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

July 22, 2021

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

Application for Tower Share
270 Hubbard Rd., Higganum, CT
Latitude: 41.464089
Longitude: -72.541994
Dish Wireless #: BOBDL00014B

Dear Ms. Bachman:

Please accept this letter as notification pursuant to the Connecticut General Statutes § 16-50aa and R.C.S.A § 16-50j-88 of Dish Wireless' Application for Tower Sharing at the existing 160-foot Monopole Tower at 270 Hubbard Rd., Higganum, CT.

- **The new antennas would support 5G services and would be installed at the 145-foot level of the tower.**

Per the requirements under R.C.S.A §16-50j-89 please find the following statements in support of Dish Wireless L.L.C.'s Application:

1. Facility and Proposed Modifications

   A. Existing Facility and Appurtenances

This facility was originally approved by the Town of Haddam's Planning and Zoning Commission on October 16, 2000 with the following conditions:

- 1. Prior to construction, the Applicant/Developer shall schedule a pre-construction conference with the Town Planner, Zoning Enforcement Officer and Town Engineer, applicant's engineer and a representative of the developer.
- 2. The Applicant/Developer shall provide the Land Use Department with the name, address and telephone number of an agent who shall e responsible for supervising the construction and maintaining the Erosion & Sediment Control measures.
- 3. Prior to construction, the Applicant/Developer shall:
  - a. Submit a list of required improvements and estimated costs;
    b. Submit to the Land Use Office a cash bond on the approved estimates;
    c. Submit an estimate of the costs to the Town Engineer;

d. Post an Erosion & Sedimentation Control cash bond with the Land Used Dept.;
e. Install Erosion & Sediment Control measures on the site before any construction begins;
f. Obtain verification from the Town Engineer that all required Erosion and Sedimentation Control bonds have been posted and measures have been completed.

The facility was later approved by the Connecticut Siting (CSC) under EM-POCKET-061-080922 for an Exempt Modification on October 10, 2008. There were no other stipulations set forth by the Town of Hebron. Please see attached.

- Latitude / Longitude: 41.464089 / -72.541994
- Height of Tower: 160'
- Owned/operated by: SBA Towers, LLC
- Property Owner: Richard J. And Beverly A. Watral.
- Size/Components of existing equipment compound:

  - 69'11" x 70'0" fenced compound with 12' wide chain link gate within an 100' x 100' lease lease area containing:
    - Monopole
    - T-Mobile 6' x 6' ground space [west of monopole w/in compound]
  - Components of existing tower:
    - T-Mobile:
    - 157'
      - (3) RFS APXV18-206517S-CA20 - Panel Antennas
      - (3) RFS APXVAARR24_43-U-NA20 – Panel Antennas
      - (3) Ericsson KRY 112 144/1 - TMAs
      - (3) Ericsson Radio 4449 B71 + B12 - RRUs
      - (3) Kathrein 782 11056 Bias T's
      - Low Profile Platform w/HRK & Reinforcement Kit (SitePro RMQP-4096-HK)
      - (12) 7/8" Coax
      - 5/8" Fiber

B. Nature and Extent of Proposed Modifications

Dish Wireless proposes to install (3) panel antennas at the 145' level of the existing 160'-foot Monopole Tower and occupy a ground lease area of 5'x7' within the existing 69' 11" x 70' fenced compound. Dish Wireless' full proposed scope of work is as follows:

Remove:

- N/A

Remove and Replace:

- N/A

Install:
Tower:
At 145':

(3) JMA Wireless MX08FRO665-21 - Panel – 600/1900/2190 MHz Panel Antennas
(3) Fujitsu TAO8025-B605 - RRUs
(3) Fujitsu TAO8025-B604 - RRUs
(1) Raycap RDIC-9181-PF-48 – OVP
SitePro1 SNP8HR-3XX (antenna Mount)
(1) 1.6" Hybrid

Ground (within existing compound):

- 5'x7' concrete pad
- Generator Plug (generator not installed)
- GPS unit
- Power protective cabinet
- H-Frame
- Safety Switch space
- Telco fiber enclosure
- Fiber ND (If required)
- Equipment platform
- Dish Equipment cabinet
- 17'- 9" L x 12" W Ice bridge

Existing Equipment to Remain: N/A

C. This Proposal is technically, legally, environmentally, and economically feasible and meets public safety concerns per Connecticut General Statute Section 16-50aa.

Dish Wireless proposes to collocate at the above-referenced existing telecommunication facility rather than to require additional tower construction. The need for the site was dictated by the existing lack of, or extremely poor service, and projected future capacity and coverage requirements for this particular geographic area. Because new wireless telecommunications sites must function as an integral part of an existing network, their locations affect the services areas of all surrounding site. In order to use mobile communications services, users must be "handed-off" efficiently from one site to the next as they travel. To accomplish this goal, new sites must be placed on very exact, calculated locations.

When the need for a new site in the Haddam area was established, SBA system engineers identified a target area in which to locate the facility. Within the general target area, there are no other tall structures that are suitable for this purpose. The Selection of this specific site location was determined by local topographic and geographic factors, mitigation of the antenna mounting structure's visual impact, compatibility with existing land use, and the ability to negotiate a mutually beneficial lease with a landlord. SBA engineers believe that the Hubbard Road site is ideally suited for the proposed monople tower facility. One carrier is currently on the tower.

This site will be located within a 10,000 square foot compound area on a 38-acre parcel owned by Richard J. Watral and Beveryly A. Watral. The property is crossed by Hubbard Road just west of Route 9 (Assessor's Map 33 Lot 10), and it is zoned Residential R-2A. The site will accessed from "Old" Hubbard Road by way of an existing entrance off (New) Hubbard Road. This parcel is a partially-wooded and undeveloped working farm. The tower site location itself is a wooded hilltop that is approximately 850' from the nearest property line and will be screened from neighboring properties by the existing vegetation.

The proposed collocation meets with all legal and technical requirements. This Application contains all required information and statements per R.C.S.A §16-50j-89 and the proposed installation has been drafted per current code, and studied with regard to structural feasibility and RF emissions output. Drawings and Reports are attached. Dish Wireless' proposed collocation presents no known material changes to environmental conditions from those as documented in the Council's original Findings of Fact and presents no known public safety concerns.

2. Engineering Drawings per the requirements under R.C.S.A. §16-50j-89 are enclosed herewith.

3. Engineering and Structural Analysis per the requirements under R.C.S.A. §16-50j-89 is enclosed herewith.

4. Engineering and Mount Analysis per the requirements under R.C.S.A. §16-50j-89 is enclosed herewith.

5. A Letter from SBA, as Owner of the Facility, agreeing to the proposed shared use of the facility, is enclosed herewith.

6. With regard to any potential environmental impact:

    A. Dish Wireless' collocation will not have any significant adverse visual impact on the surrounding areas. The antennas should result in only marginal additional equipment visibility from areas that already have views of the existing tower. The proposed work would not require any Federal Aviation Administration obstruction marking or lighting.

    B. The proposed collocation does not affect or alter the existing site with regard to wetlands, water resources or air quality. National Wetlands Inventory Maps indicated that the site was not within the 100 year floor zone.

    The proposed work is not thought to have any substantial adverse environmental impact. Public Need for the additional coverage outweighs any minor environmental effects that would result from the construction, operation, and maintenance of the proposed collocation.

7. The operation of Dish Wireless' new antennas will not increase the total radio frequency electromagnetic power density at the site to a level at or above the applicable standards. The anticipated Maximum Composite contributions from the Dish Wireless facility are only 11.68% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 17.60% of the allowable FCC established general public limit sampled at the ground level. FCC guidelines state that if a site is to be out of compliance (over allowable thresholds), the carriers over 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 per the federal government. A Power Density / RF Report per the requirements under R.C.S.A. §16-50j-89 is enclosed herewith.

8. Per the Connecticut Siting Council's COVID 19 Guidelines, one original hard copy of this Tower Share Application is being submitted, along with check in the amount of $625 for the filing fee per Conn. Gen. Stat. §4-189j; Regs., Conn. State Agencies §16-50v-1a.

    A. A copy of this Application and all attachments is being sent to:
        i. The Town of Haddam's First Selectman, Robert McGarry
        ii. The Town of Haddam's Zoning Enforcement & Wetlands Officer, Jim Puska
        iii. The Property Owner, Richard J. and Beverly A. Watral
        iv. (Separate notice is not being sent to tower owner, as it belongs to SBA)

Please note, additionally: the planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modification will not cause a significant change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

Dish Wireless respectfully submits for the Council's review and approval this Application for Tower Share.

Sincerely,

G. 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: Robert McGarry, First Selectman / with attachments
Town Office Building 30 Field Park Dr., Haddam, CT. 06438
Jim Puska, Zoning Enforcement & Wetlands Officer / with attachments
Town Office Building 30 Field Park Dr., Haddam, CT. 06438
Richard J. and Beverly A. Watral
292 HUBBARD ROAD HIGGANUM CT 06441-4343

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	Special Permit by Haddam P&Z issued 10/16/00,
Exhibit 7	EME Report	EBI Consulting 6/6/21
Exhibit 8	Structural Analysis	TES 4/26/21
Exhibit 9	Mount Analysis	B+T GRP 5/23/21
Exhibit 10	Construction Drawings	B+T GRP 6/28/21
Exhibit 11	Site Sketch (Ground)	SBA 4/8/21

EXHIBIT 1

Copy of check

EXHIBIT 2
Letter of Intent

July 22, 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: 270 Hubbard Rd., Higganum, CT
Dish Wireless Site No: BOBDL00014B
SBA Site No: CT13073-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 **270 Hubbard Rd., Higganum, CT**.

SBA Towers, 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 145' 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

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.
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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

774383952740

ADD NICKNAME

Delivered
Friday, July 30, 2021 at 9:57 am

DELIVERED
Signature not required

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

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

Travel History

TIME ZONE
Local Scan Time

Friday, July 30, 2021

9:57 AM	NEW BRITAIN, CT	Delivered Package delivered to recipient address - release authorized
8:14 AM	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
7:28 AM	WINDSOR LOCKS, CT	At local FedEx facility
2:27 AM	NEWARK, NJ	Departed FedEx hub
12:04 AM	NEWARK, NJ	Arrived at FedEx hub

Thursday, July 29, 2021

8:27 PM	FRAMINGHAM, MA	Left FedEx origin facility
1:07 PM	FRAMINGHAM, MA	Picked up

Wednesday, July 28, 2021

2:34 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER
774383952740

SERVICE
FedEx Priority Overnight

WEIGHT
5 lbs / 2.27 kgs

DIMENSIONS
18x13x3 in.

DELIVERY ATTEMPTS
1

DELIVERED TO
Residence

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
5 lbs / 2.27 kgs

TERMS
Shipper

SHIPPER REFERENCE
10-56-92009-6089

PACKAGING
FedEx Box

SPECIAL HANDLING SECTION
Deliver Weekday, Residential Delivery

SHIP DATE
7/29/21

STANDARD TRANSIT
7/30/21 before 12:00 pm

ACTUAL DELIVERY
7/30/21 at 9:57 am

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TRACK ANOTHER SHIPMENT

774383247396

ADD NICKNAME

Delivered
Friday, July 30, 2021 at 9:57 am

DELIVERED
Signature not required

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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

Travel History

TIME ZONE
Local Scan Time

Friday, July 30, 2021

9:57 AM	NEW BRITAIN, CT	Delivered Package delivered to recipient address - release authorized
8:14 AM	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
7:41 AM	WINDSOR LOCKS, CT	At local FedEx facility
6:30 AM	EAST GRANBY, CT	At destination sort facility
3:30 AM	NEWARK, NJ	Departed FedEx hub
12:04 AM	NEWARK, NJ	Arrived at FedEx hub

Thursday, July 29, 2021

8:27 PM	FRAMINGHAM, MA	Left FedEx origin facility
1:07 PM	FRAMINGHAM, MA	Picked up

Wednesday, July 28, 2021

1:59 PM	Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 774383247396	**SERVICE** FedEx Priority Overnight	**WEIGHT** 5 lbs / 2.27 kgs
DIMENSIONS 18x13x3 in.	**DELIVERY ATTEMPTS** 1	**DELIVERED TO** Residence
TOTAL PIECES 1	**TOTAL SHIPMENT WEIGHT** 5 lbs / 2.27 kgs	**TERMS** Shipper
SHIPPER REFERENCE 10-56-92009-6089	**PACKAGING** FedEx Box	**SPECIAL HANDLING SECTION** Deliver Weekday, Residential Delivery
SHIP DATE 7/29/21	**STANDARD TRANSIT** 7/30/21 before 12:00 pm	**ACTUAL DELIVERY** 7/30/21 at 9:57 am

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FedEx

TRACK ANOTHER SHIPMENT

774331461858

ADD NICKNAME

Delivered
Friday, July 30, 2021 at 10:41 am

DELIVERED

Signed for by: R.ROBERT

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

SBA COMMUNICATIONS CORPORATION
Rick Woods

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

TO

Robert McGarry, First Selectman
Town Office Building

30 Field Park Dr.
HADDAM, CT US 06438
508-251-0720

Travel History

TIME ZONE
Local Scan Time

Friday, July 30, 2021

10:41 AM	HADDAM, CT	Delivered
8:48 AM	NORTH HAVEN, CT	On FedEx vehicle for delivery
8:14 AM	NORTH HAVEN, CT	At local FedEx facility
3:45 AM	NEWARK, NJ	Departed FedEx hub
12:04 AM	NEWARK, NJ	Arrived at FedEx hub

Thursday, July 29, 2021

8:35 PM	FRAMINGHAM, MA	Left FedEx origin facility
1:07 PM	FRAMINGHAM, MA	Picked up

Thursday, July 22, 2021

12:49 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER
774331461858

SERVICE
FedEx Priority Overnight

WEIGHT
2 lbs / 0.91 kgs

DELIVERY ATTEMPTS
1

DELIVERED TO
Receptionist/Front Desk

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
2 lbs / 0.91 kgs

TERMS
Shipper

SHIPPER REFERENCE
10-56-92009-6089

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

SHIP DATE
7/29/21

STANDARD TRANSIT
7/30/21 before 12:00 pm

ACTUAL DELIVERY
7/30/21 at 10:41 am

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774331486634

ADD NICKNAME

Delivered
Friday, July 30, 2021 at 10:41 am

DELIVERED
Signed for by: R.ROBERT

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FROM
SBA COMMUNICATIONS CORPORATION
Rick Woods

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

TO
Jim Puska, Zone/Wetlands Enf. Offic
Town Office Building

30 Field Park Dr.
HADDAM, CT US 06438
508-251-0720

Travel History

TIME ZONE
Local Scan Time

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1:07 PM	FRAMINGHAM, MA	Picked up

Thursday, July 22, 2021

12:50 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER
774331486634

SERVICE
FedEx Priority Overnight

WEIGHT
2 lbs / 0.91 kgs

DELIVERY ATTEMPTS
1

DELIVERED TO
Receptionist/Front Desk

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
2 lbs / 0.91 kgs

TERMS
Shipper

SHIPPER REFERENCE
10-56-92009-6089

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

SHIP DATE
7/29/21

STANDARD TRANSIT
7/30/21 before 12:00 pm

ACTUAL DELIVERY
7/30/21 at 10:41 am

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FedEx

TRACK ANOTHER SHIPMENT

774331536437

ADD NICKNAME

Delivered
Friday, July 30, 2021 at 10:13 am

DELIVERED
Signature not required

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

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

TO
Richard J & Beverly A. Watral
292 Hubbard Rd.
HIGGANUM, CT US 06441
508-251-0720

Travel History

TIME ZONE
Local Scan Time

Friday, July 30, 2021

10:13 AM	HIGGANUM, CT	Delivered Package delivered to recipient address - release authorized
8:50 AM	NORTH HAVEN, CT	On FedEx vehicle for delivery
7:59 AM	NORTH HAVEN, CT	At local FedEx facility
3:45 AM	NEWARK, NJ	Departed FedEx hub
12:04 AM	NEWARK, NJ	Arrived at FedEx hub

Thursday, July 29, 2021

8:35 PM	FRAMINGHAM, MA	Left FedEx origin facility
1:07 PM	FRAMINGHAM, MA	Picked up

Thursday, July 22, 2021

12:52 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER
774331536437

SERVICE
FedEx Priority Overnight

WEIGHT
0.5 lbs / 0.23 kgs

DELIVERY ATTEMPTS
1

DELIVERED TO
Residence

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
0.5 lbs / 0.23 kgs

TERMS
Shipper

SHIPPER REFERENCE
10-56-92009-6089

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday, Residential Delivery

SHIP DATE
7/29/21

STANDARD TRANSIT
7/30/21 before 12:00 pm

ACTUAL DELIVERY
7/30/21 at 10:13 am

EXHIBIT 4

Property Card

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2020.

Information on the Property Records for the Municipality of Haddam was last updated on 6/28/2021.

Parcel Information

Location:	270 HUBBARD RD	Property Use:	Vacant Land	Primary Use:	Residential Vacant Land
Unique ID:	H0246400	Map Block Lot:	33 010	Acres:	6.00
490 Acres:	6.00	Zone:	R-2	Volume / Page:	0216/0533
Developers Map / Lot:		Census:	5901		

Value Information

	Appraised Value	Assessed Value
Land	88,420	1,410
Buildings	0	0
Detached Outbuildings	0	0
Total	88,420	1,410

Owner's Information

Owner's Data
WATRAL RICHARD J & BEVERLY A 292 HUBBARD RD HIGGANUM, CT 06441

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
WATRAL RICHARD J & BEVERLY A	0216	0533	03/23/1998		$0

EXHIBIT 5

Property Map

Google Maps 270 Hubbard Rd

Imagery ©2021 Maxar Technologies, U.S. Geological Survey, Map data ©2021 50 ft

270 Hubbard Rd

Directions Save Nearby Send to your phone Share

270 Hubbard Rd, Higganum, CT 06441

FF74+QM Higganum, Haddam, CT

Photos

EXHIBIT 6

Zoning Approval

HURWITZ & SAGARIN LLC

CT 1700
Zoning

November 1, 2000

Via Telecopier and First Class Mail

Ms. Esther McNany
SBA, Inc.
80 Eastern Boulevard
Glastonbury, Connecticut 06033

Re: Hubbard Road, Haddam Connecticut

Dear Esther:

Enclosed please find a copy of the Special Permit Approval issued for the above referenced site on October 16, 2000 and a copy of the legal notice published in the Middletown Press on October 31, 2000. The Town will mail SBA the original Special Permit Approval directly.

Very truly yours,

Julie M. Cashin

JULIE M. CASHIN
Enc.

LAW OFFICES
147 North Broad Street, P.O. Box 112, Milford, Connecticut 06460-0112 Tel. 203-877-8000 • Fax 203-878-9800

LEGAL NOTICE

NOVEMBER 7, 2000
STATE ELECTION

The Electors of the Town of Westbrook are hereby warned to meet at their respective polling place in said town on Tuesday, November 7, 2000, for the following purposes:

I. To cast their votes for Presidential and Vice-Presidential electors, United States Senator, Representative in Congress, State Senator, State Representative, Registrar of Voters.

II. To vote on the following question for the approval or disapproval of a proposed AMENDMENT to the Constitution of Connecticut, a vote of "YES" being a vote for approval, and a vote of "NO" being a vote for disapproval:

1. Shall the Constitution of the State be amended to eliminate County Sheriffs?

The full text of such proposed amendment with explanatory text, printed in accordance with Section 2-30a of the General Statutes, is available at the Town Clerk's office for public distribution.

The vote on the proposed Amendment is taken pursuant to Article Sixth of the Amendments to the Constitution of Connecticut and Senate Joint Resolution No. 16 of the 2000 Session of the General Assembly.

Notice is hereby given that the location of the polling place is as follows:

Voting District: 1

Location of Polling Place: Fire House, 18 South Main Street, Westbrook, CT

Voting machine will be used. The polls will be opened at six o'clock in the morning (6:00 A.M.) and will remain open until eight o'clock in the evening (8:00 P.M.).

Dated at Westbrook, CT this 30th day of October, 2000.

Tanya D. Lane, CMC/MMCA
Town Clerk of Westbrook

WEDNESDAY OCTOBER 25,2000

TOWN OF HADDAM
PLANNING AND ZONING
COMMISSION

The Planning and Zoning Commission of the Town of Haddam, Ct. held a Public Hearing and Meeting at the Haddam Town Hall, Haddam, CT, on Monday October 16, 2000 at 7:00pm and acted upon the following items:

1. Approved the Subdivision Application of Susan Hopkins, P.E., for a 2 lot re-subdivision 236 Turkey Hill road, Haddam, Map 51 Lot 16, Louis & Gianna Milardo.

2. Approved the SBA, Inc. Special permit application of SBA, Inc. for a Telecommunications Facility at 292 Hubbard Road, Higganum, property of Richard & Beverly Watral.

3. Approved the request of the Brainerd Memorial Library Association, Map 31 Lot 63, Saybrook Road, Haddam, to extend their special permit for five years. Permit#p-M312.83.

Said official action was taken at the commission's regular meeting of October 16, 2000. The full record of the Commission's decision is on file in the Land Use Office of the Town Office Building. Dated at Haddam, CT this 18th day of October, 2000.

Paul Geraghty, Chairman
Haddam Planning and Zoning Commission

CAT, "Ralph," black/grey tabby, lost near Post Office, Chestnut St, Mdtwn, friendly, 343-0278.

JAPANESE AKITA Answers to "Dante" child heart-broken, white with black spotted muzzle. 203-440-3150 REWARD!

LOST CAT, female, 9-year old, gray, named "Patience," lost in the area of Food Mart on Washington St, very friendly, call 347-7148.

LOST DOG, in Higganum, female, Borzoi (looks like a long-haired Greyhound), white with black back, no tags, answers to "Summer." Dog is very shy. If found, please call 345-2425.

128 Services Offered

WILL CLEAN YOUR HOME or business at a low price, free estimate, call Diane, 346-3821.

167d Receptions

Wedding? Ivoryton Inn, Essex & Carriage House, Farmington Village. Laura (860)677-8178

Real Estate

210 Rooms For Rent

MIDDLETOWN College Street, drug free environment. $350 includes all utilities, phone & cable. 346-2448

MIDDLETOWN, Main ST., Furnished with appliances, tv, cable, phone, air. 140/weekly. Call (860)346-8275

230 Apartments Unfurnished

CHESTER, In historic mansion, cozy 1-bedroom, private entry, eat-in kitchen, laundry, near village, cat o.k./no dogs, $675/mo, 434-8405.

DURHAM 3 room in country setting. $650 utilities included. Lease, references, no pets. 860-349-3913

EAST HAMPTON, large, 6-room, 2-bedroom, oil heat, formal dining room, garage, basement & attic. $895/mo, call Burt Realty, 267-2577.

MARLBOROUGH efficiency apartment available, no pets. Call 860-267-1109.

MIDDLEFIELD: 3 bedroom, 5 large rooms, porch, great yard, $875/mo.+ utilities, NO pets, no washer hookup. Call (860)346-4397

MIDDLETOWN, 1 & 2 bedrooms from $500. Newly painted, on bus line, off street parking for one vehicle, no pets, 1 month security required. Call (860)267-0143 Ask for Karen

MIDDLETOWN, 1-bedroom, washer/dryer hookups, garage, heat & hot water included, $675/mo, call 860-347-6719.

MIDDLETOWN: 258 Saybrook Rd., immaculate 1 bedroom, private entry, wood floors, laundry. $[illegible] with heat. [illegible]

MIDDLETOWN, 2-bedroom, 1st floor, appliances, parking, nice unit, Broad St. 346-5202, 344-8366.

MIDDLETOWN, 2-bedroom, 1st floor, appliances, parking, nice unit, Broad St. 346-5202, 344-8366.

MIDDLETOWN 2 bedroom, 2nd floor, newly remodeled, appliances, wall to wall carpeting, close to downtown. $650 plus utilities. (860)347-8853 call between 2pm-6pm.

heat & hot water included. Leave message at 860-380-3307

350 Mobile Homes

EAST HAMPTON /COLCHESTER Why rent when you can own a 3 bedroom, 2 bath, manufactured home for little money down & monthly payments less than rent payments. New & pre-owned homes available from $29,900 to $59,900. Call DiBella Development Co. 203-878-9535.

410 Commercial & Industrial Rent

MAIN ST Retail Space 1,600 sq.ft. with basement, central air. Call 860-346-8275.

Financial

550 Money To Loan

IMMEDIATE CASH
$2,500 - $75,000
Free Info No Fee
1-877-740-2495

644 Childcare Opportunities

NATIONAL EARLY CHILDHOOD COMPANY is seeking motivated professionals who are interested in leadership positions. Candidates should possess a background in early childhood, a strong background of managerial skills, & a love for the early childhood profession. Competitive salary, great benefits, & many opportunities for advancement. Fax a resume & letter of interest to 718-398-0282. EOE.

Employment & Instruction

645 Help Wanted

ACCOUNTS PAYABLE Berlin full time $OOE, A/P, Excel, phones, etc. Call Hamilton Connections 203-634-8427 or apply 290 Pratt St., Meriden.

...ates. 401K & benefits, call Tom at European Motor Cars. 632-2355

*****AUTO TECHNICIANS*****
Wanted A, B, or C Technicians, Trainee, and Used Car Technician for busy Shoreline Dealership. We offer excellent wages and a complete benefit package. Ask for details about our $1,000 sign on bonus. Join a winning team! Contact Ernie Betulia at
Hammonasset Ford,
Lincoln, Mercury
151 Boston Post Rd
Madison, CT
(203) 245-8828

vacation. Call 860-342-4545.

****

CLINICAL ASSISTANT
Full-time in a Middletown dental office. Great pay & benefits. No experience necessary. Fax resume, 860-343-3401

★

CONSTRUCTION Laborers/ Drivers/ Operators. Paving experience helpful, full/part time, call 860-828-0836.

★

CONTROLLER

Central Connecticut based newspaper seeks experienced accounting professional to prepare monthly financial statements, oversee 5 employee business office and manage day-to-day finances of 7 day newspaper operation. Knowledge of General Ledger procedure, budgeting, forecasting and Lotus.

Please fax resume & salary history to 860-224-7175 or e-mail aromanow@yahoo.com

ADMINISTRATIVE ASSISTANT, for trade show/conventions. Please reply: P O Box 386, East Berlin, CT, 06023-0386

BARTENDER Days, Apply in person at Cypress Restaurant, 1265 S. Main St, Middletown

BARTENDERS, full- and/or part-time, Tommy's Restaurant, 825 Saybrook Rd, Middletown, call 346-8686.

☆

BURGER KING- Full and part-time positions available. Good starting wages, flexible hours available, bonus after 1 year, fun place to work. Apply at 10 Marlborough Street, Portland.

CARPENTERS & CARPENTER'S HELPERS wanted, good pay, call 860-669-5883.

CARPENTERS: WE NEED YOU! Top $$, benefits, vacation time & more...call 203-237-3385

COUNSELOR/YOUTH WORKER, challenging, rewarding position with boys ages 11-16 in S.E. CT home-school. Liberal benefits/vacations, advancement. Starting salary, 2nd shift, $25,094. BS/BA & valid drivers' license required, EOE. Send resume Attn: Pete Martin, Mt. St. John, 135 Kirtland St, Deep River, CT 06417.

CREDIT DEPARTMENT
ADMINISTRATIVE ASSISTANT

Tilcon Connecticut, Inc. is seeking a full-time person to work Monday-Friday, 8-5 P.M., in our Credit Department. Experience in all phases of credit and collections helpful, including organizational, PC, typing and filing skills. Excellent phone skills required. Please forward resume to Controller, P. O. Box 67, North Branford, CT 06471. EOE M/F/D/V

CUSTOMER SERVICE REPS- FLOWERS USA is seeking enthusiastic & dependable individuals to staff our fast paced inbound call center. Incentive programs, FT & PT avail. Call today 860-767-4500 ext 131.

SPORTS WRITER

The Middletown Press is seeking a full-time entry-level writer for its sports department. Experience is preferred, but a candidate with a sharp ability for organization, page-making skills, or a knowledge of the Middlesex County high school athletic scene will rate highly.

Fax resume to Paul Nichols
at 860-347-4425 or
call 860-347-3331 (Ext. 226) for details.

HADDAM PLANNING AND ZONING COMMISSION

Hurwitz & Sagarin, LLC
Attn. Julie Cashin, Esq.
147 North Broad Street
P.O. Box 112
Milford, Ct. 06460-0112

RE: Special Permit
Map 44 Lot 38

Issued: 10-16-2000
Expires: 10-16-2002

This permit is authorized and in reference to your application to conduct regulated activities in the Town of Haddam.

The Haddam Planning & Zoning Commission has considered your application with due regard for the matters enumerated in Section 8-3c of the Connecticut General Statutes and in accordance with the Haddam Planning & Zoning Regulations, in particular Section 15 of said regulations and has found that the proposed use, as specified and conditioned below, is in conformance with said regulations.

The following activities are authorized: To allow the construction of a wireless telecommunications facility consisting of a 160 ft. monopole tower, and appurtenant equipment within a 70' x 70' fenced compound on a 100' x 100' leased parcel, access and utilities routing, subject to the following conditions:

1. Standard Special Permit Conditions (see attached)
2. Revise Site plan to show suitable plantings along route 9
3. No timbering of the balance of the site
4. Tower be made available for siting town's emergency services radio and communication facilities.

M. T. Colegrove

Geoffery Colegrove, Town Planner

TOWN OF HADDAM

PLANNING & ZONING COMMISSION
30 FIELD PARK DRIVE
HADDAM, CT., 06438

MOTION SHEET

DATE: 10/16/2000

APPLICANT: SBA Inc

OWNER: Richard and Beverly Watral

PROPERTY ADDRESS: 292 Hubbard Road

ASSESSOR MAP NO. 44 **ASSESSOR LOT NO.** 38

MOTION BY COMMISSIONER Dubois

SECOND BY COMMISSIONER Baranoff

Approve the application as submitted w/ Standard Conditions (special Permit). Additional Conditions: (1) Revise site plan to show ~~coniferous~~ suitable plantings along Route #9 boundary to screen the site; (2) No timbering of the balance of [illegible] the site:
(3) Tower be made available for siting town's emergency services radio and communication facilities.

FOR	AGAINST	ABSTAIN
~~[signature]~~		
~~[signature]~~		
Robert M. [signature]		
S. W. [signature]		
[signature] A. Dubois		
Robert M. Baranoff		

TOWN OF HADDAM
Planning and Zoning Commission
Haddam, Conn. 06438

STANDARD CONDITIONS

(SPECIAL PERMIT)

1. Prior to Construction, the Applicant/Developer shall schedule a pre-construction conference with the Town Planner, Zoning Enforcement Officer and Town Engineer, applicant's engineer and a representative of the developer at which all aspects of the the improvements shall be discussed and agreed upon. At this meeting the developer will be committed to a construction sequence and schedule for construction.

2. The Applicant/Developer shall provide the Land Use Department with the name, address and telephone number of an agent who shall be responsible for supervising the construction and maintaining the Erosion & Sedimentation Control meassures. (Such person shall submit a weekly, or at such other interval as required by the staff, inspection report on the status of the Erosion & Sedimentation Control measures to the Zoning Enforcement Officer.)

3. Prior to the commencent of any construction activity, the Applicant/ Developer shall:

   a. Submit a list of required site improvements and estimated costs of each item to the Town Engineer for approval.

   b. Submit to the Land Use Office a cash surety bond based on the approved estimates by the Town Engineer. Said Bond shall be for not less than five (5) years.

   c. Submit an estimate of the cost of Erosion & Sedimentation Control measures to the Town Engineer for approval.

   d. Post an Erosion & Sedimentation Control cash bond with the Land Use Department in an amount to be determined by the Town Engineer.

   e. Install Erosion & Sedimentation Control measures on the site before any construction activity is begun.

   f. Obtain verification from the Town Engineer that all required Erosion & Sedimentation Control bonds have been posted and the measures have been completed to his satisfaction and he has authorized the beginning of work.

4. If the applicant or his successor in title fails to respond immediately to to orders from the Zoning Enforcement Officer to remedy problems or make repairs to the Erosion & Sedimentation Control measures, the Town Engineer shall be authorized to have the work done on an emergency basis and the applicant shall be responsible for reimbursement to the Town of Haddam for such expenses.

5. The well, if required, shall be drilled, tested and approved by the Town Engineer prior to the issuance of a building permit. On site blasting shall be allowed, if necessary, before a well is drilled.

6. Prior to the commencement of construction activity, the property owner, if different from the applicant/developer, shall:

a. Aprise himself of the required Erosion & Sedimentation Control measures.

b. Discuss with the staff of the Land Use Department the requirements and obtain approvals where necessary for the Erosion & Sedimentation Control measures.

c. Install such Erosion and Sedimentation Control measures and maintain the same throughout the construction phase of the project. (If additional Erosion &Sedimentation Control measures are deemed necessary by the Zoning Enforcement Officer or the Town Engineer, said measures shall be immediately installed pursuant to the order for their installation.)

7. The applicant or his successor in title shall comply with all conditions in the Wetland Commission approvals or Permits, if any, and all orders issued by the Wetlands Enforcement Officer to protect the wetlands and watercourses.

8. If blasting is necessary for public or private lot improvements, a pre-blasting survey and post-blasting survey shall be conducted on appropriate nearby structures and wells. Proof of insurance and /or the ability to pay for damages due to any blasting shall be demonstrated prior to any blasting activity. A certificate of insurance shall be provided to the Land Use Office for recording in the applicant's file.

9. If the development involves easements, conservation restrictions, open spaces or other restrictions on the use of property, maintenance agreements, or or any similar or related documents, copies of all of said documents shall be provided to the staff of the Land Use Department. Said documents shall be reviewed by the Town Attorney and modified in accordance with said review and approval. Final revised documents shall be submitted to the staff of the Land Use Department before recording of the Site Plan in the Town of Haddam Land Records.

1ST DRAFT

TOWN OF HADDAM

PLANNING AND ZONING COMMISSION

APPLICATION FOR SPECIAL PERMIT

Applicant: SBA, Inc.
80 Eastern Blvd.
Glastonbury, CT 06033

Contact: Esther McNany
(860) 659-9101

Project: Wireless Telecommunications Facility
270 Hubbard Road, Higganum, CT
Assessor's Map 33 Lot 10

SBA, Inc.'s Application for a Special Permit
(Wireless Telecommunications Facility)

Introduction:

SBA, Inc. hereby petitions the Planning and Zoning Commission of the Town of Haddam for a special permit to construct a wireless telecommunications facility under Section 25 of the Haddam Zoning Regulations pertaining to "Communication Towers." The details of SBA's request are fully set forth in the application, attachments and drawings. Careful attention has been paid to the applicant's adherence with the Town's Zoning Regulations, and as documented in the following report, each article of the regulations has been addressed to demonstrate the applicant's compliance with same.

This narrative portion of SBA's application provides background information about SBA, Inc., details of the proposed project, and the necessity for the 270 Hubbard Road site.

Background:

SBA, Inc.:

SBA Communications Corporation began in 1989 and has grown to become the premier wireless antenna site development services provider for the Wireless Telecommunications Industry. Since its beginning, SBA has worked in partnership with the leading wireless carriers to build out networks across the country and around the globe. The compilation of our Build-to-Suit program, Site Development Services, and Construction Services provides for the best solutions to the many challenges faced today in the industry. We offer our clients the freedom to choose how to best meet their antenna site build-out objectives. Our strong financial stability, capital resources and industry leadership serve to support the needs of our clients and the Wireless Telecommunications Industry.

The goal of a carrier's radio frequency engineering group is to maximize the area which their communications system will service while minimizing the number of facilities, or sites, required. The goal of SBA, Inc. is to develop facilities, which through co-location, will accommodate the engineering needs of a number of wireless communications providers in one given site. This partnership benefits all. The carriers benefit from less capital cost, SBA benefits with long term site ownership and management, and the community benefits from the variety of wireless services provided in their area as well as the reduction in the number of towers in their neighborhoods.

In the past year, SBA has successfully built wireless communication facilities around the state that have facilitated the needs of a number of carriers at a single location. Bozrah, Norwich, Plainfield, North Stonington, and Stonington are some examples near the Town of Haddam. All these sites have multiple carriers, with Plainfield at its maximum capacity of five.

Site Necessity:

When the need for a new site in the Haddam area was established, system engineers identified a target area in which to locate the facility. The need for a new site was dictated by the existing lack of, or extremely poor service, and projected future capacity and coverage requirements for this particular geographic area. Within the general target area, the selection of this specific site location was determined by local topographic and geographic factors, mitigation of the antenna mounting structure's visual impact, compatibility with existing land use and the ability to negotiate a mutually beneficial lease with a landlord.

To accomplish this goal, the site must be placed on very exact, calculated locations. Because these sites function as an integral part of an existing network, the location of this site affects the service areas of all the surrounding sites. In order to use mobile communications services, users must be "handed-off" from one site to the next as they travel.

As illustrated in the attached propagation study, there is currently a gap in the coverage provided by wireless carriers in the Town of Haddam. The purpose of this site is to provide continuity into Haddam from existing sites which are located to the South along Interstate 95.

Site Information:

This particular site will be located within a 10,000 square foot compound area on a 6 acre parcel owned by Richard J. and Beverly A. Watral. The property address is 270 Hubbard Road (Assessor's Map 33 Lot 10), and it is zoned Residential R-2A. The site will be accessed from "Old" Hubbard Road by way of an existing entrance off (new) Hubbard Road.

This parcel is a partially-wooded and undeveloped working farm. The tower site location itself is a wooded hilltop that is approximately 850' from the nearest property line and will be screened from neighboring properties by the existing vegetation. This site has been approved by the Town of Ledyard Wetlands Commission.

The project consists of the construction of a 160-foot monopole tower along with the installation and operation of antennas and associated equipment as part of an existing wireless communications system for various carriers licensed by the FCC. The tower and related ground equipment compound exceed the setback requirements set forth in Section 4 Table 1 of the Town Zoning Regulations.

Within the leased area, a 70' x 70' equipment compound will be enclosed by a 6' tall chain link fence topped by 3 strands of barbed wire. The power and telco utilities needed for the operation of this facility will be installed underground. No water or sewer services are required.

Property Owner:	Richard J. and Beverly A. Watral
Property Address:	270 Hubbard Road, Higganum
Property Size:	6.0 acres
Lessee:	SBA, Inc.
Leased Parcel:	10,000 sq. feet
Tower:	160-foot monopole tower

Compliance with Haddam Zoning Regulations: SECTION 25. Communication Towers

25.1 Communications towers, poles, dishes or similar structures for sending or receiving signals by radio wave, electrical impulse or similar or related technologies are permitted in all zones subject to the following:

a. The structure shall be designed, colored and sited in such a fashion as to minimize its visibility, unless otherwise required by F.C.C. and/or F.A.A. regulations;

The proposed tower is a monopole design with a non-contrasting grey galvanized finish. The tower and compound will be well-screened by surrounding trees. The tapered monopole design is considered to be less visibly obtrusive than lattice or guyed towers.

b. The structure shall be located in an area adequately removed from neighboring buildings or other structures so as to minimize the risks associated with collapse or upset; the Commission may take into consideration the proposed tower location as it relates to property lines, set backs, other structures on the subject site or adjacent or adjoining sites and may require the tower to be located or relocated in an area to minimize danger in case of upset or collapse. If the Commission determines that the structure cannot be safely located with consideration to structures (existing or potential) and uses on either the subject lot or adjacent or adjoining lots such shall be grounds to deny the permit.

c. The structure shall not cause interference with TV, radio or other signals in the area and shall comply with all state and federal standards with regard to electromagnetic radiation and interference, ionizing radiation or health hazards or threats;

Please see the attached radio frequency engineer report which stipulates that the proposed telecommunications facility will comply with all FCC standards. In particular, the electromagnetic radiation associated with the facility will pose no health threat to the public and will not interfere with other communications. Moreover, no form of ionizing radiation will be present or emitted by the facility.

d. All structures, including supporting or accessory structures such as building for power or controls shall comply with all applicable zoning standards including setbacks and percentage of lot use;

Please refer to submitted site plans which address these issues in detail.

e. **In case of cease of use, either by expiration of the permit or abandonment by the owner, the structure shall be dismantled and removed by the current owner of the property upon which the tower is located;**

Upon abandonment of the facility, structures will be removed to grade and the site restored in compliance with then-applicable laws and regulations. In addition, a removal provision is included in the Lease Agreement between SBA and the property owner.

f. **The tower structure shall be so guarded as to prohibit trespass either by the use of a fence or anti-climbing shields or devices;**

As depicted in the submitted site plans, several measures have been taken to ensure site security:

1). The tower compound will be surrounded by a 6' high fence topped by 3 strands of barbed wire;

2). The gate will be securely locked; and

3). There will be no climbing rungs installed on the lower 20 feet of the tower.

g. **Any lighting on the structure shall be shielded to prevent glare onto neighboring properties;**

No lights or illumination will be placed on the proposed tower. However, the fenced site compound will be lit by a single 500-watt halogen floodlight mounted on a fencepost near the gated entryway, approximately 18 feet above ground level. Since this light is primarily for maintenance or repair during non-daylight hours, it should seldom be in use. Moreover, the light will be configured to best illuminate the facility and will not shine on adjacent properties or roadways.

h. **Every effort shall be made to use existing structures, including adding multiple uses to single towers so as to minimize the number of towers and other structures;**

Since SBA is in the business of leasing space on communication towers to multiple cellular/PCS carriers, the proposed tower has been designed to hold the typical antenna load of at least five (5) carriers. (Please refer to the accompanying site plans.) The monopole design can also accommodate Ham radio, two-way radio, pager, and other wireless communication uses in addition to the cellular and PCS carriers. The tower will also be made available to the Town of Haddam free of charge for its reasonable fire, police, ambulance, or emergency needs. Thus, the tower furthers the Town's tower sharing policy and

will serve to lessen the visual impact of wireless communication development in Haddam.

i. **Each structure shall bear a sign with the name and phone number of a person responsible for the maintenance or operation of the facility in case of emergencies, such sign to be visible from outside the premises and shall contain data identifying the location;**

No signs other than those permitted by this regulation will be displayed. A 2' x 3' sign showing tower ownership, its FCC tower registration number, and emergency telephone numbers will be placed at fence level. The sign is illustrated on drawing C-3 submitted with this application.

j. **The permit application shall comply with Section 14 of these regulations, except that the applicant may ask for a waiver of the A-2 survey standard on the site plan;**

Site plans in compliance with Section 14, including the A-2 survey standard, have been submitted with this application.

k. **This regulation applies to structures which measure over forty (40) feet from the ground at their bases;**

This regulation applies to the proposed tower because the tower will be 160 feet in height.

l. **The applicant shall provide an as built CGS coordinate for the tower location within a one meter standard.**

SBA will comply with requirement once the proposed tower is built.

m. **The application shall include a U.S.G.S. quad map showing the location of the tower and other known competing towers;**

n. **The tract of land on which the tower is to be located shall be not less than two (2) acres;**

The 270 Hubbard Road parcel measures 6.0 acres in area.

o. **Tower details shall be submitted noting the proposed height from grade, shape, type, method of anchoring and location in reference to property lines;**

Please refer to drawings _____ which address these matters in detail. As previously stated, the proposed tower is a 160-foot monopole.

p. **The Commission may require the applicant to raise a balloon or by other means illustrate the visual effect of the proposed tower;**

SBA will comply with any reasonable request from the Town concerning illustration of the visual effect of the proposed tower.

q. **The permit shall be for five (5) years and renewable upon application to the Commission;**

No response is required for this subsection.

r. **In the Gateway Conservation Zone, the location, size and height of the tower shall be consistent with the Gateway standards.**

The proposed tower site is approximately one mile west of the Gateway Conservation Zone. Thus, it is sufficiently distant to be exempt from these standards.

