



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@sbsite.com

March 7, 2022

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

**Application for Tower Share**  
**46 Meadow Rd., Clinton, CT**  
**Latitude: 41.275205**  
**Longitude: -72.497711**  
**DISH Wireless #: BOBDL00151B**

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 185-foot Self Supporting Tower at **46 Meadow Rd., Clinton, CT.**

- **The new antennas would support 5G services and would be installed at the 130-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' Application:

1. Facility and Proposed Modifications

A. Existing Facility and Appurtenances

- At its Regular Meeting held on November 8, 1999, the Clinton Planning and Zoning Commission approved CAM-99-450 and Site Plan Application 99-4501 with the following conditions:
  1. If the tower is abandoned, it is to be removed within one year by the owner, otherwise the town will remove it at the expense of the property owner;
  2. Should the existing fence fall into despair on the southwest corner of the property, the applicant shall replace the fence.

On Tuesday, November 16, 1999, the Legal Notice of Decision will appear in the Clinton Recorder at which time a 15-day appeal period will begin. The improvements cannot commence on this property until the 15-day appeal period has ended, which appeal period shall end at midnight December 1, 1999.

In addition, pursuant to Section 10.10 of the Clinton Zoning Regulations, this approval is conditioned upon the commencement of the proposed improvements within one year from November 8, 1999 and completion thereof within five years (or Nov. 8, 2004). Failure to complete all work within such a five-year period shall result in automatic expiration of the approval of such site plan.

- Latitude / Longitude: 41.275205 / -72.497711
- Height of Tower: 185'
- Owned/operated by: SBA Towers, LLC
- Property Owner: Nichols Auto Parts Inc.
- Size/Components of existing equipment compound:
  - 68'9" x 70'7" fenced compound with 11' swing gate within an 100' x 100' lease area containing:
    - 195' Self Supporting Tower[center of compound]
    - Verizon 12'x30' Equipment Shelter [northeast of tower w/in compound]
    - AT&T 12'x20' Equipment Shelter [northwest of tower w/in compound]
    - Sprint 10'x20' Equipment Shelter [east of monopole w/in compound]
    - T-Mobile 5'x12' Equipment shelter [west of tower w/in compound]
  - Components of existing tower:
    - Verizon:
      - 162' & 75'

162.0	6	SBNHH-1D65B - Panel	(3) Sector Frame	(10) 1 5/8" (2) 1 5/8" Fiber	Verizon
	4	LPA-80063-4CF - Panel			
	2	LPA-80063/6CF - Panel			
	6	FD9R6004/2C-3L			
	3	RRH2X60-AWS			
	3	RRH2X60-PCS			
	3	RRH2X60-700			
	2	DB-T1-6Z-8AB-OZ			
75.0	1	GPS	Direct	(1) 1/2	Verizon

- Sprint/Nextel:
  - 182'

182.0	3	RFS APXVTM14-C-120 - Panel	(3) Sector Frame	(4) 1 1/4" Hybrid	Sprint Nextel
	3	RFS APXVSP18-C-A20 - Panel			
	3	ALU TD-RRH8x20-25			
	3	ALU 1900 MHz RRH			
	3	ALU 800 MHz RRH			
	4	RFS ACU-A20-N RET			
	3	ALU ALU 800 MHz Filter			



- T-Mobile:
  - 194' & 192.5'

194.0	3	AIR 21 B2A B4P - Panel	(3) Sector Frame	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
	3	AIR 21 B4A B2P - Panel			
192.5	3	KRY 112 144/1			

- Town of Clinton:
  - 184', 141.5, 102'

184.0	1	PD1151	Direct	(1) 7/8"	Town of Clinton
141.5	3	SD312HL	(3) Side Arm	(4) 7/8"	Town of Clinton
102.0	1	Radiowave RDH4518A - Dish	Pipe	(2) CAT5e	

- AT&T:
  - 150'

150.5	3	Kathrein - 800 10964 - Panel	(3) Sector Frame w/ (3) Stabilizer Arm (3) SFS-V Kickers	(12) 1 5/8" (1) 1/2" Fiber & (2) 3/4" DC in (1) 3" Flex Conduit (1) 1/2" Fiber (4) 3/4" DC	AT&T
	6	Andrew - SBNHH-1D65A - Panel			
	3	Kathrein - 7770 - Panel			
	6	Powerwave TT19-08BP111-001 TMA			
	12	Powerwave 7020.00 RET			
	3	Ericsson 4449 B5 B12			
	3	Ericsson RRUS 32			
	3	Ericsson RRUS 8843 B2 B66A			
3	Raycap DC6-48-60-18-8F				

## B. Nature and Extent of Proposed Modifications

Dish Wireless proposes to install (3) panel antennas at the 130' level of the existing 195'-foot Self Supporting Tower and occupy a ground lease area of 5'x 7' within the existing 70' 7" x 69' 9" fenced compound. Dish Wireless' full proposed scope of work is as follows:

Remove: N/A

Remove and Replace: N/A

Install:

Tower:

At 130':

- (3) JMA Wireless MX08FRO665-21 Panel
- (3) Fujitsu TA08025-B605 RRU
- (3) Fujitsu TA08025-B604 RRU
- (1) Raycap RDIDC-9181-PF-48 OVP
- (1) Commscope (3) MTC3975083

(1) 1.6" Hybrid

*Ground (within existing compound):*

- 5'x7' concrete pad
- GPS Unit
- Power Protective cabinet
- Safety Swith space
- Dish equipment cabinet
- 200 AMP meter socket
- Pipe column
- Telco Fiber enclosure
- #2 AWG Tie into ground ring
- Platform
- Ground ring
- #2 Tined solid In ½" min, liquid tight conduit from 24" bewlow grade to within 3" to 6" of cad-weld end of the liquid tight conduit must be sealed with silicone caulk
- 9' 7" 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.

This site will be located within a 10,000 square foot compound area on a 12.8-acre parcel owned by Nichols Auto Parts Inc. The Tower compound is approximately 68'9" x 70'7" fenced compound with 11' swing gate within a 100' x 100' lease area.

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. No wetland soils were found on the lease or easement areas. 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 1.54% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 10.71% 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 Clinton's Town Manager, Karl F. Kilduff
    - ii. The Town of Clinton's Zoning Enforcement Officer, Kathleen S. King
    - iii. The Property Owner, Nichols Auto Parts Inc.
    - 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 x3804 + T  
508.366.2610 + F  
508.868.6000 + C  
[GShepherd@sbsite.com](mailto:GShepherd@sbsite.com)

Attachments

- cc: Karl F. Kilduff, Town Manager / with attachments  
*Town of Clinton, 54 East Main St., Clinton, CT 06413*  
Kathleen S. King, Zoning Enforcement Officer / with attachments  
*Town of Clinton, 54 East Main St., Clinton, CT 06413*  
Nichols Auto Parts Inc. / with attachments  
140 Route 32 Franklin CT 06254 (SBA address on file)

EXHIBIT LIST

Exhibit 1	Copy of Check	x
Exhibit 2	Letter of Intent to Allow Shared Use of the Existing SBA Telecommunications Site	X
Exhibit 3	Notification Receipts	x
Exhibit 4	Property Card	x
Exhibit 5	Property Map	x
Exhibit 6	Original Zoning Approval	Town of Clinton Special Permit# 99-450 Nov. 15, 1999
Exhibit 7	EME Report	EBI Consulting 9/8/21
Exhibit 8	Post-Mod Structural Analysis	TES 8/5/21
Exhibit 9	Modification Drawings	TES Job# 110857 (8/16/21)
Exhibit 10	Mount Analysis	B+T GRP 6/16/21
Exhibit 11	Construction Drawings	B+T GRP 7/28/21
Exhibit 12	Site Sketch (ground)	SBA

# EXHIBIT 1

Check copy

**SBA Network Services, LLC**

To: CONNECTICUT SITING COUNCIL

129986

Check Number:

2163944

Date:

01/07/2022

Invoice Number	Invoice Date	Description	Gross Amount	Taxes Withheld	Net Amount
PRSF01052225	01/06/2022	CSC FEE NJJER01103B DISH X	\$ 625.00	\$ 0.00	\$ 625.00

*BOB DLOOISIB*

\$ 625.00

\$ 0.00

\$ 625.00

**SBA Network Services, LLC**

8051 Congress Avenue  
Boca Raton, FL 33487

(800) 487-7483

**Wells Fargo Bank**

061209756

**2163944**

129986

DATE

AMOUNT

01/07/2022

\$ 625.00

Six Hundred Twenty Five Dollars And 00 Cents

Void After 120 Days

Pay to the Order of:

CONNECTICUT SITING COUNCIL  
ACCOUNTS RECEIVABLE  
TEN FRANKLIN SQUARE

NEW BRITAIN, CT 06051

*Bruce Lazarus*

⑈ 2163944⑈⑈061209756⑈⑈2079900424566⑈



**EXHIBIT 2**

**Letter of Intent**

March 7, 2022

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:** 46 Meadow Rd., Clinton, CT  
DISH Site No: BOBDL00151B  
SBA Site No: CT01879-S

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 46 Meadow Rd., Clinton, 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 130' 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@sbsite.com](mailto:rwoods@sbsite.com)

# EXHIBIT 3

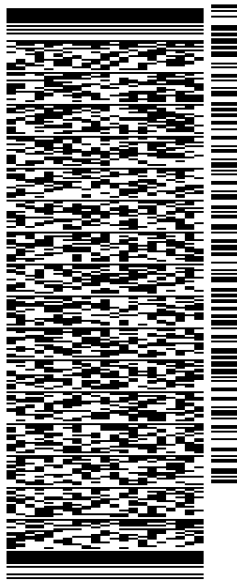
## Fedex Labels

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

SHIP DATE: 07/MAR/22  
ACTWGT: 2.00 LB  
CAD: 105843304/NET4460  
BILL SENDER

TO **MELANIE A. BACHMAN EXEC. DIR**  
**CONNECTICUT SITING COUNCIL**  
**TEN FRANKLIN SQUARE**

**NEW BRITAIN CT 06051**  
(508) 251-0720 X 3807 REF: 105692009-6089  
INV# DEPT:



TRK# 7762 2230 6824  
0201  
TUE - 08 MAR 10:30A  
PRIORITY OVERNIGHT

**EBBDLA**  
06051  
CT-US BDL

56DJ5IEB02/FE4A

**After printing this label:**

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

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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



FedEx® Tracking

[Track Another Shipment](#) [Help](#)

776222306824



[ADD NICKNAME](#)

ON TIME

Scheduled delivery:  
Tuesday, March 8, 2022 before 10:30 am



PICKED UP  
WESTBOROUGH, MA

[GET STATUS UPDATES](#)

**FROM**  
SBA COMMUNICATIONS CORPORATION  
Sherri Knapik  
134 Flanders Rd  
Suite 125  
WESTBOROUGH, MA US 01581  
508-614-0389

**TO**  
Melanie A. Bachman Exec. Dir  
Connecticut Siting Council  
Ten Franklin Square  
NEW BRITAIN, CT US 06051  
508-251-0720

[MANAGE DELIVERY](#)

[Travel History](#)

[Shipment Facts](#)

### Travel History

TIME ZONE  
Local Scan Time



Monday, March 7, 2022

12:55 PM

WESTBOROUGH, MA

Picked up  
Tendered at FedEx Office

9:24 AM

Shipment information sent to FedEx

### Shipment Facts

**TRACKING NUMBER**

776222306824

**SERVICE**

FedEx Priority Overnight

**WEIGHT**

2 lbs / 0.91 kgs

**TOTAL PIECES**

1

**TOTAL SHIPMENT WEIGHT**

2 lbs / 0.91 kgs

**TERMS**

Shipper

**SHIPPER REFERENCE**

10-56-92009-6089

**PACKAGING**

FedEx Pak

**SPECIAL HANDLING SECTION**

Deliver Weekday

**ACTUAL PICK UP**

3/7/22

**SHIPMENT-FACTS.COD-DETAIL**

\$0.00

**STANDARD TRANSIT**

3/8/22 before 10:30 am

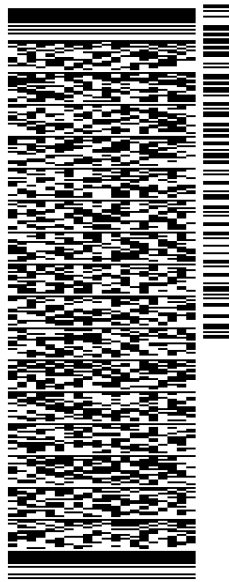
ORIGIN ID:BFBA (508) 614-0389  
SHERRI KNAPIK  
SBA COMMUNICATIONS CORPORATION  
134 FLANDERS RD  
SUITE 125  
WESTBOROUGH, MA 01581  
UNITED STATES US

SHIP DATE: 07/MAR/22  
ACTWGT: 1.00 LB  
CAD: 105843304/NET4460  
BILL SENDER

TO **KARL F. KILDUFF**  
**TOWN OF CLINTON**  
**TOWN MANAGER**  
**54 EAST MAIN ST**  
**CLINTON CT 06413**

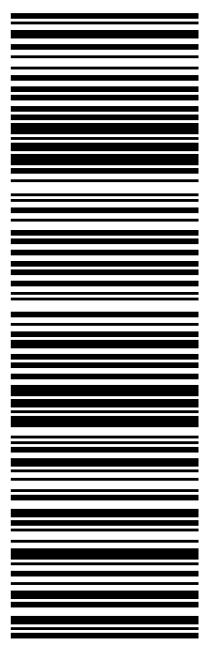
(508) 251-0720 X 3807  
REF: 105692009-6089  
PO: DEPT:

56DJ5/EB02/FE4A



TRK# 7762 2234 5784  
0201  
TUE - 08 MAR 10:30A  
PRIORITY OVERNIGHT

**EB RSPA**  
06413  
CT-US BDL



**After printing this label:**

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

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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



FedEx® Tracking

[Track Another Shipment](#) [Help](#)

776222345784



[ADD NICKNAME](#)

ON TIME

Scheduled delivery:  
Tuesday, March 8, 2022 before 10:30 am



PICKED UP  
WESTBOROUGH, MA

[GET STATUS UPDATES](#)

**FROM**  
SBA COMMUNICATIONS CORPORATION  
Sherri Knapik  
134 Flanders Rd  
Suite 125  
WESTBOROUGH, MA US 01581  
508-614-0389

**TO**  
Karl F. Kilduff  
Town of Clinton  
Town Manager  
54 East Main St  
CLINTON, CT US 06413  
508-251-0720

[MANAGE DELIVERY](#)

[Travel History](#)

[Shipment Facts](#)

### Travel History

TIME ZONE  
Local Scan Time



Monday, March 7, 2022

12:55 PM

WESTBOROUGH, MA

Picked up  
Tendered at FedEx Office

9:27 AM

Shipment information sent to FedEx

### Shipment Facts

**TRACKING NUMBER**  
776222345784

**SERVICE**  
FedEx Priority Overnight

**WEIGHT**  
0.5 lbs / 0.23 kgs

**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

**ACTUAL PICK UP**  
3/7/22

**SHIPMENT-FACTS.COD-DETAIL**  
\$.00

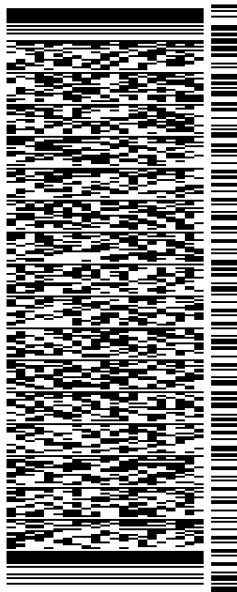
**STANDARD TRANSIT**  
3/8/22 before 10:30 am

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

SHIP DATE: 07/MAR/22  
ACTWGT: 1.00 LB  
CAD: 105843304/NET4460  
BILL SENDER

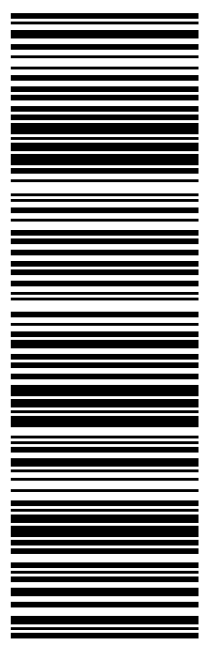
TO KATHLEEN S. KING  
TOWN OF CLINTON  
ZONING ENFORCEMENT OFFICER  
54 EAST MAIN ST  
CLINTON CT 06413  
(508) 251-0720 X 3807  
REF: 1056920096089  
PO: DEPT:

56DJ5IEB02/FE4A



TRK# 7762 2235 9931  
0201  
TUE - 08 MAR 10:30A  
PRIORITY OVERNIGHT

EB RSPA  
06413  
CT:US BDL



**After printing this label:**

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

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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





FedEx® Tracking

[Track Another Shipment](#) [Help](#)

776222359931



[ADD NICKNAME](#)

ON TIME

Scheduled delivery:  
Tuesday, March 8, 2022 before 10:30 am



PICKED UP  
WESTBOROUGH, MA

[GET STATUS UPDATES](#)

**FROM**  
SBA COMMUNICATIONS CORPORATION  
Sherri Knapik  
134 Flanders Rd  
Suite 125  
WESTBOROUGH, MA US 01581  
508-614-0389

**TO**  
Kathleen S. King  
Town of Clinton  
Zoning Enforcement Officer  
54 East Main St  
CLINTON, CT US 06413  
508-251-0720

[MANAGE DELIVERY](#)

[Travel History](#)

[Shipment Facts](#)

### Travel History

TIME ZONE  
Local Scan Time



Monday, March 7, 2022

12:55 PM

WESTBOROUGH, MA

Picked up  
Tendered at FedEx Office

9:28 AM

Shipment information sent to FedEx

### Shipment Facts

**TRACKING NUMBER**

776222359931

**SERVICE**

FedEx Priority Overnight

**WEIGHT**

0.5 lbs / 0.23 kgs

**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

**ACTUAL PICK UP**

3/7/22

**SHIPMENT-FACTS.COD-DETAIL**

\$0.00

**STANDARD TRANSIT**

3/8/22 before 10:30 am

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

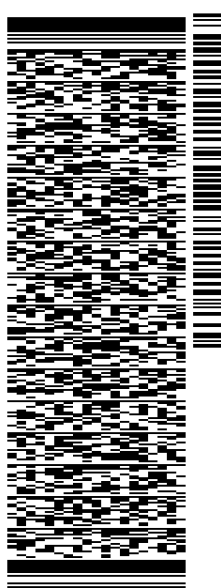
SHIP DATE: 07/MAR/22  
ACTWGT: 1.00 LB  
CAD: 105843304/NET4460  
BILL SENDER

TO

**NICHOLS AUTO PARTS INC.**  
**140 ROUTE 32**

**FRANKLIN CT 06254**

(508) 251-0720 X.3807 REF: 1056920096089  
INV# PO: DEPT:

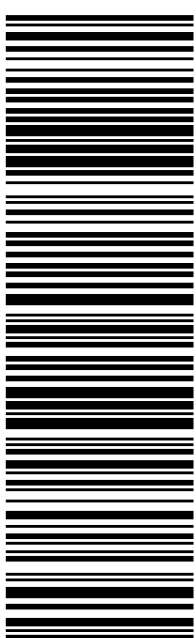


J221022010501uv

56DJ5/EB02/FE4A

TRK# 7762 2239 2665  
0201  
TUE - 08 MAR 10:30A  
PRIORITY OVERNIGHT

**EB SKKA**  
06254  
CT-US BDL



**After printing this label:**

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

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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



FedEx® Tracking

[Track Another Shipment](#) [Help](#)

776222392665


[ADD NICKNAME](#)
ON TIME

Scheduled delivery:  
Tuesday, March 8, 2022 before 10:30 am



**PICKED UP**  
WESTBOROUGH, MA

[GET STATUS UPDATES](#)

**FROM**  
SBA COMMUNICATIONS CORPORATION  
Sherri Knapik  
134 Flanders Rd  
Suite 125  
WESTBOROUGH, MA US 01581  
508-614-0389

**TO**  
Nichols Auto Parts Inc.  
140 Route 32  
FRANKLIN, CT US 06254  
508-251-0720

[MANAGE DELIVERY](#)
[Travel History](#)
[Shipment Facts](#)

## Travel History

**TIME ZONE**  
Local Scan Time



Monday, March 7, 2022

12:55 PM

WESTBOROUGH, MA

Picked up  
Tendered at FedEx Office

9:30 AM

Shipment information sent to FedEx

## Shipment Facts

### TRACKING NUMBER

776222392665

### SERVICE

FedEx Priority Overnight

### WEIGHT

0.5 lbs / 0.23 kgs

### 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

### ACTUAL PICK UP

3/7/22 [?](#)

### SHIPMENT-FACTS.COD-DETAIL

\$0.00

### STANDARD TRANSIT

3/8/22 before 10:30 am [?](#)

# EXHIBIT 4

## Property Card

# 46 MEADOW RD

**Location** 46 MEADOW RD

**Mblu** 85/ 69/ 1/ 1

**Acct#** C0092100

**Owner** NICHOLS AUTO PARTS INC

**Assessment** \$886,100

**Appraisal** \$1,265,800

**PID** 6361

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$756,800	\$509,000	\$1,265,800

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$529,800	\$356,300	\$886,100

## Owner of Record

**Owner** NICHOLS AUTO PARTS INC

**Sale Price** \$0

**Co-Owner**

**Certificate**

**Address** 46 MEADOW RD  
CLINTON, CT 06413

**Book & Page** 0452/0683

**Sale Date** 06/21/2011

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
NICHOLS AUTO PARTS INC	\$0		0452/0683	06/21/2011
CHARNEY MICHAEL R 1/2 & ROBERT 1/2	\$0		0442/1250	06/01/2010
CHARNEY ANNE LOUISE 1/2 INT;	\$0		0312/1009	03/11/2001
CHARNEY MICHAEL & ANNE LOUISE TIC	\$0		0239/0575	07/28/1995

## Building Information

### Building 1 : Section 1

**Year Built:** 1974  
**Living Area:** 4,800  
**Replacement Cost:** \$242,681  
**Building Percent Good:** 58

**Replacement Cost**

**Less Depreciation:** \$140,800

**Building Attributes**

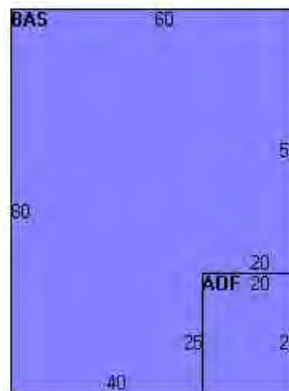
Field	Description
STYLE	Pre-Eng Gar
MODEL	Ind/Comm
Grade	Average
Stories:	1
Occupancy	1.00
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Metal/Tin
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Hot Air-no Duc
AC Type	None
Struct Class	
Bldg Use	IND BLDG
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	4022
Heat/AC	NONE
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	14.00
% Comn Wall	0.00

**Building Photo**



(http://images.vgsi.com/photos/ClintonCTPhotos//0021/P1000469\_21153..)

**Building Layout**



(http://images.vgsi.com/photos/ClintonCTPhotos//Sketches/6361\_6361.jpg)

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	4,300	4,300
AOF	Office, (Average)	500	500
		4,800	4,800

**Extra Features**

Extra Features	<u>Legend</u>
No Data for Extra Features	

**Land**

**Land Use**

**Use Code** 4022  
**Description** IND BLDG  
**Zone** I-2  
**Neighborhood** 1500  
**Alt Land Appr** No  
**Category**

**Land Line Valuation**

**Size (Acres)** 12.8  
**Frontage** 0  
**Depth** 0  
**Assessed Value** \$356,300  
**Appraised Value** \$509,000

**Outbuildings**

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
MSC51	TOWER			195.00 UNIT	\$109,700	1
MSC1				3.00 UNIT	\$506,300	1

**Valuation History**

Appraisal				
Valuation Year	Improvements	Land	Total	
2020	\$756,800	\$509,000	\$1,265,800	
2019	\$61,400	\$245,800	\$307,200	
2018	\$61,400	\$245,800	\$307,200	

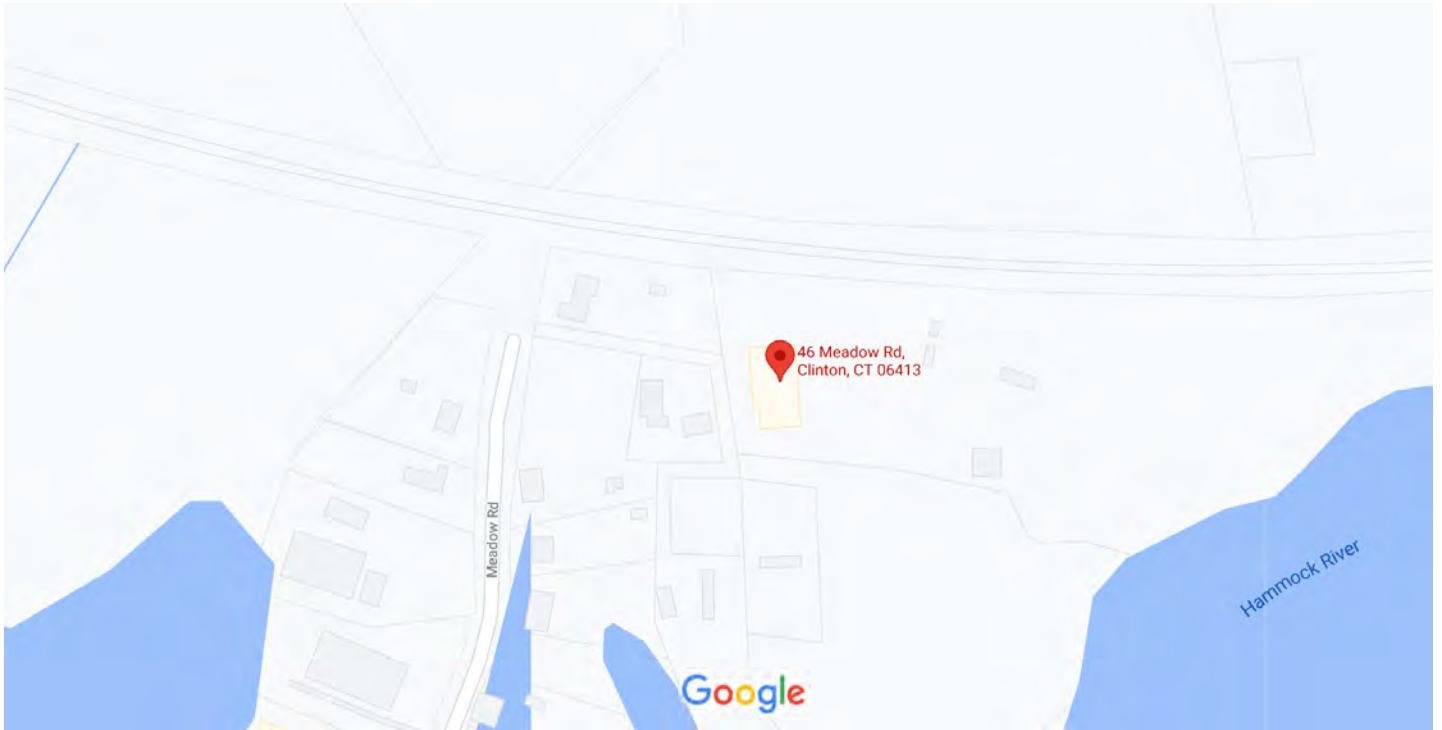
Assessment				
Valuation Year	Improvements	Land	Total	
2020	\$529,800	\$356,300	\$886,100	
2019	\$42,900	\$172,100	\$215,000	
2018	\$42,900	\$172,100	\$215,000	

# EXHIBIT 5

## Property Map



Google Maps 46 Meadow Rd



Map data ©2021 100 ft



### 46 Meadow Rd

Clinton, CT 06413

Building



Directions



Save



Nearby



Send to your phone



Share

### Photos



### At this location

Nichols Auto Parts, Inc.

3.8 ★★★★★ (16)

Junkyard · 46 Meadow Rd

Open until 5:00 PM





46 Meadow Rd



Imagery ©2021 Maxar Technologies, New York GIS, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 100 ft



# 46 Meadow Rd

Building



Directions



Save



Nearby



Send to your phone



Share



46 Meadow Rd, Clinton, CT 06413

## Photos



### At this place

**Nichols Auto Parts, Inc.**

3.8 ★★★★★ (16)

Junkyard

Open until 5:00 PM



# EXHIBIT 6

## Zoning Approval

SITE ID #4275-034

SITE NAME: Clinton 4, CT

JOB COST #001879

**ZONING/PERMITTING COMPLETION FORM**

Zoning Classification for Site:I-1

Special Relief (setback, height variance, special use permit, wetlands permit etc.):

**Special Permit**

\* Date of Zoning Decision: 11/08/99

Summary of zoning conditions **(Include details of any conditions relative to time restrictions, expiration dates, renewal obligations, monetary obligations, performance obligation, inspection fees).**

See attached.

Submitted by: Esther McNany

Title: Territory Manager

Territory Manager Approval:

\* Attach a copy of the Zoning decision and forward to the Regional Compliance Manager as soon as possible, after the decision.



Town of Clinton  
Planning and Zoning Commission  
54 East Main Street  
Clinton, Connecticut 06413

November 15, 1999

CERTIFIED MAIL

SBA, Inc  
125 Shaw Street  
New London, CT 06320

Re: SP 99-450: 46 Meadow Road, SBA, Inc.: Communications tower. Map 85, Block 69, Lot 1. Zone I-1.  
CAM 99-450: 46 Meadow Road, SBA, Inc.: Communications tower. Map 85, Block 69, Lot 1. Zone I-1.

Dear Ms. McNany:

At its Regular Monthly Meeting held on November 8, 1999, the Clinton Planning and Zoning Commission approved CAM 99-450 and Site Plan Application 99-450 with the following conditions:

1. If the tower is abandoned, it is to be removed within one year by the owner, otherwise the town will remove it at the expense of the property owner;
2. Should the existing fence fall into disrepair on the southwest corner of the property, the applicant shall replace the fence.

On Tuesday, November 16, 1999, the Legal Notice of Decision will appear in the Clinton Recorder at which time a 15-day appeal period will begin. Please be advised that the improvements cannot commence on this property until the 15-day appeal period has ended. Your 15-day appeal period will end at midnight on December 1, 1999.

In addition, pursuant to Section 10.10 of the Clinton Zoning Regulations, this approval is conditioned upon the commencement of the proposed improvements within one year from November 8, 1999 and completion thereof within five years (or by November 8, 2004). Failure to complete all work within such a five-year period shall result in automatic expiration of the approval of such site plan.

If you have any questions, please call the Planning and Zoning Office at (860) 669-6133, 9:00 a.m. to 4:00 p.m., Monday through Friday.

