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Kristen Motel
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April 13, 2022

VIA EMAIL & OVERNIGHT DELIVERY
Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC
Premises: 345 Fan Hill Road, Monroe, Connecticut

Dear Members of the Siting Council:

Pursuant to Connecticut General Statutes (C.G.S.) § 16-50aa, New Cingular Wireless PCS, LLC ("AT&T" or "the Applicant") hereby requests an order from the Connecticut Siting Council (the "Council") approving the proposed shared use of a communications tower and associated compound at the parcel identified as 345 Fan Hill Road in the Town of Monroe (the "Fan Hill Road Facility"). The owner of the facility, the Town of Monroe, and AT&T have agreed to share the use of the Fan Hill Road Facility as detailed below. Additionally, annexed here as **Attachment 1** is the Letter of Authorization between AT&T and ARX Wireless Infrastructure, LLC ("ARX"), owner of the tower equipment, authorizing AT&T to prepare and file an application for shared use of the tower.

As you may recall, on December 19, 2012, the Council acknowledged use of a temporary cellular telephone facility at 375 Fan Hill Road (EM-CING-085-121218) by New Cingular Wireless PCS, LLC ("AT&T"). The AT&T cell on wheels ("COW") deployment at 375 Fan Hill Road, Monroe, which began in December 2012 in response to the Sandy Hook tragedy, remains in-place and continues to assist with critical communication needs of the Newtown and Monroe communities. As you know, several extensions for AT&T's COW were granted to AT&T to allow continued reliable service in this area, including the last extension which is set to expire on June 30, 2023.

As noted in the last extension request for AT&T's COW, ARX was working with the Town of Monroe on a tower facility on Town-owned property that would serve as a permanent replacement for AT&T's COW. This request for shared use of that permanent replacement facility will allow AT&T to continue to provide critical reliable wireless services to the community.

The Fan Hill Road Facility

On October 21, 2021, the Monroe Planning and Zoning Commission granted Special Exception Permit Approval to the Town of Monroe and ARX Wireless Infrastructure, LLC for construction of the Fan Hill Road Facility. A copy of the Approval Resolution is attached hereto as **Attachment 2**. The Facility will consist of an approximately 176' monopole tower (the "Tower")

and associated equipment, with two (2) Town-owned omni-antennas at the top of the Tower reaching a total height of approximately 196' above ground level ("AGL").

On March 31, 2022, the Town of Monroe obtained a building permit to construct the Facility. A copy of the Building Permit is enclosed as **Attachment 3**. The Fan Hill Road Facility is located on a wooded portion of the Fawn Hollow Elementary School campus, an approximately 72.1-acre parcel owned by the Town of Monroe.

AT&T's Wireless Facility

As depicted on the plans annexed hereto as **Attachment 4** prepared by Hudson Design Group LLC last revised February 23, 2022, including a site plan, compound plan, and tower elevation, AT&T proposes the shared use of the Fan Hill Road Facility to provide FCC licensed services as well as FirstNet services.[1] AT&T will install 6 antennas and 9 remote radiohead units on a sector frame mount attached to the existing tower at the centerline height of approximately the 160' AGL. As also depicted on the drawings, AT&T will install its unmanned equipment within a proposed 6.8'x 6.8' walk-in equipment cabinet shelter on a concrete pad within AT&T's 20' x 12.6' leased area located within the fenced compound. AT&T will install a diesel emergency back-up generator on a 4'x6' concrete pad within the leased area.

Connecticut General Statutes § 16-50aa provides that, upon written request for shared use approval, an order approving such use shall be issued "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns." (C.G.S. § 16-50aa(c)(1)). Further, upon approval of such shared use, it is exclusive, and no local zoning or land use approvals are required. (C.G.S. § 16-50x). Shared use of the Fan Hill Road Facility satisfies the approval criteria set forth in C.G.S. § 16-50aa as follows:

A. Technical Feasibility: As evidenced in the structural analysis prepared by Hudson Design Group LLC and dated February 16, 2022, annexed hereto as **Attachment 5** and the mount analysis prepared by Hudson Design Group LLC, dated August 12, 2020 and revised February 18, 2022, annexed hereto as **Attachment 6**, AT&T confirmed that the proposed Fan Hill Road Facility is capable of supporting AT&T's antennas and tower mounted equipment in addition to the Town's proposed loading. The proposed shared use of this tower is therefore technically feasible.

B. Legal Feasibility: Pursuant to C.G.S. § 16-50aa, the Council is authorized to issue an order approving shared use of the existing Fan Hill Road Facility. (C.G.S. § 16-50aa(c)(1)). On October 21, 2021, the Monroe Planning and Zoning Commission

[1] FirstNet is a nationwide broadband public safety network dedicated to the needs of first responders. See https://about.att.com/newsroom/2019/fn_purpose_built_cell_sites.html for more information about FirstNet.

granted Special Exception Permit Approval to the Town of Monroe and ARX Wireless Infrastructure, LLC for construction of the Tower. Under the authority vested in the Council by C.G.S. § 16-50aa, an order by the Council approving the shared use of a tower would permit the Applicant to obtain a building permit for the proposed installation.

C. Environmental Feasibility: The proposed shared use would have a minimal environmental effect, for the following reasons:

1. Given the height of the approved tower under construction, AT&T's proposed installation would have a *de minimis* visual impact and would not cause any significant change or alteration in the physical or environmental characteristics of the facility;

2. The installation by AT&T will not increase the height of the tower;

3. The proposed installation will not increase the noise levels at the site boundaries by six decibels or more;

4. Operation of AT&T's antennas at this site will not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. AT&T's proposed antenna installation along with the existing equipment is calculated to be within 5.65% of the FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure ("MPE"). Please see the assessment of RF power density dated February 9, 2022, prepared by C Squared Systems, LLC, annexed hereto as **Attachment 7**; and

5. The proposed shared use of the Fan Hill Road Facility would not require any water or sanitary facilities or discharges into any waterbodies nor will there be any additional air emissions since the Applicant does not propose any new emergency back-up generator. Further, the installation will not generate any traffic other than for periodic maintenance visits.

D. Economic Feasibility: The Applicant and the tower owner entered into a mutual agreement to share use of the Fan Hill Road Facility on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.

E. Public Safety: As stated above and evidenced in attachments hereto the tower is structurally capable of supporting AT&T's installation and emissions are well within the maximum permitted by the FCC and the Connecticut Department of Health. Further, the addition of AT&T's telecommunications service and the provision of FirstNet service in the Monroe area through shared use of the Fan Hill Road Facility will ensure that critical wireless services are provided to the

community. The replacement of AT&T's COW with shared use of the Fan Hill Road Facility will enhance the safety and welfare of local residents and travelers through the surrounding area resulting in an improvement to public safety in this area of the State.

Notice of Tower Share Filing

Pursuant to R.C.S.A. Section 16-50j-88 and the August 2013 Tower Share Filing Guide, copies of AT&T's tower share filing request were sent to the property owner, as well as the chief elected official of Monroe, and the Monroe Planning and Zoning Department. Copies of each notice and their respective FedEx labels are included in **Attachment 8**.

Conclusion

As explained above, the proposed shared use of the Fan Hill Road Facility satisfies the criteria set forth in C.G.S. §16-50aa and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in the State of Connecticut. AT&T therefore requests the Siting Council issue an order approving the proposed shared use of the Fan Hill Road Facility.

Respectfully submitted,

Kristen Motel
On behalf of AT&T

Attachments

cc: Melanie Bachman, Executive Director
Ken Kellogg, First Selectman, Town of Monroe
Jonathan Formichella, Chairperson, Town of Monroe Town Council
Joe Chapman, CZEO, Planning and Zoning Administrator, Town of Monroe
AT&T
Lucia Chiocchio, Esq.

ATTACHMENT 1

January 20, 2022

Letteer of Authorization

RE: Telecommunications Structure located 345 Fan Hill Road Monroe, CT. Site Number CT 0005 (the "Tower").

To Whom It May Concern:

ARX Wireless Infrastructure, LLC ("ARX") is owner of the Tower located at 345 Fan Hill Road Monroe, CT. The Tower was constructed as a municipal use facility with the Town of Monroe located at the 176' level of the Tower.

New Cingular Wireless PCS, LLC ("AT&T") has expressed interest in locating antennas on the Tower.

Please use this letter as authorization for AT&T to apply for all necessary applications, governmental approvals, and permits.

Regards,

Keith Coppins
Chief Executive Officer

345 FAN HILL RD

Location	345 FAN HILL RD	**Map/Lot**	096/ 016/ 00/ /
Acct#	09601600	**Owner**	MONROE TOWN OF (SCHOOLS)
Assessment	$22,367,100	**Appraisal**	$31,953,100
PID	12811	**Building Count**	3
Survey	3275	**Affordable**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$29,154,900	$2,798,200	$31,953,100
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$20,408,400	$1,958,700	$22,367,100

Owner of Record

Owner	MONROE TOWN OF (SCHOOLS)	**Sale Price**	$0
Co-Owner	FAWN HOLLOW+ JOCKEY HOLLOW + CHALK HILL	**Certificate**	1
Address	7 FAN HILL RD MONROE, CT 06468-1800	**Book & Page**	88/ 90
		Sale Date	08/02/1967

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
MONROE TOWN OF (SCHOOLS)	$0	1	88/ 90	08/02/1967
MARJORIE HARRIETT SAPEI	$0	3	80/ 425	06/21/1965
MARJORIE HARRIETT SAPEI	$0	3	80/ 425	06/21/1965
MARJORIE HARRIETT SAPEI	$0	3	80/ 425	06/21/1965

Building Information

Building 1 : Section 1

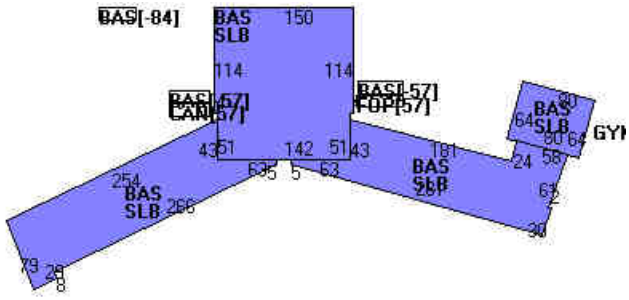
Year Built: 1965
Living Area: 64,656

Building Attributes	
Field	**Description**
STYLE	School
MODEL	Commercial
Grade	B-
Stories:	1
Occupancy	1
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Vinyl
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Hw/Steam
AC Type	None
Bldg Use	Municipal
Total Rooms	
Total Bedrms	
Total Baths	
Fireplace	
Xtra Fireplaces	
1st Floor Use:	903C
Heat/AC	Heat/AC Split
Frame Type	Fireproof
Baths/Plumbing	Normal
Ceiling/Wall	Sus Ceil and W
Rooms/Prtns	Average
Wall Height	14
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\44/63.JPG)

Building Layout



(http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/12811_12811.j

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	64,656	64,656
CAN	Canopy	57	0
FOP	Open Porch	57	0
SLB	Slab	64,854	0
		129,624	64,656

Building 2 : Section 1

Year Built: 1968
Living Area: 87,507

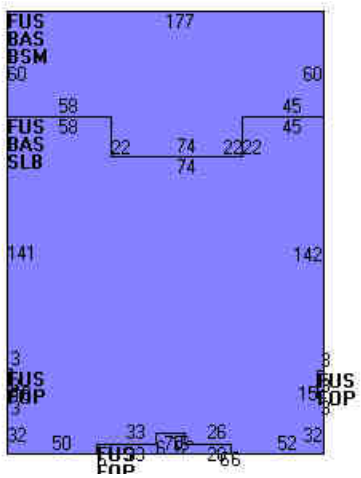
Building Attributes : Bldg 2 of 3	
Field	**Description**
STYLE	School

MODEL	Commercial
Grade	B-
Stories:	2
Occupancy	1
Exterior Wall 1	Pre-cast Concr
Exterior Wall 2	Brick/Masonry
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Vinyl
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Hw/Steam
AC Type	None
Bldg Use	Municipal
Total Rooms	
Total Bedrms	
Total Baths	
Fireplace	
Xtra Fireplaces	
1st Floor Use:	903C
Heat/AC	Heat/AC Pkgs
Frame Type	Fireresist
Baths/Plumbing	Normal
Ceiling/Wall	Sus Ceil and W
Rooms/Prtns	Average
Wall Height	10
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\67/15.JPG)

Building Layout



(http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/12811_16726.

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
FUS	Finished Upper Story	44,073	44,073
BAS	First Floor	43,434	43,434
BSM	Basement	12,248	0
FOP	Open Porch	639	0
SLB	Slab	31,186	0
		131,580	87,507

Building 3 : Section 1

Year Built: 1997
Living Area: 101,084

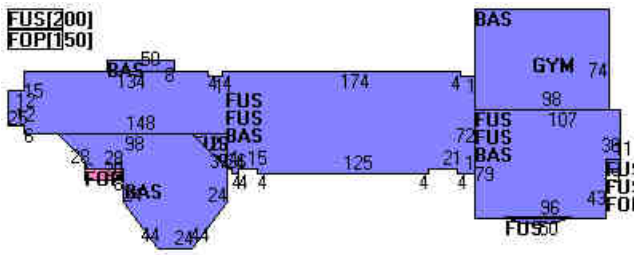
Building Attributes : Bldg 3 of 3	
Field	Description
STYLE	School
MODEL	Commercial

Grade	B+
Stories:	3
Occupancy	1
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Drywall
Interior Wall 2	Minim/Masonry
Interior Floor 1	Vinyl
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Unit Heat
AC Type	Partial
Bldg Use	Municipal
Total Rooms	
Total Bedrms	
Total Baths	
Fireplace	
Xtra Fireplaces	
1st Floor Use:	903C
Heat/AC	Heat/AC Pkgs
Frame Type	Fireproof
Baths/Plumbing	Normal
Ceiling/Wall	Sus Ceil and W
Rooms/Prtns	Average
Wall Height	12
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\67/16.JPG)

Building Layout



(http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/12811_16727.

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
FUS	Finished Upper Story	58,282	58,282
BAS	First Floor	42,802	42,802
FOP	Open Porch	473	0
		101,557	101,084

Extra Features

Extra Features					Legend
Code	Description	Size	Value	Bldg #	Comment
ELEV	Elevator	3 STOP	$48,000	3	
SPR1	Sprinklers Wet	101084 S.F.	$64,700	3	
CRS2	UTIL METAL	360 S.F.	$2,200	1	
CCP8	CANOPY AVG	400 S.F.	$3,700	1	
SPR1	Sprinklers Wet	64656 S.F.	$31,600	1	

Parcel Information

Use Code	903C
Description	Municipal
Deeded Acres	72.1

Land

Land Use

Use Code	903C
Description	Municipal
Zone	RF2
Neighborhood	
Alt Land Approved	No
Category	

Land Line Valuation

Size (Acres)	72.1
Appraised Value	$2,798,200

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PA1	ASPHALT PARKING			7500 S.F.	$7,500	3
LT3	LIGHT POLE MOUNTED			21 UNITS	$12,600	3
PA1	ASPHALT PARKING			75000 S.F.	$45,000	1
LT3	LIGHT POLE MOUNTED			8 UNITS	$4,800	1
PA1	ASPHALT PARKING			63600 S.F.	$38,200	2
LT3	LIGHT POLE MOUNTED			6 UNITS	$3,600	2

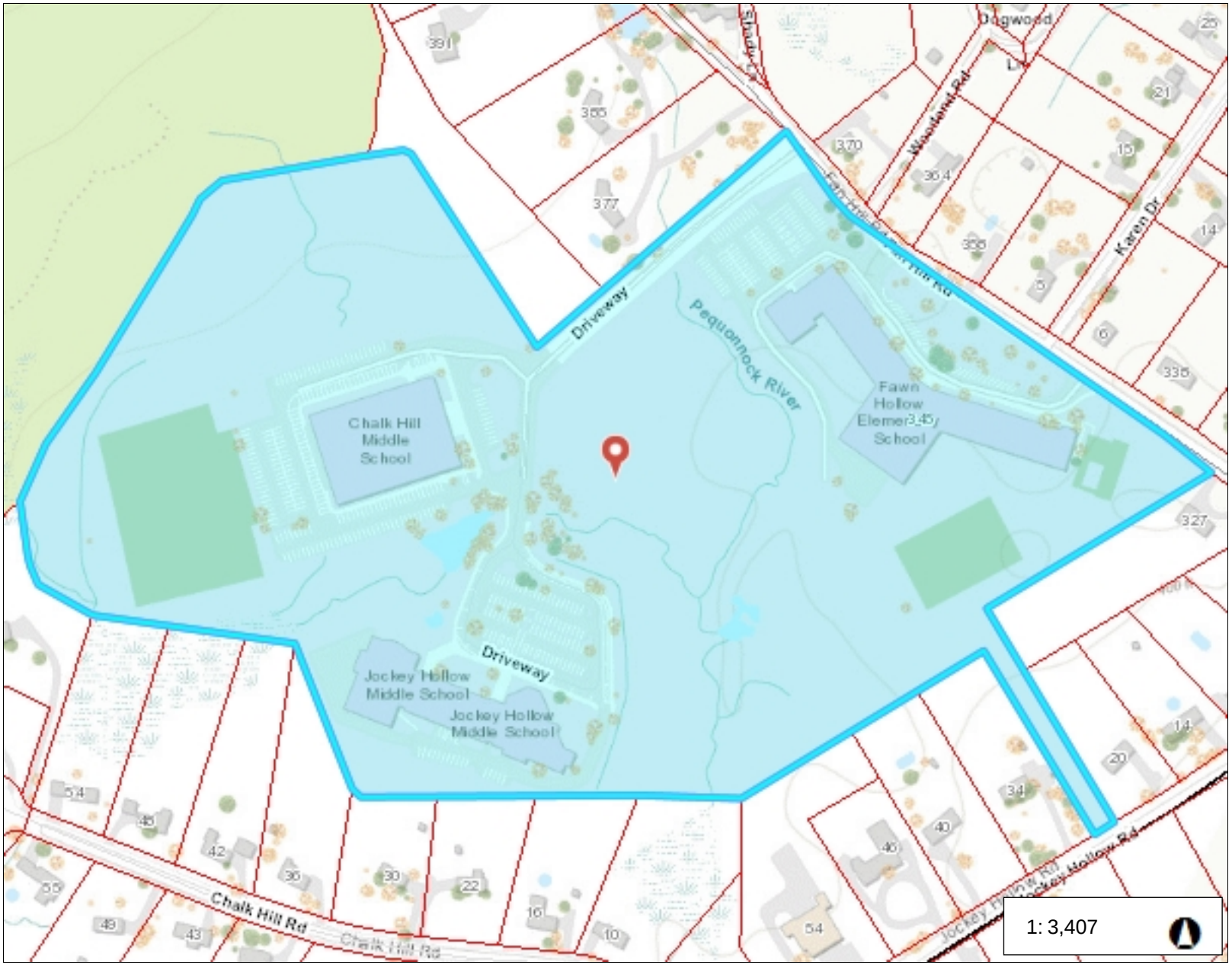
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$29,154,900	$2,798,200	$31,953,100
2019	$29,154,900	$2,798,200	$31,953,100
2019	$29,154,900	$2,798,200	$31,953,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$20,408,400	$1,958,700	$22,367,100
2019	$20,408,400	$1,958,700	$22,367,100
2019	$20,408,400	$1,958,700	$22,367,100

