386	2	0.8		
5	0.9 D + 1.6 - 90 W	Yes	Y	1	0.9	3	1.6				
6	0.9 D + 1.6 - 120 W	Yes	Y	1	0.9	3	1.386	2	-0.8		
7	0.9 D + 1.6 - 150 W	Yes	Y	1	0.9	2	-1.386	3	0.8		
8	0.9 D + 1.6 - 180 W	Yes	Y	1	0.9	2	-1.6				
9	0.9 D + 1.6 - 210 W	Yes	Y	1	0.9	2	-1.386	3	-0.8		
10	0.9 D + 1.6 - 240 W	Yes	Y	1	0.9	3	-1.386	2	-0.8		
11	0.9 D + 1.6 - 270 W	Yes	Y	1	0.9	3	-1.6				
12	0.9 D + 1.6 - 300 W	Yes	Y	1	0.9	3	-1.386	2	0.8		
13	0.9 D + 1.6 - 330 W	Yes	Y	1	0.9	2	1.386	3	-0.8		
14	1.2 D + 1.6 - 0 W	Yes	Y	1	1.2	2	1.6				
15	1.2 D + 1.6 - 30 W	Yes	Y	1	1.2	2	1.386	3	0.8		
16	1.2 D + 1.6 - 60 W	Yes	Y	1	1.2	3	1.386	2	0.8		
17	1.2 D + 1.6 - 90 W	Yes	Y	1	1.2	3	1.6				
18	1.2 D + 1.6 - 120 W	Yes	Y	1	1.2	3	1.386	2	-0.8		
19	1.2 D + 1.6 - 150 W	Yes	Y	1	1.2	2	-1.386	3	0.8		
20	1.2 D + 1.6 - 180 W	Yes	Y	1	1.2	2	-1.6				
21	1.2 D + 1.6 - 210 W	Yes	Y	1	1.2	2	-1.386	3	-0.8		
22	1.2 D + 1.6 - 240 W	Yes	Y	1	1.2	3	-1.386	2	-0.8		
23	1.2 D + 1.6 - 270 W	Yes	Y	1	1.2	3	-1.6				
24	1.2 D + 1.6 - 300 W	Yes	Y	1	1.2	3	-1.386	2	0.8		
25	1.2 D + 1.6 - 330 W	Yes	Y	1	1.2	2	1.386	3	-0.8		
26	0.9 D + 1.6 - 0 W/Ice	Yes	Y	1	0.9	4	1.6			8	1
27	0.9 D + 1.6 - 30 W/Ice	Yes	Y	1	0.9	4	1.386	5	0.8	8	1
28	0.9 D + 1.6 - 60 W/Ice	Yes	Y	1	0.9	5	1.386	4	0.8	8	1
29	0.9 D + 1.6 - 90 W/Ice	Yes	Y	1	0.9	5	1.6			8	1
30	0.9 D + 1.6 - 120 W/Ice	Yes	Y	1	0.9	5	1.386	4	-0.8	8	1
31	0.9 D + 1.6 - 150 W/Ice	Yes	Y	1	0.9	4	-1.386	5	0.8	8	1
32	0.9 D + 1.6 - 180 W/Ice	Yes	Y	1	0.9	4	-1.6			8	1
33	0.9 D + 1.6 - 210 W/Ice	Yes	Y	1	0.9	4	-1.386	5	-0.8	8	1
34	0.9 D + 1.6 - 240 W/Ice	Yes	Y	1	0.9	5	-1.386	4	-0.8	8	1
35	0.9 D + 1.6 - 270 W/Ice	Yes	Y	1	0.9	5	-1.6			8	1
36	0.9 D + 1.6 - 300 W/Ice	Yes	Y	1	0.9	5	-1.386	4	0.8	8	1
37	0.9 D + 1.6 - 330 W/Ice	Yes	Y	1	0.9	4	1.386	5	-0.8	8	1
38	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
39	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
40	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
41	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
42	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
43	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
44	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
45	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
46	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
47	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
48	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
49	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
50	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			9	1.5
51	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	9	1.5
52	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	9	1.5
53	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			9	1.5
54	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	9	1.5
55	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	9	1.5
56	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			9	1.5
57	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	9	1.5
58	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	9	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
59	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			9	1.5
60	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	9	1.5
61	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	9	1.5
62	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			10	1.5
63	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	10	1.5
64	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	10	1.5
65	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			10	1.5
66	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	10	1.5
67	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	10	1.5
68	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			10	1.5
69	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	10	1.5
70	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	10	1.5
71	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			10	1.5
72	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	10	1.5
73	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	10	1.5
74	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
75	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
76	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
77	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
78	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
79	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
80	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
81	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
82	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
83	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
84	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
85	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
86	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
87	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
88	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
89	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
90	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
91	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
92	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
93	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
94	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
95	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
96	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
97	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
98	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					13	1.5
99	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					14	1.5
100	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					15	1.5
101	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					16	1.5
102	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					17	1.5
103	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					18	1.5
104	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					19	1.5
105	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					20	1.5
106	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					21	1.5
107	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					22	1.5
108	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					23	1.5
109	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					24	1.5
110	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					25	1.5
111	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					26	1.5
112	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					27	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	1.419	5	2.678	38	1.645	2	5.467	26	1.429	11	0.392	23
2		min	-1.421	23	-0.591	8	-1.758	20	-1.901	8	-1.433	17	-0.264	5
3	53	max	1.398	5	2.722	42	1.817	14	0.767	13	1.788	3	1.039	12
4		min	-1.493	23	-0.322	12	-1.756	8	-2.519	31	-1.79	21	-4.74	42
5	82	max	1.339	17	2.635	46	1.972	14	0.814	3	1.802	7	4.487	46
6		min	-1.241	11	-0.341	4	-1.92	8	-2.879	33	-1.806	25	-1.072	4
7	Totals:	max	4.142	5	7.278	39	5.419	14						
8		min	-4.142	23	1.797	9	-5.419	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	0.693	0	37	0.164	0	y	49	70.173	73.278	8.24	8.24	2.135	H1-1b
2	2	C3.38X2.06X0.188	0.514	2.592	27	0.083	0.351	y	40	38.433	43.394	1.694	4.483	1.625	H1-1b
3	3	C3.38X2.06X0.188	0.485	0	37	0.086	2.241	z	20	38.433	43.394	1.694	4.483	1.629	H1-1b
4	4	PL3/8"x6	0.106	0.164	19	0.202	0	y	14	68.802	72.9	0.57	9.113	2.604	H1-1b
5	5	PL3/8"x6	0.107	0	15	0.164	0	y	14	68.802	72.9	0.57	9.113	2.041	H1-1b
6	6	PIPE_3.5x0.165	0.091	6.75	19	0.048	4		16	45.872	71.57	6.336	6.336	1.889	H1-1b
7	7	PL3/8"x6	0.183	0.208	14	0.265	0.208	y	49	70.705	72.9	0.57	9.113	2.439	H1-1b
8	8	PL3/8"x6	0.179	0	25	0.285	0	y	39	70.705	72.9	0.57	9.113	2.858	H1-1b
9	9	L2x2x4	0.347	0	19	0.035	2.309	z	43	23.349	30.586	0.691	1.577	1.5	H2-1
10	10	L2x2x4	0.289	2.309	20	0.048	0	y	40	23.349	30.586	0.691	1.577	1.5	H2-1
11	11	L7.63x2.5x6	0.461	1.604	8	0.104	0.334	y	38	73.845	118.523	1.798	13.683	1.234	H2-1
12	18	PIPE_2.88x0.203	0.138	5.667	17	0.049	5.667		18	35.519	70.68	5.029	5.029	3	H1-1b
13	19	PIPE_2.88x0.203	0.166	2.333	21	0.055	5.667		21	35.519	70.68	5.029	5.029	3	H1-1b
14	22	PIPE_2.88x0.203	0.174	7.812	25	0.173	8.75		14	24.131	70.68	5.029	5.029	2.485	H1-1b
15	23	L6.63x4.33x.25	0.247	3.25	18	0.027	3.25	z	24	49.975	86.751	2.311	6.976	1.5	H2-1
16	29	PIPE_2.88x0.203	0.151	2.333	19	0.054	2.333		20	35.519	70.68	5.029	5.029	3	H1-1b
17	31	HSS4X4X2	0.69	0	31	0.163	0	y	40	70.173	73.278	8.24	8.24	2.159	H1-1b
18	32	C3.38X2.06X0.188	0.512	2.592	31	0.084	0.351	y	45	38.433	43.394	1.694	4.483	1.627	H1-1b
19	33	C3.38X2.06X0.188	0.465	0	29	0.081	2.241	y	48	38.433	43.394	1.694	4.483	1.628	H1-1b
20	34	PL3/8"x6	0.085	0.164	22	0.182	0	y	30	68.802	72.9	0.57	9.113	1.419	H1-1b
21	35	PL3/8"x6	0.108	0	19	0.134	0	y	18	68.802	72.9	0.57	9.113	1.966	H1-1b
22	36	PL3/8"x6	0.157	0.208	25	0.263	0.208	y	41	70.705	72.9	0.57	9.113	1.79	H1-1b
23	37	PL3/8"x6	0.143	0	17	0.282	0	y	43	70.705	72.9	0.57	9.113	2.939	H1-1b
24	38	L2x2x4	0.267	0	23	0.034	2.309	z	47	23.349	30.586	0.691	1.577	1.5	H2-1
25	39	L2x2x4	0.259	2.309	25	0.049	0	y	44	23.349	30.586	0.691	1.577	1.5	H2-1
26	40	L7.63x2.5x6	0.348	1.604	12	0.103	0.334	y	43	73.845	118.523	1.798	13.718	1.241	H2-1
27	45	L6.63x4.33x.25	0.285	0	3	0.031	3.25	y	21	49.975	86.751	2.311	6.976	1.5	H2-1
28	50	HSS4X4X2	0.692	0	33	0.164	0	y	32	70.173	73.278	8.24	8.24	2.138	H1-1b
29	51	C3.38X2.06X0.188	0.505	2.592	47	0.084	0.351	y	49	38.433	43.394	1.694	4.483	1.63	H1-1b
30	52	C3.38X2.06X0.188	0.485	0	33	0.081	2.241	y	39	38.433	43.394	1.694	4.483	1.628	H1-1b
31	53	PL3/8"x6	0.119	0.164	15	0.186	0	y	34	68.802	72.9	0.57	9.113	2.276	H1-1b
32	54	PL3/8"x6	0.085	0	23	0.135	0	y	22	68.802	72.9	0.57	9.113	1.946	H1-1b
33	55	PL3/8"x6	0.149	0.085	14	0.266	0.208	y	45	70.705	72.9	0.57	9.113	1.426	H1-1b
34	56	PL3/8"x6	0.182	0	21	0.282	0	y	47	70.705	72.9	0.57	9.113	2.876	H1-1b
35	57	L2x2x4	0.342	0	15	0.035	2.309	z	39	23.349	30.586	0.691	1.577	1.5	H2-1
36	58	L2x2x4	0.239	2.309	16	0.048	2.309	y	48	23.349	30.586	0.691	1.577	1.5	H2-1
37	59	L7.63x2.5x6	0.416	1.604	3	0.101	0.334	y	46	73.845	118.523	1.798	13.882	1.278	H2-1
38	64	L6.63x4.33x.25	0.308	3.25	14	0.035	3.25	z	20	49.975	86.751	2.311	6.976	1.5	H2-1
39	69	PIPE_3.5x0.165	0.102	1.25	14	0.063	4		20	45.872	71.57	6.336	6.336	1.74	H1-1b
40	72	PIPE_2.88x0.203	0.175	5.667	21	0.057	5.667		21	35.519	70.68	5.029	5.029	3	H1-1b
41	73	PIPE_2.88x0.203	0.196	2.333	14	0.056	5.667		25	35.519	70.68	5.029	5.029	3	H1-1b
42	76	PIPE_2.88x0.203	0.164	2.188	25	0.144	2.188		25	24.131	70.68	5.029	5.029	2.216	H1-1b
43	78	PIPE_2.88x0.203	0.154	5.667	21	0.055	2.333		25	35.519	70.68	5.029	5.029	3	H1-1b
44	80	PIPE_3.5x0.165	0.088	4	14	0.059	2.917		25	45.872	71.57	6.336	6.336	1.435	H1-1b
45	83	PIPE_2.88x0.203	0.174	5.667	25	0.064	5.667		25	35.519	70.68	5.029	5.029	3	H1-1b
46	84	PIPE_2.88x0.203	0.157	2.333	18	0.042	5.667		17	35.519	70.68	5.029	5.029	3	H1-1b