CLINTON PLANNING AND ZONING COMMISSION

Michael Mozzochi, Chairman  
Kimberly Ann Neri, Vice Chairman  
Nancy Taubman, Secretary

Cc: Donald Gesick  
Robert Grabarek  
Nathan L. Jacobson & Associates, Inc

Phone: (860) 669-6133

FAX: (860) 664-4469

# EXHIBIT 7

## EME Report



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

Dish Wireless Existing Facility

Site ID: BOBDL00151B

46 Meadow Road  
Clinton, Connecticut 06413

**September 8, 2021**

**EBI Project Number: 6221004761**

<b>Site Compliance Summary</b>	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>10.71%</b>

September 8, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00151B

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **46 Meadow Road** in **Clinton, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 46 Meadow Road in Clinton, 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 130 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):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna AI MPE %:	<b>1.54%</b>	Antenna BI MPE %:	<b>1.54%</b>	Antenna CI MPE %:	<b>1.54%</b>

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	1.54%
Sprint	1.71%
T-Mobile	0.01%
Verizon	2.13%
AT&T	5.32%
<b>Site Total MPE % :</b>	<b>10.71%</b>

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.54%
Dish Wireless Sector B Total:	1.54%
Dish Wireless Sector C Total:	1.54%
<b>Site Total MPE % :</b>	<b>10.71%</b>

Dish Wireless Maximum MPE Power Values (Sector A)							
Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	130.0	2.09	600 MHz n71	400	0.52%
Dish Wireless 1900 MHz n70	4	542.70	130.0	5.08	1900 MHz n70	1000	0.51%
Dish Wireless 2190 MHz n66	4	542.70	130.0	5.08	2190 MHz n66	1000	0.51%
						<b>Total:</b>	<b>1.54%</b>

• 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:	1.54%
Sector B:	1.54%
Sector C:	1.54%
Dish Wireless Maximum MPE % (Sector A):	1.54%
Site Total:	10.71%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **10.71%** 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

---

## **Post-Mod Structural Analysis Report**

**Existing 195 ft Sabre Self Supporting Tower**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT01879-S**

**Customer Site Name: Clinton 4 CT**

**Carrier Name: Dish Wireless (App#: 153661, v2)**

**Carrier Site ID / Name: BOBDL00151B / SBA - CT01879S**

**Site Location: 46 Meadow Road**

**Clinton, Connecticut**

**Middlesex County**

**Latitude: 41.275205**

**Longitude: -72.497711**

### **Analysis Result:**

**Max Structural Usage: 99.3% [Pass]**

**Max Foundation Usage: 77% [Pass]**

**Report Prepared By: Ram Kodali**



## Introduction

The purpose of this report is to summarize the analysis results on the 195 ft Sabre Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any existing modification listed under Sources of Information was assumed completed and was included in this analysis.

The proposed modification by **TES** listed under Sources of Information was considered completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Sabre, Job # 00-10101, dated 11/19/99
<b>Foundation Drawing</b>	Sabre, Dwg # 9014022, dated 11/23/99
<b>Geotechnical Report</b>	JGI, Project # 99500G, dated 12/13/99; Original design soil parameters from Sabre Job # 00-10101, dated 11/23/99
<b>Mount Analysis</b>	N/A
<b>Existing Modification</b>	FDH, Project # 1465YH1400, dated 6/3/14; FDH, Project # 15BZTJ1400, dated 9/24/15; TES, Job # 32039, dated 1/10/2018; TES, Job # 71440, dated 3/29/2019
<b>Proposed Modification</b>	TES Job # 110857

## 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 **TESTowers**, 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.

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 135$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 105$ mph (3-Sec. Gust)
<b>Basic Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	D
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft

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	194.0	3	AIR 21 B2A B4P - Panel	(3) Sector Frame	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
2		3	AIR 21 B4A B2P - Panel			
3	192.5	3	KRY 112 144/1			
4	184.0	1	PD1151	Direct	(1) 7/8"	Town of Clinton
5	182.0	3	RFS APXVTM14-C-120 - Panel	(3) Sector Frame	(4) 1 1/4" Hybrid	Sprint Nextel
6		3	RFS APXVSP18-C-A20 - Panel			
7		3	ALU TD-RRH8x20-25			
8		3	ALU 1900 MHz RRH			
9		3	ALU 800 MHz RRH			
10		4	RFS ACU-A20-N RET			
11	162.0	3	ALU ALU 800 MHz Filter	(3) Sector Frame	(10) 1 5/8" (2) 1 5/8" Fiber	Verizon
12		6	SBNHH-1D65B - Panel			
13		4	LPA-80063-4CF - Panel			
14		2	LPA-80063/6CF - Panel			
15		6	FD9R6004/2C-3L			
16		3	RRH2X60-AWS			
17		3	RRH2X60-PCS			
18		3	RRH2X60-700			
19	2	DB-T1-6Z-8AB-0Z	(3) Sector Frame w/ (3) Stabilizer Arm (3) SFS-V Kickers	(12) 1 5/8" (1) 1/2" Fiber & (2) 3/4" DC in (1) 3" Flex Conduit (1) 1/2" Fiber (4) 3/4" DC	AT&T	
20	3	Kathrein - 800 10964 - Panel				
21	6	Andrew - SBNHH-1D65A - Panel				
22	3	Kathrein - 7770 - Panel				
23	6	Powerwave TT19-08BP111-001 TMA				
24	12	Powerwave 7020.00 RET				
25	3	Ericsson 4449 B5 B12				
26	3	Ericsson RRUS 32				
27	3	Ericsson RRUS 8843 B2 B66A				
28	3	Raycap DC6-48-60-18-8F	(3) Side Arm	(4) 7/8"	Town of Clinton	
29	141.5	3				SD312HL
34	102.0	1	Radiowave RDH4518A - Dish	Pipe	(2) CAT5e	Town of Clinton
35	75.0	1	GPS	Direct	(1) 1/2"	Verizon

## 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
30	130.0	3	JMA Wireless MX08FRO665-21 - Panel	Commscope (3) MTC3975083	(1) 1.6" Hybrid	Dish Wireless
31		3	Fujitsu TA08025-B604			
32		3	Fujitsu TA08025-B605			
33		1	Raycap RDIDC-9181-OF-48			

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

## Analysis Results

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

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	<b>99.3%</b>	<b>86.9%</b>	<b>14.2%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	534.3	472.3	57.5

The foundation has been investigated using the supplied documents and soils report and was found to be 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 0.1850 degrees under the operational wind speed as specified in the Analysis Criteria.

## **Conclusions**

Based on the analysis results, the structure and its foundation will be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222-G-2 Standard after the following proposed modification is successfully completed.

- Proposed modification design drawing by TES Job # 110857

## **Pre-Mod Installation Determination**

We have also checked this tower to determine if the proposed Dish Wireless equipment loading can be installed prior to the completion of the required modifications. We ran a reduced wind loading case as required by TIA-322 considering a construction period of no more than 6 months.

The tower and foundations passed, so the Carrier can proceed and install their proposed loading prior to the mods completion. Please be aware that this approval is being provided and is based on the method outlined in TIA-322. This approval is not a blanket approval and there is still a risk that the tower will experience a wind event that cannot be predicted by TIA-322 or our Engineers. In the event of an unforeseen wind event, Tower Engineering Solutions will not be liable nor responsible for damage to the tower or the Carriers equipment. Additionally, the tower cannot go beyond the 6-month construction period without the modifications being completed. If the modifications cannot be completed within 6 months from the completed installation of the Carrier's proposed equipment, TES must be notified immediately for further review.

## 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 EIA/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.

## Structure: CT01879-S-SBA

**Site Name:** Clinton 4 CT

**Code:** EIA/TIA-222-G

8/5/2021

**Type:** Self Support

**Base Shape:** Triangle

**Basic WS:** 105.00

**Height:** 195.00 (ft)

**Base Width:** 23.00

**Basic Ice WS:** 50.00

**Base Elev:** 0.00 (ft)

**Top Width:** 5.00

**Operational WS:** 60.00

Page: 1

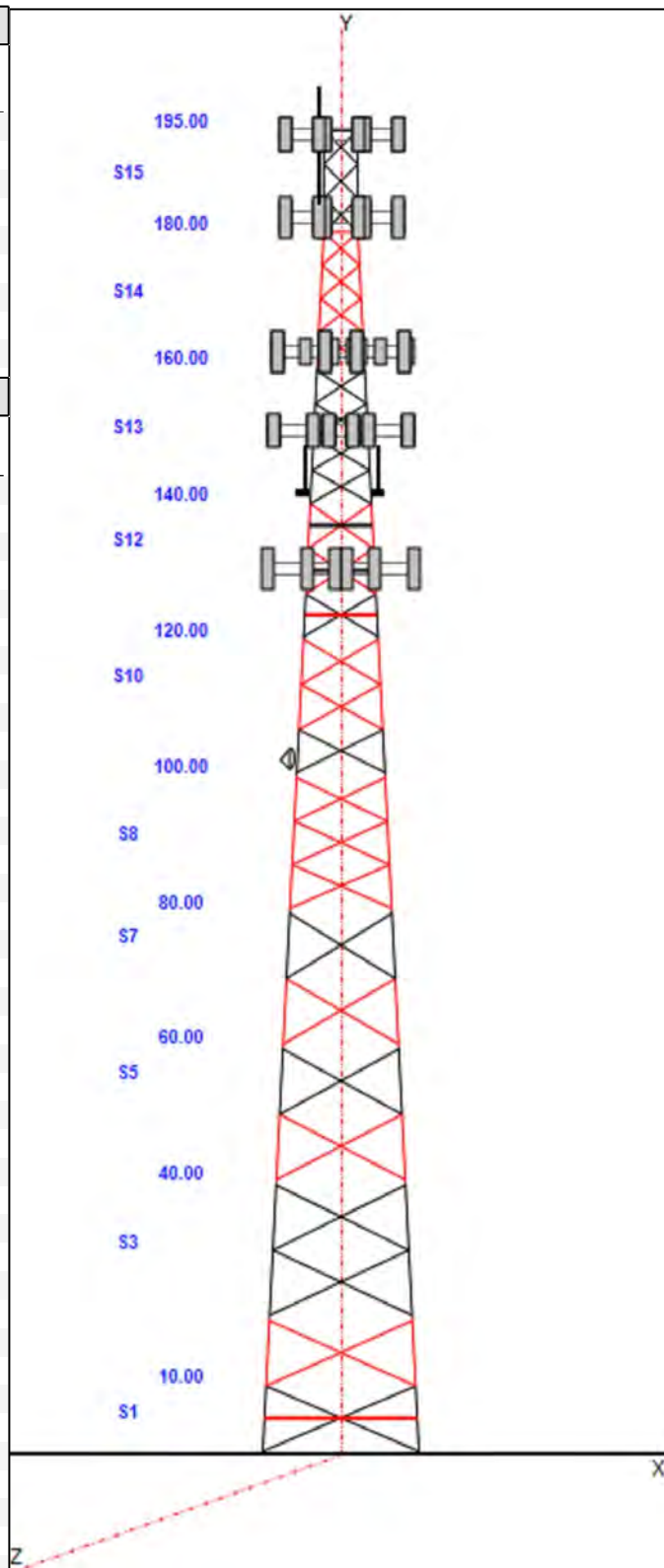


### Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1-2	PX 8" DIA PIPE	SAE 4X4X0.375	
3-5	MOD 8"PST+5x5x3/8L	SAE 4X4X0.375	
6-7	MOD 6"PX+L4x4x3/8	SAE 4X4X0.375	
8	MOD 6"PST+4x4x3/8L	SAE 3X3X0.375	
9-10	PX 5" DIA PIPE	SAE 2.5X2.5X0.375	
11-12	PX 4" DIA PIPE	SAE 2.5X2.5X0.25	
13	PX 3" DIA PIPE	SAE 2.5X2.5X0.375	
14	PST 3" DIA PIPE	SAE 1.75X1.75X0.1875	SAE 1.75X1.75X0.1875
15	PST 2" DIA PIPE	SAE 1.75X1.75X0.1875	SAE 1.75X1.75X0.1875

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
194.00	194.00	3	AIR 21 B2A B4P
194.00	194.00	3	AIR 21 B4A B2P
194.00	194.00	3	Sector Frame
192.50	192.50	3	KRY 112 144/1
184.00	192.60	1	PD1151
182.00	182.00	3	Sector Frame
182.00	182.00	3	APXVTM14-C-120
182.00	182.00	3	APXVSP18-C-A20
182.00	182.00	3	TD-RRH8x20-25
182.00	182.00	3	1900 MHz RRH
182.00	182.00	3	800 MHz RRH
182.00	182.00	4	ACU-A20-N
182.00	182.00	3	ALU 800 MHz Filter
162.00	162.00	3	Sector Frame
162.00	162.00	6	SBNHH-1D65B
162.00	162.00	4	LPA-80063-4CF
162.00	162.00	2	LPA-80063/6CF
162.00	162.00	6	FD9R6004/2C-3L
162.00	162.00	3	RRH2X60-AWS
162.00	162.00	3	RRH2X60-PCS
162.00	162.00	3	RRH2X60-700
162.00	162.00	2	DB-T1-6Z-8AB-0Z
150.50	150.50	1	(3) Stabilizer Kit + SFS-V Kit
150.50	150.50	3	7770
150.50	150.50	6	SBNHH-1D65A
150.50	150.50	6	TT19-08BP111-001
150.50	150.50	12	Powerwave 7020.00 RET
150.50	150.50	3	Raycap DC6-48-60-18-8F COVP
150.50	150.50	3	800 10964
150.50	150.50	3	Ericsson 4449 B5 B12 RRU
150.50	150.50	3	Ericsson RRUS 32 RRU
150.50	150.50	3	Ericsson RRUS 8843 B2 B66A RRU
150.50	150.50	3	Sector Frame
141.50	141.50	3	Side Arm
141.50	144.96	3	SD312HL
130.00	130.00	3	MX08FRO665-21
130.00	130.00	3	TA08025-B604
130.00	130.00	3	TA08025-B605
130.00	130.00	1	RDIDC-9181-OF-48
130.00	130.00	1	(3) MTC3975083



## Structure: CT01879-S-SBA

<b>Site Name:</b> Clinton 4 CT	<b>Code:</b> EIA/TIA-222-G	8/5/2021
<b>Type:</b> Self Support	<b>Base Shape:</b> Triangle	<b>Basic WS:</b> 105.00
<b>Height:</b> 195.00 (ft)	<b>Base Width:</b> 23.00	<b>Basic Ice WS:</b> 50.00
<b>Base Elev:</b> 0.00 (ft)	<b>Top Width:</b> 5.00	<b>Operational WS:</b> 60.00



Page: 2

102.00	102.00	1	Radiowave RDH4518A
102.00	102.00	1	Pipe Mount
75.00	75.00	1	GPS

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	195.00	1	Climbing Ladder
0.00	195.00	1	Safety Cable
0.00	194.00	12	1 5/8" Coax
0.00	194.00	1	1 5/8" Fiber
0.00	194.00	1	W/G Ladder
0.00	184.00	1	7/8" Coax
0.00	182.00	4	1 1/4" Hybrid
0.00	182.00	1	W/G Ladder
0.00	162.00	10	1 5/8" Coax
0.00	162.00	2	1 5/8" Fiber
0.00	162.00	1	W/G Ladder
0.00	150.50	1	(1)1/2 & (2)3/4" in 3" Conduit
0.00	150.50	2	1 5/8" Coax
0.00	150.50	6	1 5/8" Coax
0.00	150.50	4	1 5/8" Coax
0.00	150.50	1	1/2" Fiber
0.00	150.50	4	3/4" DC
0.00	150.50	1	W/G Ladder
0.00	141.50	4	7/8" Coax
0.00	130.00	1	1.6" Hybrid
0.00	102.00	2	CAT5e
0.00	75.00	1	1/2" Coax

### Base Reactions

Leg	Overturning
Max Uplift: -472.29 (kips)	Moment: 10183.40 (ft-kips)
Max Down: 534.34 (kips)	Total Down: 69.27 (kips)
Max Shear: 57.51 (kips)	Total Shear: 95.69 (kips)



# Structure: CT01879-S-SBA

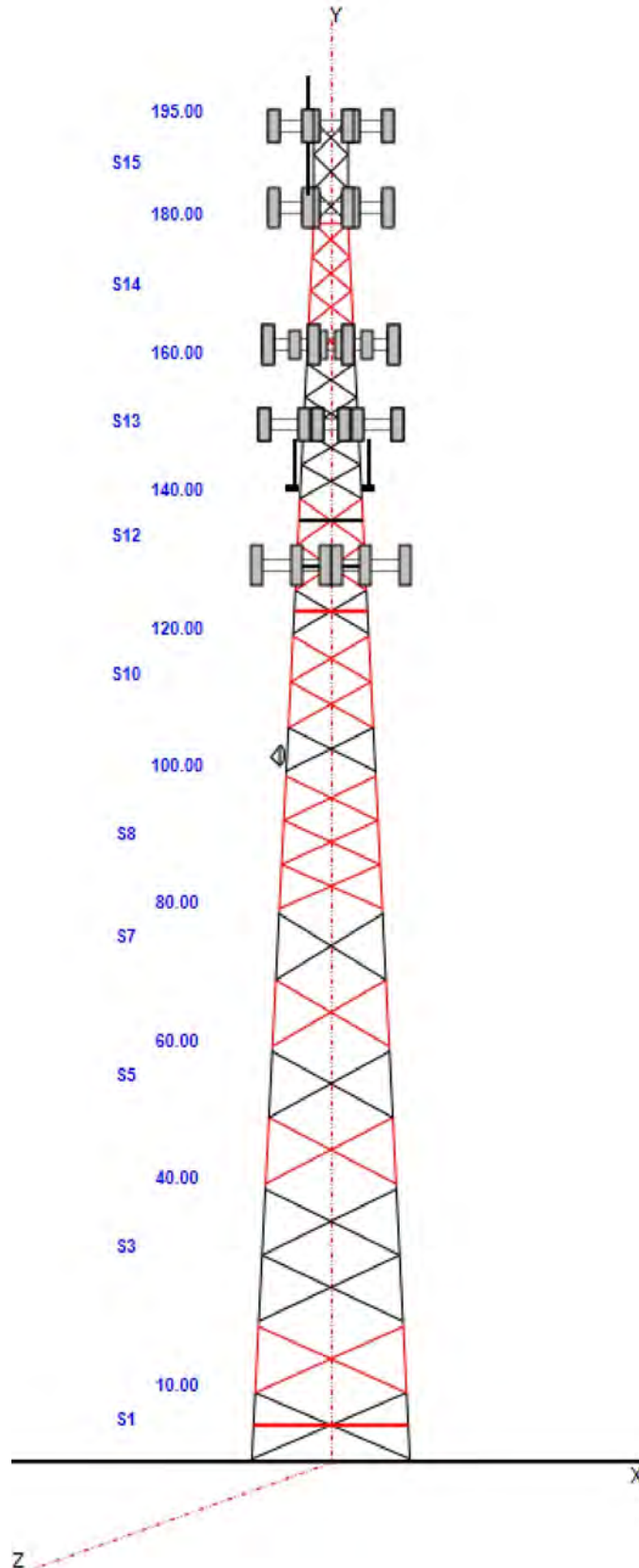
**Site Name:** Clinton 4 CT  
**Type:** Self Support  
**Height:** 195.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** Triangle  
**Base Width:** 23.00  
**Top Width:** 5.00

**Code:** EIA/TIA-222-G  
**Basic WS:** 105.00  
**Basic Ice WS:** 50.00  
**Operational WS:** 60.00

8/5/2021

Page: 3

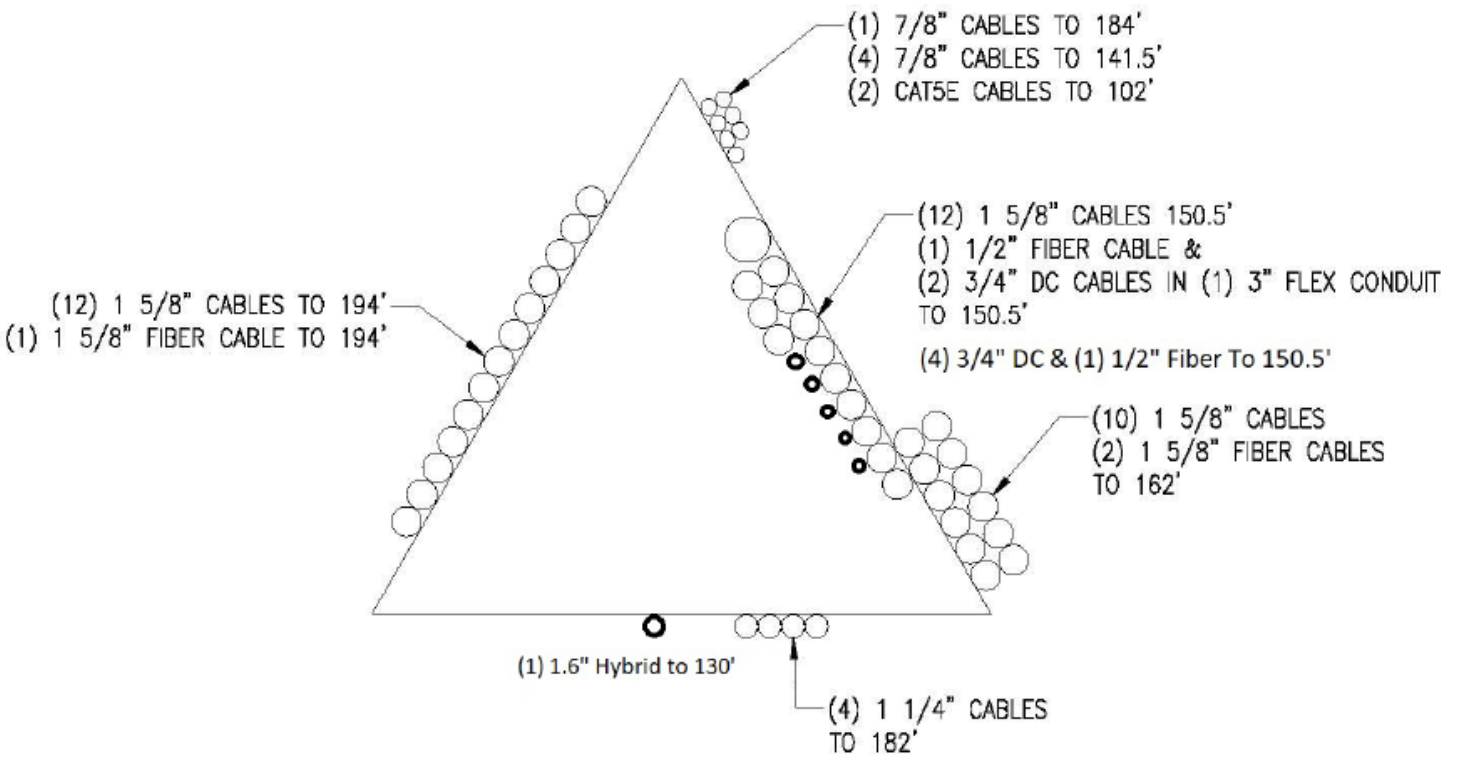


# Structure: CT01879-S-SBA - Coax Line Placement

**Type:** Self Support  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)

8/5/2021

Page: 4



## Loading Summary

<b>Structure:</b> CT01879-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/5/2021
<b>Site Name:</b> Clinton 4 CT	<b>Exposure:</b> D	
<b>Height:</b> 195.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



Page: 5

### Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice		Ice		Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
			Weight (lb)	CaAa (sf)	Weight (lb)	CaAa (sf)						
194.00	AIR 21 B2A B4P	3	91.50	6.090	264.95	7.214	56.000	12.100	7.900	0.90	0.86	0.000
194.00	AIR 21 B4A B2P	3	90.40	6.090	263.85	7.214	56.000	12.100	7.900	0.90	0.86	0.000
194.00	Sector Frame	3	500.00	17.500	1213.84	31.741	0.000	0.000	0.000	0.75	0.67	0.000
192.50	KRY 112 144/1	3	11.00	0.410	22.02	0.896	6.900	6.100	2.700	0.80	0.67	0.000
184.00	PD1151	1	20.00	4.820	243.60	11.145	206.400	2.800	2.800	1.00	1.00	8.600
182.00	Sector Frame	3	500.00	17.500	1206.88	31.602	0.000	0.000	0.000	0.75	0.67	0.000
182.00	APXVTM14-C-120	3	56.00	6.340	218.85	7.468	56.300	12.600	6.300	0.80	0.79	0.000
182.00	APXVSP18-C-A20	3	57.00	8.020	259.69	9.332	72.000	11.800	7.000	0.80	0.83	0.000
182.00	TD-RRH8x20-25	3	70.00	4.050	182.15	4.874	26.100	18.600	6.700	0.80	0.67	0.000
182.00	1900 MHz RRH	3	44.00	3.800	154.54	5.207	23.000	13.000	17.000	0.80	0.67	0.000
182.00	800 MHz RRH	3	53.00	2.490	127.89	3.648	19.700	13.000	10.800	0.80	0.67	0.000
182.00	ACU-A20-N	4	1.00	0.140	5.35	0.441	4.000	2.000	3.500	0.80	0.67	0.000
182.00	ALU 800 MHz Filter	3	8.80	0.780	26.67	1.435	10.000	8.000	3.000	0.80	0.67	0.000
162.00	Sector Frame	3	500.00	17.500	1206.88	31.602	0.000	0.000	0.000	0.75	0.67	0.000
162.00	SBNHH-1D65B	6	40.60	8.080	245.24	9.389	72.000	11.900	7.100	0.80	0.81	0.000
162.00	LPA-80063-4CF	4	20.00	6.150	228.53	7.197	47.400	15.200	13.100	0.80	0.92	0.000
162.00	LPA-80063/6CF	2	27.00	9.600	319.21	10.971	70.900	15.000	13.100	0.80	0.94	0.000
162.00	FD9R6004/2C-3L	6	3.10	0.360	11.23	0.809	5.800	6.500	1.500	0.80	0.67	0.000
162.00	RRH2X60-AWS	3	55.00	3.500	136.02	4.299	37.000	11.000	6.000	0.80	0.67	0.000
162.00	RRH2X60-PCS	3	55.00	2.200	140.85	2.845	22.000	12.000	9.400	0.80	0.67	0.000
162.00	RRH2X60-700	3	55.00	3.500	136.02	4.299	37.000	11.000	6.000	0.80	0.67	0.000
162.00	DB-T1-6Z-8AB-OZ	2	18.90	4.800	164.77	5.685	24.000	24.000	10.000	0.80	0.71	0.000
150.50	(3) Stabilizer Kit + SFS-V Kit	1	180.00	8.100	406.18	16.582	0.000	0.000	0.000	1.00	1.00	0.000
150.50	7770	3	35.00	5.500	170.17	6.565	55.000	11.000	5.000	0.80	0.73	0.000
150.50	SBNHH-1D65A	6	33.50	5.880	191.86	6.960	55.000	11.900	7.100	0.80	0.83	0.000
150.50	TT19-08BP111-001	6	16.00	0.640	36.24	1.233	9.900	6.700	5.400	0.80	0.67	0.000
150.50	Powerwave 7020.00 RET	12	2.20	0.400	12.43	0.884	4.900	8.300	2.400	0.80	0.67	0.000
150.50	Raycap DC6-48-60-18-8F COVP	3	32.80	0.920	96.57	1.358	24.000	11.000	18.500	0.80	0.57	0.000
150.50	800 10964	3	83.80	10.000	309.47	11.299	59.000	20.000	6.390	0.80	0.71	0.000
150.50	Ericsson 4449 B5 B12 RRU	3	73.00	1.970	127.88	2.517	14.960	13.190	10.430	0.80	0.67	0.000
150.50	Ericsson RRUS 32 RRU	3	77.00	1.650	125.49	2.230	20.900	9.500	3.300	0.80	0.67	0.000
150.50	Ericsson RRUS 8843 B2 B66A RRU	3	72.00	1.640	119.30	2.156	14.900	13.200	10.900	0.80	0.67	0.000
150.50	Sector Frame	3	450.00	14.000	801.84	21.037	0.000	0.000	0.000	0.75	0.75	0.000
141.50	Side Arm	3	120.00	4.500	223.49	9.685	0.000	0.000	0.000	0.75	0.75	0.000
141.50	SD312HL	3	10.30	3.450	107.58	6.230	83.100	3.500	18.900	1.00	1.00	3.462
130.00	MX08FRO665-21	3	64.50	12.490	349.73	13.926	72.000	20.000	8.000	0.80	0.74	0.000
130.00	TA08025-B604	3	63.90	1.960	113.55	2.510	15.800	15.000	7.900	0.80	0.67	0.000
130.00	TA08025-B605	3	75.00	1.960	126.29	2.510	15.800	15.000	9.100	0.80	0.67	0.000
130.00	RDIDC-9181-OF-48	1	21.90	2.010	74.12	2.567	16.600	14.600	8.500	1.00	1.00	0.000
130.00	(3) MTC3975083	1	1242.0	29.450	2432.30	65.738	0.000	0.000	0.000	0.75	1.00	0.000
102.00	Radiowave RDH4518A	1	110.00	8.920	276.38	10.612	0.000	0.000	0.000	1.00	1.00	0.000
102.00	Pipe Mount	1	100.00	2.000	180.71	3.345	0.000	0.000	0.000	1.00	1.00	0.000
75.00	GPS	1	10.00	1.000	37.36	1.664	12.000	9.000	6.000	1.00	1.00	0.000
<b>Totals:</b>		<b>136</b>	<b>12,357.30</b>		<b>33,308.02</b>						<b>Number of Appurtenances :</b>	<b>43</b>

## Loading Summary

<b>Structure:</b> CT01879-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/5/2021
<b>Site Name:</b> Clinton 4 CT	<b>Exposure:</b> D	
<b>Height:</b> 195.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



Page: 6

### Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	195.00	Climbing Ladder	1	1.00	6.90	100.00	2	Individual NR		N	1.00	1.00	
0.00	195.00	Safety Cable	1	0.38	0.27	100.00	2	Individual NR		N	1.00	1.00	
0.00	194.00	1 5/8" Coax	12	1.98	1.04	100.00	3	Individual IR		N	1.00	1.00	
0.00	194.00	1 5/8" Fiber	1	1.63	1.10	100.00	3	Individual NR		N	1.00	1.00	
0.00	194.00	W/G Ladder	1	1.00	6.00	100.00	3	Individual NR		N	1.00	1.00	
0.00	184.00	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	182.00	1 1/4" Hybrid	4	1.55	0.66	100.00	1	Individual IR		N	1.00	1.00	
0.00	182.00	W/G Ladder	1	2.00	6.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	162.00	1 5/8" Coax	10	1.98	1.04	50.00	2	Block		N	0.40	1.00	
0.00	162.00	1 5/8" Fiber	2	1.63	1.10	50.00	2	Block		N	0.40	1.00	
0.00	162.00	W/G Ladder	1	1.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	150.50	(1)1/2 & (2)3/4" in 3" Conduit	1	3.00	1.78	100.00	2	Individual NR		N	1.00	1.00	
0.00	150.50	1 5/8" Coax	2	1.98	1.04	100.00	2	Individual IR		N	1.00	1.00	0
0.00	150.50	1 5/8" Coax	6	1.98	1.04	50.00	2	Block		N	0.40	1.00	
0.00	150.50	1 5/8" Coax	4	1.98	1.04	100.00	2	Individual IR		N	1.00	1.00	
0.00	150.50	1/2" Fiber	1	0.50	0.16	100.00	2	Individual NR		N	1.00	1.00	0
0.00	150.50	3/4" DC	4	0.75	0.40	50.00	2	Block		N	1.00	1.00	0
0.00	150.50	W/G Ladder	1	1.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	141.50	7/8" Coax	4	1.11	0.52	50.00	2	Block		N	0.40	1.00	
0.00	130.00	1.6" Hybrid	1	1.60	1.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	102.00	CAT5e	2	0.19	0.02	50.00	2	Block		N	0.50	1.00	
0.00	75.00	1/2" Coax	1	0.65	0.16	100.00	2	Individual NR		N	1.00	1.00	

## Section Forces

**Structure:** CT01879-S-SBA  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** D  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

8/5/2021  
  
 Page: 7



**Load Case:** 1.2D + 1.6W Normal Wind

1.2D + 1.6W 105 mph Wind at Normal To Face

<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	<b>Ice Importance Factor:</b> 1.00
<b>Ice Dead Load Factor:</b> 0.00	