Town of Monroe

Map Title



Legend

- Parcels
- Streetname
- Roadways
  - Local
  - Collector
  - Minor Collector
  - Minor Arterial
  - Major Collector
  - PA Other
  - PA Other Expwy
  - PA Interstate

567.8 0 283.90 567.8 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

METROCOG
Connecticut Metropolitan Council of Governments

ATTACHMENT 2

TOWN OF MONROE
PLANNING and ZONING COMMISSION
7 Fan Hill Road
Monroe, CT 06468
Phone: 203-452-2812
www.monroect.org

SPECIAL EXCEPTION PERMIT APPROVAL
SEP-2021-11 – File #1636A

345 FAN HILL ROAD
176 FOOT MONOPOLE TOWER WITHIN A 75' X 75' AREA THAT INCLUDES A 50' X 50' GRAVEL BASED FENCED EQUIPMENT COMPOUND
Assessor Map 96, Lot 16– Residential RF-1 District (RF-1)

OWNER / APPLICANT
Town of Monroe/ARX Wireless Infrastructure, LLC

Date of Approval	**October 21, 2021**
Date Final Plans to be Signed by	**January 21, 2022**
Site Plan 5-Year Expiration*	**October 21, 2026**

**** If conditions of approval are not completed accordingly***

WHEREAS, the Monroe Planning and Zoning Commission (hereinafter "Commission") is considering an application for Special Exception Permit Approval for the construction of a 176 foot monopole tower within a 75' x 75' area that includes a 50' x 50' gravel based fenced equipment compound located on a wooded area of the town schools campus:

Whereas the property consist of 72.1 acres; and

WHEREAS, Planning and Zoning Commission is required per Zoning §6.8.1 and 8.1 as well as subsequent administrative Zoning and Building Permits per Zoning §9.4; and

WHEREAS, in the course of its review of the application, the Commission has noted the following:

- The site is not within 500 feet of a Town boundary;
- The site is not located within a public watershed area;
- The site is not subject to a Conservation Easement and does not include areas of 100-year floodplain;
- The site does contain wetlands/watercourses but all activity is outside the 100/150-foot upland review areas;
- The Commission provided a favorable 8-24 Referral to the Town Council
- Landscaping will be provided along the fencing for adequate buffering.

WHEREAS, the Commission has considered the proposed application at a duly noticed public hearing opened and closed on October 21, 2021; and

NOW THEREFORE BE IT RESOLVED, the Commission, in accordance with §6.8.1 and 8.1.1 of the Zoning Regulations, hereby finds the following in respect to the **Supplemental Regulations** (*numbering sequence follows that in the Zoning Regulations*):

A. The purpose, location, height and design of the proposed monopole structure is in compliance with the standards of 6.8.1 thru 6.8.4;

BE IT FURTHER RESOLVED, the Commission, in accordance with §6.8.1 and 8.1.1 of the Zoning Regulations hereby finds, upon motion by **Westlund** and seconded by **Paniccia**, following deliberations conducted on **October 21, 2021**, voted (**5**) in favor and **(0)** in opposition to **APPROVE Special Exception Permit Application SEP-2021-11, File #1636A**, subject to the conditions (modifications and requirements) as set forth below, as follows:

Vote:	**MICHAEL O'REILLY**	**aye**	*For the Commission:*
	DOMENIC PANICCIA	**aye**	
	LEON AMBROSEY	**aye**	
	RYAN CONDON	**aye**	
	ROBERT WESTLUND	**aye**	*Michael O'Reilly, Chair*

1. *Adherence to the recommendations of C, D and E of the Town Engineer in his report dated 10/4/2021 ; and.*

BE IT FURTHER RESOLVED, this Approval is specific solely to that detailed herein and the associated Site Development Plans as required to be revised and signed by the Commission Chair; and

BE IT FURTHER RESOLVED, the Commission hereby authorizes the publishing and filing of a Notice of Decision consistent with the requirements set forth in CGS §8-3c(b); and

BE IT FURTHER RESOLVED, as set forth above, this Approval shall be subject to the following conditions (modifications and requirements):

MODIFICATIONS AND REQUIREMENTS OF APPROVAL

A. TO BE COMPLETED WITHIN 180 DAYS (EXPIRATION TERM DATE of January 21, 2022)

Prior to authorized endorsement of final Site Plans by the Commission Chair, the following shall be completed within one-hundred-eighty (180) days of the date of this Approval, unless a written request for an extension is submitted prior thereto (the Commission shall consider said request at its next available meeting, which may be past the date of expiration), or this Approval shall become null and void without further notice:

1. **Required Revision of Final Site Plans**

A **SINGLE (1)** complete set of final Site Plans (see list above) shall be submitted, revised as set forth and required below, subject to acceptance by the Planning and Zoning Administrator:

a. Each plan set sheet shall be signed and sealed providing live certification thereof by the professional(s) responsible for the preparation thereof.

b. Each plan set sheet shall include a common revision date of March 4, 2021 or later.

c. Each plan set sheet shall include the following signature block with original signature of the applicant/owner affixed thereon:

The owner/applicant acknowledges that all work shown on these Site Plans shall be completed in compliance with the Planning and Zoning Commission approval relating thereto, and in accordance with all applicable Town of Monroe Codes and Regulations, as well as other applicable State and Federal laws, requirements and regulations.

Town of Monroe
Owner:
{INSERT PRINTED OWNER NAME}
{INSERT PRINTED ADDRESS} 7 Fan Hill Rd Monroe, CT 06468

Arx Wireless Infrastructure, LLC
Applicant:
{INSERT PRINTED APPLICANT NAME
{INSERT PRINTED ADDRESS} 110 Washington Ave North Haven, CT 06473

d. The following notes shall be added to the Cover Sheet and Sheet L-1.2:

- ***Reference is hereby made to the corresponding Special Exception Permit / Site Development Plan Approval as issued by the Monroe Planning and Zoning Commission (SEP-2021-05, File #1630A, approved on April 8, 2021) and these corresponding Site Plans on file with the Monroe Planning and Zoning Department.***

2. **Endorsement of Final Site Plans**

a. Upon satisfactory completion of **Conditions A1** above, the applicant shall submit **One (1)** complete plan set (full size 24"x 36" collated, **unbound** and **rolled**), for the authorized endorsement of same by the Commission Chair.

b. Following endorsement above, the applicant will be provided with a digital copy for purposes of providing **Six (6)** full sized, **printed to scale** (24" x36" collated, **bound** and **folded**) **color copies** showing the endorsement thereon accordingly.

B. PRIOR TO AUTHORIZED ISSUANCE OF ZONING AND BUILDING PERMITS

Prior to the authorized commencement of any approved work or construction and the authorized issuance of Zoning and Building Permits the applicant shall complete the following:

1. **Procurement of Involved Agency Permits and Approvals** – The applicant/owner shall be responsible for the procurement of all applicable local, State and Federal permits and approvals prior to the commencement of site or building modification or construction. Any substantive changes to the approved site facilities, use, or to the overall final Site Plans as a result, shall require modified review and approval by the Commission, which review may include the submission of a new application and/or the holding of a Public Hearing.

2. **Required Recording of Approval** – Upon satisfactory completion of all **Section A Conditions** above, the applicant shall record an ***original*** copy of this Approval document ***(as provided by the Planning and Zoning Department)*** in the Monroe Land Records. The applicant shall be responsible for providing a copy of said recording, showing all marks of recording to the Planning and Zoning Department.

3. No **Zoning Permit or Building Permit** relating to this Approval shall be authorized or issued until the recording as set forth in **Condition B2** above has been completed and copies thereof as recorded have been provided to the Planning and Zoning Department. Consistent with CGS §8-3c(b) and Zoning §7.4.1A and §8.1.6(A), this Approval shall be effective for the purpose of obtaining zoning and building permits upon the recording of this Resolution as signed by the Commission Chair in the Monroe Land Records as set forth herein.

4. Prior to the authorized issuance of a **Zoning Permit (Provisional Certificate of Zoning Compliance)**, the following shall be provided to the Zoning Enforcement Officer (ZEO) (**no site activity shall commence and no Building Permit shall be issued prior to obtaining a duly issued Zoning Permit** – *Zoning and Building Permits are not issued until the required pre-construction meeting is held*):

    - Submission of a complete Application for a Provisional Certificate of Zoning Compliance (Zoning Permit) based on this Approval and the signed Site Plans.
    - Verification of recordings on the Monroe Land Records as required per **Condition B2** Above.
    - Verification of Town of Monroe Health Department approval for the final design and construction of the septic disposal system.
    - Administrative Town of Monroe Inland Wetlands, Fire and Health Department approvals, as may be required.
    - Verification of State of Connecticut DEEP approval/acceptance of the removal of the existing oil/water separator and holding tank, and approval for the installation of a new oil/water separator connection of floor drains to the stormwater drainage system.

5. **Pre-Construction Meeting** – A pre-construction meeting shall be held with the applicant/owner, general contractor, excavator, builder and other project consultants and the land use and building officials of the Town of Monroe. The pre-construction meeting shall not be scheduled until all requirements set forth above have been completed by the applicant/owner. Additional construction meetings may be called as deemed necessary throughout construction.

C. DURING SITE CONSTRUCTION

The following shall be addressed during construction:

1. There shall be no clearing, excavation or filling, grading, removal of vegetation or other site or building construction inconsistent with that shown on the signed Site Plans, except reasonable field changes as approved by the Planning and Zoning Administrator and Town Engineer. Field changes may only be permitted where they do not substantively alter the intent or design of the signed Site Plans or increase the size of the footprint of any structure or use of land. All other changes shall require the prior review and approval of the Commission as a change pursuant to **Section F** below.

2. Erosion and sedimentation controls and temporary stormwater management measures as approved shall be properly maintained until construction is completed and all disturbed areas have been stabilized. Said controls and measures shall be periodically inspected, continually maintained throughout the construction phase and supplemented to ensure their proper installation and functions. The ZEO, Building Inspector, Inland Wetlands Agent and Town Engineer or their duly authorized representatives may require additional controls as deemed necessary or appropriate based on changing site conditions during construction.

3. Pursuant to Zoning §6.4.9(M), hours of excavation/filling/grading operations shall be limited to between the hours of 8:00 am to 5:00 pm, Monday through Friday.

4. Pursuant to Zoning §6.4.9(P), there shall be no blasting, nor any onsite material sorting, crushing or processing.

5. The applicant/owner shall be responsible for the following:

   - Notifying the Planning and Zoning Department of changes in the status of ownership and/or contractor(s) and/or professional design or inspection consultants involved in the construction and/or subsequent facility operations;
   - Notifying any new owner and/or contractor(s) and/or consultants of all construction requirements including all job meeting notes and inspection notes produced up to the date of any such change in project related personnel;
   - Notifying and informing its contractors, employees, agents and assigns of their responsibility to comply with the modifications and requirements set forth in this Approval; and
   - Adherence with the standards and requirements per the pre-construction meeting (Report of Pre-Construction Meeting) and any subsequent construction meetings and inspections.

D. PRIOR TO ISSUANCE OF PERMANENT CERTIFICATE OF ZONING COMPLIANCE

The following shall be completed prior to the authorized issuance of a Permanent Zoning Certificate of Compliance (or a Building Department Certificate of Occupancy/Completion):

1. Use and/or occupancy of approved site improvements shall not be authorized until the applicant/owner obtains a Permanent Certificate of Zoning Compliance and Building Department Certificate of Occupancy/Completion. It shall be the applicant's/owner's responsibility to coordinate and request all inspections, and to request and obtain a Permanent Certificate of Zoning Compliance and Building Department Certificate of Occupancy/Completion.

2. Prior to the authorized issuance of a **Permanent Certificate of Zoning Compliance and/or a Building Department Certificate of Occupancy/Completion**, the applicant shall complete the following consistent with the signed Site Plans:

   - An As-Built Plan detailing and certifying completed improvements, including a second copy of same superimposed on the original approved layout plan (to be shown in red or varied shading), including adequate information to verify that all work is completed in compliance with this Approval, in quantities as specified by the Planning and Zoning Department.
   - Verification that the facility water supply and subsurface septic disposal system are constructed, operational and compliant to the satisfaction of the Monroe Health Department.
   - Verification of State of Connecticut DEEP completion acceptance of the removal of the existing oil/water separator and holding tank and completion acceptance of the installation of a new oil/water separator connection of floor drains to the stormwater drainage system.
   - Professional Engineer Certification that all drainage system improvements have been installed in accordance with the approved final signed Site Plans and are built and functioning as designed.
   - Verification and submission of a Wetland Permit Certificate of Completion.
   - Verification of satisfactory completion and operation of all utility connections (electric, telecommunications, natural gas, water, septic, stormwater).
   - Verification that all disturbed areas are stabilized and exhibit healthy vegetative cover.
   - Verification that the site is clean of construction related equipment, materials and debris; and all erosion controls have been appropriately removed and disposed of.

- All site improvements and landscaping, consistent with the signed final Site Plans, as well as all related requirements as set forth and agreed to during the pre-construction meeting and any subsequent construction meetings or inspections, shall be determined to be complete.

E. CONTINUING CONDITIONS OF OPERATION FOLLOWING AUTHORIZED OCCUPANCY/USE

The following shall be adhered to as conditions of operation following acceptance pursuant to a ZEO Permanent Certificate of Zoning Compliance and Building Department Certificate of Occupancy/Completion:

1. All related permits and approvals shall be maintained as current throughout the duration of use. The premises and improvements shall be maintained in good working order and shall be regularly maintained to function as designed in a neat and orderly manner, free of debris, sediment and litter.

2. Appropriate measures shall be maintained to ensure snow removal so there is no plowed snow stored within travel lanes, parking spaces or over landscaping to its detriment. No snow shall be plowed into or upon any abutting street right-of-way.

3. Permitted parking and loading shall occur completely on-site, and shall be restricted to designated areas of the site. No unauthorized on-site parking or storage shall be permitted.

4. No driveway, parking or landscape area shall be utilized for outdoor storage, sale or display of merchandise, equipment, refuse, recycling, donations or other purposes.

5. There shall be no construction vehicle or equipment parking or storage on the premises, nor any storage of building or construction materials beyond that used to complete the project; upon completion any such storage shall be removed. All parking and loading areas shall be maintained to ensure an adequate surface treatment and positive drainage.

6. No new or changes to exterior signs, lighting or other materials or devices shall be permitted to be installed, supported, hung, flown or otherwise attached to site buildings, structures, lights or site grounds or vegetation without prior authorized approval and permit.

7. Consistent with the signed Site Plans, site landscaping and vegetation shall be maintained in a healthy growing condition; and dead, damaged or diseased landscaping shall be replaced promptly.

8. Subsequent changes to the appearance, coloring or physical dimensions, rooflines, materials, trim or facades of the site buildings, accessory uses and structures, fencing, signs, lights and other accessory site improvements relating to the operations and functions of the site use shall require separate prior authorized review and permit.

9. All pavement paint markings shall be maintained and periodically repainted to ensure adequate visibility and delineation at all times.

F. ACCEPTANCE / CHANGES / COMPLIANCE / EXPIRATION

1. **Applicant/Owner Acceptance.**

   - All representations by the applicant/owner and their representatives and discussion reflected in the Commission meetings record shall be binding upon this Approval and are incorporated herein by reference, except to the extent as may have been modified herein by the Commission in the issuance of this Approval.

- This Approval and all required modifications and requirements specified herein shall be binding upon the applicant/owner, and any heirs, assigns and/or successors, as well as the subject property and premises, unless otherwise amended by a subsequent act of the Commission.
- The acceptance of this Approval by the applicant/owner shall be evidenced by completion of the required recordings and filings set forth herein, indicating agreement that said Approval is contingent upon strict compliance with Town Regulations and all modifications and requirements as well as time/expiration periods, as set forth herein and on the signed Site Plans.

2. **Changes**. Any additions or changes to the approved land uses, site activities, occupants, occupancy, tenancy, the Site Plans, the site and site improvements, systems or facilities thereon, shall require prior review and authorized approval and permit.

3. **Approval Compliance**. Failure to maintain compliance with any specified requirement of this Approval shall constitute a violation of the terms of this Approval and a violation of the Zoning Regulations enforceable and subject to any and all remedies prescribed by applicable State and local laws, including but not limited to the ordered suspension of the use of the premises in full or part until such time as the failure or noncompliance has been satisfactorily resolved, and/or the revocation of said Approval or the revocation of any issued Zoning or Building Permits or Certificate of Zoning Compliance or Certificate of Occupancy/Completion.