Site Necessity:

As described in the attached radiofrequency report, there is currently a gap in the coverage provided by wireless carriers in the Town of Haddam and specifically along portions of Route 9. The purpose of the proposed site is to provide continuity of service into Haddam from existing sites [redacted].

The need for a new site was dictated by the existing lack of, or extremely poor service, and projected future capacity and coverage requirements for this particular geographic area. Because new wireless telecommunication sites must function as an integral part of an existing network, their locations affect the service areas of all the surrounding sites. In order to use mobile communications services, users must be "handed-off" efficiently from one site to the next as they travel. To accomplish this goal, new sites must be placed on very exact, calculated locations.

When the need for a new site in the Haddam area was established, SBA system engineers identified a target area in which to locate the facility. Within the general target area, there are no other tall structures that are suitable for this purpose. The selection of this specific site location was determined by local topographic and geographic factors, mitigation of the antenna mounting structure's visual impact, compatibility with existing land use, and the ability to negotiate a mutually beneficial lease with a landlord. SBA engineers believe that the Hubbard Road site is ideally suited for the proposed monopole tower facility.

Site Information:

This particular site will be located within a 10,000 square foot compound area on a 38-acre parcel owned by Richard J. Watral, Beverly A. Watral, and Wayne R. Watral. The property is an un-numbered lot crossed by Hubbard Road just west of Route 9 (Assessor's Map 44 Lot 38), and it is zoned Residential R-2A. The site will be accessed from "Old" Hubbard Road by way of an existing entrance off (new) Hubbard Road.

This Map 44 Lot 38 parcel is large wooded and undeveloped tract. The tower site itself is a wooded hilltop situated on the north side of Hubbard Road, being separated by the road from the main body of the parcel. The tower site will be screened from neighboring properties and Route 9 by existing vegetation. There are no wetlands on the site, and it lies entirely outside the Town's 50-foot wetlands review area.

The project consists of the construction of a 160-foot monopole tower along with the installation and operation of antennas and associated equipment as part of an existing wireless communications system for various carriers licensed by the FCC. The tower and related ground equipment

compound exceed the setback requirements set forth in Section 4 Table 1 of the Town Zoning Regulations, being _____ feet from the nearest property line.

Within the leased area, a 70' x 70' equipment compound will be enclosed by a 6' tall chain link fence topped by 3 strands of barbed wire. The power and telco utilities needed for the operation of this facility will be installed underground. No water or sewer services are required.

Property Owner:	Richard J. Watral, Beverly A. Watral, and Wayne R. Watral
Property Address:	Hubbard Road, Higganum
Property Size:	38.0 acres
Lessee:	SBA, Inc.
Leased Parcel:	10,000 sq. feet
Tower:	160-foot monopole tower

PLANNING AND ZONING COMMISSION
TOWN OF HADDAM
30 FIELD PARK DRIVE
HADDAM, CT. 06438
APPLICATION FOR SPECIAL PERMIT
(SEE SECTION 15 OF THE HADDAM ZONING REGULATIONS)

MAP 44 LOT 38 LOCATION Hubbard Road

APPLICANT: SBA, Inc. PHONE 860-659-9101
ADDRESS: 80 Eastern Boulevard, Glastonbury, CT 06033

OWNER: Richard Watral, Beverly Watral, Wayne Watral PHONE 860-345-4880
ADDRESS: 292 Hubbard Road, Higganum, CT 06441

ZONE: R-2A DEED REFERENCES: Volume 216 PAGE 531

Zoning regulations under which this application is being made: §25-Communication Towers, §15-Special Permit §14-Site Plans Review, §6.3(k)

Completely describe the proposed activities, uses, and structures for which this application is being made: Construction of a wireless telecommunications facility consisting of a 160 ft. monopole tower, and appurtenant equipment within a 70'x70' fenced compound on a 100'x100' leased parcel, access and utilities routing.

Please include the following items with your application:

1. Application Form
2. Site Plan (as indicated in Section 14 & 15.6 of the Haddam Zoning regulations)
3. Inland Wetland Agency Permit, if required
4. Any other State, Federal or Local permits required
5. Application Fee $75.00
6. State of Connecticut DEP Environmental Fee $10.00

Are there any waivers requested as part of this application? Yes _____ No x Please explain: _____

The owner applicant hereby grant the Haddam Planning and Zoning Commission, and/or it's designated agent, permission to enter the property for which this permit is requested for the purpose of inspection and enforcement of the Haddam Zoning Regulations.

_____ _____
On behalf of APPLICANT DATE
JULIE M. CASHIN, ESQ., Agent for SBA, Inc.

See LOA attached hereto

_____ _____
OWNER DATE

****

ADMINISTRATIVE USE ONLY:

DATE RECEIVED _____ FEE $_____ CHECK # _____ CASH _____

REV. 3-24-98

ZONING ANALYSIS

Date of analysis: 4/4/00

GENERAL INFO:

Jurisdiction: Haddam, CT

Town Hall Hours: M-W 9-4, Thur 9-7, Fri 9-12

Town Planner: Harry Eberhart — Phone: 860-345-8531

ZEO: Cynthia Williams — Phone: 345-8531

Wetlands Officer: Cynthia Williams — Phone: 345-8531

Other: _____ — Phone: _____

PLANNING AND ZONING INFO: (T-Hall)

Meeting dates: 1st & 3rd Monday (7:00 pm) — Submittal deadline: 10 BUSDAYS - Verbal @ P&Z Office TO SLL

Permit(s) required (check all that apply):

☒ Site Plan §15.6 + 300' Beyond Prop. ☐ Special Use ☐ Special Exception Sec 6.3-K

☐ Variance ☐ Zoning Permit ☒ Other Special Permit

Fee(s): $75 + 60 deposit — Number of copies: _____

Setbacks/Fall zone: Front 40' Rear 30' Side 20' — Need FCC License holder: ☐ Yes ☒ No

Height Restrictions: None — Zone Restrictions: None

Comments (ex: monopoles only, cannot build on ridgelines, etc): No specific fall zone requirements.

WETLANDS INFO: (Elementary School)

Meeting dates: 2nd Monday, 7pm — Submittal deadline: 3 days before mtg bus.

Permit required:

? ☐ Significant Activity ☐ Regulated Activity ☐ Declaratory Ruling

☐ Other: _____ ☒ None if outside review zone = 50' BUFFER ZONE

Review/buffer zone: ≤ 50' from boundary of wetland + 50' IF > 10% GRADE

Fee: None if outside rev. area. — Number of copies: None (Have site plan)

- Zoning Commission will request W.L.O. sign-off
- OR we can have her look at project ahead of time

Per P & Z Office
- Filing Deadline
is 10 Business
Days
- SLL

LAND USE DEPARTMENT

FEE SCHEDULE

WETLAND APPLICATIONS:

USE PERMITTED OF RIGHT	- NO FEE
NONREGULATED USE	- NO FEE
BASIC APPLICATION	- $ 50.00
SIGNIFICANT ACTIVITY	- $ 35.00/1,000 SQUARE FEET
PETITION TO AMEND MAP	- $ 450.00
RENEWAL OF PERMIT	- $ 25.00

ZONING BOARD OF APPEALS:

APPLICATION FEE	- $ 25.00
RECORDING FILING FEE	- $ 10.00
ADVERTISING COSTS	- $ 50.00 DEPOSIT

PLANNING & ZONING APPLICATIONS:

ZONING PERMIT	- $25.00
SITE PLAN	- $ 50.00
HOME OCCUPATION SITE PLAN	- $ 50.00
SPECIAL PERMIT	
APPLICATION	- $ 75.00
INSPECTION FEE	- 3% OF PUBLIC IMPROVE.
ADVERTISING COSTS	- $ 50.00 DEPOSIT
NOTICE SIGN	- $ 10.00 DEPOSIT
SUBDIVISION	
APPLICATION	- $ 75.00 PER LOT
INSPECTION FEE	- 5% OF PUBLIC IMPROVE.
NOTICE SIGN	- $ 10.00 DEPOSIT

EROSION CONTROL PERMIT:

FEE	- $ 50.00
MINIMUM BOND	- $ 500.00

TIMBERING PERMITS:

FEE	- $ 50.00
MINIMUM BOND	- $ 500.00

TIMBERING SEDIMENTATION & EROSION CONTROL:

FEE	- $ 100.00
BOND	- AMOUNT SET BY PLANNING & ZONING COMMISSION

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: BOBDL00133A

160 West Street
Cromwell, Connecticut 06416

July 6, 2021

EBI Project Number: 6221003253

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**17.60%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

July 6, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00133A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **160 West Street** in **Cromwell, 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 160 West Street in Cromwell, 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 51 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):	51 feet	Height (AGL):	51 feet	Height (AGL):	51 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 %:	**11.68%**	Antenna B1 MPE %:	**11.68%**	Antenna C1 MPE %:	**11.68%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	11.68%
Verizon	5.85%
T-Mobile	0.07%
Site Total MPE % :	17.60%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	11.68%
Dish Wireless Sector B Total:	11.68%
Dish Wireless Sector C Total:	11.68%
Site Total MPE % :	17.60%

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	51.0	15.88	600 MHz n71	400	3.97%
Dish Wireless 1900 MHz n70	4	542.70	51.0	38.54	1900 MHz n70	1000	3.85%
Dish Wireless 2190 MHz n66	4	542.70	51.0	38.54	2190 MHz n66	1000	3.85%
						Total:	**11.68%**

• 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:	11.68%
Sector B:	11.68%
Sector C:	11.68%
Dish Wireless Maximum MPE % (Sector A):	11.68%
Site Total:	17.60%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **17.60%** 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 160 ft Valmont Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT01700-S

Customer Site Name: Haddam

Carrier Name: Dish Wireless (App#: 153524, V1)

Carrier Site ID / Name: BOBDL00014B / 0

Site Location: 270 Hubbard Road

Higganum, Connecticut

Middlesex County

Latitude: 41.464089

Longitude: -72.541994

Analysis Result:

Max Structural Usage: 32.6% [Pass]

Max Foundation Usage: 29.0% [Pass]

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

Report Prepared By : Delu Zhou

Introduction

The purpose of this report is to summarize the analysis results on the 160 ft Valmont 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	Original fabrications drawings prepared by Valmont Microflect. Dated 10-26-2000. Drawing No DD1504Z. Order No 12825-00. Site: 4275-024, Haddam, CT.. Previous structural report prepared by FDH Engineering, Inc. Dated 02-17-2003. Project No 15BFZE1400.
Foundation Drawing	Original foundation drawings prepared by Valmont Microflect. Dated 10-31-2000. Drawing No 3403-F. Order No 12825-00. Site: 4275-024, Haddam, CT.
Geotechnical Report	Geotechnical report of Jaworski Geotech, Inc. Dated 10-27-2000. Project No 99564G.
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} = 130.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.176, S_1 = 0.061

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	157.0	3	RFS APXV18-206517S-C-A20 - Panel	Low Profile Platform w/HRK & Reinforcement Kit (Sitepro RMQP-4096-HK)	(12) 7/8" Coax; (1) 1 5/8" Fiber	T-Mobile
2		3	RFS APXVAARR24_43-U-NA20 - Panel			
3		3	Ericsson KRY 112 144/1 TMA's			
4		3	Ericsson Radio 4449 B71+B12 RRU's			
5		3	Kathrein 782 11056 Bias T's			

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
6	145.0	3	JMA Wireless MX08FRO665-21 Panel	Sitepro1 SNP8HR-3XX	(1) 1.6" Hybrid	Dish Wireless
7		3	Fujitsu TA08025-B605 RRU			
8		3	Fujitsu TA08025-B604 RRU			
9		1	Raycap RDIDC-9181-PF-48 OVP			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**32.6%**	**31.8%**	**22.4%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2770.2	26.6	79.1

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

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 0.4186 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 32.56% at 0.0ft

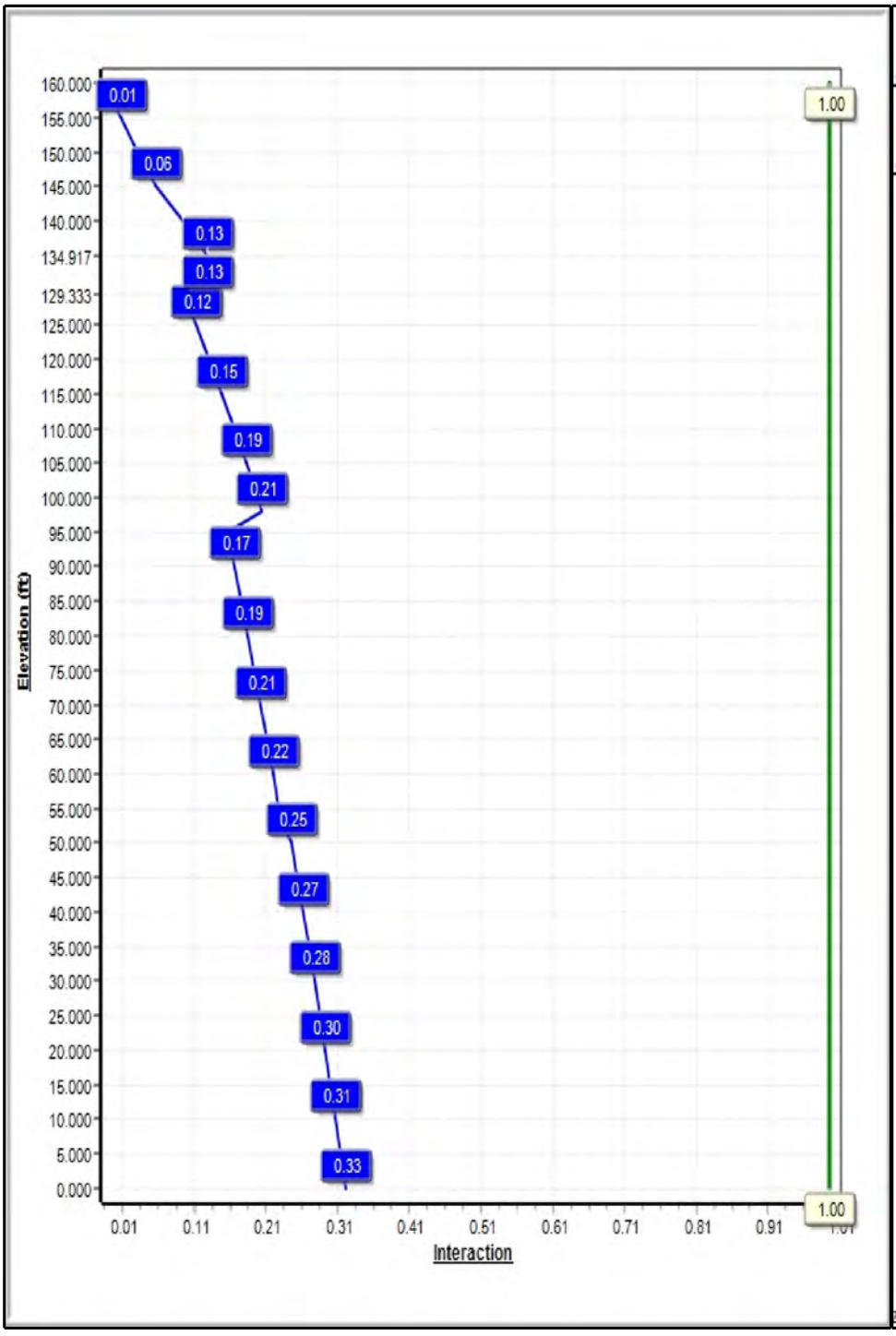
Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Haddam	**Exposure:**	B	
Height:	160.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

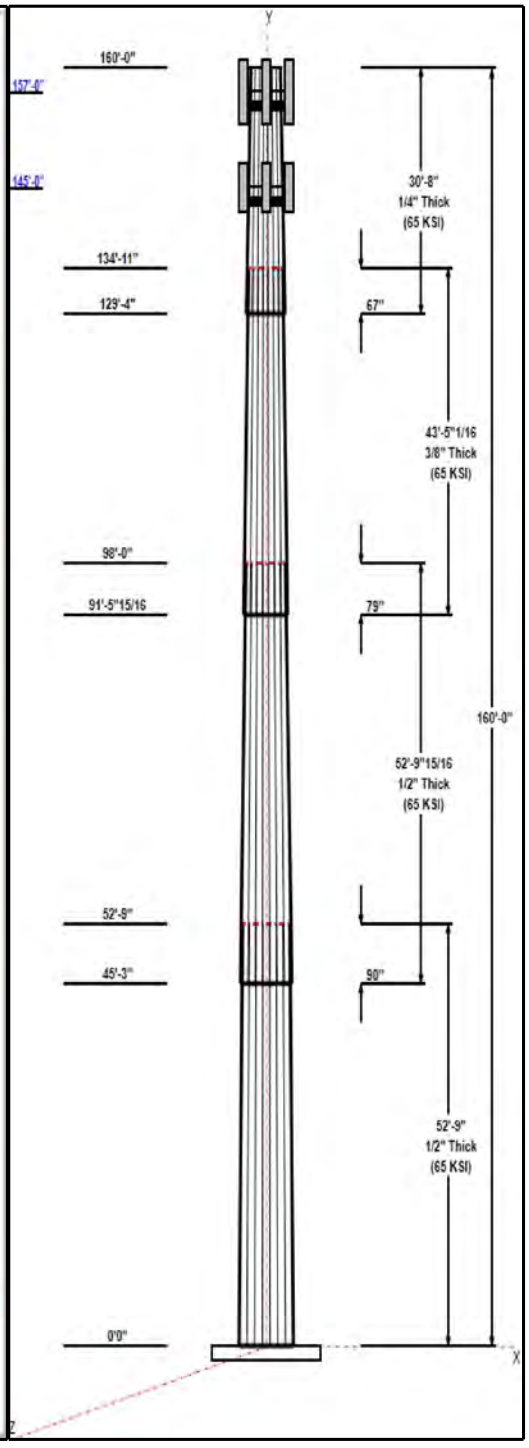
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 101 mph Wind

Iterations: 21





Structure: CT01700-S-SBA

Type: Tapered
Site Name: Haddam
Height: 160.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 16 Sided
Taper: 0.21000

4/26/2021

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	52.75	51.92	63.00	0.500		0.21000	65
2	52.83	43.40	54.50	0.500	Slip	0.21000	65
3	43.42	36.42	45.54	0.375	Slip	0.21000	65
4	30.67	31.65	38.09	0.250	Slip	0.21000	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
157.00	157.00	3	RFS	T-Mobile
157.00	157.00	3	RFS	T-Mobile
157.00	157.00	3	Ericsson KRY 112 144/1	T-Mobile
157.00	157.00	3	Ericsson Radio 4449	T-Mobile
157.00	157.00	3	Kathrein 782 11056 Bias	T-Mobile
157.00	157.00	1	low profile platform	T-Mobile
145.00	145.00	3	MX08FRO665-21	Dish Wireless
145.00	145.00	1	SNP8HR-3XX	Dish Wireless
145.00	145.00	3	TA08025-B605	Dish Wireless
145.00	145.00	3	TA08025-B604	Dish Wireless
145.00	145.00	1	RDIDC-9181-PF-48	Dish Wireless

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
3.00	157.00	Inside	1 5/8" Fiber	T-Mobile
3.00	157.00	Inside	7/8" Coax	T-Mobile
3.00	145.00	Inside	1.6" Hybrid	Dish Wireless

Anchor Bolts

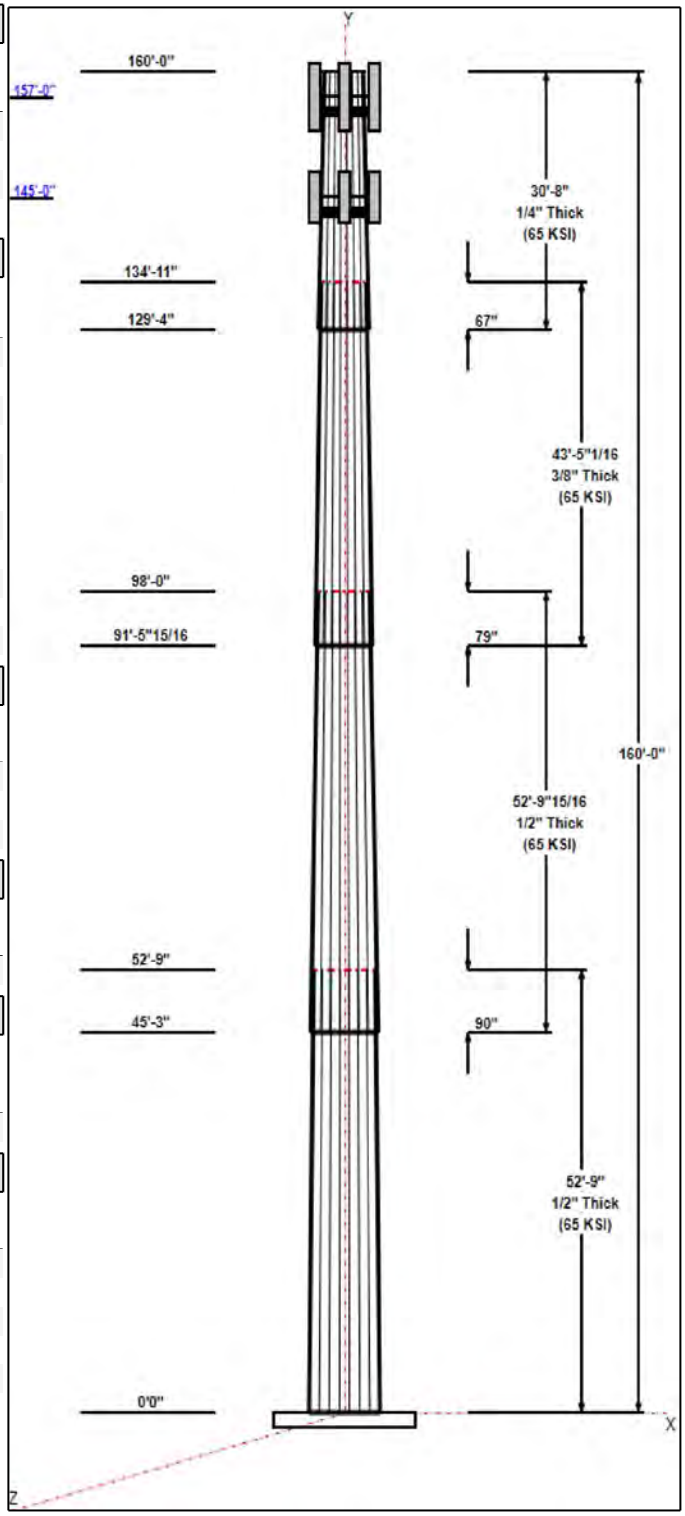
Qty	Specifications	Grade (ksi)	Arrangement
24	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.0000	77.7	60.0	Polygon

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	2770.2	26.6	56.9
0.9D + 1.6W 101 mph Wind	2754.4	26.6	42.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	726.5	6.9	79.1
1.2D + 1.0E	186.8	1.6	56.9
0.9D + 1.0E	185.6	1.6	42.7
1.0D + 1.0W 60 mph Wind	608.6	5.9	47.4

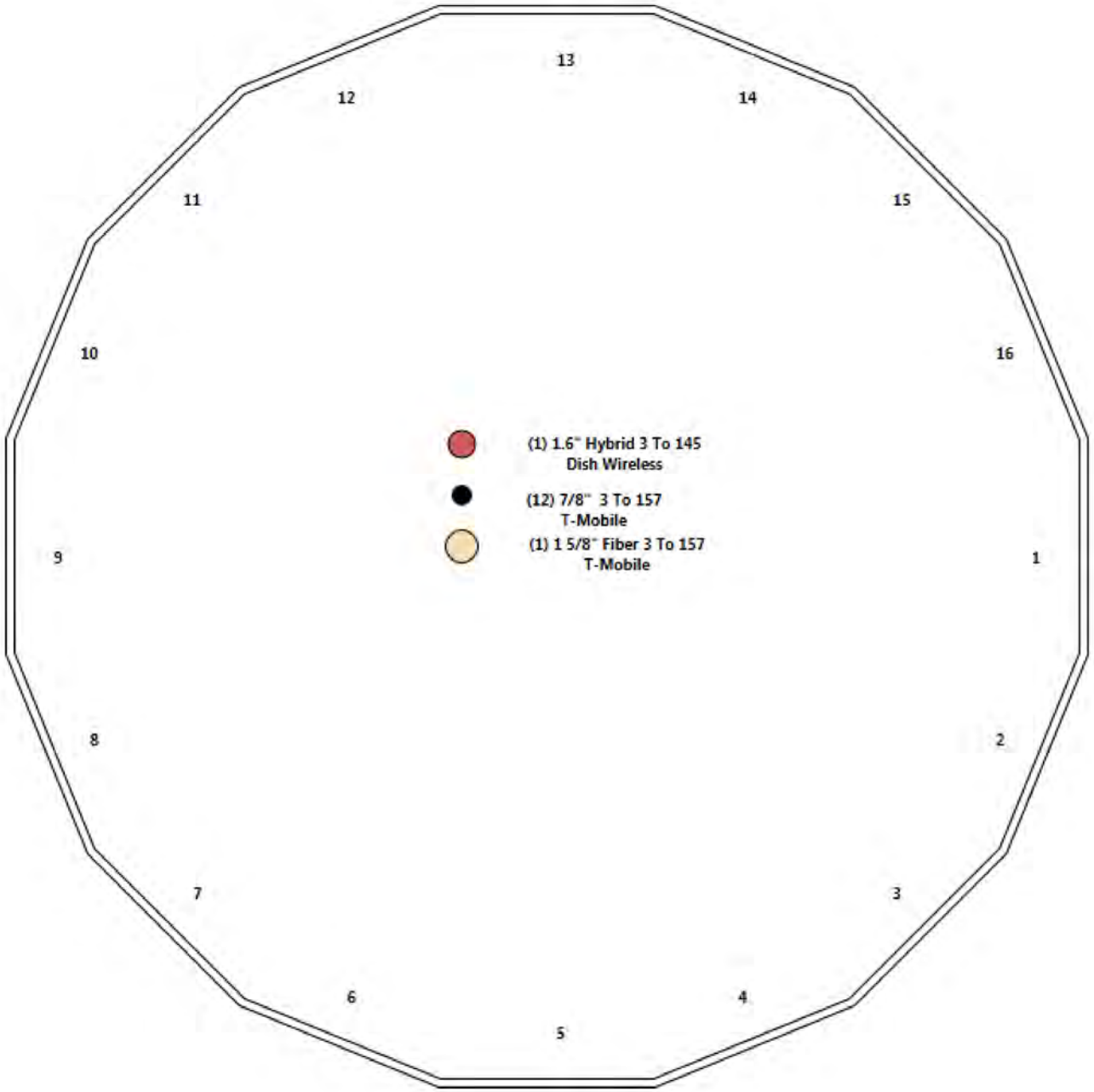


Structure: CT01700-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Haddam
Height: 160.00 (ft)

4/26/2021

Tower Engineering Solutions



Shaft Properties

Structure:	CT01700-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Haddam		**Exposure:**	B	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 4

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	16	52.750	0.5000	65		0.00	16,308
2	16	52.830	0.5000	65	Slip	90.00	13,892
3	16	43.420	0.3750	65	Slip	79.00	7,176
4	16	30.667	0.2500	65	Slip	67.00	2,881
					Total Shaft Weight:		**40,257**

	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	63.00	0.00	99.69	49194.34	23.47	126.00	51.92	52.75	82.02	27398.9	19.06	103.8	0.210000
2	54.50	45.25	86.13	31724.59	20.09	109.00	43.40	98.08	68.43	15912.7	15.68	86.81	0.210000
3	45.54	91.50	54.02	13919.33	22.56	121.43	36.42	134.92	43.12	7075.89	17.73	97.11	0.210000
4	38.09	129.3	30.18	5458.82	28.71	152.36	31.65	160.00	25.04	3119.13	23.59	126.6	0.210000

Load Summary

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 5	

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	157.00	RFS APXV18-206517S-C-A20	3	26.40	5.17	0.79	119.67	7.556	0.79	0.00	0.00
2	157.00	RFS APXVAARR24_43-U-NA20	3	128.00	20.24	0.72	560.71	22.149	0.72	0.00	0.00
3	157.00	Ericsson KRY 112 144/1 TMA's	3	11.02	0.35	0.60	21.87	0.757	0.60	0.00	0.00
4	157.00	Ericsson Radio 4449 B71+B12	3	74.00	1.63	0.67	141.67	2.164	0.67	0.00	0.00
5	157.00	Kathrein 782 11056 Bias T's	3	1.80	0.15	0.60	11.16	0.355	0.60	0.00	0.00
6	157.00	low profile platform (Sitepro	1	2645.00	51.70	1.00	5427.32	90.131	1.00	0.00	0.00
7	145.00	MX08FRO665-21	3	64.50	12.49	0.74	354.39	13.950	1.00	0.00	0.00
8	145.00	SNP8HR-3XX	1	1876.00	35.73	1.00	3833.77	80.475	1.00	0.00	0.00
9	145.00	TA08025-B605	3	75.00	1.96	0.67	127.13	2.519	0.67	0.00	0.00
10	145.00	TA08025-B604	3	63.90	1.96	0.67	114.36	2.519	0.67	0.00	0.00
11	145.00	RDIDC-9181-PF-48	1	21.85	2.01	1.00	74.80	2.576	1.00	0.00	0.00
		Totals:	**27**	**5,876.71**			**13,688.74**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
3.00	157.00	(1) 1 5/8" Fiber	0.00	Inside
3.00	157.00	(12) 7/8" Coax	0.00	Inside
3.00	145.00	(1) 1.6" Hybrid	0.00	Inside

Shaft Section Properties

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.5000	63.000	99.688	49194.3	23.47	126.00	76.0	1531.	0.0
5.00		0.5000	61.950	98.013	46756.4	23.05	123.90	76.5	1480.	1681.8
10.00		0.5000	60.900	96.338	44400.3	22.64	121.80	77.0	1430.	1653.3
15.00		0.5000	59.850	94.663	42124.7	22.22	119.70	77.4	1380.	1624.8
20.00		0.5000	58.800	92.988	39928.3	21.80	117.60	77.9	1332.	1596.3
25.00		0.5000	57.750	91.314	37809.6	21.38	115.50	78.4	1284.	1567.8
30.00		0.5000	56.700	89.639	35767.1	20.97	113.40	78.8	1237.	1539.4
35.00		0.5000	55.650	87.964	33799.6	20.55	111.30	79.3	1191.	1510.9
40.00		0.5000	54.600	86.290	31905.6	20.13	109.20	79.8	1146.	1482.4
45.00		0.5000	53.550	84.615	30083.7	19.71	107.10	80.3	1102.	1453.9
45.25	Bot - Section 2	0.5000	53.498	84.531	29994.5	19.69	107.00	80.3	1099.	71.9
50.00		0.5000	52.500	82.940	28332.5	19.29	105.00	80.7	1058.	2732.6
52.75	Top - Section 1	0.5000	52.922	83.614	29028.7	19.46	105.84	0.0	0.0	1558.6
55.00		0.5000	52.450	82.860	28250.9	19.27	104.90	80.8	1056.	637.3
60.00		0.5000	51.400	81.186	26572.3	18.86	102.80	81.2	1014.	1395.5
65.00		0.5000	50.350	79.511	24961.5	18.44	100.70	81.7	972.5	1367.0
70.00		0.5000	49.300	77.836	23417.2	18.02	98.60	82.2	931.7	1338.5
75.00		0.5000	48.250	76.161	21937.9	17.60	96.50	82.5	891.9	1310.0
80.00		0.5000	47.200	74.487	20522.3	17.19	94.40	82.5	852.9	1281.6
85.00		0.5000	46.150	72.812	19168.9	16.77	92.30	82.5	814.8	1253.1
90.00		0.5000	45.100	71.137	17876.4	16.35	90.20	82.5	777.5	1224.6
91.50	Bot - Section 3	0.5000	44.786	70.636	17501.1	16.23	89.57	82.5	766.5	361.0
95.00		0.5000	44.050	69.462	16643.3	15.93	88.10	82.5	741.1	1473.8
98.08	Top - Section 2	0.3750	44.153	52.370	12679.7	21.83	117.74	0.0	0.0	1275.5
100.00		0.3750	43.750	51.887	12332.6	21.62	116.67	78.1	552.9	340.6
105.00		0.3750	42.700	50.631	11458.5	21.06	113.87	78.7	526.4	872.1
110.00		0.3750	41.650	49.375	10626.7	20.50	111.07	79.4	500.5	850.7
115.00		0.3750	40.600	48.119	9836.1	19.94	108.27	80.0	475.2	829.4
120.00		0.3750	39.550	46.863	9085.8	19.39	105.47	80.6	450.6	808.0
125.00		0.3750	38.500	45.607	8374.6	18.83	102.67	81.3	426.7	786.6
129.33	Bot - Section 4	0.3750	37.590	44.518	7789.2	18.35	100.24	81.8	406.5	664.5
130.00		0.3750	37.450	44.351	7701.6	18.27	99.87	81.9	403.4	169.1
134.92	Top - Section 3	0.2500	36.917	29.242	4966.9	27.78	147.67	0.0	0.0	1227.8
135.00		0.2500	36.900	29.228	4959.8	27.77	147.60	71.2	263.7	8.3
140.00		0.2500	35.850	28.391	4545.6	26.93	143.40	72.1	248.7	490.2
145.00		0.2500	34.800	27.554	4155.2	26.10	139.20	73.0	234.2	475.9
150.00		0.2500	33.750	26.716	3787.7	25.26	135.00	74.0	220.1	461.7
155.00		0.2500	32.700	25.879	3442.6	24.43	130.80	74.9	206.5	447.4
157.00		0.2500	32.280	25.544	3310.7	24.09	129.12	75.3	201.2	175.0
160.00		0.2500	31.650	25.041	3119.1	23.59	126.60	75.9	193.3	258.2
										40257.3

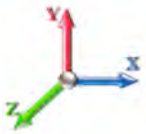
Wind Loading - Shaft

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

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	0.70	17.366	19.10	452.33	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	444.79	0.750	0.000	5.00	26.541	19.91	608.4	0.0	2018.2
10.00		1.00	0.70	17.366	19.10	437.25	0.750	0.000	5.00	26.095	19.57	598.2	0.0	1984.0
15.00		1.00	0.70	17.366	19.10	429.71	0.750	0.000	5.00	25.649	19.24	588.0	0.0	1949.8
20.00		1.00	0.70	17.366	19.10	422.18	0.750	0.000	5.00	25.203	18.90	577.7	0.0	1915.6
25.00		1.00	0.70	17.366	19.10	414.64	0.750	0.000	5.00	24.757	18.57	567.5	0.0	1881.4
30.00		1.00	0.70	17.381	19.12	407.27	0.750	0.000	5.00	24.311	18.23	557.8	0.0	1847.2
35.00		1.00	0.73	18.163	19.98	408.63	0.750	0.000	5.00	23.865	17.90	572.2	0.0	1813.0
40.00		1.00	0.76	18.870	20.76	408.64	0.750	0.000	5.00	23.419	17.56	583.3	0.0	1778.8
45.00		1.00	0.79	19.516	21.47	407.58	0.750	0.000	5.00	22.973	17.23	591.8	0.0	1744.6
45.25	Bot - Section 2	1.00	0.79	19.547	21.50	407.50	0.750	0.000	0.25	1.137	0.85	29.3	0.0	86.3
50.00		1.00	0.81	20.112	22.12	405.65	0.750	0.000	4.75	21.793	16.34	578.6	0.0	3279.2
52.75	Top - Section 1	1.00	0.82	20.422	22.46	404.27	0.750	0.000	2.75	12.433	9.32	335.2	0.0	1870.3
55.00		1.00	0.83	20.667	22.73	410.82	0.750	0.000	2.25	10.072	7.55	274.8	0.0	764.7
60.00		1.00	0.85	21.187	23.31	407.63	0.750	0.000	5.00	22.059	16.54	616.9	0.0	1674.6
65.00		1.00	0.87	21.678	23.85	403.89	0.750	0.000	5.00	21.613	16.21	618.5	0.0	1640.4
70.00		1.00	0.89	22.142	24.36	399.68	0.750	0.000	5.00	21.167	15.88	618.6	0.0	1606.2
75.00		1.00	0.91	22.582	24.84	395.04	0.750	0.000	5.00	20.721	15.54	617.7	0.0	1572.1
80.00		1.00	0.93	23.003	25.30	390.03	0.750	0.000	5.00	20.275	15.21	615.6	0.0	1537.9
85.00		1.00	0.94	23.404	25.74	384.67	0.750	0.000	5.00	19.829	14.87	612.6	0.0	1503.7
90.00		1.00	0.96	23.790	26.17	379.00	0.750	0.000	5.00	19.383	14.54	608.7	0.0	1469.5
91.50	Bot - Section 3	1.00	0.96	23.902	26.29	377.24	0.750	0.000	1.50	5.715	4.29	180.3	0.0	433.2
95.00		1.00	0.97	24.160	26.58	373.04	0.750	0.000	3.50	13.445	10.08	428.8	0.0	1768.6
98.08	Top - Section 2	1.00	0.98	24.381	26.82	369.24	0.750	0.000	3.08	11.639	8.73	374.6	0.0	1530.6
100.00		1.00	0.99	24.517	26.97	373.23	0.750	0.000	1.92	7.170	5.38	232.0	0.0	408.7
105.00		1.00	1.00	24.861	27.35	366.82	0.750	0.000	5.00	18.363	13.77	602.6	0.0	1046.5
110.00		1.00	1.02	25.194	27.71	360.18	0.750	0.000	5.00	17.917	13.44	595.8	0.0	1020.9
115.00		1.00	1.03	25.516	28.07	353.34	0.750	0.000	5.00	17.471	13.10	588.4	0.0	995.3
120.00		1.00	1.04	25.828	28.41	346.30	0.750	0.000	5.00	17.025	12.77	580.4	0.0	969.6
125.00		1.00	1.05	26.131	28.74	339.08	0.750	0.000	5.00	16.579	12.43	571.9	0.0	944.0
129.33	Bot - Section 4	1.00	1.06	26.387	29.03	332.68	0.750	0.000	4.33	14.008	10.51	487.9	0.0	797.4
130.00		1.00	1.07	26.425	29.07	331.68	0.750	0.000	0.67	2.154	1.62	75.1	0.0	203.0
134.92	Top - Section 3	1.00	1.08	26.707	29.38	324.25	0.750	0.000	4.92	15.638	11.73	551.3	0.0	1473.4
135.00		1.00	1.08	26.712	29.38	328.58	0.750	0.000	0.08	0.261	0.20	9.2	0.0	9.9
140.00		1.00	1.09	26.991	29.69	320.89	0.750	0.000	5.00	15.453	11.59	550.6	0.0	588.2
145.00	Appurtenance(s)	1.00	1.10	27.263	29.99	313.06	0.750	0.000	5.00	15.007	11.26	540.1	0.0	571.1
150.00		1.00	1.11	27.528	30.28	305.09	0.750	0.000	5.00	14.561	10.92	529.1	0.0	554.0
155.00		1.00	1.12	27.787	30.57	296.98	0.750	0.000	5.00	14.115	10.59	517.7	0.0	536.9
157.00	Appurtenance(s)	1.00	1.12	27.889	30.68	293.71	0.750	0.000	2.00	5.521	4.14	203.3	0.0	210.0
160.00		1.00	1.13	28.040	30.84	288.75	0.750	0.000	3.00	8.148	6.11	301.6	0.0	309.8
								Totals:	**160.00**			**18,692.0**		**48,308.7**