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	22.379	14.40	0.00	0.16	2.74	1.00	1.00	0.00	28.47	68.65	0.00	4,902.3	0.0	2622.33	1672.95	4,295.28
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	1.00	1.00	0.00	21.15	68.65	0.00	4,152.5	0.0	2014.20	1673.32	3,687.52
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	1.00	1.00	0.00	45.77	137.31	0.00	7,924.0	0.0	4716.14	3775.39	8,491.54
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	1.00	1.00	0.00	22.08	68.65	0.00	3,866.9	0.0	2415.06	2025.61	4,440.67
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	1.00	1.00	0.00	21.58	68.65	0.00	3,807.0	0.0	2424.68	2097.56	4,522.24
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	1.00	1.00	0.00	19.06	68.65	0.00	3,652.0	0.0	2250.18	2159.39	4,409.57
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	1.00	1.00	0.00	18.57	68.38	0.00	3,592.8	0.0	2227.64	2205.13	4,432.77
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	1.00	1.00	0.00	35.97	136.22	0.00	6,308.8	0.0	4382.41	4534.45	8,916.86
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	1.00	1.00	0.00	8.41	45.36	0.00	1,714.1	0.0	1116.97	1545.89	2,662.86
10	113.3	35.13	10.812	12.38	0.00	0.14	2.80	1.00	1.00	0.00	16.25	90.58	0.00	3,367.7	0.0	2171.24	3136.76	5,308.01
11	123.3	35.65	7.214	5.01	0.00	0.17	2.71	1.00	1.00	0.00	9.71	45.31	0.00	1,496.0	0.0	1277.42	1630.88	2,908.30
12	133.3	36.14	13.498	10.02	0.00	0.18	2.68	1.00	1.00	0.00	18.51	89.27	0.00	2,914.1	0.0	2437.15	3257.53	5,694.68
13	150.0	36.89	15.173	11.69	0.00	0.16	2.73	1.00	1.00	0.00	21.51	108.52	0.00	3,857.4	0.0	2943.26	4118.87	7,062.13
14	170.0	37.70	9.382	11.69	0.00	0.17	2.71	1.00	1.00	0.00	15.71	64.15	0.00	1,894.7	0.0	2181.11	2485.62	4,666.73
15	187.5	38.35	6.700	5.94	0.00	0.16	2.73	1.00	1.00	0.00	10.08	34.24	0.00	988.1	0.0	1433.57	1305.93	2,739.50
														<b>54,438.3</b>	<b>0.0</b>			<b>74,238.63</b>

**Load Case:** 1.2D + 1.6W 60° Wind

1.2D + 1.6W 105 mph Wind at 60° From Face

<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	<b>Ice Importance Factor:</b> 1.00
<b>Ice Dead Load Factor:</b> 0.00	


Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	22.379	14.40	0.00	0.16	2.74	0.80	1.00	0.00	23.99	68.65	0.00	4,902.3	0.0	2210.07	1672.95	3,883.02
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	0.80	1.00	0.00	18.10	68.65	0.00	4,152.5	0.0	1723.94	1673.32	3,397.26
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	0.80	1.00	0.00	40.13	137.31	0.00	7,924.0	0.0	4134.79	3775.39	7,910.18
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	0.80	1.00	0.00	19.44	68.65	0.00	3,866.9	0.0	2126.10	2025.61	4,151.71
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	0.80	1.00	0.00	19.05	68.65	0.00	3,807.0	0.0	2140.62	2097.56	4,238.18
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	0.80	1.00	0.00	16.62	68.65	0.00	3,652.0	0.0	1962.38	2159.39	4,121.77
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	0.80	1.00	0.00	16.24	68.38	0.00	3,592.8	0.0	1948.36	2205.13	4,153.49
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	0.80	1.00	0.00	31.59	136.22	0.00	6,308.8	0.0	3848.91	4534.45	8,383.36
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	0.80	1.00	0.00	7.27	45.36	0.00	1,714.1	0.0	965.73	1545.89	2,511.61
10	113.3	35.13	10.812	12.38	0.00	0.14	2.80	0.80	1.00	0.00	14.09	90.58	0.00	3,367.7	0.0	1882.36	3136.76	5,019.13
11	123.3	35.65	7.214	5.01	0.00	0.17	2.71	0.80	1.00	0.00	8.27	45.31	0.00	1,496.0	0.0	1087.59	1630.88	2,718.47
12	133.3	36.14	13.498	10.02	0.00	0.18	2.68	0.80	1.00	0.00	15.81	89.27	0.00	2,914.1	0.0	2081.63	3257.53	5,339.15
13	150.0	36.89	15.173	11.69	0.00	0.16	2.73	0.80	1.00	0.00	18.47	108.52	0.00	3,857.4	0.0	2527.96	4118.87	6,646.83
14	170.0	37.70	9.382	11.69	0.00	0.17	2.71	0.80	1.00	0.00	13.83	64.15	0.00	1,894.7	0.0	1920.54	2485.62	4,406.16
15	187.5	38.35	6.700	5.94	0.00	0.16	2.73	0.80	1.00	0.00	8.74	34.24	0.00	988.1	0.0	1242.95	1305.93	2,548.88
														<b>54,438.3</b>	<b>0.0</b>			<b>69,429.21</b>

## Section Forces

**Structure:** CT01879-S-SBA  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** D  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

8/5/2021  
  
 Page: 8



**Load Case:** 1.2D + 1.6W 90° Wind

1.2D + 1.6W 105 mph Wind at 90° From Face

Wind Load Factor: 1.60

Wind Importance Factor: 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00

Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	22.379	14.40	0.00	0.16	2.74	0.85	1.00	0.00	25.11	68.65	0.00	4,902.3	0.0	2313.14	1672.95	3,986.08
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	0.85	1.00	0.00	18.86	68.65	0.00	4,152.5	0.0	1796.50	1673.32	3,469.83
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	0.85	1.00	0.00	41.54	137.31	0.00	7,924.0	0.0	4280.13	3775.39	8,055.52
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	0.85	1.00	0.00	20.10	68.65	0.00	3,866.9	0.0	2198.34	2025.61	4,223.95
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	0.85	1.00	0.00	19.69	68.65	0.00	3,807.0	0.0	2211.64	2097.56	4,309.19
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	0.85	1.00	0.00	17.23	68.65	0.00	3,652.0	0.0	2034.33	2159.39	4,193.72
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	0.85	1.00	0.00	16.82	68.38	0.00	3,592.8	0.0	2018.18	2205.13	4,223.31
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	0.85	1.00	0.00	32.69	136.22	0.00	6,308.8	0.0	3982.29	4534.45	8,516.73
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	0.85	1.00	0.00	7.56	45.36	0.00	1,714.1	0.0	1003.54	1545.89	2,549.42
10	113.3	35.13	10.812	12.38	0.00	0.14	2.80	0.85	1.00	0.00	14.63	90.58	0.00	3,367.7	0.0	1954.58	3136.76	5,091.35
11	123.3	35.65	7.214	5.01	0.00	0.17	2.71	0.85	1.00	0.00	8.63	45.31	0.00	1,496.0	0.0	1135.05	1630.88	2,765.93
12	133.3	36.14	13.498	10.02	0.00	0.18	2.68	0.85	1.00	0.00	16.48	89.27	0.00	2,914.1	0.0	2170.51	3257.53	5,428.03
13	150.0	36.89	15.173	11.69	0.00	0.16	2.73	0.85	1.00	0.00	19.23	108.52	0.00	3,857.4	0.0	2631.79	4118.87	6,750.66
14	170.0	37.70	9.382	11.69	0.00	0.17	2.71	0.85	1.00	0.00	14.30	64.15	0.00	1,894.7	0.0	1985.68	2485.62	4,471.30
15	187.5	38.35	6.700	5.94	0.00	0.16	2.73	0.85	1.00	0.00	9.07	34.24	0.00	988.1	0.0	1290.60	1305.93	2,596.53
<b>54,438.3</b>														<b>0.0</b>	<b>70,631.56</b>			

**Load Case:** 0.9D + 1.6W Normal Wind

0.9D + 1.6W 105 mph Wind at Normal To Face

Wind Load Factor: 1.60

Wind Importance Factor: 1.00

Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00

Ice Importance Factor: 1.00


Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	22.379	14.40	0.00	0.16	2.74	1.00	1.00	0.00	28.47	68.65	0.00	3,676.7	0.0	2622.33	1672.95	4,295.28
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	1.00	1.00	0.00	21.15	68.65	0.00	3,114.4	0.0	2014.20	1673.32	3,687.52
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	1.00	1.00	0.00	45.77	137.31	0.00	5,943.0	0.0	4716.14	3775.39	8,491.54
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	1.00	1.00	0.00	22.08	68.65	0.00	2,900.2	0.0	2415.06	2025.61	4,440.67
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	1.00	1.00	0.00	21.58	68.65	0.00	2,855.2	0.0	2424.68	2097.56	4,522.24
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	1.00	1.00	0.00	19.06	68.65	0.00	2,739.0	0.0	2250.18	2159.39	4,409.57
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	1.00	1.00	0.00	18.57	68.38	0.00	2,694.6	0.0	2227.64	2205.13	4,432.77
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	1.00	1.00	0.00	35.97	136.22	0.00	4,731.6	0.0	4382.41	4534.45	8,916.86
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	1.00	1.00	0.00	8.41	45.36	0.00	1,285.6	0.0	1116.97	1545.89	2,662.86
10	113.3	35.13	10.812	12.38	0.00	0.14	2.80	1.00	1.00	0.00	16.25	90.58	0.00	2,525.8	0.0	2171.24	3136.76	5,308.01
11	123.3	35.65	7.214	5.01	0.00	0.17	2.71	1.00	1.00	0.00	9.71	45.31	0.00	1,122.0	0.0	1277.42	1630.88	2,908.30
12	133.3	36.14	13.498	10.02	0.00	0.18	2.68	1.00	1.00	0.00	18.51	89.27	0.00	2,185.5	0.0	2437.15	3257.53	5,694.68
13	150.0	36.89	15.173	11.69	0.00	0.16	2.73	1.00	1.00	0.00	21.51	108.52	0.00	2,893.0	0.0	2943.26	4118.87	7,062.13
14	170.0	37.70	9.382	11.69	0.00	0.17	2.71	1.00	1.00	0.00	15.71	64.15	0.00	1,421.0	0.0	2181.11	2485.62	4,666.73
15	187.5	38.35	6.700	5.94	0.00	0.16	2.73	1.00	1.00	0.00	10.08	34.24	0.00	741.1	0.0	1433.57	1305.93	2,739.50
<b>40,828.7</b>														<b>0.0</b>	<b>74,238.63</b>			

## Section Forces

**Structure:** CT01879-S-SBA  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** D  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

8/5/2021  
  
 Page: 9



**Load Case:** 0.9D + 1.6W 60° Wind

0.9D + 1.6W 105 mph Wind at 60° From Face

<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 0.90	<b>Ice Importance Factor:</b> 1.00
<b>Ice Dead Load Factor:</b> 0.00	

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	22.379	14.40	0.00	0.16	2.74	0.80	1.00	0.00	23.99	68.65	0.00	3,676.7	0.0	2210.07	1672.95	3,883.02
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	0.80	1.00	0.00	18.10	68.65	0.00	3,114.4	0.0	1723.94	1673.32	3,397.26
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	0.80	1.00	0.00	40.13	137.31	0.00	5,943.0	0.0	4134.79	3775.39	7,910.18
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	0.80	1.00	0.00	19.44	68.65	0.00	2,900.2	0.0	2126.10	2025.61	4,151.71
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	0.80	1.00	0.00	19.05	68.65	0.00	2,855.2	0.0	2140.62	2097.56	4,238.18
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	0.80	1.00	0.00	16.62	68.65	0.00	2,739.0	0.0	1962.38	2159.39	4,121.77
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	0.80	1.00	0.00	16.24	68.38	0.00	2,694.6	0.0	1948.36	2205.13	4,153.49
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	0.80	1.00	0.00	31.59	136.22	0.00	4,731.6	0.0	3848.91	4534.45	8,383.36
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	0.80	1.00	0.00	7.27	45.36	0.00	1,285.6	0.0	965.73	1545.89	2,511.61
10	113.3	35.13	10.812	12.38	0.00	0.14	2.80	0.80	1.00	0.00	14.09	90.58	0.00	2,525.8	0.0	1882.36	3136.76	5,019.13
11	123.3	35.65	7.214	5.01	0.00	0.17	2.71	0.80	1.00	0.00	8.27	45.31	0.00	1,122.0	0.0	1087.59	1630.88	2,718.47
12	133.3	36.14	13.498	10.02	0.00	0.18	2.68	0.80	1.00	0.00	15.81	89.27	0.00	2,185.5	0.0	2081.63	3257.53	5,339.15
13	150.0	36.89	15.173	11.69	0.00	0.16	2.73	0.80	1.00	0.00	18.47	108.52	0.00	2,893.0	0.0	2527.96	4118.87	6,646.83
14	170.0	37.70	9.382	11.69	0.00	0.17	2.71	0.80	1.00	0.00	13.83	64.15	0.00	1,421.0	0.0	1920.54	2485.62	4,406.16
15	187.5	38.35	6.700	5.94	0.00	0.16	2.73	0.80	1.00	0.00	8.74	34.24	0.00	741.1	0.0	1242.95	1305.93	2,548.88
														<b>40,828.7</b>	<b>0.0</b>			<b>69,429.21</b>

**Load Case:** 0.9D + 1.6W 90° Wind

0.9D + 1.6W 105 mph Wind at 90° From Face

<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 0.90	<b>Ice Importance Factor:</b> 1.00
<b>Ice Dead Load Factor:</b> 0.00	

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	22.379	14.40	0.00	0.16	2.74	0.85	1.00	0.00	25.11	68.65	0.00	3,676.7	0.0	2313.14	1672.95	3,986.08
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	0.85	1.00	0.00	18.86	68.65	0.00	3,114.4	0.0	1796.50	1673.32	3,469.83
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	0.85	1.00	0.00	41.54	137.31	0.00	5,943.0	0.0	4280.13	3775.39	8,055.52
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	0.85	1.00	0.00	20.10	68.65	0.00	2,900.2	0.0	2198.34	2025.61	4,223.95
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	0.85	1.00	0.00	19.69	68.65	0.00	2,855.2	0.0	2211.64	2097.56	4,309.19
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	0.85	1.00	0.00	17.23	68.65	0.00	2,739.0	0.0	2034.33	2159.39	4,193.72
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	0.85	1.00	0.00	16.82	68.38	0.00	2,694.6	0.0	2018.18	2205.13	4,223.31
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	0.85	1.00	0.00	32.69	136.22	0.00	4,731.6	0.0	3982.29	4534.45	8,516.73
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	0.85	1.00	0.00	7.56	45.36	0.00	1,285.6	0.0	1003.54	1545.89	2,549.42
10	113.3	35.13	10.812	12.38	0.00	0.14	2.80	0.85	1.00	0.00	14.63	90.58	0.00	2,525.8	0.0	1954.58	3136.76	5,091.35
11	123.3	35.65	7.214	5.01	0.00	0.17	2.71	0.85	1.00	0.00	8.63	45.31	0.00	1,122.0	0.0	1135.05	1630.88	2,765.93
12	133.3	36.14	13.498	10.02	0.00	0.18	2.68	0.85	1.00	0.00	16.48	89.27	0.00	2,185.5	0.0	2170.51	3257.53	5,428.03
13	150.0	36.89	15.173	11.69	0.00	0.16	2.73	0.85	1.00	0.00	19.23	108.52	0.00	2,893.0	0.0	2631.79	4118.87	6,750.66
14	170.0	37.70	9.382	11.69	0.00	0.17	2.71	0.85	1.00	0.00	14.30	64.15	0.00	1,421.0	0.0	1985.68	2485.62	4,471.30
15	187.5	38.35	6.700	5.94	0.00	0.16	2.73	0.85	1.00	0.00	9.07	34.24	0.00	741.1	0.0	1290.60	1305.93	2,596.53
														<b>40,828.7</b>	<b>0.0</b>			<b>70,631.56</b>

## Section Forces

**Structure:** CT01879-S-SBA  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** D  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

8/5/2021  
  
 Page: 10



**Load Case:** 1.2D + 1.0Di + 1.0Wi Normal Wind

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

**Wind Load Factor:** 1.00  
**Dead Load Factor:** 1.20  
**Ice Dead Load Factor:** 1.00

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	5.60	22.379	28.67	14.27	0.22	2.54	1.00	1.00	1.24	38.95	107.25	22.77	9,241.7	4339.4	470.64	515.42	986.06
2	15.0	5.60	15.237	29.92	15.52	0.20	2.59	1.00	1.00	1.39	32.43	110.13	25.42	8,397.7	4245.3	400.49	539.21	939.70
3	30.0	6.32	28.213	73.08	31.90	0.24	2.47	1.00	1.00	1.49	70.76	230.86	44.57	17,334.	9410.3	940.68	1235.81	2,176.49
4	45.0	6.78	13.208	36.50	15.91	0.25	2.43	1.00	1.00	1.55	34.57	116.76	23.21	8,703.0	4836.2	485.23	671.06	1,156.29
5	55.0	7.03	12.642	36.38	15.79	0.26	2.41	1.00	1.00	1.58	34.02	117.44	23.68	8,696.6	4889.6	488.69	698.43	1,187.12
6	65.0	7.23	12.188	31.71	15.57	0.25	2.44	1.00	1.00	1.61	30.74	118.02	24.08	8,415.1	4763.1	460.69	726.41	1,187.10
7	75.0	7.41	11.639	31.49	15.35	0.26	2.41	1.00	1.00	1.63	30.14	118.25	23.07	8,353.3	4760.4	457.28	737.57	1,194.85
8	90.0	7.65	21.896	68.89	36.62	0.30	2.29	1.00	1.00	1.66	63.18	237.25	44.22	15,996.	9688.0	942.58	1497.12	2,439.70
9	103.3	7.84	5.694	17.86	11.66	0.26	2.40	1.00	1.00	1.68	16.20	78.07	14.95	4,617.2	2903.1	258.91	511.67	770.58
10	113.3	7.97	10.812	35.14	22.76	0.28	2.36	1.00	1.00	1.70	31.62	155.26	30.16	9,141.2	5773.5	504.74	1031.28	1,536.02
11	123.3	8.08	7.214	15.87	10.87	0.31	2.28	1.00	1.00	1.71	16.75	77.85	15.21	4,596.1	3100.1	262.54	520.79	783.33
12	133.3	8.20	13.498	31.20	21.18	0.32	2.23	1.00	1.00	1.72	32.44	154.71	27.79	8,981.8	6067.7	504.44	1029.20	1,533.64
13	150.0	8.36	15.173	45.23	33.54	0.35	2.17	1.00	1.00	1.75	43.07	185.53	35.20	11,129.	7272.4	663.59	1313.96	1,977.55
14	170.0	8.55	9.382	43.21	31.52	0.40	2.07	1.00	1.00	1.77	36.86	112.22	24.15	6,697.1	4802.5	553.20	884.22	1,437.42
15	187.5	8.70	6.700	28.97	23.03	0.43	2.00	1.00	1.00	1.78	25.56	57.39	13.98	3,834.3	2846.2	378.34	437.69	816.04
														<b>134,136.0</b>	<b>79697.7</b>			<b>20,121.87</b>

**Load Case:** 1.2D + 1.0Di + 1.0Wi 60° Wind

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

**Wind Load Factor:** 1.00  
**Dead Load Factor:** 1.20  
**Ice Dead Load Factor:** 1.00

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	5.60	22.379	28.67	14.27	0.22	2.54	0.80	1.00	1.24	34.47	107.25	22.77	9,241.7	4339.4	416.55	515.42	931.97
2	15.0	5.60	15.237	29.92	15.52	0.20	2.59	0.80	1.00	1.39	29.39	110.13	25.42	8,397.7	4245.3	362.86	539.21	902.07
3	30.0	6.32	28.213	73.08	31.90	0.24	2.47	0.80	1.00	1.49	65.11	230.86	44.57	17,334.	9410.3	865.66	1235.81	2,101.47
4	45.0	6.78	13.208	36.50	15.91	0.25	2.43	0.80	1.00	1.55	31.93	116.76	23.21	8,703.0	4836.2	448.16	671.06	1,119.21
5	55.0	7.03	12.642	36.38	15.79	0.26	2.41	0.80	1.00	1.58	31.50	117.44	23.68	8,696.6	4889.6	452.37	698.43	1,150.80
6	65.0	7.23	12.188	31.71	15.57	0.25	2.44	0.80	1.00	1.61	28.30	118.02	24.08	8,415.1	4763.1	424.16	726.41	1,150.56
7	75.0	7.41	11.639	31.49	15.35	0.26	2.41	0.80	1.00	1.63	27.81	118.25	23.07	8,353.3	4760.4	421.96	737.57	1,159.53
8	90.0	7.65	21.896	68.89	36.62	0.30	2.29	0.80	1.00	1.66	58.80	237.25	44.22	15,996.	9688.0	877.25	1497.12	2,374.36
9	103.3	7.84	5.694	17.86	11.66	0.26	2.40	0.80	1.00	1.68	15.06	78.07	14.95	4,617.2	2903.1	240.71	511.67	752.38
10	113.3	7.97	10.812	35.14	22.76	0.28	2.36	0.80	1.00	1.70	29.46	155.26	30.16	9,141.2	5773.5	470.22	1031.28	1,501.50
11	123.3	8.08	7.214	15.87	10.87	0.31	2.28	0.80	1.00	1.71	15.31	77.85	15.21	4,596.1	3100.1	239.93	520.79	760.71
12	133.3	8.20	13.498	31.20	21.18	0.32	2.23	0.80	1.00	1.72	29.74	154.71	27.79	8,981.8	6067.7	462.46	1029.20	1,491.65
13	150.0	8.36	15.173	45.23	33.54	0.35	2.17	0.80	1.00	1.75	40.03	185.53	35.20	11,129.	7272.4	616.83	1313.96	1,930.79
14	170.0	8.55	9.382	43.21	31.52	0.40	2.07	0.80	1.00	1.77	34.98	112.22	24.15	6,697.1	4802.5	525.04	884.22	1,409.26
15	187.5	8.70	6.700	28.97	23.03	0.43	2.00	0.80	1.00	1.78	24.22	57.39	13.98	3,834.3	2846.2	358.51	437.69	796.20
														<b>134,136.0</b>	<b>79697.7</b>			<b>19,532.49</b>



## Section Forces

**Structure:** CT01879-S-SBA  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** D  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

8/5/2021  
  
 Page: 11



**Load Case:** 1.2D + 1.0Di + 1.0Wi 90° Wind

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face

**Wind Load Factor:** 1.00  
**Dead Load Factor:** 1.20  
**Ice Dead Load Factor:** 1.00

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	5.0	5.60	22.379	28.67	14.27	0.22	2.54	0.85	1.00	1.24	35.59	107.25	22.77	9,241.7	4339.4	430.07	515.42	945.50
2	15.0	5.60	15.237	29.92	15.52	0.20	2.59	0.85	1.00	1.39	30.15	110.13	25.42	8,397.7	4245.3	372.27	539.21	911.48
3	30.0	6.32	28.213	73.08	31.90	0.24	2.47	0.85	1.00	1.49	66.52	230.86	44.57	17,334.	9410.3	884.42	1235.81	2,120.22
4	45.0	6.78	13.208	36.50	15.91	0.25	2.43	0.85	1.00	1.55	32.59	116.76	23.21	8,703.0	4836.2	457.42	671.06	1,128.48
5	55.0	7.03	12.642	36.38	15.79	0.26	2.41	0.85	1.00	1.58	32.13	117.44	23.68	8,696.6	4889.6	461.45	698.43	1,159.88
6	65.0	7.23	12.188	31.71	15.57	0.25	2.44	0.85	1.00	1.61	28.91	118.02	24.08	8,415.1	4763.1	433.29	726.41	1,159.70
7	75.0	7.41	11.639	31.49	15.35	0.26	2.41	0.85	1.00	1.63	28.39	118.25	23.07	8,353.3	4760.4	430.79	737.57	1,168.36
8	90.0	7.65	21.896	68.89	36.62	0.30	2.29	0.85	1.00	1.66	59.89	237.25	44.22	15,996.	9688.0	893.58	1497.12	2,390.70
9	103.3	7.84	5.694	17.86	11.66	0.26	2.40	0.85	1.00	1.68	15.35	78.07	14.95	4,617.2	2903.1	245.26	511.67	756.93
10	113.3	7.97	10.812	35.14	22.76	0.28	2.36	0.85	1.00	1.70	30.00	155.26	30.16	9,141.2	5773.5	478.85	1031.28	1,510.13
11	123.3	8.08	7.214	15.87	10.87	0.31	2.28	0.85	1.00	1.71	15.67	77.85	15.21	4,596.1	3100.1	245.58	520.79	766.37
12	133.3	8.20	13.498	31.20	21.18	0.32	2.23	0.85	1.00	1.72	30.41	154.71	27.79	8,981.8	6067.7	472.96	1029.20	1,502.15
13	150.0	8.36	15.173	45.23	33.54	0.35	2.17	0.85	1.00	1.75	40.79	185.53	35.20	11,129.	7272.4	628.52	1313.96	1,942.48
14	170.0	8.55	9.382	43.21	31.52	0.40	2.07	0.85	1.00	1.77	35.45	112.22	24.15	6,697.1	4802.5	532.08	884.22	1,416.30
15	187.5	8.70	6.700	28.97	23.03	0.43	2.00	0.85	1.00	1.78	24.55	57.39	13.98	3,834.3	2846.2	363.47	437.69	801.16
														<b>134,136.0</b>	<b>79697.7</b>			<b>19,679.84</b>

**Load Case:** 1.0D + 1.0W Normal Wind

1.0D + 1.0W 60 mph Wind at Normal To Face

**Wind Load Factor:** 1.00  
**Dead Load Factor:** 1.00  
**Ice Dead Load Factor:** 0.00

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	5.0	8.07	22.379	14.40	0.00	0.16	2.74	1.00	1.00	0.00	29.79	68.65	0.00	4,085.3	0.0	560.06	341.42	901.48
2	15.0	8.07	15.237	14.40	0.00	0.13	2.83	1.00	1.00	0.00	22.56	68.65	0.00	3,460.4	0.0	438.59	341.49	780.09
3	30.0	9.10	28.213	41.18	0.00	0.17	2.72	1.00	1.00	0.00	45.77	137.31	0.00	6,603.3	0.0	962.48	770.49	1,732.97
4	45.0	9.77	13.208	20.59	0.00	0.17	2.69	1.00	1.00	0.00	22.08	68.65	0.00	3,222.4	0.0	492.87	413.39	906.26
5	55.0	10.12	12.642	20.59	0.00	0.18	2.67	1.00	1.00	0.00	21.58	68.65	0.00	3,172.5	0.0	494.83	428.07	922.91
6	65.0	10.41	12.188	16.14	0.00	0.16	2.72	1.00	1.00	0.00	19.66	68.65	0.00	3,043.3	0.0	473.62	440.69	914.32
7	75.0	10.68	11.639	16.14	0.00	0.17	2.70	1.00	1.00	0.00	19.10	68.38	0.00	2,994.0	0.0	467.77	450.03	917.80
8	90.0	11.02	21.896	32.28	0.00	0.18	2.65	1.00	1.00	0.00	36.89	136.22	0.00	5,257.3	0.0	917.05	925.40	1,842.45
9	103.3	11.29	5.694	6.19	0.00	0.14	2.82	1.00	1.00	0.00	9.16	45.36	0.00	1,428.4	0.0	248.27	315.49	563.76
10	113.3	11.47	10.812	12.38	0.00	0.14	2.80	1.00	1.00	0.00	17.73	90.58	0.00	2,806.4	0.0	483.45	640.16	1,123.61
11	123.3	11.64	7.214	5.01	0.00	0.17	2.71	1.00	1.00	0.00	10.07	45.31	0.00	1,246.7	0.0	270.27	324.92	595.19
12	133.3	11.80	13.498	10.02	0.00	0.18	2.68	1.00	1.00	0.00	19.21	89.27	0.00	2,428.4	0.0	516.40	649.02	1,165.42
13	150.0	12.05	15.173	11.69	0.00	0.16	2.73	1.00	1.00	0.00	21.82	108.52	0.00	3,214.5	0.0	609.44	828.23	1,437.67
14	170.0	12.31	9.382	11.69	0.00	0.17	2.71	1.00	1.00	0.00	16.04	64.15	0.00	1,578.9	0.0	454.50	507.27	961.77
15	187.5	12.52	6.700	5.94	0.00	0.16	2.73	1.00	1.00	0.00	10.08	34.24	0.00	823.4	0.0	292.57	266.52	559.08
														<b>45,365.2</b>	<b>0.0</b>			<b>15,324.76</b>

## Section Forces

**Structure:** CT01879-S-SBA

**Code:** EIA/TIA-222-G

8/5/2021

**Site Name:** Clinton 4 CT

**Exposure:** D



**Height:** 195.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 0.85

**Topography:** 1

**Struct Class:** II

Page: 12

**Load Case:** 1.0D + 1.0W 60° Wind

1.0D + 1.0W 60 mph Wind at 60° From Face

**Wind Load Factor:** 1.00

**Wind Importance Factor:** 1.00

**Dead Load Factor:** 1.00

**Ice Dead Load Factor:** 0.00

**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	8.07	22.379	14.40	0.00	0.16	2.74	0.80	1.00	0.00	25.32	68.65	0.00	4,085.3	0.0	475.92	341.42	817.34
2	15.0	8.07	15.237	14.40	0.00	0.13	2.83	0.80	1.00	0.00	19.52	68.65	0.00	3,460.4	0.0	379.36	341.49	720.85
3	30.0	9.10	28.213	41.18	0.00	0.17	2.72	0.80	1.00	0.00	40.13	137.31	0.00	6,603.3	0.0	843.83	770.49	1,614.32
4	45.0	9.77	13.208	20.59	0.00	0.17	2.69	0.80	1.00	0.00	19.44	68.65	0.00	3,222.4	0.0	433.90	413.39	847.29
5	55.0	10.12	12.642	20.59	0.00	0.18	2.67	0.80	1.00	0.00	19.05	68.65	0.00	3,172.5	0.0	436.86	428.07	864.93
6	65.0	10.41	12.188	16.14	0.00	0.16	2.72	0.80	1.00	0.00	17.22	68.65	0.00	3,043.3	0.0	414.89	440.69	855.58
7	75.0	10.68	11.639	16.14	0.00	0.17	2.70	0.80	1.00	0.00	16.78	68.38	0.00	2,994.0	0.0	410.78	450.03	860.80
8	90.0	11.02	21.896	32.28	0.00	0.18	2.65	0.80	1.00	0.00	32.51	136.22	0.00	5,257.3	0.0	808.17	925.40	1,733.57
9	103.3	11.29	5.694	6.19	0.00	0.14	2.82	0.80	1.00	0.00	8.02	45.36	0.00	1,428.4	0.0	217.41	315.49	532.89
10	113.3	11.47	10.812	12.38	0.00	0.14	2.80	0.80	1.00	0.00	15.57	90.58	0.00	2,806.4	0.0	424.50	640.16	1,064.65
11	123.3	11.64	7.214	5.01	0.00	0.17	2.71	0.80	1.00	0.00	8.62	45.31	0.00	1,246.7	0.0	231.53	324.92	556.45
12	133.3	11.80	13.498	10.02	0.00	0.18	2.68	0.80	1.00	0.00	16.51	89.27	0.00	2,428.4	0.0	443.84	649.02	1,092.87
13	150.0	12.05	15.173	11.69	0.00	0.16	2.73	0.80	1.00	0.00	18.79	108.52	0.00	3,214.5	0.0	524.69	828.23	1,352.92
14	170.0	12.31	9.382	11.69	0.00	0.17	2.71	0.80	1.00	0.00	14.16	64.15	0.00	1,578.9	0.0	401.32	507.27	908.59
15	187.5	12.52	6.700	5.94	0.00	0.16	2.73	0.80	1.00	0.00	8.74	34.24	0.00	823.4	0.0	253.66	266.52	520.18
														<b>45,365.2</b>	<b>0.0</b>			<b>14,343.24</b>