4. **Expiration**. This Approval shall expire and be null and void without further written notice as set forth above on **Page 1** unless all building and site improvements, including site stabilization and landscaping, are completed consistent with the signed final Site Plans. The Commission may grant one of more extensions of time to complete said improvements, not to exceed an additional five (5) years. Any request for an extension shall be submitted to the Commission in writing in a timely manner prior to the expiration date for which an extension is requested (a minimum of forty-five (45) days prior is recommended) and shall state the reasons and circumstances for the requested extension. In considering any such request, the Commission may require a public hearing and shall review the adequacy of any held bond. This project will be deemed complete when a Permanent Certificate of Zoning Compliance and Certificate of Occupancy/Use have been obtained consistent with this Resolution of Approval and the signed final Site Plans, provided continual zoning, building, health and fire safety code compliance are maintained.

ATTACHMENT 3

BUILDING PERMIT

Town of Monroe,
Building Department **Phone: 203-452-2805** Permit Number

DATE OF ISSUE 1/31/2022 17156

Applicant : Monroe Town Of (schools) Roberts Douglas

To Build or Erect:
176' Tall Monopole And Foundation Installed Within A 50' X 50' Fenced Compound, New Underground Utilities From An Existing Utility Pole To The Compound.
A New Equipment Shelter And Antennas For The Town Of Monroe Emergency Communications.

LOCATION : 346 Fan Hill Road

Use Group Zone 096/016/00 Lot Number Square Footage

PERMIT MUST BE DISPLAYED ON WORK SITE AT ALL TIMES

INSPECTION APPROVALS		
FOOTINGS	PLUMBING	OIL TANK
FOUNDATION	HEATING	ELEC SERVICE
FRAMING	CHIMNEY	HEARTH
ELEC. WIRING	INSULATION	FINAL

No building or structure hereafter erected shall be used or occupied in whole or part until the CERTIFICATE OF USE AND OCCUPANCY has been issued by the Building Official.
Certified Plot Plan of New Structures' Foundation Required Prior to Framing.

BUILDING OFFICIAL : DATE: 3.31.2022

INSPECTORS' COMMENTS:

ATTACHMENT 4

PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY (NSB A PROPOSED 176'–0" A.G.L. TALL MONOPOLE. PROPOSED WALK–IN CABINET, AND GENERATOR WILL BE INSTALLED AT GRADE INSIDE A EXISTING FENCED–IN COMPOUND. PROPOSED SIX PANEL ANTENNAS AND ASSOCIATED EQUIPMENT WILL BE INSTALLED AT A HEIGHT OF 160'–0" A.G.L.):
SITE ADDRESS:	FAN HILL ROAD MONROE, CT 06468
APPLICANT:	AT&T 550 COCHITUATE ROAD FRAMINGHAM, MA 01701
SITE OWNER:	TOWN OF MONROE (SCHOOLS) 345 FAN HILL ROAD MONROE, CT 06468
LATITUDE:	41.345758 N, 41° 20' 44.73" N
LONGITUDE:	73.235072 W, 73° 14' 6.26" W
TYPE OF SITE:	MONOPOLE/ WALK–IN CABINET
TOWER HEIGHT:	176'–0"±
OVERALL TOWER HEIGHT:	196'–0"±
RAD CENTER:	160'–0"±
APPLICABLE CODES:	ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE CT STATE BUILDING CODE, NATIONAL ELECTRIC CODE (NEC 2017), ANSI/EIA/TIA–222 H & COMPLY WITH AT&T MOBILITY SPECIFICATIONS

SITE NUMBER: CT1156

SITE NAME: MONROE

FA CODE:10577820

PACE ID: MRCTB004853, MRCTB029869, MRCTB036324, MRCTB047880, MRCTB036363

PROJECT: NSB

DRAWING INDEX

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A–1	COMPOUND & EQUIPMENT PLAN	5
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E–1	ELECTRICAL NOTES & ONE–LINE DIAGRAM	5
G–1	GROUNDING DETAILS	5
RF–1	RF PLUMBING DIAGRAM	5

VICINITY MAP

DIRECTIONS TO SITE:

GET ON I–90 W, HEAD SOUTHWEST, TURN LEFT ONTO LEGGATT MCCALL CONN, CONTINUE ONTO BURR ST, TURN LEFT ONTO COCHITUATE RD, USE THE RIGHT LANE TO MERGE ONTO I–90 W VIA THE RAMP TO SPRINGFIELD, FOLLOW I–90 W AND I–84 TO WASSERMAN WAY IN NEWTOWN. TAKE EXIT 11 FROM I–84, MERGE ONTO I–90 W, USE THE RIGHT 2 LANES TO TAKE EXIT 78 FOR I–84 TOWARD HARTFORD CT/NEW YORK CITY, TAKE EXIT 11 TOWARD CT–34/DERBY/NEW HAVEN, TURN RIGHT ONTO WASSERMAN WAY, TURN RIGHT ONTO CT–34 E, TURN RIGHT ONTO TODDY HILL RD, CONTINUE ONTO BOTSFORD HILL RD, TURN LEFT ONTO HIGH BRIDGE RD, CONTINUE ONTO HAMMERTOWN RD, SLIGHT RIGHT ONTO FAN HILL RD, TURN RIGHT, TURN LEFT

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1–800–922–4455
OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1156
SITE NAME: MONROE

FAN HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
5	02/23/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1156	T–1	5

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. 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.

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

4. 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.

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

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

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

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

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

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

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SAI
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR 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 CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR 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.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR 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.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1156
SITE NAME: MONROE

FAN HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK'D
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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1156	GN-1	5

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
REQUIRED	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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NORTH ANDOVER, MA 01845
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FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1156
SITE NAME: MONROE

FAN HILL ROAD
MONROE, CT 06468
FAIRFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK'D	APP'D
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1	06/18/21	ISSUED FOR REVIEW	ES	JC	DPH

SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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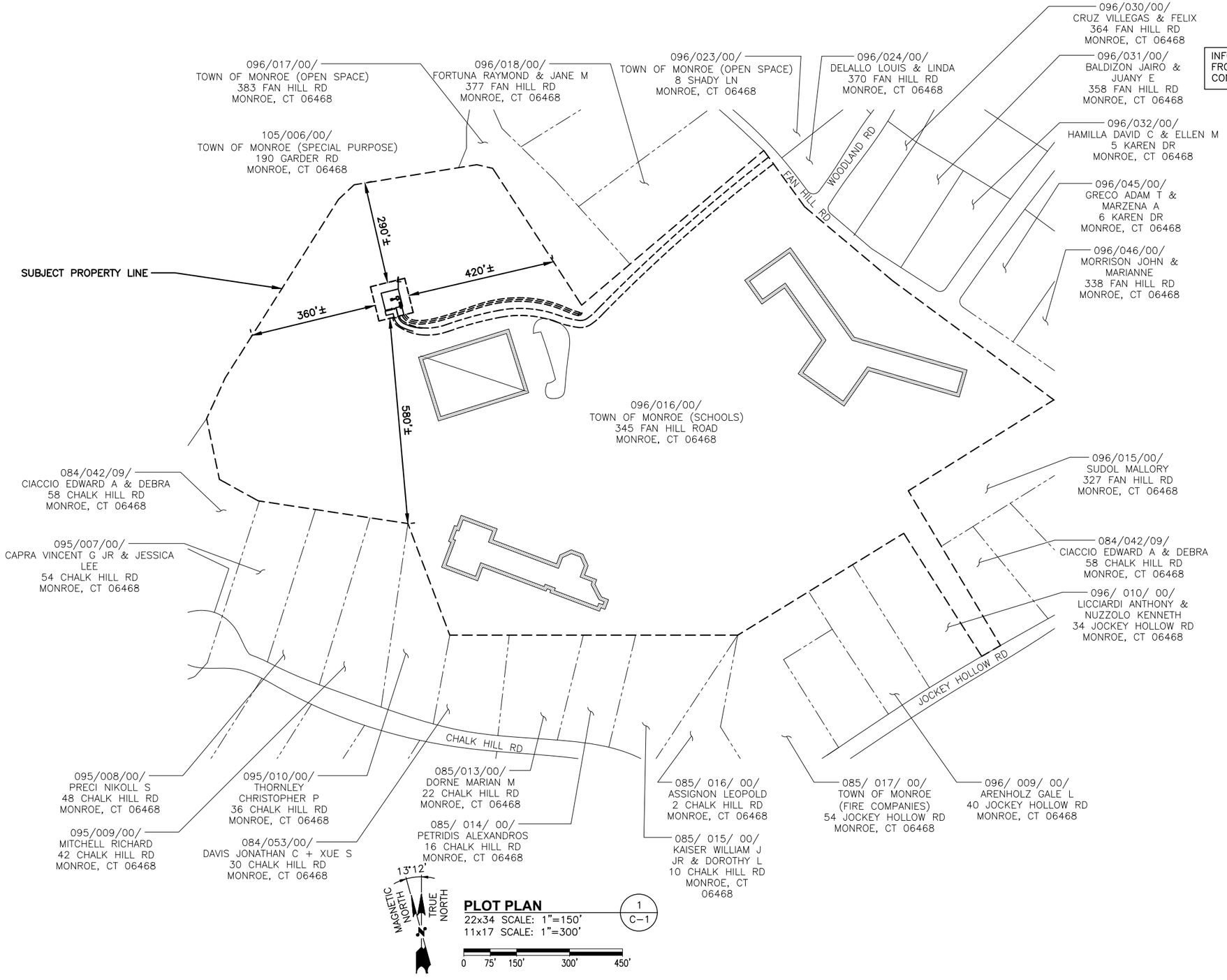
STRUCTURAL NOTES
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1156	SN-1	5



PLOT PLAN (1 / C–1)
22x34 SCALE: 1"=150'
11x17 SCALE: 1"=300'

INFORMATION TAKEN FROM PLANS BY CONNECTICUT GIS

DIMENSIONS REQUIREMENTS:	REQUIRED	PROPOSED
ANTENNA SETBACKS		
FRONT YARD SETBACK:	50'	290'±
SIDE YARD SETBACK:	50'	420'±
SIDE YARD SETBACK:	50'	360'±
REAR YARD SETBACK:	50'	580'±

(ALL MEASUREMENTS ARE IN FEET ± UNLESS OTHERWISE NOTED) (SETBACK TO EXISTING EQUIPMENT SHELTER UNLESS OTHERWISE NOTED)

LIST OF HOMES WITHIN 1,000 FEET RADIUS

PARCEL ID	QTY	PARCEL ID	QTY
106/ 001/ 00/	1	096/ 021/ 00/	1
096/ 020/ 00/	1	096/ 019/ 00/	1
096/ 018/ 00/	1	084/ 042/ 09/	1
095/ 007/ 00/	1	095/ 008/ 00/	1
084/ 042/ 08/	1		
TOTAL: 9			

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PLOT PLAN
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1156	C–1	5

NOTE:

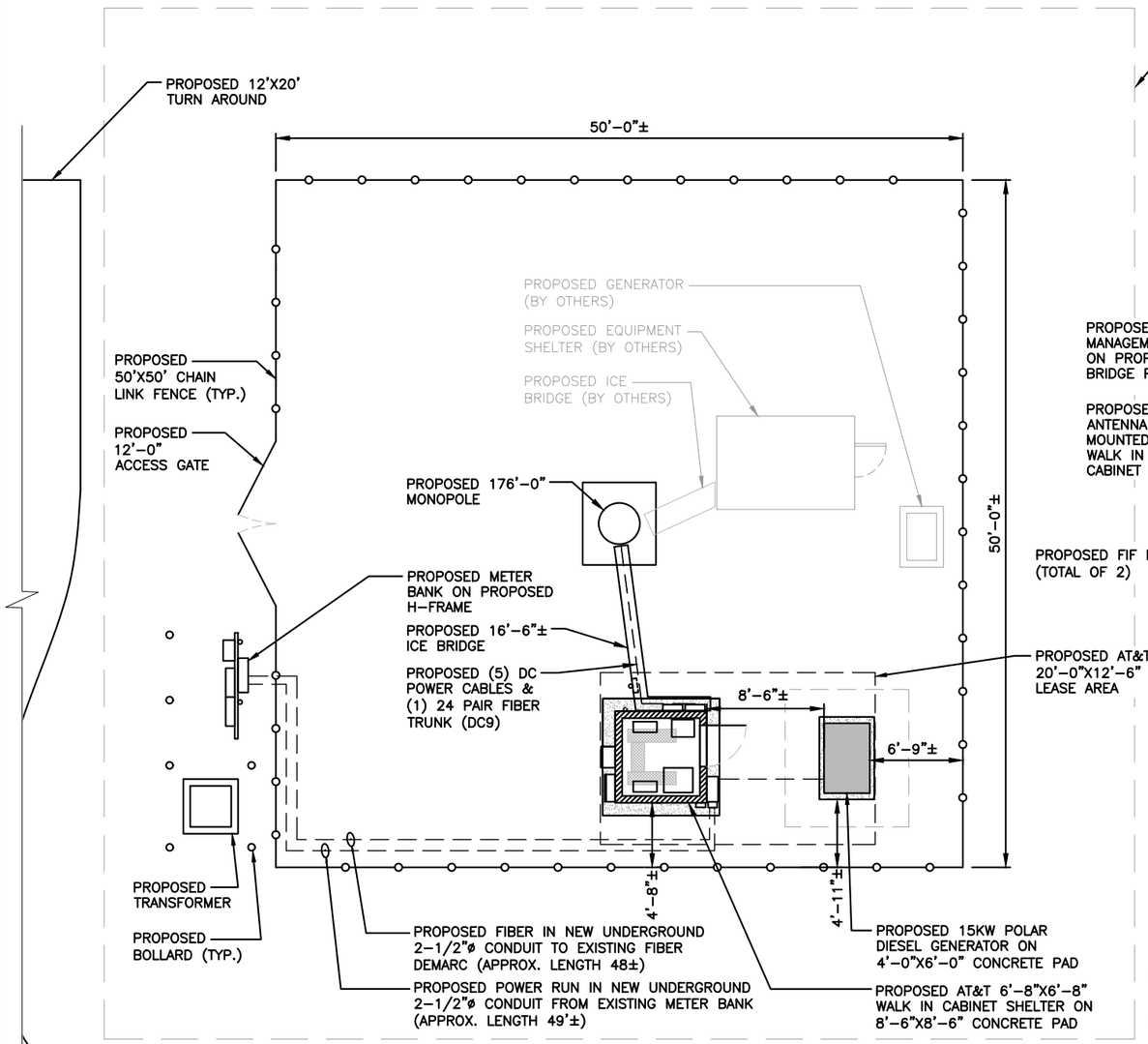
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 16, 2022, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

PROPOSED POWER, TELCO, & GROUNDING TO COME FROM EXISTING SOURCES (ROUTING TO BE DETERMINED)

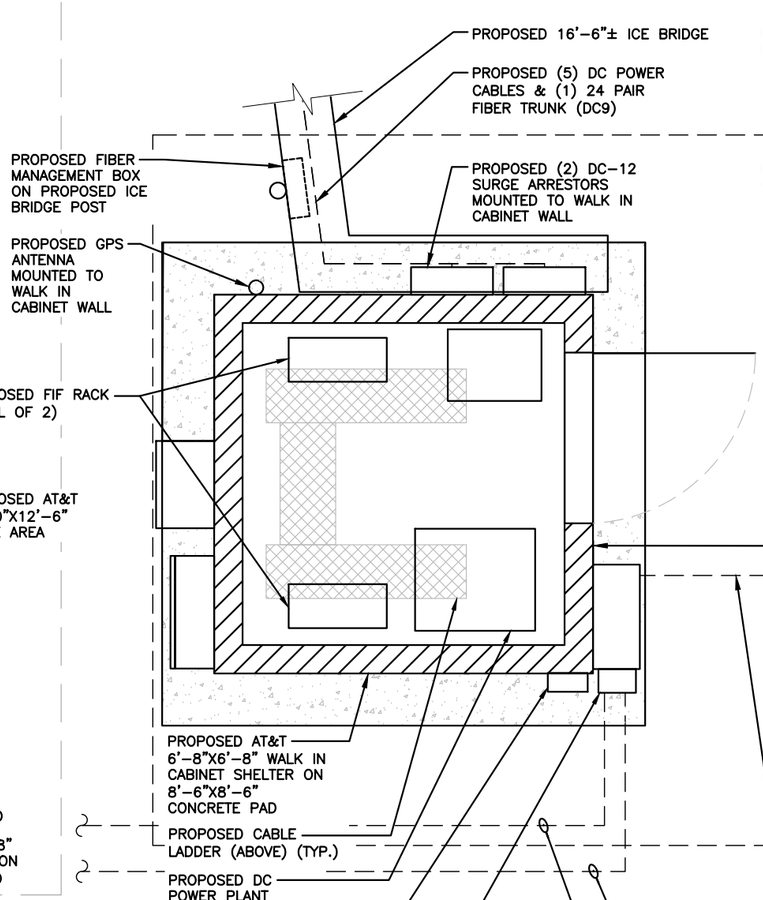


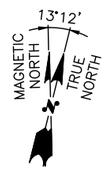
1 A-2

COMPOUND PLAN 1 A-1

22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"