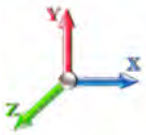
Discrete Appurtenance Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

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	157.00	RFS	3	27.889	30.678	0.59	0.75	9.19	95.04	0.000	0.000	451.08	0.00	0.00
2	157.00	Kathrein 782 11056 Bias	3	27.889	30.678	0.45	0.75	0.20	6.48	0.000	0.000	9.94	0.00	0.00
3	157.00	Ericsson Radio 4449	3	27.889	30.678	0.50	0.75	2.46	266.40	0.000	0.000	120.61	0.00	0.00
4	157.00	Ericsson KRY 112 144/1	3	27.889	30.678	0.45	0.75	0.47	39.67	0.000	0.000	23.19	0.00	0.00
5	157.00	RFS	3	27.889	30.678	0.54	0.75	32.79	460.80	0.000	0.000	1609.44	0.00	0.00
6	157.00	low profile platform	1	27.889	30.678	1.00	1.00	51.70	3174.00	0.000	0.000	2537.69	0.00	0.00
7	145.00	RDIDC-9181-PF-48	1	27.263	29.989	1.00	1.00	2.01	26.22	0.000	0.000	96.44	0.00	0.00
8	145.00	TA08025-B604	3	27.263	29.989	0.50	0.75	2.95	230.04	0.000	0.000	141.77	0.00	0.00
9	145.00	TA08025-B605	3	27.263	29.989	0.50	0.75	2.95	270.00	0.000	0.000	141.77	0.00	0.00
10	145.00	SNP8HR-3XX	1	27.263	29.989	1.00	1.00	35.73	2251.20	0.000	0.000	1714.41	0.00	0.00
11	145.00	MX08FRO665-21	3	27.263	29.989	0.55	0.75	20.80	232.20	0.000	0.000	997.84	0.00	0.00
							Totals:		**7,052.05**			**7,844.20**		

Total Applied Force Summary

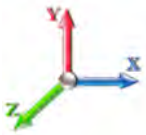
Structure:	CT01700-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Haddam		**Exposure:**	B	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 9

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

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		608.41	2038.06	0.00	0.00
10.00		598.19	2033.68	0.00	0.00
15.00		587.96	1999.48	0.00	0.00
20.00		577.74	1965.29	0.00	0.00
25.00		567.51	1931.10	0.00	0.00
30.00		557.76	1896.91	0.00	0.00
35.00		572.18	1862.71	0.00	0.00
40.00		583.32	1828.52	0.00	0.00
45.00		591.79	1794.33	0.00	0.00
45.25		29.33	88.82	0.00	0.00
50.00		578.57	3326.37	0.00	0.00
52.75		335.16	1897.59	0.00	0.00
55.00		274.78	787.10	0.00	0.00
60.00		616.94	1724.31	0.00	0.00
65.00		618.45	1690.12	0.00	0.00
70.00		618.65	1655.93	0.00	0.00
75.00		617.67	1621.74	0.00	0.00
80.00		615.62	1587.54	0.00	0.00
85.00		612.59	1553.35	0.00	0.00
90.00		608.67	1519.16	0.00	0.00
91.50		180.32	448.08	0.00	0.00
95.00		428.78	1803.41	0.00	0.00
98.08		374.59	1561.22	0.00	0.00
100.00		232.04	427.76	0.00	0.00
105.00		602.62	1096.22	0.00	0.00
110.00		595.85	1070.58	0.00	0.00
115.00		588.44	1044.94	0.00	0.00
120.00		580.43	1019.29	0.00	0.00
125.00		571.85	993.65	0.00	0.00
129.33		487.89	840.42	0.00	0.00
130.00		75.12	209.58	0.00	0.00
134.92		551.29	1522.21	0.00	0.00
135.00		9.21	10.78	0.00	0.00
140.00		550.56	637.88	0.00	0.00
145.00	(11) attachments	3632.30	3630.44	0.00	0.00
150.00		529.11	597.68	0.00	0.00
155.00		517.72	580.59	0.00	0.00
157.00	(16) attachments	4955.21	4269.84	0.00	0.00
160.00		301.58	309.84	0.00	0.00
	Totals:	**26,536.20**	**56,876.50**	**0.00**	**0.00**

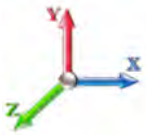
Calculated Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

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	-56.86	-26.58	0.00	-2770.2	0.00	2770.21	6819.80	3409.90	17589.7	8732.29	0.00	0.000	0.000	0.326
5.00	-54.78	-26.04	0.00	-2637.3	0.00	2637.33	6746.92	3373.46	17107.0	8492.68	0.04	-0.078	0.000	0.319
10.00	-52.72	-25.51	0.00	-2507.1	0.00	2507.13	6672.61	3336.30	16627.2	8254.47	0.17	-0.156	0.000	0.312
15.00	-50.69	-24.99	0.00	-2379.5	0.00	2379.58	6596.88	3298.44	16150.4	8017.76	0.37	-0.235	0.000	0.305
20.00	-48.69	-24.46	0.00	-2254.6	0.00	2254.66	6519.72	3259.86	15676.8	7782.62	0.66	-0.313	0.000	0.297
25.00	-46.73	-23.95	0.00	-2132.3	0.00	2132.34	6441.14	3220.57	15206.5	7549.16	1.03	-0.391	0.000	0.290
30.00	-44.81	-23.44	0.00	-2012.6	0.00	2012.60	6361.14	3180.57	14739.8	7317.48	1.48	-0.469	0.000	0.282
35.00	-42.92	-22.91	0.00	-1895.4	0.00	1895.41	6279.71	3139.85	14276.8	7087.65	2.02	-0.547	0.000	0.274
40.00	-41.06	-22.36	0.00	-1780.8	0.00	1780.88	6196.85	3098.43	13817.8	6859.78	2.63	-0.624	0.000	0.266
45.00	-39.26	-21.78	0.00	-1669.0	0.00	1669.08	6112.57	3056.29	13362.9	6633.95	3.33	-0.701	0.000	0.258
45.25	-39.16	-21.77	0.00	-1663.6	0.00	1663.64	6108.32	3054.16	13340.3	6622.72	3.36	-0.705	0.000	0.258
50.00	-35.82	-21.19	0.00	-1560.2	0.00	1560.22	6026.87	3013.43	12912.4	6410.27	4.10	-0.778	0.000	0.249
52.75	-33.91	-20.85	0.00	-1501.9	0.00	1501.97	6061.52	3030.76	13093.1	6500.01	4.56	-0.820	0.000	0.237
55.00	-33.11	-20.59	0.00	-1455.0	0.00	1455.06	6022.75	3011.37	12891.0	6399.67	4.96	-0.854	0.000	0.233
60.00	-31.37	-19.99	0.00	-1352.1	0.00	1352.11	5935.55	2967.78	12445.2	6178.32	5.89	-0.925	0.000	0.224
65.00	-29.67	-19.37	0.00	-1252.1	0.00	1252.19	5846.93	2923.47	12004.0	5959.31	6.90	-0.995	0.000	0.215
70.00	-28.00	-18.76	0.00	-1155.3	0.00	1155.31	5756.88	2878.44	11567.7	5742.72	7.98	-1.063	0.000	0.206
75.00	-26.37	-18.14	0.00	-1061.5	0.00	1061.52	5658.40	2829.20	11122.7	5521.79	9.13	-1.131	0.000	0.197
80.00	-24.78	-17.52	0.00	-970.81	0.00	970.81	5533.97	2766.99	10636.4	5280.39	10.35	-1.197	0.000	0.188
85.00	-23.22	-16.90	0.00	-883.20	0.00	883.20	5409.55	2704.77	10161.0	5044.38	11.64	-1.261	0.000	0.179
90.00	-21.70	-16.27	0.00	-798.70	0.00	798.70	5285.12	2642.56	9696.54	4813.77	12.99	-1.323	0.000	0.170
91.50	-21.25	-16.09	0.00	-774.34	0.00	774.34	5247.88	2623.94	9559.60	4745.79	13.41	-1.342	0.000	0.167
95.00	-19.45	-15.64	0.00	-717.95	0.00	717.95	5160.70	2580.35	9242.88	4588.55	14.41	-1.385	0.000	0.160
98.08	-17.89	-15.23	0.00	-669.79	0.00	669.79	3670.30	1835.15	6627.10	3289.97	15.31	-1.421	0.000	0.209
100.00	-17.45	-15.00	0.00	-640.55	0.00	640.55	3647.80	1823.90	6525.29	3239.43	15.89	-1.444	0.000	0.203
105.00	-16.35	-14.39	0.00	-565.52	0.00	565.52	3588.21	1794.10	6261.99	3108.71	17.44	-1.513	0.000	0.187
110.00	-15.29	-13.79	0.00	-493.56	0.00	493.56	3527.20	1763.60	6001.46	2979.38	19.06	-1.579	0.000	0.170
115.00	-14.24	-13.18	0.00	-424.63	0.00	424.63	3464.76	1732.38	5743.91	2851.52	20.75	-1.640	0.000	0.153
120.00	-13.23	-12.59	0.00	-358.71	0.00	358.71	3400.89	1700.45	5489.50	2725.22	22.50	-1.697	0.000	0.136
125.00	-12.24	-11.99	0.00	-295.79	0.00	295.79	3335.61	1667.80	5238.44	2600.58	24.30	-1.748	0.000	0.117
129.33	-11.42	-11.48	0.00	-243.82	0.00	243.82	3277.87	1638.94	5023.71	2493.98	25.91	-1.788	0.000	0.101
130.00	-11.20	-11.41	0.00	-236.16	0.00	236.16	3268.89	1634.45	4990.91	2477.70	26.16	-1.794	0.000	0.099
134.92	-9.70	-10.81	0.00	-180.07	0.00	180.07	1872.17	936.08	2836.24	1408.03	28.03	-1.832	0.000	0.133
135.00	-9.68	-10.81	0.00	-179.17	0.00	179.17	1871.69	935.84	2834.15	1406.99	28.06	-1.832	0.000	0.133
140.00	-9.05	-10.24	0.00	-125.15	0.00	125.15	1842.22	921.11	2709.07	1344.90	30.00	-1.876	0.000	0.098
145.00	-5.54	-6.49	0.00	-73.94	0.00	73.94	1811.32	905.66	2584.53	1283.07	31.99	-1.907	0.000	0.061
150.00	-4.96	-5.95	0.00	-41.48	0.00	41.48	1779.00	889.50	2460.71	1221.60	34.00	-1.927	0.000	0.037
155.00	-4.40	-5.41	0.00	-11.75	0.00	11.75	1745.26	872.63	2337.81	1160.59	36.02	-1.937	0.000	0.013
157.00	-0.30	-0.31	0.00	-0.94	0.00	0.94	1731.36	865.68	2288.95	1136.33	36.83	-1.938	0.000	0.001
160.00	0.00	-0.30	0.00	0.00	0.00	0.00	1710.09	855.04	2216.02	1100.12	38.05	-1.938	0.000	0.000

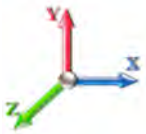
Wind Loading - Shaft

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Load Case: 0.9D + 1.6W 101 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	0.70	17.366	19.10	452.33	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	444.79	0.750	0.000	5.00	26.541	19.91	608.4	0.0	1513.6
10.00		1.00	0.70	17.366	19.10	437.25	0.750	0.000	5.00	26.095	19.57	598.2	0.0	1488.0
15.00		1.00	0.70	17.366	19.10	429.71	0.750	0.000	5.00	25.649	19.24	588.0	0.0	1462.4
20.00		1.00	0.70	17.366	19.10	422.18	0.750	0.000	5.00	25.203	18.90	577.7	0.0	1436.7
25.00		1.00	0.70	17.366	19.10	414.64	0.750	0.000	5.00	24.757	18.57	567.5	0.0	1411.1
30.00		1.00	0.70	17.381	19.12	407.27	0.750	0.000	5.00	24.311	18.23	557.8	0.0	1385.4
35.00		1.00	0.73	18.163	19.98	408.63	0.750	0.000	5.00	23.865	17.90	572.2	0.0	1359.8
40.00		1.00	0.76	18.870	20.76	408.64	0.750	0.000	5.00	23.419	17.56	583.3	0.0	1334.1
45.00		1.00	0.79	19.516	21.47	407.58	0.750	0.000	5.00	22.973	17.23	591.8	0.0	1308.5
45.25	Bot - Section 2	1.00	0.79	19.547	21.50	407.50	0.750	0.000	0.25	1.137	0.85	29.3	0.0	64.8
50.00		1.00	0.81	20.112	22.12	405.65	0.750	0.000	4.75	21.793	16.34	578.6	0.0	2459.4
52.75	Top - Section 1	1.00	0.82	20.422	22.46	404.27	0.750	0.000	2.75	12.433	9.32	335.2	0.0	1402.7
55.00		1.00	0.83	20.667	22.73	410.82	0.750	0.000	2.25	10.072	7.55	274.8	0.0	573.6
60.00		1.00	0.85	21.187	23.31	407.63	0.750	0.000	5.00	22.059	16.54	616.9	0.0	1256.0
65.00		1.00	0.87	21.678	23.85	403.89	0.750	0.000	5.00	21.613	16.21	618.5	0.0	1230.3
70.00		1.00	0.89	22.142	24.36	399.68	0.750	0.000	5.00	21.167	15.88	618.6	0.0	1204.7
75.00		1.00	0.91	22.582	24.84	395.04	0.750	0.000	5.00	20.721	15.54	617.7	0.0	1179.0
80.00		1.00	0.93	23.003	25.30	390.03	0.750	0.000	5.00	20.275	15.21	615.6	0.0	1153.4
85.00		1.00	0.94	23.404	25.74	384.67	0.750	0.000	5.00	19.829	14.87	612.6	0.0	1127.8
90.00		1.00	0.96	23.790	26.17	379.00	0.750	0.000	5.00	19.383	14.54	608.7	0.0	1102.1
91.50	Bot - Section 3	1.00	0.96	23.902	26.29	377.24	0.750	0.000	1.50	5.715	4.29	180.3	0.0	324.9
95.00		1.00	0.97	24.160	26.58	373.04	0.750	0.000	3.50	13.445	10.08	428.8	0.0	1326.4
98.08	Top - Section 2	1.00	0.98	24.381	26.82	369.24	0.750	0.000	3.08	11.639	8.73	374.6	0.0	1148.0
100.00		1.00	0.99	24.517	26.97	373.23	0.750	0.000	1.92	7.170	5.38	232.0	0.0	306.5
105.00		1.00	1.00	24.861	27.35	366.82	0.750	0.000	5.00	18.363	13.77	602.6	0.0	784.9
110.00		1.00	1.02	25.194	27.71	360.18	0.750	0.000	5.00	17.917	13.44	595.8	0.0	765.7
115.00		1.00	1.03	25.516	28.07	353.34	0.750	0.000	5.00	17.471	13.10	588.4	0.0	746.4
120.00		1.00	1.04	25.828	28.41	346.30	0.750	0.000	5.00	17.025	12.77	580.4	0.0	727.2
125.00		1.00	1.05	26.131	28.74	339.08	0.750	0.000	5.00	16.579	12.43	571.9	0.0	708.0
129.33	Bot - Section 4	1.00	1.06	26.387	29.03	332.68	0.750	0.000	4.33	14.008	10.51	487.9	0.0	598.0
130.00		1.00	1.07	26.425	29.07	331.68	0.750	0.000	0.67	2.154	1.62	75.1	0.0	152.2
134.92	Top - Section 3	1.00	1.08	26.707	29.38	324.25	0.750	0.000	4.92	15.638	11.73	551.3	0.0	1105.0
135.00		1.00	1.08	26.712	29.38	328.58	0.750	0.000	0.08	0.261	0.20	9.2	0.0	7.5
140.00		1.00	1.09	26.991	29.69	320.89	0.750	0.000	5.00	15.453	11.59	550.6	0.0	441.1
145.00	Appurtenance(s)	1.00	1.10	27.263	29.99	313.06	0.750	0.000	5.00	15.007	11.26	540.1	0.0	428.3
150.00		1.00	1.11	27.528	30.28	305.09	0.750	0.000	5.00	14.561	10.92	529.1	0.0	415.5
155.00		1.00	1.12	27.787	30.57	296.98	0.750	0.000	5.00	14.115	10.59	517.7	0.0	402.7
157.00	Appurtenance(s)	1.00	1.12	27.889	30.68	293.71	0.750	0.000	2.00	5.521	4.14	203.3	0.0	157.5
160.00		1.00	1.13	28.040	30.84	288.75	0.750	0.000	3.00	8.148	6.11	301.6	0.0	232.4
								Totals:	**160.00**			**18,692.0**		**36,231.5**

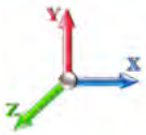
Discrete Appurtenance Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Load Case: 0.9D + 1.6W 101 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	157.00	RFS	3	27.889	30.678	0.59	0.75	9.19	71.28	0.000	0.000	451.08	0.00	0.00
2	157.00	Kathrein 782 11056 Bias	3	27.889	30.678	0.45	0.75	0.20	4.86	0.000	0.000	9.94	0.00	0.00
3	157.00	Ericsson Radio 4449	3	27.889	30.678	0.50	0.75	2.46	199.80	0.000	0.000	120.61	0.00	0.00
4	157.00	Ericsson KRY 112 144/1	3	27.889	30.678	0.45	0.75	0.47	29.75	0.000	0.000	23.19	0.00	0.00
5	157.00	RFS	3	27.889	30.678	0.54	0.75	32.79	345.60	0.000	0.000	1609.44	0.00	0.00
6	157.00	low profile platform	1	27.889	30.678	1.00	1.00	51.70	2380.50	0.000	0.000	2537.69	0.00	0.00
7	145.00	RDIDC-9181-PF-48	1	27.263	29.989	1.00	1.00	2.01	19.67	0.000	0.000	96.44	0.00	0.00
8	145.00	TA08025-B604	3	27.263	29.989	0.50	0.75	2.95	172.53	0.000	0.000	141.77	0.00	0.00
9	145.00	TA08025-B605	3	27.263	29.989	0.50	0.75	2.95	202.50	0.000	0.000	141.77	0.00	0.00
10	145.00	SNP8HR-3XX	1	27.263	29.989	1.00	1.00	35.73	1688.40	0.000	0.000	1714.41	0.00	0.00
11	145.00	MX08FRO665-21	3	27.263	29.989	0.55	0.75	20.80	174.15	0.000	0.000	997.84	0.00	0.00
							Totals:		**5,289.04**			**7,844.20**		

Total Applied Force Summary

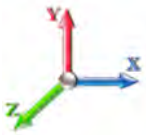
Structure:	CT01700-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Haddam		**Exposure:**	B	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 13

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 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		608.41	1528.55	0.00	0.00
10.00		598.19	1525.26	0.00	0.00
15.00		587.96	1499.61	0.00	0.00
20.00		577.74	1473.97	0.00	0.00
25.00		567.51	1448.32	0.00	0.00
30.00		557.76	1422.68	0.00	0.00
35.00		572.18	1397.03	0.00	0.00
40.00		583.32	1371.39	0.00	0.00
45.00		591.79	1345.75	0.00	0.00
45.25		29.33	66.61	0.00	0.00
50.00		578.57	2494.78	0.00	0.00
52.75		335.16	1423.19	0.00	0.00
55.00		274.78	590.32	0.00	0.00
60.00		616.94	1293.24	0.00	0.00
65.00		618.45	1267.59	0.00	0.00
70.00		618.65	1241.95	0.00	0.00
75.00		617.67	1216.30	0.00	0.00
80.00		615.62	1190.66	0.00	0.00
85.00		612.59	1165.01	0.00	0.00
90.00		608.67	1139.37	0.00	0.00
91.50		180.32	336.06	0.00	0.00
95.00		428.78	1352.55	0.00	0.00
98.08		374.59	1170.92	0.00	0.00
100.00		232.04	320.82	0.00	0.00
105.00		602.62	822.17	0.00	0.00
110.00		595.85	802.93	0.00	0.00
115.00		588.44	783.70	0.00	0.00
120.00		580.43	764.47	0.00	0.00
125.00		571.85	745.23	0.00	0.00
129.33		487.89	630.31	0.00	0.00
130.00		75.12	157.19	0.00	0.00
134.92		551.29	1141.66	0.00	0.00
135.00		9.21	8.08	0.00	0.00
140.00		550.56	478.41	0.00	0.00
145.00	(11) attachments	3632.30	2722.83	0.00	0.00
150.00		529.11	448.26	0.00	0.00
155.00		517.72	435.44	0.00	0.00
157.00	(16) attachments	4955.21	3202.38	0.00	0.00
160.00		301.58	232.38	0.00	0.00
	Totals:	**26,536.20**	**42,657.38**	**0.00**	**0.00**

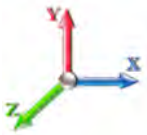
Calculated Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Load Case: 0.9D + 1.6W 101 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	-42.64	-26.56	0.00	-2754.3	0.00	2754.36	6819.80	3409.90	17589.7	8732.29	0.00	0.000	0.000	0.322
5.00	-41.08	-26.01	0.00	-2621.5	0.00	2621.54	6746.92	3373.46	17107.0	8492.68	0.04	-0.078	0.000	0.315
10.00	-39.52	-25.46	0.00	-2491.4	0.00	2491.49	6672.61	3336.30	16627.2	8254.47	0.17	-0.156	0.000	0.308
15.00	-37.99	-24.92	0.00	-2364.1	0.00	2364.18	6596.88	3298.44	16150.4	8017.76	0.37	-0.233	0.000	0.301
20.00	-36.48	-24.39	0.00	-2239.5	0.00	2239.57	6519.72	3259.86	15676.8	7782.62	0.66	-0.311	0.000	0.293
25.00	-35.00	-23.86	0.00	-2117.6	0.00	2117.64	6441.14	3220.57	15206.5	7549.16	1.02	-0.389	0.000	0.286
30.00	-33.55	-23.33	0.00	-1998.3	0.00	1998.35	6361.14	3180.57	14739.8	7317.48	1.47	-0.466	0.000	0.278
35.00	-32.13	-22.79	0.00	-1881.6	0.00	1881.68	6279.71	3139.85	14276.8	7087.65	2.00	-0.543	0.000	0.271
40.00	-30.74	-22.24	0.00	-1767.7	0.00	1767.72	6196.85	3098.43	13817.8	6859.78	2.61	-0.620	0.000	0.263
45.00	-29.38	-21.65	0.00	-1656.5	0.00	1656.53	6112.57	3056.29	13362.9	6633.95	3.31	-0.696	0.000	0.255
45.25	-29.30	-21.64	0.00	-1651.1	0.00	1651.12	6108.32	3054.16	13340.3	6622.72	3.34	-0.700	0.000	0.254
50.00	-26.79	-21.06	0.00	-1548.3	0.00	1548.33	6026.87	3013.43	12912.4	6410.27	4.08	-0.772	0.000	0.246
52.75	-25.36	-20.72	0.00	-1490.4	0.00	1490.43	6061.52	3030.76	13093.1	6500.01	4.53	-0.814	0.000	0.234
55.00	-24.76	-20.46	0.00	-1443.8	0.00	1443.82	6022.75	3011.37	12891.0	6399.67	4.93	-0.849	0.000	0.230
60.00	-23.45	-19.85	0.00	-1341.5	0.00	1341.53	5935.55	2967.78	12445.2	6178.32	5.85	-0.919	0.000	0.221
65.00	-22.17	-19.24	0.00	-1242.2	0.00	1242.29	5846.93	2923.47	12004.0	5959.31	6.85	-0.988	0.000	0.212
70.00	-20.92	-18.62	0.00	-1146.1	0.00	1146.11	5756.88	2878.44	11567.7	5742.72	7.92	-1.056	0.000	0.203
75.00	-19.69	-18.00	0.00	-1053.0	0.00	1053.02	5658.40	2829.20	11122.7	5521.79	9.07	-1.123	0.000	0.194
80.00	-18.49	-17.38	0.00	-963.01	0.00	963.01	5533.97	2766.99	10636.4	5280.39	10.28	-1.188	0.000	0.186
85.00	-17.32	-16.76	0.00	-876.10	0.00	876.10	5409.55	2704.77	10161.0	5044.38	11.56	-1.252	0.000	0.177
90.00	-16.19	-16.14	0.00	-792.27	0.00	792.27	5285.12	2642.56	9696.54	4813.77	12.90	-1.314	0.000	0.168
91.50	-15.85	-15.96	0.00	-768.11	0.00	768.11	5247.88	2623.94	9559.60	4745.79	13.32	-1.332	0.000	0.165
95.00	-14.49	-15.51	0.00	-712.19	0.00	712.19	5160.70	2580.35	9242.88	4588.55	14.31	-1.374	0.000	0.158
98.08	-13.33	-15.12	0.00	-664.42	0.00	664.42	3670.30	1835.15	6627.10	3289.97	15.21	-1.411	0.000	0.206
100.00	-13.00	-14.89	0.00	-635.39	0.00	635.39	3647.80	1823.90	6525.29	3239.43	15.78	-1.433	0.000	0.200
105.00	-12.17	-14.28	0.00	-560.96	0.00	560.96	3588.21	1794.10	6261.99	3108.71	17.32	-1.502	0.000	0.184
110.00	-11.37	-13.67	0.00	-489.58	0.00	489.58	3527.20	1763.60	6001.46	2979.38	18.93	-1.567	0.000	0.168
115.00	-10.59	-13.07	0.00	-421.22	0.00	421.22	3464.76	1732.38	5743.91	2851.52	20.60	-1.628	0.000	0.151
120.00	-9.83	-12.48	0.00	-355.85	0.00	355.85	3400.89	1700.45	5489.50	2725.22	22.34	-1.684	0.000	0.134
125.00	-9.10	-11.89	0.00	-293.45	0.00	293.45	3335.61	1667.80	5238.44	2600.58	24.13	-1.735	0.000	0.116
129.33	-8.48	-11.39	0.00	-241.91	0.00	241.91	3277.87	1638.94	5023.71	2493.98	25.72	-1.775	0.000	0.100
130.00	-8.32	-11.31	0.00	-234.32	0.00	234.32	3268.89	1634.45	4990.91	2477.70	25.97	-1.780	0.000	0.097
134.92	-7.19	-10.73	0.00	-178.69	0.00	178.69	1872.17	936.08	2836.24	1408.03	27.83	-1.818	0.000	0.131
135.00	-7.18	-10.72	0.00	-177.80	0.00	177.80	1871.69	935.84	2834.15	1406.99	27.86	-1.818	0.000	0.130
140.00	-6.71	-10.16	0.00	-124.19	0.00	124.19	1842.22	921.11	2709.07	1344.90	29.79	-1.862	0.000	0.096
145.00	-4.11	-6.44	0.00	-73.38	0.00	73.38	1811.32	905.66	2584.53	1283.07	31.76	-1.893	0.000	0.060
150.00	-3.67	-5.90	0.00	-41.17	0.00	41.17	1779.00	889.50	2460.71	1221.60	33.75	-1.912	0.000	0.036
155.00	-3.26	-5.37	0.00	-11.67	0.00	11.67	1745.26	872.63	2337.81	1160.59	35.76	-1.922	0.000	0.012
157.00	-0.22	-0.31	0.00	-0.93	0.00	0.93	1731.36	865.68	2288.95	1136.33	36.57	-1.923	0.000	0.001
160.00	0.00	-0.30	0.00	0.00	0.00	0.00	1710.09	855.04	2216.02	1100.12	37.77	-1.923	0.000	0.000

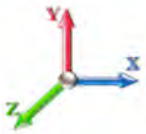
Wind Loading - Shaft

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

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	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.242	5.00	27.576	33.09	154.9	496.2	2514.4
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.331	5.00	27.204	32.65	152.8	523.7	2507.7
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	5.00	26.804	32.17	150.6	536.6	2486.4
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.427	5.00	26.392	31.67	148.3	543.2	2458.8
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.459	5.00	25.973	31.17	145.9	546.0	2427.5
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.486	5.00	25.549	30.66	143.7	546.5	2393.7
35.00		1.00	0.73	4.451	4.90	0.00	1.200	1.509	5.00	25.122	30.15	147.6	545.2	2358.2
40.00		1.00	0.76	4.625	5.09	0.00	1.200	1.529	5.00	24.693	29.63	150.7	542.5	2321.4
45.00		1.00	0.79	4.783	5.26	0.00	1.200	1.547	5.00	24.262	29.11	153.2	538.9	2283.5
45.25	Bot - Section 2	1.00	0.79	4.790	5.27	0.00	1.200	1.548	0.25	1.201	1.44	7.6	26.9	113.3
50.00		1.00	0.81	4.929	5.42	0.00	1.200	1.564	4.75	23.031	27.64	149.8	517.0	3796.2
52.75	Top - Section 1	1.00	0.82	5.005	5.51	0.00	1.200	1.572	2.75	13.154	15.78	86.9	297.8	2168.1
55.00		1.00	0.83	5.065	5.57	0.00	1.200	1.579	2.25	10.664	12.80	71.3	242.6	1007.3
60.00		1.00	0.85	5.193	5.71	0.00	1.200	1.592	5.00	23.386	28.06	160.3	533.4	2208.0
65.00		1.00	0.87	5.313	5.84	0.00	1.200	1.605	5.00	22.951	27.54	160.9	527.1	2167.6
70.00		1.00	0.89	5.426	5.97	0.00	1.200	1.617	5.00	22.515	27.02	161.3	520.4	2126.7
75.00		1.00	0.91	5.534	6.09	0.00	1.200	1.628	5.00	22.078	26.49	161.3	513.3	2085.4
80.00		1.00	0.93	5.637	6.20	0.00	1.200	1.639	5.00	21.641	25.97	161.0	505.9	2043.7
85.00		1.00	0.94	5.736	6.31	0.00	1.200	1.649	5.00	21.203	25.44	160.5	498.1	2001.8
90.00		1.00	0.96	5.830	6.41	0.00	1.200	1.658	5.00	20.765	24.92	159.8	490.0	1959.5
91.50	Bot - Section 3	1.00	0.96	5.858	6.44	0.00	1.200	1.661	1.50	6.130	7.36	47.4	146.0	579.2
95.00		1.00	0.97	5.921	6.51	0.00	1.200	1.667	3.50	14.418	17.30	112.7	343.1	2111.7
98.08	Top - Section 2	1.00	0.98	5.975	6.57	0.00	1.200	1.673	3.08	12.498	15.00	98.6	298.4	1829.0
100.00		1.00	0.99	6.008	6.61	0.00	1.200	1.676	1.92	7.706	9.25	61.1	184.7	593.4
105.00		1.00	1.00	6.093	6.70	0.00	1.200	1.684	5.00	19.767	23.72	159.0	472.4	1518.9
110.00		1.00	1.02	6.174	6.79	0.00	1.200	1.692	5.00	19.327	23.19	157.5	463.4	1484.3
115.00		1.00	1.03	6.253	6.88	0.00	1.200	1.699	5.00	18.887	22.66	155.9	454.3	1449.5
120.00		1.00	1.04	6.330	6.96	0.00	1.200	1.707	5.00	18.447	22.14	154.1	445.0	1414.6
125.00		1.00	1.05	6.404	7.04	0.00	1.200	1.714	5.00	18.007	21.61	152.2	435.5	1379.4
129.33	Bot - Section 4	1.00	1.06	6.467	7.11	0.00	1.200	1.720	4.33	15.250	18.30	130.2	370.2	1167.5
130.00		1.00	1.07	6.476	7.12	0.00	1.200	1.720	0.67	2.345	2.81	20.0	57.5	260.5
134.92	Top - Section 3	1.00	1.08	6.545	7.20	0.00	1.200	1.727	4.92	17.053	20.46	147.3	414.6	1888.0
135.00		1.00	1.08	6.546	7.20	0.00	1.200	1.727	0.08	0.285	0.34	2.5	7.0	17.0
140.00		1.00	1.09	6.615	7.28	0.00	1.200	1.733	5.00	16.898	20.28	147.5	411.6	999.8
145.00	Appurtenance(s)	1.00	1.10	6.681	7.35	0.00	1.200	1.739	5.00	16.457	19.75	145.1	401.6	972.7
150.00		1.00	1.11	6.746	7.42	0.00	1.200	1.745	5.00	16.015	19.22	142.6	391.4	945.4
155.00		1.00	1.12	6.810	7.49	0.00	1.200	1.751	5.00	15.574	18.69	140.0	381.1	918.0
157.00	Appurtenance(s)	1.00	1.12	6.835	7.52	0.00	1.200	1.753	2.00	6.105	7.33	55.1	150.8	360.8
160.00		1.00	1.13	6.872	7.56	0.00	1.200	1.757	3.00	9.026	10.83	81.9	222.4	532.3
								Totals:	**160.00**			**4,899.3**		**63,851.0**

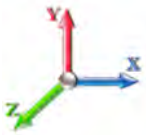
Discrete Appurtenance Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense 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

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	157.00	RFS	3	6.835	7.518	0.59	0.75	13.43	295.06	0.000	0.000	100.97	0.00	0.00
2	157.00	Kathrein 782 11056 Bias	3	6.835	7.518	0.45	0.75	0.48	34.56	0.000	0.000	3.60	0.00	0.00
3	157.00	Ericsson Radio 4449	3	6.835	7.518	0.50	0.75	3.26	469.41	0.000	0.000	24.52	0.00	0.00
4	157.00	Ericsson KRY 112 144/1	3	6.835	7.518	0.45	0.75	1.02	62.98	0.000	0.000	7.69	0.00	0.00
5	157.00	RFS	3	6.835	7.518	0.54	0.75	35.88	1758.92	0.000	0.000	269.77	0.00	0.00
6	157.00	low profile platform	1	6.835	7.518	1.00	1.00	90.13	5201.32	0.000	0.000	677.65	0.00	0.00
7	145.00	RDIDC-9181-PF-48	1	6.681	7.350	1.00	1.00	2.58	101.02	0.000	0.000	18.94	0.00	0.00
8	145.00	TA08025-B604	3	6.681	7.350	0.50	0.75	3.80	345.12	0.000	0.000	27.91	0.00	0.00
9	145.00	TA08025-B605	3	6.681	7.350	0.50	0.75	3.80	388.58	0.000	0.000	27.91	0.00	0.00
10	145.00	SNP8HR-3XX	1	6.681	7.350	1.00	1.00	80.47	4136.97	0.000	0.000	591.45	0.00	0.00
11	145.00	MX08FRO665-21	3	6.681	7.350	0.75	0.75	31.39	900.26	0.000	0.000	230.68	0.00	0.00
							Totals:		**13,694.19**			**1,981.09**		

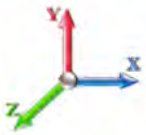
Total Applied Force Summary

Structure:	CT01700-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Haddam		**Exposure:**	B	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense 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

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		154.92	2534.25	0.00	0.00
10.00		152.83	2557.38	0.00	0.00
15.00		150.58	2536.12	0.00	0.00
20.00		148.27	2508.48	0.00	0.00
25.00		145.91	2477.14	0.00	0.00
30.00		143.65	2443.38	0.00	0.00
35.00		147.61	2407.87	0.00	0.00
40.00		150.73	2371.04	0.00	0.00
45.00		153.17	2333.18	0.00	0.00
45.25		7.60	115.75	0.00	0.00
50.00		149.85	3843.38	0.00	0.00
52.75		86.90	2195.40	0.00	0.00
55.00		71.30	1029.69	0.00	0.00
60.00		160.29	2257.69	0.00	0.00
65.00		160.95	2217.25	0.00	0.00
70.00		161.27	2176.36	0.00	0.00
75.00		161.29	2135.07	0.00	0.00
80.00		161.03	2093.42	0.00	0.00
85.00		160.53	2051.46	0.00	0.00
90.00		159.80	2009.21	0.00	0.00
91.50		47.40	594.04	0.00	0.00
95.00		112.69	2146.48	0.00	0.00
98.08		98.58	1859.62	0.00	0.00
100.00		61.12	612.51	0.00	0.00
105.00		158.97	1568.59	0.00	0.00
110.00		157.52	1534.00	0.00	0.00
115.00		155.90	1499.21	0.00	0.00
120.00		154.13	1464.25	0.00	0.00
125.00		152.22	1429.12	0.00	0.00
129.33		130.17	1210.59	0.00	0.00
130.00		20.04	267.09	0.00	0.00
134.92		147.33	1936.85	0.00	0.00
135.00		2.47	17.80	0.00	0.00
140.00		147.54	1049.48	0.00	0.00
145.00	(11) attachments	1042.03	6894.28	0.00	0.00
150.00		142.62	989.08	0.00	0.00
155.00		140.00	961.71	0.00	0.00
157.00	(16) attachments	1139.29	8200.49	0.00	0.00
160.00		81.88	532.27	0.00	0.00
	Totals:	**6,880.38**	**79,060.97**	**0.00**	**0.00**

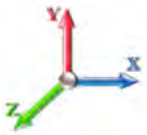
Calculated Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense 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

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	-79.06	-6.89	0.00	-726.47	0.00	726.47	6819.80	3409.90	17589.7	8732.29	0.00	0.000	0.000	0.095
5.00	-76.52	-6.77	0.00	-691.99	0.00	691.99	6746.92	3373.46	17107.0	8492.68	0.01	-0.021	0.000	0.093
10.00	-73.96	-6.64	0.00	-658.16	0.00	658.16	6672.61	3336.30	16627.2	8254.47	0.04	-0.041	0.000	0.091
15.00	-71.43	-6.51	0.00	-624.97	0.00	624.97	6596.88	3298.44	16150.4	8017.76	0.10	-0.062	0.000	0.089
20.00	-68.91	-6.38	0.00	-592.41	0.00	592.41	6519.72	3259.86	15676.8	7782.62	0.17	-0.082	0.000	0.087
25.00	-66.44	-6.26	0.00	-560.49	0.00	560.49	6441.14	3220.57	15206.5	7549.16	0.27	-0.103	0.000	0.085
30.00	-63.99	-6.13	0.00	-529.19	0.00	529.19	6361.14	3180.57	14739.8	7317.48	0.39	-0.123	0.000	0.082
35.00	-61.58	-6.00	0.00	-498.53	0.00	498.53	6279.71	3139.85	14276.8	7087.65	0.53	-0.144	0.000	0.080
40.00	-59.21	-5.87	0.00	-468.52	0.00	468.52	6196.85	3098.43	13817.8	6859.78	0.69	-0.164	0.000	0.078
45.00	-56.87	-5.72	0.00	-439.19	0.00	439.19	6112.57	3056.29	13362.9	6633.95	0.87	-0.184	0.000	0.076
45.25	-56.76	-5.72	0.00	-437.76	0.00	437.76	6108.32	3054.16	13340.3	6622.72	0.88	-0.185	0.000	0.075
50.00	-52.91	-5.57	0.00	-410.60	0.00	410.60	6026.87	3013.43	12912.4	6410.27	1.08	-0.204	0.000	0.073
52.75	-50.72	-5.48	0.00	-395.29	0.00	395.29	6061.52	3030.76	13093.1	6500.01	1.20	-0.215	0.000	0.069
55.00	-49.69	-5.42	0.00	-382.95	0.00	382.95	6022.75	3011.37	12891.0	6399.67	1.30	-0.225	0.000	0.068
60.00	-47.43	-5.27	0.00	-355.85	0.00	355.85	5935.55	2967.78	12445.2	6178.32	1.55	-0.243	0.000	0.066
65.00	-45.21	-5.11	0.00	-329.52	0.00	329.52	5846.93	2923.47	12004.0	5959.31	1.81	-0.262	0.000	0.063
70.00	-43.03	-4.95	0.00	-303.98	0.00	303.98	5756.88	2878.44	11567.7	5742.72	2.10	-0.280	0.000	0.060
75.00	-40.90	-4.79	0.00	-279.22	0.00	279.22	5658.40	2829.20	11122.7	5521.79	2.40	-0.297	0.000	0.058
80.00	-38.80	-4.63	0.00	-255.27	0.00	255.27	5533.97	2766.99	10636.4	5280.39	2.72	-0.315	0.000	0.055
85.00	-36.75	-4.47	0.00	-232.11	0.00	232.11	5409.55	2704.77	10161.0	5044.38	3.06	-0.332	0.000	0.053
90.00	-34.74	-4.30	0.00	-209.76	0.00	209.76	5285.12	2642.56	9696.54	4813.77	3.41	-0.348	0.000	0.050
91.50	-34.15	-4.26	0.00	-203.32	0.00	203.32	5247.88	2623.94	9559.60	4745.79	3.52	-0.353	0.000	0.049
95.00	-32.00	-4.14	0.00	-188.41	0.00	188.41	5160.70	2580.35	9242.88	4588.55	3.79	-0.364	0.000	0.047
98.08	-30.14	-4.03	0.00	-175.66	0.00	175.66	3670.30	1835.15	6627.10	3289.97	4.03	-0.374	0.000	0.062
100.00	-29.53	-3.97	0.00	-167.92	0.00	167.92	3647.80	1823.90	6525.29	3239.43	4.18	-0.379	0.000	0.060
105.00	-27.96	-3.81	0.00	-148.06	0.00	148.06	3588.21	1794.10	6261.99	3108.71	4.58	-0.398	0.000	0.055
110.00	-26.43	-3.65	0.00	-129.00	0.00	129.00	3527.20	1763.60	6001.46	2979.38	5.01	-0.415	0.000	0.051
115.00	-24.93	-3.49	0.00	-110.75	0.00	110.75	3464.76	1732.38	5743.91	2851.52	5.45	-0.431	0.000	0.046
120.00	-23.46	-3.33	0.00	-93.30	0.00	93.30	3400.89	1700.45	5489.50	2725.22	5.91	-0.446	0.000	0.041
125.00	-22.03	-3.17	0.00	-76.64	0.00	76.64	3335.61	1667.80	5238.44	2600.58	6.39	-0.459	0.000	0.036
129.33	-20.82	-3.03	0.00	-62.90	0.00	62.90	3277.87	1638.94	5023.71	2493.98	6.81	-0.469	0.000	0.032
130.00	-20.56	-3.01	0.00	-60.88	0.00	60.88	3268.89	1634.45	4990.91	2477.70	6.87	-0.471	0.000	0.031
134.92	-18.62	-2.85	0.00	-46.06	0.00	46.06	1872.17	936.08	2836.24	1408.03	7.36	-0.480	0.000	0.043
135.00	-18.60	-2.85	0.00	-45.82	0.00	45.82	1871.69	935.84	2834.15	1406.99	7.37	-0.481	0.000	0.043
140.00	-17.56	-2.70	0.00	-31.56	0.00	31.56	1842.22	921.11	2709.07	1344.90	7.88	-0.492	0.000	0.033
145.00	-10.67	-1.60	0.00	-18.08	0.00	18.08	1811.32	905.66	2584.53	1283.07	8.40	-0.499	0.000	0.020
150.00	-9.68	-1.45	0.00	-10.09	0.00	10.09	1779.00	889.50	2460.71	1221.60	8.93	-0.504	0.000	0.014
155.00	-8.72	-1.30	0.00	-2.86	0.00	2.86	1745.26	872.63	2337.81	1160.59	9.46	-0.507	0.000	0.007
157.00	-0.53	-0.09	0.00	-0.26	0.00	0.26	1731.36	865.68	2288.95	1136.33	9.67	-0.507	0.000	0.001
160.00	0.00	-0.08	0.00	0.00	0.00	0.00	1710.09	855.04	2216.02	1100.12	9.99	-0.507	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT01700-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Haddam		**Exposure:**	B	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 19