Envelope AISC 13TH (360-05): LRFD Member Steel Code Checks (Continued)

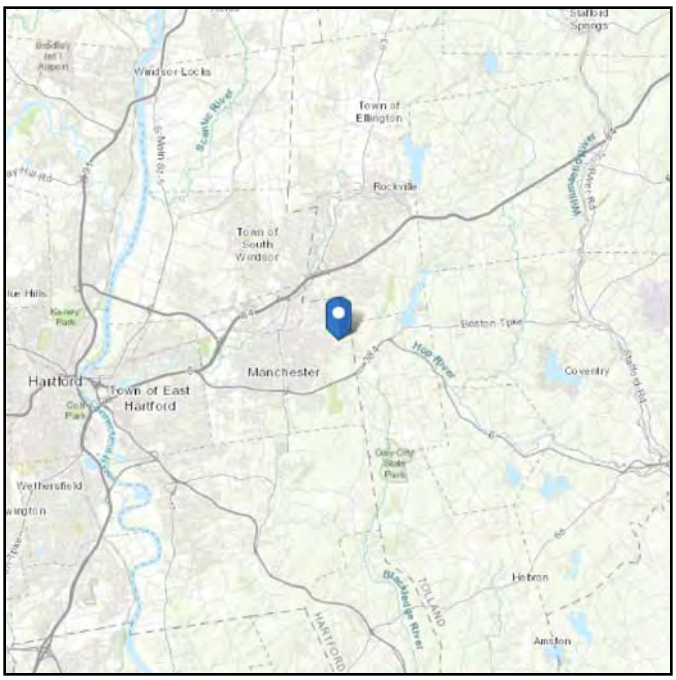
	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
47	87	PIPE_2.88x0.203	0.161	7.813	21	0.159	8.75		21	24.131	70.68	5.029	5.029	2.465	H1-1b
48	89	PIPE_2.88x0.203	0.18	5.667	14	0.04	5.667		15	35.519	70.68	5.029	5.029	3	H1-1b

APPENDIX B
(Additional Calculations)

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	466.77 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.789083
Soil Class:	D - Stiff Soil	**Longitude:**	-72.482083



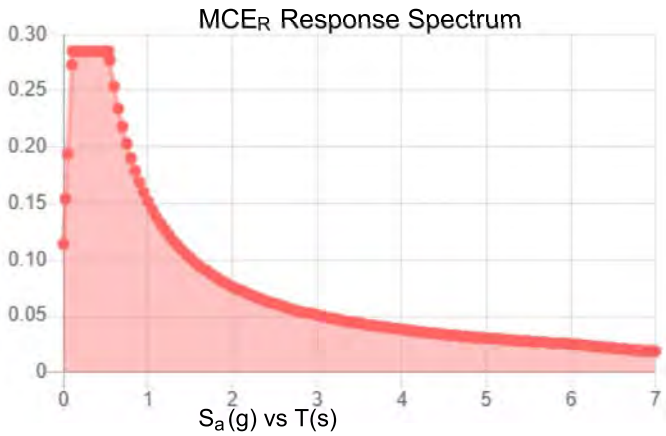
Seismic

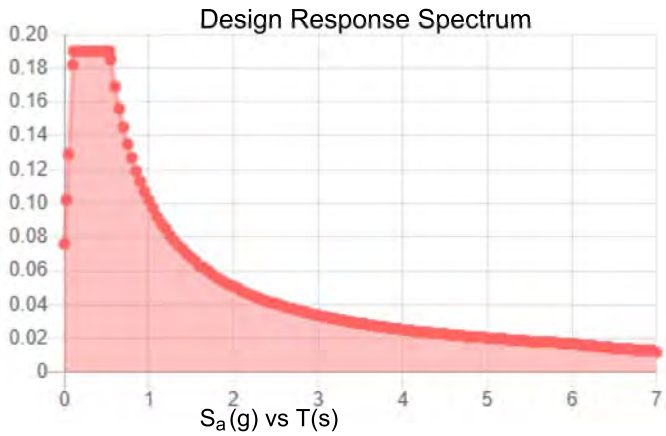
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.178	S_{DS} :	0.19
S_1 :	0.063	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.089
S_{MS} :	0.285	PGA_M :	0.142
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Thu Aug 26 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Aug 26 2021

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

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

PROJECT	**149468.003.01 - Manchester 1, CT**				**KSC**
SUBJECT	**Platform- Mount Analysis**				
DATE	**08/26/21**	PAGE	1	OF	5

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

INPUT

[REF: ANSI/TIA-222-G2005]

Tower Type		: MP		
Tower Height		: 109	ft	
Mount Elevation		: 85	ft	
Antenna Elevation		: 85	ft	
Crest Height		: 0	ft	
Structure Class		: II		[Table 2-1]
Exposure Category		: C		[Sec. 2.6.5]
Topography Category		: 1		[Sec. 2.6.6.2]
Wind Velocity	V	: 97	mph	[Annex B]
Ice wind Velocity	V_i	: 50	mph	[Annex B]
Service Velocity	V_s	: 30	mph	[Annex B]
Base Ice thickness	t_i	: 1	in	[Annex B]

ANTENNAS

	Manufacturer	Model	Height (in)	Front Width (in)	Side Width (in)	Weight (lbs)	Shape	Quantity	Location (%)
Mount Pipe **29**									
	JMA WIRELESS	MX08FRO665-21	72.00	20.00	8.00	64.50	Flat	0.5	15
	JMA WIRELESS	MX08FRO665-21	72.00	20.00	8.00	64.50	Flat	0.5	85
	Fujitsu	TA08025-B605	15.75	14.96	9.05	74.95	Flat	1	20
	Fujitsu	TA08025-B604	15.75	14.96	7.87	63.93	Flat	1	50
Mount Pipe **89**									
	JMA WIRELESS	MX08FRO665-21	72.00	20.00	8.00	64.50	Flat	0.5	15
	JMA WIRELESS	MX08FRO665-21	72.00	20.00	8.00	64.50	Flat	0.5	85
	Fujitsu	TA08025-B605	15.75	14.96	9.05	74.95	Flat	1	20
	Fujitsu	TA08025-B604	15.75	14.96	7.87	63.93	Flat	1	50
Mount Pipe **78**									
	JMA WIRELESS	MX08FRO665-21	72.00	20.00	8.00	64.50	Flat	0.5	15
	JMA WIRELESS	MX08FRO665-21	72.00	20.00	8.00	64.50	Flat	0.5	85
	Fujitsu	TA08025-B605	15.75	14.96	9.05	74.95	Flat	1	20
	Fujitsu	TA08025-B604	15.75	14.96	7.87	63.93	Flat	1	50
Mount Pipe **31**									
	RAYCAP	RDIDC-9181-PF-48	16.57	14.57	8.15	21.85	Flat	1	20
Mount Pipe									
Mount Pipe									

PROJECT	**#149468.003.01-Manchester 1, CT**				**KSC**
SUBJECT	**Platform- Mount Analysis**				
DATE	**08/26/21**	PAGE	1	OF	1

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

[REF: ANSI/TIA-222-G2005]

Reactions at Bolted Connection

Tension	:	1.645	k
Vertical Shear	:	2.678	k
Horizontal Shear	:	1.419	k
Torsion	:	0.392	k.ft
Moment from Horizontal Forces	:	1.429	k.ft
Moment from Vertical Forces	:	5.467	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	4.6	in
Bolt spacing, Vertical	:	4	in
Bolt edge distance, plate height	:	2.9	in
Bolt edge distance, plate width	:	2	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	3.03	k
Force from Horz. Moment	:	3.28	k
Force from Vert. Moment	:	14.18	k
Shear Load / Bolt	:	0.76	k
Tension Load / Bolt	:	0.41	k
Resultant from Moments / Bolt	:	7.28	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**37.11%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**10.58%**		**OKAY**
Unity Check, Combined	:	**47.69%**		**OKAY**
Available Bearing Strength, ΦR_n	:	80.34	k/bolt	
Unity Check, Bolt Bearing	:	**0.94%**		**OKAY**

EXHIBIT 10

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00128A

DISH Wireless L.L.C. SITE ADDRESS:

93 LAKE STREET
MANCHESTER, CT 06042

SBA APPROVED

By Stephen Roth at 4:55:56 AM, 12/10/2021

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:
- NEW ENTRY PORT CUT OUT BY SBA OPS TEAM
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)