**Load Case:** 1.0D + 1.0W 90° Wind

1.0D + 1.0W 60 mph Wind at 90° From Face

**Wind Load Factor:** 1.00

**Wind Importance Factor:** 1.00

**Dead Load Factor:** 1.00

**Ice Dead Load Factor:** 0.00

**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	8.07	22.379	14.40	0.00	0.16	2.74	0.85	1.00	0.00	26.44	68.65	0.00	4,085.3	0.0	496.96	341.42	838.37
2	15.0	8.07	15.237	14.40	0.00	0.13	2.83	0.85	1.00	0.00	20.28	68.65	0.00	3,460.4	0.0	394.17	341.49	735.66
3	30.0	9.10	28.213	41.18	0.00	0.17	2.72	0.85	1.00	0.00	41.54	137.31	0.00	6,603.3	0.0	873.50	770.49	1,643.98
4	45.0	9.77	13.208	20.59	0.00	0.17	2.69	0.85	1.00	0.00	20.10	68.65	0.00	3,222.4	0.0	448.64	413.39	862.03
5	55.0	10.12	12.642	20.59	0.00	0.18	2.67	0.85	1.00	0.00	19.69	68.65	0.00	3,172.5	0.0	451.35	428.07	879.43
6	65.0	10.41	12.188	16.14	0.00	0.16	2.72	0.85	1.00	0.00	17.83	68.65	0.00	3,043.3	0.0	429.57	440.69	870.27
7	75.0	10.68	11.639	16.14	0.00	0.17	2.70	0.85	1.00	0.00	17.36	68.38	0.00	2,994.0	0.0	425.03	450.03	875.05
8	90.0	11.02	21.896	32.28	0.00	0.18	2.65	0.85	1.00	0.00	33.60	136.22	0.00	5,257.3	0.0	835.39	925.40	1,760.79
9	103.3	11.29	5.694	6.19	0.00	0.14	2.82	0.85	1.00	0.00	8.31	45.36	0.00	1,428.4	0.0	225.12	315.49	540.61
10	113.3	11.47	10.812	12.38	0.00	0.14	2.80	0.85	1.00	0.00	16.11	90.58	0.00	2,806.4	0.0	439.24	640.16	1,079.39
11	123.3	11.64	7.214	5.01	0.00	0.17	2.71	0.85	1.00	0.00	8.98	45.31	0.00	1,246.7	0.0	241.21	324.92	566.13
12	133.3	11.80	13.498	10.02	0.00	0.18	2.68	0.85	1.00	0.00	17.19	89.27	0.00	2,428.4	0.0	461.98	649.02	1,111.00
13	150.0	12.05	15.173	11.69	0.00	0.16	2.73	0.85	1.00	0.00	19.54	108.52	0.00	3,214.5	0.0	545.87	828.23	1,374.10
14	170.0	12.31	9.382	11.69	0.00	0.17	2.71	0.85	1.00	0.00	14.63	64.15	0.00	1,578.9	0.0	414.62	507.27	921.89
15	187.5	12.52	6.700	5.94	0.00	0.16	2.73	0.85	1.00	0.00	9.07	34.24	0.00	823.4	0.0	263.39	266.52	529.91
														<b>45,365.2</b>	<b>0.0</b>			<b>14,588.62</b>

## Force/Stress Compression Summary

**Structure:** CT01879-S-SBA  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Code:** EIA/TIA-222-G  
**Exposure:** D  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II  
**Topography:** 1

8/5/2021  
  
 Page: 13



### LEG MEMBERS

Sect	Top Elev	Member	Force (kips)		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls	
							X	Y	Z					
1	10	PX - 8" DIA PIPE	-521.36	1.2D + 1.6W	Normal Wind	9.64	50	50	50	20.10	50.00	557.49	93.5	Member X
2	20	PX - 8" DIA PIPE	-495.64	1.2D + 1.6W	Normal Wind	9.64	100	100	100	40.20	50.00	510.21	97.1	Member X
3	40	MOD - 8"PST+5x5x3/8L	-466.48	1.2D + 1.6W	Normal Wind	9.62	100	100	100	43.01	50.00	472.01	98.8	Member X
4	50	MOD - 8"PST+5x5x3/8L	-409.27	1.2D + 1.6W	Normal Wind	9.64	100	100	100	43.13	50.00	471.68	86.8	Member X
5	60	MOD - 8"PST+5x5x3/8L	-379.72	1.2D + 1.6W	Normal Wind	9.64	100	100	100	43.13	50.00	471.68	80.5	Member X
6	70	MOD - 6"PX+L4x4x3/8	-350.79	1.2D + 1.6W	Normal Wind	9.64	100	100	100	56.38	50.00	401.71	87.3	Member X
7	80	MOD - 6"PX+L4x4x3/8	-320.82	1.2D + 1.6W	Normal Wind	9.64	100	100	100	56.38	50.00	401.71	79.9	Member X
8	100	MOD - 6"PST+4x4x3/8L	-295.61	1.2D + 1.6W	Normal Wind	6.43	100	100	100	37.83	50.00	342.05	86.4	Member X
9	106.6	PX - 5" DIA PIPE	-234.93	1.2D + 1.6W	Normal Wind	6.31	100	100	100	41.12	50.00	242.97	96.7	Member X
10	120	PX - 5" DIA PIPE	-214.90	1.2D + 1.6W	Normal Wind	6.68	100	100	100	43.54	50.00	239.36	89.8	Member X
11	126.6	PX - 4" DIA PIPE	-182.77	1.2D + 1.6W	Normal Wind	0.38	50	50	50	1.52	50.00	198.42	92.1	Member X
12	140	PX - 4" DIA PIPE	-150.52	1.2D + 1.6W	Normal Wind	6.68	50	50	50	27.07	50.00	188.10	80.0	Member X
13	160	PX - 3" DIA PIPE	-110.92	1.2D + 1.6W	Normal Wind	4.91	100	100	100	51.73	50.00	111.75	99.3	Member X
14	180	PST - 3" DIA PIPE	-50.72	1.2D + 1.6W	Normal Wind	4.91	100	100	100	50.84	50.00	83.07	61.1	Member X
15	195	PST - 2" DIA PIPE	-14.54	1.2D + 1.6W	Normal Wind	5.00	100	100	100	76.24	50.00	31.48	46.2	Member X

### HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
							X	Y	Z								
1	10									0.00	0	0					
2	20									0.00	0	0					
3	40									0.00	0	0					
4	50									0.00	0	0					
5	60									0.00	0	0					
6	70									0.00	0	0					
7	80									0.00	0	0					
8	100									0.00	0	0					
9	106.									0.00	0	0					
10	120									0.00	0	0					
11	126.									0.00	0	0					
12	140									0.00	0	0					
13	160									0.00	0	0					
14	180	SAE - 1.75X1.75X0.1875	-0.65	1.2D + 1.6W	60° Wind	5.00	100	100	100	174.92	36.00	4.58	1	1	15.19	9.79	14 Member Z
15	195	SAE - 1.75X1.75X0.1875	-0.52	0.9D + 1.6W	60° Wind	5.00	100	100	100	174.92	36.00	4.58	1	1	15.19	9.79	11 Member Z

### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
							X	Y	Z								
1	10	SAE - 4X4X0.375	-17.0	1.2D + 1.6W	90° Wind	24.46	48	48	48	178.77	36.00	20.22	1	1	21.86	20.2	84 Member Z
2	20	SAE - 4X4X0.375	-18.6	0.9D + 1.6W	90° Wind	23.57	48	48	48	172.32	36.00	21.76	1	1	21.86	21.5	87 Bolt Bear
3	40	SAE - 4X4X0.375	-17.5	1.2D + 1.6W	90° Wind	21.75	48	48	48	159.02	36.00	25.55	1	1	21.86	21.5	82 Bolt Bear
4	50	SAE - 4X4X0.375	-16.4	1.2D + 1.6W	90° Wind	20.84	48	48	48	152.33	36.00	27.85	1	1	21.86	21.5	76 Bolt Bear
5	60	SAE - 4X4X0.375	-16.6	1.2D + 1.6W	90° Wind	19.99	48	48	48	146.12	36.00	30.26	1	1	21.86	21.5	77 Bolt Bear
6	70	SAE - 4X4X0.375	-14.9	1.2D + 1.6W	90° Wind	19.09	48	48	48	139.53	36.00	33.19	1	1	21.86	21.5	70 Bolt Bear
7	80	SAE - 4X4X0.375	-15.5	1.2D + 1.6W	90° Wind	18.26	48	48	48	133.50	36.00	36.26	1	1	21.86	21.5	72 Bolt Bear
8	100	SAE - 3X3X0.375	-13.3	1.2D + 1.6W	90° Wind	15.99	48	48	48	156.87	36.00	19.37	1	1	21.86	21.5	69 Member Z
9	106.	SAE - 2.5X2.5X0.375	-12.1	1.2D + 1.6W	90° Wind	14.13	48	48	48	167.11	36.00	14.00	1	1	15.19	19.5	87 Member Z
10	120	SAE - 2.5X2.5X0.375	-12.3	1.2D + 1.6W	90° Wind	13.15	48	48	48	155.52	36.00	16.16	1	1	15.19	19.5	81 Bolt Shear
11	126.	SAE - 2.5X2.5X0.25	-11.1	1.2D + 1.6W	90° Wind	12.37	46	46	46	139.06	36.00	13.90	1	1	15.19	13.0	86 Bolt Bear

## Force/Stress Compression Summary

<b>Structure:</b> CT01879-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/5/2021
<b>Site Name:</b> Clinton 4 CT	<b>Exposure:</b> D	
<b>Height:</b> 195.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



Page: 14

### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap		Bear Cap %	Use Controls
						X	Y	Z					(kips)	(kips)		
12	140	SAE - 2.5X2.5X0.25	-10.4	1.2D + 1.6W 90° Wind	12.02	46	46	46	135.13	36.00	14.72	1	1	15.19	13.0	80 Bolt Bear
13	160	SAE - 2.5X2.5X0.375	-8.84	1.2D + 1.6W 90° Wind	9.61	49	49	49	117.04	36.00	27.25	1	1	15.19	19.5	58 Bolt Shear
14	180	SAE - 1.75X1.75X0.187&4.29	1.2D + 1.6W 90° Wind	8.32	49	49	49	142.61	36.00	6.89	1	1	15.19	9.79	62 Member Z	
15	195	SAE - 1.75X1.75X0.187&2.91	1.2D + 1.6W Normal Wind	7.07	50	50	50	123.69	36.00	8.98	1	1	15.19	9.79	32 Member Z	

## Force/Stress Tension Summary

**Structure:** CT01879-S-SBA  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Code:** EIA/TIA-222-G  
**Exposure:** D  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

8/5/2021  
  
 Page: 15



### LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	10	PX - 8" DIA PIPE	474.94	0.9D + 1.6W 60° Wind	50	574.20	82.7	Member
2	20	PX - 8" DIA PIPE	438.93	0.9D + 1.6W 60° Wind	50	574.20	76.4	Member
3	40	MOD - 8"PST+5x5x3/8L	428.28	0.9D + 1.6W 60° Wind	50	540.39	79.3	Member
4	50	MOD - 8"PST+5x5x3/8L	378.57	0.9D + 1.6W 60° Wind	50	540.39	70.1	Member
5	60	MOD - 8"PST+5x5x3/8L	338.15	0.9D + 1.6W 60° Wind	50	540.39	62.6	Member
6	70	MOD - 6"PX+L4x4x3/8	327.04	0.9D + 1.6W 60° Wind	50	506.83	64.5	Member
7	80	MOD - 6"PX+L4x4x3/8	286.32	0.9D + 1.6W 60° Wind	50	506.83	56.5	Member
8	100	MOD - 6"PST+4x4x3/8L	274.69	0.9D + 1.6W 60° Wind	50	379.79	72.3	Member
9	106.67	PX - 5" DIA PIPE	220.02	0.9D + 1.6W 60° Wind	50	274.95	80.0	Member
10	120	PX - 5" DIA PIPE	191.40	0.9D + 1.6W 60° Wind	50	274.95	69.6	Member
11	126.66	PX - 4" DIA PIPE	162.18	0.9D + 1.6W 60° Wind	50	198.45	81.7	Member
12	140	PX - 4" DIA PIPE	133.11	0.9D + 1.6W 60° Wind	50	198.45	67.1	Member
13	160	PX - 3" DIA PIPE	96.88	0.9D + 1.6W 60° Wind	50	135.90	71.3	Member
14	180	PST - 3" DIA PIPE	48.73	0.9D + 1.6W 60° Wind	50	100.35	48.6	Member
15	195	PST - 2" DIA PIPE	11.59	0.9D + 1.6W 60° Wind	50	48.15	24.1	Member

### HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	10	-			36	0.00	0	0					
2	20	-			36	0.00	0	0					
3	40	-			36	0.00	0	0					
4	50	-			36	0.00	0	0					
5	60	-			36	0.00	0	0					
6	70	-			36	0.00	0	0					
7	80	-			36	0.00	0	0					
8	100	-			36	0.00	0	0					
9	106.67	-			36	0.00	0	0					
10	120	-			36	0.00	0	0					
11	126.66	-			36	0.00	0	0					
12	140	-			36	0.00	0	0					
13	160	-			36	0.00	0	0					
14	180	SAE - 1.75X1.75X0.1875	0.55	1.2D + 1.6W 90° Wind	36	15.64	1	1	15.19	9.79	7.50	7.4	Blck Shear
15	195	SAE - 1.75X1.75X0.1875	0.54	1.2D + 1.6W 90° Wind	36	15.64	1	1	15.19	9.79	7.50	7.2	Blck Shear

### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	10	SAE - 4X4X0.375	16.40	0.9D + 1.6W 90° Wind	36	82.60	1	1	21.86	20.24	24.55	81.0	Bolt Bear
2	20	SAE - 4X4X0.375	18.15	0.9D + 1.6W 90° Wind	36	82.60	1	1	21.86	21.53	24.93	84.3	Bolt Bear
3	40	SAE - 4X4X0.375	17.04	0.9D + 1.6W 90° Wind	36	82.60	1	1	21.86	21.53	24.93	79.1	Bolt Bear
4	50	SAE - 4X4X0.375	16.12	0.9D + 1.6W 90° Wind	36	82.60	1	1	21.86	21.53	24.93	74.9	Bolt Bear
5	60	SAE - 4X4X0.375	16.15	0.9D + 1.6W 90° Wind	36	82.60	1	1	21.86	21.53	24.93	75.0	Bolt Bear
6	70	SAE - 4X4X0.375	14.80	1.2D + 1.6W 90° Wind	36	82.60	1	1	21.86	21.53	24.93	68.7	Bolt Bear
7	80	SAE - 4X4X0.375	15.00	1.2D + 1.6W 90° Wind	36	82.60	1	1	21.86	21.53	24.93	69.7	Bolt Bear
8	100	SAE - 3X3X0.375	13.25	1.2D + 1.6W 90° Wind	36	58.13	1	1	21.86	21.53	20.85	63.6	Blck Shear
9	106.67	SAE - 2.5X2.5X0.375	12.02	1.2D + 1.6W 90° Wind	36	47.27	1	1	15.19	19.58	19.07	79.1	Bolt Shear
10	120	SAE - 2.5X2.5X0.375	12.08	1.2D + 1.6W 90° Wind	36	47.27	1	1	15.19	19.58	19.07	79.6	Bolt Shear
11	126.66	SAE - 2.5X2.5X0.25	10.93	1.2D + 1.6W 90° Wind	36	32.71	1	1	15.19	13.05	14.07	83.8	Bolt Bear
12	140	SAE - 2.5X2.5X0.25	10.24	1.2D + 1.6W 90° Wind	36	32.71	1	1	15.19	13.05	12.71	80.5	Blck Shear

## Force/Stress Tension Summary

<b>Structure:</b> CT01879-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/5/2021
<b>Site Name:</b> Clinton 4 CT	<b>Exposure:</b> D	
<b>Height:</b> 195.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
13	160	SAE - 2.5X2.5X0.375	8.63	1.2D + 1.6W 90° Wind	36	47.27	1	1	15.19	19.58	19.07	56.8	Bolt Shear
14	180	SAE - 1.75X1.75X0.1875	4.36	1.2D + 1.6W 90° Wind	36	15.64	1	1	15.19	9.79	7.50	58.2	Blck Shear
15	195	SAE - 1.75X1.75X0.1875	2.71	0.9D + 1.6W 60° Wind	36	15.64	1	1	15.19	9.79	7.50	36.2	Blck Shear

## Support Forces Summary

**Structure:** CT01879-S-SBA  
**Site Name:** Clinton 4 CT  
**Height:** 195.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** D  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

8/5/2021  
  
 Page: 17



Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.00	534.34	-57.51	
	1a	20.06	-232.54	-19.09	
	1b	-20.06	-232.54	-19.09	
1.2D + 1.6W 60° Wind	1	-6.10	268.44	-28.08	
	1a	-27.25	267.98	8.95	
	1b	-45.36	-467.15	-26.31	
1.2D + 1.6W 90° Wind	1	-7.22	23.21	-1.29	
	1a	-43.46	451.93	21.19	
	1b	-41.41	-405.87	-19.90	
0.9D + 1.6W Normal Wind	1	0.00	527.90	-57.13	
	1a	20.36	-237.97	-19.28	
	1b	-20.36	-237.97	-19.28	
0.9D + 1.6W 60° Wind	1	-6.11	262.33	-27.71	
	1a	-26.93	261.91	8.75	
	1b	-45.66	-472.29	-26.48	
0.9D + 1.6W 90° Wind	1	-7.23	17.41	-0.93	
	1a	-43.14	445.63	21.00	
	1b	-41.72	-411.08	-20.08	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	186.84	-13.78	
	1a	6.06	-10.12	-5.37	
	1b	-6.06	-10.12	-5.37	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-1.59	120.21	-6.39	
	1a	-6.30	119.81	1.86	
	1b	-12.86	-73.40	-7.45	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-1.86	55.74	0.69	
	1a	-10.52	167.52	5.05	
	1b	-11.74	-56.65	-5.74	
1.0D + 1.0W Normal Wind	1	0.00	124.01	-12.79	
	1a	3.29	-33.15	-3.44	
	1b	-3.29	-33.15	-3.44	
1.0D + 1.0W 60° Wind	1	-1.27	69.67	-6.74	
	1a	-6.44	69.48	2.31	
	1b	-8.50	-81.42	-4.93	
1.0D + 1.0W 90° Wind	1	-1.49	19.33	-1.22	
	1a	-9.78	107.20	4.83	
	1b	-7.69	-68.81	-3.62	

### Max Reactions

Leg	Overturning
Max Uplift: -472.29 (kips)	Moment: 10183.40 (ft-kips)
Max Down: 534.34 (kips)	Total Down: 69.27 (kips)
Max Shear: 57.51 (kips)	Total Shear: 95.69 (kips)

## Analysis Summary

<b>Structure:</b> CT01879-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/5/2021
<b>Site Name:</b> Clinton 4 CT	<b>Exposure:</b> D	
<b>Height:</b> 195.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II
		<b>Page:</b> 18



### Max Reactions

	Leg	Overturning
Max Uplift:	-472.29 (kips)	Moment: 10183.40 (ft-kips)
Max Down:	534.34 (kips)	Total Down: 69.27 (kips)
Max Shear:	57.51 (kips)	Total Shear: 95.69 (kips)

### Anchor Bolts

Bolt Size (in.): 1.50	Number Bolts: 8
Yield Strength (Ksi): 105.00	Tensile Strength (Ksi): 125.00
Detail Type: C	

**Interaction Ratio: 0.51**

### Max Usages

Max Leg: 99.3% (1.2D + 1.6W Normal Wind - Sect 13)  
 Max Diag: 86.9% (1.2D + 1.6W 90° Wind - Sect 9)  
 Max Horiz: 14.2% (1.2D + 1.6W 60° Wind - Sect 14)


### Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.6W 105 mph Wind at 60° From Face	79.63	0.3546	0.0063	0.5509
	100.38	0.5595	0.0179	0.6968
	126.67	0.9080	0.0575	0.8729
	140.00	1.1297	0.0698	0.9997
	149.81	1.3122	0.1039	1.1420
	160.38	1.5327	0.1529	1.5340
	180.00	1.9828	0.3085	1.4375
	185.00	2.1035	0.4218	1.2448
0.9D + 1.6W 105 mph Wind at 90° From Face	190.00	2.2290	0.4412	1.5424
	195.00	2.3544	0.4346	1.4409
	79.63	0.3579	-0.0186	0.5419
	100.38	0.5646	-0.0198	0.6838
	126.67	0.9149	0.0475	0.8783
	140.00	1.1387	0.0604	0.9916
	149.81	1.3237	0.0658	1.1441
	160.38	1.5448	0.0772	1.5193
180.00	1.9982	0.0783	1.4726	
185.00	2.1193	0.0308	0.7602	
190.00	2.2451	0.0782	1.6377	
195.00	2.3714	0.0785	1.4466	



0.9D + 1.6W 105 mph Wind at Normal To Face	79.63	0.3696	0.0164	0.6094
	100.38	0.5823	0.0256	0.7721
	126.67	0.9418	0.0255	0.9039
	140.00	1.1717	0.0254	1.0661
	149.81	1.3615	0.0253	1.1845
	160.38	1.5890	-0.0273	1.5987
	180.00	2.0552	-0.0342	1.4391
	185.00	2.1809	0.0248	2.1186
	190.00	2.3107	-0.0344	1.5001
	195.00	2.4408	-0.0340	1.5857
-----				
1.0D + 1.0W 60 mph Wind at 60° From Face	79.63	0.0729	-0.0021	0.1126
	100.38	0.1150	-0.0016	0.1428
	126.67	0.1863	0.0098	0.1785
	140.00	0.2318	0.0116	0.2041
	149.81	0.2694	0.0132	0.2346
	160.38	0.3145	0.0164	0.3168
	180.00	0.4068	0.0172	0.2921
	185.00	0.4317	0.0216	0.2522
	190.00	0.4572	0.0222	0.3154
	195.00	0.4829	0.0218	0.2959
-----				
1.0D + 1.0W 60 mph Wind at 90° From Face	79.63	0.0735	-0.0040	0.1113
	100.38	0.1159	-0.0043	0.1403
	126.67	0.1877	0.0091	0.1800
	140.00	0.2337	0.0115	0.2031
	149.81	0.2715	0.0122	0.2347
	160.38	0.3168	0.0139	0.3110
	180.00	0.4097	0.0138	0.3014
	185.00	0.4345	0.0043	0.1562
	190.00	0.4603	0.0131	0.3352
	195.00	0.4861	0.0130	0.2968
-----				
1.0D + 1.0W 60 mph Wind at Normal To Face	79.63	0.0760	0.0032	0.1240
	100.38	0.1196	0.0050	0.1579
	126.67	0.1933	0.0047	0.1850
	140.00	0.2403	0.0045	0.2184
	149.81	0.2790	0.0042	0.2418
	160.38	0.3255	-0.0066	0.3243
	180.00	0.4209	-0.0079	0.2952
	185.00	0.4469	0.0031	0.4342
	190.00	0.4732	-0.0079	0.3073
	195.00	0.4998	-0.0079	0.3236
-----				
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	79.63	0.0927	-0.0028	0.1432
	100.38	0.1463	-0.0022	0.1817
	126.67	0.2383	0.0126	0.2260
	140.00	0.2957	0.0149	0.2587
	149.81	0.3428	0.0169	0.2965
	160.38	0.3999	0.0208	0.4010
	180.00	0.5163	0.0395	0.3708
	185.00	0.5472	0.0491	0.3242
	190.00	0.5798	0.0506	0.4046
	195.00	0.6124	0.0500	0.3740
-----				
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	79.63	0.0936	-0.0056	0.1414
	100.38	0.1473	-0.0063	0.1776
	126.67	0.2386	0.0119	0.2266
	140.00	0.2961	0.0151	0.2559
	149.81	0.3434	0.0163	0.2951
	160.38	0.4004	0.0185	0.3914
	180.00	0.5169	0.0189	0.3838
	185.00	0.5480	0.0167	0.1499
	190.00	0.5803	0.0186	0.4332
	195.00	0.6128	0.0186	0.3726

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	79.63	0.0938	0.0026	0.1542
	100.38	0.1484	0.0041	0.1973
	126.67	0.2414	0.0039	0.2300
	140.00	0.3000	0.0037	0.2717
	149.81	0.3481	-0.0039	0.2994
	160.38	0.4059	-0.0079	0.3983
	180.00	0.5246	-0.0095	0.3691
	185.00	0.5565	0.0026	0.5915
	190.00	0.5896	-0.0095	0.3843
	195.00	0.6229	-0.0095	0.4094
-----				
1.2D + 1.6W 105 mph Wind at 60° From Face	79.63	0.3551	0.0063	0.5517
	100.38	0.5603	0.0179	0.6981
	126.67	0.9096	0.0577	0.8748
	140.00	1.1317	0.0699	1.0020
	149.81	1.3147	0.1041	1.1449
	160.38	1.5358	0.1531	1.5386
	180.00	1.9870	0.3091	1.4410
	185.00	2.1081	0.4227	1.2487
	190.00	2.2339	0.4422	1.5463
	195.00	2.3596	0.4355	1.4452
-----				
1.2D + 1.6W 105 mph Wind at 90° From Face	79.63	0.3584	-0.0187	0.5428
	100.38	0.5654	-0.0198	0.6850
	126.67	0.9164	0.0476	0.8802
	140.00	1.1408	0.0604	0.9939
	149.81	1.3261	0.0660	1.1467
	160.38	1.5478	0.0773	1.5231
	180.00	2.0024	0.0785	1.4764
	185.00	2.1238	0.0306	0.7640
	190.00	2.2499	0.0784	1.6417
	195.00	2.3766	0.0787	1.4508
-----				
1.2D + 1.6W 105 mph Wind at Normal To Face	79.63	0.3701	0.0164	0.6102
	100.38	0.5832	0.0256	0.7735
	126.67	0.9435	0.0255	0.9059
	140.00	1.1738	0.0254	1.0686
	149.81	1.3641	0.0253	1.1872
	160.38	1.5922	-0.0275	1.6028
	180.00	2.0597	-0.0345	1.4433
	185.00	2.1857	0.0248	2.1231
	190.00	2.3159	-0.0346	1.5045
	195.00	2.4463	-0.0343	1.5897
-----				

	<b>Pier Foundation For Self Supporting Tower</b>		Date	
			8/5/2021	
	<b>Customer Name:</b>	<b>SBA Communications Corp</b>	<b>EIA/TIA Standard:</b>	EIA-222-G
	<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	195
	<b>Site Number:</b>	CT01879-S-SBA	<b>Engineer Name:</b>	Rama K.
<b>Engr. Number:</b>	110857	<b>Engineer Login ID:</b>		

**Foundation Info Obtained from:** Drawings/Calculations Acceptable overstress (σ): 5.0%

**Structure Type:** Self Supporting Tower

**Analysis or Design?** Analysis

**Base Reactions (Factored):**

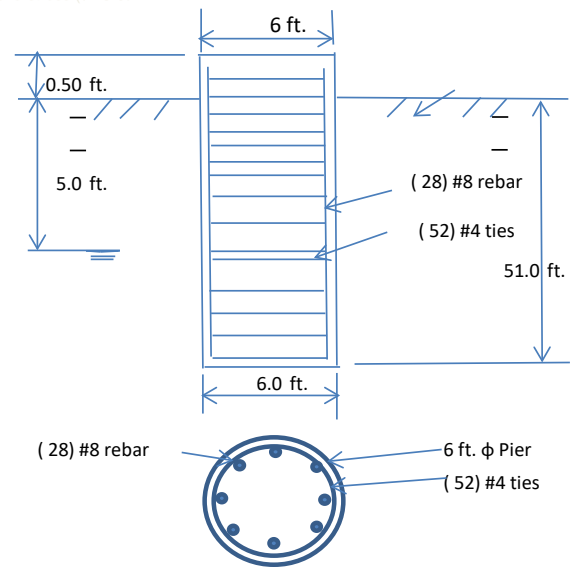
Axial Load (Kips): 534.3    Shear Force (Kips): 57.5

Uplift Force (Kips): 472.3    Moment (Kips-ft): 0.0

**Foundation Geometries:**

Diameter of Pier (ft.): 6.0    Depth of Base B. G. S. : 51.0 ft.

Pier Height A. G. (ft.): 0.50



**Material Properties and Rebar Info:**

Concrete Strength (psi): 3000    Steel Elastic Modulus: 29000 ksi

Vertical bar yield (ksi): 60    Tie steel yield strength: 60 ksi

Vertical Rebar Size #: 8    Tie / Stirrup Size #: 4

Qty. of Vertical Rebars: 28    Tie Spacing: 12.0 in.

Concrete Cover (in.): 3    Concrete unit weight: 150.0 pcf

Consider ties in concrete shear strength? Yes

**Soil Design Parameters:**

Water Table B.G.S. (ft): 5.0    Unit weight of water: 62.4 psf

Ratio of Uplift/Axial Skin Friction: 1.00    Pullout failure Angle: 30 (°)

Skin Frictions are to be obtained from: Calculations    Please Enter Ultimate End Bearing Pressure (psf): 10000

Kc = 1.15 For Sand    Kt = 0.7 For Sand and Silt    Friction δ Between Pier & Soil = 0.95

Kc = 1.0 Silt/Clay    Kt = 0.85 For Clay

Depth of Layers (ft)		γ <sub>soil</sub> (pcf)	φ (°)	Cohesion (psf)			Soil Types	Ultimate Uplift Skin Friction (psf)	Ultimate Axial Skin Friction (psf)	Kc	Kt	α
Top	Bottom											
0.0	3.0	100	0	0	0	0	Sand			1.15	0.70	
3.0	52.0	120	30	0		10000	Sand	724.3	1189.9	1.15	0.70	
52.0	57.0	120	30	0		10000	Sand	790.4	1298.5	1.15	0.70	

Soil weight Increase Factor for bouyant soils (1.0 to 1.15): 1.1

**Foundation Analysis and Design:**

Uplift Strength Reduction Factor: 0.75    Soil Bearing Strength Reduction Factor: 0.75

Total Dry Soil Volume from Conical Failure (cu. Ft.): 14952    Dry Soil Weight from Conical Failure: 1615    Kips

Total Buoyant Soil Volume from Conical Failure (cu. Ft.): 45491    Buoyant Soil Weight from Conical Failure (Ki): 3439    Kips

Total Dry Concrete Volume (cu. Ft.): 156    Total Dry Concrete Weight: 23.33    Kips

Total Buoyant Concrete Volume (cu. Ft.): 1301    Total Buoyant Concrete Weight: 113.93    Kips

Total Effective Concrete Weight (Kips): 137.3    Total Effective Soil Weight: 5054    Kips

Total Effective Vertical Load on Base (Kips): 563

**Check Soil Capacities:**

Calculated Foundation Allowable Axial Capacity (Kips):	1019	>	Design Factored Axial Load (Kips):	563	Usage	0.55	OK!
Calculated Foundation Uplift Capacity (Kips):	615	>	Design Factored Uplift Load (Kips):	472		0.77	OK!