Load Case:	1.2D + 1.0E							**Iterations**	19
Gust Response Factor	1.10				**Sds**	0.14		**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.07		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.45		**SA**	0.03	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1681.8	0.00	0.03	0.02	19.07	
10.00		1653.3	0.01	0.05	0.03	28.23	
15.00		1624.8	0.02	0.06	0.04	32.70	
20.00		1596.3	0.03	0.07	0.04	34.78	
25.00		1567.8	0.05	0.07	0.04	35.70	
30.00		1539.3	0.07	0.07	0.04	36.11	
35.00		1510.8	0.09	0.07	0.04	36.33	
40.00		1482.3	0.12	0.07	0.03	36.49	
45.00		1453.8	0.15	0.07	0.03	36.49	
45.25	Bot - Section 2	71.95	0.15	0.07	0.03	1.81	
50.00		2732.6	0.18	0.06	0.03	69.31	
52.75	Top - Section 1	1558.5	0.21	0.06	0.02	39.48	
55.00		637.28	0.22	0.06	0.02	16.04	
60.00		1395.5	0.27	0.05	0.02	33.76	
65.00		1367.0	0.31	0.04	0.01	30.22	
70.00		1338.5	0.36	0.03	0.01	24.86	
75.00		1310.0	0.42	0.01	0.01	17.58	
80.00		1281.5	0.47	-0.01	0.01	8.66	
85.00		1253.0	0.53	-0.03	0.01	-1.10	
90.00		1224.5	0.60	-0.05	0.01	-10.46	
91.50	Bot - Section 3	361.01	0.62	-0.06	0.02	-3.85	
95.00		1473.8	0.67	-0.08	0.02	-22.29	
98.08	Top - Section 2	1275.5	0.71	-0.09	0.03	-23.20	
100.00		340.57	0.74	-0.10	0.04	-6.68	
105.00		872.12	0.81	-0.11	0.06	-18.64	
110.00		850.75	0.89	-0.12	0.08	-17.00	
115.00		829.38	0.98	-0.12	0.12	-12.71	
120.00		808.01	1.06	-0.09	0.17	-5.94	
125.00		786.64	1.15	-0.03	0.22	3.11	
129.33	Bot - Section 4	664.47	1.23	0.04	0.28	10.92	
130.00		169.13	1.25	0.05	0.29	3.14	
134.92	Top - Section 3	1227.8	1.34	0.19	0.38	44.50	
135.00		8.29	1.35	0.19	0.38	0.30	
140.00		490.16	1.45	0.38	0.48	28.40	
145.00	Appurtenance(s)	2983.9	1.55	0.64	0.61	246.95	
150.00		461.67	1.66	0.98	0.76	51.28	
155.00		447.42	1.77	1.42	0.93	63.95	
157.00	Appurtenance(s)	3543.6	1.82	1.63	1.01	555.24	
160.00		258.20	1.89	1.98	1.14	46.07	
	Totals:	**46,134.0**				**1,469.6**	**Total Wind:** **26,536.2**

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

Calculated Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 19

Gust Response Factor	1.10			**Sds**	0.14			**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.07			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.45	**SA**	0.03	**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	-56.88	-1.59	0.00	-186.76	0.00	186.76	6819.80	3409.90	17589.7	8732.29		0.00	0.00	0.030
5.00	-54.84	-1.58	0.00	-178.79	0.00	178.79	6746.92	3373.46	17107.0	8492.68		0.00	-0.01	0.029
10.00	-52.80	-1.56	0.00	-170.90	0.00	170.90	6672.61	3336.30	16627.2	8254.47		0.01	-0.01	0.029
15.00	-50.80	-1.53	0.00	-163.12	0.00	163.12	6596.88	3298.44	16150.4	8017.76		0.03	-0.02	0.028
20.00	-48.84	-1.50	0.00	-155.48	0.00	155.48	6519.72	3259.86	15676.8	7782.62		0.04	-0.02	0.027
25.00	-46.91	-1.46	0.00	-147.99	0.00	147.99	6441.14	3220.57	15206.5	7549.16		0.07	-0.03	0.027
30.00	-45.01	-1.43	0.00	-140.67	0.00	140.67	6361.14	3180.57	14739.8	7317.48		0.10	-0.03	0.026
35.00	-43.15	-1.40	0.00	-133.51	0.00	133.51	6279.71	3139.85	14276.8	7087.65		0.14	-0.04	0.026
40.00	-41.32	-1.36	0.00	-126.52	0.00	126.52	6196.85	3098.43	13817.8	6859.78		0.18	-0.04	0.025
45.00	-39.53	-1.33	0.00	-119.69	0.00	119.69	6112.57	3056.29	13362.9	6633.95		0.23	-0.05	0.025
45.25	-39.44	-1.33	0.00	-119.36	0.00	119.36	6108.32	3054.16	13340.3	6622.72		0.23	-0.05	0.024
50.00	-36.11	-1.26	0.00	-113.05	0.00	113.05	6026.87	3013.43	12912.4	6410.27		0.28	-0.05	0.024
52.75	-34.21	-1.22	0.00	-109.59	0.00	109.59	6061.52	3030.76	13093.1	6500.01		0.31	-0.06	0.023
55.00	-33.43	-1.20	0.00	-106.84	0.00	106.84	6022.75	3011.37	12891.0	6399.67		0.34	-0.06	0.022
60.00	-31.70	-1.17	0.00	-100.82	0.00	100.82	5935.55	2967.78	12445.2	6178.32		0.41	-0.06	0.022
65.00	-30.01	-1.14	0.00	-94.96	0.00	94.96	5846.93	2923.47	12004.0	5959.31		0.48	-0.07	0.021
70.00	-28.35	-1.12	0.00	-89.25	0.00	89.25	5756.88	2878.44	11567.7	5742.72		0.55	-0.08	0.020
75.00	-26.73	-1.10	0.00	-83.65	0.00	83.65	5658.40	2829.20	11122.7	5521.79		0.64	-0.08	0.020
80.00	-25.15	-1.09	0.00	-78.15	0.00	78.15	5533.97	2766.99	10636.4	5280.39		0.72	-0.09	0.019
85.00	-23.59	-1.09	0.00	-72.69	0.00	72.69	5409.55	2704.77	10161.0	5044.38		0.82	-0.09	0.019
90.00	-22.07	-1.09	0.00	-67.23	0.00	67.23	5285.12	2642.56	9696.54	4813.77		0.91	-0.10	0.018
91.50	-21.62	-1.09	0.00	-65.59	0.00	65.59	5247.88	2623.94	9559.60	4745.79		0.94	-0.10	0.018
95.00	-19.82	-1.09	0.00	-61.77	0.00	61.77	5160.70	2580.35	9242.88	4588.55		1.02	-0.10	0.017
98.08	-18.26	-1.09	0.00	-58.42	0.00	58.42	3670.30	1835.15	6627.10	3289.97		1.08	-0.10	0.023
100.00	-17.83	-1.09	0.00	-56.33	0.00	56.33	3647.80	1823.90	6525.29	3239.43		1.13	-0.11	0.022
105.00	-16.74	-1.09	0.00	-50.89	0.00	50.89	3588.21	1794.10	6261.99	3108.71		1.24	-0.11	0.021
110.00	-15.66	-1.09	0.00	-45.45	0.00	45.45	3527.20	1763.60	6001.46	2979.38		1.36	-0.12	0.020
115.00	-14.62	-1.09	0.00	-40.02	0.00	40.02	3464.76	1732.38	5743.91	2851.52		1.49	-0.12	0.018
120.00	-13.60	-1.09	0.00	-34.59	0.00	34.59	3400.89	1700.45	5489.50	2725.22		1.62	-0.13	0.017
125.00	-12.61	-1.08	0.00	-29.16	0.00	29.16	3335.61	1667.80	5238.44	2600.58		1.76	-0.13	0.015
129.33	-11.77	-1.07	0.00	-24.48	0.00	24.48	3277.87	1638.94	5023.71	2493.98		1.89	-0.14	0.013
130.00	-11.56	-1.07	0.00	-23.77	0.00	23.77	3268.89	1634.45	4990.91	2477.70		1.91	-0.14	0.013
134.92	-10.03	-1.02	0.00	-18.53	0.00	18.53	1872.17	936.08	2836.24	1408.03		2.05	-0.14	0.019
135.00	-10.02	-1.02	0.00	-18.45	0.00	18.45	1871.69	935.84	2834.15	1406.99		2.06	-0.14	0.018
140.00	-9.39	-0.99	0.00	-13.36	0.00	13.36	1842.22	921.11	2709.07	1344.90		2.21	-0.15	0.015
145.00	-5.76	-0.73	0.00	-8.42	0.00	8.42	1811.32	905.66	2584.53	1283.07		2.37	-0.15	0.010
150.00	-5.16	-0.68	0.00	-4.76	0.00	4.76	1779.00	889.50	2460.71	1221.60		2.53	-0.15	0.007
155.00	-4.58	-0.61	0.00	-1.37	0.00	1.37	1745.26	872.63	2337.81	1160.59		2.69	-0.15	0.004
157.00	-0.31	-0.05	0.00	-0.14	0.00	0.14	1731.36	865.68	2288.95	1136.33		2.75	-0.15	0.000
160.00	0.00	-0.05	0.00	0.00	0.00	0.00	1710.09	855.04	2216.02	1100.12		2.85	-0.15	0.000

Seismic Segment Forces (Factored)

Structure:	CT01700-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Haddam		**Exposure:**	B	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Load Case:	0.9D + 1.0E							**Iterations**	19
Gust Response Factor	1.10				**Sds**	0.14		**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.07		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.45		**SA**	0.03	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1681.8	0.00	0.03	0.02	19.07	
10.00		1653.3	0.01	0.05	0.03	28.23	
15.00		1624.8	0.02	0.06	0.04	32.70	
20.00		1596.3	0.03	0.07	0.04	34.78	
25.00		1567.8	0.05	0.07	0.04	35.70	
30.00		1539.3	0.07	0.07	0.04	36.11	
35.00		1510.8	0.09	0.07	0.04	36.33	
40.00		1482.3	0.12	0.07	0.03	36.49	
45.00		1453.8	0.15	0.07	0.03	36.49	
45.25	Bot - Section 2	71.95	0.15	0.07	0.03	1.81	
50.00		2732.6	0.18	0.06	0.03	69.31	
52.75	Top - Section 1	1558.5	0.21	0.06	0.02	39.48	
55.00		637.28	0.22	0.06	0.02	16.04	
60.00		1395.5	0.27	0.05	0.02	33.76	
65.00		1367.0	0.31	0.04	0.01	30.22	
70.00		1338.5	0.36	0.03	0.01	24.86	
75.00		1310.0	0.42	0.01	0.01	17.58	
80.00		1281.5	0.47	-0.01	0.01	8.66	
85.00		1253.0	0.53	-0.03	0.01	-1.10	
90.00		1224.5	0.60	-0.05	0.01	-10.46	
91.50	Bot - Section 3	361.01	0.62	-0.06	0.02	-3.85	
95.00		1473.8	0.67	-0.08	0.02	-22.29	
98.08	Top - Section 2	1275.5	0.71	-0.09	0.03	-23.20	
100.00		340.57	0.74	-0.10	0.04	-6.68	
105.00		872.12	0.81	-0.11	0.06	-18.64	
110.00		850.75	0.89	-0.12	0.08	-17.00	
115.00		829.38	0.98	-0.12	0.12	-12.71	
120.00		808.01	1.06	-0.09	0.17	-5.94	
125.00		786.64	1.15	-0.03	0.22	3.11	
129.33	Bot - Section 4	664.47	1.23	0.04	0.28	10.92	
130.00		169.13	1.25	0.05	0.29	3.14	
134.92	Top - Section 3	1227.8	1.34	0.19	0.38	44.50	
135.00		8.29	1.35	0.19	0.38	0.30	
140.00		490.16	1.45	0.38	0.48	28.40	
145.00	Appurtenance(s)	2983.9	1.55	0.64	0.61	246.95	
150.00		461.67	1.66	0.98	0.76	51.28	
155.00		447.42	1.77	1.42	0.93	63.95	
157.00	Appurtenance(s)	3543.6	1.82	1.63	1.01	555.24	
160.00		258.20	1.89	1.98	1.14	46.07	
	Totals:	**46,134.0**				**1,469.6**	**Total Wind:** **26,536.2**

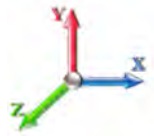
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.14			**Iterations**	19
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.07			**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.45	**SA**	0.03			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.66	-1.59	0.00	-185.62	0.00	185.62	6819.80	3409.90	17589.7	8732.29		0.00	0.00	0.028
5.00	-41.13	-1.58	0.00	-177.66	0.00	177.66	6746.92	3373.46	17107.0	8492.68		0.00	-0.01	0.027
10.00	-39.60	-1.55	0.00	-169.77	0.00	169.77	6672.61	3336.30	16627.2	8254.47		0.01	-0.01	0.027
15.00	-38.10	-1.52	0.00	-162.01	0.00	162.01	6596.88	3298.44	16150.4	8017.76		0.03	-0.02	0.026
20.00	-36.63	-1.49	0.00	-154.39	0.00	154.39	6519.72	3259.86	15676.8	7782.62		0.04	-0.02	0.025
25.00	-35.18	-1.46	0.00	-146.93	0.00	146.93	6441.14	3220.57	15206.5	7549.16		0.07	-0.03	0.025
30.00	-33.76	-1.42	0.00	-139.64	0.00	139.64	6361.14	3180.57	14739.8	7317.48		0.10	-0.03	0.024
35.00	-32.36	-1.39	0.00	-132.51	0.00	132.51	6279.71	3139.85	14276.8	7087.65		0.14	-0.04	0.024
40.00	-30.99	-1.36	0.00	-125.56	0.00	125.56	6196.85	3098.43	13817.8	6859.78		0.18	-0.04	0.023
45.00	-29.64	-1.32	0.00	-118.78	0.00	118.78	6112.57	3056.29	13362.9	6633.95		0.23	-0.05	0.023
45.25	-29.58	-1.32	0.00	-118.45	0.00	118.45	6108.32	3054.16	13340.3	6622.72		0.23	-0.05	0.023
50.00	-27.08	-1.25	0.00	-112.18	0.00	112.18	6026.87	3013.43	12912.4	6410.27		0.28	-0.05	0.022
52.75	-25.66	-1.21	0.00	-108.74	0.00	108.74	6061.52	3030.76	13093.1	6500.01		0.31	-0.06	0.021
55.00	-25.07	-1.20	0.00	-106.02	0.00	106.02	6022.75	3011.37	12891.0	6399.67		0.34	-0.06	0.021
60.00	-23.78	-1.16	0.00	-100.04	0.00	100.04	5935.55	2967.78	12445.2	6178.32		0.40	-0.06	0.020
65.00	-22.51	-1.13	0.00	-94.23	0.00	94.23	5846.93	2923.47	12004.0	5959.31		0.47	-0.07	0.020
70.00	-21.27	-1.11	0.00	-88.56	0.00	88.56	5756.88	2878.44	11567.7	5742.72		0.55	-0.07	0.019
75.00	-20.05	-1.09	0.00	-83.02	0.00	83.02	5658.40	2829.20	11122.7	5521.79		0.63	-0.08	0.019
80.00	-18.86	-1.08	0.00	-77.56	0.00	77.56	5533.97	2766.99	10636.4	5280.39		0.72	-0.09	0.018
85.00	-17.69	-1.08	0.00	-72.15	0.00	72.15	5409.55	2704.77	10161.0	5044.38		0.81	-0.09	0.018
90.00	-16.55	-1.08	0.00	-66.74	0.00	66.74	5285.12	2642.56	9696.54	4813.77		0.91	-0.10	0.017
91.50	-16.22	-1.08	0.00	-65.12	0.00	65.12	5247.88	2623.94	9559.60	4745.79		0.94	-0.10	0.017
95.00	-14.87	-1.08	0.00	-61.33	0.00	61.33	5160.70	2580.35	9242.88	4588.55		1.01	-0.10	0.016
98.08	-13.69	-1.08	0.00	-58.01	0.00	58.01	3670.30	1835.15	6627.10	3289.97		1.08	-0.10	0.021
100.00	-13.37	-1.08	0.00	-55.94	0.00	55.94	3647.80	1823.90	6525.29	3239.43		1.12	-0.11	0.021
105.00	-12.55	-1.08	0.00	-50.54	0.00	50.54	3588.21	1794.10	6261.99	3108.71		1.23	-0.11	0.020
110.00	-11.75	-1.08	0.00	-45.15	0.00	45.15	3527.20	1763.60	6001.46	2979.38		1.35	-0.12	0.018
115.00	-10.96	-1.08	0.00	-39.76	0.00	39.76	3464.76	1732.38	5743.91	2851.52		1.48	-0.12	0.017
120.00	-10.20	-1.08	0.00	-34.37	0.00	34.37	3400.89	1700.45	5489.50	2725.22		1.61	-0.13	0.016
125.00	-9.45	-1.07	0.00	-28.98	0.00	28.98	3335.61	1667.80	5238.44	2600.58		1.75	-0.13	0.014
129.33	-8.82	-1.06	0.00	-24.33	0.00	24.33	3277.87	1638.94	5023.71	2493.98		1.87	-0.14	0.012
130.00	-8.67	-1.06	0.00	-23.62	0.00	23.62	3268.89	1634.45	4990.91	2477.70		1.89	-0.14	0.012
134.92	-7.53	-1.01	0.00	-18.42	0.00	18.42	1872.17	936.08	2836.24	1408.03		2.04	-0.14	0.017
135.00	-7.52	-1.01	0.00	-18.34	0.00	18.34	1871.69	935.84	2834.15	1406.99		2.04	-0.14	0.017
140.00	-7.04	-0.98	0.00	-13.29	0.00	13.29	1842.22	921.11	2709.07	1344.90		2.19	-0.15	0.014
145.00	-4.32	-0.73	0.00	-8.38	0.00	8.38	1811.32	905.66	2584.53	1283.07		2.35	-0.15	0.009
150.00	-3.87	-0.68	0.00	-4.74	0.00	4.74	1779.00	889.50	2460.71	1221.60		2.51	-0.15	0.006
155.00	-3.43	-0.61	0.00	-1.36	0.00	1.36	1745.26	872.63	2337.81	1160.59		2.67	-0.15	0.003
157.00	-0.23	-0.05	0.00	-0.14	0.00	0.14	1731.36	865.68	2288.95	1136.33		2.73	-0.15	0.000
160.00	0.00	-0.05	0.00	0.00	0.00	0.00	1710.09	855.04	2216.02	1100.12		2.83	-0.15	0.000

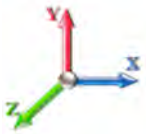
Wind Loading - Shaft

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

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	0.70	6.129	6.74	268.71	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	264.23	0.750	0.000	5.00	26.541	19.91	134.2	0.0	1681.8
10.00		1.00	0.70	6.129	6.74	259.75	0.750	0.000	5.00	26.095	19.57	131.9	0.0	1653.3
15.00		1.00	0.70	6.129	6.74	255.28	0.750	0.000	5.00	25.649	19.24	129.7	0.0	1624.8
20.00		1.00	0.70	6.129	6.74	250.80	0.750	0.000	5.00	25.203	18.90	127.4	0.0	1596.3
25.00		1.00	0.70	6.129	6.74	246.32	0.750	0.000	5.00	24.757	18.57	125.2	0.0	1567.8
30.00		1.00	0.70	6.134	6.75	241.94	0.750	0.000	5.00	24.311	18.23	123.0	0.0	1539.4
35.00		1.00	0.73	6.410	7.05	242.75	0.750	0.000	5.00	23.865	17.90	126.2	0.0	1510.9
40.00		1.00	0.76	6.659	7.33	242.76	0.750	0.000	5.00	23.419	17.56	128.7	0.0	1482.4
45.00		1.00	0.79	6.887	7.58	242.13	0.750	0.000	5.00	22.973	17.23	130.5	0.0	1453.9
45.25	Bot - Section 2	1.00	0.79	6.898	7.59	242.08	0.750	0.000	0.25	1.137	0.85	6.5	0.0	71.9
50.00		1.00	0.81	7.098	7.81	240.98	0.750	0.000	4.75	21.793	16.34	127.6	0.0	2732.6
52.75	Top - Section 1	1.00	0.82	7.207	7.93	240.16	0.750	0.000	2.75	12.433	9.32	73.9	0.0	1558.6
55.00		1.00	0.83	7.294	8.02	244.05	0.750	0.000	2.25	10.072	7.55	60.6	0.0	637.3
60.00		1.00	0.85	7.477	8.22	242.16	0.750	0.000	5.00	22.059	16.54	136.1	0.0	1395.5
65.00		1.00	0.87	7.650	8.42	239.94	0.750	0.000	5.00	21.613	16.21	136.4	0.0	1367.0
70.00		1.00	0.89	7.814	8.60	237.43	0.750	0.000	5.00	21.167	15.88	136.5	0.0	1338.5
75.00		1.00	0.91	7.969	8.77	234.68	0.750	0.000	5.00	20.721	15.54	136.2	0.0	1310.0
80.00		1.00	0.93	8.118	8.93	231.70	0.750	0.000	5.00	20.275	15.21	135.8	0.0	1281.6
85.00		1.00	0.94	8.260	9.09	228.51	0.750	0.000	5.00	19.829	14.87	135.1	0.0	1253.1
90.00		1.00	0.96	8.396	9.24	225.15	0.750	0.000	5.00	19.383	14.54	134.3	0.0	1224.6
91.50	Bot - Section 3	1.00	0.96	8.435	9.28	224.10	0.750	0.000	1.50	5.715	4.29	39.8	0.0	361.0
95.00		1.00	0.97	8.526	9.38	221.61	0.750	0.000	3.50	13.445	10.08	94.6	0.0	1473.8
98.08	Top - Section 2	1.00	0.98	8.604	9.46	219.35	0.750	0.000	3.08	11.639	8.73	82.6	0.0	1275.5
100.00		1.00	0.99	8.652	9.52	221.72	0.750	0.000	1.92	7.170	5.38	51.2	0.0	340.6
105.00		1.00	1.00	8.774	9.65	217.91	0.750	0.000	5.00	18.363	13.77	132.9	0.0	872.1
110.00		1.00	1.02	8.891	9.78	213.97	0.750	0.000	5.00	17.917	13.44	131.4	0.0	850.7
115.00		1.00	1.03	9.005	9.91	209.90	0.750	0.000	5.00	17.471	13.10	129.8	0.0	829.4
120.00		1.00	1.04	9.115	10.03	205.72	0.750	0.000	5.00	17.025	12.77	128.0	0.0	808.0
125.00		1.00	1.05	9.222	10.14	201.43	0.750	0.000	5.00	16.579	12.43	126.1	0.0	786.6
129.33	Bot - Section 4	1.00	1.06	9.312	10.24	197.63	0.750	0.000	4.33	14.008	10.51	107.6	0.0	664.5
130.00		1.00	1.07	9.326	10.26	197.04	0.750	0.000	0.67	2.154	1.62	16.6	0.0	169.1
134.92	Top - Section 3	1.00	1.08	9.425	10.37	192.63	0.750	0.000	4.92	15.638	11.73	121.6	0.0	1227.8
135.00		1.00	1.08	9.427	10.37	195.20	0.750	0.000	0.08	0.261	0.20	2.0	0.0	8.3
140.00		1.00	1.09	9.525	10.48	190.63	0.750	0.000	5.00	15.453	11.59	121.4	0.0	490.2
145.00	Appurtenance(s)	1.00	1.10	9.621	10.58	185.98	0.750	0.000	5.00	15.007	11.26	119.1	0.0	475.9
150.00		1.00	1.11	9.715	10.69	181.24	0.750	0.000	5.00	14.561	10.92	116.7	0.0	461.7
155.00		1.00	1.12	9.806	10.79	176.43	0.750	0.000	5.00	14.115	10.59	114.2	0.0	447.4
157.00	Appurtenance(s)	1.00	1.12	9.842	10.83	174.48	0.750	0.000	2.00	5.521	4.14	44.8	0.0	175.0
160.00		1.00	1.13	9.896	10.89	171.54	0.750	0.000	3.00	8.148	6.11	66.5	0.0	258.2
								Totals:	**160.00**			**4,122.8**		**40,257.3**

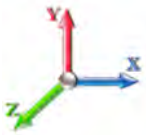
Discrete Appurtenance Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense 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

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	157.00	RFS	3	9.842	10.827	0.59	0.75	9.19	79.20	0.000	0.000	99.49	0.00	0.00
2	157.00	Kathrein 782 11056 Bias	3	9.842	10.827	0.45	0.75	0.20	5.40	0.000	0.000	2.19	0.00	0.00
3	157.00	Ericsson Radio 4449	3	9.842	10.827	0.50	0.75	2.46	222.00	0.000	0.000	26.60	0.00	0.00
4	157.00	Ericsson KRY 112 144/1	3	9.842	10.827	0.45	0.75	0.47	33.06	0.000	0.000	5.12	0.00	0.00
5	157.00	RFS	3	9.842	10.827	0.54	0.75	32.79	384.00	0.000	0.000	354.99	0.00	0.00
6	157.00	low profile platform	1	9.842	10.827	1.00	1.00	51.70	2645.00	0.000	0.000	559.73	0.00	0.00
7	145.00	RDIDC-9181-PF-48	1	9.621	10.583	1.00	1.00	2.01	21.85	0.000	0.000	21.27	0.00	0.00
8	145.00	TA08025-B604	3	9.621	10.583	0.50	0.75	2.95	191.70	0.000	0.000	31.27	0.00	0.00
9	145.00	TA08025-B605	3	9.621	10.583	0.50	0.75	2.95	225.00	0.000	0.000	31.27	0.00	0.00
10	145.00	SNP8HR-3XX	1	9.621	10.583	1.00	1.00	35.73	1876.00	0.000	0.000	378.14	0.00	0.00
11	145.00	MX08FRO665-21	3	9.621	10.583	0.55	0.75	20.80	193.50	0.000	0.000	220.09	0.00	0.00
							Totals:		**5,876.71**			**1,730.17**		

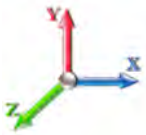
Total Applied Force Summary

Structure:	CT01700-S-SBA		**Code:**	EIA/TIA-222-G	4/26/2021
Site Name:	Haddam		**Exposure:**	B	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense 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

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		134.20	1698.39	0.00	0.00
10.00		131.94	1694.73	0.00	0.00
15.00		129.69	1666.24	0.00	0.00
20.00		127.43	1637.74	0.00	0.00
25.00		125.17	1609.25	0.00	0.00
30.00		123.02	1580.75	0.00	0.00
35.00		126.20	1552.26	0.00	0.00
40.00		128.66	1523.77	0.00	0.00
45.00		130.53	1495.27	0.00	0.00
45.25		6.47	74.02	0.00	0.00
50.00		127.61	2771.98	0.00	0.00
52.75		73.93	1581.32	0.00	0.00
55.00		60.61	655.91	0.00	0.00
60.00		136.08	1436.93	0.00	0.00
65.00		136.41	1408.43	0.00	0.00
70.00		136.45	1379.94	0.00	0.00
75.00		136.24	1351.45	0.00	0.00
80.00		135.78	1322.95	0.00	0.00
85.00		135.12	1294.46	0.00	0.00
90.00		134.25	1265.96	0.00	0.00
91.50		39.77	373.40	0.00	0.00
95.00		94.57	1502.84	0.00	0.00
98.08		82.62	1301.02	0.00	0.00
100.00		51.18	356.47	0.00	0.00
105.00		132.92	913.52	0.00	0.00
110.00		131.42	892.15	0.00	0.00
115.00		129.79	870.78	0.00	0.00
120.00		128.02	849.41	0.00	0.00
125.00		126.13	828.04	0.00	0.00
129.33		107.61	700.35	0.00	0.00
130.00		16.57	174.65	0.00	0.00
134.92		121.60	1268.51	0.00	0.00
135.00		2.03	8.98	0.00	0.00
140.00		121.44	531.56	0.00	0.00
145.00	(11) attachments	801.16	3025.37	0.00	0.00
150.00		116.70	498.07	0.00	0.00
155.00		114.19	483.82	0.00	0.00
157.00	(16) attachments	1092.95	3558.20	0.00	0.00
160.00		66.52	258.20	0.00	0.00
	Totals:	**5,853.00**	**47,397.09**	**0.00**	**0.00**

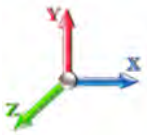
Calculated Forces

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense 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

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	-47.40	-5.86	0.00	-608.65	0.00	608.65	6819.80	3409.90	17589.7	8732.29	0.00	0.000	0.000	0.077
5.00	-45.70	-5.74	0.00	-579.35	0.00	579.35	6746.92	3373.46	17107.0	8492.68	0.01	-0.017	0.000	0.075
10.00	-44.00	-5.62	0.00	-550.66	0.00	550.66	6672.61	3336.30	16627.2	8254.47	0.04	-0.034	0.000	0.073
15.00	-42.33	-5.50	0.00	-522.57	0.00	522.57	6596.88	3298.44	16150.4	8017.76	0.08	-0.052	0.000	0.072
20.00	-40.69	-5.38	0.00	-495.07	0.00	495.07	6519.72	3259.86	15676.8	7782.62	0.15	-0.069	0.000	0.070
25.00	-39.08	-5.27	0.00	-468.15	0.00	468.15	6441.14	3220.57	15206.5	7549.16	0.23	-0.086	0.000	0.068
30.00	-37.50	-5.15	0.00	-441.81	0.00	441.81	6361.14	3180.57	14739.8	7317.48	0.33	-0.103	0.000	0.066
35.00	-35.95	-5.03	0.00	-416.04	0.00	416.04	6279.71	3139.85	14276.8	7087.65	0.44	-0.120	0.000	0.064
40.00	-34.42	-4.91	0.00	-390.87	0.00	390.87	6196.85	3098.43	13817.8	6859.78	0.58	-0.137	0.000	0.063
45.00	-32.93	-4.78	0.00	-366.30	0.00	366.30	6112.57	3056.29	13362.9	6633.95	0.73	-0.154	0.000	0.061
45.25	-32.85	-4.78	0.00	-365.11	0.00	365.11	6108.32	3054.16	13340.3	6622.72	0.74	-0.155	0.000	0.061
50.00	-30.08	-4.65	0.00	-342.40	0.00	342.40	6026.87	3013.43	12912.4	6410.27	0.90	-0.171	0.000	0.058
52.75	-28.50	-4.58	0.00	-329.60	0.00	329.60	6061.52	3030.76	13093.1	6500.01	1.00	-0.180	0.000	0.055
55.00	-27.84	-4.52	0.00	-319.30	0.00	319.30	6022.75	3011.37	12891.0	6399.67	1.09	-0.188	0.000	0.055
60.00	-26.40	-4.39	0.00	-296.69	0.00	296.69	5935.55	2967.78	12445.2	6178.32	1.29	-0.203	0.000	0.052
65.00	-24.99	-4.25	0.00	-274.75	0.00	274.75	5846.93	2923.47	12004.0	5959.31	1.51	-0.218	0.000	0.050
70.00	-23.61	-4.12	0.00	-253.49	0.00	253.49	5756.88	2878.44	11567.7	5742.72	1.75	-0.233	0.000	0.048
75.00	-22.26	-3.98	0.00	-232.91	0.00	232.91	5658.40	2829.20	11122.7	5521.79	2.00	-0.248	0.000	0.046
80.00	-20.94	-3.84	0.00	-213.01	0.00	213.01	5533.97	2766.99	10636.4	5280.39	2.27	-0.263	0.000	0.044
85.00	-19.64	-3.71	0.00	-193.79	0.00	193.79	5409.55	2704.77	10161.0	5044.38	2.55	-0.277	0.000	0.042
90.00	-18.38	-3.57	0.00	-175.25	0.00	175.25	5285.12	2642.56	9696.54	4813.77	2.85	-0.290	0.000	0.040
91.50	-18.00	-3.53	0.00	-169.90	0.00	169.90	5247.88	2623.94	9559.60	4745.79	2.94	-0.295	0.000	0.039
95.00	-16.50	-3.43	0.00	-157.54	0.00	157.54	5160.70	2580.35	9242.88	4588.55	3.16	-0.304	0.000	0.038
98.08	-15.20	-3.34	0.00	-146.97	0.00	146.97	3670.30	1835.15	6627.10	3289.97	3.36	-0.312	0.000	0.049
100.00	-14.84	-3.29	0.00	-140.55	0.00	140.55	3647.80	1823.90	6525.29	3239.43	3.49	-0.317	0.000	0.047
105.00	-13.93	-3.16	0.00	-124.09	0.00	124.09	3588.21	1794.10	6261.99	3108.71	3.83	-0.332	0.000	0.044
110.00	-13.04	-3.02	0.00	-108.30	0.00	108.30	3527.20	1763.60	6001.46	2979.38	4.18	-0.347	0.000	0.040
115.00	-12.17	-2.89	0.00	-93.18	0.00	93.18	3464.76	1732.38	5743.91	2851.52	4.56	-0.360	0.000	0.036
120.00	-11.32	-2.76	0.00	-78.72	0.00	78.72	3400.89	1700.45	5489.50	2725.22	4.94	-0.372	0.000	0.032
125.00	-10.49	-2.63	0.00	-64.92	0.00	64.92	3335.61	1667.80	5238.44	2600.58	5.34	-0.384	0.000	0.028
129.33	-9.79	-2.52	0.00	-53.51	0.00	53.51	3277.87	1638.94	5023.71	2493.98	5.69	-0.392	0.000	0.024
130.00	-9.62	-2.50	0.00	-51.83	0.00	51.83	3268.89	1634.45	4990.91	2477.70	5.74	-0.394	0.000	0.024
134.92	-8.35	-2.37	0.00	-39.53	0.00	39.53	1872.17	936.08	2836.24	1408.03	6.15	-0.402	0.000	0.033
135.00	-8.34	-2.37	0.00	-39.33	0.00	39.33	1871.69	935.84	2834.15	1406.99	6.16	-0.402	0.000	0.032
140.00	-7.81	-2.25	0.00	-27.47	0.00	27.47	1842.22	921.11	2709.07	1344.90	6.59	-0.412	0.000	0.025
145.00	-4.79	-1.43	0.00	-16.23	0.00	16.23	1811.32	905.66	2584.53	1283.07	7.02	-0.419	0.000	0.015
150.00	-4.29	-1.31	0.00	-9.11	0.00	9.11	1779.00	889.50	2460.71	1221.60	7.46	-0.423	0.000	0.010
155.00	-3.81	-1.19	0.00	-2.58	0.00	2.58	1745.26	872.63	2337.81	1160.59	7.91	-0.425	0.000	0.004
157.00	-0.26	-0.07	0.00	-0.21	0.00	0.21	1731.36	865.68	2288.95	1136.33	8.09	-0.425	0.000	0.000
160.00	0.00	-0.07	0.00	0.00	0.00	0.00	1710.09	855.04	2216.02	1100.12	8.35	-0.425	0.000	0.000

Final Analysis Summary

Structure:	CT01700-S-SBA	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

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 101 mph Wind	26.6	0.00	56.86	0.00	0.00	2770.21
0.9D + 1.6W 101 mph Wind	26.6	0.00	42.64	0.00	0.00	2754.36
1.2D + 1.0Di + 1.0Wi 50 mph Wind	6.9	0.00	79.06	0.00	0.00	726.47
1.2D + 1.0E	1.6	0.00	56.88	0.00	0.00	186.76
0.9D + 1.0E	1.6	0.00	42.66	0.00	0.00	185.62
1.0D + 1.0W 60 mph Wind	5.9	0.00	47.40	0.00	0.00	608.65

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 101 mph Wind	-56.86	-26.58	0.00	-2770.2	0.00	-2770.2	6819.80	3409.9	17589.7	8732.29	0.00	0.326
0.9D + 1.6W 101 mph Wind	-42.64	-26.56	0.00	-2754.3	0.00	-2754.3	6819.80	3409.9	17589.7	8732.29	0.00	0.322
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-79.06	-6.89	0.00	-726.47	0.00	-726.47	6819.80	3409.9	17589.7	8732.29	0.00	0.095
1.2D + 1.0E	-56.88	-1.59	0.00	-186.76	0.00	-186.76	6819.80	3409.9	17589.7	8732.29	0.00	0.030
0.9D + 1.0E	-42.66	-1.59	0.00	-185.62	0.00	-185.62	6819.80	3409.9	17589.7	8732.29	0.00	0.028
1.0D + 1.0W 60 mph Wind	-47.40	-5.86	0.00	-608.65	0.00	-608.65	6819.80	3409.9	17589.7	8732.29	0.00	0.077

Base Plate Summary

Structure:	CT01700-S-SB	**Code:**	EIA/TIA-222-G	4/26/2021	
Site Name:	Haddam	**Exposure:**	B		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	6690.00
Axial (kip):	76.20
Shear (kip):	49.30
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	2770.21
Axial (kip):	56.86
Shear (kip):	26.58

Base Plate	
Yield (ksi):	60.00
Width (in):	77.72
Style:	Polygon
Polygon Sides:	16.00
Clip Length (in):	0.00
Effective Len (in):	12.91
Moment (kip-in):	351.18
Allow Stress (ksi):	81.00
Applied Stress (ksi):	17.82
Stress Ratio:	0.22

Anchor Bolts	
Bolt Circle:	71.72
Number Bolts:	24.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00
Compression	
Force (kip):	80.54
Allowable (kip):	260.00
Ratio:	0.32
Tension	
Force (kip):	73.96
Allowable (kip):	260.00
Ratio:	0.29

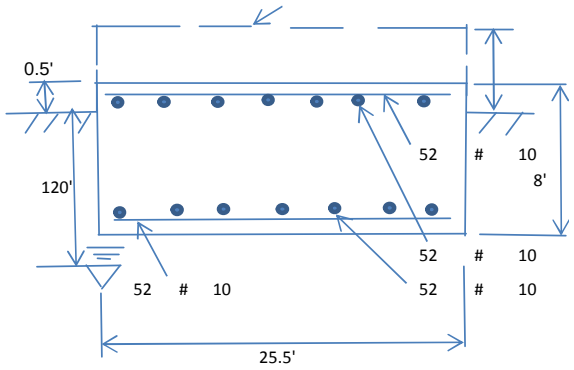
Monopole Mat Foundation Design

				Date
				4/26/2021
Customer Name:	SBA Communcations Corp	**EIA/TIA Standard:**	EIA-222-G
Site Name:	Haddam	**Structure Height (Ft.):**	300
Site Number:	CT01700-S-SBA	**Engineer Name:**	Rama K.
Engr. Number:	106422	**Engineer Login ID:**	

Foundation Info Obtained from: Mapping Operation

Structure Type: Monopole

Analysis or Design? Analysis

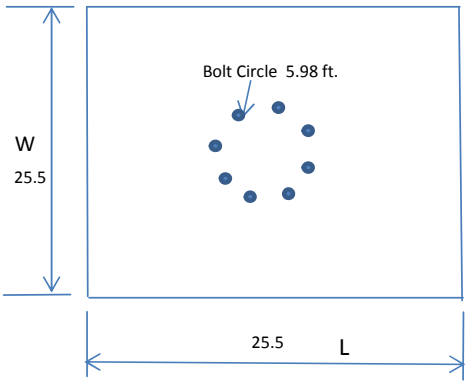


Base Reactions (Factored):

Axial Load (Kips):	56.9	Shear Force (Kips):	26.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2770.2
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Anchor Bolt Circle (ft.):	5.98	Depth of Base BG (ft.):	7.50
Thickness of Pad (ft):	8.00		
Length of Pad (ft.):	25.5	Width of Pad (ft.):	25.5
Final Length of pad (ft)	25.5	Final width of pad (ft):	25.5



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Pad Rebar Yield (Ksi):	60	Tie Spacing (in):	12.0	
Pad Steel Rebar Size (#):	10			
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):	52	Qty. of Rebar in Pad (W):	52

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	52	Qty. of Rebar in Pad (W):	52
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Water Table B.G.S. (ft):	120.0	Unit Weight of Water:	57.0	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00			

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

Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	5202.00	Total Dry Concrete Weight (Kips):	780.30
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	780.30	Total Vertical Load on Base (Kips):	837.16

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2589	<	Allowable Factored Soil Bearing (psf): 9000	0.29	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9678.9	>	Design Factored Momont (kips-ft): 2582	0.27	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	3.75	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

Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	2322.4	>	One-Way Factored Shear (L-D. Kips):	98.4	0.04	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	2322.4	>	One-Way Factored Shear (W-D., Kips):	98.4	0.04	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	2694.1	>	One-Way Factored Shear (C-C, Kips):	535.5	0.20	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0023	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0023		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	26697.5	>	Moment at Bottom (L-Direct. K-Ft):	89.1	0.00	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	26697.5	>	Moment at Bottom (W-Direct. K-Ft):	89.1	0.00	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	37522.2	>	Moment at Bottom (C-C Dir. K-Ft):	126.1	0.00	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0023	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0023		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	26697.5	>	Moment at the top (L-Dir Kips-Ft):	398.2	0.01	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	26697.5	>	Moment at the top (W-Dir Kips-Ft):	398.2	0.01	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	37522.2	>	Moment at the top (C-C Direc. K-Ft):	345.4	0.01	OK!