SITE INFORMATION

PROPERTY OWNER:	ROSSETTO, ALAN C
ADDRESS:	23 LONGVIEW DRIVE LANCASTER, NH 03584
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT13529-A
TOWER APP NUMBER:	167826
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 47' 20.7" N 72.48208267 N
LONGITUDE (NAD 83):	72° 28' 55.5" W 41.789083 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	TILLABLE C
PARCEL NUMBER:	333000093A
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	SBA COMMUNICATAIONS CORP. 8051 CONGRESS AVENUE BOCA RATON, FL 33487 (800) 487-7483
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	JEAN COTTRELL JEAN.COTTRELL@DISH.COM
CONST. MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

CONNECTICUT CODE OF COMPLIANCE

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

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

CONTINUE TO BRADLEY INTERNATIONAL AIRPORT CON, HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT, TAKE I-91 S, I-291 E AND I-384 TO CT-85 N IN BOLTON. TAKE EXIT 5 FROM I-384, CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON, CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON, USE THE RIGHT 2 LANES TO MERGE WITH I-91 S TOWARD HARTFORD, TAKE EXIT 35A FOR I-291 TOWARD MANCHESTER, CONTINUE ONTO I-291 E, TAKE THE I-384 E EXIT, CONTINUE ONTO I-384, TAKE EXIT 5 FOR CT-85 TOWARD BOLTON/COLCHESTER, TAKE US-44 W TO LAKE ST IN MANCHESTER, TURN LEFT ONTO CT-85 N, TURN LEFT ONTO US-44 W/US-6 W, TURN RIGHT ONTO LAKE ST, TURN LEFT ON TO ACCESS ROAD, ARRIVING AT BOBDL00128A.

SHEET INDEX

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

VICINITY MAP

NO SCALE

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

811

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.

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SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

12/9/21

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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/1/21	ISSUED FOR REVIEW
0	12/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149468.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

SHEET TITLE

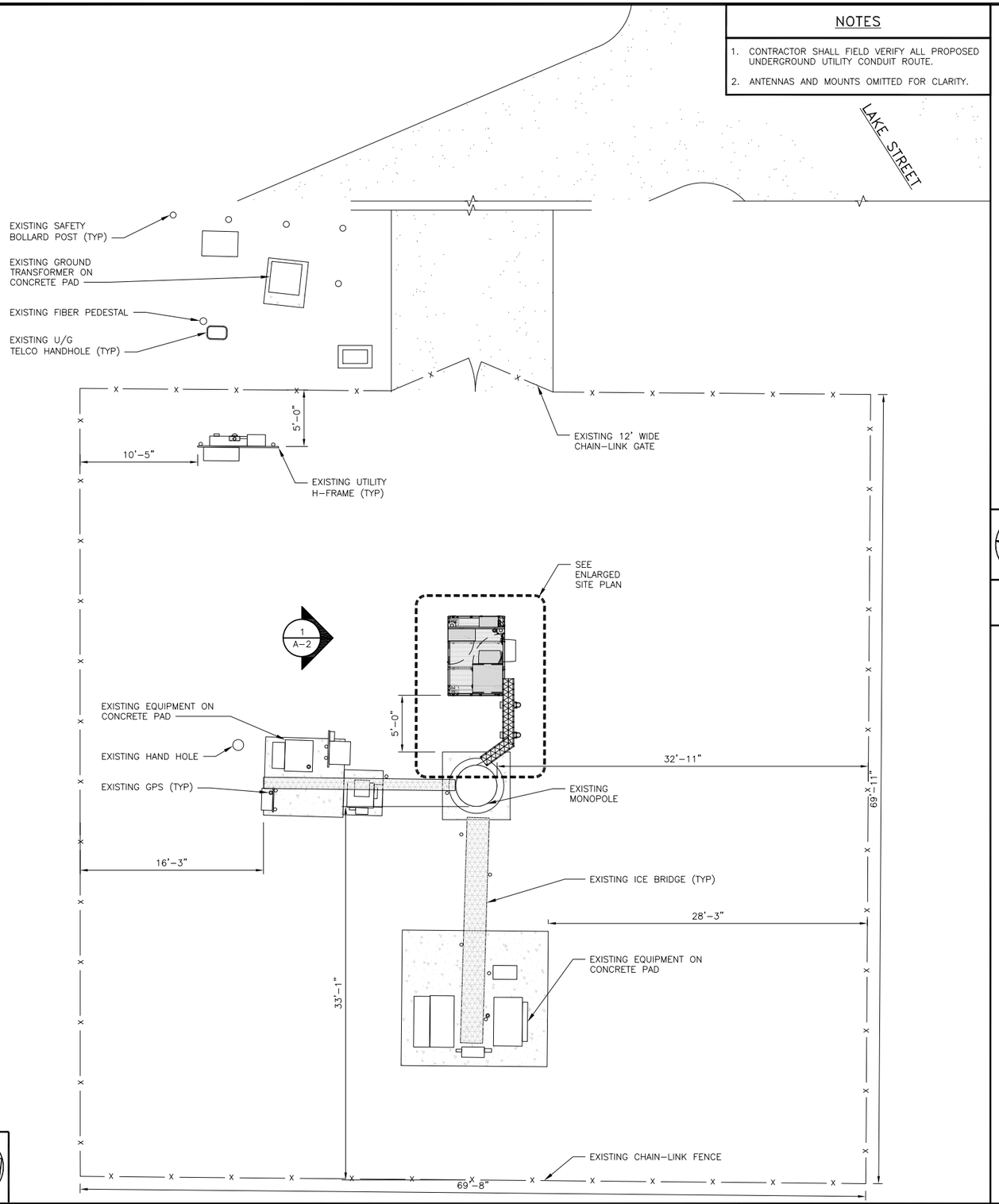
TITLE SHEET

SHEET NUMBER

T-1

NOTES

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



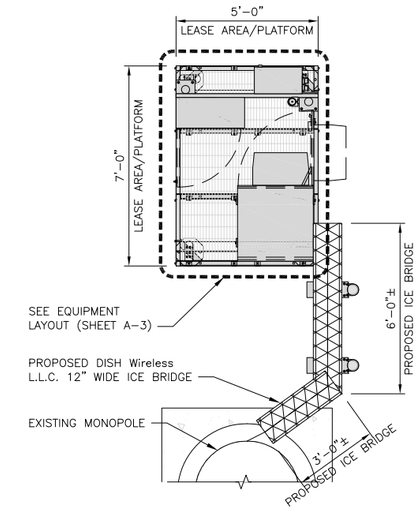
OVERALL SITE PLAN

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

1

NOTES

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



ENLARGED SITE PLAN

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

2

NOT USED

3

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PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

SHEET TITLE

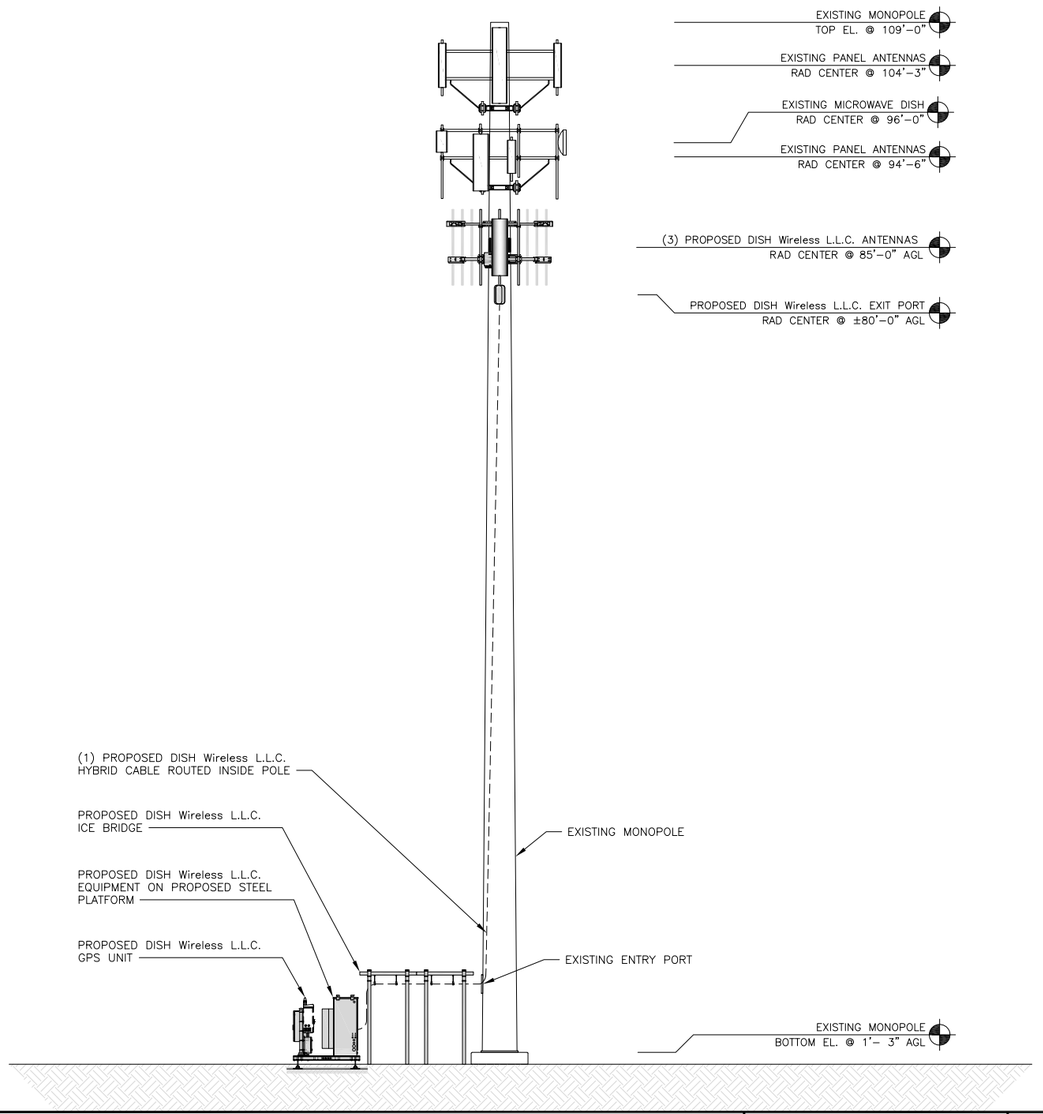
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