**Check the capacities of Reinforcing Concrete:**

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compression):	0.65		Wind Load Factor on Concrete Design:	1.00			
Reinforcing Concrete Pier:							
Vertical Steel Rebar Area (sq. in./each):	0.79		Tie / Stirrup Area (sq. in./each):	0.20			
Calculated Moment Capacity (Mn,Kips-Ft):	1962	>	Design Factored Moment (Mu, K-Ft):	322.3		0.16	OK!
Calculated Shear Capacity (Kips):	333.3	>	Design Factored Shear (Kips):	57.5		0.17	OK!
Calculated Tension Capacity (Tn, Kips):	1194.5	>	Design Factored Tension (Tu Kips):	472.3		0.40	OK!
Calculated Compression Capacity (Pn, Kips):	5369	>	Design Factored Axial Load (Pu Kips):	534.3		0.10	OK!
Moment & Tension Strength Combination:	0.16	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00			in.
Pier Reinforcement Ratio:	0.005		Reinforcement Ratio is satisfied per ACI				

**Reinforce Pier Foundation by Adding Concrete Block (Yes/No ?)**

No

# Exhibit 9

Tower Modification Drawings

TES Job# 110857

PER THE INTERNATIONAL BUILDING CODE THIS STRUCTURE IS CLASSIFIED AS:

1. CONSTRUCTION TYPE II-B (TABLE 601)
2. GROUP U OCCUPANCY (SECTION 312.1 UNOCCUPIED TOWER SITE)

# MODIFICATION AND DESIGN DRAWINGS FOR AN EXISTING 195' SABRE SELF SUPPORTING TOWER

PROPOSED CARRIER: DISH WIRELESS

SITE: CT01879-S-SBA / CLINTON 4 CT

COORDINATES (LATITUDE: 41.275205°, LONGITUDE: -72.497711°)

### CONSTRUCTION CLASS

THE RIGGING PLAN FOR THIS SITE WOULD BE A  
MINIMUM OF A CLASS **IV** AND THE CONTRACTOR  
SHALL MAKE FINAL DETERMINATION

PLEASE NOTE THIS SET OF DRAWINGS IS FOR INSTALLATION AND ASSEMBLY ONLY. FABRICATION DETAIL DRAWINGS ARE NOT PROVIDED AND MUST BE COMPLETED BY THE STEEL FABRICATOR SELECTED. TES CAN PROVIDE THE FABRICATION DETAIL DRAWINGS FOR AN ADDITIONAL FEE.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	TOWER PROFILE	0
A-2	MID-PANEL HORIZONTAL ASSEMBLY - 1 BAY (8.625" O.D. PIPE LEG)	0

**NOTE:**

1. THE MODIFICATION DRAWINGS ARE BASED ON THE  
TES PROJECT NO. 110502, DATED 06/21/21.



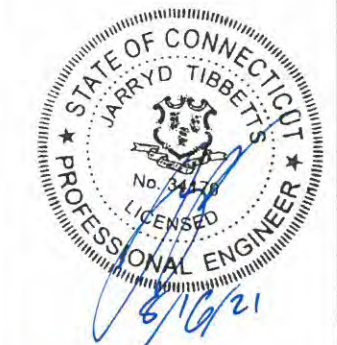
**Tower Engineering Solutions**  
1320 GREENWAY DRIVE, SUITE 600  
IRVING, TX 75038  
PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW  
BOCA RATON, FL 33487  
(800)-487-SITE

TES JOB NO:  
110857

CUSTOMER SITE NO:  
CT01879-S-SBA  
CUSTOMER SITE NAME:  
CLINTON 4 CT  
46 MEADOW ROAD  
CLINTON, CT 06413



DRAWN BY: CH      CHECKED BY: RAM/AD

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	CH	08/16/21

SHEET TITLE:  
  
**TITLE SHEET**

This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

SHEET NUMBER:      REV #:  
**T-1**                      **0**



**GENERAL NOTES**

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, 2018 CONNECTICUT STATE BUILDING CODE AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER ANSI/ASSP A10.48, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.

**FABRICATION**

1. ALL STEEL SHALL MEET OR EXCEED THE MINIMUM STRENGTH AS SPECIFIED IN THE DRAWINGS. IF YIELD STRENGTH WAS NOT NOTED IN THE DRAWINGS, CONTRACTORS SHALL CONTACT TES FOR DIRECTION.
2. ALL FIELD CUT EDGES SHALL BE GROUND SMOOTH. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

**WELDING**

1. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNO. (E70XX UNLESS NOTED OTHERWISE).
2. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5" BEYOND THE PROPOSED FIELD WELD SURFACES.
3. ALL WELDS SHALL BE INSPECTED VISUALLY. A MINIMUM OF 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. 100% OF WELDS SHALL BE INSPECTED IF DEFECTS ARE FOUND.
4. WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
5. AFTER INSPECTION, ALL FIELD WELDED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

**BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS**

1. ALL HIGH STRENGTH BOLTS SHALL CONFORM TO THE PROVISIONS OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS AS APPROVED BY THE RCSC.
2. FLANGE BOLTS SHALL BE TIGHTENED BY THE AISC "TURN-OF-THE-NUT" METHOD. THE FOLLOWING TABLE SHOULD BE USED FOR THE "TURN-OF-THE-NUT" TIGHTENING.
3. SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
4. THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY EITHER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
5. HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

**VERIFICATION AND INSPECTION**

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2015 SECTION 1705 - FOR STEEL CONSTRUCTION & TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

**POST INSTALLED EPOXY INJECTED ANCHOR BOLTS:**

1. CONCRETE MUST BE A MINIMUM OF 28 DAYS OLD.
2. FOLLOW MANUFACTURER'S REQUIREMENTS FOR CURE TIME VS. AMBIENT TEMPERATURE.
3. DRILL HOLE TO REQUIRED DIAMETER AND DEPTH. ALL WATER, DIRT, OIL, DEBRIS, GREASE OR DUST MUST BE REMOVED FROM EACH CORE HOLE. FOLLOW MANUFACTURER'S RECOMMENDATION FOR CORRECT TYPE OF CORE BIT. AVOID DAMAGING EXISTING REINFORCING STEEL OR OTHER EMBEDDED ITEMS. NOTIFY TES ENGINEERING IF VOIDS IN THE CONCRETE, REINFORCING STEEL OR OTHER EMBEDDED ITEMS ARE ENCOUNTERED. STOP CORING IMMEDIATELY IF THIS OCCURS.
4. A HOLE ROUGHENING DEVICE FROM EITHER HILTI OR ALLFASTENERS SHALL BE USED WITH ALL HOLES. FOLLOW ALL MANUFACTURER'S RECOMMENDED CORING AND INSTALLATION INSTRUCTIONS.
5. AFTER CORING AND ROUGHENING, FLUSH EACH HOLE WITH RUNNING WATER TO REMOVE ANY SLURRY OR DEBRIS. REMOVE ALL WATER FROM THE HOLE BY MECHANICAL PUMPING.
6. BRUSH EACH HOLE WITH AN APPROPRIATE SIZED NYLON BRUSH AND FLUSH WITH RUNNING WATER A SECOND TIME. REMOVE ALL WATER FROM THE HOLE.
7. AFTER THE SECOND WATER FLUSH BRUSH THE HOLE AGAIN WITH THE APPROPRIATE SIZED NYLON BRUSH.
8. BLOW EACH HOLE WITH COMPRESSED AIR TWO TIMES MINIMUM.
9. CONFIRM THAT EACH HOLE IS PROPERLY ROUGHED AND DRY.
10. NO EPOXY INJECTION SHALL TAKE PLACE IN RAINY CONDITIONS.
11. EPOXY SHOULD BE VISIBLE AT THE TOP OF THE CORE HOLE AFTER INSTALLATION.
12. CONTRACTOR TO SUPPLY ONE PHOTO OF EACH ROUGHED AND CLEANED HOLE IN CLOSEOUT PHOTO PACKAGE.

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING<sup>a,b</sup>

BOLT LENGTH <sup>f</sup>	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20 <sup>d</sup>	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS <sup>d</sup>
NOT MORE THAN 4d <sub>b</sub>	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN 4d <sub>b</sub> BUT NOT MORE THAN 8d <sub>b</sub>	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN 8d <sub>b</sub> BUT NOT MORE THAN 12d <sub>b</sub>	2/3 TURN	5/6 TURN	1 TURN

<sup>a</sup> NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR REQUIRED NUT ROTATIONS OF 1/2 TURN AND LESS, THE TOLERANCE IS PLUS OR MINUS 30 DEGREES; FOR REQUIRED NUT ROTATIONS OF 2/3 TURN AND MORE, THE TOLERANCE IS PLUS OR MINUS 45 DEGREES.

<sup>b</sup> APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

<sup>c</sup> WHEN THE BOLT LENGTH EXCEEDS 12d<sub>b</sub>, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

<sup>d</sup> BEVELED WASHER NOT USED.

SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004 RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS

**INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:**

1. HB12 HOLLO BOLT: 59 FT-LBS
2. HB16 HOLLO BOLT: 140 FT-LBS
3. HB20 HOLLO BOLT: 221 FT-LBS
4. M20 AJAX BOLT: 280 FT-LBS.

**FIELD HOT WORK PLAN NOTES:**

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

1. CONTRACTOR'S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
2. HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
3. CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
4. CONTRACTOR SHALL MAKE SURE THAT CELL PHONE COVERAGE IS AVAILABLE IN THE TOWER SITE. IF CELL COVERAGE IS NOT AVAILABLE, AN IMMEDIATE AVAILABLE MEANS OF DIRECT COMMUNICATION WITH THE FIRE DEPARTMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION START.
5. ALL CONSTRUCTION SHALL BE PERFORMED UNDER WIND SPEED LESS THAN 10 MPH ON THE GROUND LEVEL. IF WIND SPEED INCREASE, CONTRACTOR MUST DETERMINE IF CONSTRUCTION SHALL BE DISCONTINUED.
6. FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
7. CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
8. ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
9. IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
10. PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.



**Tower Engineering Solutions**

1320 GREENWAY DRIVE, SUITE 600  
IRVING, TX 75038  
PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW  
BOCA RATON, FL 33487  
(800)-487-SITE

TES JOB NO:  
110857

CUSTOMER SITE NO:  
CT01879-S-SBA  
CUSTOMER SITE NAME:  
CLINTON 4 CT  
46 MEADOW ROAD  
CLINTON, CT 06413

DRAWN BY: CH CHECKED BY: RAM/AD

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	CH	08/16/21

SHEET TITLE:

GENERAL NOTES

This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

SHEET NUMBER: REV #:

GN-1 0



**NOTES:**

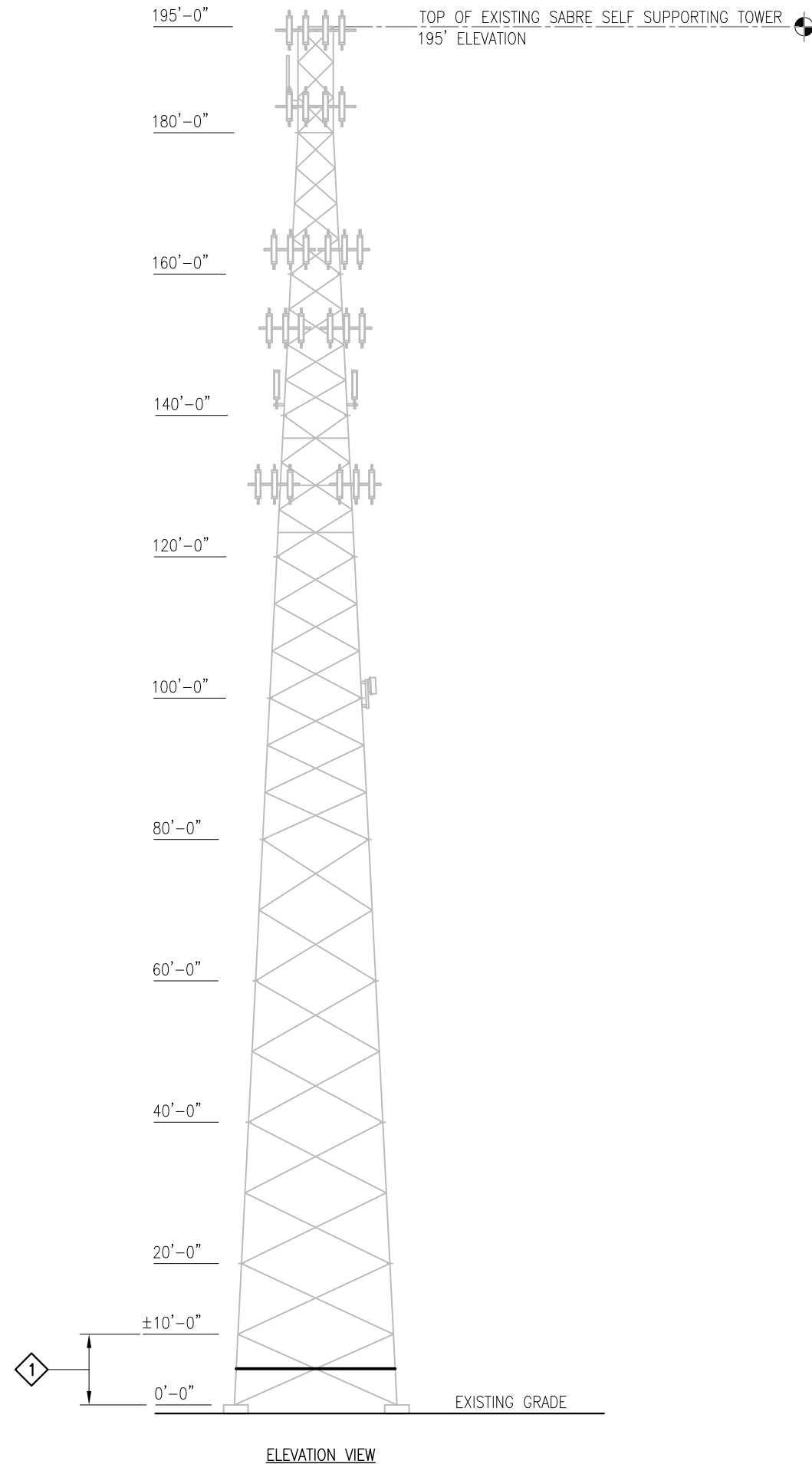
1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE TOWER AND ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
2. TEMPORARY RELOCATION OF EXISTING EQUIPMENT AROUND THE FOUNDATION MAY BE REQUIRED DURING CONSTRUCTION.

**SCOPE OF WORK**

1. INSTALL NEW L 3 1/2" X 3 1/2" X 3/8" A36 MID-PANEL HORIZONTALS FROM 0' TO ±10' ELEV. SEE SHEET A-2 FOR DETAILS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.



**PHOTO 1**



**Tower Engineering Solutions**  
 1320 GREENWAY DRIVE, SUITE 600  
 IRVING, TX 75038  
 PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW  
 BOCA RATON, FL 33487  
 (800)-487-SITE

TES JOB NO:  
 110857

CUSTOMER SITE NO:  
 CT01879-S-SBA  
 CUSTOMER SITE NAME:  
 CLINTON 4 CT  
 46 MEADOW ROAD  
 CLINTON, CT 06413

DRAWN BY: CH      CHECKED BY: RAM/AD

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	CH	08/16/21

SHEET TITLE:

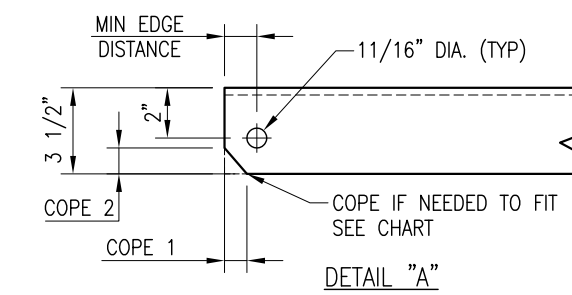
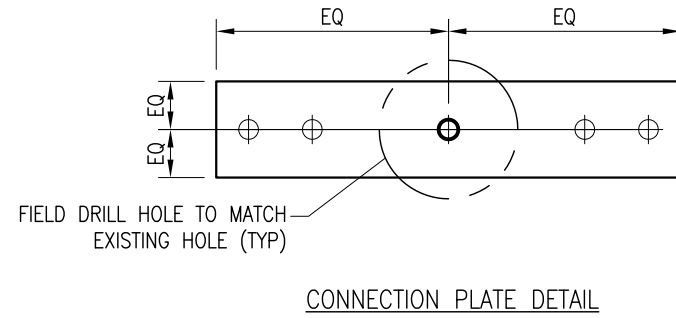
**TOWER PROFILE**

This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

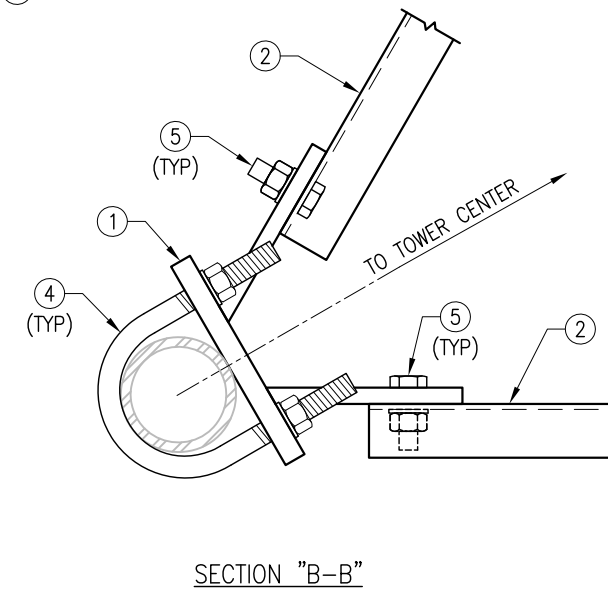
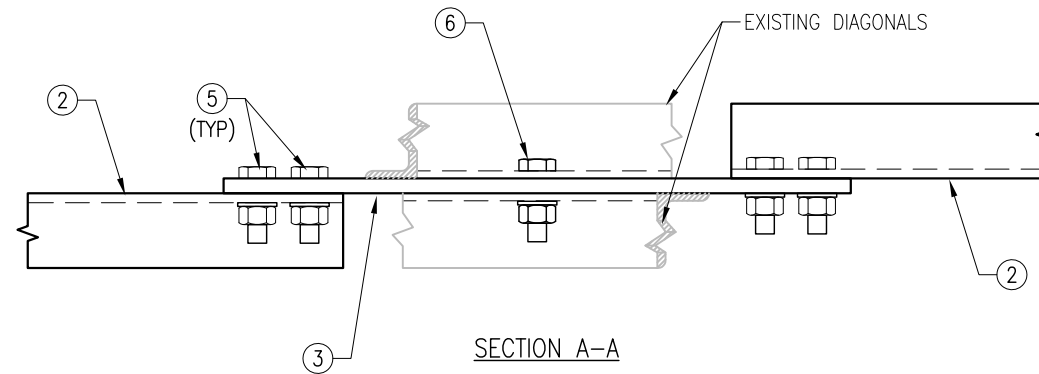
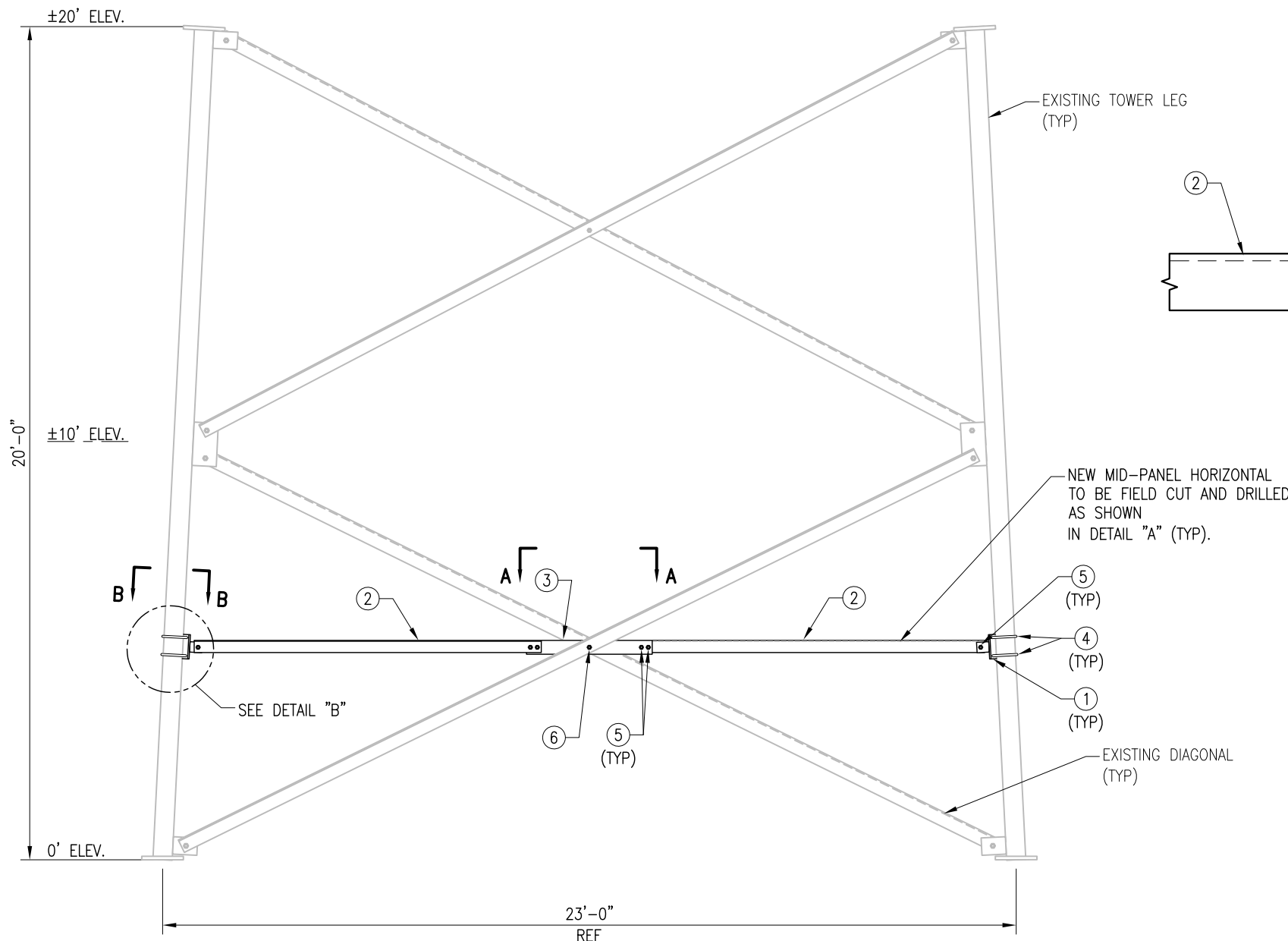
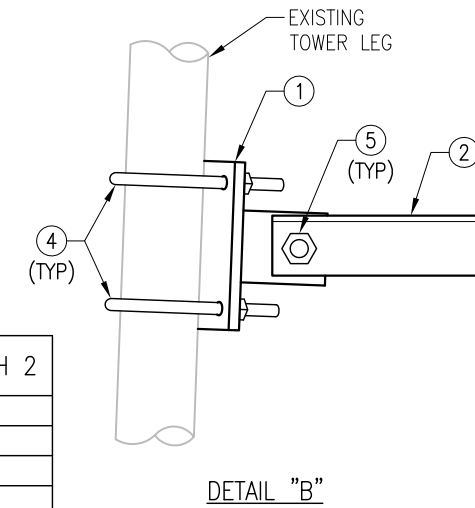
SHEET NUMBER: **A-1**      REV #: **0**

**NOTES:**

1. SEE SHEET A-1 FOR LOCATION OF REQUIRED SECTION MODIFICATIONS.
2. TEMPORARY RELOCATION OF ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
3. WHEN FIELD CUTTING AND DRILLING ANGLES, USE SAME GAGE LINES AND EDGE DISTANCES AS INDICATED ON SHOP CUT AND DRILLED ENDS.
4. APPLY (2) COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS TO ALL FIELD CUT AND DRILLED AREAS.



BOLT DIA	MIN EDGE DISTANCE	COPE LENGTH 1	COPE LENGTH 2
1/2"	7/8"	5/8"	1 1/4"
5/8"	1 1/8"	13/16"	1 3/16"
3/4"	1 3/8"	1"	1 1/8"
7/8"	1 1/2"	1 1/16"	1 1/16"
1"	1 3/4"	1 1/4"	1"



ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	3	HBR8625W	PL 3/4" X 7" X 11 1/8" A36 WELDMENT BRACKET
2	6	MH-251	L 3 1/2" X 3 1/2" X 3/8" X 12'-6" A36
3	3	MH-27-400CP1	PL 3/8" X 4" X 2'-9 1/4" A36
4	6	MS02-625-875-1100	RU-BOLT 5/8" X 8 3/4" I.W. X 11" I.L. A36 OR EQUIV
5	18	---	BOLT 5/8" X 2" A325
6	3	---	BOLT 3/4" X 2 1/2" A325

NOTE:  
TOWER SHOWN IS ONLY REPRESENTATIVE.



**Tower Engineering Solutions**  
1320 GREENWAY DRIVE, SUITE 600  
IRVING, TX 75038  
PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW  
BOCA RATON, FL 33487  
(800)-487-SITE

TES JOB NO:  
110857

CUSTOMER SITE NO:  
CT01879-S-SBA  
CUSTOMER SITE NAME:  
CLINTON 4 CT  
46 MEADOW ROAD  
CLINTON, CT 06413

DRAWN BY: CH	CHECKED BY: RAM/AD		
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	CH	08/16/21

SHEET TITLE:  
MID-PANEL HORIZONTAL  
ASSEMBLY- 1 BAY  
(8.625" O.D. PIPE LEG)

This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

SHEET NUMBER: A-2	REV #: 0
----------------------	-------------

# EXHIBIT 10

## Antenna Mount Analysis



June 16, 2021

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

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:** BOBDL00151B  
**Site Name:** SBA - CT01879S

**SBA Network Services Designation:** **Site Number:** CT01879-S  
**Site Name:** Clinton 4 CT  
**Application Number:** 153661, v2

**Engineering Firm Designation:** **B+T Group Project Number:** 149434.003.01

**Site Data:** **46 Meadow Road, Clinton, CT, 06413, Middlesex County**  
**Latitude 41.27519°, Longitude -72.49771°**  
**Self-Support Tower**  
**(3) 8 ft. Sector 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:

<p>Proposed Equipment          Note: See Table 1 for the final loading configuration</p>	<p><b>Sufficient Capacity</b>  <b>(Passing at 51.9%)</b></p>
--	--

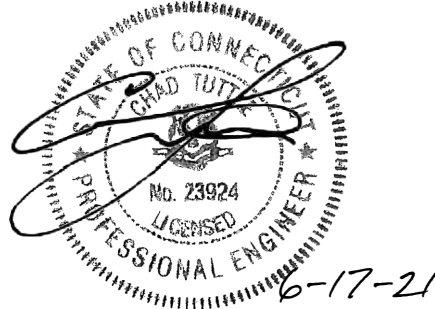
"This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category D and Risk Category II was/were used in this analysis."

We at B+T Group appreciate the opportunity of providing our continuing professional services to you and SBA Network Services. 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: Jacob Johnson, E.I.T.

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

Chad E. Tuttle, P.E.



## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Information

Table 2 - Documents Provided

### 3) ANALYSIS PROCEDURE

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

### 5) RECOMMENDATIONS

### 6) APPENDIX A

RISA-3D Output

### 7) APPENDIX B

Additional Calculations

## 1) INTRODUCTION

The mount consists of Commscope sector mount (Part #MTC3975083 w/11.676 ft. Tieback) at 130 ft., attached to self-support tower at 46 Meadow Road, Clinton, CT, 06413, Middlesex County. The proposed antenna loading information was obtained from SBA Network Services. 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 and Small Wind Turbine Support Structures using a 3-second gust wind speed of 105 mph with no ice and 50 mph with 0.75-inch escalated ice thickness. Exposure Category D and Risk Category II were used in this analysis. In addition, the sector 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 30° 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	130	1	3	JMA Wireless MX08FRO665-21	1
			3	Fujitsu TA08025-B605	2
			3	Fujitsu TA08025-B604	
		--	1	Raycap RDIDC-9181-PF-48	3

Note:

- (1) Proposed Antenna to be installed on the proposed Mount Pipe.
- (2) Proposed Equipment to be installed directly behind the Antenna.
- (3) Proposed Equipment to be installed on the Mount.

**Table 2 - Documents Provided**

Documents	Remarks	Reference	Source
SBA Application	Proposed Loading	Date: 06/11/2021	SBA Network Services
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.

Manufacturer's drawings were used to create the model.

### 3.2) Assumptions

1. The mount was built in accordance with the manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas and other appurtenances are as specified in Table 1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.

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

Component	Section	Length	Note
Tieback	Pipe2.38x0.12	11.676'	--

6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
8. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
9. The following material grades were assumed (Unless Noted Otherwise):
  - a) Connection Bolts : ASTM A325
  - b) Steel Pipe : ASTM A53 (GR. 35)
  - c) HSS (Round) : ASTM 500 (GR. B-42)
  - d) HSS (Rectangular) : ASTM 500 (GR. B-46)
  - e) Channel : ASTM A36 (GR. 36)
  - f) Steel Solid Rod : ASTM A36 (GR. 36)
  - g) Steel Plate : ASTM A36 (GR. 36)
  - h) Steel Angle : ASTM A36 (GR. 36)
  - i) UNISTRUT : ASTM A570 (GR. 33)

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the antenna mounting system.

#### 4) ANALYSIS RESULTS

**Table 3 – Mount Component Stresses vs. Capacity**

Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Horizontals	130	25.5	Pass
-	Support Arms	130	28.7	Pass
-	Diagonals	130	31.6	Pass
-	Connection Plates	130	24.6	Pass
-	Verticals	130	51.9	Pass
-	Tieback	130	36.6	Pass
-	Mount Pipes	130	28.4	Pass

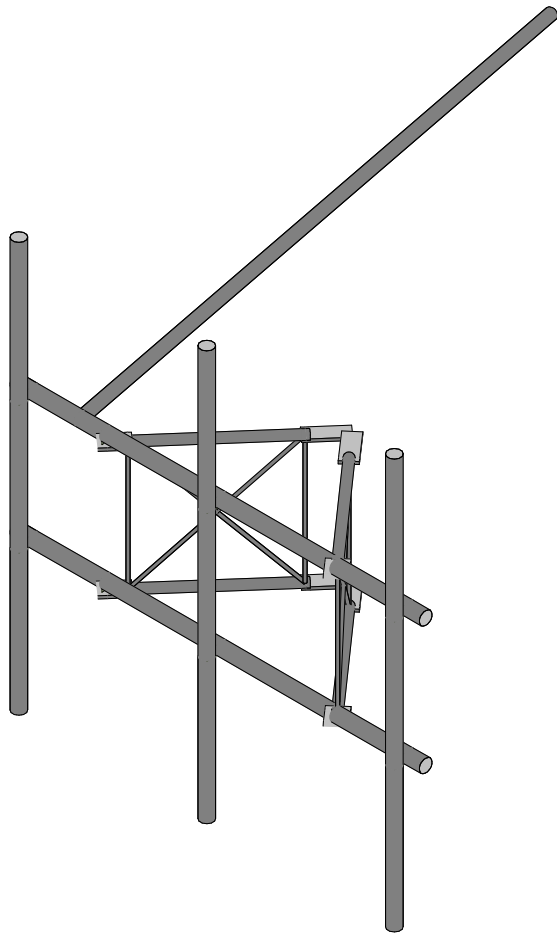
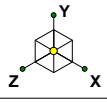
#### 5) RECOMMENDATIONS

The Commscope sector mount (Part # MTC3975083 w/11.676 ft. Tieback) 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

APK

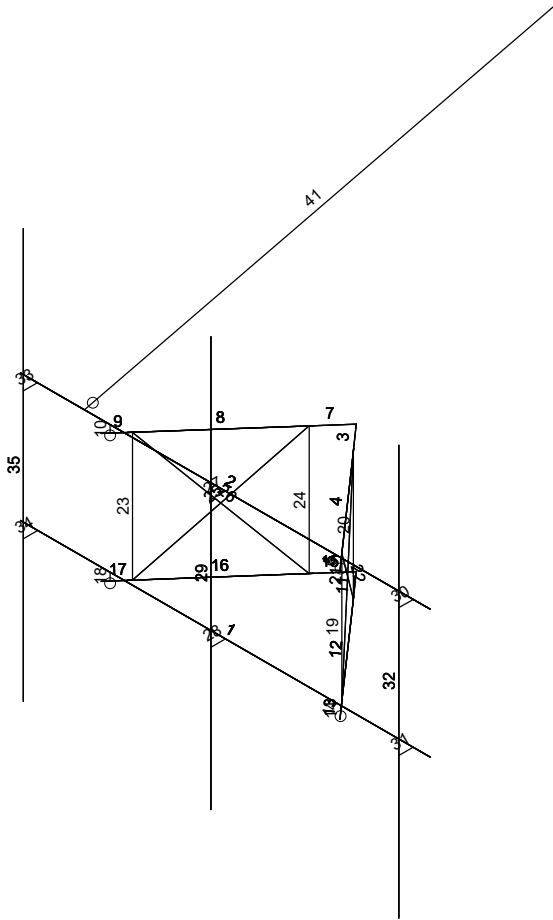
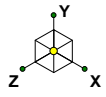
149434.003.01

CT01879-S - Clinton 4 CT

SK - 1

June 16, 2021 at 7:42 PM

149434\_003\_01\_Clinton 4 CT\_C...