EXHIBIT 9

Antenna Mount Analysis

May 23, 2021

Sherri Knapik
SBA Communications Corporation
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
towersupport@btgrp.com

Subject:	**Appurtenance Mount Analysis Report**	
Carrier Designation:	***Dish Wireless* Co-Locate**	
	Site Number:	BOBDL00014B
	Site Name:	N/A
***SBA Network Services Designation*:**	**Site Number:**	CT01700-S
	Site Name:	Haddam
	Application Number:	153524, v1
Engineering Firm Designation:	**B+T Group Project Number:**	151159.003.01
Site Data:	**270 Hubbard Road, Haddam, CT, 06441, Middlesex County** **Latitude *41.46408*°, Longitude *-72.54199*°** **Monopole** **8' Platform Mount**	

Dear Ms. Knapik,

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:

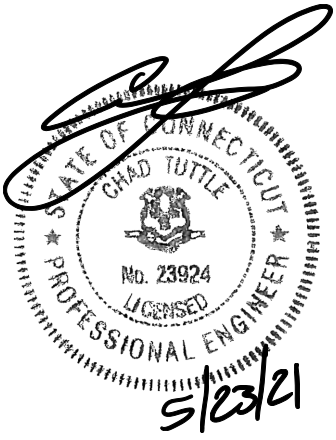
Proposed Equipment Note: See Table 1 for the final loading configuration	**Sufficient Capacity** **(Passing at 59.8%)**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

We at *B+T Group* appreciate the opportunity of providing our continuing professional services to you and *SBA Communications Corporation.* 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: Anne Delice

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 mount consists of SitePro1 platform mount (Part #SNP8HR-396) at 145 ft., attached to monopole at 270 Hubbard Road, Haddam, CT, 06441, Middlesex County. The proposed antenna loading information was obtained from SBA Communications Corporation. 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 101 mph with no ice and 50 mph with 0.75 inch escalated ice thickness. Exposure Category B, Topographic Category 1 and Risk Category II were used in this 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 30 mph. 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	145	1	3	JMA 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 the Mount.

Table 2 - Documents Provided

Documents	Remarks	Reference	Source
Colo App	Proposed Loading	Date: 03/30/2021	SBA Communications Corporation
RFDS		Date: 03/28/2021	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.1), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses and deflections for various loading cases. Selected output from the analysis is included in Appendix A.

Manufacturers drawing 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.

The following assumptions have been included in the analysis of the mount

Component	Section	Length	Note
Proposed Mount Pipes	2" Std. Pipe	8'-0''	All Positions, All Sectors

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

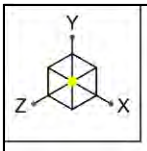
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Face Horizontals	145	14.5	Pass
-	Support Tubes	145	40.0	Pass
-	Support Angles	145	41.0	Pass
-	Connection Plates	145	57.4	Pass
-	Support Rails	145	28.5	Pass
-	Mount Pipes	145	59.8	Pass
-	Connection Angles	145	30.9	Pass
-	Connection Bolts	145	19.7	Pass

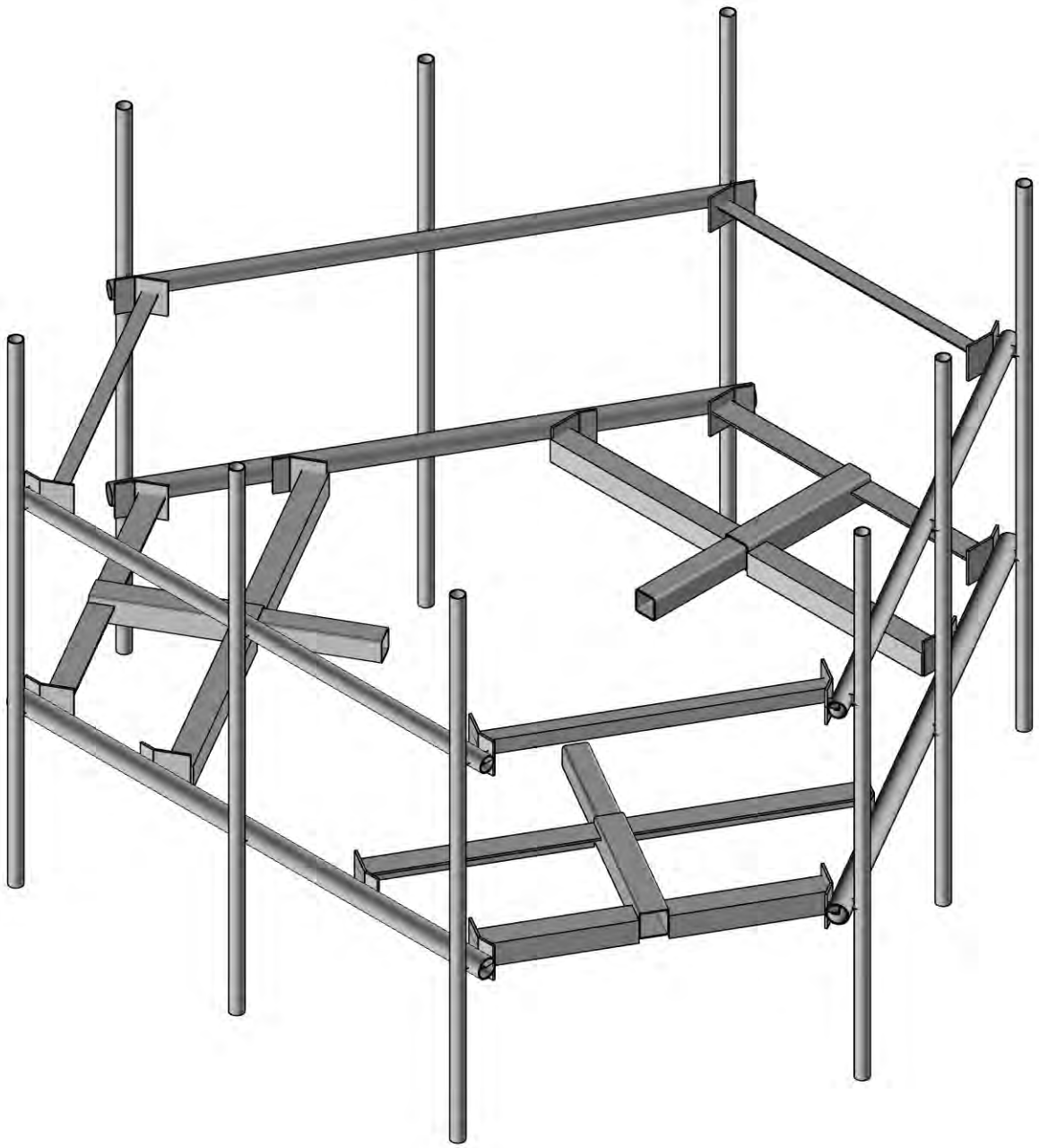
5) RECOMMENDATIONS

The SitePro1 platform mount, Part #SNP8HR-396 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)





Envelope Only Solution

B+T Group	CT01700-S - Haddam	SK-1
KR		May 20, 2021
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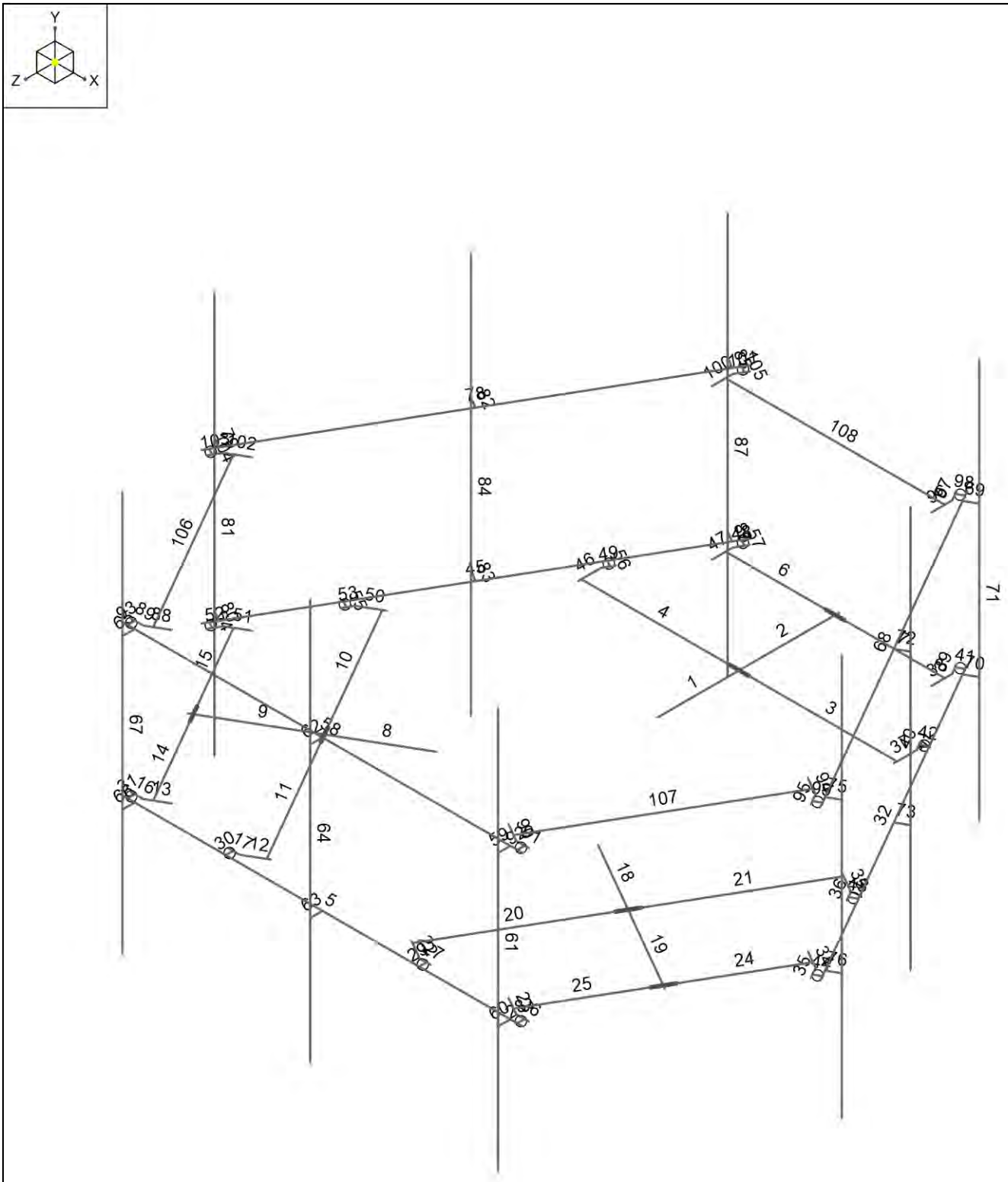

Envelope Only Solution

B+T Group	CT01700-S - Haddam	SK-2
KR		May 20, 2021
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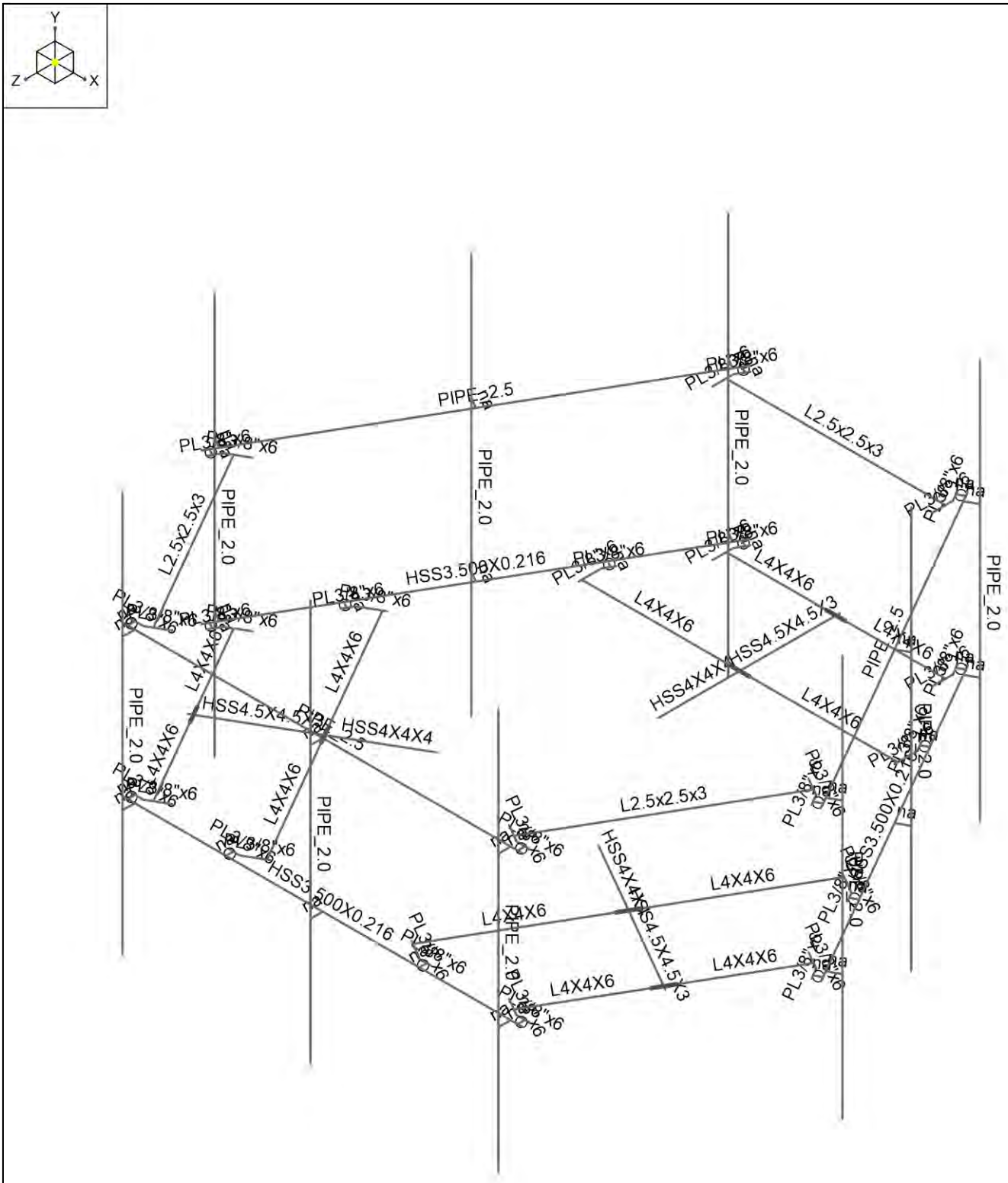

Envelope Only Solution

B+T Group	CT01700-S - Haddam	SK-3
KR		May 20, 2021
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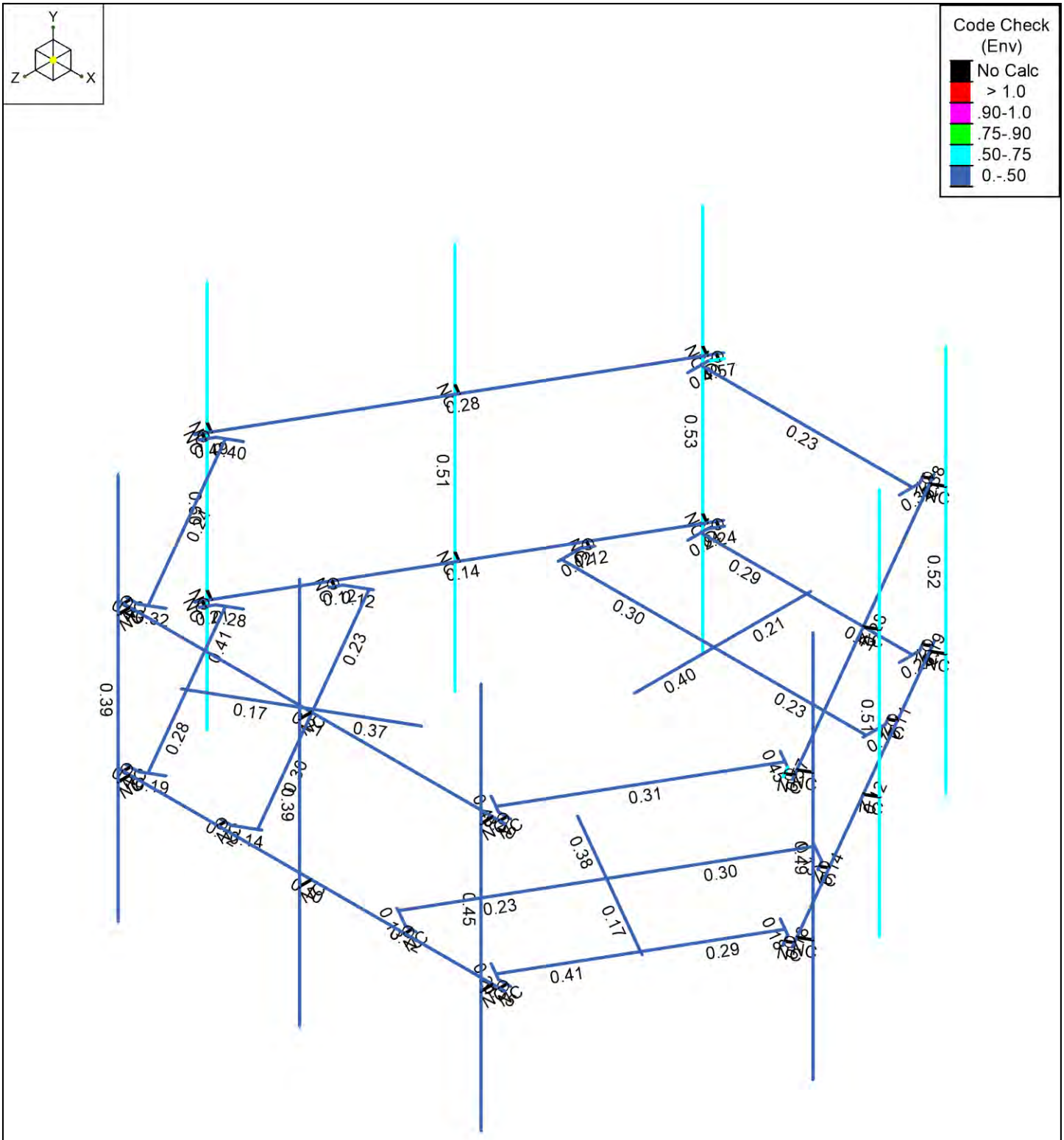
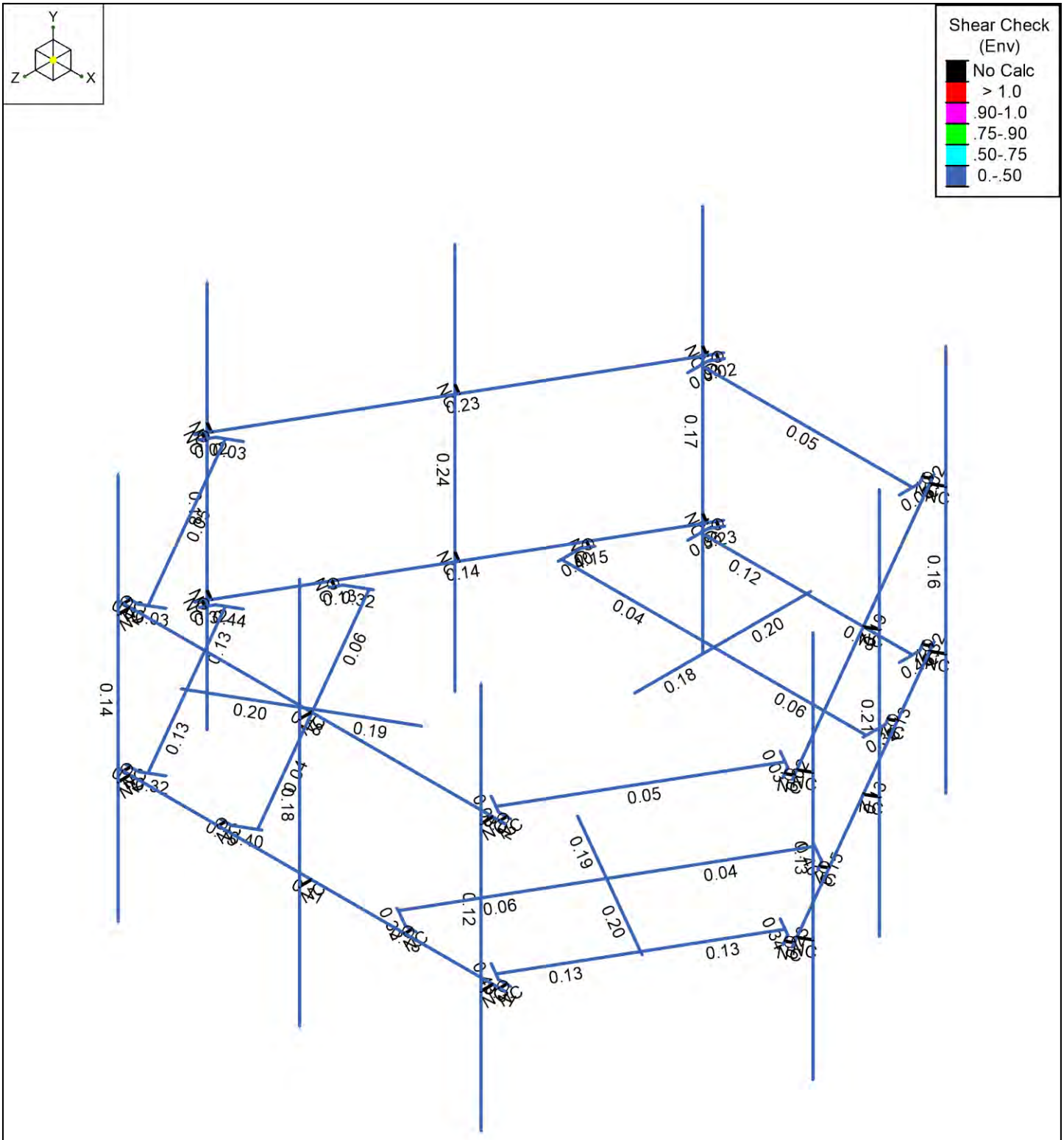


Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	CT01700-S - Haddam	SK-4
KR		May 20, 2021
151159.003.01		151159_003_01_Haddam_CT.R3D



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	CT01700-S - Haddam	SK-5
KR		May 20, 2021
151159.003.01		151159_003_01_Haddam_CT.R3D

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MF-H1	HSS3.500X0.216	Beam	HSS Pipe	A500 Gr.B RND	Typical	2.08	2.84	2.84	5.69
2	SF-H1	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
3	SF-H2	HSS4.5X4.5X3	Beam	Tube	A500 Gr.B Rect	Typical	2.93	9.02	9.02	14.4
4	SF-H3	L4X4X6	Beam	Single Angle	A36 Gr.36	Typical	2.86	4.32	4.32	0.141
5	MF-CP1	PL3/8"x6	Beam	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
6	MF-H2	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
7	MF-P1	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
8	C-A1	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	0.901	0.535	0.535	0.011

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	188	1		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
2	2	2	1		SF-H2	Beam	Tube	A500 Gr.B Rect	Typical
3	3	5	3	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
4	4	3	4	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
5	5	6	7		MF-H1	Beam	HSS Pipe	A500 Gr.B RND	Typical
6	6	9	8	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
7	7	8	10	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
8	8	189	11		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
9	9	12	11		SF-H2	Beam	Tube	A500 Gr.B Rect	Typical
10	10	15	13	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
11	11	13	14	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
12	12	17	19		MF-CP1	Beam	RECT	A36 Gr.36	Typical
13	13	16	18		MF-CP1	Beam	RECT	A36 Gr.36	Typical
14	14	21	20	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
15	15	20	22	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
16	16	18	23		MF-CP1	Beam	RECT	A36 Gr.36	Typical
17	17	19	24		MF-CP1	Beam	RECT	A36 Gr.36	Typical
18	18	190	27		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
19	19	28	27		SF-H2	Beam	Tube	A500 Gr.B Rect	Typical
20	20	31	29	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
21	21	29	30	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
22	22	33	35		MF-CP1	Beam	RECT	A36 Gr.36	Typical
23	23	32	34		MF-CP1	Beam	RECT	A36 Gr.36	Typical
24	24	37	36	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
25	25	36	38	90	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
26	26	34	39		MF-CP1	Beam	RECT	A36 Gr.36	Typical
27	27	35	40		MF-CP1	Beam	RECT	A36 Gr.36	Typical
28	28	41	45		RIGID	None	None	RIGID	Typical
29	29	42	46		RIGID	None	None	RIGID	Typical
30	30	26	44		RIGID	None	None	RIGID	Typical
31	31	25	43		RIGID	None	None	RIGID	Typical
32	32	47	48		MF-H1	Beam	HSS Pipe	A500 Gr.B RND	Typical
33	33	50	52		MF-CP1	Beam	RECT	A36 Gr.36	Typical
34	34	49	51		MF-CP1	Beam	RECT	A36 Gr.36	Typical
35	35	51	53		MF-CP1	Beam	RECT	A36 Gr.36	Typical
36	36	52	54		MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	58	60		MF-CP1	Beam	RECT	A36 Gr.36	Typical
38	38	57	59		MF-CP1	Beam	RECT	A36 Gr.36	Typical
39	39	59	61		MF-CP1	Beam	RECT	A36 Gr.36	Typical
40	40	60	62		MF-CP1	Beam	RECT	A36 Gr.36	Typical
41	41	63	67		RIGID	None	None	RIGID	Typical
42	42	64	68		RIGID	None	None	RIGID	Typical
43	43	56	66		RIGID	None	None	RIGID	Typical
44	44	55	65		RIGID	None	None	RIGID	Typical
45	45	69	70		MF-H1	Beam	HSS Pipe	A500 Gr.B RND	Typical
46	46	72	74		MF-CP1	Beam	RECT	A36 Gr.36	Typical
47	47	71	73		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
48	48	73	75		MF-CP1	Beam	RECT	A36 Gr.36	Typical
49	49	74	76		MF-CP1	Beam	RECT	A36 Gr.36	Typical
50	50	80	82		MF-CP1	Beam	RECT	A36 Gr.36	Typical
51	51	79	81		MF-CP1	Beam	RECT	A36 Gr.36	Typical
52	52	81	83		MF-CP1	Beam	RECT	A36 Gr.36	Typical
53	53	82	84		MF-CP1	Beam	RECT	A36 Gr.36	Typical
54	54	85	89		RIGID	None	None	RIGID	Typical
55	55	86	90		RIGID	None	None	RIGID	Typical
56	56	78	88		RIGID	None	None	RIGID	Typical
57	57	77	87		RIGID	None	None	RIGID	Typical
58	58	92	93		MF-H2	Beam	Pipe	A53 Gr.B	Typical
59	59	96	97		RIGID	None	None	RIGID	Typical
60	60	94	95		RIGID	None	None	RIGID	Typical
61	61	98	99		MF-P1	Column	Pipe	A53 Gr.B	Typical
62	62	102	103		RIGID	None	None	RIGID	Typical
63	63	100	101		RIGID	None	None	RIGID	Typical
64	64	104	105		MF-P1	Column	Pipe	A53 Gr.B	Typical
65	65	108	109		RIGID	None	None	RIGID	Typical
66	66	106	107		RIGID	None	None	RIGID	Typical
67	67	110	111		MF-P1	Column	Pipe	A53 Gr.B	Typical
68	68	112	113		MF-H2	Beam	Pipe	A53 Gr.B	Typical
69	69	116	117		RIGID	None	None	RIGID	Typical
70	70	114	115		RIGID	None	None	RIGID	Typical
71	71	118	119		MF-P1	Column	Pipe	A53 Gr.B	Typical
72	72	122	123		RIGID	None	None	RIGID	Typical
73	73	120	121		RIGID	None	None	RIGID	Typical
74	74	124	125		MF-P1	Column	Pipe	A53 Gr.B	Typical
75	75	128	129		RIGID	None	None	RIGID	Typical
76	76	126	127		RIGID	None	None	RIGID	Typical
77	77	130	131		MF-P1	Column	Pipe	A53 Gr.B	Typical
78	78	132	133		MF-H2	Beam	Pipe	A53 Gr.B	Typical
79	79	136	137		RIGID	None	None	RIGID	Typical
80	80	134	135		RIGID	None	None	RIGID	Typical
81	81	138	139		MF-P1	Column	Pipe	A53 Gr.B	Typical
82	82	142	143		RIGID	None	None	RIGID	Typical
83	83	140	141		RIGID	None	None	RIGID	Typical
84	84	144	145		MF-P1	Column	Pipe	A53 Gr.B	Typical
85	85	148	149		RIGID	None	None	RIGID	Typical
86	86	146	147		RIGID	None	None	RIGID	Typical
87	87	150	151		MF-P1	Column	Pipe	A53 Gr.B	Typical
88	88	152	153		MF-CP1	Beam	RECT	A36 Gr.36	Typical
89	89	153	155		MF-CP1	Beam	RECT	A36 Gr.36	Typical
90	90	157	158		MF-CP1	Beam	RECT	A36 Gr.36	Typical
91	91	158	160		MF-CP1	Beam	RECT	A36 Gr.36	Typical
92	92	161	163		RIGID	None	None	RIGID	Typical
93	93	156	162		RIGID	None	None	RIGID	Typical
94	94	164	165		MF-CP1	Beam	RECT	A36 Gr.36	Typical
95	95	165	167		MF-CP1	Beam	RECT	A36 Gr.36	Typical
96	96	169	170		MF-CP1	Beam	RECT	A36 Gr.36	Typical
97	97	170	172		MF-CP1	Beam	RECT	A36 Gr.36	Typical
98	98	173	175		RIGID	None	None	RIGID	Typical
99	99	168	174		RIGID	None	None	RIGID	Typical
100	100	176	177		MF-CP1	Beam	RECT	A36 Gr.36	Typical
101	101	177	179		MF-CP1	Beam	RECT	A36 Gr.36	Typical
102	102	181	182		MF-CP1	Beam	RECT	A36 Gr.36	Typical
103	103	182	184		MF-CP1	Beam	RECT	A36 Gr.36	Typical
104	104	185	187		RIGID	None	None	RIGID	Typical
105	105	180	186		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
106	106	183	154	180	C-A1	Beam	Single Angle	A36 Gr.36	Typical
107	107	159	166	180	C-A1	Beam	Single Angle	A36 Gr.36	Typical
108	108	171	178	180	C-A1	Beam	Single Angle	A36 Gr.36	Typical

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	72	
3	90 Wind - No Ice	WLX			20	72	
4	0 Wind - Ice	WLZ			20	72	
5	90 Wind - Ice	WLX			20	72	
6	0 Wind - Service	WLZ			20	72	
7	90 Wind - Service	WLX			20	72	
8	Ice	OL1			20	72	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				117	
29	BLC 8 Transient Area Loads	None				117	

Load Combinations

	Description	Solve	PDelta	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		

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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
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

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	61	Y	-0.032	%15
2	61	Y	-0.032	%85
3	61	Y	-0.075	%20
4	61	Y	-0.064	%50
5	61	Y	0	0
6	81	Y	-0.032	%15
7	81	Y	-0.032	%85
8	81	Y	-0.075	%20
9	81	Y	-0.064	%50
10	81	Y	0	0
11	71	Y	-0.032	%15
12	71	Y	-0.032	%85
13	71	Y	-0.075	%20
14	71	Y	-0.064	%50
15	71	Y	0	0
16	8	Y	-0.022	%50
17	8	Y	0	0
18	8	Y	0	0
19	8	Y	0	0
20	8	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	61	Z	-0.17	%15
2	61	Z	-0.17	%85
3	61	Z	-0.054	%20
4	61	Z	-0.054	%50
5	61	Z	0	0
6	81	Z	-0.17	%15
7	81	Z	-0.17	%85
8	81	Z	-0.054	%20
9	81	Z	-0.054	%50
10	81	Z	0	0
11	71	Z	-0.17	%15
12	71	Z	-0.17	%85
13	71	Z	-0.054	%20
14	71	Z	-0.054	%50
15	71	Z	0	0
16	8	Z	-0.055	%50
17	8	Z	0	0
18	8	Z	0	0
19	8	Z	0	0
20	8	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	61	X	-0.068	%15
2	61	X	-0.068	%85
3	61	X	-0.032	%20
4	61	X	-0.028	%50
5	61	X	0	0
6	81	X	-0.068	%15
7	81	X	-0.068	%85
8	81	X	-0.032	%20
9	81	X	-0.028	%50
10	81	X	0	0
11	71	X	-0.068	%15
12	71	X	-0.068	%85
13	71	X	-0.032	%20
14	71	X	-0.028	%50
15	71	X	0	0
16	8	X	-0.031	%50
17	8	X	0	0
18	8	X	0	0
19	8	X	0	0
20	8	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	61	Z	-0.051	%15
2	61	Z	-0.051	%85
3	61	Z	-0.02	%20
4	61	Z	-0.02	%50
5	61	Z	0	0
6	81	Z	-0.051	%15
7	81	Z	-0.051	%85
8	81	Z	-0.02	%20
9	81	Z	-0.02	%50
10	81	Z	0	0
11	71	Z	-0.051	%15

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
12	71	Z	-0.051	%85
13	71	Z	-0.02	%20
14	71	Z	-0.02	%50
15	71	Z	0	0
16	8	Z	-0.02	%50
17	8	Z	0	0
18	8	Z	0	0
19	8	Z	0	0
20	8	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	61	X	-0.025	%15
2	61	X	-0.025	%85
3	61	X	-0.013	%20
4	61	X	-0.012	%50
5	61	X	0	0
6	81	X	-0.025	%15
7	81	X	-0.025	%85
8	81	X	-0.013	%20
9	81	X	-0.012	%50
10	81	X	0	0
11	71	X	-0.025	%15
12	71	X	-0.025	%85
13	71	X	-0.013	%20
14	71	X	-0.012	%50
15	71	X	0	0
16	8	X	-0.013	%50
17	8	X	0	0
18	8	X	0	0
19	8	X	0	0
20	8	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	61	Z	-0.015	%15
2	61	Z	-0.015	%85
3	61	Z	-0.005	%20
4	61	Z	-0.005	%50
5	61	Z	0	0
6	81	Z	-0.015	%15
7	81	Z	-0.015	%85
8	81	Z	-0.005	%20
9	81	Z	-0.005	%50
10	81	Z	0	0
11	71	Z	-0.015	%15
12	71	Z	-0.015	%85
13	71	Z	-0.005	%20
14	71	Z	-0.005	%50
15	71	Z	0	0
16	8	Z	-0.005	%50
17	8	Z	0	0
18	8	Z	0	0
19	8	Z	0	0
20	8	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	61	X	-0.006	%15
2	61	X	-0.006	%85
3	61	X	-0.003	%20
4	61	X	-0.003	%50
5	61	X	0	0
6	81	X	-0.006	%15
7	81	X	-0.006	%85
8	81	X	-0.003	%20
9	81	X	-0.003	%50
10	81	X	0	0
11	71	X	-0.006	%15
12	71	X	-0.006	%85
13	71	X	-0.003	%20
14	71	X	-0.003	%50
15	71	X	0	0
16	8	X	-0.003	%50
17	8	X	0	0
18	8	X	0	0
19	8	X	0	0
20	8	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	61	Y	-0.148	%15
2	61	Y	-0.148	%85
3	61	Y	-0.054	%20
4	61	Y	-0.052	%50
5	61	Y	0	0
6	81	Y	-0.148	%15
7	81	Y	-0.148	%85
8	81	Y	-0.054	%20
9	81	Y	-0.052	%50
10	81	Y	0	0
11	71	Y	-0.148	%15
12	71	Y	-0.148	%85
13	71	Y	-0.054	%20
14	71	Y	-0.052	%50
15	71	Y	0	0
16	8	Y	-0.054	%50
17	8	Y	0	0
18	8	Y	0	0
19	8	Y	0	0
20	8	Y	0	0

Member Point Loads (BLC 13 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	58	Y	-0.25	%5

Member Point Loads (BLC 14 : Maint LL 2)

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

Member Point Loads (BLC 15 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	68	Y	-0.25	%5

Member Point Loads (BLC 16 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Y	-0.25	%5

Member Point Loads (BLC 17 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	78	Y	-0.25	%5

Member Point Loads (BLC 18 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	45	Y	-0.25	%5

Member Point Loads (BLC 19 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	58	Y	-0.25	%95

Member Point Loads (BLC 20 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	5	Y	-0.25	%95

Member Point Loads (BLC 21 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	68	Y	-0.25	%95

Member Point Loads (BLC 22 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Y	-0.25	%95

Member Point Loads (BLC 23 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	78	Y	-0.25	%95

Member Point Loads (BLC 24 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	45	Y	-0.25	%95

Member Point Loads (BLC 25 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	9	Y	-0.25	%5

Member Point Loads (BLC 26 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	19	Y	-0.25	%5

Member Point Loads (BLC 27 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Y	-0.25	%5