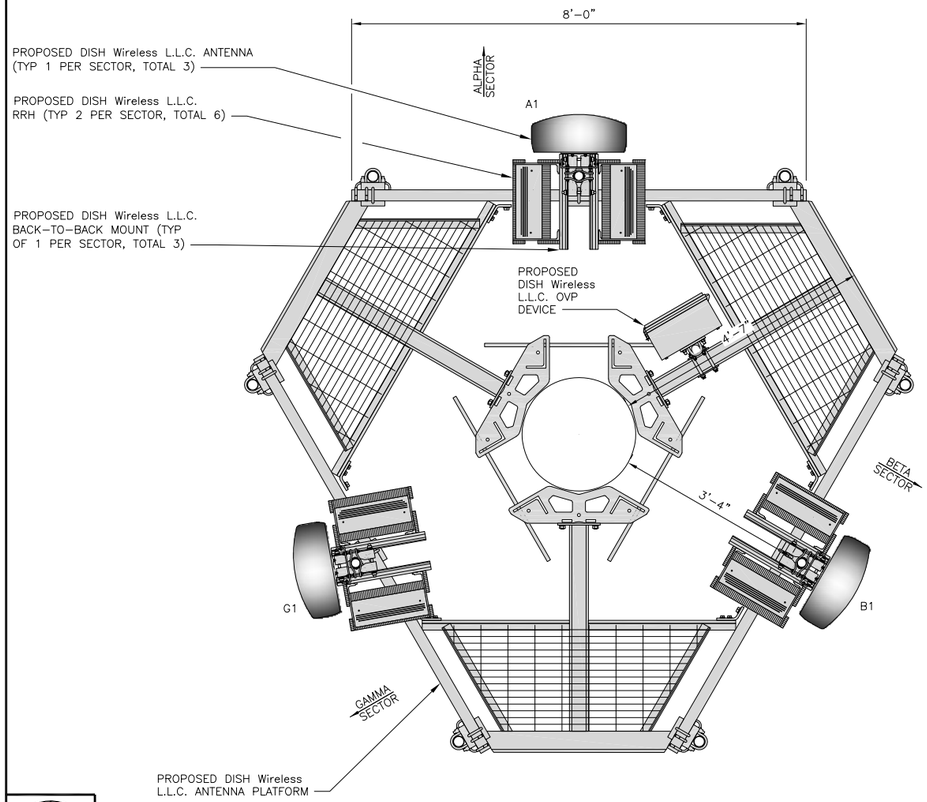
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

8' 4' 0 8' 16'
1/8"=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	A1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	0°	85'-0"	(1) HIGH-CAPACITY HYBRID CABLE (120' LONG)
BETA	B1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	120°	85'-0"	
GAMMA	G1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	260°	85'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025-B605	5G
	A1	FUJITSU – TA08025-B605	5G
BETA	B1	FUJITSU – TA08025-B605	5G
	B1	FUJITSU – TA08025-B605	5G
GAMMA	G1	FUJITSU – TA08025-B605	5G
	G1	FUJITSU – TA08025-B605	5G

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. (FINAL RFDS IS IN NEXSYSONE)
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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STATE OF CONNECTICUT * CHAD E. LITTLE * No. 23924 LICENSED PROFESSIONAL ENGINEER

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DISH Wireless L.L.C.
PROJECT INFORMATION

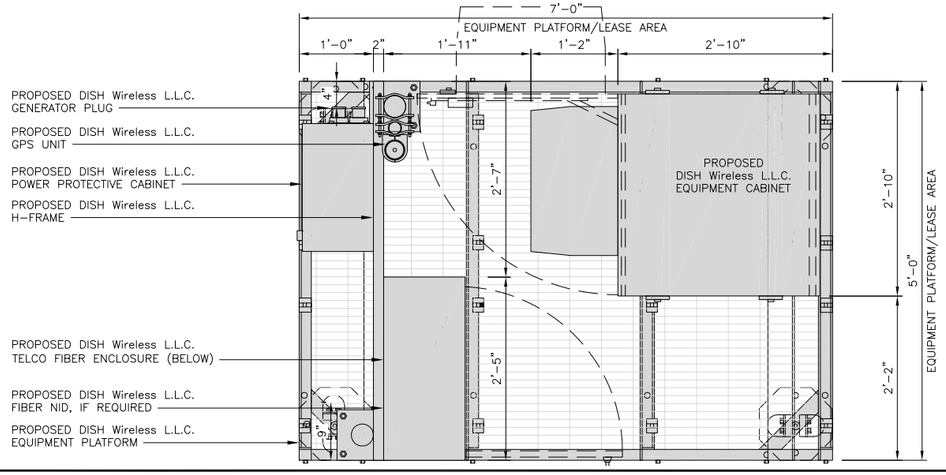
BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



PLATFORM EQUIPMENT PLAN

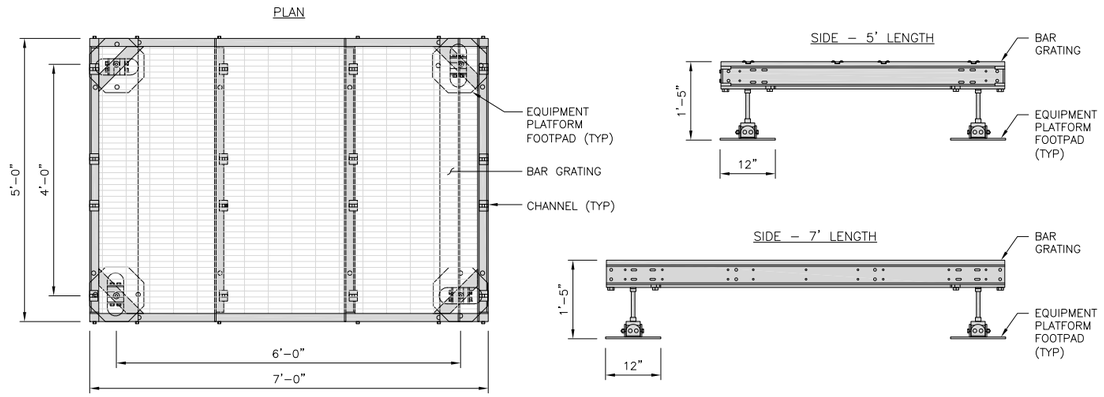
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

1

COMMSCOPE MTC4045LP 5X7 PLATFORM

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

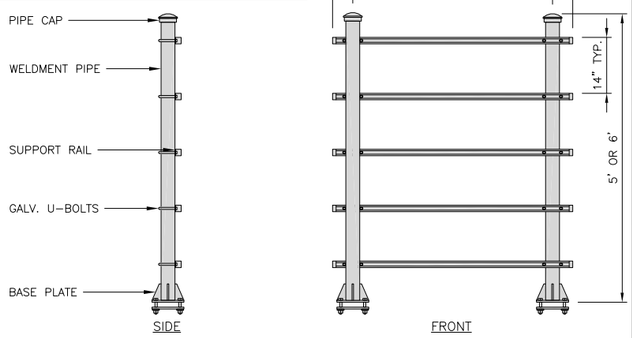
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL | NO SCALE | 2

COMMSCOPE MTC4045HFLD H-FRAME

UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

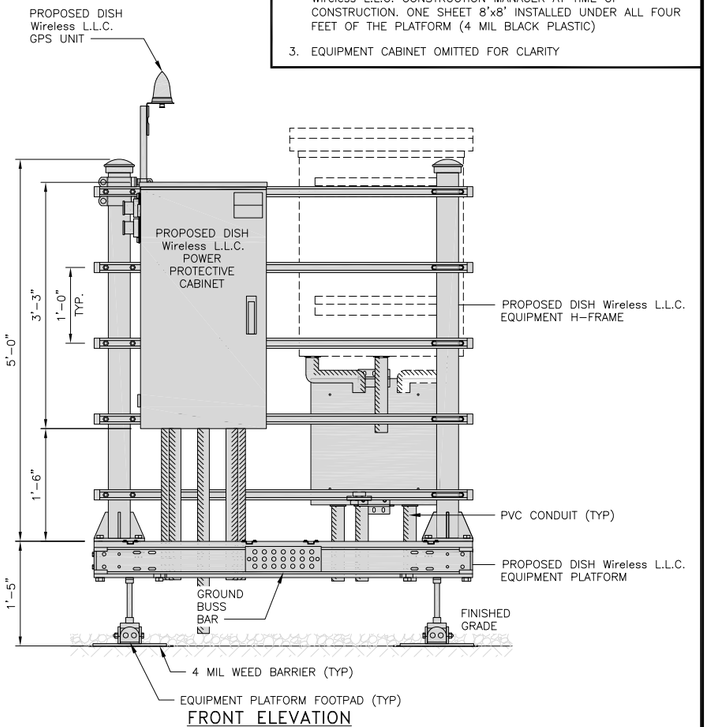


H-FRAME DETAIL | NO SCALE | 3

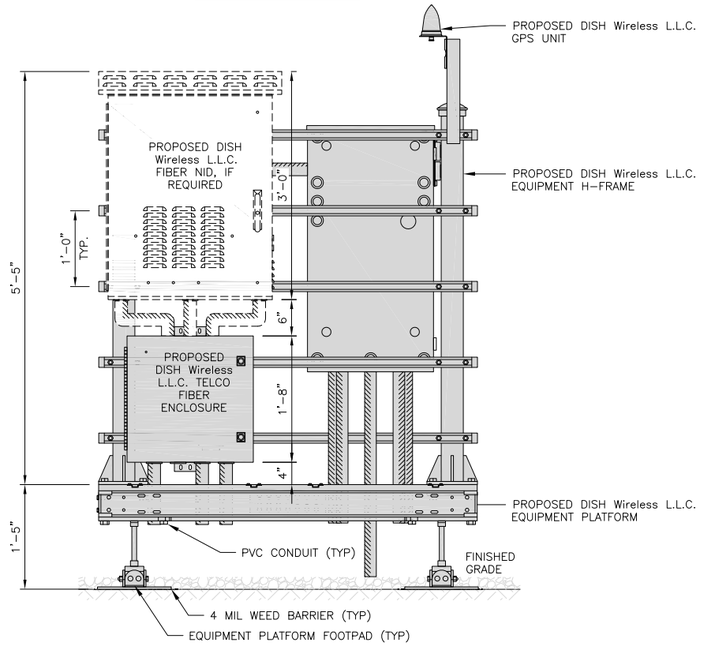
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION | 12" 9" 6" 3" 0 1' 2' 1"=1'-0" | 5