EQUIPMENT PLAN 2 A-1

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

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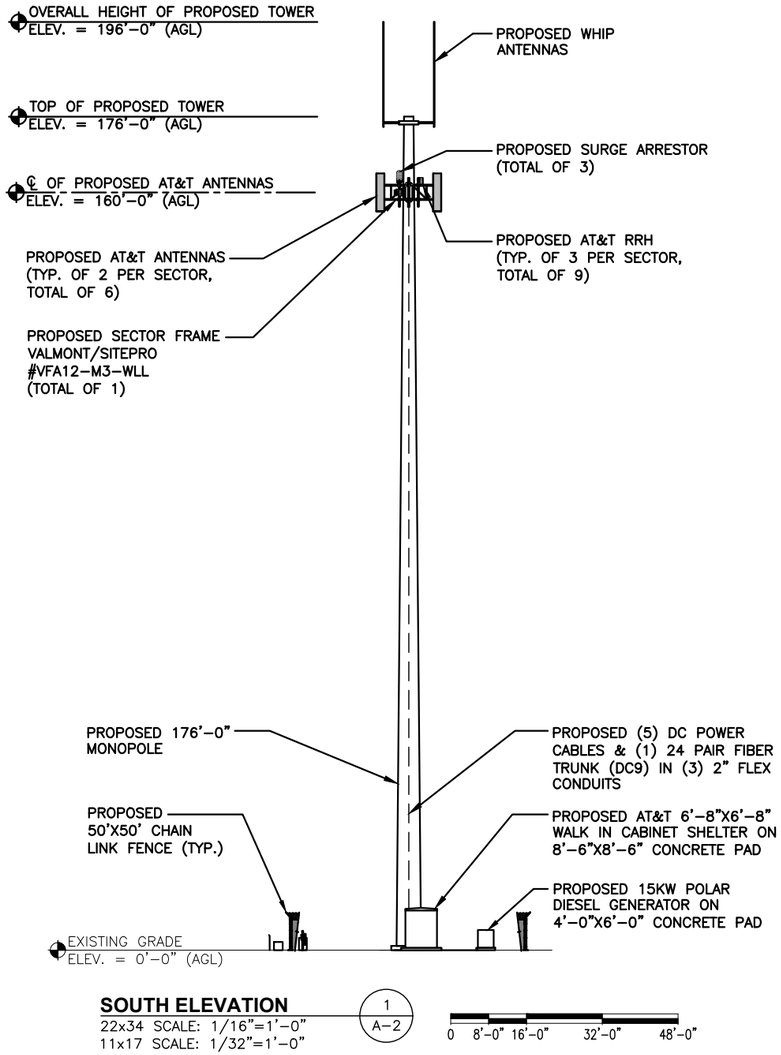
COMPOUND & EQUIPMENT PLANS (NSB)

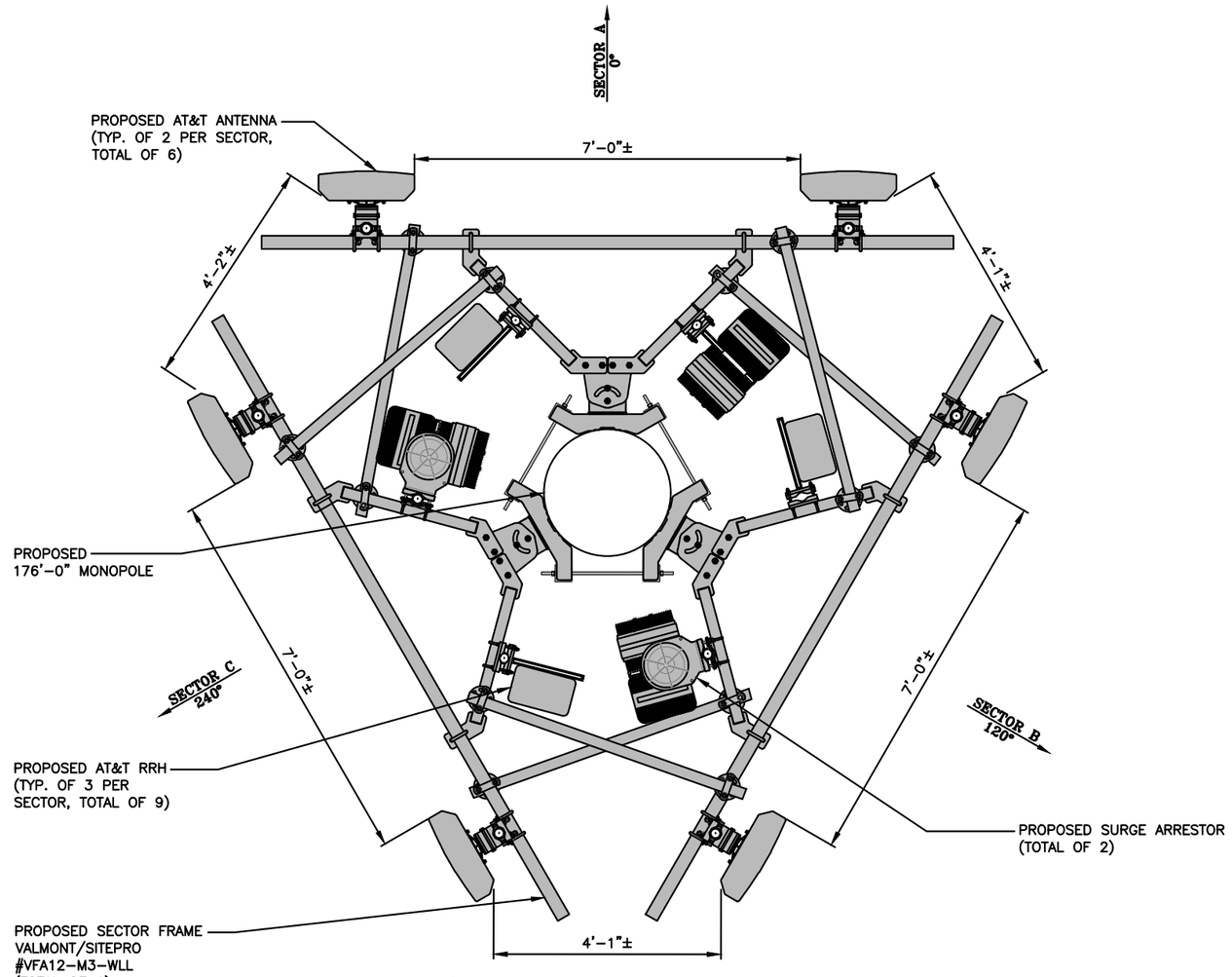
SITE NUMBER	DRAWING NUMBER	REV
CT1156	A-1	5



SOUTH ELEVATION (1 / A-2)

22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

0 8'-0" 16'-0" 32'-0" 48'-0"



PROPOSED ANTENNA LAYOUT (2 / A-2)

SCALE: N.T.S

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: FEBRUARY 18, 2022

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 16, 2022, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

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ANTENNA LAYOUT & ELEVATION (NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1156	A-2	5

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: FEBRUARY 18, 2022

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

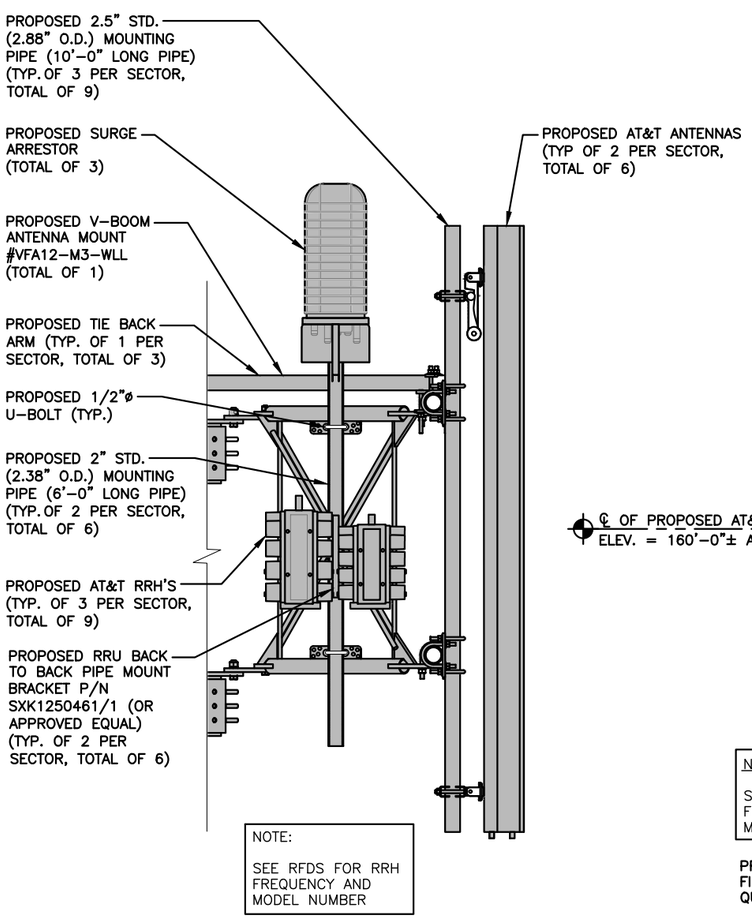
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 16, 2022, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	PROPOSED	LTE B14/AWS	EPBQ-654L8H8-L2	96X21X6.3	160'-0"	0°	–	(P) (1) B14 4478	18.1X13.4X8.3	(P) (5) DC POWER CABLES & (1) 24 PAIR FIBER TRUNK (DC9)	(P) (1) RAYCAP DC9-48-60-24-8C-EV (P) (1) RAYCAP DC6-48-60-0-8C-EV
A2	–	–	–	–	–	–	–	–	–		
A3	PROPOSED	LTE 700 BC / PCS	EPBQ-654L8H8-L2	96X21X6.3	160'-0"	0°	–	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	14.9X13.2X10.4 14.9X13.2X10.9		
A4	–	–	–	–	–	–	–	–	–		
B1	PROPOSED	LTE B14/AWS	EPBQ-654L8H8-L2	96X21X6.3	160'-0"	120°	–	(P) (1) B14 4478	18.1X13.4X8.3		
B2	–	–	–	–	–	–	–	–	–		
B3	PROPOSED	LTE 700 BC / PCS	EPBQ-654L8H8-L2	96X21X6.3	160'-0"	120°	–	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	14.9X13.2X10.4 14.9X13.2X10.9		
B4	–	–	–	–	–	–	–	–	–		
C1	PROPOSED	LTE B14/AWS	EPBQ-654L8H8-L2	96X21X6.3	160'-0"	240°	–	(P) (1) B14 4478	18.1X13.4X8.3		
C2	–	–	–	–	–	–	–	–	–		
C3	PROPOSED	LTE 700 BC / PCS	EPBQ-654L8H8-L2	96X21X6.3	160'-0"	240°	–	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	14.9X13.2X10.4 14.9X13.2X10.9		
C4	–	–	–	–	–	–	–	–	–		

FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S



℄ OF PROPOSED AT&T ANTENNAS
ELEV. = 160'-0"± A.G.L

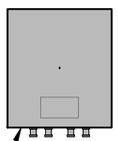
NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

PROPOSED SECTOR FRAME, ANTENNA,SURGE SUPPRESSOR & RRH'S MOUNTING DETAIL (2 / A-3)
SCALE: N.T.S

NOTE:

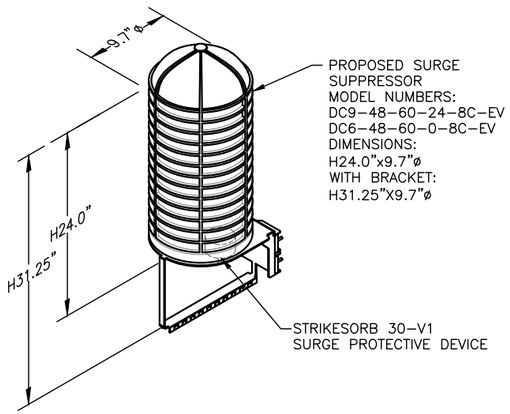
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

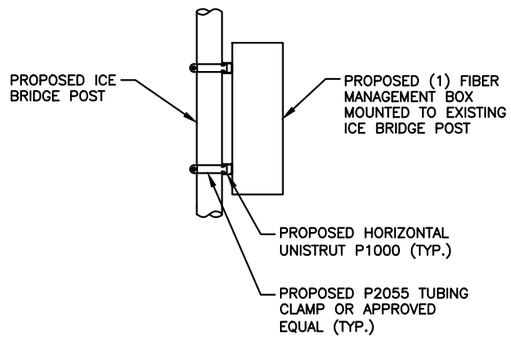
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (3 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)
SCALE: N.T.S



PROPOSED FIBER MANAGEMENT BOX MOUNTING DETAIL (5 / A-3)
SCALE: N.T.S

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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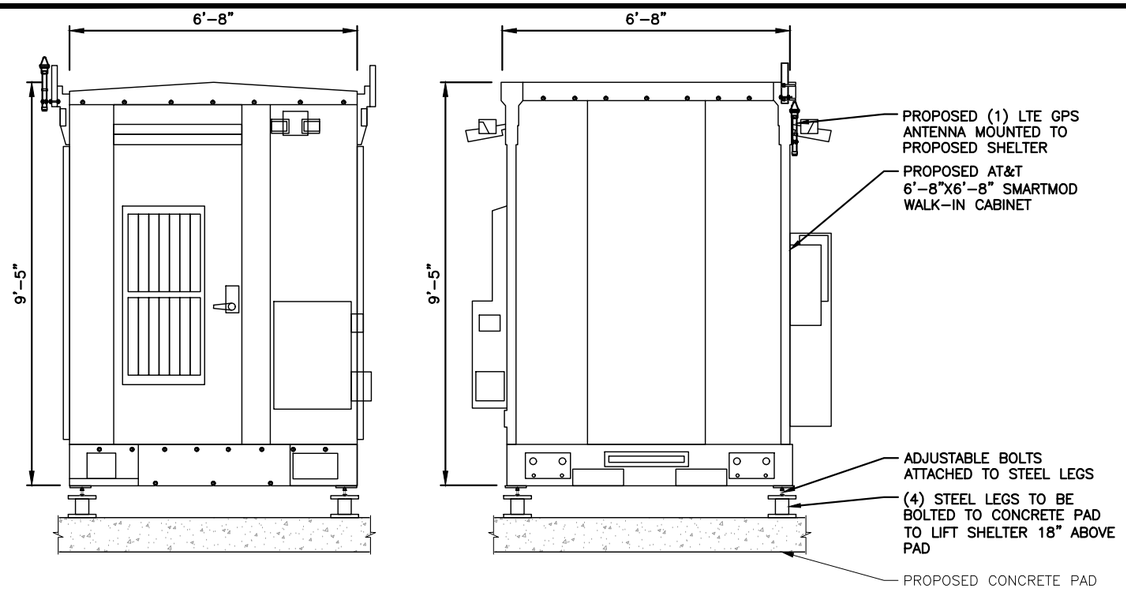
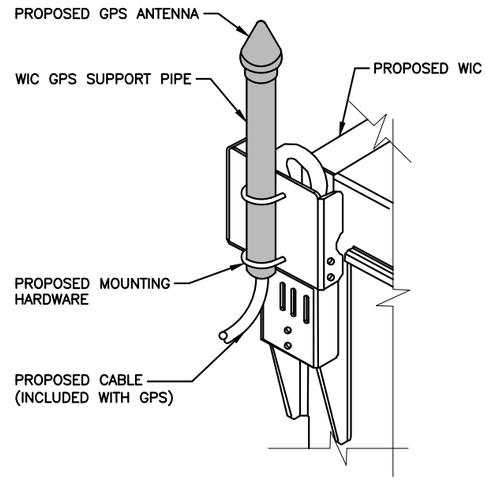
DETAILS
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1156	A-3	5

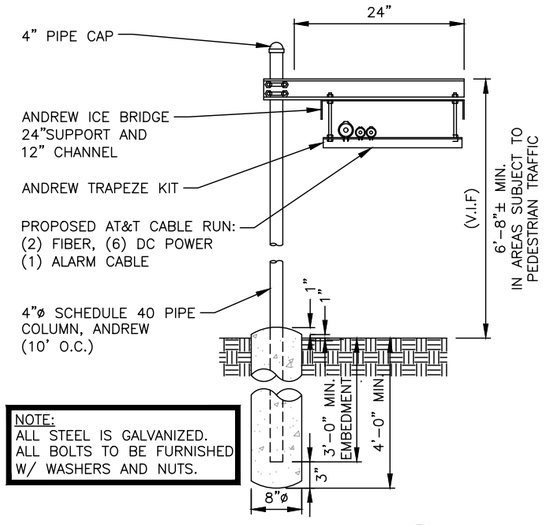


NOTE:
SHELTER SHALL BE MOUNTED PER MANUFACTURER'S SPECIFICATIONS.

TYPICAL SHELTER DETAIL (1 / A-4)
SCALE: N.T.S

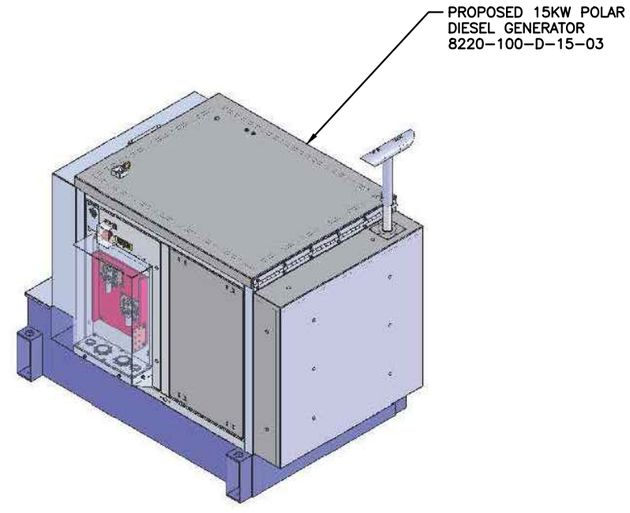


GPS MOUNTING DETAIL (2 / A-4)
N.T.S



NOTE:
ALL STEEL IS GALVANIZED.
ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.