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	-0.012	-0.012	0	%100
2	2	Z	-0.013	-0.013	0	%100
3	3	Z	-0.013	-0.013	0	%100
4	4	Z	-0.013	-0.013	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, %)]
5	5	Z	-0.01	-0.01	0	%100
6	6	Z	-0.012	-0.012	0	%100
7	7	Z	-0.012	-0.012	0	%100
8	8	Z	-0.012	-0.012	0	%100
9	9	Z	-0.013	-0.013	0	%100
10	10	Z	-0.013	-0.013	0	%100
11	11	Z	-0.013	-0.013	0	%100
12	12	Z	-0.016	-0.016	0	%100
13	13	Z	-0.016	-0.016	0	%100
14	14	Z	-0.012	-0.012	0	%100
15	15	Z	-0.012	-0.012	0	%100
16	16	Z	-0.016	-0.016	0	%100
17	17	Z	-0.016	-0.016	0	%100
18	18	Z	-0.012	-0.012	0	%100
19	19	Z	-0.013	-0.013	0	%100
20	20	Z	-0.013	-0.013	0	%100
21	21	Z	-0.013	-0.013	0	%100
22	22	Z	-0.016	-0.016	0	%100
23	23	Z	-0.016	-0.016	0	%100
24	24	Z	-0.012	-0.012	0	%100
25	25	Z	-0.012	-0.012	0	%100
26	26	Z	-0.016	-0.016	0	%100
27	27	Z	-0.016	-0.016	0	%100
28	32	Z	-0.01	-0.01	0	%100
29	33	Z	-0.016	-0.016	0	%100
30	34	Z	-0.016	-0.016	0	%100
31	35	Z	-0.016	-0.016	0	%100
32	36	Z	-0.016	-0.016	0	%100
33	37	Z	-0.016	-0.016	0	%100
34	38	Z	-0.016	-0.016	0	%100
35	39	Z	-0.016	-0.016	0	%100
36	40	Z	-0.016	-0.016	0	%100
37	45	Z	-0.01	-0.01	0	%100
38	46	Z	-0.016	-0.016	0	%100
39	47	Z	-0.016	-0.016	0	%100
40	48	Z	-0.016	-0.016	0	%100
41	49	Z	-0.016	-0.016	0	%100
42	50	Z	-0.016	-0.016	0	%100
43	51	Z	-0.016	-0.016	0	%100
44	52	Z	-0.016	-0.016	0	%100
45	53	Z	-0.016	-0.016	0	%100
46	58	Z	-0.008	-0.008	0	%100
47	61	Z	-0.007	-0.007	0	%100
48	64	Z	-0.007	-0.007	0	%100
49	67	Z	-0.007	-0.007	0	%100
50	68	Z	-0.008	-0.008	0	%100
51	71	Z	-0.007	-0.007	0	%100
52	74	Z	-0.007	-0.007	0	%100
53	77	Z	-0.007	-0.007	0	%100
54	78	Z	-0.008	-0.008	0	%100
55	81	Z	-0.007	-0.007	0	%100
56	84	Z	-0.007	-0.007	0	%100
57	87	Z	-0.007	-0.007	0	%100
58	88	Z	-0.016	-0.016	0	%100
59	89	Z	-0.016	-0.016	0	%100
60	90	Z	-0.016	-0.016	0	%100
61	91	Z	-0.016	-0.016	0	%100
62	94	Z	-0.016	-0.016	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, %)]
63	95	Z	-0.016	-0.016	0	%100
64	96	Z	-0.016	-0.016	0	%100
65	97	Z	-0.016	-0.016	0	%100
66	100	Z	-0.016	-0.016	0	%100
67	101	Z	-0.016	-0.016	0	%100
68	102	Z	-0.016	-0.016	0	%100
69	103	Z	-0.016	-0.016	0	%100
70	106	Z	-0.011	-0.011	0	%100
71	107	Z	-0.011	-0.011	0	%100
72	108	Z	-0.011	-0.011	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.012	-0.012	0	%100
2	2	X	-0.013	-0.013	0	%100
3	3	X	-0.013	-0.013	0	%100
4	4	X	-0.013	-0.013	0	%100
5	5	X	-0.01	-0.01	0	%100
6	6	X	-0.012	-0.012	0	%100
7	7	X	-0.012	-0.012	0	%100
8	8	X	-0.012	-0.012	0	%100
9	9	X	-0.013	-0.013	0	%100
10	10	X	-0.013	-0.013	0	%100
11	11	X	-0.013	-0.013	0	%100
12	12	X	-0.016	-0.016	0	%100
13	13	X	-0.016	-0.016	0	%100
14	14	X	-0.012	-0.012	0	%100
15	15	X	-0.012	-0.012	0	%100
16	16	X	-0.016	-0.016	0	%100
17	17	X	-0.016	-0.016	0	%100
18	18	X	-0.012	-0.012	0	%100
19	19	X	-0.013	-0.013	0	%100
20	20	X	-0.013	-0.013	0	%100
21	21	X	-0.013	-0.013	0	%100
22	22	X	-0.016	-0.016	0	%100
23	23	X	-0.016	-0.016	0	%100
24	24	X	-0.012	-0.012	0	%100
25	25	X	-0.012	-0.012	0	%100
26	26	X	-0.016	-0.016	0	%100
27	27	X	-0.016	-0.016	0	%100
28	32	X	-0.01	-0.01	0	%100
29	33	X	-0.016	-0.016	0	%100
30	34	X	-0.016	-0.016	0	%100
31	35	X	-0.016	-0.016	0	%100
32	36	X	-0.016	-0.016	0	%100
33	37	X	-0.016	-0.016	0	%100
34	38	X	-0.016	-0.016	0	%100
35	39	X	-0.016	-0.016	0	%100
36	40	X	-0.016	-0.016	0	%100
37	45	X	-0.01	-0.01	0	%100
38	46	X	-0.016	-0.016	0	%100
39	47	X	-0.016	-0.016	0	%100
40	48	X	-0.016	-0.016	0	%100
41	49	X	-0.016	-0.016	0	%100
42	50	X	-0.016	-0.016	0	%100
43	51	X	-0.016	-0.016	0	%100
44	52	X	-0.016	-0.016	0	%100
45	53	X	-0.016	-0.016	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, %)]
46	58	X	-0.008	-0.008	0	%100
47	61	X	-0.007	-0.007	0	%100
48	64	X	-0.007	-0.007	0	%100
49	67	X	-0.007	-0.007	0	%100
50	68	X	-0.008	-0.008	0	%100
51	71	X	-0.007	-0.007	0	%100
52	74	X	-0.007	-0.007	0	%100
53	77	X	-0.007	-0.007	0	%100
54	78	X	-0.008	-0.008	0	%100
55	81	X	-0.007	-0.007	0	%100
56	84	X	-0.007	-0.007	0	%100
57	87	X	-0.007	-0.007	0	%100
58	88	X	-0.016	-0.016	0	%100
59	89	X	-0.016	-0.016	0	%100
60	90	X	-0.016	-0.016	0	%100
61	91	X	-0.016	-0.016	0	%100
62	94	X	-0.016	-0.016	0	%100
63	95	X	-0.016	-0.016	0	%100
64	96	X	-0.016	-0.016	0	%100
65	97	X	-0.016	-0.016	0	%100
66	100	X	-0.016	-0.016	0	%100
67	101	X	-0.016	-0.016	0	%100
68	102	X	-0.016	-0.016	0	%100
69	103	X	-0.016	-0.016	0	%100
70	106	X	-0.011	-0.011	0	%100
71	107	X	-0.011	-0.011	0	%100
72	108	X	-0.011	-0.011	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.006	-0.006	0	%100
2	2	Z	-0.007	-0.007	0	%100
3	3	Z	-0.007	-0.007	0	%100
4	4	Z	-0.007	-0.007	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.006	-0.006	0	%100
7	7	Z	-0.006	-0.006	0	%100
8	8	Z	-0.006	-0.006	0	%100
9	9	Z	-0.007	-0.007	0	%100
10	10	Z	-0.007	-0.007	0	%100
11	11	Z	-0.007	-0.007	0	%100
12	12	Z	-0.01	-0.01	0	%100
13	13	Z	-0.011	-0.011	0	%100
14	14	Z	-0.006	-0.006	0	%100
15	15	Z	-0.006	-0.006	0	%100
16	16	Z	-0.014	-0.014	0	%100
17	17	Z	-0.015	-0.015	0	%100
18	18	Z	-0.006	-0.006	0	%100
19	19	Z	-0.007	-0.007	0	%100
20	20	Z	-0.007	-0.007	0	%100
21	21	Z	-0.007	-0.007	0	%100
22	22	Z	-0.01	-0.01	0	%100
23	23	Z	-0.011	-0.011	0	%100
24	24	Z	-0.006	-0.006	0	%100
25	25	Z	-0.006	-0.006	0	%100
26	26	Z	-0.014	-0.014	0	%100
27	27	Z	-0.015	-0.015	0	%100
28	32	Z	-0.002	-0.002	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, %)]
29	33	Z	-0.01	-0.01	0	%100
30	34	Z	-0.011	-0.011	0	%100
31	35	Z	-0.014	-0.014	0	%100
32	36	Z	-0.015	-0.015	0	%100
33	37	Z	-0.01	-0.01	0	%100
34	38	Z	-0.011	-0.011	0	%100
35	39	Z	-0.014	-0.014	0	%100
36	40	Z	-0.015	-0.015	0	%100
37	45	Z	-0.002	-0.002	0	%100
38	46	Z	-0.01	-0.01	0	%100
39	47	Z	-0.011	-0.011	0	%100
40	48	Z	-0.014	-0.014	0	%100
41	49	Z	-0.015	-0.015	0	%100
42	50	Z	-0.01	-0.01	0	%100
43	51	Z	-0.011	-0.011	0	%100
44	52	Z	-0.014	-0.014	0	%100
45	53	Z	-0.015	-0.015	0	%100
46	58	Z	-0.002	-0.002	0	%100
47	61	Z	-0.002	-0.002	0	%100
48	64	Z	-0.002	-0.002	0	%100
49	67	Z	-0.002	-0.002	0	%100
50	68	Z	-0.002	-0.002	0	%100
51	71	Z	-0.002	-0.002	0	%100
52	74	Z	-0.002	-0.002	0	%100
53	77	Z	-0.002	-0.002	0	%100
54	78	Z	-0.002	-0.002	0	%100
55	81	Z	-0.002	-0.002	0	%100
56	84	Z	-0.002	-0.002	0	%100
57	87	Z	-0.002	-0.002	0	%100
58	88	Z	-0.011	-0.011	0	%100
59	89	Z	-0.014	-0.014	0	%100
60	90	Z	-0.011	-0.011	0	%100
61	91	Z	-0.014	-0.014	0	%100
62	94	Z	-0.011	-0.011	0	%100
63	95	Z	-0.014	-0.014	0	%100
64	96	Z	-0.011	-0.011	0	%100
65	97	Z	-0.014	-0.014	0	%100
66	100	Z	-0.011	-0.011	0	%100
67	101	Z	-0.014	-0.014	0	%100
68	102	Z	-0.011	-0.011	0	%100
69	103	Z	-0.014	-0.014	0	%100
70	106	Z	-0.007	-0.007	0	%100
71	107	Z	-0.007	-0.007	0	%100
72	108	Z	-0.007	-0.007	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.006	-0.006	0	%100
2	2	X	-0.007	-0.007	0	%100
3	3	X	-0.007	-0.007	0	%100
4	4	X	-0.007	-0.007	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.006	-0.006	0	%100
7	7	X	-0.006	-0.006	0	%100
8	8	X	-0.006	-0.006	0	%100
9	9	X	-0.007	-0.007	0	%100
10	10	X	-0.007	-0.007	0	%100
11	11	X	-0.007	-0.007	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, %)]
12	12	X	-0.01	-0.01	0	%100
13	13	X	-0.011	-0.011	0	%100
14	14	X	-0.006	-0.006	0	%100
15	15	X	-0.006	-0.006	0	%100
16	16	X	-0.014	-0.014	0	%100
17	17	X	-0.015	-0.015	0	%100
18	18	X	-0.006	-0.006	0	%100
19	19	X	-0.007	-0.007	0	%100
20	20	X	-0.007	-0.007	0	%100
21	21	X	-0.007	-0.007	0	%100
22	22	X	-0.01	-0.01	0	%100
23	23	X	-0.011	-0.011	0	%100
24	24	X	-0.006	-0.006	0	%100
25	25	X	-0.006	-0.006	0	%100
26	26	X	-0.014	-0.014	0	%100
27	27	X	-0.015	-0.015	0	%100
28	32	X	-0.002	-0.002	0	%100
29	33	X	-0.01	-0.01	0	%100
30	34	X	-0.011	-0.011	0	%100
31	35	X	-0.014	-0.014	0	%100
32	36	X	-0.015	-0.015	0	%100
33	37	X	-0.01	-0.01	0	%100
34	38	X	-0.011	-0.011	0	%100
35	39	X	-0.014	-0.014	0	%100
36	40	X	-0.015	-0.015	0	%100
37	45	X	-0.002	-0.002	0	%100
38	46	X	-0.01	-0.01	0	%100
39	47	X	-0.011	-0.011	0	%100
40	48	X	-0.014	-0.014	0	%100
41	49	X	-0.015	-0.015	0	%100
42	50	X	-0.01	-0.01	0	%100
43	51	X	-0.011	-0.011	0	%100
44	52	X	-0.014	-0.014	0	%100
45	53	X	-0.015	-0.015	0	%100
46	58	X	-0.002	-0.002	0	%100
47	61	X	-0.002	-0.002	0	%100
48	64	X	-0.002	-0.002	0	%100
49	67	X	-0.002	-0.002	0	%100
50	68	X	-0.002	-0.002	0	%100
51	71	X	-0.002	-0.002	0	%100
52	74	X	-0.002	-0.002	0	%100
53	77	X	-0.002	-0.002	0	%100
54	78	X	-0.002	-0.002	0	%100
55	81	X	-0.002	-0.002	0	%100
56	84	X	-0.002	-0.002	0	%100
57	87	X	-0.002	-0.002	0	%100
58	88	X	-0.011	-0.011	0	%100
59	89	X	-0.014	-0.014	0	%100
60	90	X	-0.011	-0.011	0	%100
61	91	X	-0.014	-0.014	0	%100
62	94	X	-0.011	-0.011	0	%100
63	95	X	-0.014	-0.014	0	%100
64	96	X	-0.011	-0.011	0	%100
65	97	X	-0.014	-0.014	0	%100
66	100	X	-0.011	-0.011	0	%100
67	101	X	-0.014	-0.014	0	%100
68	102	X	-0.011	-0.011	0	%100
69	103	X	-0.014	-0.014	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, %)]
70	106	X	-0.007	-0.007	0	%100
71	107	X	-0.007	-0.007	0	%100
72	108	X	-0.007	-0.007	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.001	-0.001	0	%100
4	4	Z	-0.001	-0.001	0	%100
5	5	Z	-0.0004	-0.0004	0	%100
6	6	Z	-0.001	-0.001	0	%100
7	7	Z	-0.001	-0.001	0	%100
8	8	Z	-0.001	-0.001	0	%100
9	9	Z	-0.001	-0.001	0	%100
10	10	Z	-0.001	-0.001	0	%100
11	11	Z	-0.001	-0.001	0	%100
12	12	Z	-0.001	-0.001	0	%100
13	13	Z	-0.001	-0.001	0	%100
14	14	Z	-0.001	-0.001	0	%100
15	15	Z	-0.001	-0.001	0	%100
16	16	Z	-0.001	-0.001	0	%100
17	17	Z	-0.001	-0.001	0	%100
18	18	Z	-0.001	-0.001	0	%100
19	19	Z	-0.001	-0.001	0	%100
20	20	Z	-0.001	-0.001	0	%100
21	21	Z	-0.001	-0.001	0	%100
22	22	Z	-0.001	-0.001	0	%100
23	23	Z	-0.001	-0.001	0	%100
24	24	Z	-0.001	-0.001	0	%100
25	25	Z	-0.001	-0.001	0	%100
26	26	Z	-0.001	-0.001	0	%100
27	27	Z	-0.001	-0.001	0	%100
28	32	Z	-0.0004	-0.0004	0	%100
29	33	Z	-0.001	-0.001	0	%100
30	34	Z	-0.001	-0.001	0	%100
31	35	Z	-0.001	-0.001	0	%100
32	36	Z	-0.001	-0.001	0	%100
33	37	Z	-0.001	-0.001	0	%100
34	38	Z	-0.001	-0.001	0	%100
35	39	Z	-0.001	-0.001	0	%100
36	40	Z	-0.001	-0.001	0	%100
37	45	Z	-0.0004	-0.0004	0	%100
38	46	Z	-0.001	-0.001	0	%100
39	47	Z	-0.001	-0.001	0	%100
40	48	Z	-0.001	-0.001	0	%100
41	49	Z	-0.001	-0.001	0	%100
42	50	Z	-0.001	-0.001	0	%100
43	51	Z	-0.001	-0.001	0	%100
44	52	Z	-0.001	-0.001	0	%100
45	53	Z	-0.001	-0.001	0	%100
46	58	Z	-0.0003	-0.0003	0	%100
47	61	Z	-0.0003	-0.0003	0	%100
48	64	Z	-0.0003	-0.0003	0	%100
49	67	Z	-0.0003	-0.0003	0	%100
50	68	Z	-0.0003	-0.0003	0	%100
51	71	Z	-0.0003	-0.0003	0	%100
52	74	Z	-0.0003	-0.0003	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, %)]
53	77	Z	-0.0003	-0.0003	0	%100
54	78	Z	-0.0003	-0.0003	0	%100
55	81	Z	-0.0003	-0.0003	0	%100
56	84	Z	-0.0003	-0.0003	0	%100
57	87	Z	-0.0003	-0.0003	0	%100
58	88	Z	-0.001	-0.001	0	%100
59	89	Z	-0.001	-0.001	0	%100
60	90	Z	-0.001	-0.001	0	%100
61	91	Z	-0.001	-0.001	0	%100
62	94	Z	-0.001	-0.001	0	%100
63	95	Z	-0.001	-0.001	0	%100
64	96	Z	-0.001	-0.001	0	%100
65	97	Z	-0.001	-0.001	0	%100
66	100	Z	-0.001	-0.001	0	%100
67	101	Z	-0.001	-0.001	0	%100
68	102	Z	-0.001	-0.001	0	%100
69	103	Z	-0.001	-0.001	0	%100
70	106	Z	-0.0009	-0.0009	0	%100
71	107	Z	-0.0009	-0.0009	0	%100
72	108	Z	-0.0009	-0.0009	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	-0.001	-0.001	0	%100
5	5	X	-0.0004	-0.0004	0	%100
6	6	X	-0.001	-0.001	0	%100
7	7	X	-0.001	-0.001	0	%100
8	8	X	-0.001	-0.001	0	%100
9	9	X	-0.001	-0.001	0	%100
10	10	X	-0.001	-0.001	0	%100
11	11	X	-0.001	-0.001	0	%100
12	12	X	-0.001	-0.001	0	%100
13	13	X	-0.001	-0.001	0	%100
14	14	X	-0.001	-0.001	0	%100
15	15	X	-0.001	-0.001	0	%100
16	16	X	-0.001	-0.001	0	%100
17	17	X	-0.001	-0.001	0	%100
18	18	X	-0.001	-0.001	0	%100
19	19	X	-0.001	-0.001	0	%100
20	20	X	-0.001	-0.001	0	%100
21	21	X	-0.001	-0.001	0	%100
22	22	X	-0.001	-0.001	0	%100
23	23	X	-0.001	-0.001	0	%100
24	24	X	-0.001	-0.001	0	%100
25	25	X	-0.001	-0.001	0	%100
26	26	X	-0.001	-0.001	0	%100
27	27	X	-0.001	-0.001	0	%100
28	32	X	-0.0004	-0.0004	0	%100
29	33	X	-0.001	-0.001	0	%100
30	34	X	-0.001	-0.001	0	%100
31	35	X	-0.001	-0.001	0	%100
32	36	X	-0.001	-0.001	0	%100
33	37	X	-0.001	-0.001	0	%100
34	38	X	-0.001	-0.001	0	%100
35	39	X	-0.001	-0.001	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, %)]
36	40	X	-0.001	-0.001	0	%100
37	45	X	-0.0004	-0.0004	0	%100
38	46	X	-0.001	-0.001	0	%100
39	47	X	-0.001	-0.001	0	%100
40	48	X	-0.001	-0.001	0	%100
41	49	X	-0.001	-0.001	0	%100
42	50	X	-0.001	-0.001	0	%100
43	51	X	-0.001	-0.001	0	%100
44	52	X	-0.001	-0.001	0	%100
45	53	X	-0.001	-0.001	0	%100
46	58	X	-0.0003	-0.0003	0	%100
47	61	X	-0.0003	-0.0003	0	%100
48	64	X	-0.0003	-0.0003	0	%100
49	67	X	-0.0003	-0.0003	0	%100
50	68	X	-0.0003	-0.0003	0	%100
51	71	X	-0.0003	-0.0003	0	%100
52	74	X	-0.0003	-0.0003	0	%100
53	77	X	-0.0003	-0.0003	0	%100
54	78	X	-0.0003	-0.0003	0	%100
55	81	X	-0.0003	-0.0003	0	%100
56	84	X	-0.0003	-0.0003	0	%100
57	87	X	-0.0003	-0.0003	0	%100
58	88	X	-0.001	-0.001	0	%100
59	89	X	-0.001	-0.001	0	%100
60	90	X	-0.001	-0.001	0	%100
61	91	X	-0.001	-0.001	0	%100
62	94	X	-0.001	-0.001	0	%100
63	95	X	-0.001	-0.001	0	%100
64	96	X	-0.001	-0.001	0	%100
65	97	X	-0.001	-0.001	0	%100
66	100	X	-0.001	-0.001	0	%100
67	101	X	-0.001	-0.001	0	%100
68	102	X	-0.001	-0.001	0	%100
69	103	X	-0.001	-0.001	0	%100
70	106	X	-0.0009	-0.0009	0	%100
71	107	X	-0.0009	-0.0009	0	%100
72	108	X	-0.0009	-0.0009	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	-0.016	-0.016	0	%100
2	2	Y	-0.017	-0.017	0	%100
3	3	Y	-0.016	-0.016	0	%100
4	4	Y	-0.016	-0.016	0	%100
5	5	Y	-0.011	-0.011	0	%100
6	6	Y	-0.016	-0.016	0	%100
7	7	Y	-0.016	-0.016	0	%100
8	8	Y	-0.016	-0.016	0	%100
9	9	Y	-0.017	-0.017	0	%100
10	10	Y	-0.016	-0.016	0	%100
11	11	Y	-0.016	-0.016	0	%100
12	12	Y	-0.016	-0.016	0	%100
13	13	Y	-0.016	-0.016	0	%100
14	14	Y	-0.016	-0.016	0	%100
15	15	Y	-0.016	-0.016	0	%100
16	16	Y	-0.016	-0.016	0	%100
17	17	Y	-0.016	-0.016	0	%100
18	18	Y	-0.016	-0.016	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
19	19	Y	-0.017	-0.017	0	%100
20	20	Y	-0.016	-0.016	0	%100
21	21	Y	-0.016	-0.016	0	%100
22	22	Y	-0.016	-0.016	0	%100
23	23	Y	-0.016	-0.016	0	%100
24	24	Y	-0.016	-0.016	0	%100
25	25	Y	-0.016	-0.016	0	%100
26	26	Y	-0.016	-0.016	0	%100
27	27	Y	-0.016	-0.016	0	%100
28	32	Y	-0.011	-0.011	0	%100
29	33	Y	-0.016	-0.016	0	%100
30	34	Y	-0.016	-0.016	0	%100
31	35	Y	-0.016	-0.016	0	%100
32	36	Y	-0.016	-0.016	0	%100
33	37	Y	-0.016	-0.016	0	%100
34	38	Y	-0.016	-0.016	0	%100
35	39	Y	-0.016	-0.016	0	%100
36	40	Y	-0.016	-0.016	0	%100
37	45	Y	-0.011	-0.011	0	%100
38	46	Y	-0.016	-0.016	0	%100
39	47	Y	-0.016	-0.016	0	%100
40	48	Y	-0.016	-0.016	0	%100
41	49	Y	-0.016	-0.016	0	%100
42	50	Y	-0.016	-0.016	0	%100
43	51	Y	-0.016	-0.016	0	%100
44	52	Y	-0.016	-0.016	0	%100
45	53	Y	-0.016	-0.016	0	%100
46	58	Y	-0.01	-0.01	0	%100
47	61	Y	-0.009	-0.009	0	%100
48	64	Y	-0.009	-0.009	0	%100
49	67	Y	-0.009	-0.009	0	%100
50	68	Y	-0.01	-0.01	0	%100
51	71	Y	-0.009	-0.009	0	%100
52	74	Y	-0.009	-0.009	0	%100
53	77	Y	-0.009	-0.009	0	%100
54	78	Y	-0.01	-0.01	0	%100
55	81	Y	-0.009	-0.009	0	%100
56	84	Y	-0.009	-0.009	0	%100
57	87	Y	-0.009	-0.009	0	%100
58	88	Y	-0.016	-0.016	0	%100
59	89	Y	-0.016	-0.016	0	%100
60	90	Y	-0.016	-0.016	0	%100
61	91	Y	-0.016	-0.016	0	%100
62	94	Y	-0.016	-0.016	0	%100
63	95	Y	-0.016	-0.016	0	%100
64	96	Y	-0.016	-0.016	0	%100
65	97	Y	-0.016	-0.016	0	%100
66	100	Y	-0.016	-0.016	0	%100
67	101	Y	-0.016	-0.016	0	%100
68	102	Y	-0.016	-0.016	0	%100
69	103	Y	-0.016	-0.016	0	%100
70	106	Y	-0.011	-0.011	0	%100
71	107	Y	-0.011	-0.011	0	%100
72	108	Y	-0.011	-0.011	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	5	Y	0	-0.001	0	0.8
2	5	Y	-0.001	-0.001	0.8	1.6
3	5	Y	-0.001	0	1.6	2.4
4	9	Y	-0.002	-0.014	0	0.694
5	9	Y	-0.014	-0.015	0.694	1.389
6	9	Y	-0.015	-0.003	1.389	2.083
7	10	Y	-0.001	-0.006	0	0.593
8	10	Y	-0.006	-0.009	0.593	1.185
9	10	Y	-0.009	-0.009	1.185	1.778
10	10	Y	-0.009	-0.006	1.778	2.371
11	10	Y	-0.006	-0.000536	2.371	2.964
12	11	Y	-0.0005405	-0.007	0.188	0.78
13	11	Y	-0.007	-0.009	0.78	1.373
14	11	Y	-0.009	-0.008	1.373	1.966
15	11	Y	-0.008	-0.007	1.966	2.558
16	11	Y	-0.007	-0.0009811	2.558	3.151
17	13	Y	-0.073	-0.023	0	0.104
18	13	Y	-0.023	0.002	0.104	0.208
19	13	Y	0.002	0.003	0.208	0.313
20	13	Y	0.003	0.003	0.313	0.417
21	14	Y	-0.0007206	-0.004	0	0.4
22	14	Y	-0.004	-0.009	0.4	0.8
23	14	Y	-0.009	-0.01	0.8	1.2
24	14	Y	-0.01	-0.006	1.2	1.6
25	14	Y	-0.006	-0.003	1.6	2
26	15	Y	-0.003	-0.006	0.188	0.588
27	15	Y	-0.006	-0.01	0.588	0.988
28	15	Y	-0.01	-0.009	0.988	1.388
29	15	Y	-0.009	-0.004	1.388	1.788
30	15	Y	-0.004	-0.000745	1.788	2.188
31	17	Y	-0.009	-0.009	0	0.216
32	45	Y	0	-0.001	5.6	6.4
33	45	Y	-0.001	-0.001	6.4	7.2
34	45	Y	-0.001	0	7.2	8
35	51	Y	-0.072	-0.023	0	0.104
36	51	Y	-0.023	0.002	0.104	0.208
37	51	Y	0.002	0.003	0.208	0.313
38	51	Y	0.003	0.003	0.313	0.417
39	53	Y	-0.009	-0.009	0	0.216
40	5	Y	0	-0.001	5.6	6.4
41	5	Y	-0.001	-0.001	6.4	7.2
42	5	Y	-0.001	0	7.2	8
43	19	Y	-0.002	-0.014	0	0.694
44	19	Y	-0.014	-0.015	0.694	1.389
45	19	Y	-0.015	-0.003	1.389	2.083
46	20	Y	-0.001	-0.006	0	0.593
47	20	Y	-0.006	-0.009	0.593	1.185
48	20	Y	-0.009	-0.009	1.185	1.778
49	20	Y	-0.009	-0.006	1.778	2.371
50	20	Y	-0.006	-0.0005361	2.371	2.964
51	21	Y	-0.0005405	-0.007	0.188	0.78
52	21	Y	-0.007	-0.009	0.78	1.373
53	21	Y	-0.009	-0.008	1.373	1.966
54	21	Y	-0.008	-0.007	1.966	2.558
55	21	Y	-0.007	-0.0009812	2.558	3.151
56	23	Y	-0.072	-0.023	0	0.104
57	23	Y	-0.023	0.002	0.104	0.208
58	23	Y	0.002	0.003	0.208	0.313

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads) (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, %)]
59	23	Y	0.003	0.003	0.313	0.417
60	24	Y	-0.0007239	-0.004	0	0.4
61	24	Y	-0.004	-0.009	0.4	0.8
62	24	Y	-0.009	-0.01	0.8	1.2
63	24	Y	-0.01	-0.006	1.2	1.6
64	24	Y	-0.006	-0.003	1.6	2
65	25	Y	-0.003	-0.006	0.188	0.587
66	25	Y	-0.006	-0.01	0.587	0.987
67	25	Y	-0.01	-0.009	0.987	1.387
68	25	Y	-0.009	-0.004	1.387	1.787
69	25	Y	-0.004	-0.0007447	1.787	2.187
70	27	Y	-0.009	-0.009	0	0.216
71	32	Y	0	-0.001	0	0.8
72	32	Y	-0.001	-0.001	0.8	1.6
73	32	Y	-0.001	0	1.6	2.4
74	34	Y	-0.073	-0.023	0	0.104
75	34	Y	-0.023	0.002	0.104	0.208
76	34	Y	0.002	0.003	0.208	0.313
77	34	Y	0.003	0.003	0.313	0.417
78	36	Y	-0.009	-0.009	0	0.216
79	2	Y	-0.002	-0.014	0	0.694
80	2	Y	-0.014	-0.015	0.694	1.389
81	2	Y	-0.015	-0.003	1.389	2.083
82	3	Y	-0.001	-0.006	0	0.593
83	3	Y	-0.006	-0.009	0.593	1.185
84	3	Y	-0.009	-0.009	1.185	1.778
85	3	Y	-0.009	-0.006	1.778	2.371
86	3	Y	-0.006	-0.0005361	2.371	2.964
87	4	Y	-0.0005405	-0.007	0.188	0.78
88	4	Y	-0.007	-0.009	0.78	1.373
89	4	Y	-0.009	-0.008	1.373	1.966
90	4	Y	-0.008	-0.007	1.966	2.558
91	4	Y	-0.007	-0.0009812	2.558	3.151
92	6	Y	-0.0007255	-0.004	0	0.4
93	6	Y	-0.004	-0.009	0.4	0.8
94	6	Y	-0.009	-0.01	0.8	1.2
95	6	Y	-0.01	-0.006	1.2	1.6
96	6	Y	-0.006	-0.003	1.6	2
97	7	Y	-0.003	-0.006	0.188	0.588
98	7	Y	-0.006	-0.01	0.588	0.988
99	7	Y	-0.01	-0.009	0.988	1.388
100	7	Y	-0.009	-0.004	1.388	1.788
101	7	Y	-0.004	-0.0007447	1.788	2.188
102	32	Y	0	-0.001	5.6	6.4
103	32	Y	-0.001	-0.001	6.4	7.2
104	32	Y	-0.001	0	7.2	8
105	38	Y	-0.072	-0.023	0	0.104
106	38	Y	-0.023	0.002	0.104	0.208
107	38	Y	0.002	0.003	0.208	0.313
108	38	Y	0.003	0.003	0.313	0.417
109	40	Y	-0.009	-0.009	0	0.216
110	45	Y	0	-0.001	0	0.8
111	45	Y	-0.001	-0.001	0.8	1.6
112	45	Y	-0.001	0	1.6	2.4
113	47	Y	-0.073	-0.023	0	0.104
114	47	Y	-0.023	0.002	0.104	0.208
115	47	Y	0.002	0.003	0.208	0.313
116	47	Y	0.003	0.003	0.313	0.417

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads) (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, %)]
117	49	Y	-0.009	-0.009	0	0.216

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	5	Y	0	-0.001	0	0.8
2	5	Y	-0.001	-0.001	0.8	1.6
3	5	Y	-0.001	0	1.6	2.4
4	9	Y	-0.001	-0.011	0	0.694
5	9	Y	-0.011	-0.012	0.694	1.389
6	9	Y	-0.012	-0.002	1.389	2.083
7	10	Y	-0.0008348	-0.005	0	0.593
8	10	Y	-0.005	-0.007	0.593	1.185
9	10	Y	-0.007	-0.008	1.185	1.778
10	10	Y	-0.008	-0.005	1.778	2.371
11	10	Y	-0.005	-0.0004446	2.371	2.964
12	11	Y	-0.0004483	-0.006	0.188	0.78
13	11	Y	-0.006	-0.008	0.78	1.373
14	11	Y	-0.008	-0.007	1.373	1.966
15	11	Y	-0.007	-0.005	1.966	2.558
16	11	Y	-0.005	-0.0008137	2.558	3.151
17	13	Y	-0.061	-0.019	0	0.104
18	13	Y	-0.019	0.002	0.104	0.208
19	13	Y	0.002	0.003	0.208	0.313
20	13	Y	0.003	0.003	0.313	0.417
21	14	Y	-0.0005977	-0.003	0	0.4
22	14	Y	-0.003	-0.007	0.4	0.8
23	14	Y	-0.007	-0.008	0.8	1.2
24	14	Y	-0.008	-0.005	1.2	1.6
25	14	Y	-0.005	-0.002	1.6	2
26	15	Y	-0.002	-0.005	0.188	0.588
27	15	Y	-0.005	-0.008	0.588	0.988
28	15	Y	-0.008	-0.007	0.988	1.388
29	15	Y	-0.007	-0.003	1.388	1.788
30	15	Y	-0.003	-0.0006179	1.788	2.188
31	17	Y	-0.007	-0.007	0	0.216
32	45	Y	-9.035e-20	-0.001	5.6	6.4
33	45	Y	-0.001	-0.001	6.4	7.2
34	45	Y	-0.001	-9.035e-20	7.2	8
35	51	Y	-0.06	-0.019	0	0.104
36	51	Y	-0.019	0.002	0.104	0.208
37	51	Y	0.002	0.002	0.208	0.313
38	51	Y	0.002	0.003	0.313	0.417
39	53	Y	-0.007	-0.007	0	0.216
40	5	Y	0	-0.001	5.6	6.4
41	5	Y	-0.001	-0.001	6.4	7.2
42	5	Y	-0.001	0	7.2	8
43	19	Y	-0.001	-0.011	0	0.694
44	19	Y	-0.011	-0.012	0.694	1.389
45	19	Y	-0.012	-0.002	1.389	2.083
46	20	Y	-0.0008053	-0.005	0	0.593
47	20	Y	-0.005	-0.007	0.593	1.185
48	20	Y	-0.007	-0.007	1.185	1.778
49	20	Y	-0.007	-0.005	1.778	2.371
50	20	Y	-0.005	-0.0004289	2.371	2.964
51	21	Y	-0.0004324	-0.006	0.188	0.78
52	21	Y	-0.006	-0.007	0.78	1.373
53	21	Y	-0.007	-0.006	1.373	1.966
54	21	Y	-0.006	-0.005	1.966	2.558

Member Distributed Loads (BLC 29 : BLC 8 Transient Area Loads) (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, %)]
55	21	Y	-0.005	-0.000785	2.558	3.151
56	23	Y	-0.058	-0.019	0	0.104
57	23	Y	-0.019	0.002	0.104	0.208
58	23	Y	0.002	0.002	0.208	0.313
59	23	Y	0.002	0.002	0.313	0.417
60	24	Y	-0.0005791	-0.003	0	0.4
61	24	Y	-0.003	-0.007	0.4	0.8
62	24	Y	-0.007	-0.008	0.8	1.2
63	24	Y	-0.008	-0.005	1.2	1.6
64	24	Y	-0.005	-0.002	1.6	2
65	25	Y	-0.002	-0.005	0.188	0.587
66	25	Y	-0.005	-0.008	0.587	0.987
67	25	Y	-0.008	-0.007	0.987	1.387
68	25	Y	-0.007	-0.003	1.387	1.787
69	25	Y	-0.003	-0.0005958	1.787	2.187
70	27	Y	-0.007	-0.007	0	0.216
71	32	Y	0	-0.001	0	0.8
72	32	Y	-0.001	-0.001	0.8	1.6
73	32	Y	-0.001	0	1.6	2.4
74	34	Y	-0.059	-0.019	0	0.104
75	34	Y	-0.019	0.002	0.104	0.208
76	34	Y	0.002	0.002	0.208	0.313
77	34	Y	0.002	0.002	0.313	0.417
78	36	Y	-0.007	-0.007	0	0.216
79	2	Y	-0.001	-0.011	0	0.694
80	2	Y	-0.011	-0.012	0.694	1.389
81	2	Y	-0.012	-0.002	1.389	2.083
82	3	Y	-0.0008053	-0.005	0	0.593
83	3	Y	-0.005	-0.007	0.593	1.185
84	3	Y	-0.007	-0.007	1.185	1.778
85	3	Y	-0.007	-0.005	1.778	2.371
86	3	Y	-0.005	-0.0004289	2.371	2.964
87	4	Y	-0.0004324	-0.006	0.188	0.78
88	4	Y	-0.006	-0.007	0.78	1.373
89	4	Y	-0.007	-0.006	1.373	1.966
90	4	Y	-0.006	-0.005	1.966	2.558
91	4	Y	-0.005	-0.000785	2.558	3.151
92	6	Y	-0.0005804	-0.003	0	0.4
93	6	Y	-0.003	-0.007	0.4	0.8
94	6	Y	-0.007	-0.008	0.8	1.2
95	6	Y	-0.008	-0.005	1.2	1.6
96	6	Y	-0.005	-0.002	1.6	2
97	7	Y	-0.002	-0.005	0.188	0.588
98	7	Y	-0.005	-0.008	0.588	0.988
99	7	Y	-0.008	-0.007	0.988	1.388
100	7	Y	-0.007	-0.003	1.388	1.788
101	7	Y	-0.003	-0.0005958	1.788	2.188
102	32	Y	-9.035e-20	-0.001	5.6	6.4
103	32	Y	-0.001	-0.001	6.4	7.2
104	32	Y	-0.001	-9.035e-20	7.2	8
105	38	Y	-0.058	-0.019	0	0.104
106	38	Y	-0.019	0.002	0.104	0.208
107	38	Y	0.002	0.002	0.208	0.313
108	38	Y	0.002	0.002	0.313	0.417
109	40	Y	-0.007	-0.007	0	0.216
110	45	Y	-9.035e-20	-0.001	0	0.8
111	45	Y	-0.001	-0.001	0.8	1.6
112	45	Y	-0.001	-9.035e-20	1.6	2.4

Member Distributed Loads (BLC 29 : BLC 8 Transient Area Loads) (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, %)]
113	47	Y	-0.059	-0.019	0	0.104
114	47	Y	-0.019	0.002	0.104	0.208
115	47	Y	0.002	0.002	0.208	0.313
116	47	Y	0.002	0.002	0.313	0.417
117	49	Y	-0.007	-0.007	0	0.216

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

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	106	L	Y	-0.5
2	126	L	Y	-0.5
3	146	L	Y	-0.5

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

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	100	L	Y	-0.5
2	120	L	Y	-0.5
3	140	L	Y	-0.5

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

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	94	L	Y	-0.5
2	114	L	Y	-0.5
3	134	L	Y	-0.5