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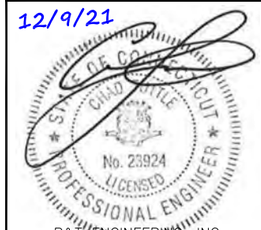

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Expires 2/10/22

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RY	SA	BEH

RFDS REV #: 1

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

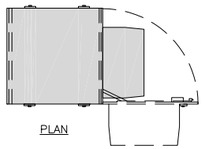
SHEET TITLE

EQUIPMENT PLATFORM AND H-FRAME DETAILS

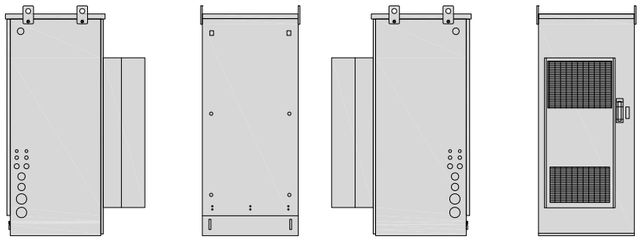
SHEET NUMBER

A-3

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



PLAN

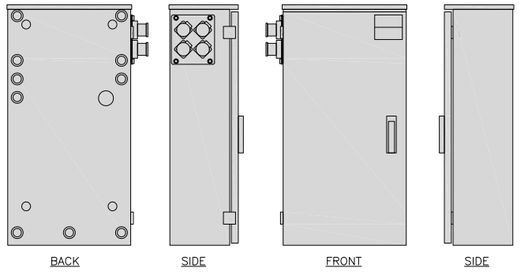


SIDE BACK SIDE FRONT

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

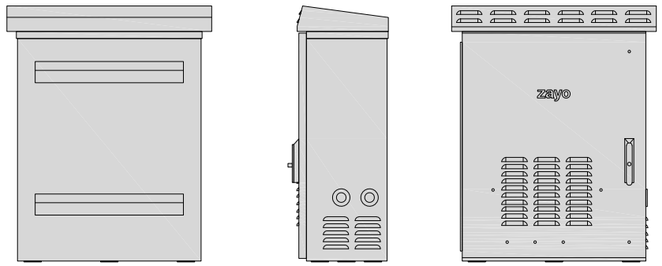
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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

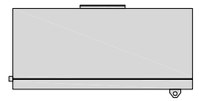
BOTTOM



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



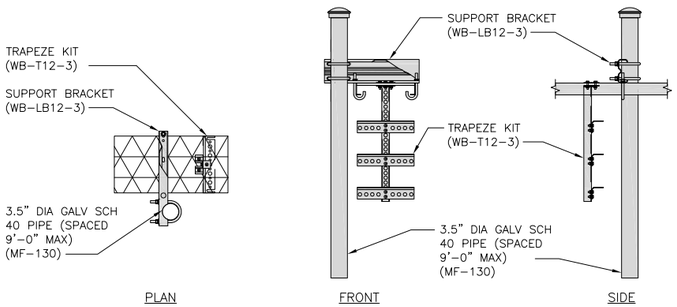
FRONT

SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

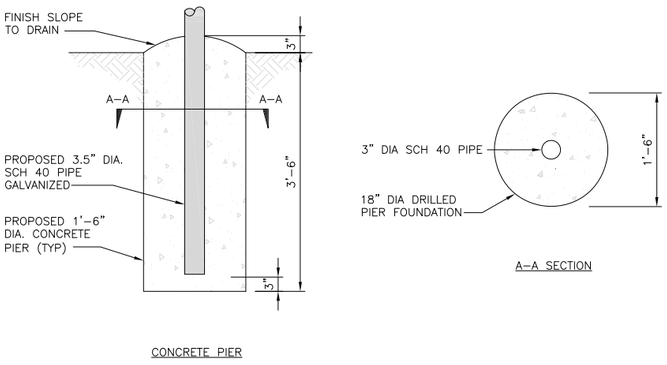
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



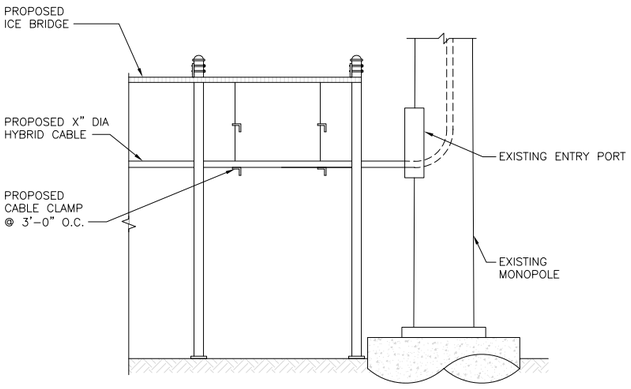
PLAN FRONT SIDE

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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93 LAKE STREET
MANCHESTER, CT 06042

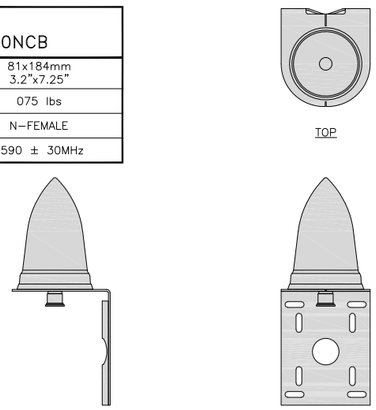
SHEET TITLE

EQUIPMENT DETAILS

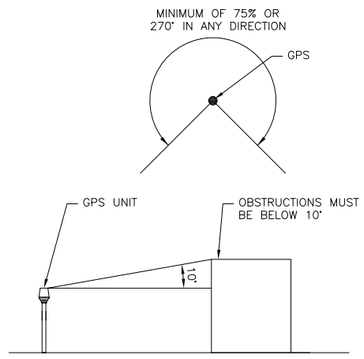
SHEET NUMBER

A-4

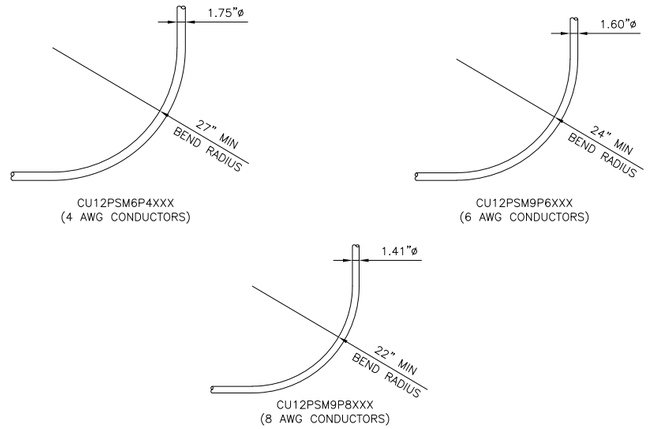
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



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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CONSTRUCTION DOCUMENTS

SUBMITTALS		
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A&E PROJECT NUMBER

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

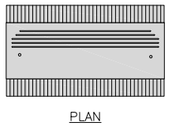
SHEET TITLE

EQUIPMENT DETAILS

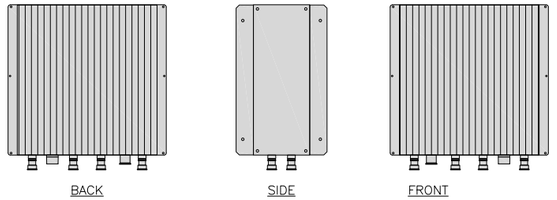
SHEET NUMBER

A-5

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



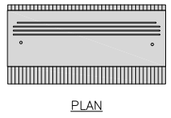
PLAN



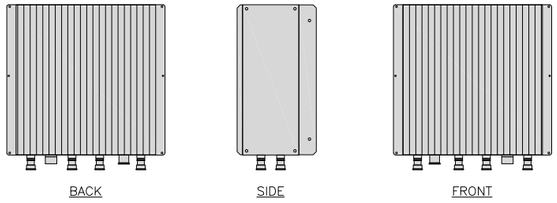
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

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



PLAN

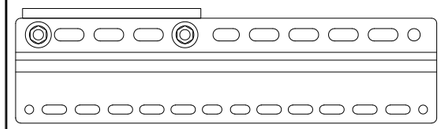


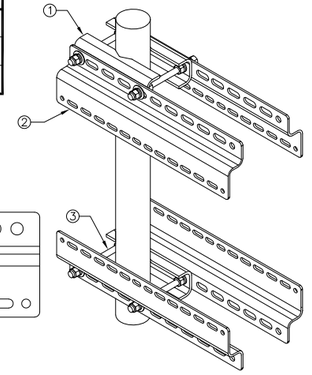
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

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

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

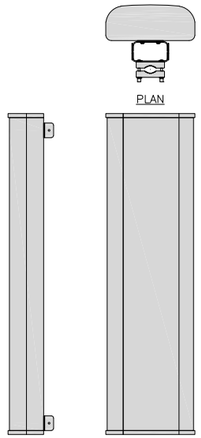




NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



PLAN

SIDE FRONT

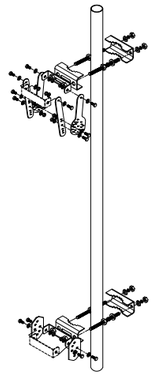
ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

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

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

ANTENNA BRACKET NOT PART OF KIT

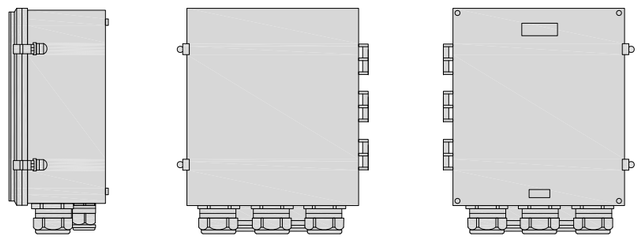


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

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

PLAN



SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

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

NOTE:
OR DISH Wireless L.L.C.
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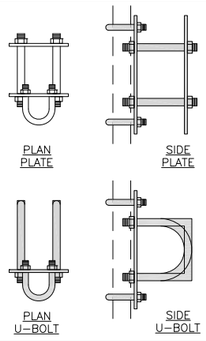
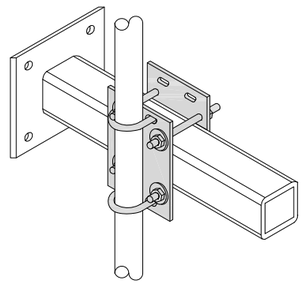