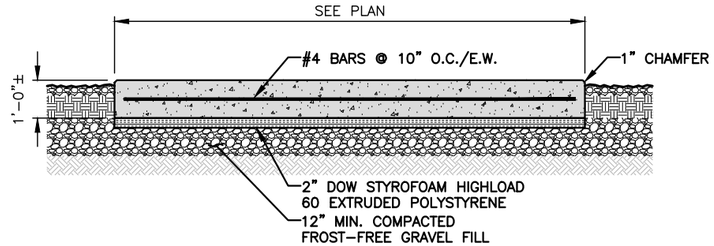
ICE BRIDGE DETAIL (3 / A-4)
SCALE: N.T.S



PROPOSED 15kW DIESEL POLAR GENERATOR (4 / A-5)
SCALE: N.T.S

FOUNDATION NOTES & CONCRETE SPECIFICATIONS:

1. FOUNDATION AREA SHALL BE EXCAVATED TO THE DEPTH AND DIMENSIONS SHOWN ON THE PLANS. EXISTING LEDGE AND ALL OTHER EXISTING UNSUITABLE MATERIAL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE. THE SUBGRADE SHALL BE ROLLED WITH A 1-TON, VIBRATORY, WALK-BEHIND ROLLER AT A SPEED OF LESS THAN 2 FPS, 6 PASSES MINIMUM, TO PROVIDE UNYIELDING SURFACE.
2. UNDERCUT SOFT OR "WEAVING" AREAS A MINIMUM OF 12 INCHES DEEP. BACKFILL UNDERCUT AREA WITH FILL MEETING THE SPECIFICATIONS OF STRUCTURAL FILL.
3. CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c)=4000 psi. CONCRETE TO BE AIR ENTRAINED, DESIRED AIR CONTENT TO BE 6% (PLUS OR MINUS 2%)
4. REINFORCING BAR TO BE ASTM A615 GRADE 60.
5. WELDED WIRE FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A185. WIRES FOR FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A82.
6. COORDINATE WITH MANUFACTURER OF PREFABRICATED SHELTER FOR LOCATION OF ATTACHMENTS TO BASE SLAB.
7. ALL REINFORCING TO HAVE MINIMUM CONCRETE COVER PER ACI SPECIFICATIONS.
8. ALL CONCRETE MATERIALS AND WORKMANSHIP SHALL CONFORM TO LATEST EDITION OF ACI 318 AND APPLICABLE STATE BUILDING CODE.



CONCRETE PAD DETAIL (5 / A-4)
22x34 SCALE: N.T.S

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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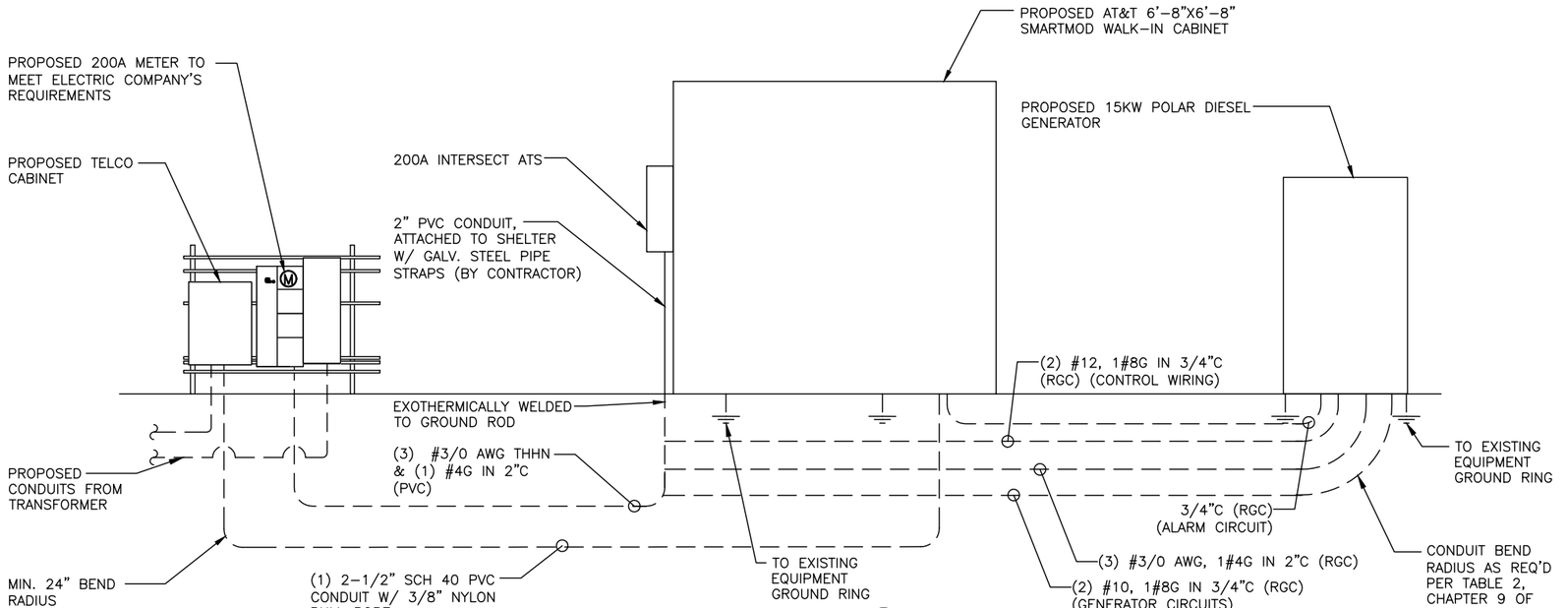
DETAILS (NSB)

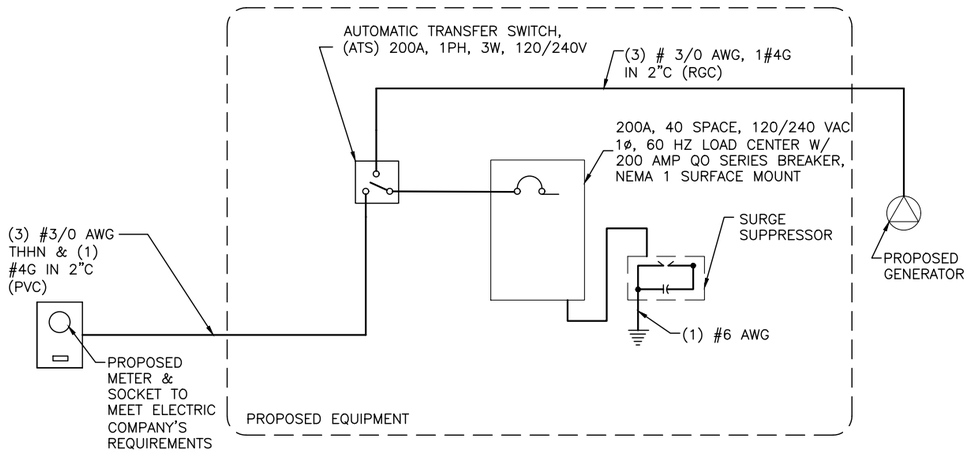
SITE NUMBER	DRAWING NUMBER	REV
CT1156	A-4	5

NOTES:

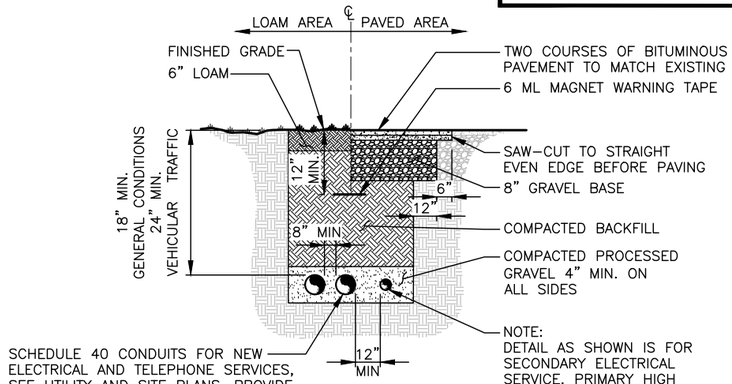
1. GROUND [ATS] TO EXISTING GROUND BAR
2. GROUND GENERATOR TO EXISTING GROUND RING WITH (2) #2 AWG GROUND WIRES.



GENERATOR WIRING DETAIL 1 / E-1
SCALE: N.T.S



TYPICAL ONE-LINE DIAGRAM 2 / E-1
SCALE: N.T.S



INSTALL (2) PULL STRINGS AND CAP THE TELCO CONDUITS INSIDE THE VAULT AND MESA CABINET TO AVOID WATER/ICE FILL UP.

BURIED CONDUIT DETAIL 3 / E-1
SCALE: N.T.S

ELECTRICAL LEGEND & ABBREVIATIONS

	NEW PANEL BOARD, SURFACE MOUNTED
	EXISTING PANEL BOARD, SURFACE MOUNTED
T	DRY TYPE TRANSFORMER
M	METER
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
F	FUSIBLE DISCONNECT SWITCH, MOUNTED 54"A.F.F.
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED
	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
J	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
	EXPOSED WIRING
	HOME RUNS, MINIMUM 2#10 + 1#8G IN 3/4" CONDUIT U.O.N.
A.F.F.	ABOVE FINISHED FLOOR
U.O.N.	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTER
A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
PVC	POLYVINYL CHLORIDE
HZ	HERTZ
PH, ø	PHASE
W	WATTS
NEC	NATIONAL ELECTRIC CODE
PPC	POWER PROTECTION CABINET
UL	UNDERWRITER LABORATORIES
PTS	POWER TRANSFER SWITCH
QO	QUICK OPEN
GRC	GALVANIZED RIGID CONDUIT
G	GROUND
	GROUND
MGB	MASTER GROUND BAR — ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	COAXIAL CABLE
	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PF	POWER FACTOR

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ART. 250.
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
21. BOND ANTENNA EGB'S AND MGB TO GROUND RING.
22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
23. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
24. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL, MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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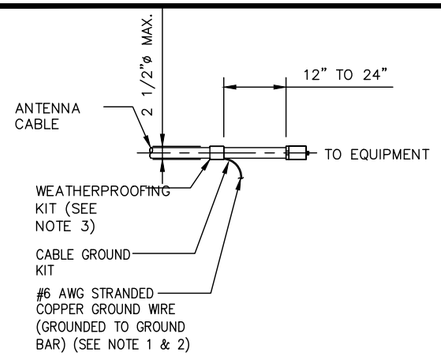
ELECTRICAL NOTES & ONE-LINE DIAGRAM (NSB)

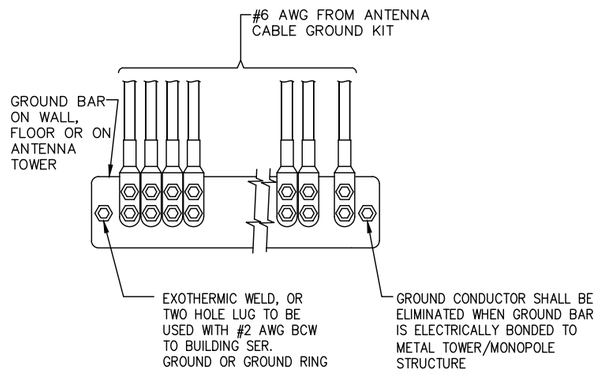
SITE NUMBER	DRAWING NUMBER	REV
CT1156	E-1	5



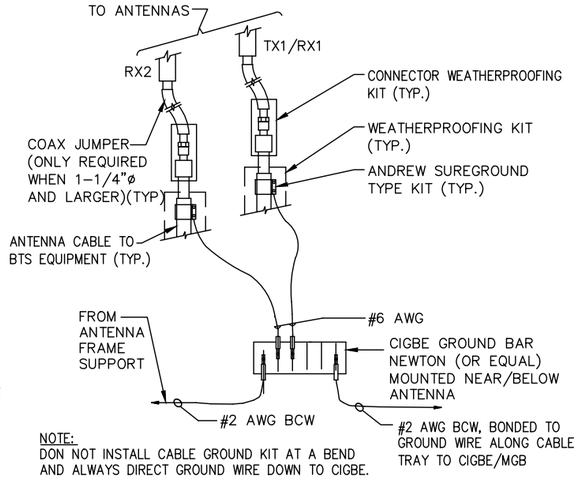
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE SUPPLIED WITH KIT. COLD SHRINK SHALL NOT BE USED.

CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE 1 G-1
SCALE: N.T.S



INSTALLATION OF GROUND WIRE TO GROUND BAR 2 G-1
SCALE: N.T.S



NOTE:
DON NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

INSTALLATION OF GROUND WIRE TO GROUNDING BAR TOWER 3 G-1
SCALE: N.T.S

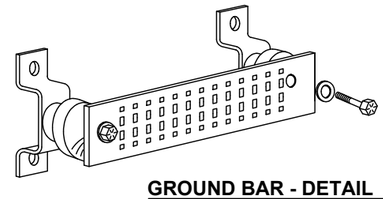
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

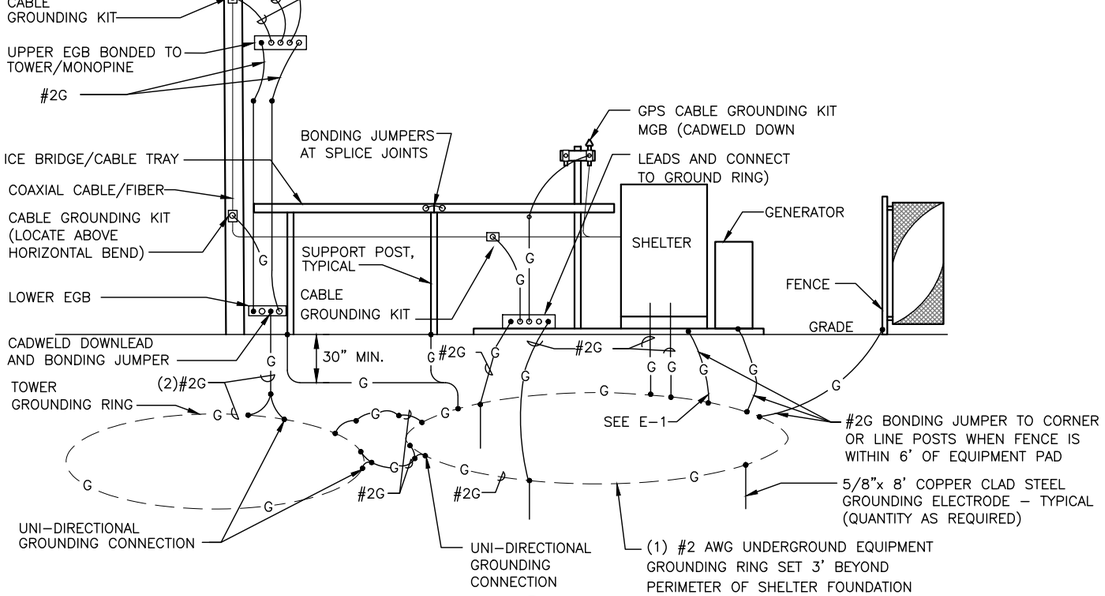
CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

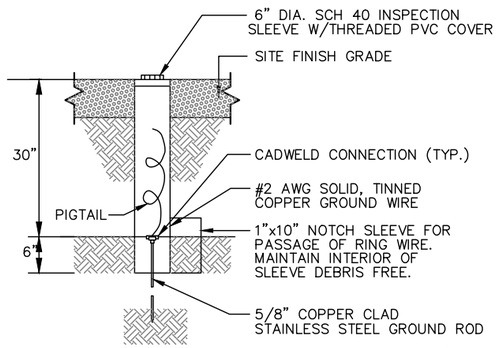
INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



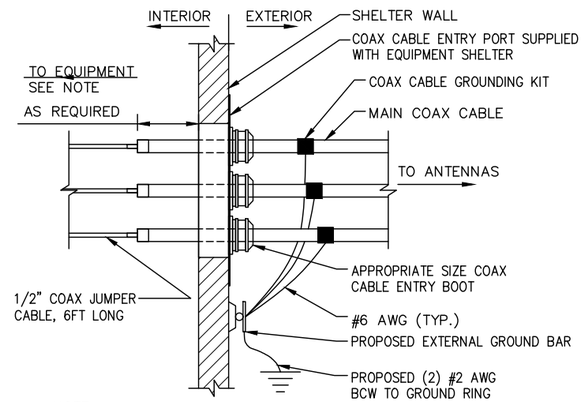
GROUND BAR - DETAIL 4 G-1
SCALE: N.T.S



GROUNDING ONE-LINE DIAGRAM 5 G-1
SCALE: N.T.S



GROUND ROD TEST WELL DETAIL 6 G-1
SCALE: N.T.S



NOTE:
EXTEND MAIN COAXIAL CABLE AS CLOSE AS POSSIBLE TO BTS EQUIPMENT. MAX LENGTH OF BTS JUMPER IS 6 FT.