Envelope Only Solution

B+T Group

APK

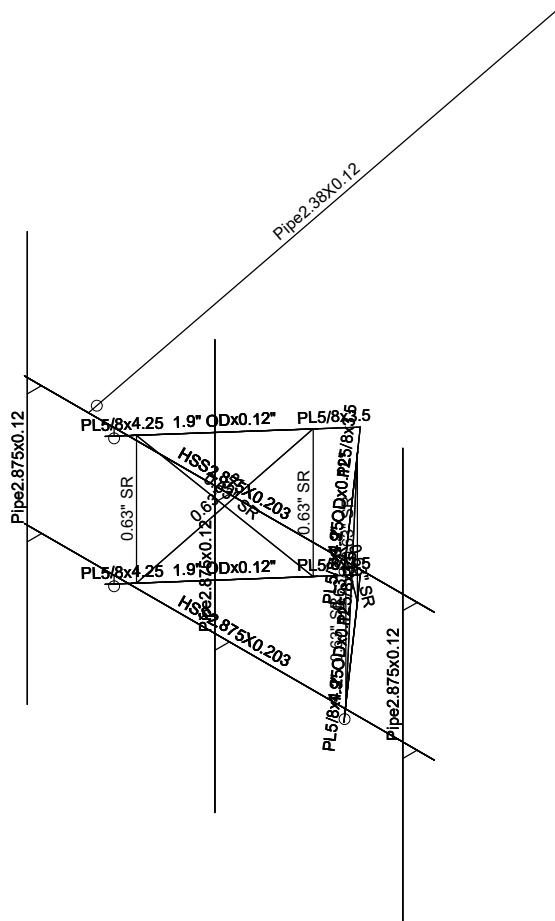
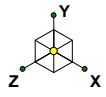
149434.003.01

CT01879-S - Clinton 4 CT

SK - 2

June 16, 2021 at 7:42 PM

149434\_003\_01\_Clinton 4 CT\_C...

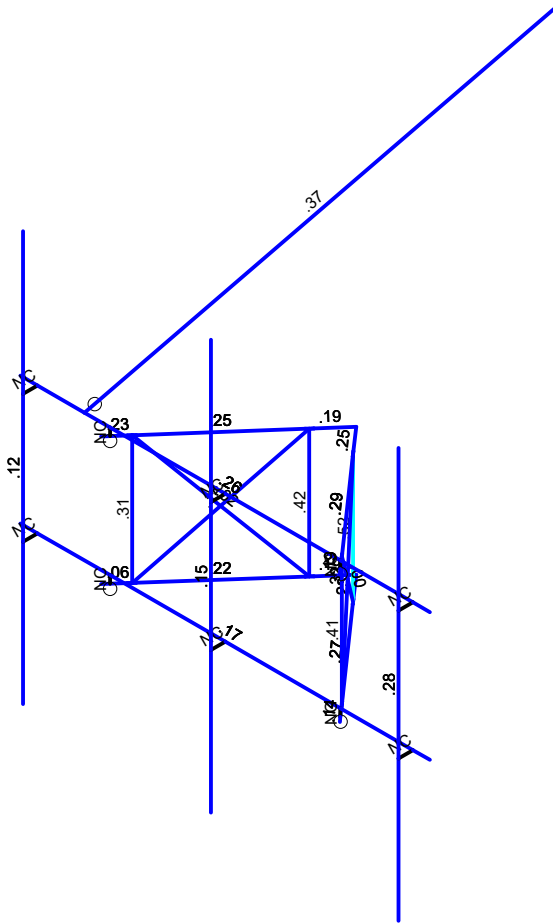
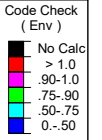
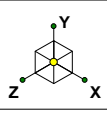


Envelope Only Solution

B+T Group
APK
149434.003.01

CT01879-S - Clinton 4 CT

SK - 3
June 16, 2021 at 7:42 PM
149434_003_01_Clinton 4 CT_C...



Member Code Checks Displayed (Enveloped)  
Envelope Only Solution

B+T Group
APK
149434.003.01

CT01879-S - Clinton 4 CT
--------------------------

SK - 4
June 16, 2021 at 7:42 PM
149434_003_01_Clinton 4 CT_C...



## APPENDIX B

(Additional Calculations)





























# EXHIBIT 11

## Construction Drawings



DISH Wireless L.L.C. SITE ID:

**BOBDL00151B**

DISH Wireless L.L.C. SITE ADDRESS:

**46 MEADOW ROAD  
CLINTON, CT 06413**

**APPROVED**  
By Stephen Roth at 3:52:08 PM, 7/28/2021

**SCOPE OF WORK**

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

- TOWER SCOPE OF WORK:**
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
  - INSTALL (3) PROPOSED ANTENNA MOUNTS (1 PER SECTOR)
  - INSTALL PROPOSED JUMPERS
  - INSTALL (6) PROPOSED RRU's (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)
  - INSTALL (1) PROPOSED METER SOCKET

SITE INFORMATION		PROJECT DIRECTORY	
PROPERTY OWNER:	CRANE HILLARY	APPLICANT:	DISH Wireless L.L.C.
ADDRESS:	21 CHESTNUT ST CLINTON, CT 06413		5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER TYPE:	SELF-SUPPORT TOWER	TOWER OWNER:	SBA COMMUNICATAIONS CORP.
TOWER CO SITE ID:	CT01879-S		8051 CONGRESS AVENUE BOCA RATON, FL 33487 (800) 487-7483
TOWER APP NUMBER:	153661	SITE DESIGNER:	B+T GROUP
COUNTY:	MIDDLESEX		1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
LATITUDE (NAD 83):	41° 16' 30.74" N 41.27520489 N	SITE ACQUISITION:	JEAN COTTRELL JEAN.COTTRELL@DISH.COM
LONGITUDE (NAD 83):	72° 29' 51.76" W 72.49771078 W	CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
ZONING JURISDICTION:	TOWN OF CLINTON	RF ENGINEER:	BOSENER CHARLES BOSENER.CHARLES@DISH.COM
ZONING DISTRICT:	I-2 INDUSTRIAL DISTRICT - 2		
PARCEL NUMBER:	85/69/71/		
OCCUPANCY GROUP:	U		
CONSTRUCTION TYPE:	V-B		
POWER COMPANY:	EVERSOURCE CT ELECTRIC		
TELEPHONE COMPANY:	AT&T FIBER		



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBDL00151B**  
46 MEADOW ROAD  
CLINTON, CT 06413

SHEET TITLE  
TITLE SHEET

SHEET NUMBER  
**T-1**

**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

**SITE PHOTO**



**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]. KEEP RIGHT ONTO LOCAL ROAD(S). AT ROUNDABOUT, TAKE THE SECOND EXIT ONTO LOCAL ROAD(S). BEAR RIGHT ONTO CT-81 [CLINTON ST]. KEEP STRAIGHT ONTO CT-81 [HIGH ST]. TURN RIGHT ONTO CT-81 [CENTRAL AVE]. TURN LEFT ONTO CT-81 [HULL ST], THEN IMMEDIATELY TURN LEFT ONTO US-1 [W MAIN ST]. KEEP STRAIGHT ONTO US-1 [E MAIN ST]. TURN LEFT ONTO MEADOW RD. TURN RIGHT ONTO LOCAL ROAD AND ARRIVE AT BOBDL00151B.

**VICINITY MAP**



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



**GENERAL NOTES**

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

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

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

**SHEET INDEX**

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
LS1	SITE SURVEY
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

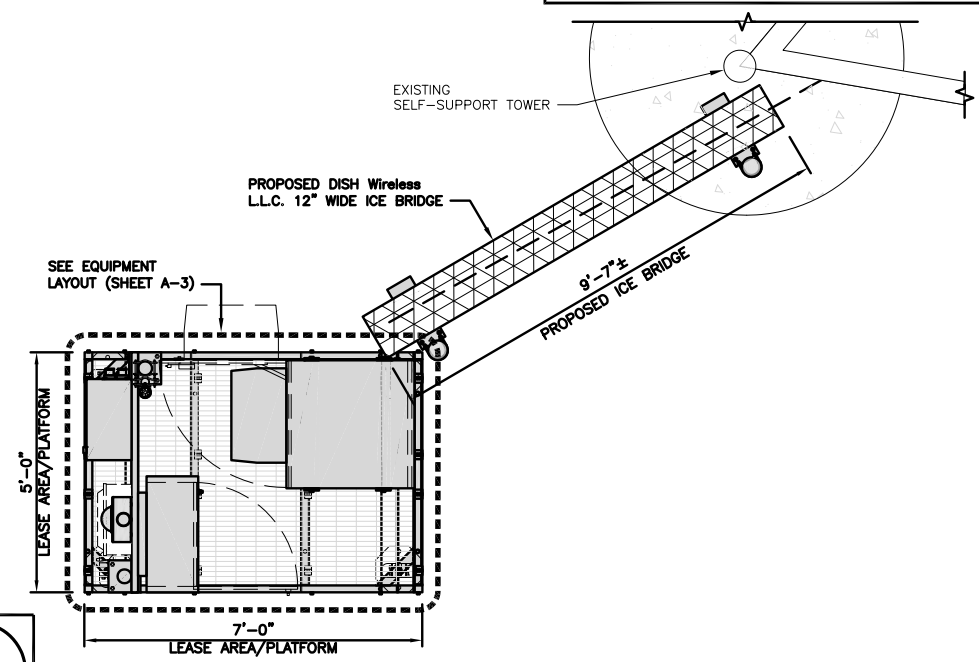
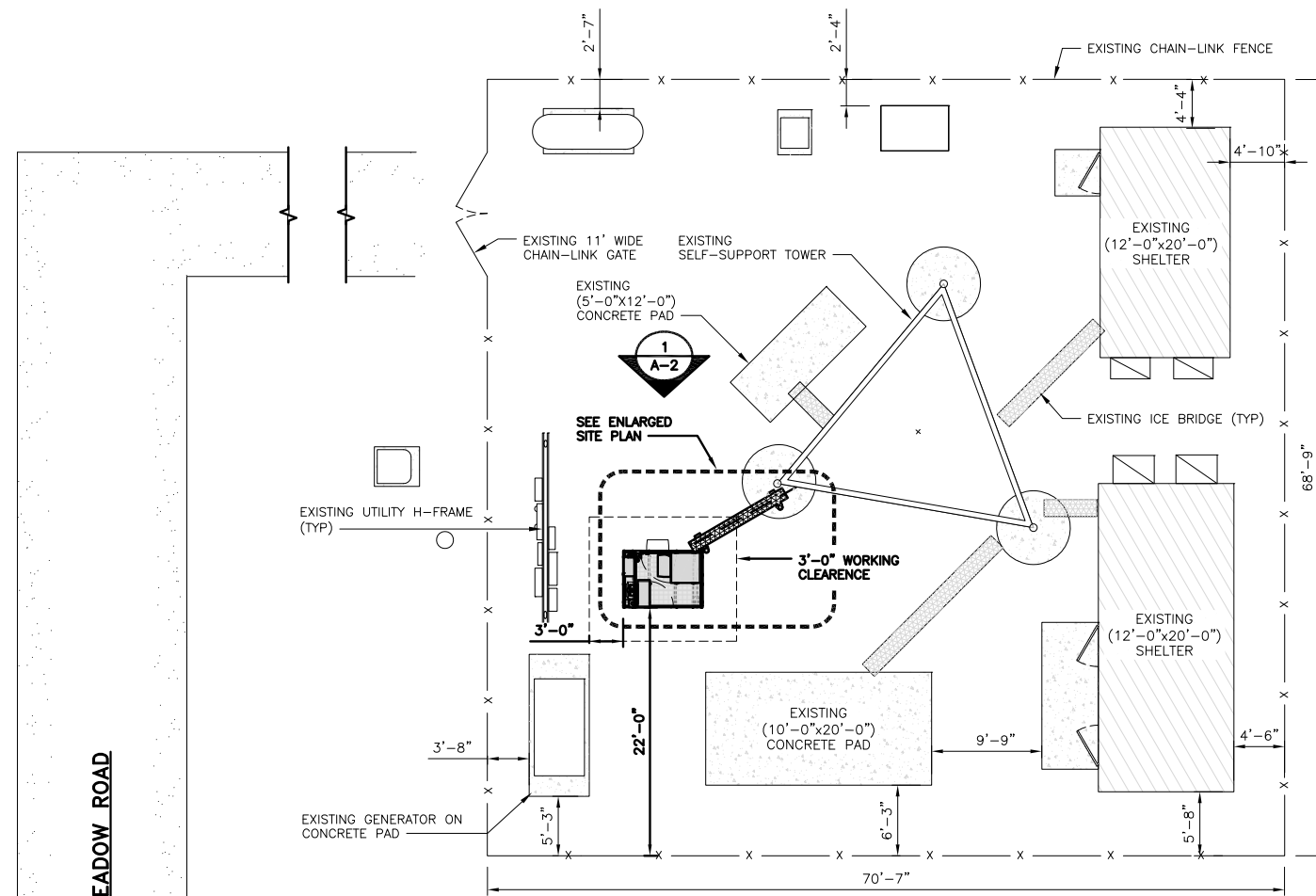


**NOTES**

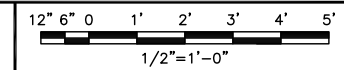
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

**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.



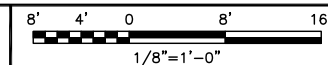
**ENLARGED SITE PLAN**



2



**OVERALL SITE PLAN**



1

**NOT USED**

3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

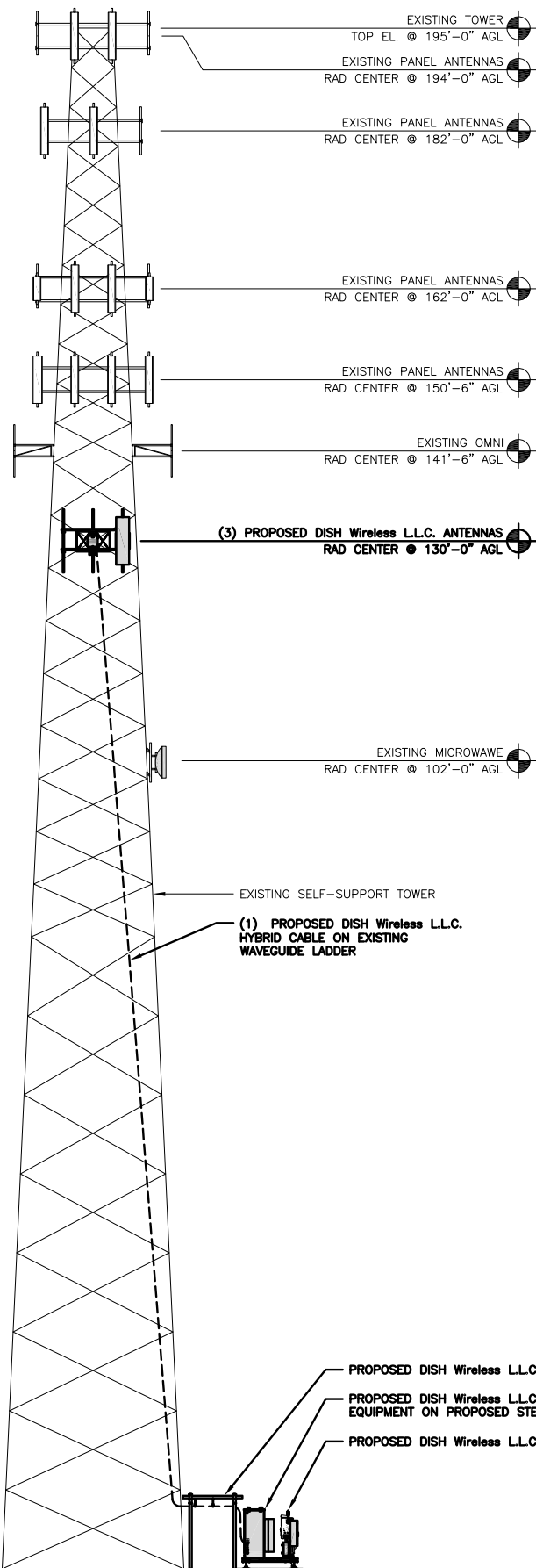
SHEET TITLE  
OVERALL AND ENLARGED  
SITE PLAN

SHEET NUMBER

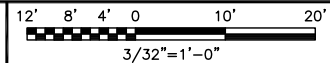
**A-1**

**NOTES**

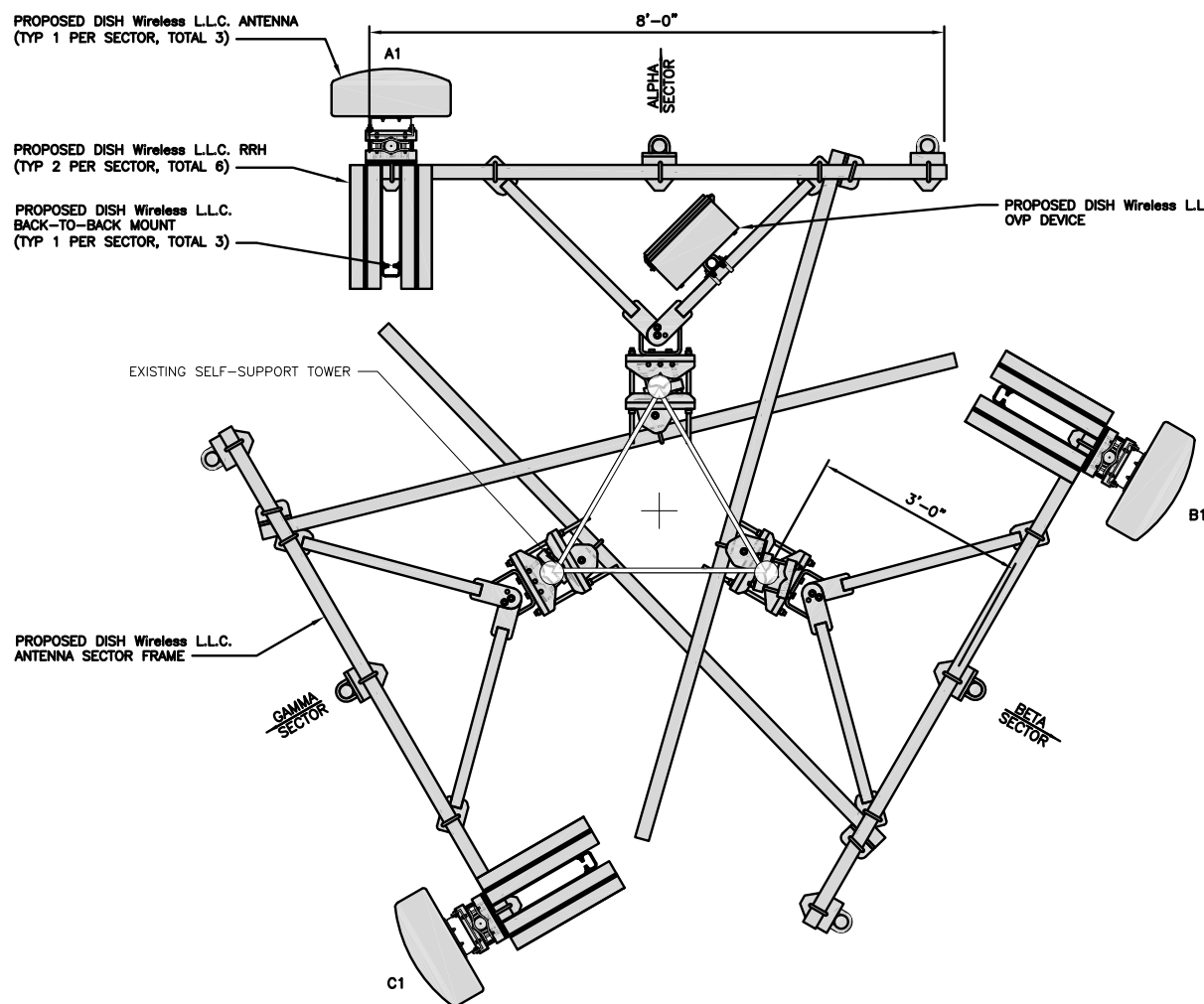
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



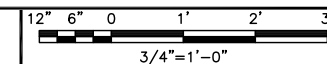
**PROPOSED NORTH ELEVATION**



1



**ANTENNA LAYOUT**



2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS-MX08FR0665-21	5G	72.0" x 20.0"	0°	130'-0"	(1) HIGH-CAPACITY HYBRID CABLE (161' LONG)
BETA	B1	PROPOSED	JMA WIRELESS-MX08FR0665-21	5G	72.0" x 20.0"	120°	130'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS-MX08FR0665-21	5G	72.0" x 20.0"	240°	130'-0"	
SECTOR	POSITION	RRH		NOTES				
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY					
ALPHA	A1	FUJITSU - TA08025-B605	5G	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.				
	A1	FUJITSU - TA08025-B604	5G					
BETA	B1	FUJITSU - TA08025-B605	5G					
	B1	FUJITSU - TA08025-B604	5G					
GAMMA	C1	FUJITSU - TA08025-B605	5G					
	C1	FUJITSU - TA08025-B604	5G					

**ANTENNA SCHEDULE**

NO SCALE

3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

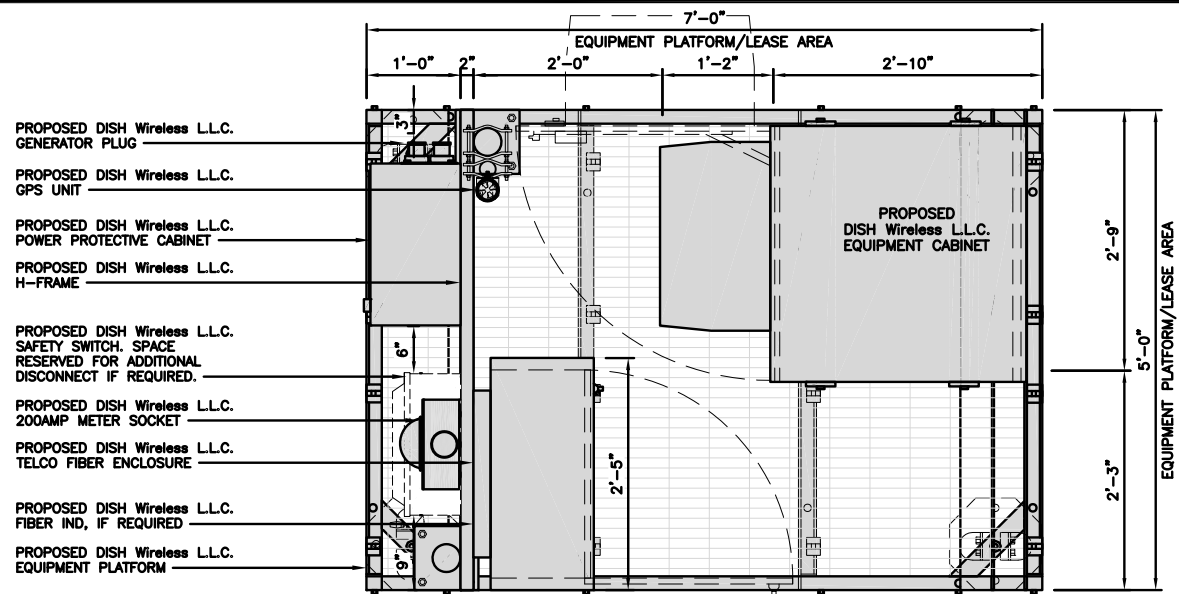
A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

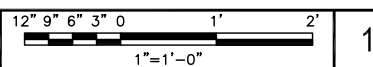
SHEET TITLE  
ELEVATION, ANTENNA  
LAYOUT AND SCHEDULE

SHEET NUMBER

**A-2**



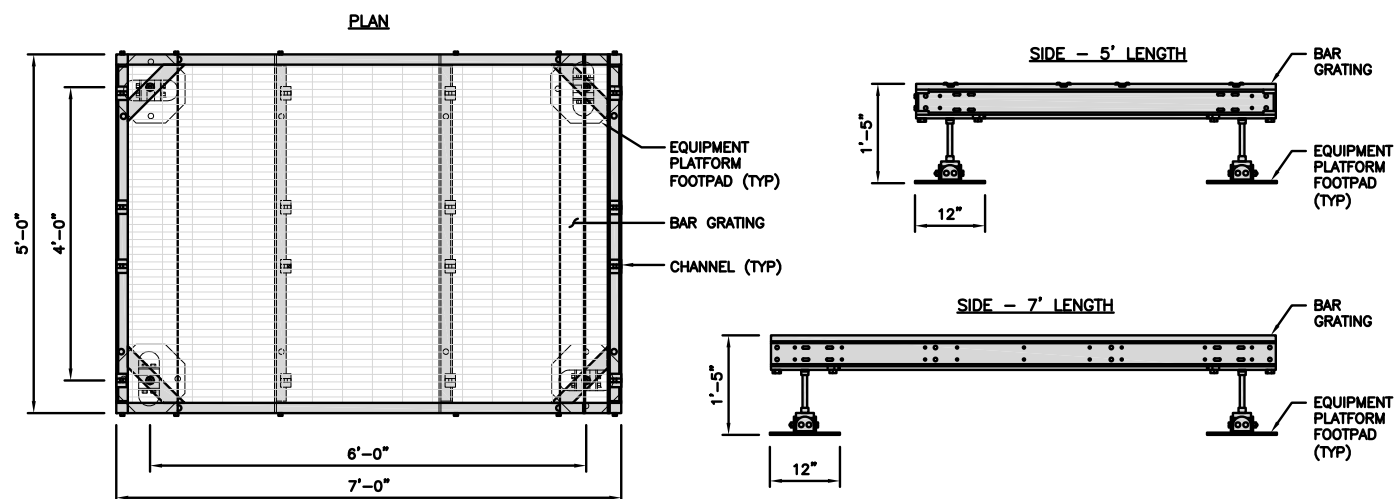
PLATFORM EQUIPMENT PLAN



1

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

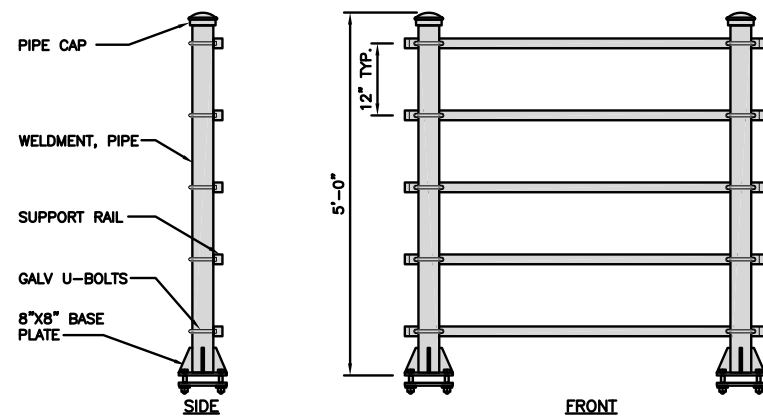
NOTE:  
GC TO PROVIDE EXTENDED  
THREAD FOR PLATFORM IF  
REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL

NO SCALE 2

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



H-FRAME DETAIL

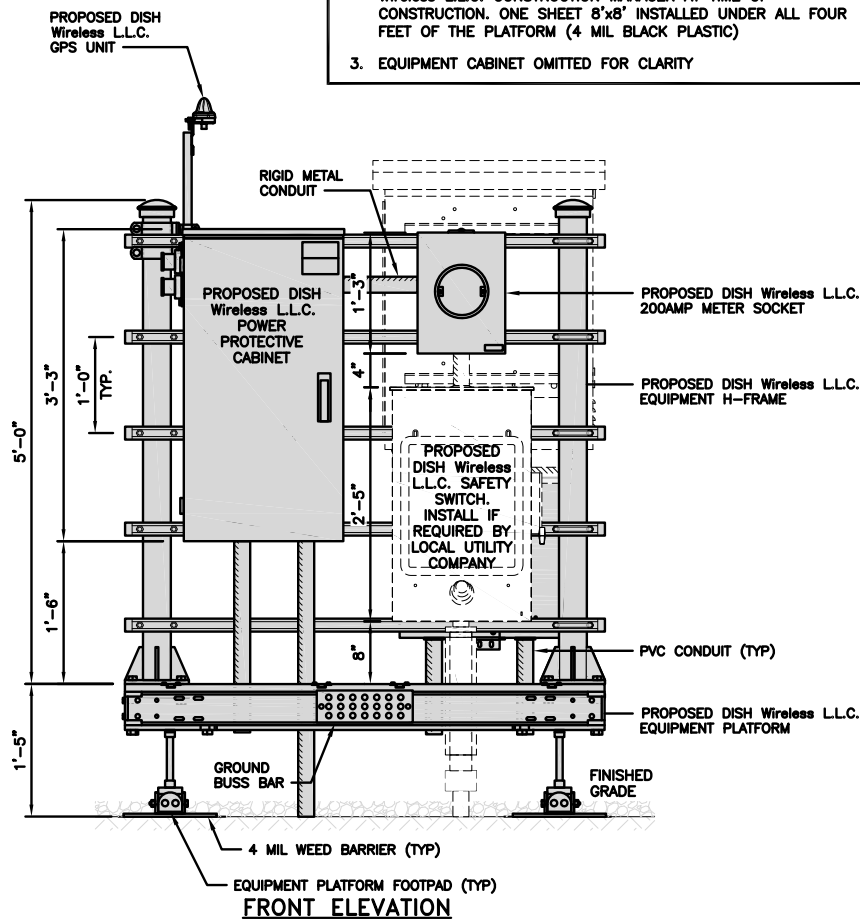
NO SCALE 3

NOT USED

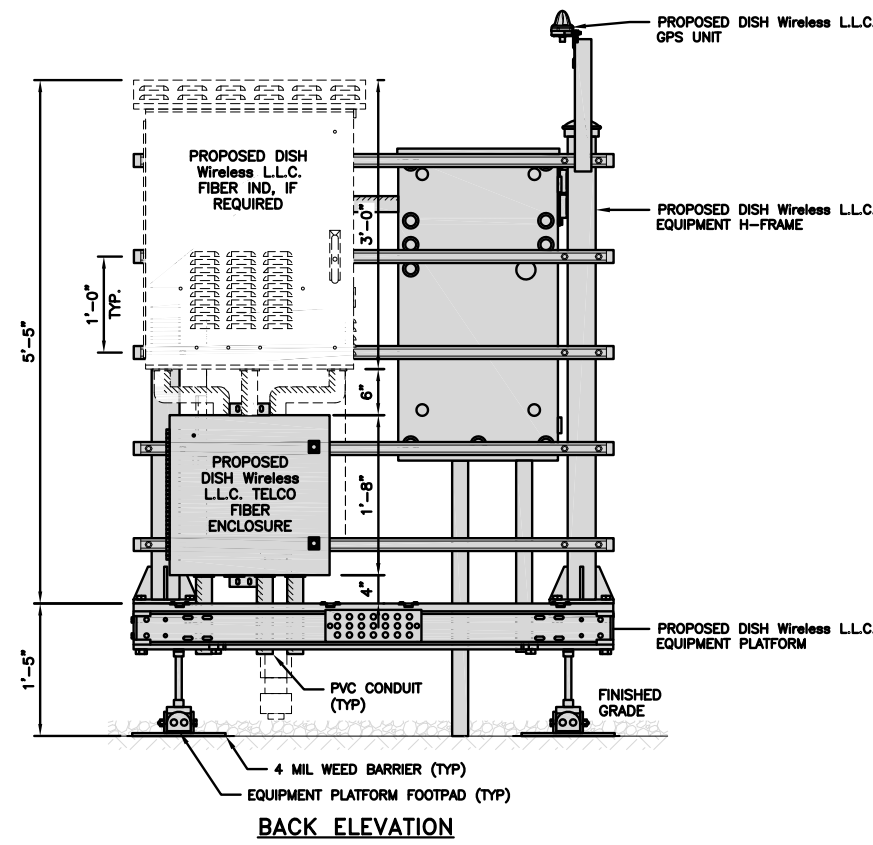
NO SCALE 4

NOTES

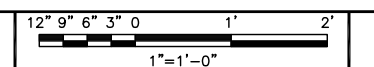
1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT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