PLAN PLATE SIDE PLATE

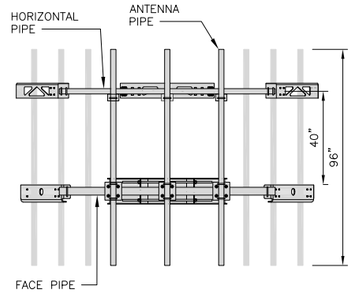
PLAN U-BOLT SIDE U-BOLT

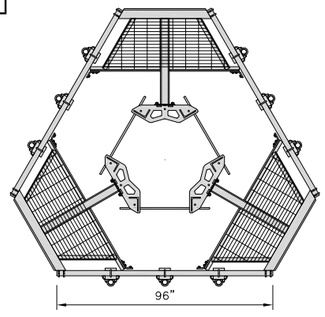


RRH/OVP MOUNT DETAIL | NO SCALE | 8

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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DISH Wireless L.L.C.
PROJECT INFORMATION

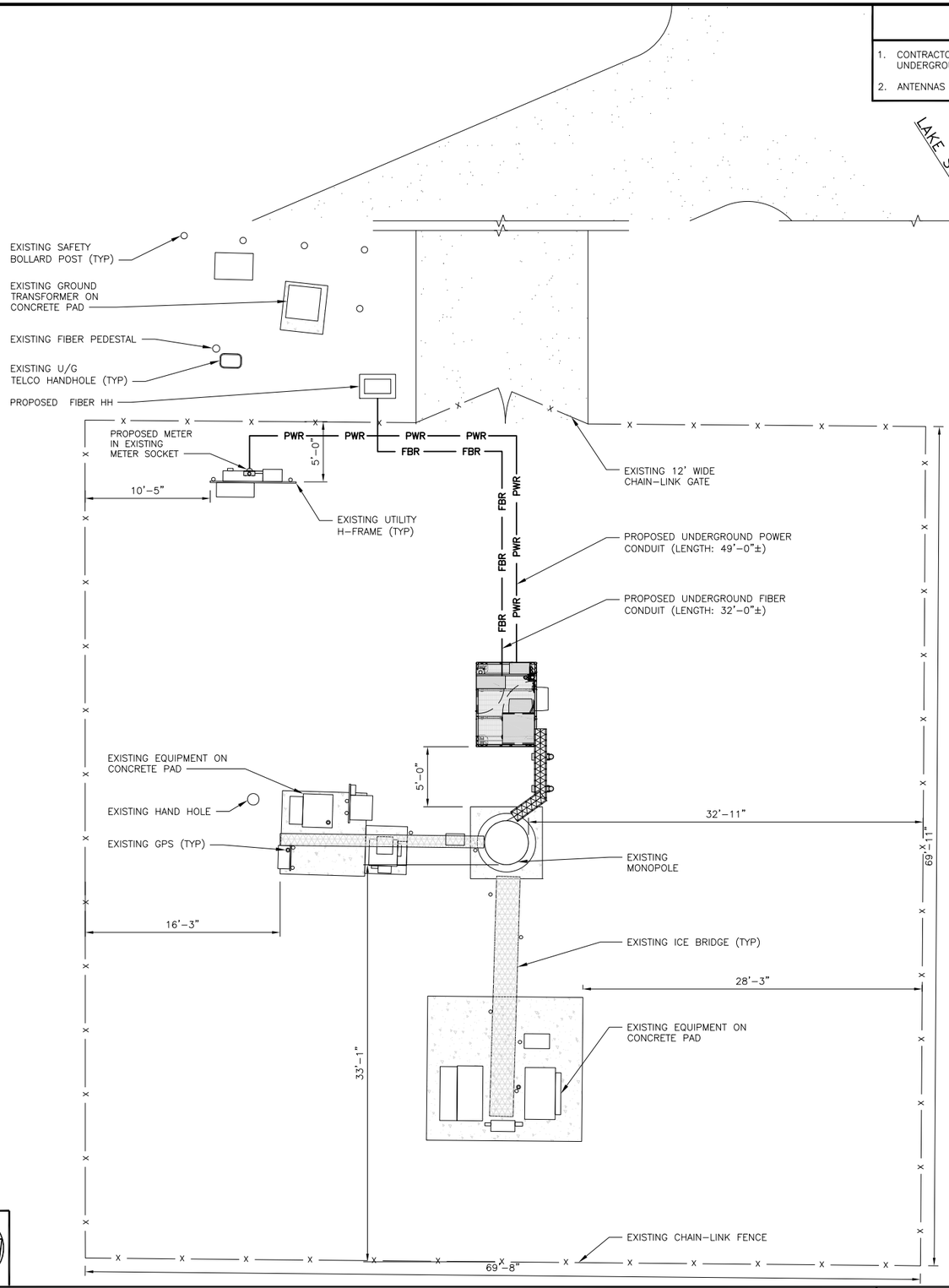
BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

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.

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

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

UTILITY ROUTE PLAN

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

1

ELECTRICAL NOTES

NO SCALE

2

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

SHEET TITLE

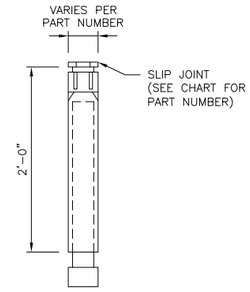
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

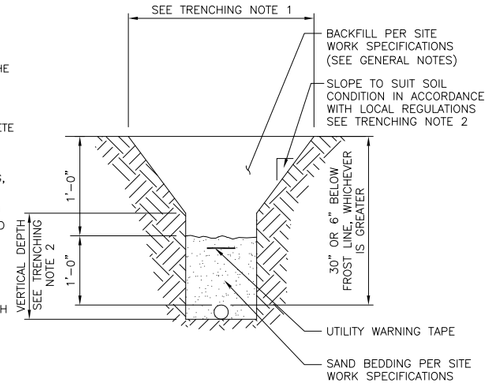


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

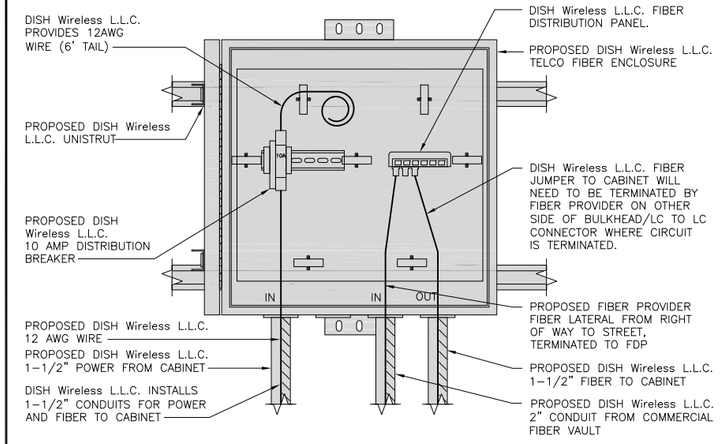
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

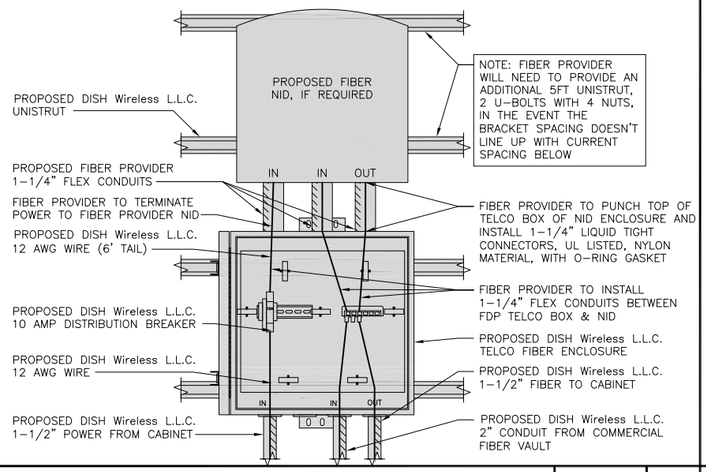
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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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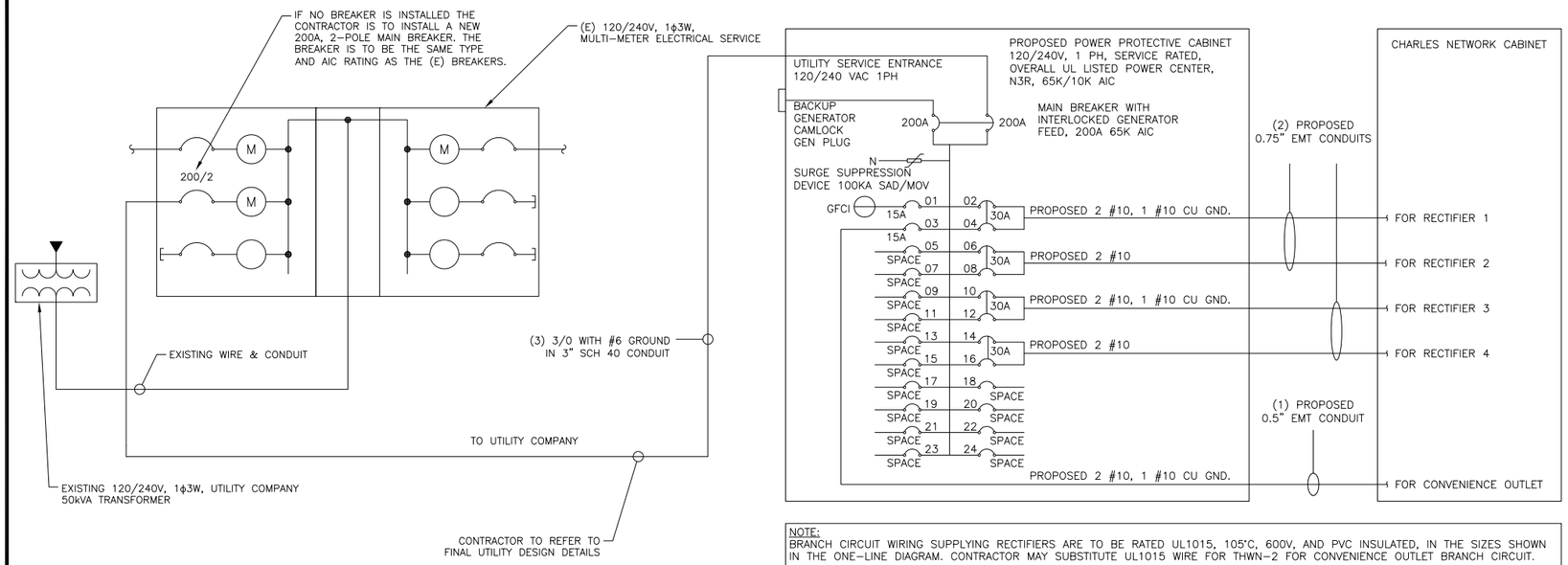
MANCHESTER, CT 06042

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

PPC ONE–LINE DIAGRAM | NO SCALE | 1

NOTES

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.