INSTALLATION OF GROUND WIRE TO GROUND BAR 7 G-1
SCALE: N.T.S

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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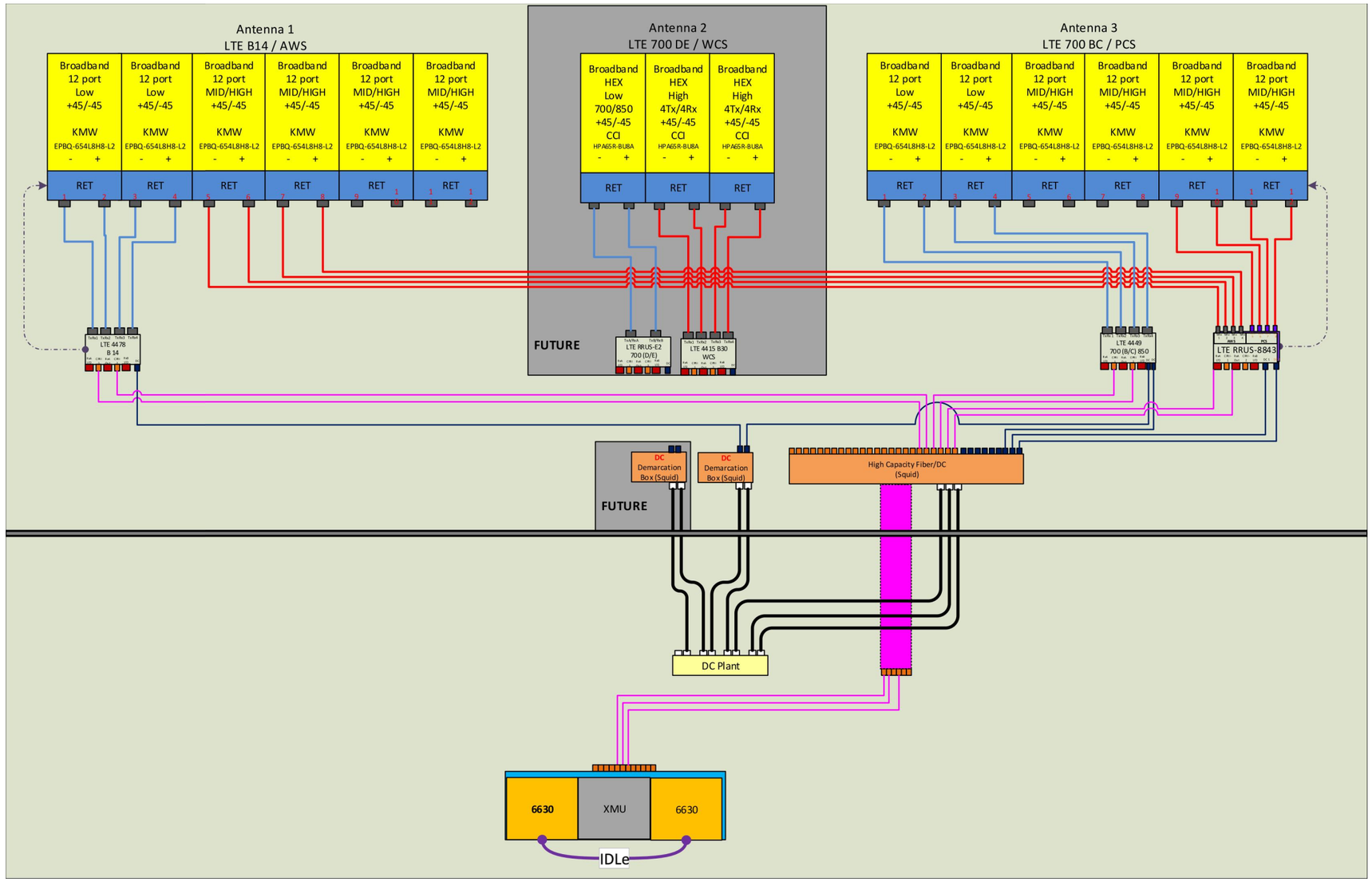
GROUNDING DETAILS (NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1156	G-1	5



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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RF PLUMBING DIAGRAM
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1156	RF–1	5

ATTACHMENT 5

STRUCTURAL ANALYSIS REPORT

For

SITE NUMBER: CT1156 (NSB)
SITE NAME: MONROE

Fan Hill Road
Monroe, CT 06468

Antennas Mounted on the Proposed Monopole

Prepared for:

Dated: February 16, 2022

Prepared by:

HUDSON Design Group LLC

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STATE OF CONNECTICUT
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PROFESSIONAL ENGINEER

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the proposed 175' monopole supporting the proposed AT&T's antennas located at elevation 160' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

The following documents were used for our reference:

- Tower Design Package prepared by TAPP dated January 13, 2022.
- Geotechnical Report prepared by Welti Geotechnical, P.C. dated September 30, 2021

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **84.1 %** - (Base Plate Controlling).

FOUNDATION SUMMARY:

Based on our evaluation, we have determined that the existing foundation **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The foundation is rated at **59.2 %** - (Bearing Controlling).

HUDSON Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(3) 20 ft x 3 in Whip Antennas	186'	**Side Arm Mount**
	(1) 2 ft Dish Antenna	176'	**Side Arm Mount**
AT&T	***(6) EPBQ-654L8H8-L2 Antennas***	160'	**VFA12-M3-WLL**
AT&T	***(3) B14 4478 RRH's***	160'	**VFA12-M3-WLL**
AT&T	***(3) 4449 B5/B12 RRH's***	160'	**VFA12-M3-WLL**
AT&T	***(3) B2/B66A 8843 RRH's***	160'	**VFA12-M3-WLL**
AT&T	***(1) DC9-48-60-24-8C-EV Squid Surge Arrestor***	160'	**VFA12-M3-WLL**
AT&T	***(1) DC6-48-60-0-8C-EV Squid Surge Arrestor***	160'	**VFA12-M3-WLL**

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	***(5) DC Power Cables***	160'	Inside Monopole
AT&T	***(1) Fiber Cable***	160'	Inside Monopole
AT&T	**(3) 2" Flex Conduits**	160'	Inside Monopole

Proposed AT&T Coax Cables shown in Bold.

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ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	52.3 %	130 – 176	PASS	
Pole Section-L2	47.7 %	86.75 – 130	PASS	
Pole Section-L3	50.0 %	46.75 – 86.75	PASS	
Pole Section-L4	51.9 %	1 – 46.75	PASS	
Base Plate	**84.1 %**	-	PASS	**Controlling**

FOUNDATION COMPARISON SUMMARY:

	Stress Ratio	Pass/Fail	Comments
Bearing	**59.2 %**	PASS	**Controlling**
Overturning	58.3 %	PASS	
Shear	12.8 %	PASS	

HUDSON Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   County: Fairfield
   Ultimate Wind Speed: 130 mph (3 second gust)
   Structural Class: III
   Exposure Category: C
   Topographic Category: 1
   Nominal Ice Thickness: 1 inch

2. Approximate height above grade to proposed antennas: 160'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

2. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

SUPPORT RECOMMENDATIONS:

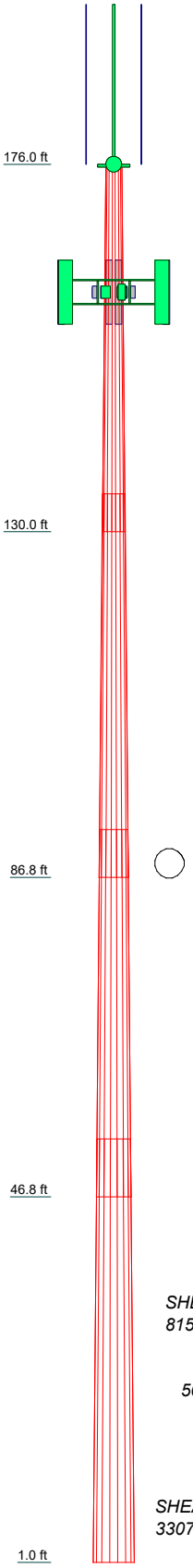
HDG recommends that the proposed antennas, RRHs, and surge arrestors be mounted on the proposed sector frame supported by the proposed monopole.

Reference HDG's Latest Construction Drawings for all component and connection requirements (attached).

HUDSON
Design Group LLC

CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	46.00	18	0.1875	4.75	24.0000	34.4486		2704.9
2	48.00	18	0.3125	6.00	32.9947	43.8975		6177.9
3	46.00	18	0.3750	7.25	41.9096	52.3582		8711.6
4	53.00	18	0.4375		49.9614	62.0000		13910.0
							A572-65	
								31504.4



ALL REACTIONS ARE FACTORED

AXIAL 63446 lb

SHEAR 8157 lb

MOMENT 876119 lb-ft

TORQUE 375 lb-ft
50 mph WIND - 1.0000 in ICE

AXIAL 45748 lb

SHEAR 33074 lb

MOMENT 3534807 lb-ft

TORQUE 1070 lb-ft
REACTIONS - 130 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
20 ft x 3 in dia whip	186	EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	160
20 ft x 3 in dia whip	186	B14 4478 RRH	160
20 ft x 3 in dia whip	186	B14 4478 RRH	160
(3) 6' Side Arm Mount	176	B14 4478 RRH	160
2' Ø Dish Antenna w/o Radome	176	4449 B5/B12 RRH	160
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	160	4449 B5/B12 RRH	160
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	160	4449 B5/B12 RRH	160
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	160	B2/B66A 8843 RRH	160
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	160	B2/B66A 8843 RRH	160
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	160	B2/B66A 8843 RRH	160
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	160	Squid Surge Arrestor	160
		Squid Surge Arrestor	160
		VFA12-M3-WLL	160

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 84.1%

Hudson Design Group
45 Beechwood Drive
North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Job: ***175' Monopole***		
Project: ***CT1156***		
Client: AT&T	Drawn by: ID	App'd:
Code: TIA-222-H	Date: 02/18/22	Scale: NTS
Path: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\TnxTower\Tnx Projects\AT&T\CT\CT1156\CT1156.eri		Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 1.00 ft.
Basic wind speed of 130 mph.
Risk Category III.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	176.00-130.00	46.00	4.75	18	24.0000	34.4486	0.1875	0.7500	A572-65 (65 ksi)
L2	130.00-86.75	48.00	6.00	18	32.9947	43.8975	0.3125	1.2500	A572-65 (65 ksi)
L3	86.75-46.75	46.00	7.25	18	41.9096	52.3582	0.3750	1.5000	A572-65 (65 ksi)
L4	46.75-1.00	53.00		18	49.9614	62.0000	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	24.3413	14.1714	1015.2211	8.4534	12.1920	83.2694	2031.7780	7.0871	3.8940	20.768
	34.9511	20.3896	3023.7756	12.1627	17.4999	172.7883	6051.5299	10.1968	5.7330	30.576
L2	34.5510	32.4166	4374.4856	11.6022	16.7613	260.9874	8754.7272	16.2114	5.2571	16.823
	44.5265	43.2309	10375.4166	15.4727	22.2999	465.2668	20764.4855	21.6195	7.1760	22.963
L3	43.8822	49.4366	10774.7495	14.7448	21.2901	506.0920	21563.6767	24.7230	6.7161	17.91
	53.1081	61.8730	21123.4413	18.4540	26.5980	794.1751	42274.6773	30.9424	8.5550	22.813
L4	52.3369	68.7701	21309.2121	17.5810	25.3804	839.5932	42646.4634	34.3916	8.0232	18.339
	62.8890	85.4872	40932.7736	21.8547	31.4960	1299.6182	81919.4076	42.7517	10.1420	23.182

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 176.00-130.00				1	1	1			
L2 130.00-86.75				1	1	1			
L3 86.75-46.75				1	1	1			
L4 46.75-1.00				1	1	1			

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.2500 in
Number of bolts	20
Embedment length	72.0000 in
f'_c	4.5 ksi
Grout space	3.0000 in
Base plate grade	A570-50
Base plate thickness	2.2500 in
Bolt circle diameter	69.5000 in
Outer diameter	75.5000 in
Inner diameter	62.0000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
DC Cable	C	No	Yes	Inside Pole	160.00 - 1.00	5	No Ice	0.00	0.88
							1/2" Ice	0.00	0.88
							1" Ice	0.00	0.88
Fiber Cable (1-1/4")	C	No	Yes	Inside Pole	160.00 - 1.00	1	No Ice	0.00	0.48
							1/2" Ice	0.00	0.48
							1" Ice	0.00	0.48
2" Conduit	C	No	Yes	Inside Pole	160.00 - 1.00	3	No Ice	0.00	2.80
							1/2" Ice	0.00	2.80
							1" Ice	0.00	2.80

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	176.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	398.07
L2	130.00-86.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	573.88
L3	86.75-46.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	530.76
L4	46.75-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	607.06

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	176.00-130.00	A	1.340	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	398.07
L2	130.00-86.75	A	1.294	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	573.88
L3	86.75-46.75	A	1.233	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	530.76
L4	46.75-1.00	A	1.115	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	607.06

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
20 ft x 3 in dia whip	A	From Face	3.00	0.0000	186.00	No Ice	6.00	6.00	60.00
			0.00			1/2" Ice	8.03	8.03	103.17
			0.00			1" Ice	10.08	10.08	159.01
20 ft x 3 in dia whip	B	From Face	3.00	0.0000	186.00	No Ice	6.00	6.00	60.00
			0.00			1/2" Ice	8.03	8.03	103.17
			0.00			1" Ice	10.08	10.08	159.01
20 ft x 3 in dia whip	C	From Face	3.00	0.0000	186.00	No Ice	6.00	6.00	60.00
			0.00			1/2" Ice	8.03	8.03	103.17
			0.00			1" Ice	10.08	10.08	159.01
(3) 6' Side Arm Mount	C	None		0.0000	176.00	No Ice	1.74	1.74	80.00
						1/2" Ice	2.46	2.46	90.00
						1" Ice	2.83	2.83	110.00
** VFA12-M3-WLL	C	From Face	0.00	0.0000	160.00	No Ice	18.91	13.07	2999.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	28.29	20.60	3461.00
			0.00			1" Ice	36.92	27.50	4134.00
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	A	From Face	3.00	0.0000	160.00	No Ice	18.09	8.93	126.20
			6.00			1/2" Ice	18.72	10.35	240.55
			0.00			1" Ice	19.36	11.61	365.16
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	B	From Face	3.00	0.0000	160.00	No Ice	18.09	8.93	126.20
			6.00			1/2" Ice	18.72	10.35	240.55
			0.00			1" Ice	19.36	11.61	365.16
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	C	From Face	3.00	0.0000	160.00	No Ice	18.09	8.93	126.20
			6.00			1/2" Ice	18.72	10.35	240.55
			0.00			1" Ice	19.36	11.61	365.16
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	A	From Face	3.00	0.0000	160.00	No Ice	18.09	8.93	126.20
			-6.00			1/2" Ice	18.72	10.35	240.55
			0.00			1" Ice	19.36	11.61	365.16
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	B	From Face	3.00	0.0000	160.00	No Ice	18.09	8.93	126.20
			-6.00			1/2" Ice	18.72	10.35	240.55
			0.00			1" Ice	19.36	11.61	365.16
EPBQ-654L8H8-L2 Antenna w/ Mounting PIpe	C	From Face	3.00	0.0000	160.00	No Ice	18.09	8.93	126.20
			-6.00			1/2" Ice	18.72	10.35	240.55
			0.00			1" Ice	19.36	11.61	365.16
B14 4478 RRH	A	From Face	1.00	0.0000	160.00	No Ice	2.02	1.25	60.00
			1.00			1/2" Ice	2.20	1.40	77.66
			0.00			1" Ice	2.39	1.56	98.08
B14 4478 RRH	B	From Face	1.00	0.0000	160.00	No Ice	2.02	1.25	60.00
			1.00			1/2" Ice	2.20	1.40	77.66
			0.00			1" Ice	2.39	1.56	98.08
B14 4478 RRH	C	From Face	1.00	0.0000	160.00	No Ice	2.02	1.25	60.00
			1.00			1/2" Ice	2.20	1.40	77.66
			0.00			1" Ice	2.39	1.56	98.08
4449 B5/B12 RRH	A	From Face	1.00	0.0000	160.00	No Ice	1.97	1.40	7.20
			-1.00			1/2" Ice	2.15	1.56	25.68
			0.00			1" Ice	2.33	1.72	46.97
4449 B5/B12 RRH	B	From Face	1.00	0.0000	160.00	No Ice	1.97	1.40	7.20
			-1.00			1/2" Ice	2.15	1.56	25.68
			0.00			1" Ice	2.33	1.72	46.97
4449 B5/B12 RRH	C	From Face	1.00	0.0000	160.00	No Ice	1.97	1.40	7.20
			-1.00			1/2" Ice	2.15	1.56	25.68
			0.00			1" Ice	2.33	1.72	46.97
B2/B66A 8843 RRH	A	From Face	1.00	0.0000	160.00	No Ice	1.64	1.35	72.00
			-1.00			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
B2/B66A 8843 RRH	B	From Face	1.00	0.0000	160.00	No Ice	1.64	1.35	72.00
			-1.00			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
B2/B66A 8843 RRH	C	From Face	1.00	0.0000	160.00	No Ice	1.64	1.35	72.00
			-1.00			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
Squid Surge Arrestor	C	From Face	1.00	0.0000	160.00	No Ice	0.81	0.81	33.00
			-1.00			1/2" Ice	1.30	1.30	48.38
			0.00			1" Ice	1.48	1.48	66.11
Squid Surge Arrestor	C	From Face	1.00	0.0000	160.00	No Ice	0.81	0.81	33.00
			-1.00			1/2" Ice	1.30	1.30	48.38
			0.00			1" Ice	1.48	1.48	66.11
***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
2' Ø Dish Antenna w/o Radome		Paraboloid w/o Radome	None		0.0000		176.00	2.00	No Ice	3.14	10.00
									1/2" Ice	3.41	78.35
									1" Ice	3.68	116.70

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 90 deg - No Ice
5	0.9 Dead+1.0 Wind 90 deg - No Ice
6	1.2 Dead+1.0 Wind 180 deg - No Ice
7	0.9 Dead+1.0 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	176 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-15405.89	-180.81	-6302.51
			Max. Mx	4	-7888.64	-357148.47	-4341.46
			Max. My	6	-7844.25	-76.98	-370996.44
			Max. Vy	4	13650.28	-357148.47	-4341.46
			Max. Vx	6	14030.85	-76.98	-370996.44
			Max. Torque	5			-1073.73
L2	130 - 86.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-25751.46	-186.03	-6484.43
			Max. Mx	4	-15331.24	-1051359.59	-4438.65
			Max. My	6	-15298.26	-80.65	-1081262.38
			Max. Vy	4	19519.04	-1051359.59	-4438.65
			Max. Vx	6	19901.58	-80.65	-1081262.38
			Max. Torque	5			-1072.93
L3	86.75 - 46.75	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	8	-39341.81	-187.32	-6529.39
			Max. Mx	4	-25856.68	-1921687.28	-4496.62
			Max. My	6	-25836.78	-82.37	-1966407.79
			Max. Vy	4	25387.33	-1921687.28	-4496.62
			Max. Vx	6	25767.85	-82.37	-1966407.79
			Max. Torque	5			-1071.47
L4	46.75 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-63445.99	-186.98	-6517.46
			Max. Mx	4	-45731.74	-3470148.07	-4525.95
			Max. My	6	-45731.22	-82.86	-3534806.83
			Max. Vy	4	32728.80	-3470148.07	-4525.95
			Max. Vx	6	33097.98	-82.86	-3534806.83
			Max. Torque	5			-1070.44

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	8	63445.99	0.00	0.15
	Max. H_x	8	63445.99	0.00	0.15
	Max. H_z	2	45748.41	-0.00	33074.27
	Max. M_x	2	3525784.81	-0.00	33074.27
	Max. M_z	4	3470148.07	-32705.49	0.01
	Max. Torsion	7	99.75	-0.00	-33064.47
	Min. Vert	7	34310.84	-0.00	-33064.47
	Min. H_x	5	34311.33	-32707.74	0.00
	Min. H_z	6	45748.40	-0.00	-33074.23
	Min. M_x	6	-3534806.83	-0.00	-33074.23
	Min. M_z	7	61.60	-0.00	-33064.47
	Min. Torsion	5	-1070.01	-32707.74	0.00