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	189	max	1.495	5	2.304	42	1.35	14	1.259	11	1.565	3	1.572	13
2		min	-1.554	23	-0.215	12	-1.305	8	-2.948	53	-1.549	21	-5.73	43
3	190	max	1.386	16	2.219	46	1.668	14	0.644	5	1.634	7	4.536	21
4		min	-1.323	10	-0.227	4	-1.641	8	-4.01	47	-1.623	13	-1.932	3
5	188	max	0.961	5	2.262	38	2.008	2	6.055	14	1.256	11	1.964	77
6		min	-0.966	11	-0.476	8	-2.081	20	-2.605	8	-1.253	17	-1.024	59
7	Totals:	max	3.775	5	6.116	38	5.017	14						
8		min	-3.775	23	1.845	8	-5.017	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	HSS4X4X4	0.4	0	25	0.184	0	y	76	138.124	139.518	16.181	16.181	1.243	H1-1b
2	2	HSS4.5X4.5X3	0.208	2.083	14	0.202	1.996	y	76	119.657	121.302	16.25	16.25	1.726	H1-1b
3	3	L4X4X6	0.228	2.964	61	0.061	2.964	z	76	83.036	92.664	4.398	9.886	1.5	H2-1
4	4	L4X4X6	0.299	0	40	0.044	0	z	60	83.036	92.664	4.398	9.886	1.5	H2-1
5	5	HSS3.500X0.216	0.1	0.25	24	0.11	0.25		18	51.941	78.624	6.899	6.899	2.11	H1-1b
6	6	L4X4X6	0.286	2	61	0.125	2	y	77	88.147	92.664	4.398	9.886	1.5	H2-1
7	7	L4X4X6	0.408	0	75	0.127	0	z	76	88.147	92.664	4.398	9.886	1.5	H2-1
8	8	HSS4X4X4	0.374	0	31	0.187	0	y	80	138.124	139.518	16.181	16.181	1.308	H1-1b
9	9	HSS4.5X4.5X3	0.17	2.083	18	0.203	1.996	y	80	119.657	121.302	16.25	16.25	1.733	H1-1b
10	10	L4X4X6	0.228	2.964	53	0.061	2.964	z	80	83.036	92.664	4.398	9.886	1.5	H2-1
11	11	L4X4X6	0.3	0	44	0.044	0	z	51	83.036	92.664	4.398	9.886	1.5	H2-1
12	12	PL3/8"x6	0.136	0.067	21	0.396	0.067	y	48	63.595	72.9	0.57	9.113	1.525	H1-1b
13	13	PL3/8"x6	0.188	0.273	18	0.325	0.273	y	54	65.031	72.9	0.57	9.113	3	H1-1b
14	14	L4X4X6	0.283	2	53	0.125	2	y	81	88.147	92.664	4.398	9.886	1.5	H2-1
15	15	L4X4X6	0.41	0	80	0.128	0	z	80	88.147	92.664	4.398	9.886	1.5	H2-1
16	16	PL3/8"x6	0.194	0.167	19	0.222	0	y	53	69.866	72.9	0.57	9.113	1.446	H1-1b
17	17	PL3/8"x6	0.125	0.13	21	0.149	0	y	49	70.59	72.9	0.57	9.113	1.37	H1-1b
18	18	HSS4X4X4	0.382	0	21	0.186	0	y	85	138.124	139.518	16.181	16.181	1.247	H1-1b
19	19	HSS4.5X4.5X3	0.174	2.083	21	0.203	1.996	y	85	119.657	121.302	16.25	16.25	1.733	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
20	20	L4X4X6	0.228	2.964	56	0.061	2.964	z	85	83.036	92.664	4.398	9.886	1.5	H2-1
21	21	L4X4X6	0.299	0	48	0.044	0	z	56	83.036	92.664	4.398	9.886	1.5	H2-1
22	22	PL3/8"x6	0.129	0.067	20	0.319	0.067	y	51	63.595	72.9	0.57	9.113	1.691	H1-1b
23	23	PL3/8"x6	0.212	0.273	24	0.425	0.273	y	82	65.031	72.9	0.57	9.113	2.913	H1-1b
24	24	L4X4X6	0.286	2	56	0.125	2	y	85	88.147	92.664	4.398	9.886	1.5	H2-1
25	25	L4X4X6	0.407	0	84	0.127	0	z	84	88.147	92.664	4.398	9.886	1.5	H2-1
26	26	PL3/8"x6	0.15	0.167	23	0.313	0	y	83	69.866	72.9	0.57	9.113	1.539	H1-1b
27	27	PL3/8"x6	0.115	0.13	19	0.129	0	y	63	70.59	72.9	0.57	9.113	1.375	H1-1b
28	32	HSS3.500X0.216	0.125	0.25	15	0.134	7.75		15	51.941	78.624	6.899	6.899	2.052	H1-1b
29	33	PL3/8"x6	0.146	0.067	25	0.396	0.067	y	40	63.595	72.9	0.57	9.113	1.515	H1-1b
30	34	PL3/8"x6	0.185	0.273	15	0.336	0.273	y	21	65.031	72.9	0.57	9.113	2.782	H1-1b
31	35	PL3/8"x6	0.177	0.167	22	0.225	0	y	57	69.866	72.9	0.57	9.113	1.497	H1-1b
32	36	PL3/8"x6	0.141	0.13	14	0.148	0	y	41	70.59	72.9	0.57	9.113	1.371	H1-1b
33	37	PL3/8"x6	0.114	0.067	24	0.319	0.067	y	56	63.595	72.9	0.57	9.113	1.953	H1-1b
34	38	PL3/8"x6	0.23	0.273	15	0.463	0.273	y	14	65.031	72.9	0.57	9.113	3	H1-1b
35	39	PL3/8"x6	0.19	0.167	15	0.316	0	y	75	69.866	72.9	0.57	9.113	1.533	H1-1b
36	40	PL3/8"x6	0.107	0.13	23	0.129	0	y	67	70.59	72.9	0.57	9.113	1.381	H1-1b
37	45	HSS3.500X0.216	0.135	0.25	20	0.145	0.25		14	51.941	78.624	6.899	6.899	2.111	H1-1b
38	46	PL3/8"x6	0.119	0.067	17	0.398	0.067	y	44	63.595	72.9	0.57	9.113	1.568	H1-1b
39	47	PL3/8"x6	0.243	0.273	20	0.356	0.273	y	14	65.031	72.9	0.57	9.113	3	H1-1b
40	48	PL3/8"x6	0.238	0.167	14	0.225	0	y	61	69.866	72.9	0.57	9.113	1.496	H1-1b
41	49	PL3/8"x6	0.116	0.13	18	0.148	0	y	45	70.59	72.9	0.57	9.113	1.373	H1-1b
42	50	PL3/8"x6	0.121	0.067	15	0.319	0.067	y	60	63.595	72.9	0.57	9.113	1.632	H1-1b
43	51	PL3/8"x6	0.281	0.273	20	0.439	0.273	y	19	65.031	72.9	0.57	9.113	3	H1-1b
44	52	PL3/8"x6	0.211	0.167	19	0.315	0	y	79	69.866	72.9	0.57	9.113	1.542	H1-1b
45	53	PL3/8"x6	0.119	0.13	15	0.129	0	y	71	70.59	72.9	0.57	9.113	1.375	H1-1b
46	58	PIPE_2.5	0.205	7.75	17	0.18	0.25		24	30.038	50.715	3.596	3.596	1.926	H1-1b
47	61	PIPE_2.0	0.446	5.5	24	0.122	5.5		23	14.916	32.13	1.872	1.872	2.85	H1-1b
48	64	PIPE_2.0	0.389	5.5	17	0.175	5.5		18	14.916	32.13	1.872	1.872	3	H1-1b
49	67	PIPE_2.0	0.392	5.5	23	0.139	5.5		24	14.916	32.13	1.872	1.872	3	H1-1b
50	68	PIPE_2.5	0.279	7.75	21	0.185	7.75		15	30.038	50.715	3.596	3.596	1.978	H1-1b
51	71	PIPE_2.0	0.517	5.5	15	0.156	5.5		15	14.916	32.13	1.872	1.872	3	H1-1b
52	74	PIPE_2.0	0.512	5.5	21	0.207	5.5		21	14.916	32.13	1.872	1.872	3	H1-1b
53	77	PIPE_2.0	0.492	5.5	15	0.129	5.5		16	14.916	32.13	1.872	1.872	2.607	H1-1b
54	78	PIPE_2.5	0.285	7.75	25	0.232	0.25		20	30.038	50.715	3.596	3.596	1.981	H1-1b
55	81	PIPE_2.0	0.598	5.5	20	0.176	5.5		19	14.916	32.13	1.872	1.872	3	H1-1b
56	84	PIPE_2.0	0.512	5.5	25	0.236	5.5		14	14.916	32.13	1.872	1.872	3	H1-1b
57	87	PIPE_2.0	0.527	5.5	19	0.174	5.5		20	14.916	32.13	1.872	1.872	3	H1-1b
58	88	PL3/8"x6	0.324	0.417	16	0.026	0.417	y	39	65.031	72.9	0.57	9.113	2.624	H1-1b
59	89	PL3/8"x6	0.427	0.167	17	0.018	0.167	y	47	69.866	72.9	0.57	9.113	1.482	H1-1b
60	90	PL3/8"x6	0.434	0.273	20	0.034	0.417	y	38	65.031	72.9	0.57	9.113	2.479	H1-1b
61	91	PL3/8"x6	0.398	0.167	18	0.018	0.167	y	45	69.866	72.9	0.57	9.113	1.555	H1-1b
62	94	PL3/8"x6	0.446	0.417	20	0.026	0.417	y	43	65.031	72.9	0.57	9.113	2.522	H1-1b
63	95	PL3/8"x6	0.565	0.167	21	0.018	0.167	y	39	69.866	72.9	0.57	9.113	1.436	H1-1b
64	96	PL3/8"x6	0.319	0.273	24	0.034	0.417	y	42	65.031	72.9	0.57	9.113	3	H1-1b
65	97	PL3/8"x6	0.384	0.167	21	0.02	0	z	14	69.866	72.9	0.57	9.113	1.459	H1-1b
66	100	PL3/8"x6	0.399	0.417	25	0.026	0.417	y	47	65.031	72.9	0.57	9.113	3	H1-1b
67	101	PL3/8"x6	0.574	0.167	25	0.019	0	z	14	69.866	72.9	0.57	9.113	1.467	H1-1b
68	102	PL3/8"x6	0.395	0.417	14	0.034	0.417	y	45	65.031	72.9	0.57	9.113	2.315	H1-1b
69	103	PL3/8"x6	0.487	0.167	14	0.018	0.167	y	49	69.866	72.9	0.57	9.113	1.6	H1-1b
70	106	L2.5x2.5x3	0.242	0	15	0.048	4.375	z	80	15.536	29.192	0.873	1.822	1.5	H2-1
71	107	L2.5x2.5x3	0.309	0	20	0.048	4.375	z	84	15.536	29.192	0.873	1.822	1.5	H2-1
72	108	L2.5x2.5x3	0.23	0	24	0.048	4.375	z	76	15.536	29.192	0.873	1.822	1.5	H2-1

APPENDIX B
(Additional Calculations)

PROJECT	**151159.003.01 - Haddam, CT**				**KSC**
SUBJECT	**Platform- Mount Analysis**				
DATE	**05/23/21**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	1.35	k
Vertical Shear	:	2.304	k
Horizontal Shear	:	1.495	k
Torsion	:	1.572	k.ft
Moment from Horizontal Forces	:	1.565	k.ft
Moment from Vertical Forces	:	1.259	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1	in
Bolt edge distance, plate width	:	1	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	2.75	k
Force from Horz. Moment	:	2.83	k
Force from Vert. Moment	:	2.28	k
Shear Load / Bolt	:	0.69	k
Tension Load / Bolt	:	0.34	k
Resultant from Moments / Bolt	:	1.82	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	:	**10.41%**		**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	:	**9.27%**		**OKAY**
Unity Check, Combined	:	**19.67%**		**OKAY**
Available Bearing Strength, ΦR_n	:	18.35	k/bolt	
Unity Check, Bolt Bearing	:	**3.74%**		**OKAY**

PROJECT	**151159.003.01 - Haddam, CT**				**KSC**
SUBJECT	**Platform Mount Analysis**				
DATE	**05/23/21**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Connecting Member Parameters

Plate Yield Strength, F_y	:	36.00	ksi	[AISC Table 2-5]
Plate Tensile Strength, F_u	:	58.00	ksi	[AISC Table 2-5]
Plate Height	:	8.00	in	
Plate Width	:	8.00	in	
Plate Thickness	:	0.50	in	
Edge Distance	:	0.56	in	
Gross Tension Area, A_{gt}	:	4.00	in^2	
Gross Shear Area, A_{gv}	:	0.5	in^2	
Net Area for tension, A_{nv}	:	3.66	in^2	
Net Area for shear, A_{nt}	:	2.50	in^2	

Plate Check

Available Tensile Yield	:	129.60	k	[Eq. J4-1]
Available Tensile Rupture	:	159.05	k	[Eq. J4-2]
Unity Check, Plate Tension	:	**1.66%**		**OKAY**
Available Shear Yield	:	10.80	k	[Eq. J4-3]
Available Shear Rupture	:	87.00	k	[Eq. J4-4]
Unity Check, Plate Shear	:	**25.43%**		**OKAY**
Available Block Shear, ΦRn	:	62.48	k	[Eq. J4-5]
Unity Check, Block Shear	:	**4.40%**		**OKAY**

EXHIBIT 10

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00014B

DISH Wireless L.L.C. SITE ADDRESS:

270 HUBBARD ROAD
HADDAM, CT 06438

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED TOWER 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 SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)

SITE PHOTO

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.

SITE INFORMATION

PROPERTY OWNER:	SBA TOWERS INC
ADDRESS:	8051 CONGRESS AVE BOCA RATON, FL 33487
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT01700-S
TOWER APP NUMBER:	153524
COUNTY:	MIDDLESEX
LATITUDE (NAD 83):	41° 27' 50.72" N 41.464089 N
LONGITUDE (NAD 83):	72° 32' 31.18" W 72.541994 W
ZONING JURISDICTION:	TOWN OF HADDAM
ZONING DISTRICT:	R-2A
PARCEL NUMBER:	44 038 C
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	CL&P
TELEPHONE COMPANY:	CROWN CASTLE

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
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

DEPART BRADLEY INTERNATIONAL AIRPORT ON TERMINAL RD. ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. ROAD NAME CHANGES TO CT-20 [BRADLEY FIELD CONNECTOR]. TAKE RAMP (RIGHT) ONTO I-91 [RICHARD P HORAN MEMORIAL HWY]. AT EXIT 22S, TAKE RAMP (LEFT) ONTO CT-9. KEEP STRAIGHT ONTO CT-17 [CT-9]. AT EXIT 13, ROAD NAME CHANGES TO CT-9. AT EXIT 9, KEEP RIGHT ONTO RAMP. TURN RIGHT ONTO CT-81 [KILLINGWORTH RD]. TURN LEFT ONTO HUBBARD RD. TURN LEFT ONTO ACCESS ROAD AND ARRIVE AT BOBDL00014B.

VICINITY MAP

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

6/28/2021

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLB	BLB	JW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/24/21	ISSUED FOR REVIEW
0	6/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

151159.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

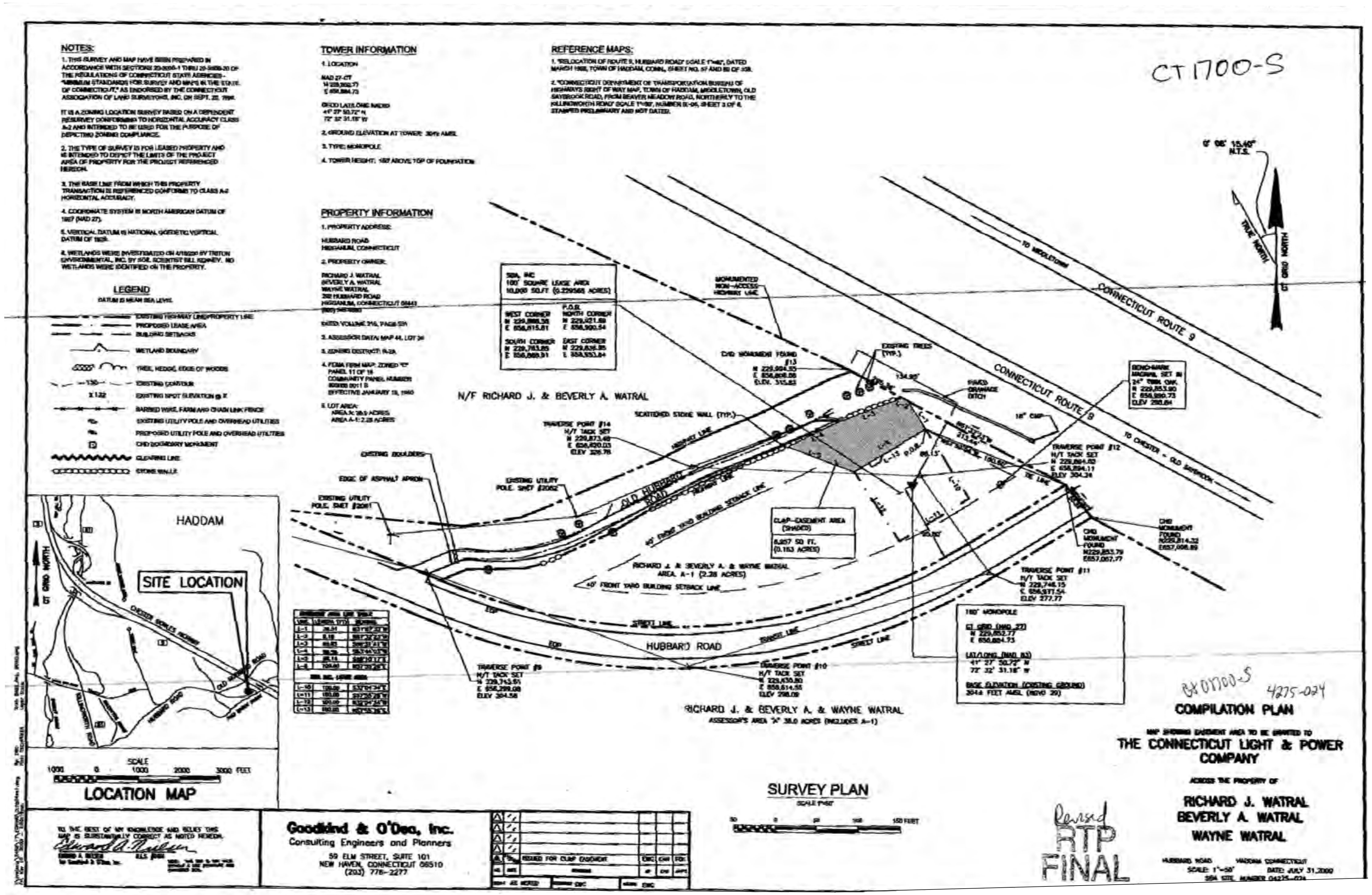
BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



SITE SURVEY

NO SCALE

1

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
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PROJECT INFORMATION

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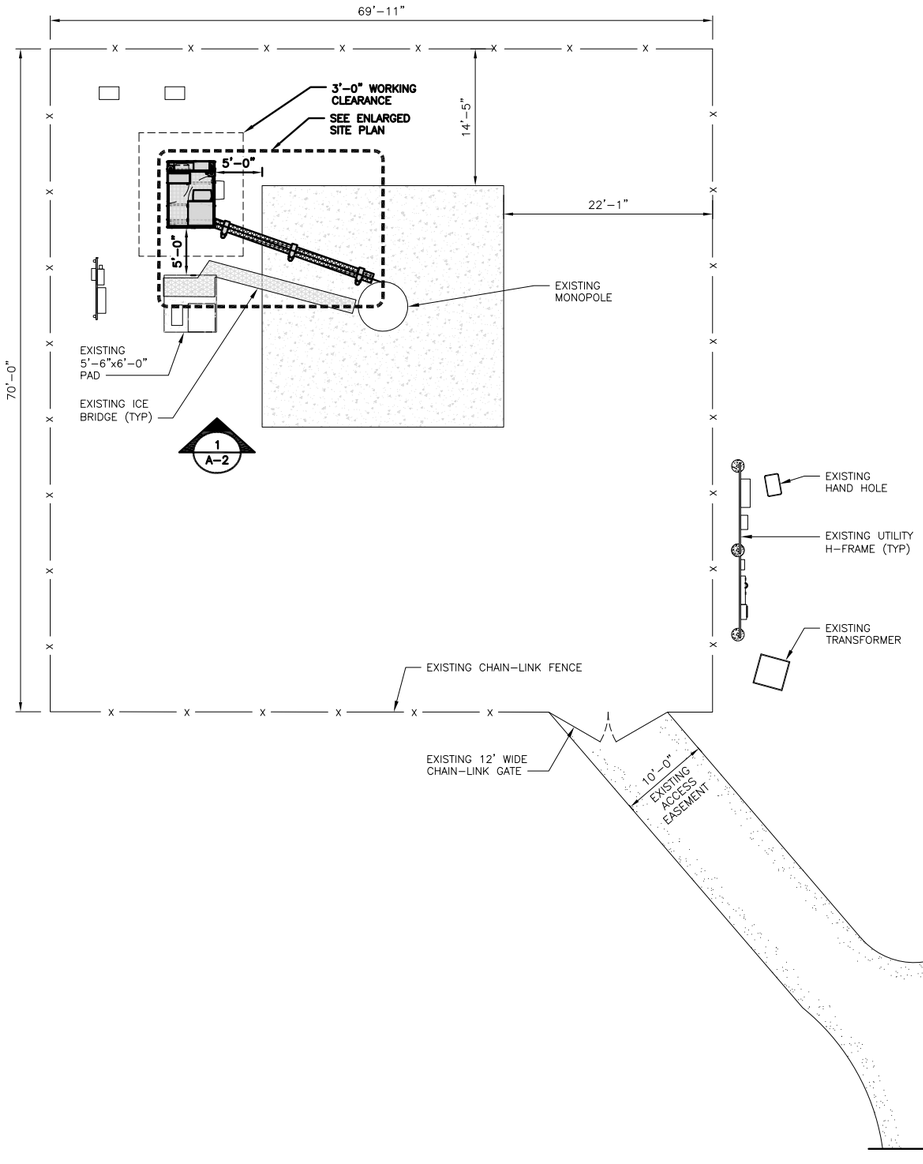
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE
SITE SURVEY

SHEET NUMBER
LS1

NOTES

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



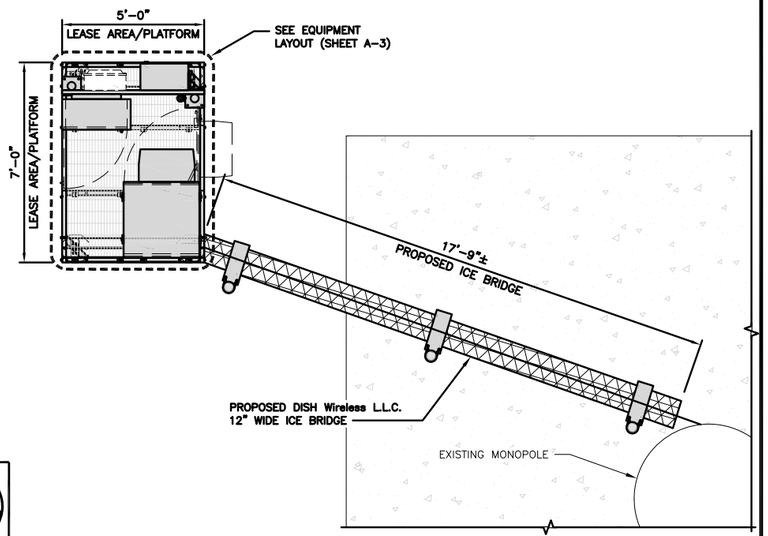
OVERALL SITE PLAN

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

1

NOTES

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



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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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE

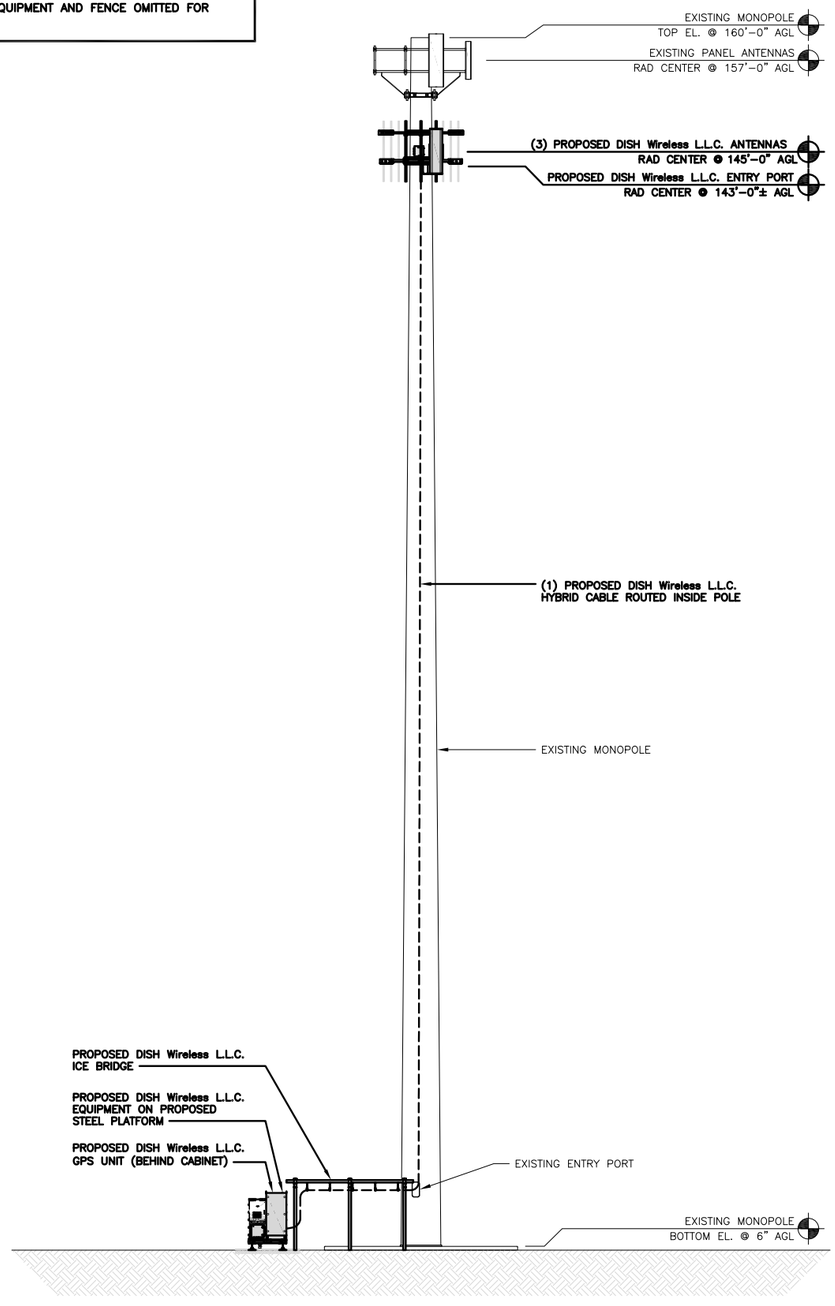
OVERALL AND ENLARGED SITE PLAN

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 SOUTHWEST ELEVATION

10' 0 10' 20'
1"=10'

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 WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	0°	145'–0"	(1) HIGH–CAPACITY HYBRID CABLE (190' LONG)
BETA	B1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	120°	145'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	240°	145'–0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025–B604	5G
	A1	FUJITSU – TA08025–B605	5G
BETA	B1	FUJITSU – TA08025–B604	5G
	B1	FUJITSU – TA08025–B605	5G
GAMMA	C1	FUJITSU – TA08025–B604	5G
	C1	FUJITSU – TA08025–B605	5G

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.

ANTENNA SCHEDULE

NO SCALE

3

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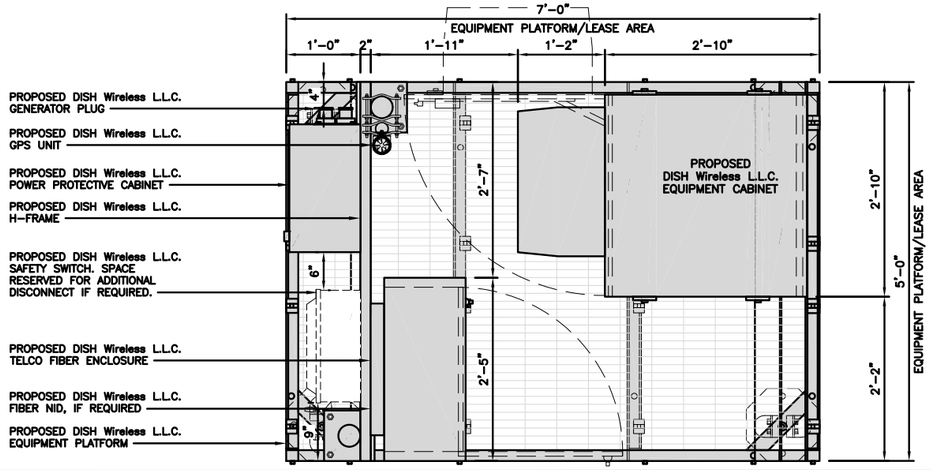
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



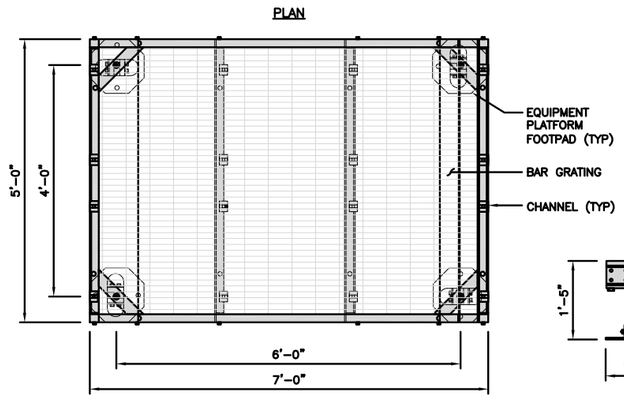
PLATFORM EQUIPMENT PLAN

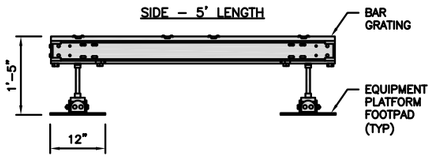
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

1

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

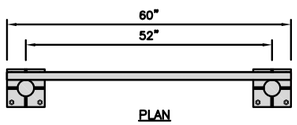
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"

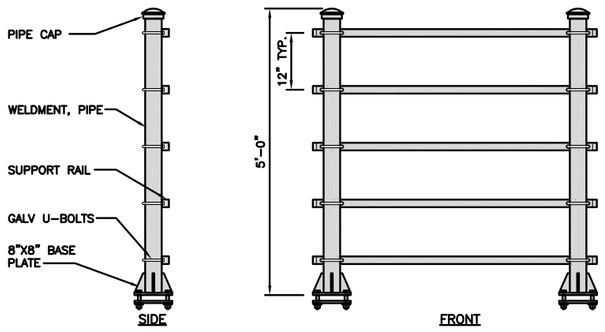




PLATFORM DETAIL | NO SCALE | 2

KENWOOD T1701KT5-5S H-FRAME	
UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS



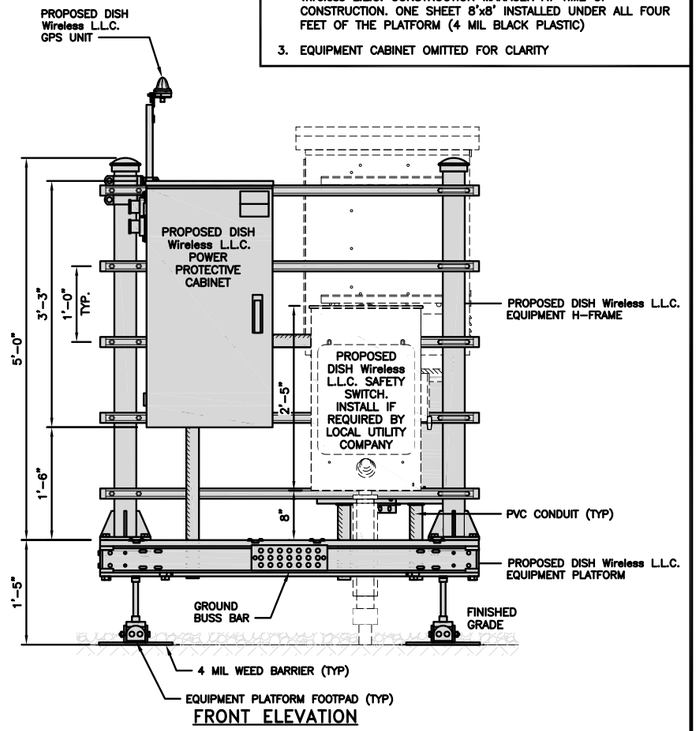


H-FRAME DETAIL | NO SCALE | 3

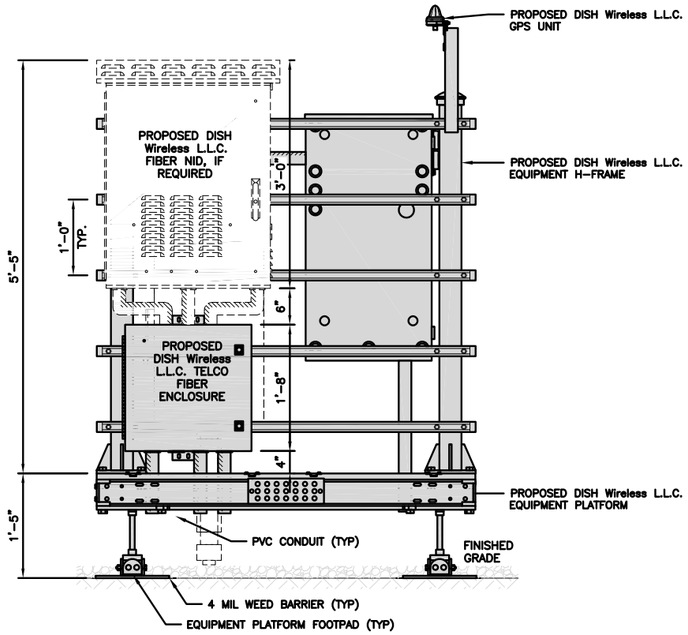
NOT USED | NO SCALE | 4

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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CONSTRUCTION DOCUMENTS

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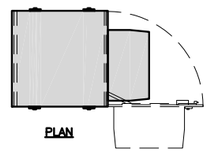
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

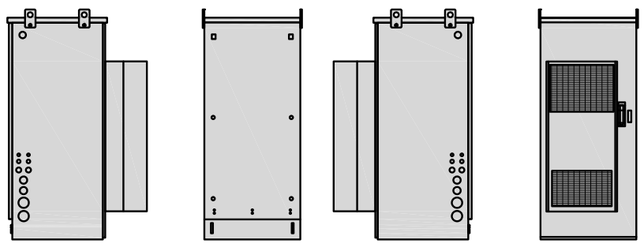
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

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

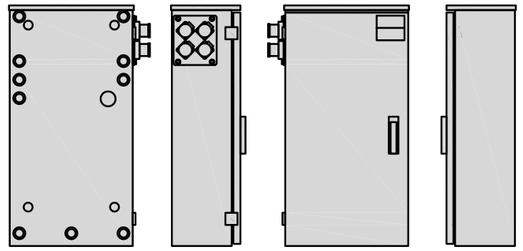


SIDE BACK SIDE FRONT

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

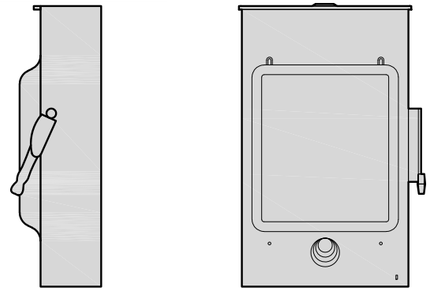


BACK SIDE FRONT SIDE

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

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

TOP

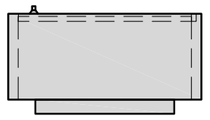


SIDE FRONT

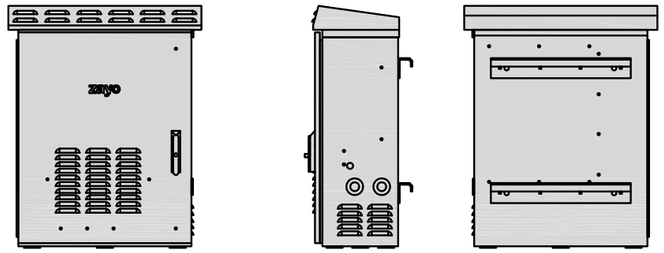
SAFETY SWITCH DETAIL | NO SCALE | 3

NOT USED | NO SCALE | 4

ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)	
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC



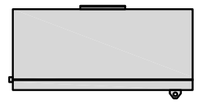
PLAN



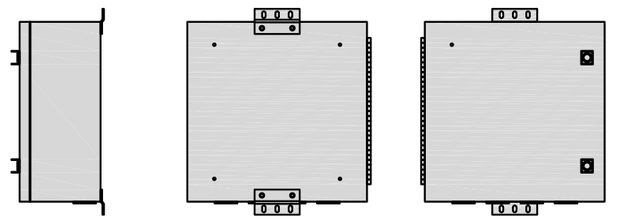
FRONT SIDE BACK

NETWORK INTERFACE UNIT 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

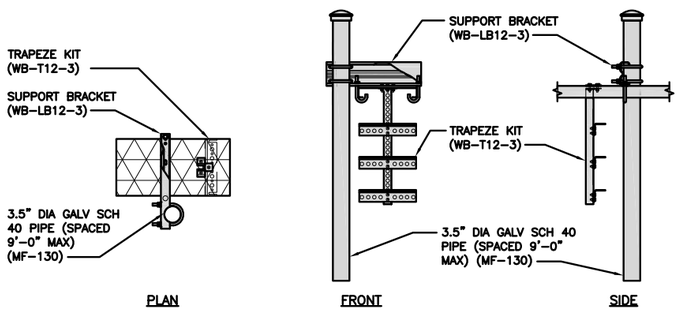


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

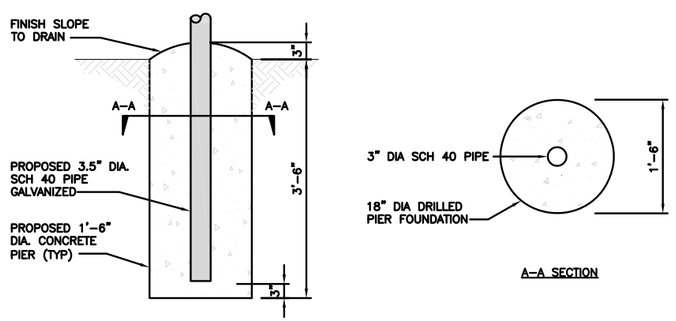
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



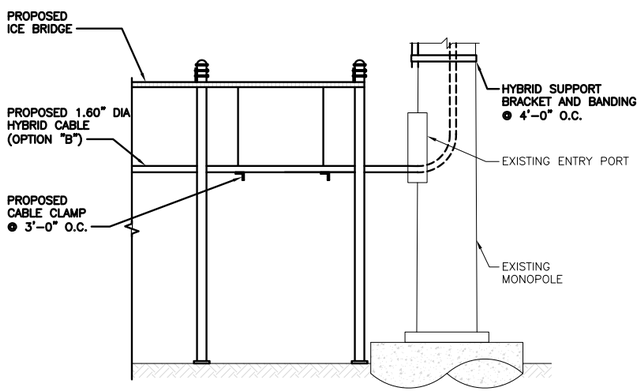
PLAN FRONT SIDE

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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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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6/28/2021

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Expires 2/10/22

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BLB	BLB	JW

RFDS REV #: 1

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A&E PROJECT NUMBER

151159.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

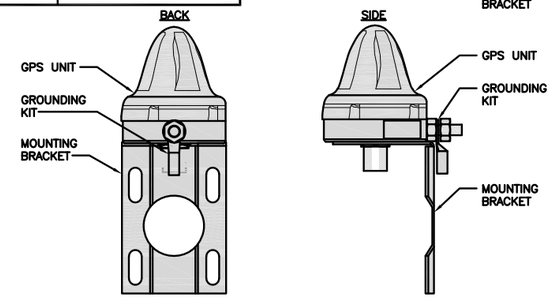
SHEET TITLE

EQUIPMENT DETAILS

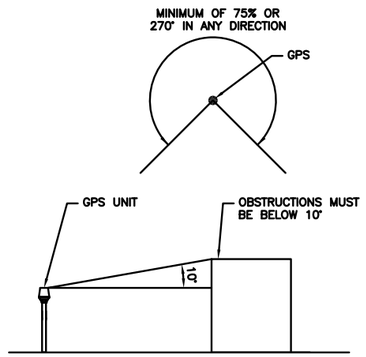
SHEET NUMBER

A-4

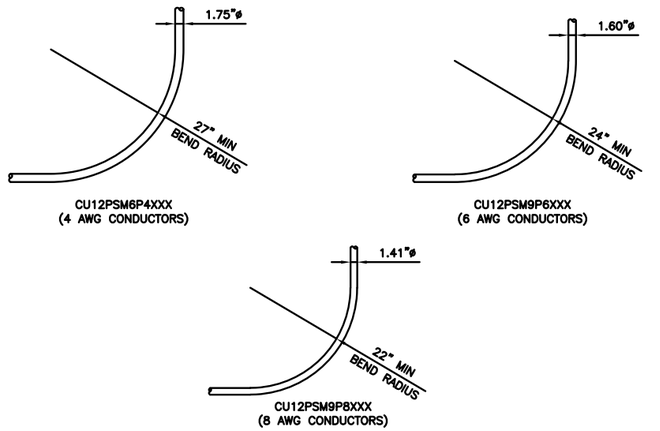
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA 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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270 HUBBARD ROAD
HADDAM, CT 06438

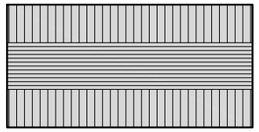
SHEET TITLE

EQUIPMENT DETAILS

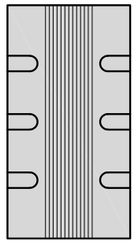
SHEET NUMBER

A-5

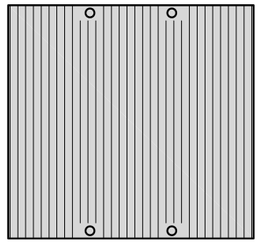
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



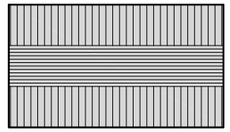
SIDE



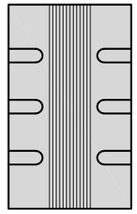
FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

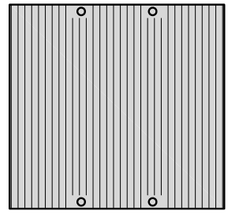
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE

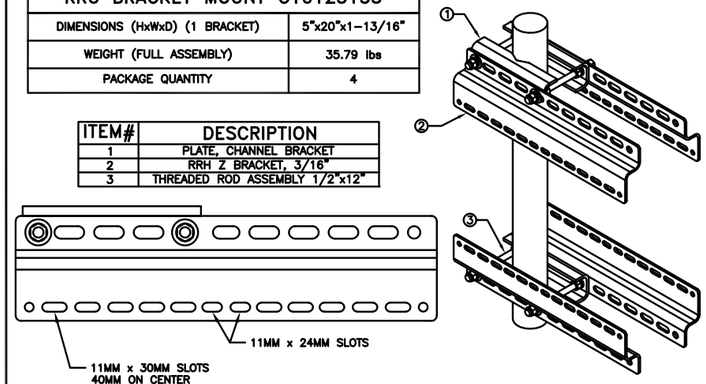


FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

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

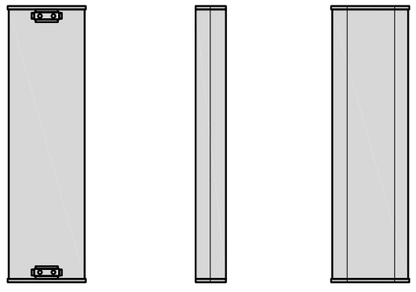
ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