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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12/9/21

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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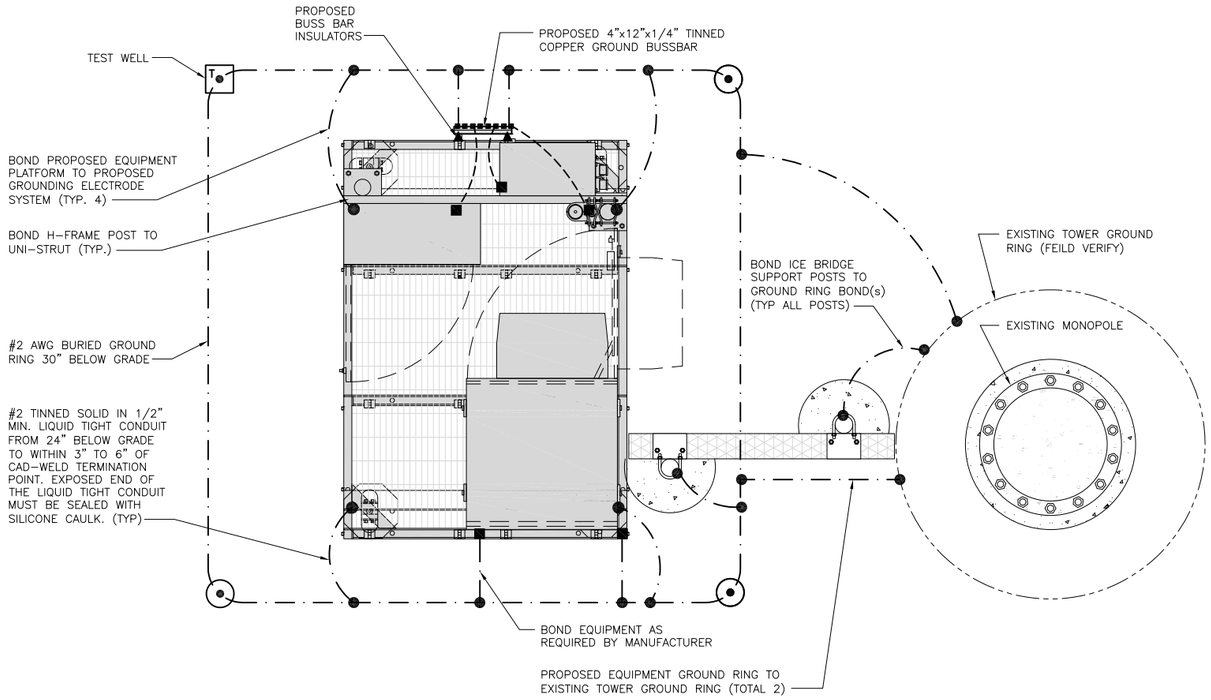
0	12/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149468.001.01

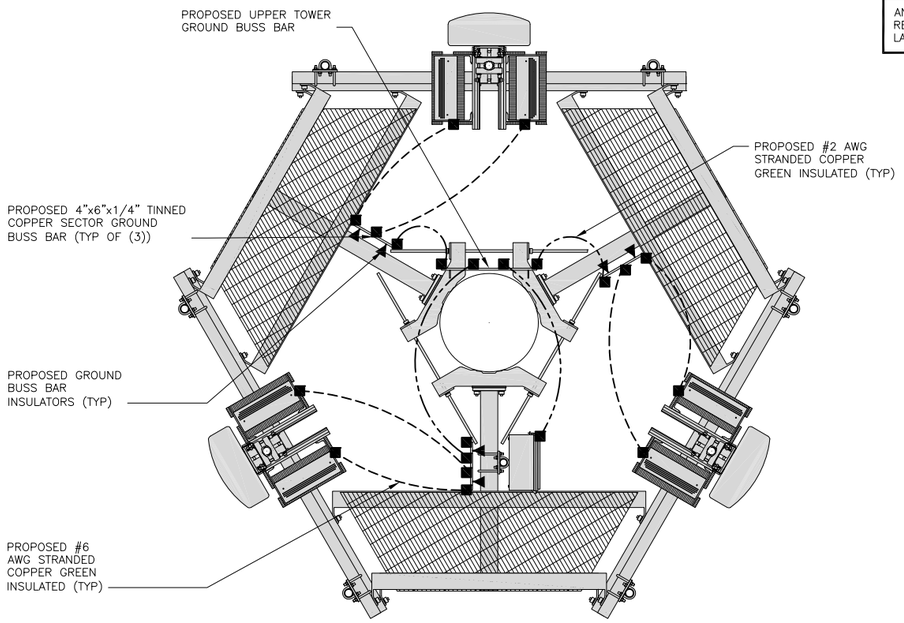
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

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
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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PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