FRONT ELEVATION



BACK ELEVATION



5



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

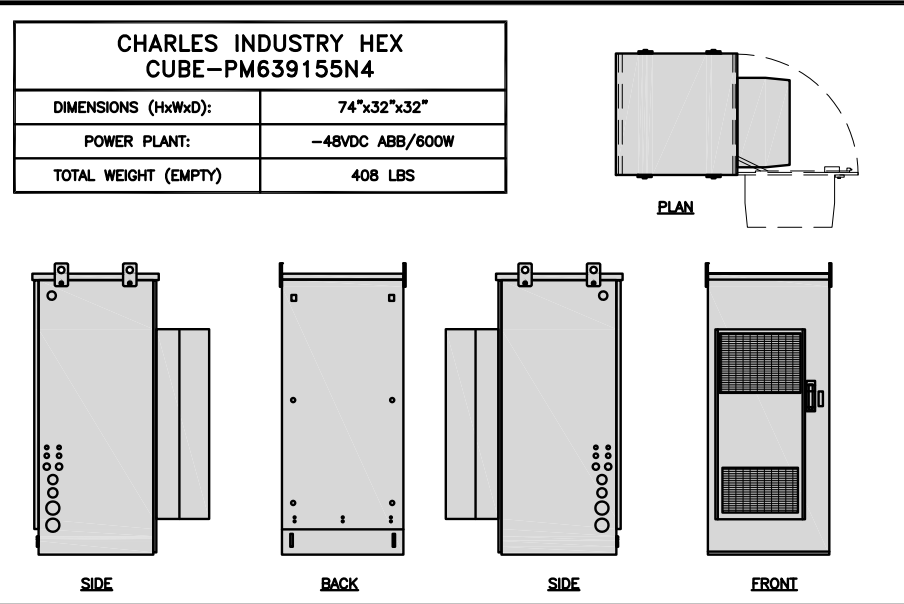
BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

SHEET TITLE  
EQUIPMENT PLATFORM AND  
H-FRAME DETAILS

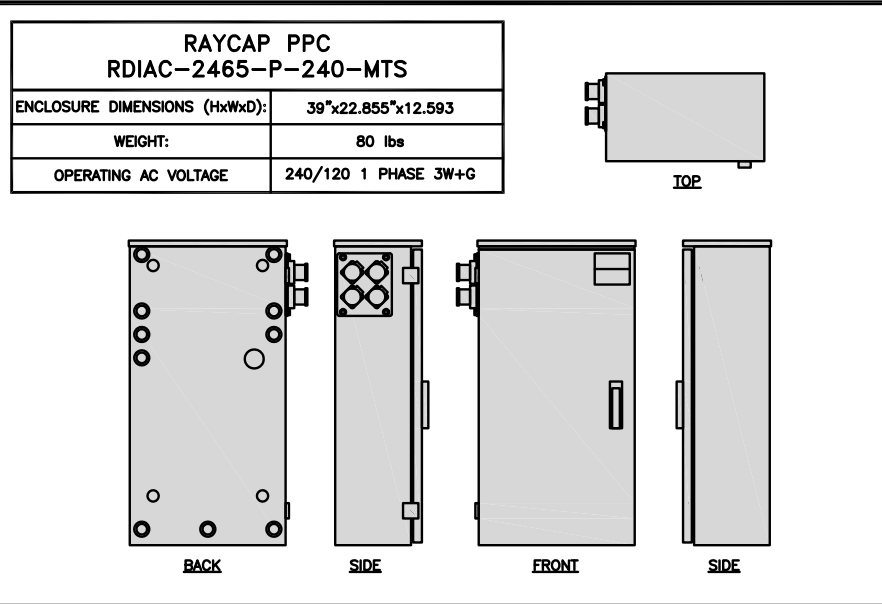
SHEET NUMBER

**A-3**

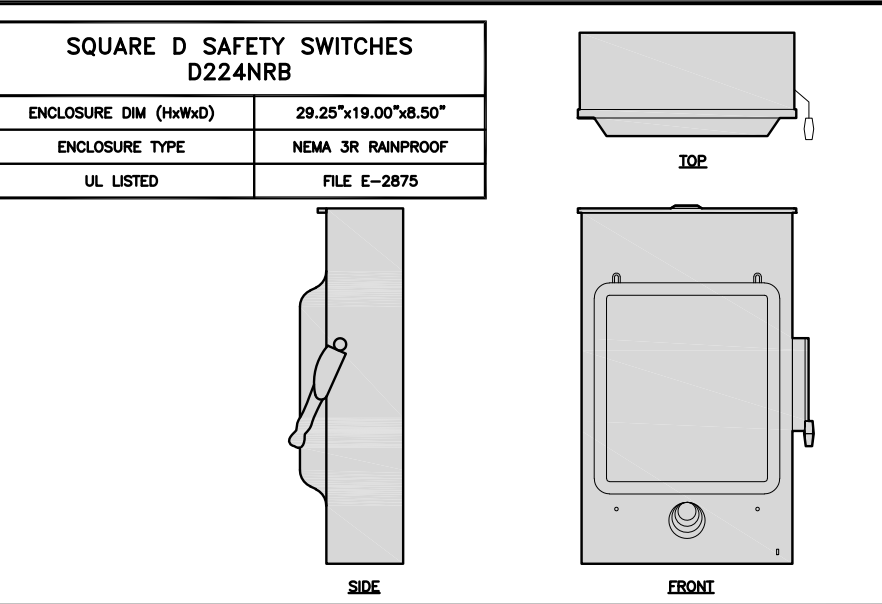




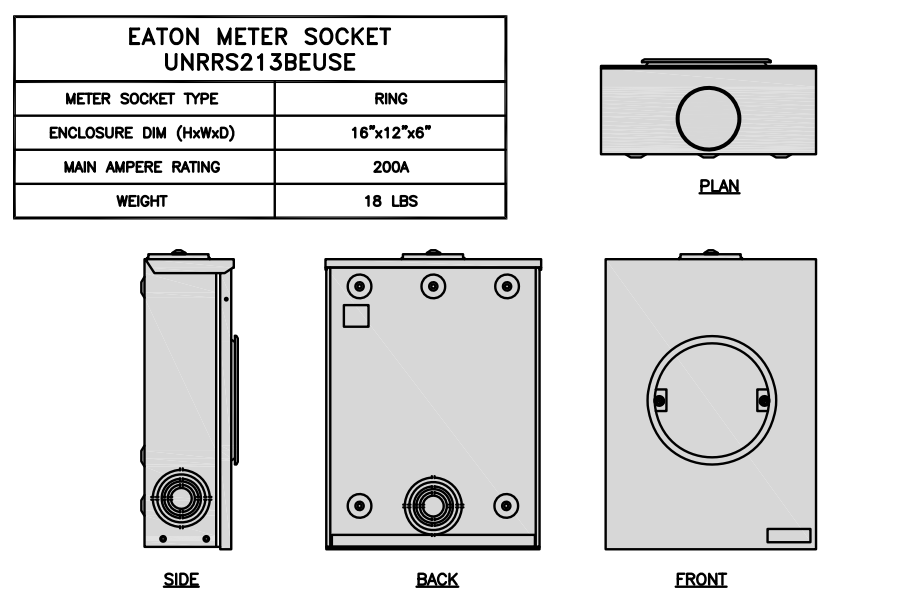
CABINET DETAIL NO SCALE 1



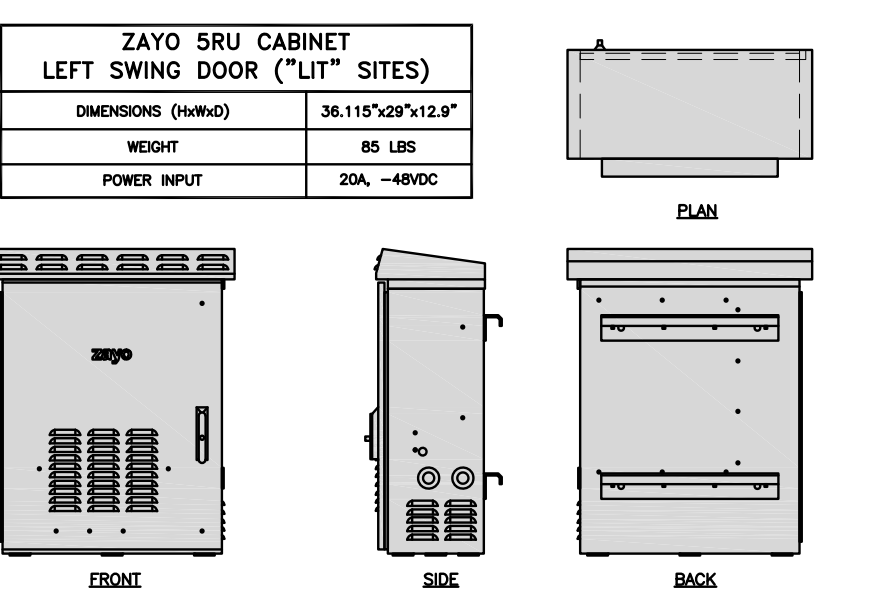
POWER PROTECTION CABINET (PPC) DETAIL NO SCALE 2



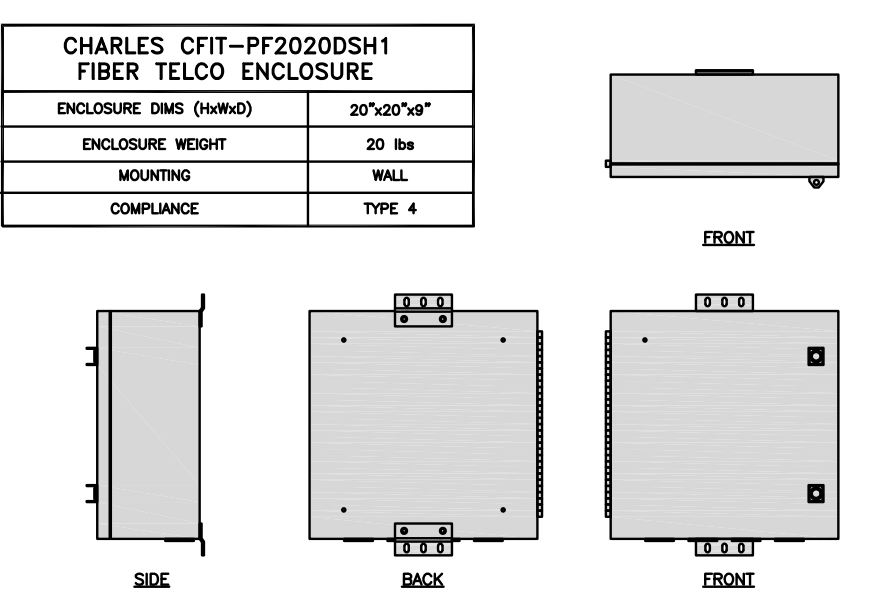
SAFETY SWITCH DETAIL NO SCALE 3



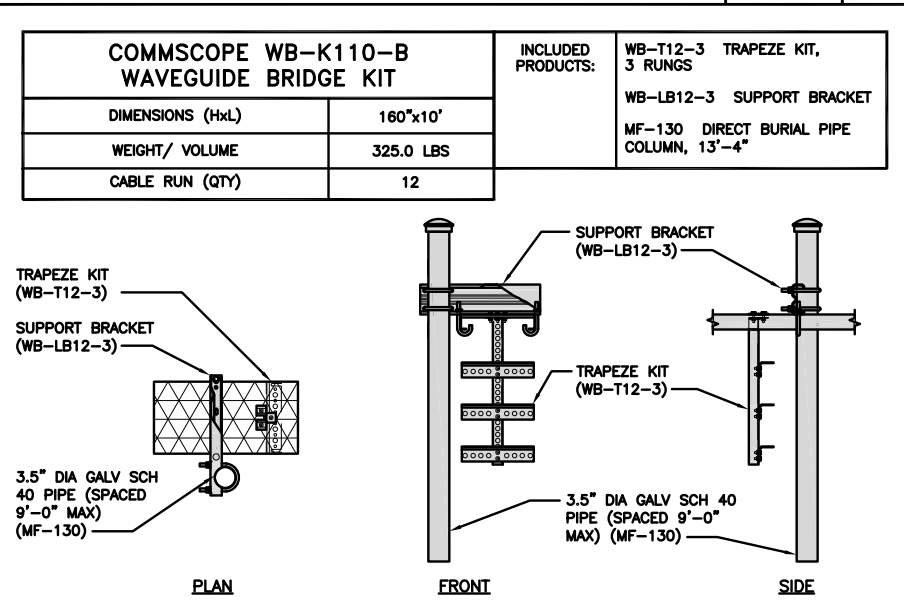
METER SOCKET DETAIL NO SCALE 4



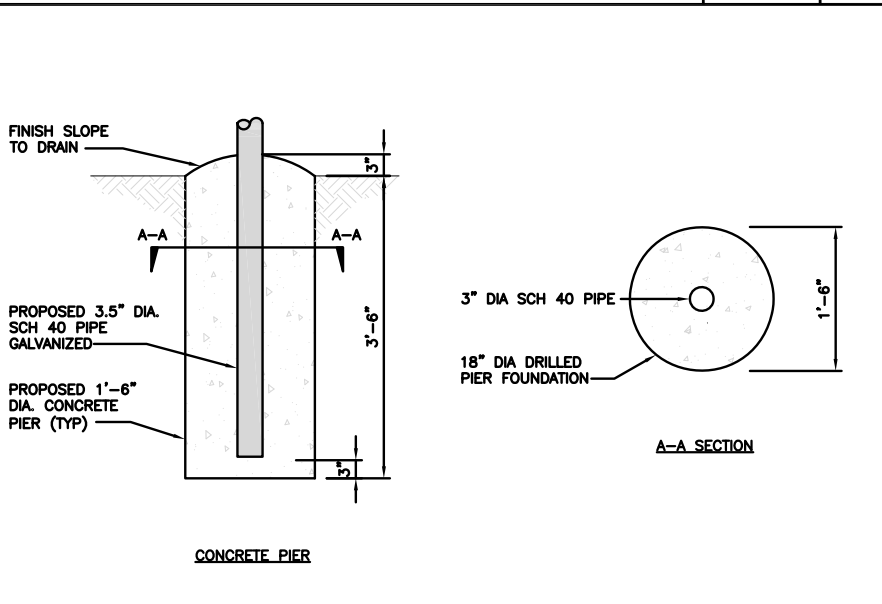
NETWORK INTERFACE UNIT DETAIL NO SCALE 5



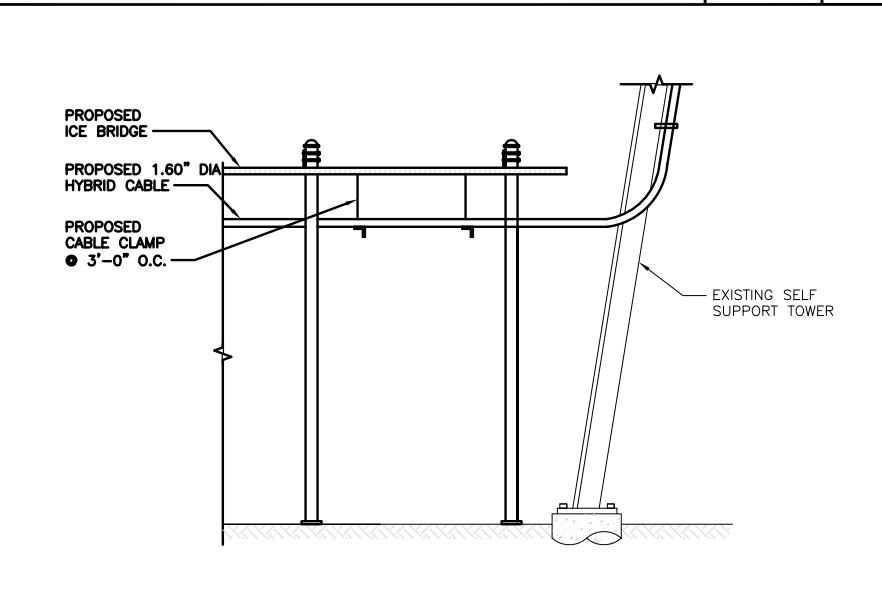
FIBER TELCO ENCLOSURE DETAIL NO SCALE 6



ICE BRIDGE DETAIL NO SCALE 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL NO SCALE 8



HYBRID CABLE RUN NO SCALE 9

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

8051 CONGRESS AVENUE  
BOCA RATON, FL 33487

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

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

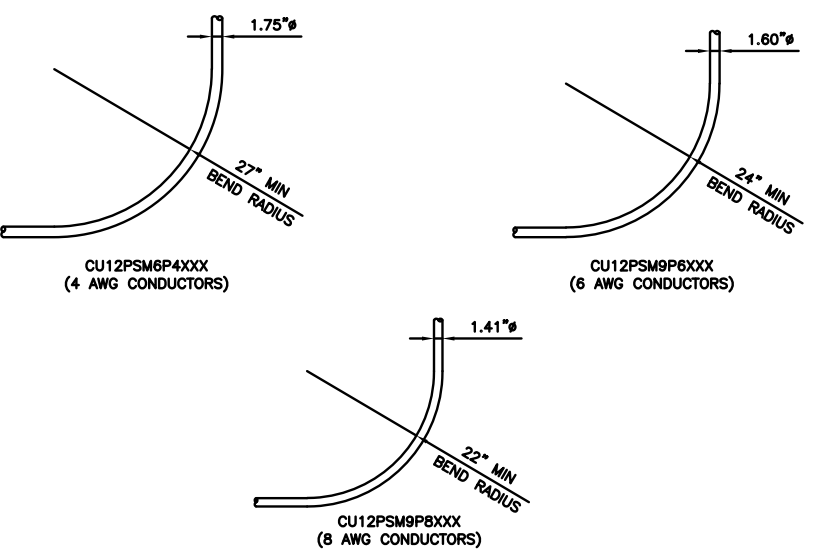
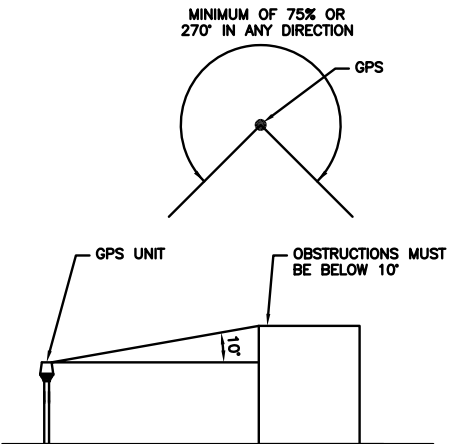
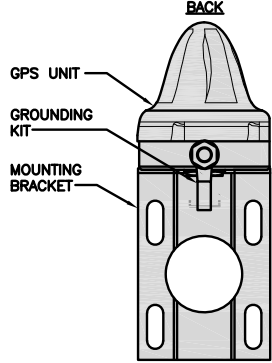
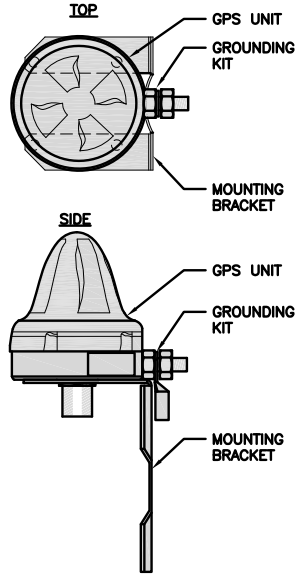
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

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

RFDS REV #: 1

CONSTRUCTION DOCUMENTS		
SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION
A&E PROJECT NUMBER 149434.001.01		
DISH Wireless L.L.C. PROJECT INFORMATION BOBDL00151B 46 MEADOW ROAD CLINTON, CT 06413		
SHEET TITLE EQUIPMENT DETAILS		
SHEET NUMBER <b>A-4</b>		

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 RADIUS NO SCALE 3

NOT USED

NOT USED

NOT USED

NOT USED NO SCALE 4

NOT USED NO SCALE 5

NOT USED NO SCALE 6

NOT USED

NOT USED

NOT USED

NOT USED NO SCALE 7

NOT USED NO SCALE 8

NOT USED NO SCALE 9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

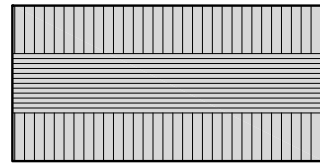
DISH Wireless L.L.C.  
PROJECT INFORMATION

BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

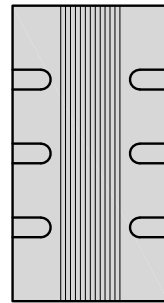
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-5**

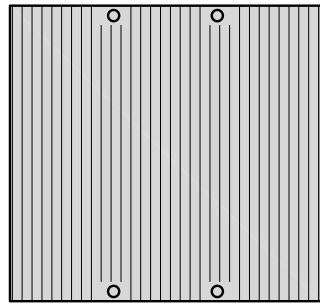
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



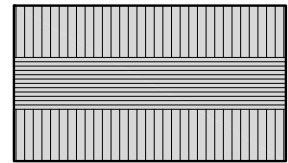
FRONT

REMOTE RADIO HEAD DETAIL

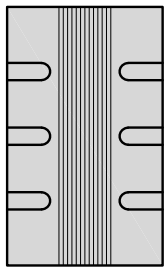
NO SCALE

1

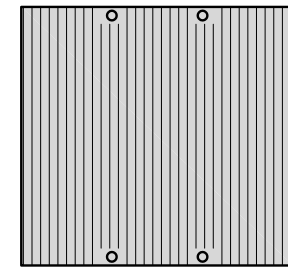
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



FRONT

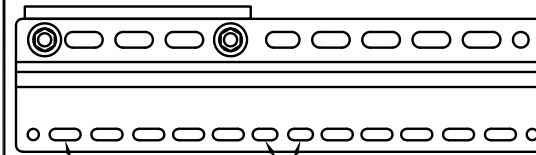
REMOTE RADIO HEAD DETAIL

NO SCALE

2

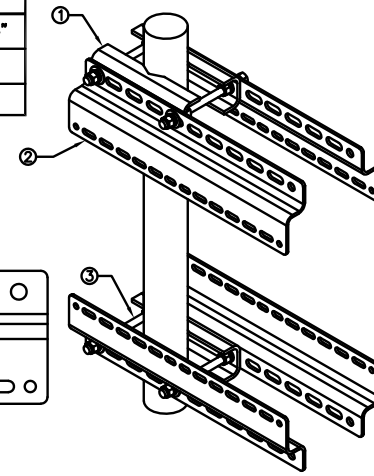
SABRE INDUSTRIES RRU BRACKET MOUNT C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



11MM x 30MM SLOTS  
40MM ON CENTER

11MM x 24MM SLOTS

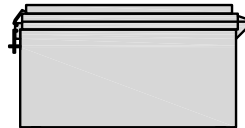


REMOTE RADIO MOUNT DETAIL

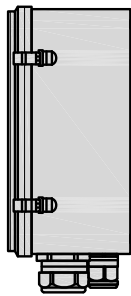
NO SCALE

3

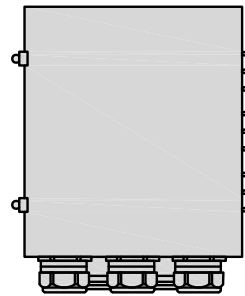
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



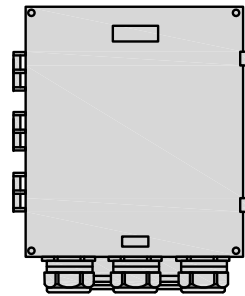
PLAN



SIDE



BACK



FRONT

SURGE SUPPRESSION DETAIL (OVP)

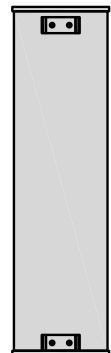
NO SCALE

4

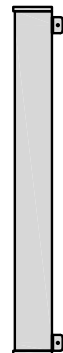
JMA WIRELESS MX08FR0665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



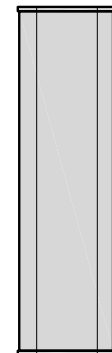
PLAN



BACK



SIDE



FRONT

ANTENNA DETAIL

NO SCALE

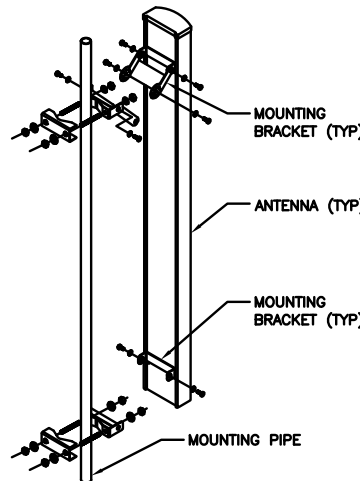
5

NOT USED

NO SCALE

6

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



MOUNTING BRACKET (TYP)

ANTENNA (TYP)

MOUNTING BRACKET (TYP)

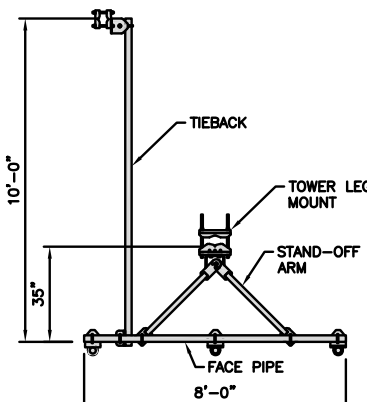
MOUNTING PIPE

ANTENNA MOUNTING DETAIL

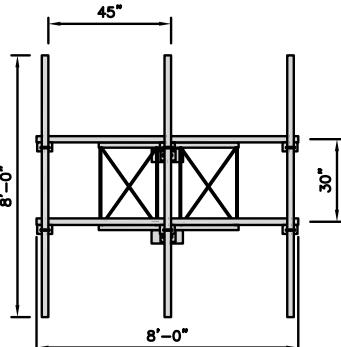
NO SCALE

7

COMMSCOPE V-FRAME MTC3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs



PLAN



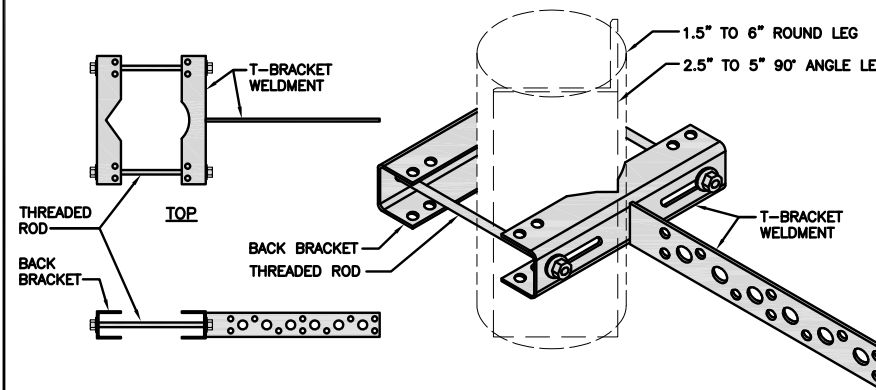
FRONT

ANTENNA FRAME DETAIL

NO SCALE

8

SITEPRO1 T600 UNIVERSAL T-BRACKET	
DIMENSIONS (HxWxL)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS



SIDE

ISOMETRIC

VERTICAL CABLE SUPPORT DETAIL

NO SCALE

9

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

**CONSTRUCTION  
DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

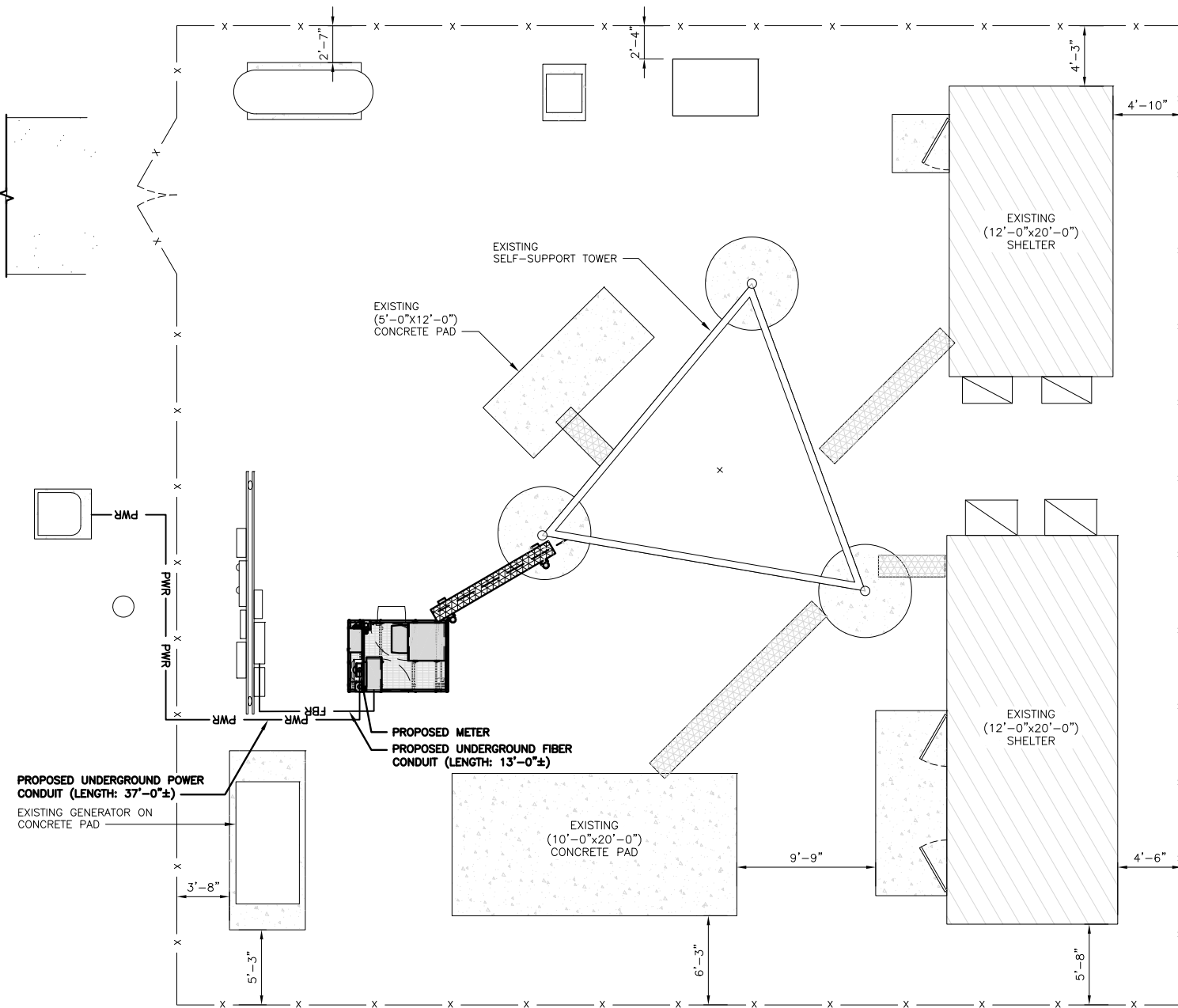
DISH Wireless L.L.C.  
PROJECT INFORMATION

BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

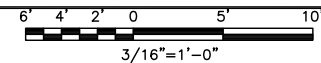
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER

**A-6**



UTILITY ROUTE PLAN



1

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

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

ELECTRICAL NOTES

NO SCALE

2



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

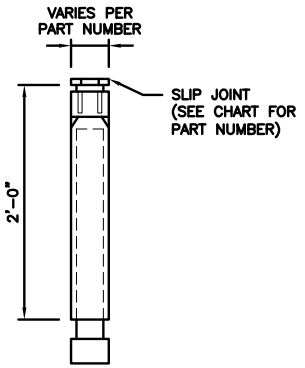
SHEET TITLE  
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

SHEET NUMBER

**E-1**

**CARLON EXPANSION FITTINGS**

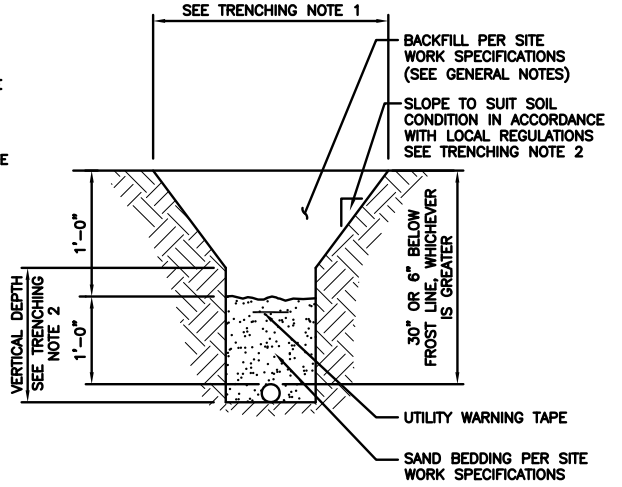
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N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

**TRENCHING NOTES**

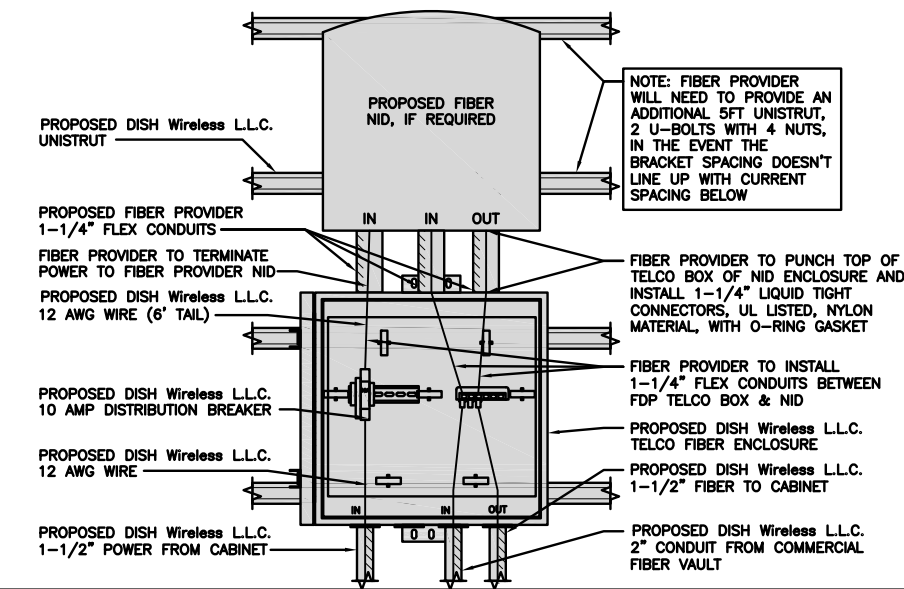
- CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



**EXPANSION JOINT DETAIL** NO SCALE 1

**TYPICAL UNDERGROUND TRENCH DETAIL** NO SCALE 2

**NOT USED** NO SCALE 3



**NOT USED** NO SCALE 5

**NOT USED** NO SCALE 6

**LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)** NO SCALE 4

**NOT USED** NO SCALE 7

**NOT USED** NO SCALE 8

**NOT USED** NO SCALE 9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

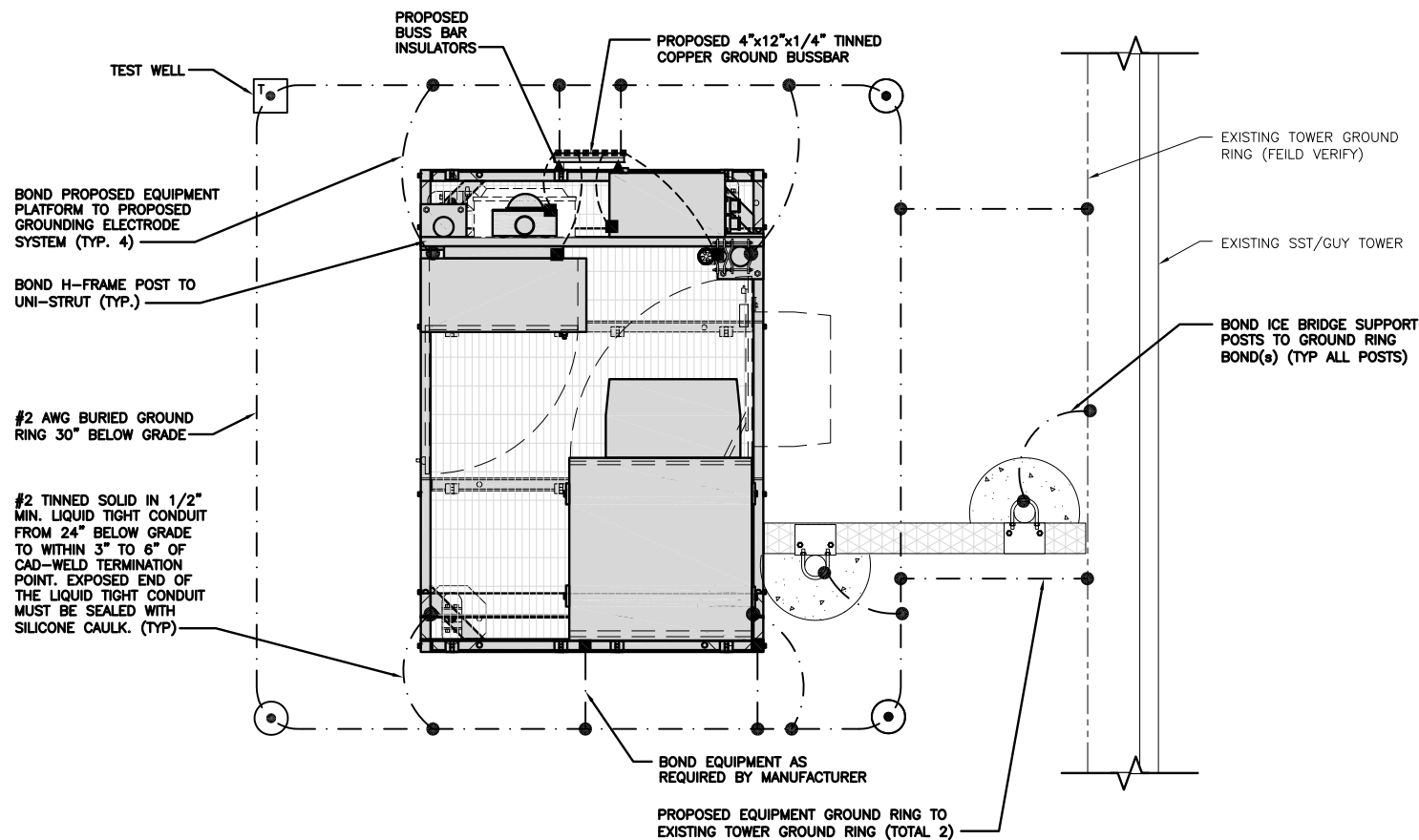
BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

SHEET TITLE  
ELECTRICAL  
DETAILS

SHEET NUMBER

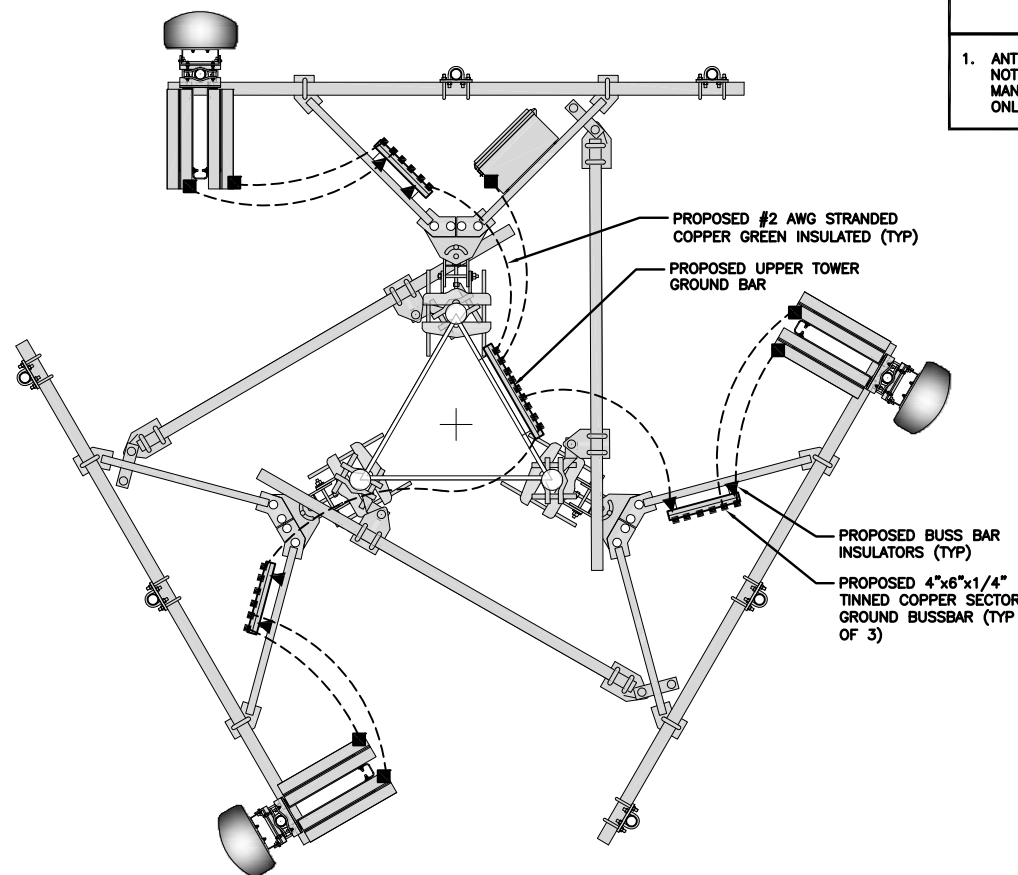
**E-2**





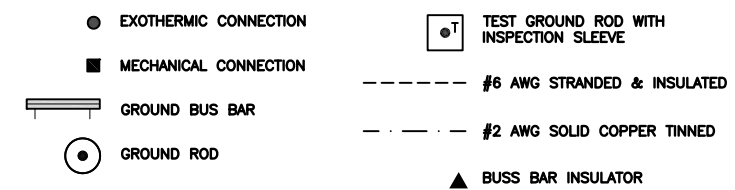
TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- 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.
- 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 GROUND 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 TOWER STEEL.  
REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

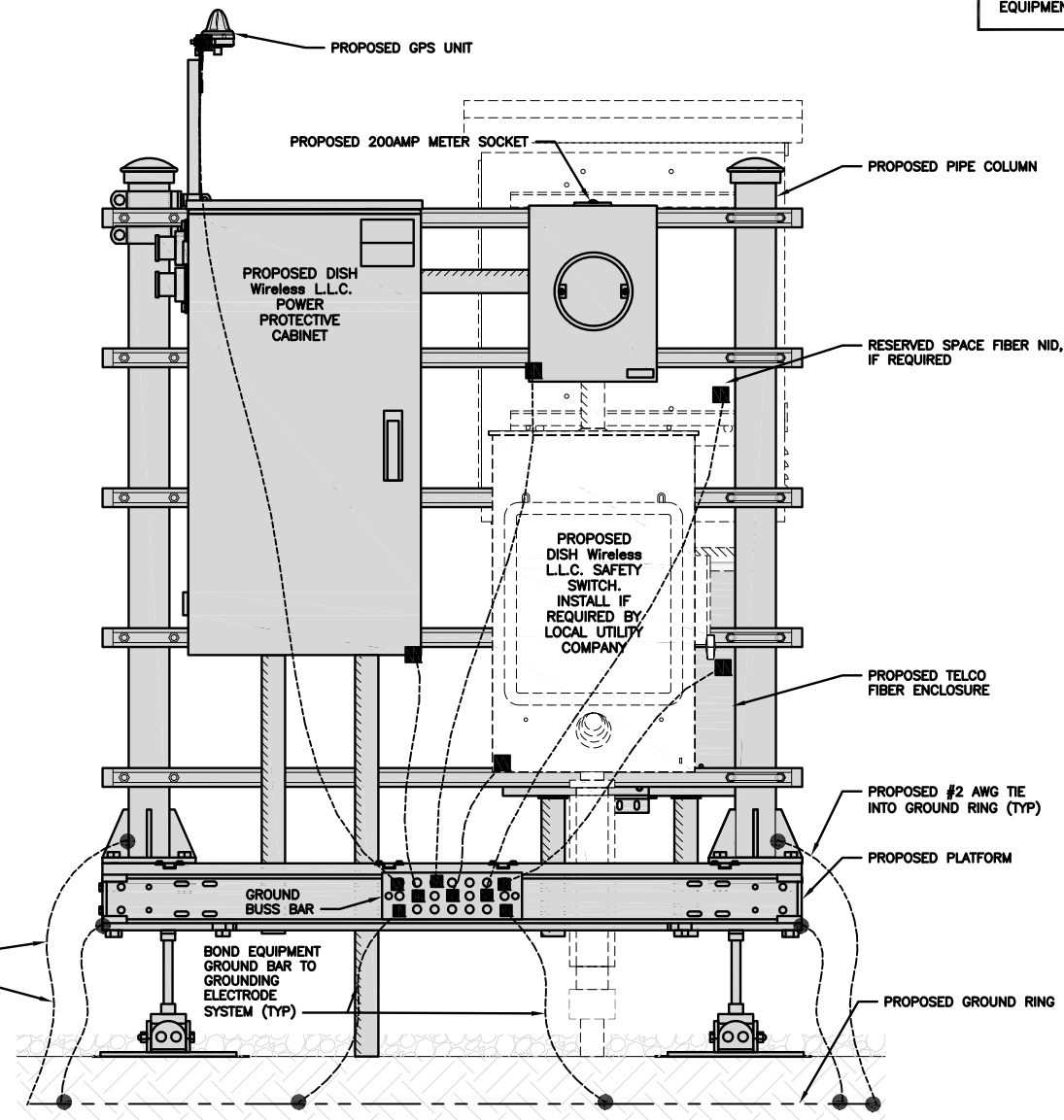
BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

SHEET TITLE  
GROUNDING PLANS  
AND NOTES

SHEET NUMBER

G-1

**NOTES**  
EQUIPMENT CABINET OMITTED FOR CLARITY

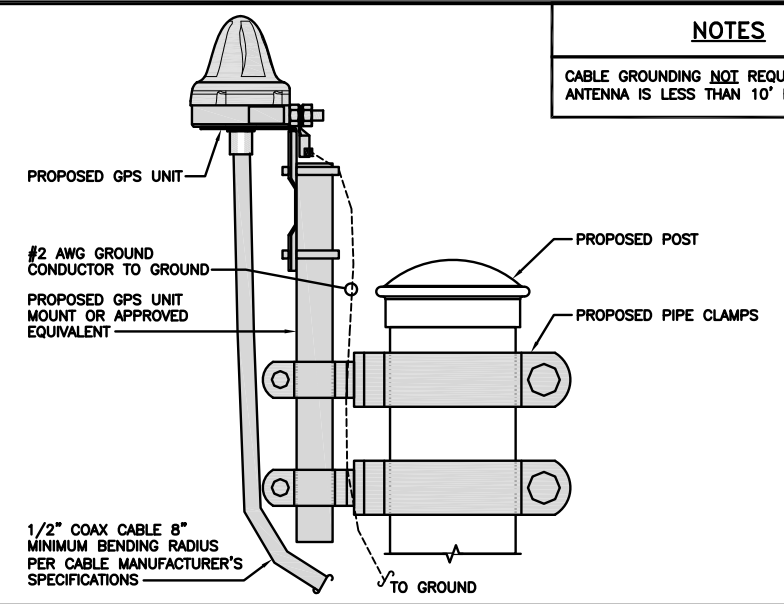


#2 TINNED SOLID IN 1/2" MIN. LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (TYP)

**H-FRAME GROUNDING DETAIL**

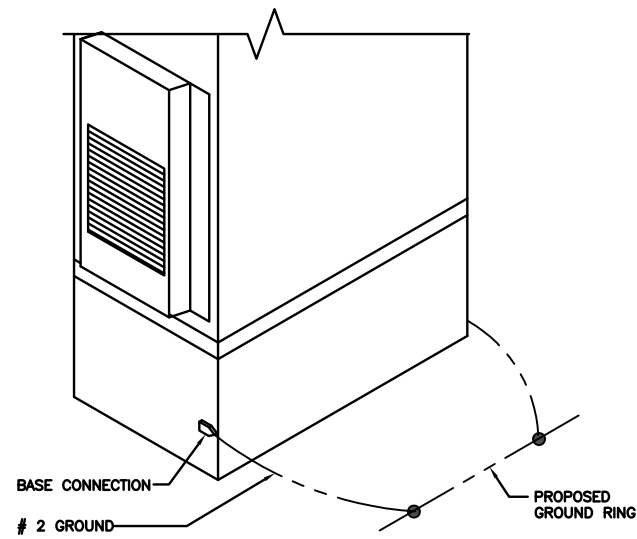
NO SCALE 1

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



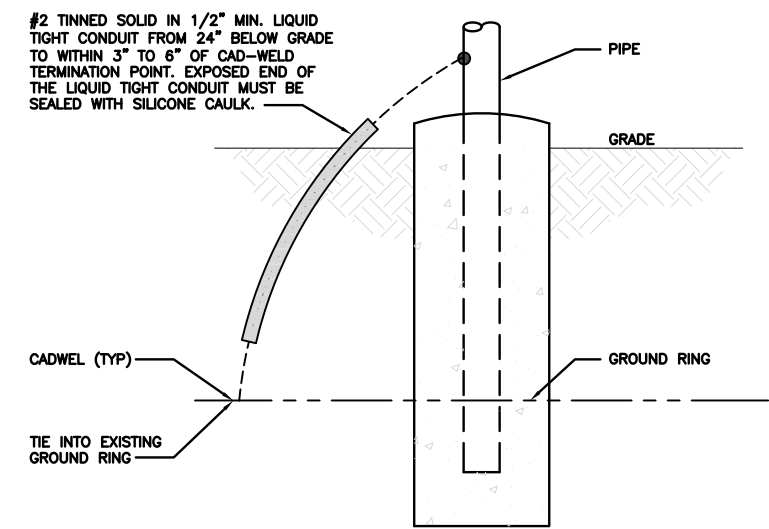
**TYPICAL GPS UNIT GROUNDING**

NO SCALE 2



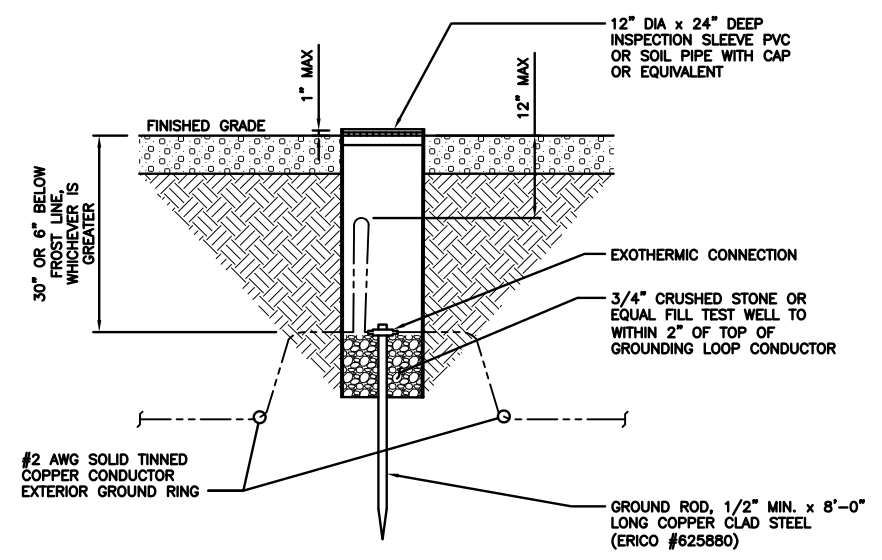
**OUTDOOR CABINET GROUNDING**

NO SCALE 3



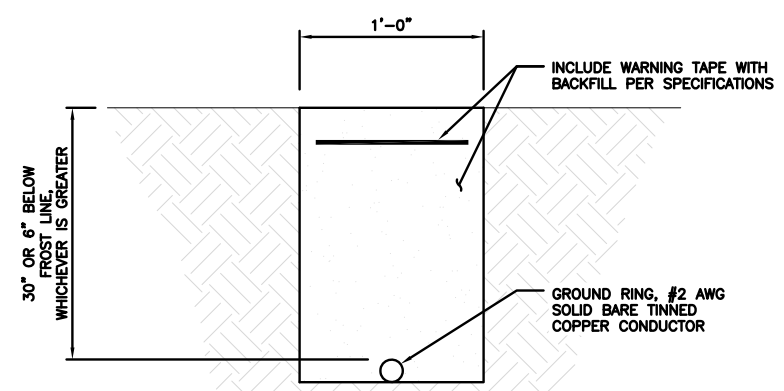
**TRANSITIONING GROUND DETAIL**

NO SCALE 4



**TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE**

NO SCALE 5



**TYPICAL GROUND RING TRENCH**

NO SCALE 6



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

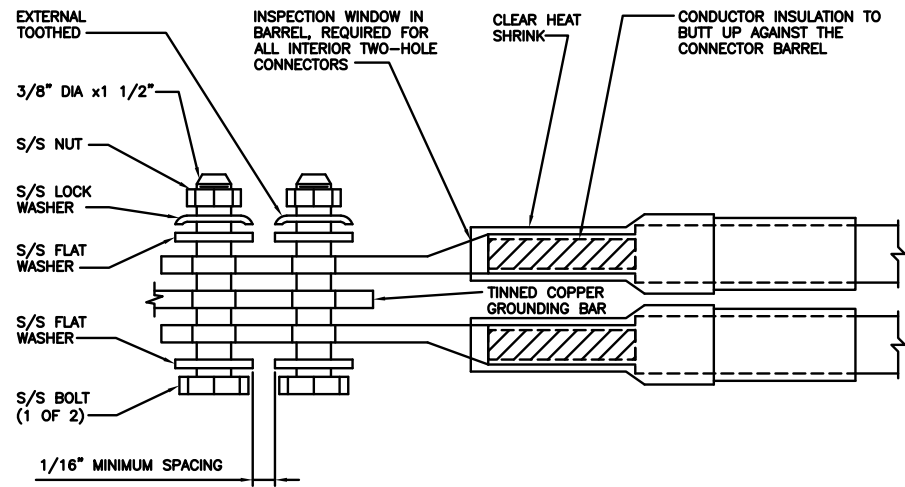
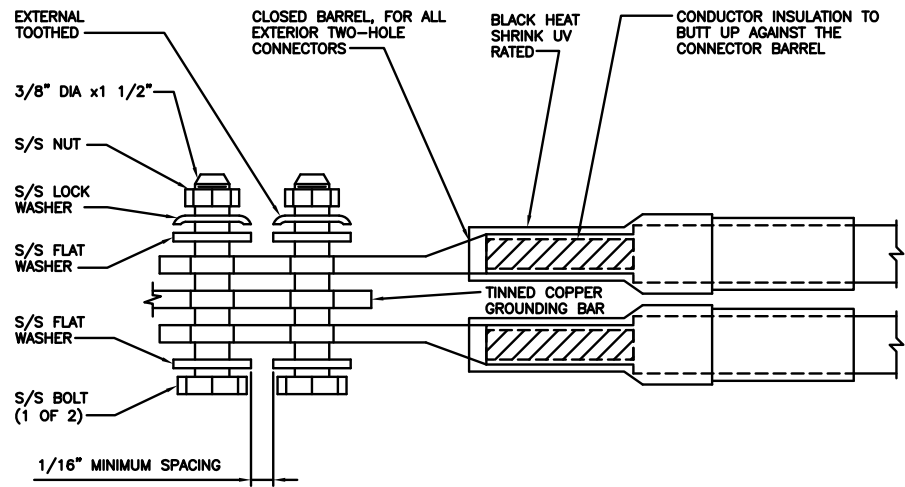
DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

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

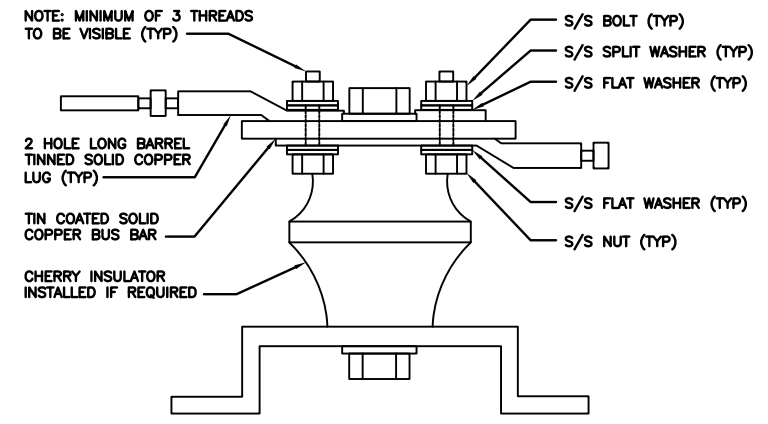
NO SCALE 1

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



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
  
BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
**G-3**

**RF JUMPER COLOR CODING**

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

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

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

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

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

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

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

**HYBRID/DISCREET CABLES**

INCLUDE SECTOR BANDS BEING SUPPORTED  
ALONG WITH FREQUENCY BANDS

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

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

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

**NOTES**

- 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

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

**POWER CABLES TO RRHs**

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

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

**RET MOTORS AT ANTENNAS**

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

**MICROWAVE RADIO LINKS**

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

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

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

**RF CABLE COLOR CODES**

NO SCALE

1

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



CBRS TECH  
(3 GHz)



AWS  
(N66+N70+H-BLOCK)



NEGATIVE SLANT PORT  
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

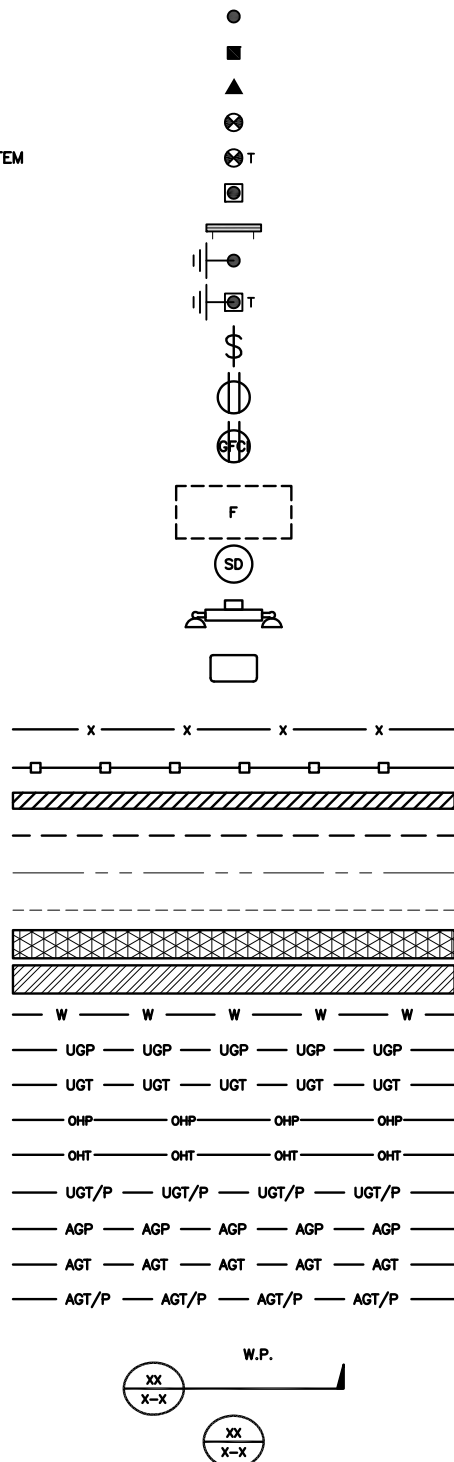
DISH Wireless L.L.C.  
PROJECT INFORMATION

BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

SHEET TITLE  
RF  
CABLE COLOR CODE

SHEET NUMBER  
**RF-1**

EXOTHERMIC CONNECTION  
 MECHANICAL CONNECTION  
 BUSS BAR INSULATOR  
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 EXOTHERMIC WITH INSPECTION SLEEVE  
 GROUNDING BAR  
 GROUND ROD  
 TEST GROUND ROD WITH INSPECTION SLEEVE  
 SINGLE POLE SWITCH  
 DUPLEX RECEPTACLE  
 DUPLEX GFCI RECEPTACLE  
 FLUORESCENT LIGHTING FIXTURE  
 (2) TWO LAMPS 48-T8  
 SMOKE DETECTION (DC)  
 EMERGENCY LIGHTING (DC)  
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW  
 LED-1-25A400/51K-SR4-120-PE-DBTDX



SECTION REFERENCE  
 DETAIL REFERENCE

**LEGEND**

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

**ABBREVIATIONS**



5701 SOUTH SANTA FE DRIVE  
 LITTLETON, CO 80120



8051 CONGRESS AVENUE  
 BOCA RATON, FL 33487



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
 149434.001.01

DISH Wireless L.L.C.  
 PROJECT INFORMATION

BOBDL00151B  
 46 MEADOW ROAD  
 CLINTON, CT 06413

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.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-2**

**CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:**

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

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
  - ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
  - 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- TIE WRAPS ARE NOT ALLOWED.
- 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.
- 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.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- 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.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C."
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

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.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

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

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

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	7/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
149434.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
  
BOBDL00151B  
46 MEADOW ROAD  
CLINTON, CT 06413

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-4**

# EXHIBIT 12

## Site Sketch (ground)