BACK

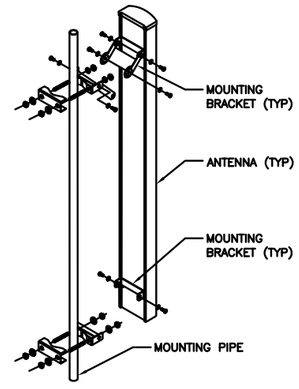
SIDE

FRONT

ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

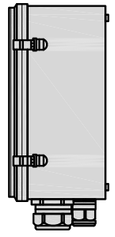
M04 MOUNTING BRACKET HPA-33R-BUU-H4-K	
WIDTH	5" (135mm)
DEPTH	2" (51mm)
HEIGHT	8" (213mm)
TOTAL WEIGHT (WITH BRACKETS)	1.5 LBS (15.50 Kg)
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1X8-PIN DAISY CHAIN



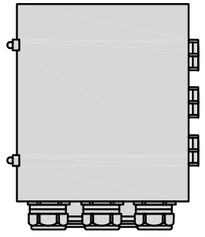
ANTENNA MOUNTING DETAIL | NO SCALE | 6

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

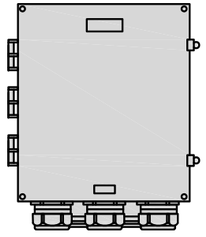
PLAN



SIDE



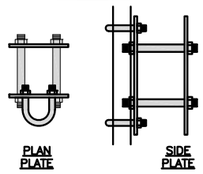
BACK



FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS



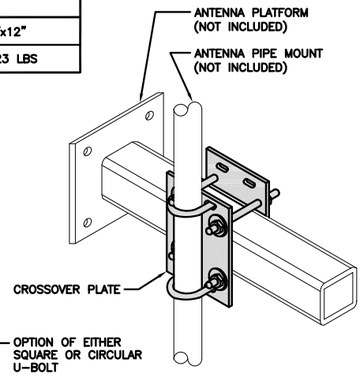
PLAN PLATE

SIDE PLATE

PLAN U-BOLT

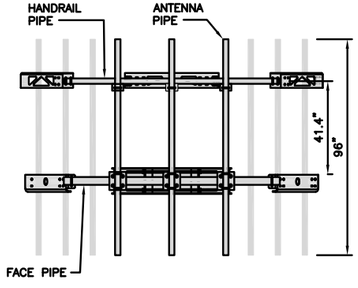
SIDE U-BOLT

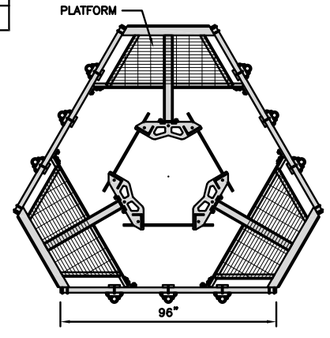
OPTION OF EITHER SQUARE OR CIRCULAR U-BOLT



RRH/OVP MOUNT DETAIL | NO SCALE | 8

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





ANTENNA PLATFORM DETAIL | NO SCALE | 9

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE

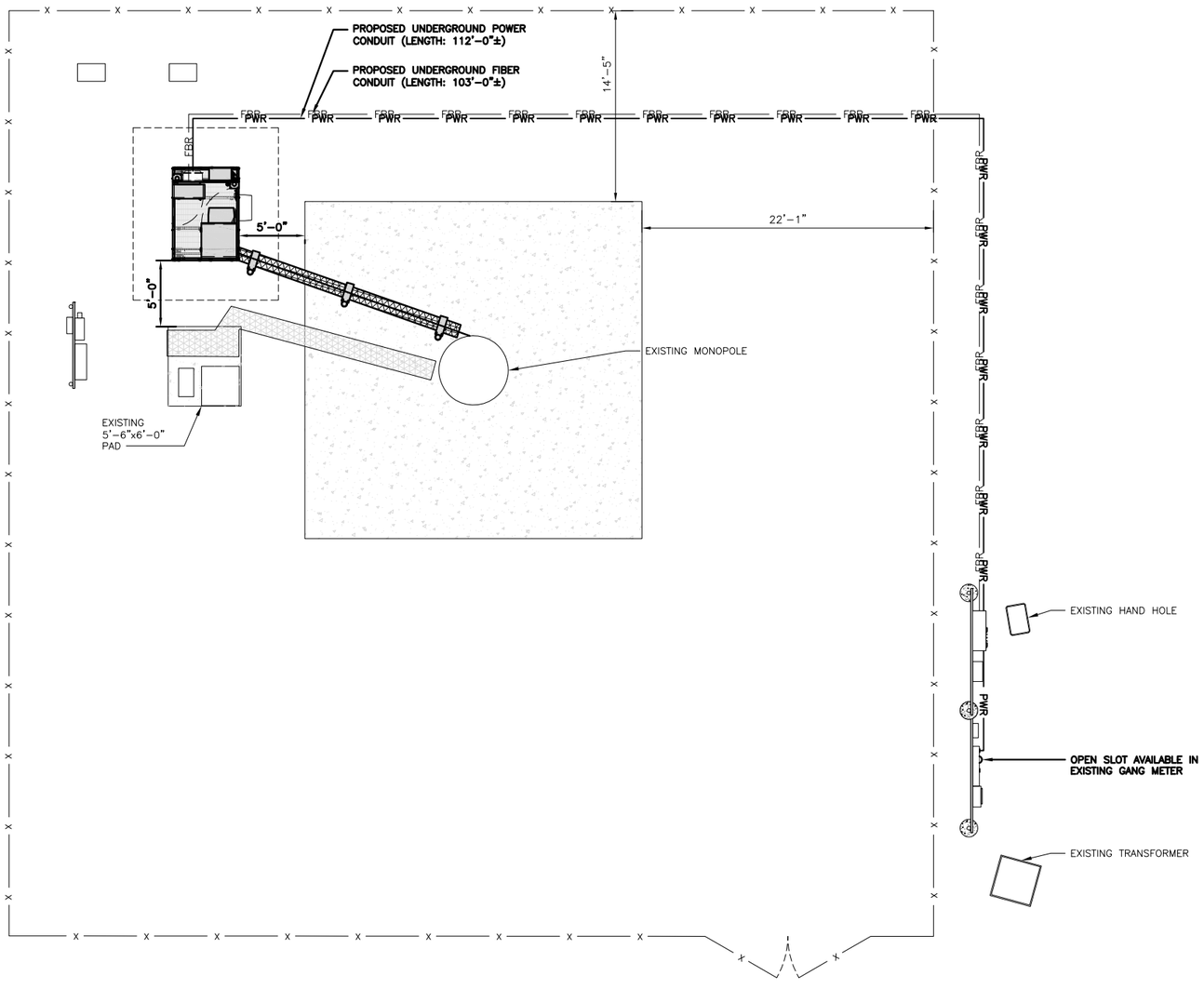
EQUIPMENT DETAILS

SHEET NUMBER

A-6

NOTES

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



UTILITY ROUTE PLAN

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

1

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

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

ELECTRICAL NOTES

NO SCALE

2

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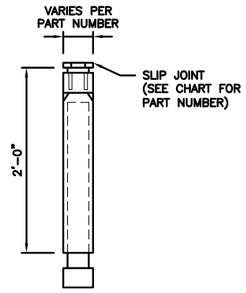
SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

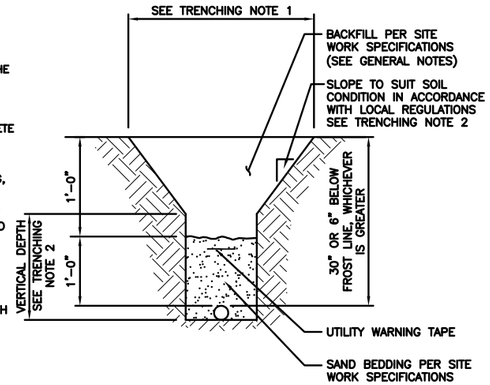


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

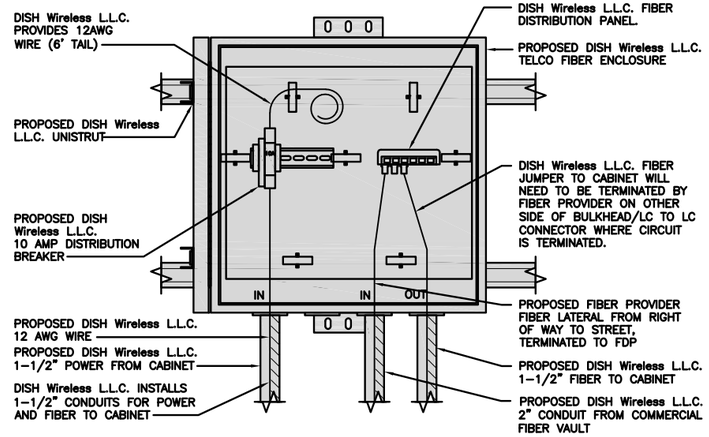
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

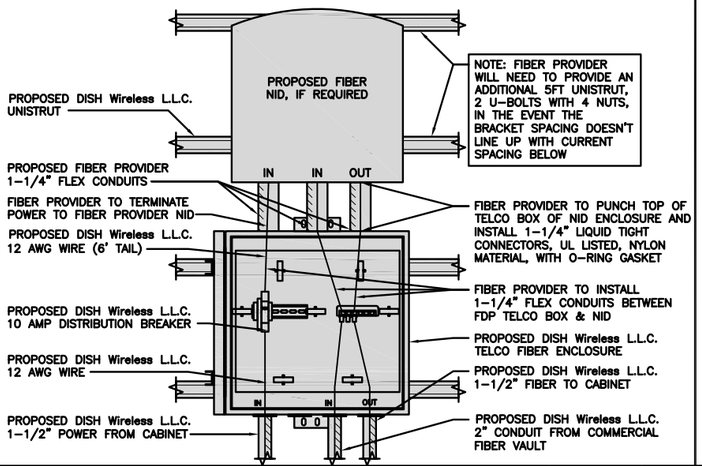
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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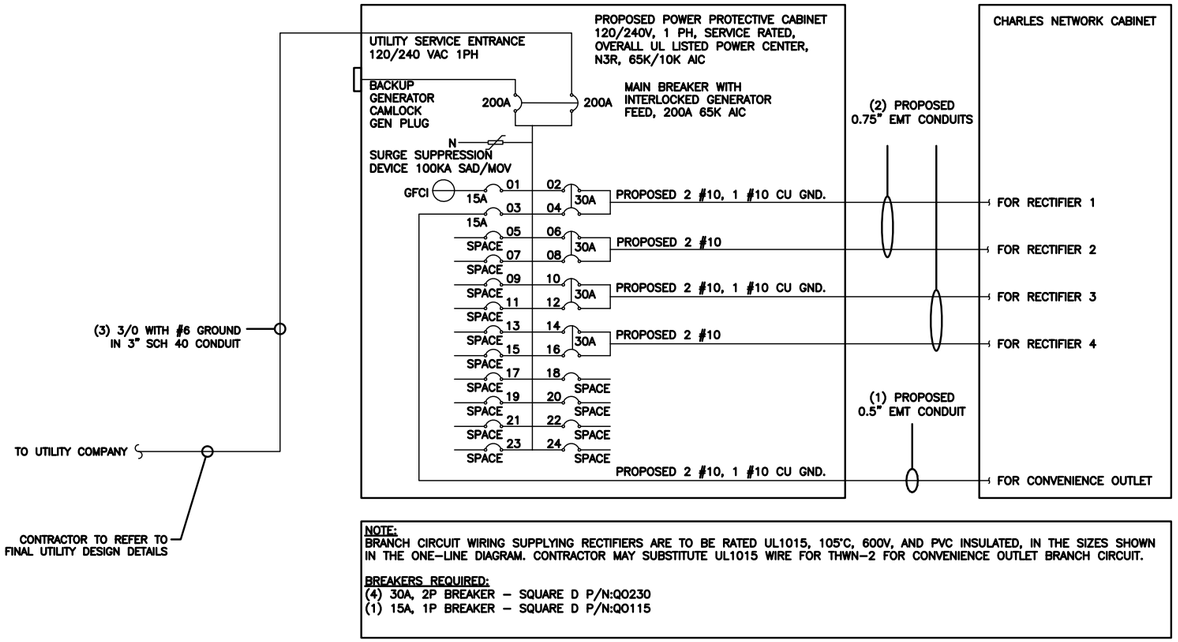
ELECTRICAL DETAILS

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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LITTLETON, CO 80120

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

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Expires 2/10/22

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RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

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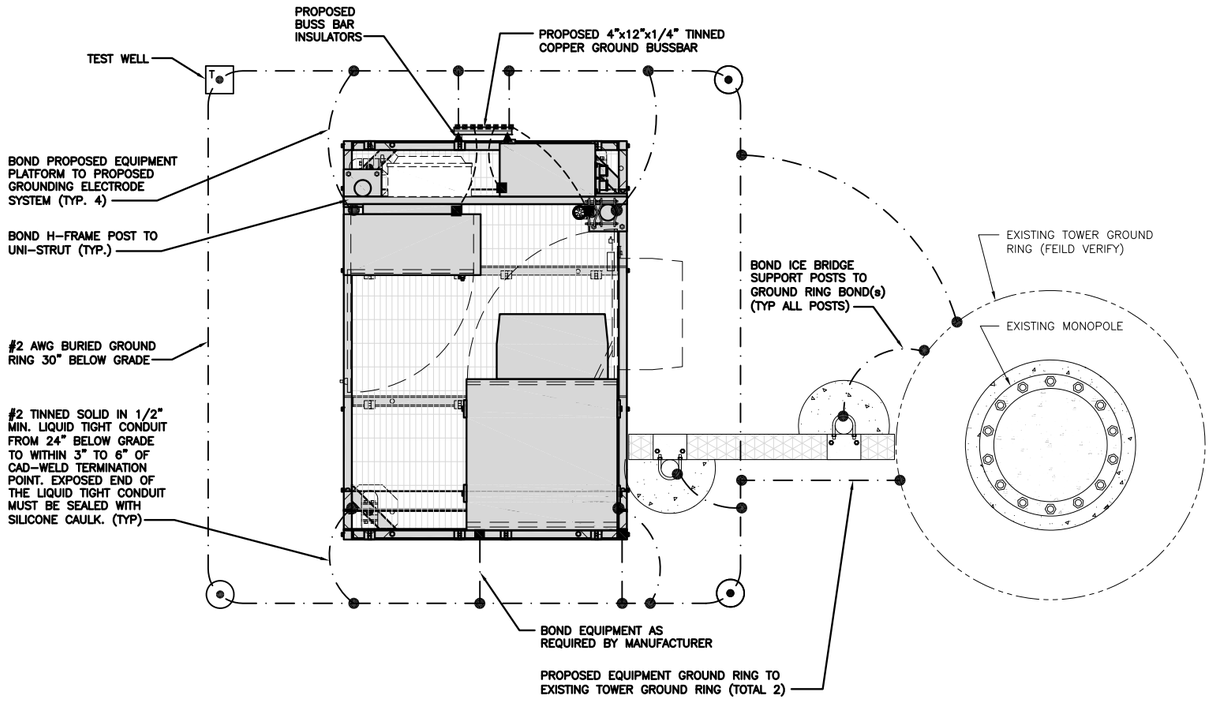
A&E PROJECT NUMBER
151159.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

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

SHEET NUMBER
E-3

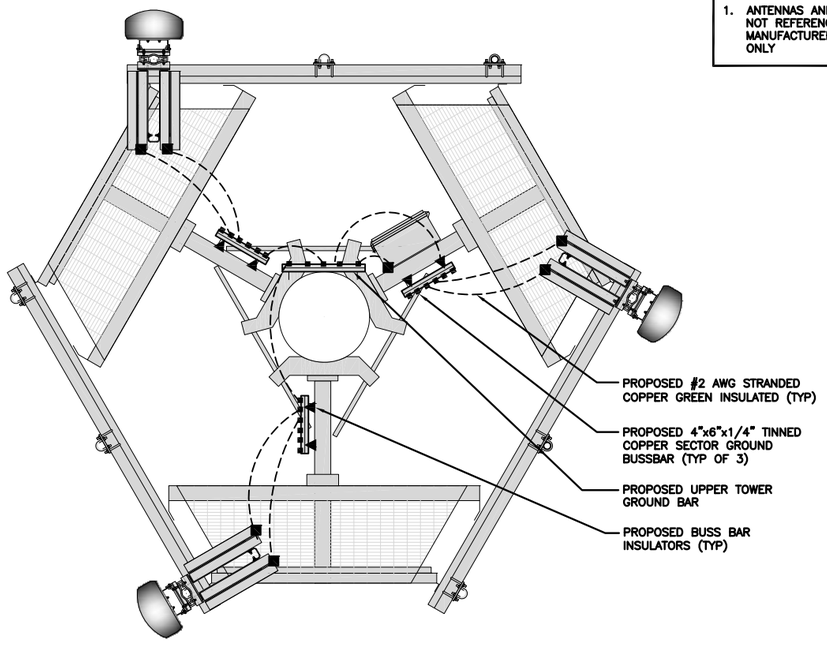


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

- 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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LITTLETON, CO 80120

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
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A&E PROJECT NUMBER
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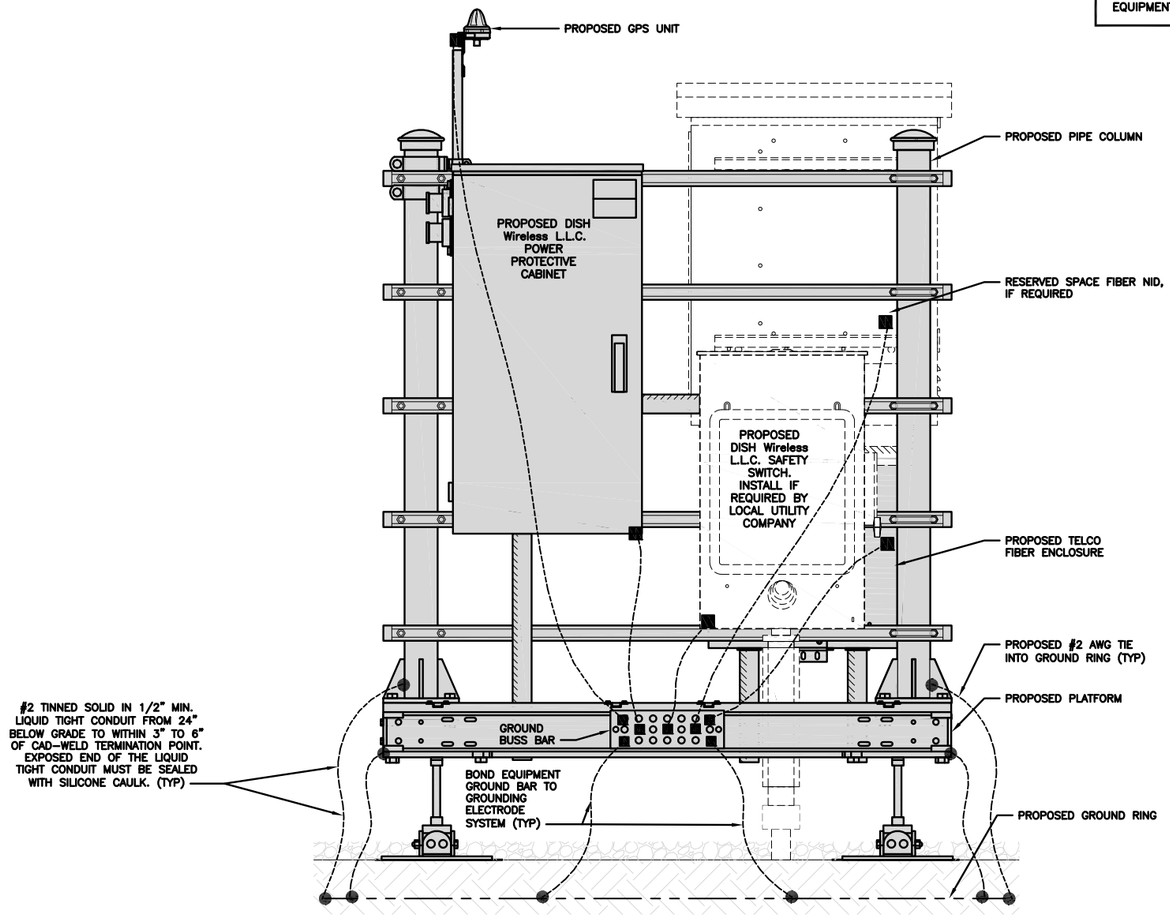
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

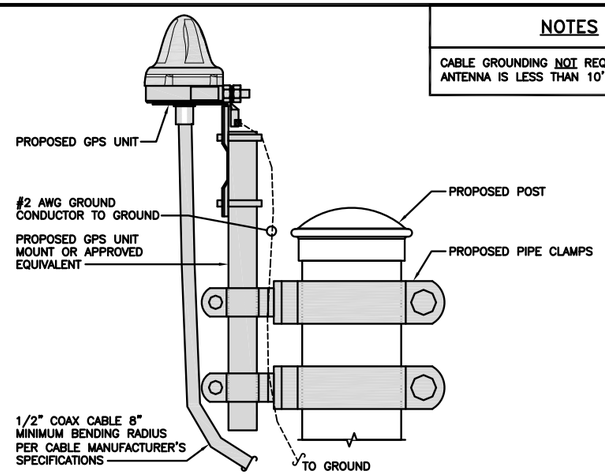
EQUIPMENT CABINET OMITTED FOR CLARITY



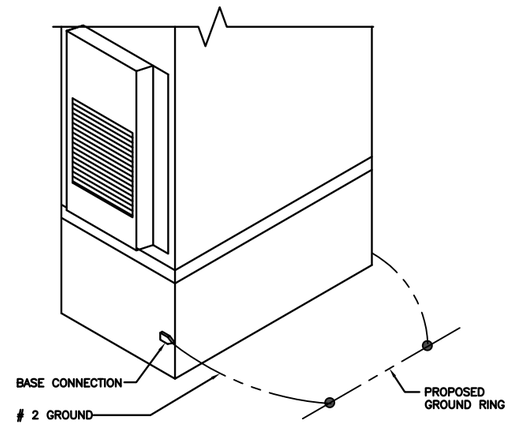
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

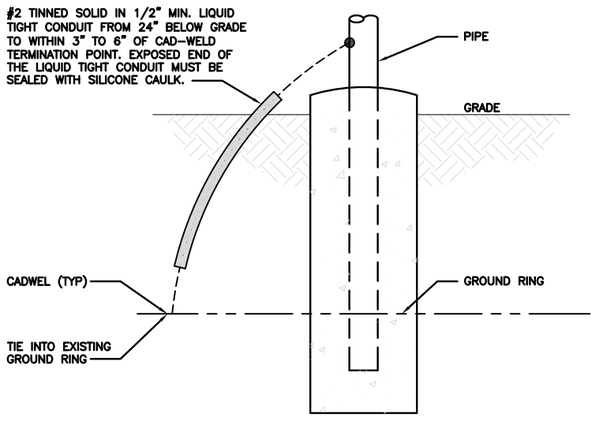
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



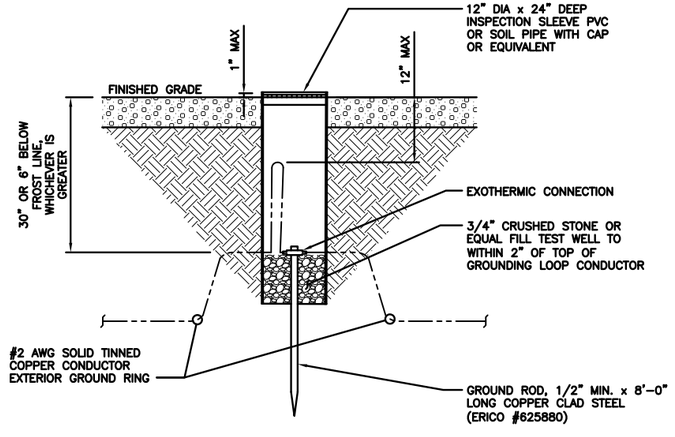
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



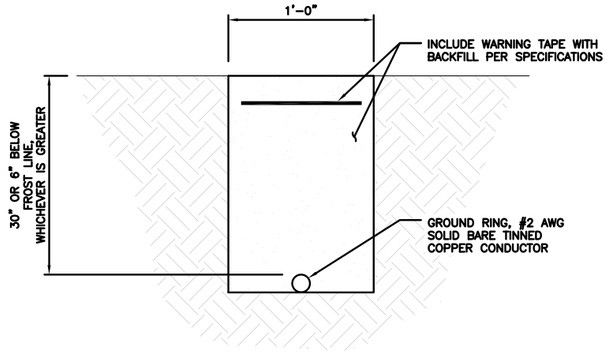
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE

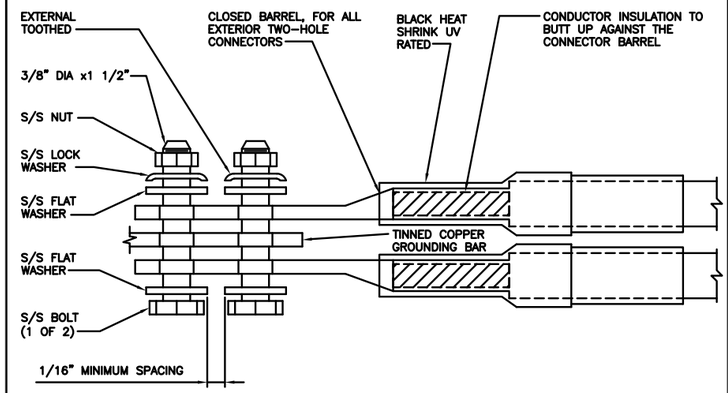
GROUNDING DETAILS

SHEET NUMBER

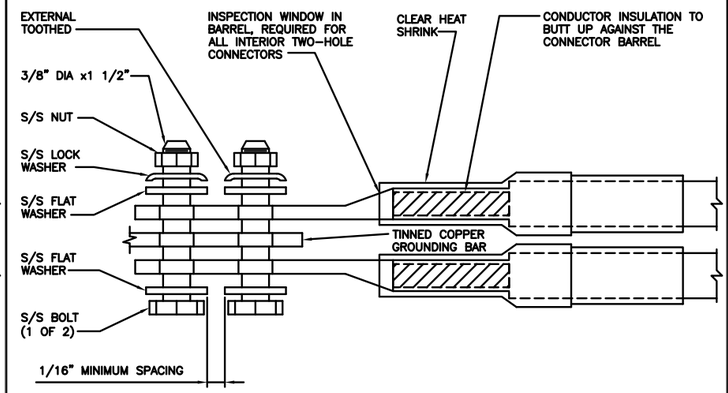
G-2

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).

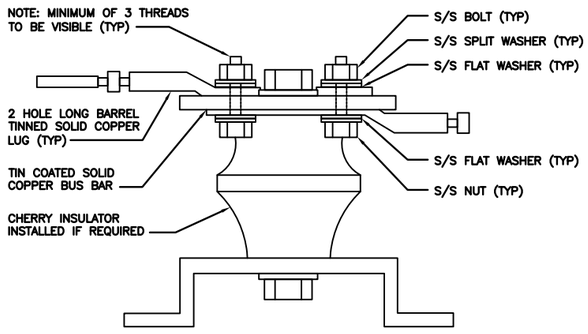
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

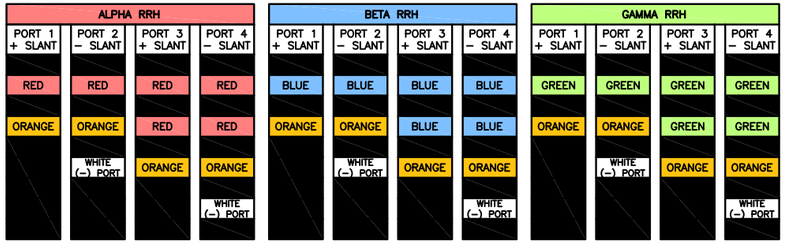
G-3

RF JUMPER COLOR CODING

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

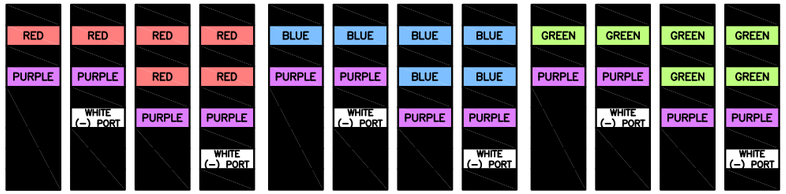
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

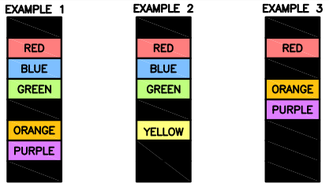


HYBRID/DISCREET CABLES

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

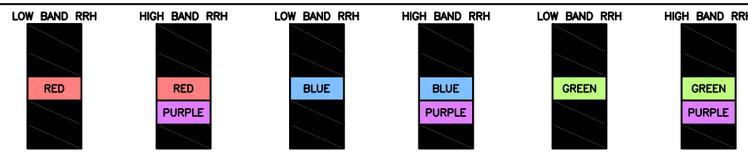


NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. FINAL RFDS IS IN NEXYSONE.

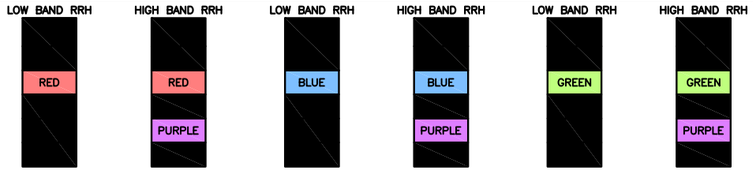
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

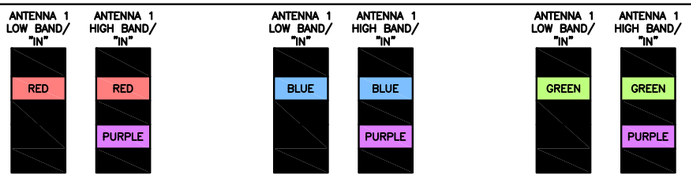


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



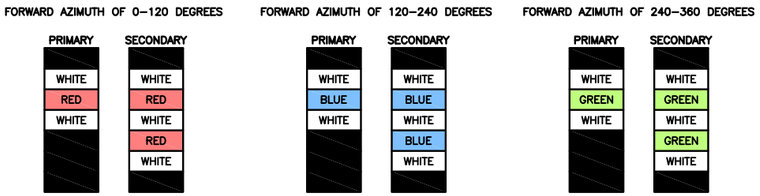
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES	NO SCALE	1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER	NO SCALE	2

NOT USED	NO SCALE	3

NOT USED	NO SCALE	4

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CONSTRUCTION DOCUMENTS

SUBMITTALS

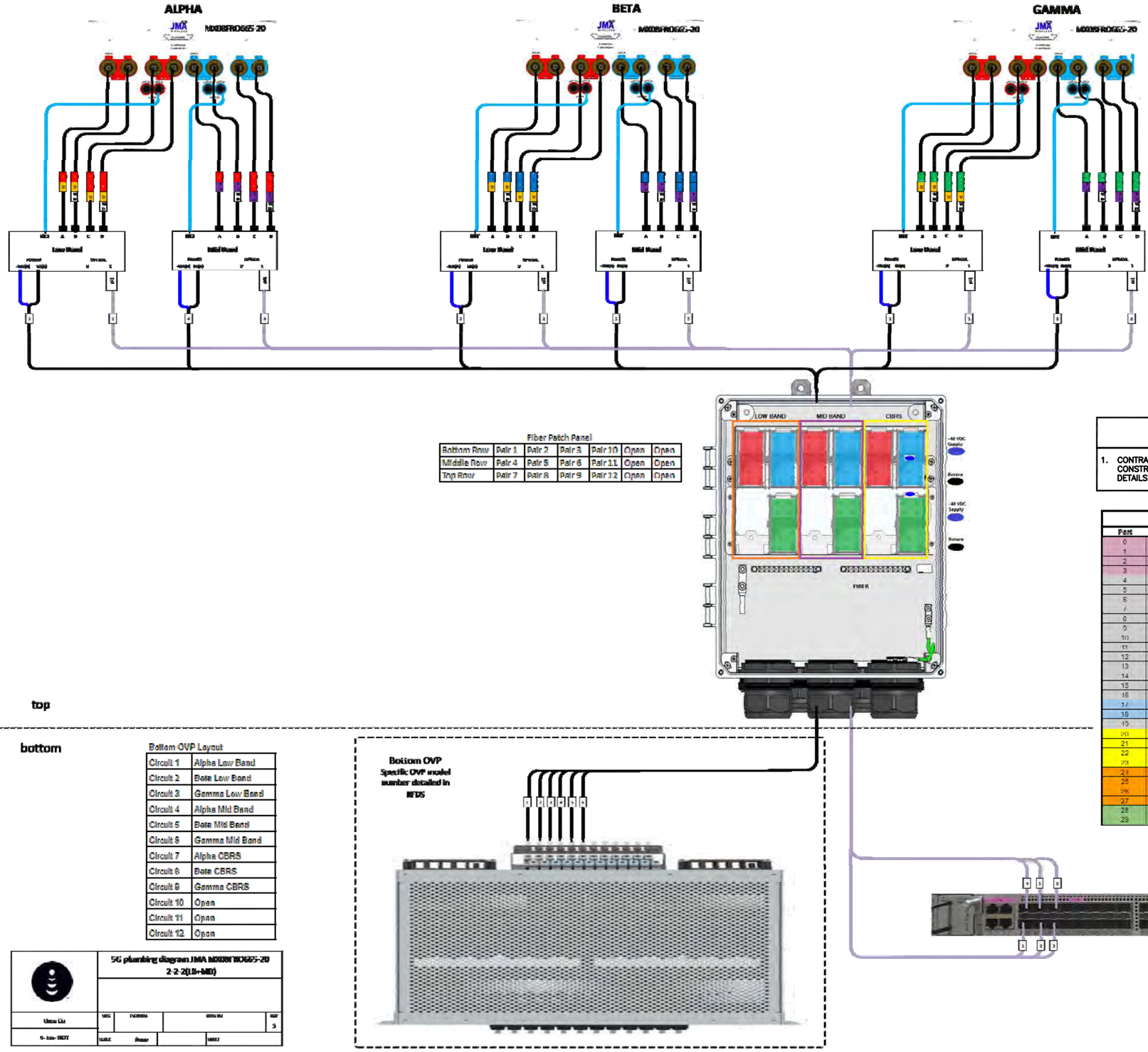
REV	DATE	DESCRIPTION
A	5/24/21	ISSUED FOR REVIEW
0	6/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
151159.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1



Fiber Patch Panel

Bottom Row	Pair 1	Pair 2	Pair 3	Pair 10	Open	Open
Middle Row	Pair 4	Pair 5	Pair 6	Pair 11	Open	Open
Top Row	Pair 7	Pair 8	Pair 9	Pair 12	Open	Open

Bottom OVP Layout

Circuit 1	Alpha Low Band
Circuit 2	Beta Low Band
Circuit 3	Gamma Low Band
Circuit 4	Alpha Mid Band
Circuit 5	Beta Mid Band
Circuit 6	Gamma Mid Band
Circuit 7	Alpha CBRS
Circuit 8	Beta CBRS
Circuit 9	Gamma CBRS
Circuit 10	Open
Circuit 11	Open
Circuit 12	Open

5G plumbing diagram JMA MX08FRO665-20
2-2-2(LB+MB)

Chen Liu

5-Jan-2021

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. FINAL RFDS IS IN NEXYSONE.

CSR NCS540

Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CHWR - Alpha
2	Gi0/0/0/2	CDR3 - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed Wifi
11	Te0/0/0/11	Fixed Wifi
12	Te0/0/0/12	Fixed Wifi
13	Te0/0/0/13	Fixed Wifi
14	Te0/0/0/14	CHER1
15	Te0/0/0/15	CDR32
16	Te0/0/0/16	CBRS3
17	Gi0/0/0/17	SM1 - BMC
18	Gi0/0/0/18	SM2 - BMC
19	Te0/0/0/19	SM1 - Data 1
20	Te0/0/0/20	SM1 - Data 2
21	Te0/0/0/21	SM2 - Data 1
22	Te0/0/0/22	SM2 - Data 2
23	Te0/0/0/23	Reserved Uplink (FOC TBD)
24	Te0/0/0/24	Blank/Future
25	Te0/0/0/25	Blank/Future
26	Te0/0/0/26	Fiber NIU
27	Te0/0/0/27	Fiber NIU
28	Te0/0/0/28	Blank/Future
29	Te0/0/0/29	Blank/Future

PLUMBING DIAGRAM

NO SCALE

1

dish wireless.

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

SHEET NUMBER

RF-2

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

DETAIL REFERENCE

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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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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1717 S. BOULDER
SUITE 300
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PEC.0001564
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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.

3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.

4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.

5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

- CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
- CONCRETE EXPOSED TO EARTH OR WEATHER:
- #6 BARS AND LARGER 2"
- #5 BARS AND SMALLER 1-1/2"
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
- SLAB AND WALLS 3/4"
- BEAMS AND COLUMNS 1-1/2"

7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.

2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.

3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.

5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).

7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

8. TIE WRAPS ARE NOT ALLOWED.

9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.

12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).

14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.

18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.

21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).

22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).

23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.

25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP

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

6/28/2021

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLB	BLB	JW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/24/21	ISSUED FOR REVIEW
0	6/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

151159.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00014B
270 HUBBARD ROAD
HADDAM, CT 06438

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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LITTLETON, CO 80120

SBA

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SHEET TITLE

GENERAL NOTES

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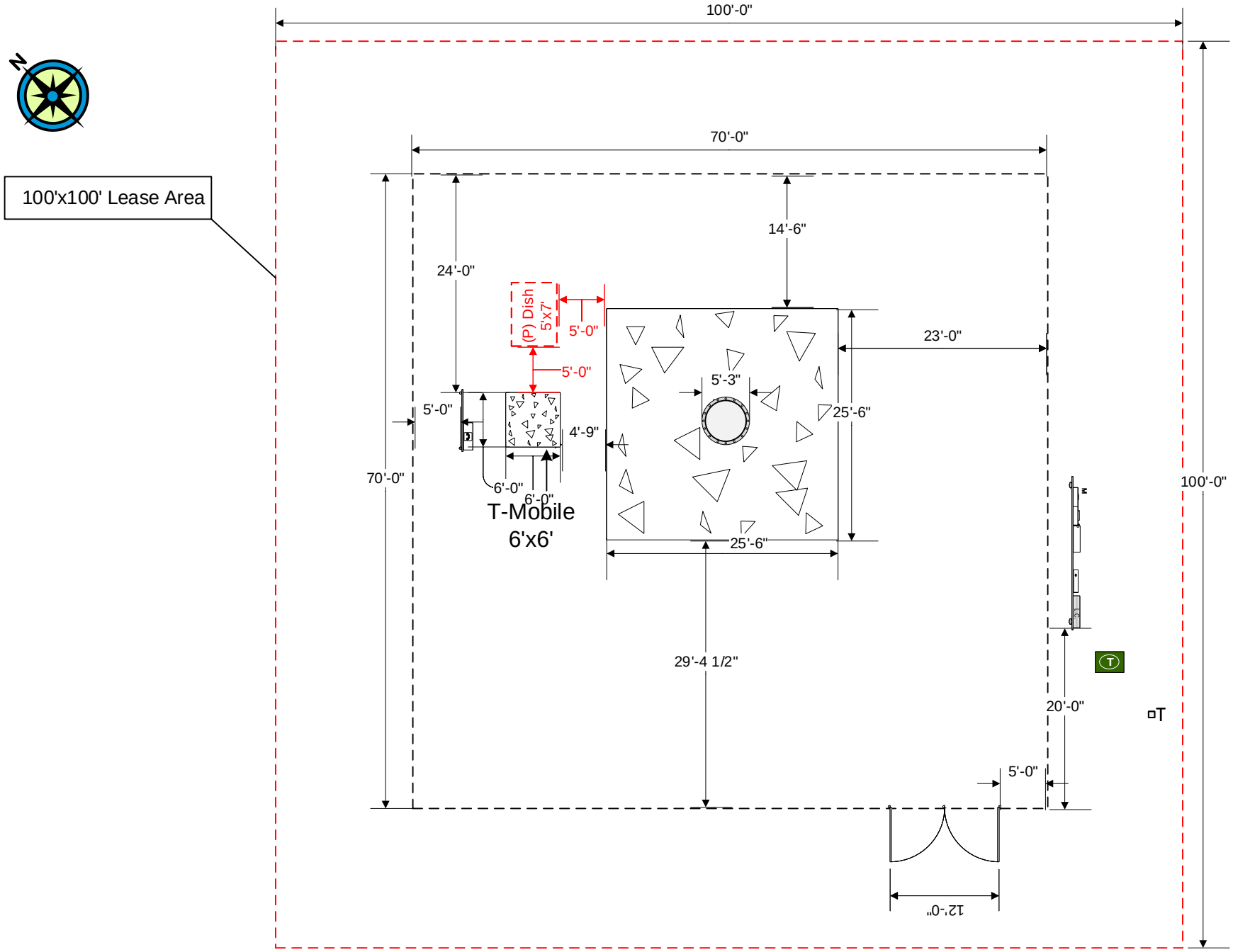
GN-4

EXHIBIT 11

Site Sketch (Ground)



0ft. 0in. 15'0" 30'0"

SBA Communications

SBA

Haddam

COMPOUND DRAWING

By: Stephen Roth

sroth@sbasite.com

DATE:	SITE NUMBER:	STATE:
4/8/2021	CT01700-S	CT