SHEET TITLE

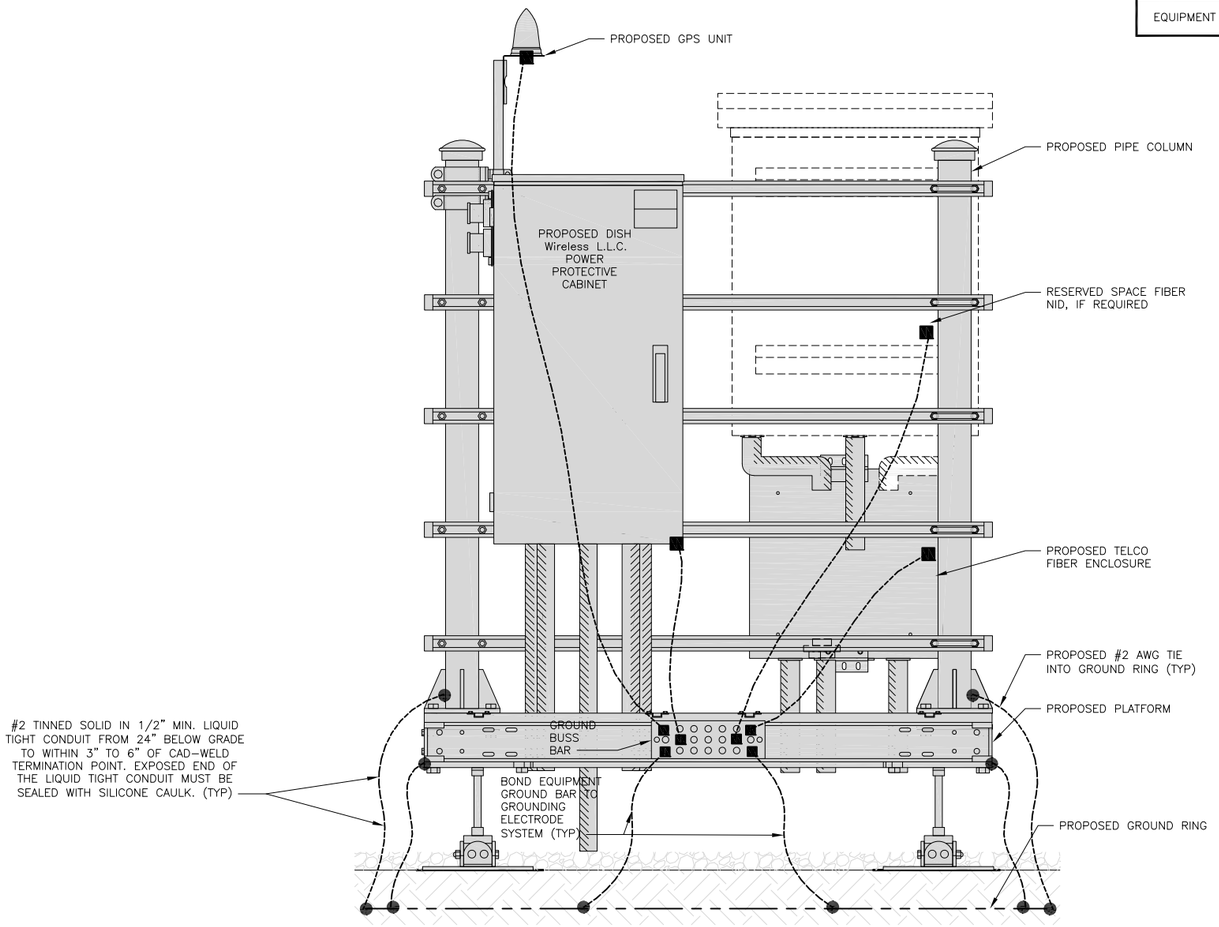
GROUNDING PLANS AND NOTES

SHEET NUMBER

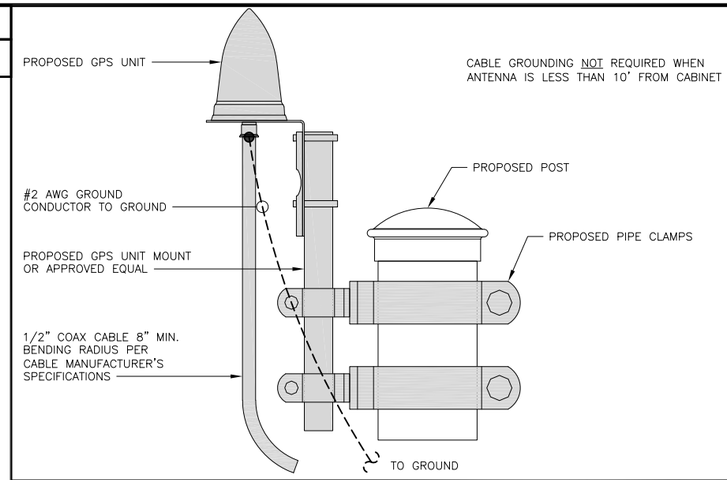
G-1

NOTES

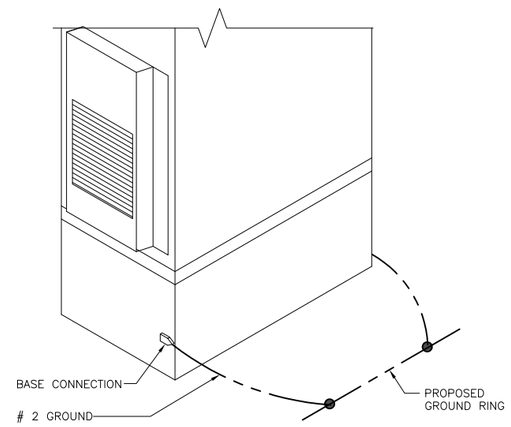
EQUIPMENT CABINET OMITTED FOR CLARITY



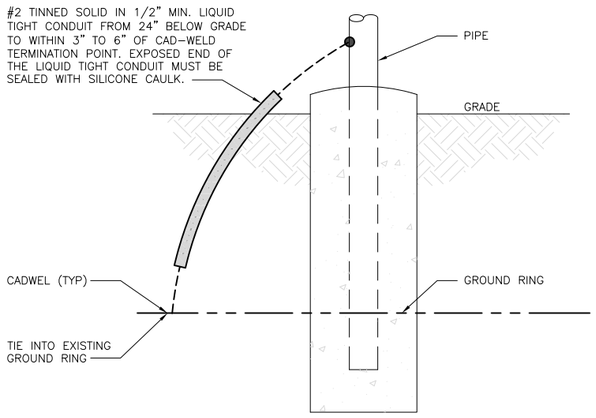
H-FRAME GROUNDING DETAIL | NO SCALE | 1



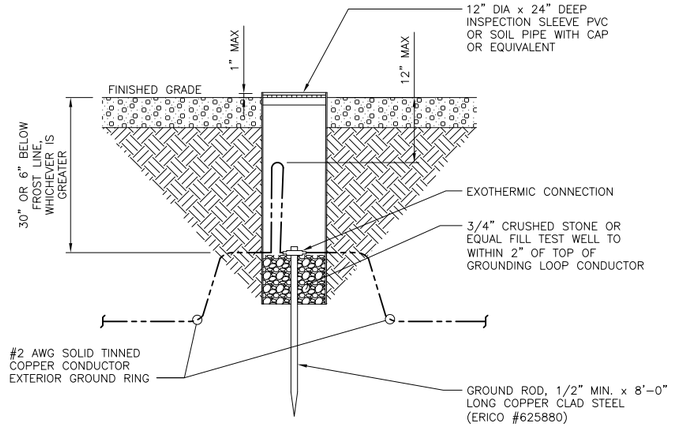
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



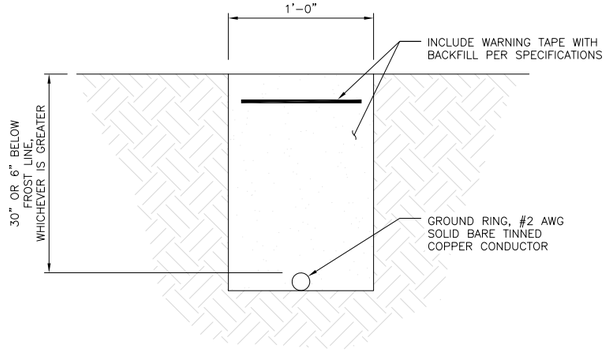
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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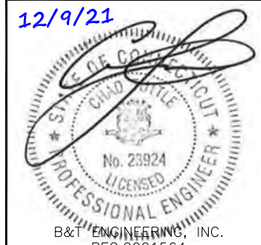

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PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

SHEET TITLE

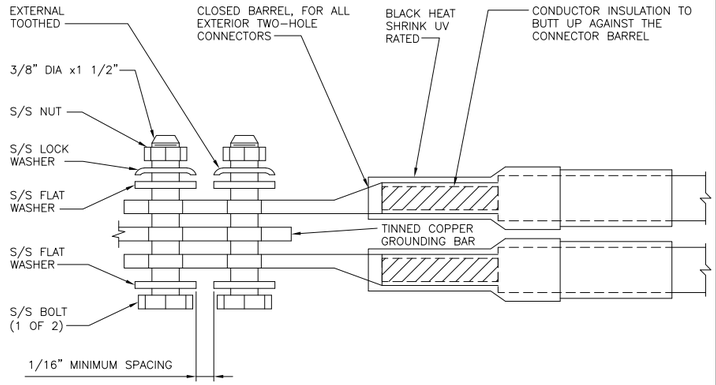
GROUNDING DETAILS

SHEET NUMBER

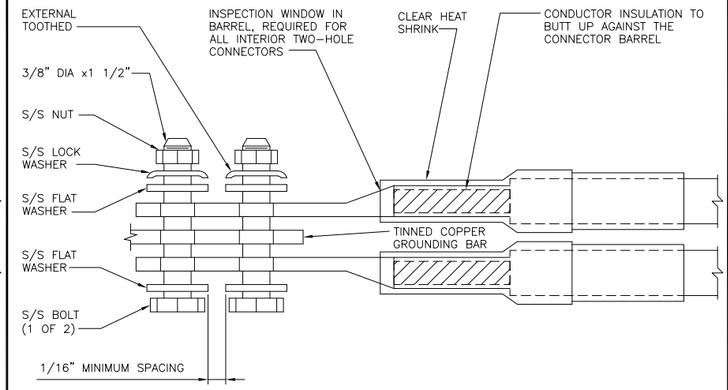
G-2

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).

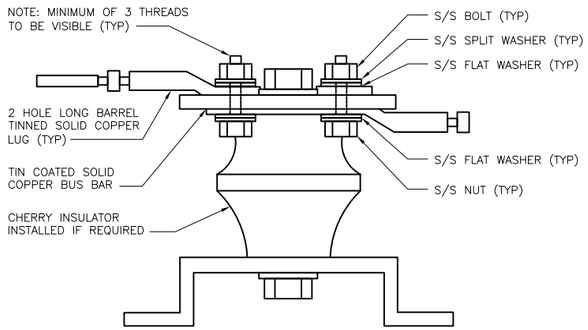
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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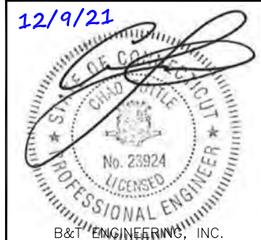

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MANCHESTER, CT 06042

SHEET TITLE

GROUNDING DETAILS

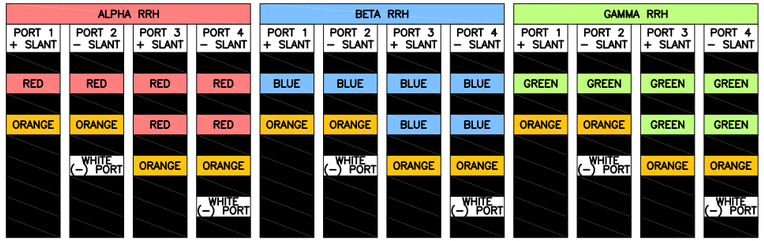
SHEET NUMBER

G-3

HYBRID/DISCREET CABLES — 3/4" TAPE WIDTHS WITH 3/4" SPACING

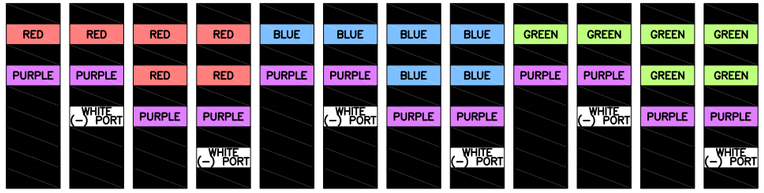
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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)



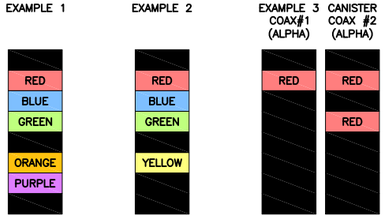
HYBRID/DISCREET CABLES

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.



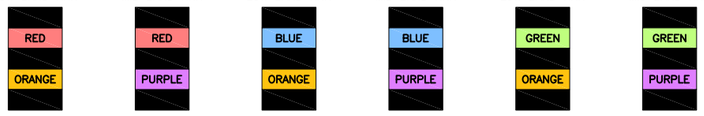
CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RD DETAILS. FINAL RFDS IS IN NEXSYSONE.

FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

POWER CABLES TO RRHs

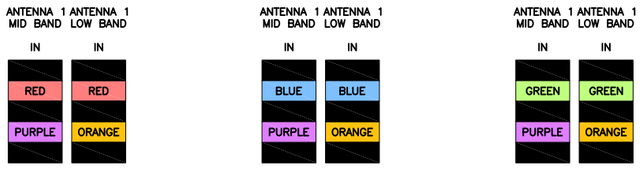
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

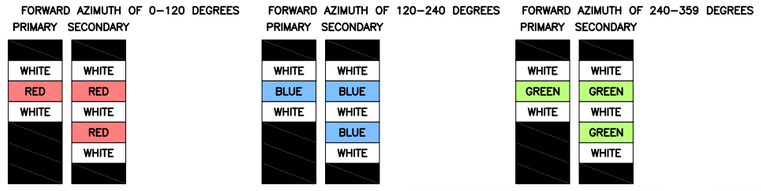
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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.



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		2
NOT USED		3
RF CABLE COLOR CODES		1
NOT USED		4

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SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED–1–25A400/51K–SR4–120–PE–DDBTXD

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

W.P.

SECTION REFERENCE

XX
X–X

DETAIL REFERENCE

XX
X–X

LEGEND

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

ABBREVIATIONS

dish wireless.

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12/9/21

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/1/21	ISSUED FOR REVIEW
0	12/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149468.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

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.

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12/9/21

STATE OF CONNECTICUT
CHAD TUTTLE
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PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/1/21	ISSUED FOR REVIEW
0	12/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149468.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

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.

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12/9/21

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BEH

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/1/21	ISSUED FOR REVIEW
0	12/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149468.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00128A
93 LAKE STREET
MANCHESTER, CT 06042

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.

7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.

8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.

19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

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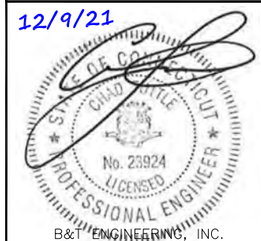

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GN-4