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	38123.93	-0.00	-0.04	3679.32	-67.55	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	45748.41	0.00	-33074.27	-3525784.81	-82.85	99.13
0.9 Dead+1.0 Wind 0 deg - No Ice	34310.85	0.00	-33064.54	-3503425.22	-61.60	99.77
1.2 Dead+1.0 Wind 90 deg - No Ice	45748.42	32705.49	-0.01	4525.78	-3470148.07	1037.74
0.9 Dead+1.0 Wind 90 deg - No	34311.33	32707.74	-0.00	3350.69	-3448742.99	1070.01

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Ice						
1.2 Dead+1.0 Wind 180 deg - No Ice	45748.40	0.00	33074.23	3534806.83	-82.84	-99.11
0.9 Dead+1.0 Wind 180 deg - No Ice	34310.84	0.00	33064.47	3510098.01	-61.60	-99.75
1.2 Dead+1.0 Ice+1.0 Temp	63445.99	-0.00	-0.15	6517.46	-186.98	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	63445.96	-0.00	-8157.48	-862789.81	-191.20	28.83
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	63445.96	8057.08	-0.05	6665.55	-852914.09	374.96
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	63445.95	-0.00	8157.36	876118.81	-191.19	-28.83
Dead+Wind 0 deg - Service	38123.86	-0.00	-6304.66	-666885.42	-68.81	22.25
Dead+Wind 90 deg - Service	38123.86	6234.37	-0.05	3747.87	-659258.71	209.84
Dead+Wind 180 deg - Service	38123.86	-0.00	6304.55	674380.07	-68.81	-22.25

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-38123.93	0.00	0.00	38123.93	0.04	0.000%
2	0.00	-45748.72	-33082.19	-0.00	45748.41	33074.27	0.014%
3	0.00	-34311.54	-33082.19	-0.00	34310.85	33064.54	0.037%
4	32713.27	-45748.72	0.00	-32705.49	45748.42	0.01	0.014%
5	32713.27	-34311.54	0.00	-32707.74	34311.33	0.00	0.012%
6	0.00	-45748.72	33082.19	-0.00	45748.40	-33074.23	0.014%
7	0.00	-34311.54	33082.19	-0.00	34310.84	-33064.47	0.037%
8	0.00	-63445.99	0.00	0.00	63445.99	0.15	0.000%
9	0.00	-63445.99	-8160.23	0.00	63445.96	8157.48	0.004%
10	8059.82	-63445.99	0.00	-8057.08	63445.96	0.05	0.004%
11	0.00	-63445.99	8160.23	0.00	63445.95	-8157.36	0.004%
12	0.00	-38123.93	-6308.50	0.00	38123.86	6304.66	0.010%
13	6238.19	-38123.93	0.00	-6234.37	38123.86	0.05	0.010%
14	0.00	-38123.93	6308.50	0.00	38123.86	-6304.55	0.010%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00023807	0.00036524
3	Yes	4	0.00052396	0.00125033
4	Yes	5	0.00023830	0.00049516
5	Yes	5	0.00016717	0.00041942
6	Yes	5	0.00023790	0.00036745
7	Yes	4	0.00052363	0.00125756
8	Yes	4	0.00000001	0.00006181
9	Yes	5	0.00047563	0.00113728
10	Yes	5	0.00047644	0.00113534
11	Yes	5	0.00047758	0.00118340
12	Yes	4	0.00061019	0.00028269
13	Yes	4	0.00061066	0.00028575
14	Yes	4	0.00061141	0.00029109

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	176 - 130	Pole	TP34.4486x24x0.1875	1	-7844.25	140372.00	52.3	Pass
L2	130 - 86.75	Pole	TP43.8975x32.9947x0.3125	2	-15298.30	481988.00	47.7	Pass
L3	86.75 - 46.75	Pole	TP52.3582x41.9096x0.375	3	-25836.80	980038.00	50.0	Pass
L4	46.75 - 1	Pole	TP62x49.9614x0.4375	4	-45731.20	2079250.00	51.9	Pass
							Summary	
							Pole (L1) 52.3	Pass
							Base Plate 84.1	Pass
							RATING = **84.1**	**Pass**

Monopole Pier and Pad Foundation

Site Number: CT1156

TIA-222 Revision: H

Design Reactions		
Shear, **S**:	33.074	kips
Moment, **M**:	3534.807	ft-kips
Tower Height, **H**:	175	ft
Tower Weight, **Wt**:	45.748	kips
Base Diameter, **BD**:	5.17	ft

Foundation Dimensions		
Depth, **D**:	6	ft
Pad Width, **W**:	28	ft
Neglected Depth, **N**:	0	ft
Thickness, **T**:	3.50	ft
Pier Diameter, **Pd**:	7.50	ft
Ext. Above Grade, **E**:	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.125	kcf
Ult. Bearing Capacity, Bc:	6.0	ksf
Angle of Friction, **Φ**:	34	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.130	ksf
Base Friction, **μ**:	0.45	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	4500	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	10	
Pier Rebar Quanity, **mp**:	54	26
Pad Rebar Size, **Spad**:	10	
Pad Rebar Quanity, **mpad**:	116	11
Pier Tie Size, **St**:	5	3
Tie Quanity, **mt**:	8	4

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7.5	7.166666667	**OK**
Overturning (ft-kips)	6061.75	3534.81	**58.3%**
Shear Capacity (kips)	259.01	33.07	**12.8%**
Bearing (ksf)	3.00	1.78	**59.2%**
Pad Shear - 1-way (kips)	1297.10	338.05	**26.1%**
Pad Shear - 2-way (kips)	3113.57	88.82	**2.9%**
Pad Moment Capacity (k-ft)	23084.86	1228.89	**5.3%**
Pier Moment Capacity (k-ft)	11227.51	3634.03	**32.4%**

ATTACHMENT 6

August 12, 2020
February 18, 2022 (Rev. 1)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT1156 (NSB)
	FA Number:	10577820
	PACE Number:	MRCTB004853
	PT Number:	2051A0A0D1
	Site Name:	MONROE
	Site Address:	Fan Hill Road Monroe, CT 06468

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the proposed AT&T antenna/RRH mount to determine their capability of supporting the following additional loading:

- **(6) EPBQ-654L8H8-L2 Antennas (96.0"x21.0"x6.3" – Wt. = 97 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.5" – Wt. = 71 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(1) DC9-48-60-24-8C-EV Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.)**
- **(1) DC6-48-60-0-8C-EV Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.)**

**Proposed equipment shown in bold.*

Mount fabrication drawings prepared by SitePro1, P/N VFA12-M3-WLL, dated October 29, 2018 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 130 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.46 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.205 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.065.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mount is to be secured to the proposed monopole with ring mounts and threaded rods. HDG considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the Proposed SitePro1 VFA12-M3-WLL mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	94	LC20	49%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N VFA12-M3-WLL, dated October 29, 2018.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The proposed mount will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

STATE OF CONNECTICUT
DANIEL HAMM
PROFESSIONAL ENGINEER

Daniel P. Hamm, PE
Principal

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 2/15/2022
Project Name: MONROE
Project No.: CT1156
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

z=	160	(ft)
z_g=	900	(ft)
α=	9.5	

K_z= 1.397

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= 1

(If Category 1 then K_{zt} =1.0)

Category= **1**

K_h=	1	
K_c=	1.0	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	160	
z_s=	400	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i =	1.00	in
Importance Factor = I=	1.25	(from Table 2-3)
K_{iz} =	1.17	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.46 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	176	G_h=	0.85
2.6.9.2 Guyed Masts		G_h=	0.85
2.6.9.3 Pole Structures		G_h=	1.1
2.6.9 Appurtenances		G_h=	1.0

2.6.9.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.397	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**56.60**	K_e=	0.99	(from 2.6.8)
$q_{z\ (ice)}$=	**8.37**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**3.01**	V_{max}=	130	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

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Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		**Aspect Ratio ≤ 2.5**	**Aspect Ratio = 7**	**Aspect Ratio ≥ 25**
		Ca	**Ca**	**Ca**
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	**C < 39** (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.46** in | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.57	1.29	**1024**	**178**	**55**
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	**71**	**16**	**4**
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	**79**	**18**	**4**
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	**77**	**17**	**4**
DC9-48-60-24-8C-EV Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	**88**	**18**	**5**
DC6-48-60-0-8C-EV Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	**88**	**18**	**5**
Plate 11-1/4x5/8	0.6	12.0		0.05	0.05	2.00	**6**		
Plate 3-1/2x5/8	0.6	12.0		0.05	0.05	2.00	**6**		
3/4" RoundBar	0.8	12.0		0.06	0.06	1.20	**4**		
5/8" RoundBar	0.6	12.0		0.05	0.05	1.20	**4**		
2" Pipe	2.4	12.0		0.20	0.20	1.20	**13**		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	**16**		

Date: 2/15/2022
Project Name: MONROE
Project No.: CT1156
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.46	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	1024	398	867
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	114	82
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	79	111	87
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	93	81

WIND LOADS WITH ICE:

EPBQ-654L8H8-L2 Antenna	98.9	23.9	9.2	16.44	6.34	4.13	10.72	1.27	1.52	175	81	152
B14 4478 RRH (Side)	21.0	11.2	16.3	1.64	2.38	1.87	1.29	1.20	1.20	16	24	18
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	18	23	19
B2/B66A 8843 RRH (Side)	17.8	13.8	16.1	1.71	2.00	1.29	1.11	1.20	1.20	17	20	18

WIND LOADS AT 30 MPH:

EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	55	21	46
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	5
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	4

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Project Name: MONROE
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WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.46	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	1024	398	555
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	114	104
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	79	111	103
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	93	89

WIND LOADS WITH ICE:

EPBQ-654L8H8-L2 Antenna	98.9	23.9	9.2	16.44	6.34	4.13	10.72	1.27	1.52	175	81	104
B14 4478 RRH (Side)	21.0	11.2	16.3	1.64	2.38	1.87	1.29	1.20	1.20	16	24	22
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	18	23	22
B2/B66A 8843 RRH (Side)	17.8	13.8	16.1	1.71	2.00	1.29	1.11	1.20	1.20	17	20	19

WIND LOADS AT 30 MPH:

EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	55	21	30
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5

Date: 2/15/2022
Project Name: MONROE
Project No.: CT1156
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.46	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	1024	398	398
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	114	114
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	79	111	111
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	93	93

WIND LOADS WITH ICE:

EPBQ-654L8H8-L2 Antenna	98.9	23.9	9.2	16.44	6.34	4.13	10.72	1.27	1.52	175	81	81
B14 4478 RRH (Side)	21.0	11.2	16.3	1.64	2.38	1.87	1.29	1.20	1.20	16	24	24
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	18	23	23
B2/B66A 8843 RRH (Side)	17.8	13.8	16.1	1.71	2.00	1.29	1.11	1.20	1.20	17	20	20

WIND LOADS AT 30 MPH:

EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	55	21	21
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5

Date: 2/15/2022
Project Name: MONROE
Project No.: CT1156
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.46	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	1024	398	555
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	114	104
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	79	111	103
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	93	89

WIND LOADS WITH ICE:

EPBQ-654L8H8-L2 Antenna	98.9	23.9	9.2	16.44	6.34	4.13	10.72	1.27	1.52	175	81	104
B14 4478 RRH (Side)	21.0	11.2	16.3	1.64	2.38	1.87	1.29	1.20	1.20	16	24	22
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	18	23	22
B2/B66A 8843 RRH (Side)	17.8	13.8	16.1	1.71	2.00	1.29	1.11	1.20	1.20	17	20	19

WIND LOADS AT 30 MPH:

EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	55	21	30
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5

Date: 2/15/2022
Project Name: MONROE
Project No.: CT1156
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.46	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	1024	398	867
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	114	82
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	79	111	87
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	93	81

WIND LOADS WITH ICE:

EPBQ-654L8H8-L2 Antenna	98.9	23.9	9.2	16.44	6.34	4.13	10.72	1.27	1.52	175	81	152
B14 4478 RRH (Side)	21.0	11.2	16.3	1.64	2.38	1.87	1.29	1.20	1.20	16	24	18
4449 B5/B12 RRH (Side)	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	18	23	19
B2/B66A 8843 RRH (Side)	17.8	13.8	16.1	1.71	2.00	1.29	1.11	1.20	1.20	17	20	18

WIND LOADS AT 30 MPH:

EPBQ-654L8H8-L2 Antenna	96.0	21.0	6.3	14.00	4.20	4.57	15.24	1.29	1.67	55	21	46
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	5
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	4

Date: 2/18/2022
Project Name: MONROE
Project No.: CT1156
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.46 in.
Density of ice: 56 pcf

EPBQ-654L8H8-L2 Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	21.0	
Depth (in):	6.3	
Total weight of ice on object:		334 lbs
Weight of object:	97.0 lbs	
Combined weight of ice and object:		431 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		46 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		106 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	13.2	
Depth (in):	9.4	
Total weight of ice on object:		47 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		120 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		41 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		113 lbs

DC9-48-60-24-8C-EV Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		54 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		83 lbs

DC6-48-60-0-8C-EV Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		54 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		83 lbs

PL 11-1/4x5/8

Weight of ice based on total radial SF area:

Height (in):	11.25	
Width (in):	0.63	
Per foot weight of ice on object:		23 plf

PL 3-1/2x5/8

Weight of ice based on total radial SF area:

Height (in):	3.5	
Width (in):	0.63	
Per foot weight of ice on object:		9 plf

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		7 plf

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		8 plf

5/8" Round Bar

Per foot weight of ice:

diameter (in):	0.63	
Per foot weight of ice on object:		4 plf

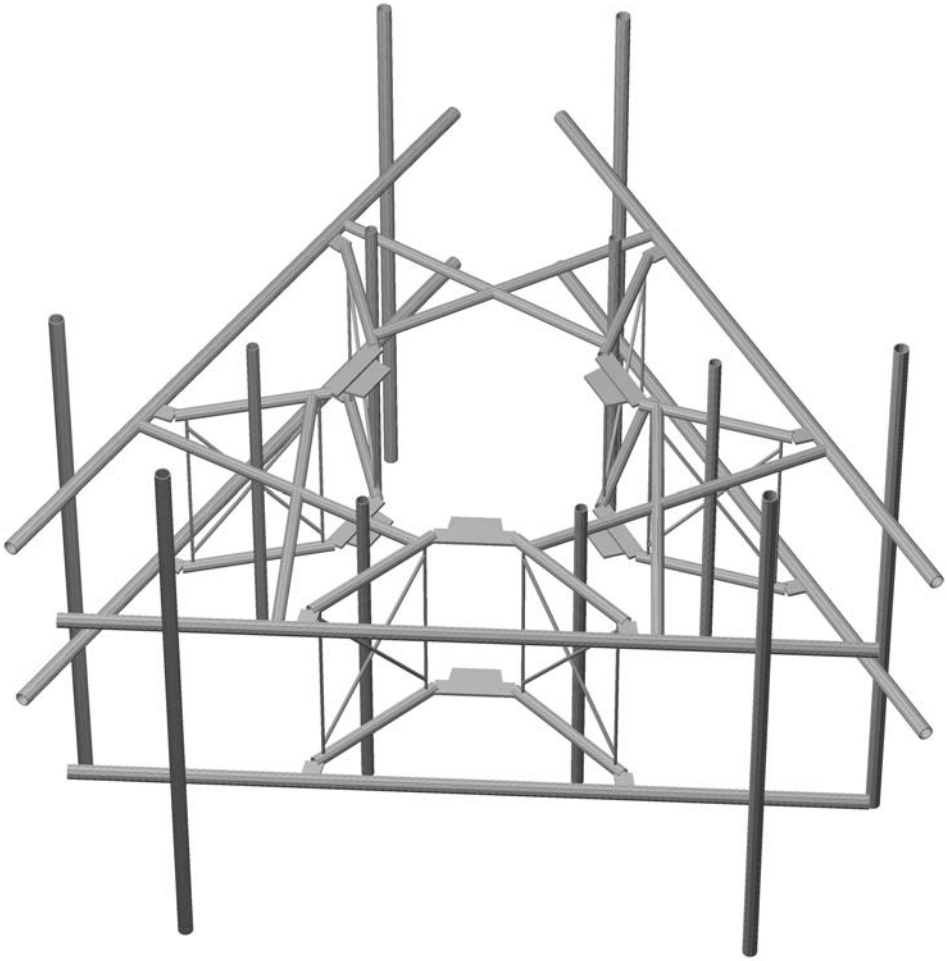
3/4" Round Bar

Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		4 plf

HUDSON
Design Group LLC

Mount Calculations
(Proposed Conditions)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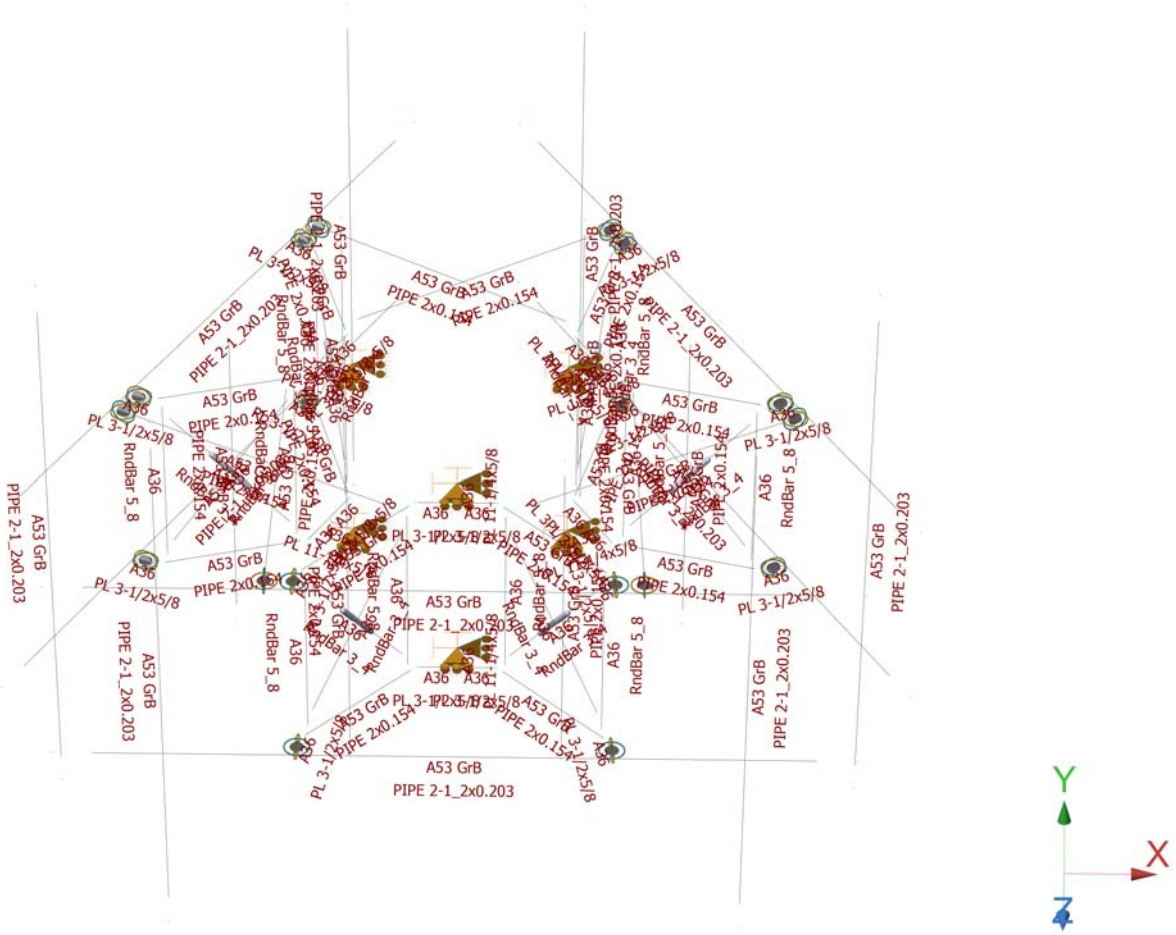
Z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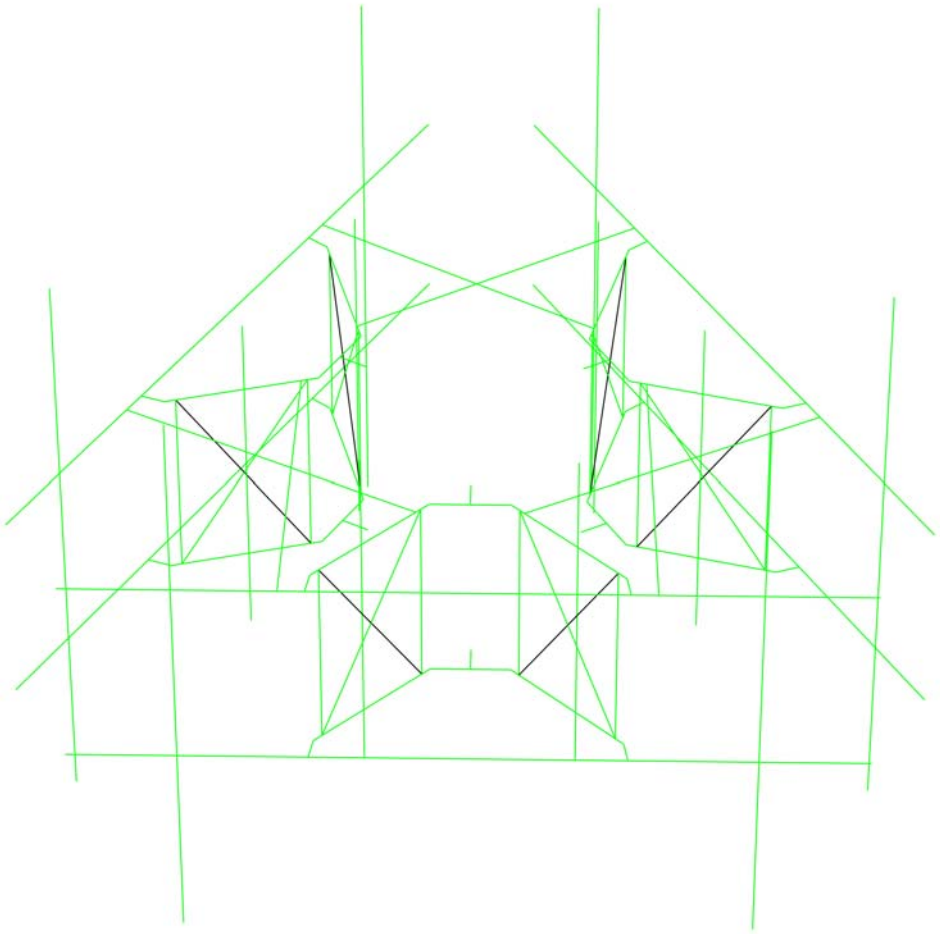
PL 3-1/2x5/8
RndBar 5_8
A36
Y
X
Z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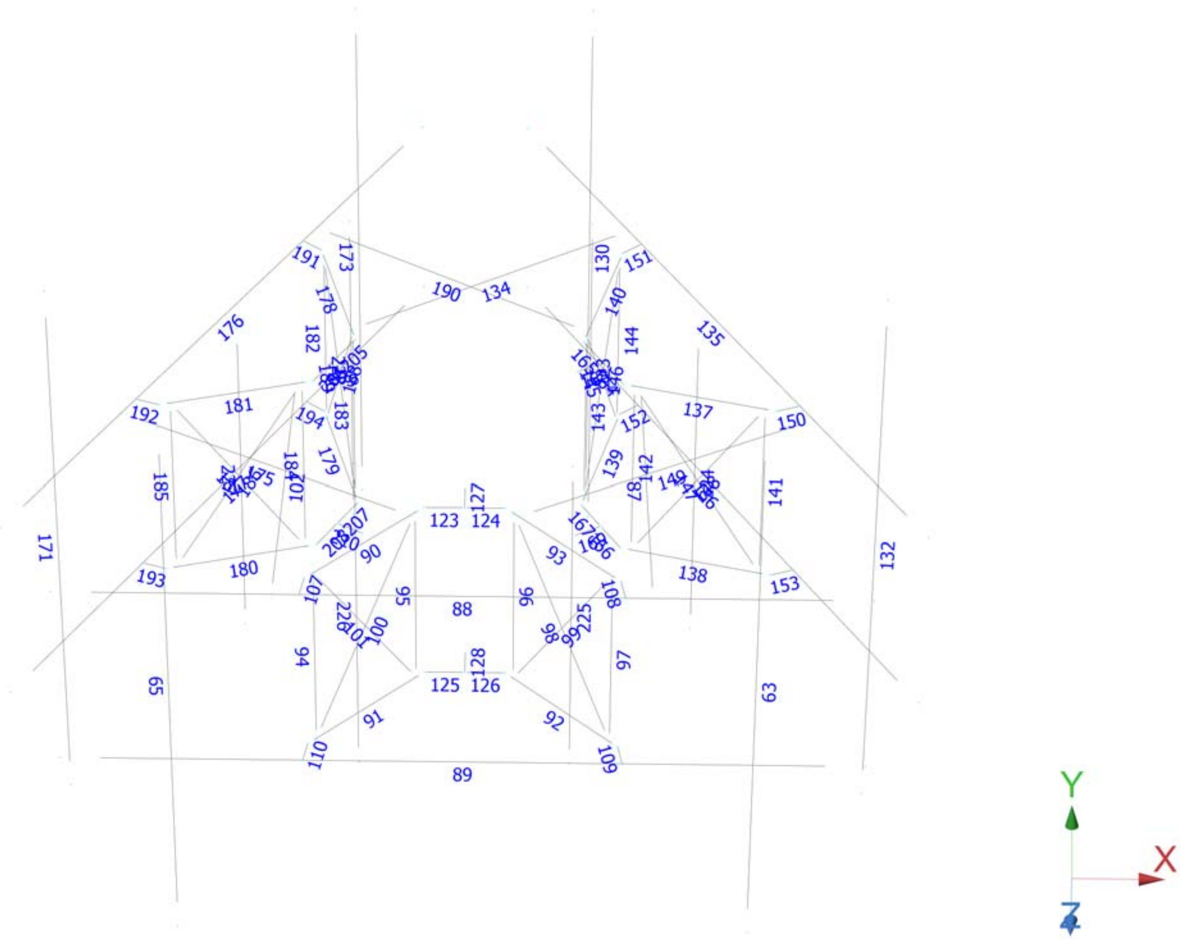
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109
Y
X
Z

RAM® Elements
CONNECT Edition

Current Date: 2/15/2022 3:36 PM
Units system: English

Load data

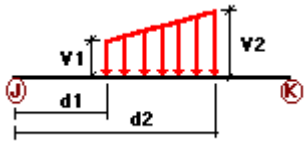
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	87	z	-0.013	0.00	0.00	No	0.00	No
	88	z	-0.016	0.00	0.00	No	0.00	No
	89	z	-0.016	0.00	0.00	No	0.00	No
	90	z	-0.013	0.00	0.00	No	0.00	No
	91	z	-0.013	0.00	0.00	No	0.00	No
	92	z	-0.013	0.00	0.00	No	0.00	No
	93	z	-0.013	0.00	0.00	No	0.00	No
	94	z	-0.004	0.00	0.00	No	0.00	No
	95	z	-0.004	0.00	0.00	No	0.00	No
	96	z	-0.004	0.00	0.00	No	0.00	No
	97	z	-0.004	0.00	0.00	No	0.00	No
	98	z	-0.004	0.00	0.00	No	0.00	No
	99	z	-0.004	0.00	0.00	No	0.00	No
	100	z	-0.004	0.00	0.00	No	0.00	No
	101	z	-0.004	0.00	0.00	No	0.00	No
	102	z	-0.013	0.00	0.00	No	0.00	No
	107	z	-0.006	0.00	0.00	No	0.00	No
	108	z	-0.006	0.00	0.00	No	0.00	No

109	z	-0.006	0.00	0.00	No	0.00	No
110	z	-0.006	0.00	0.00	No	0.00	No
123	z	-0.006	0.00	0.00	No	0.00	No
124	z	-0.006	0.00	0.00	No	0.00	No
125	z	-0.006	0.00	0.00	No	0.00	No
126	z	-0.006	0.00	0.00	No	0.00	No
127	z	-0.006	0.00	0.00	No	0.00	No
128	z	-0.006	0.00	0.00	No	0.00	No
130	z	-0.016	0.00	0.00	No	0.00	No
132	z	-0.016	0.00	0.00	No	0.00	No
134	z	-0.013	0.00	0.00	No	0.00	No
135	z	-0.016	0.00	0.00	No	0.00	No
136	z	-0.016	0.00	0.00	No	0.00	No
137	z	-0.013	0.00	0.00	No	0.00	No
138	z	-0.013	0.00	0.00	No	0.00	No
139	z	-0.013	0.00	0.00	No	0.00	No
140	z	-0.013	0.00	0.00	No	0.00	No
141	z	-0.004	0.00	0.00	No	0.00	No
142	z	-0.004	0.00	0.00	No	0.00	No
143	z	-0.004	0.00	0.00	No	0.00	No
144	z	-0.004	0.00	0.00	No	0.00	No
145	z	-0.004	0.00	0.00	No	0.00	No
146	z	-0.004	0.00	0.00	No	0.00	No
147	z	-0.004	0.00	0.00	No	0.00	No
148	z	-0.004	0.00	0.00	No	0.00	No
149	z	-0.013	0.00	0.00	No	0.00	No
150	z	-0.006	0.00	0.00	No	0.00	No
151	z	-0.006	0.00	0.00	No	0.00	No
152	z	-0.006	0.00	0.00	No	0.00	No
153	z	-0.006	0.00	0.00	No	0.00	No
164	z	-0.006	0.00	0.00	No	0.00	No
165	z	-0.006	0.00	0.00	No	0.00	No
166	z	-0.006	0.00	0.00	No	0.00	No
167	z	-0.006	0.00	0.00	No	0.00	No
168	z	-0.006	0.00	0.00	No	0.00	No
169	z	-0.006	0.00	0.00	No	0.00	No
171	z	-0.016	0.00	0.00	No	0.00	No
173	z	-0.016	0.00	0.00	No	0.00	No
175	z	-0.013	0.00	0.00	No	0.00	No
176	z	-0.016	0.00	0.00	No	0.00	No
177	z	-0.016	0.00	0.00	No	0.00	No
178	z	-0.013	0.00	0.00	No	0.00	No
179	z	-0.013	0.00	0.00	No	0.00	No
180	z	-0.013	0.00	0.00	No	0.00	No
181	z	-0.013	0.00	0.00	No	0.00	No
182	z	-0.004	0.00	0.00	No	0.00	No
183	z	-0.004	0.00	0.00	No	0.00	No
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188	z	-0.004	0.00	0.00	No	0.00	No
189	z	-0.004	0.00	0.00	No	0.00	No
190	z	-0.013	0.00	0.00	No	0.00	No
191	z	-0.006	0.00	0.00	No	0.00	No
192	z	-0.006	0.00	0.00	No	0.00	No
193	z	-0.006	0.00	0.00	No	0.00	No
194	z	-0.006	0.00	0.00	No	0.00	No
205	z	-0.006	0.00	0.00	No	0.00	No
206	z	-0.006	0.00	0.00	No	0.00	No

	207	z	-0.006	0.00	0.00	No	0.00	No
	208	z	-0.006	0.00	0.00	No	0.00	No
	209	z	-0.006	0.00	0.00	No	0.00	No
	210	z	-0.006	0.00	0.00	No	0.00	No
	223	z	-0.013	0.00	0.00	No	0.00	No
	224	z	-0.013	0.00	0.00	No	0.00	No
	225	z	-0.013	0.00	0.00	No	0.00	No
	226	z	-0.013	0.00	0.00	No	0.00	No
	227	z	-0.013	0.00	0.00	No	0.00	No
	228	z	-0.013	0.00	0.00	No	0.00	No
W30	63	x	-0.016	0.00	0.00	No	0.00	No
	65	x	-0.016	0.00	0.00	No	0.00	No
	87	x	-0.013	0.00	0.00	No	0.00	No
	90	x	-0.013	0.00	0.00	No	0.00	No
	91	x	-0.013	0.00	0.00	No	0.00	No
	92	x	-0.013	0.00	0.00	No	0.00	No
	93	x	-0.013	0.00	0.00	No	0.00	No
	94	x	-0.004	0.00	0.00	No	0.00	No
	95	x	-0.004	0.00	0.00	No	0.00	No
	96	x	-0.004	0.00	0.00	No	0.00	No
	97	x	-0.004	0.00	0.00	No	0.00	No
	98	x	-0.004	0.00	0.00	No	0.00	No
	99	x	-0.004	0.00	0.00	No	0.00	No
	100	x	-0.004	0.00	0.00	No	0.00	No
	101	x	-0.004	0.00	0.00	No	0.00	No
	102	x	-0.013	0.00	0.00	No	0.00	No
	107	x	-0.006	0.00	0.00	No	0.00	No
	108	x	-0.006	0.00	0.00	No	0.00	No
	109	x	-0.006	0.00	0.00	No	0.00	No
	110	x	-0.006	0.00	0.00	No	0.00	No
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	124	x	-0.006	0.00	0.00	No	0.00	No
	125	x	-0.006	0.00	0.00	No	0.00	No
	126	x	-0.006	0.00	0.00	No	0.00	No
	127	x	-0.006	0.00	0.00	No	0.00	No
	128	x	-0.006	0.00	0.00	No	0.00	No
	130	x	-0.016	0.00	0.00	No	0.00	No
	132	x	-0.016	0.00	0.00	No	0.00	No
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	138	x	-0.013	0.00	0.00	No	0.00	No
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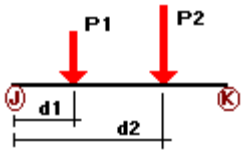
	143	x	-0.004	0.00	0.00	No	0.00	No
	144	x	-0.004	0.00	0.00	No	0.00	No
	145	x	-0.004	0.00	0.00	No	0.00	No
	146	x	-0.004	0.00	0.00	No	0.00	No
	147	x	-0.004	0.00	0.00	No	0.00	No
	148	x	-0.004	0.00	0.00	No	0.00	No
	149	x	-0.013	0.00	0.00	No	0.00	No
	150	x	-0.006	0.00	0.00	No	0.00	No
	151	x	-0.006	0.00	0.00	No	0.00	No
	152	x	-0.006	0.00	0.00	No	0.00	No
	153	x	-0.006	0.00	0.00	No	0.00	No
	164	x	-0.006	0.00	0.00	No	0.00	No
	165	x	-0.006	0.00	0.00	No	0.00	No

	166	x	-0.006	0.00	0.00	No	0.00	No
	167	x	-0.006	0.00	0.00	No	0.00	No
	168	x	-0.006	0.00	0.00	No	0.00	No
	169	x	-0.006	0.00	0.00	No	0.00	No
	171	x	-0.016	0.00	0.00	No	0.00	No
	173	x	-0.016	0.00	0.00	No	0.00	No
	175	x	-0.013	0.00	0.00	No	0.00	No
	176	x	-0.016	0.00	0.00	No	0.00	No
	177	x	-0.016	0.00	0.00	No	0.00	No
	178	x	-0.013	0.00	0.00	No	0.00	No
	179	x	-0.013	0.00	0.00	No	0.00	No
	180	x	-0.013	0.00	0.00	No	0.00	No
	181	x	-0.013	0.00	0.00	No	0.00	No
	182	x	-0.004	0.00	0.00	No	0.00	No
	183	x	-0.004	0.00	0.00	No	0.00	No
	184	x	-0.004	0.00	0.00	No	0.00	No
	185	x	-0.004	0.00	0.00	No	0.00	No
	186	x	-0.004	0.00	0.00	No	0.00	No
	187	x	-0.004	0.00	0.00	No	0.00	No
	188	x	-0.004	0.00	0.00	No	0.00	No
	189	x	-0.004	0.00	0.00	No	0.00	No
	190	x	-0.013	0.00	0.00	No	0.00	No
	191	x	-0.006	0.00	0.00	No	0.00	No
	192	x	-0.006	0.00	0.00	No	0.00	No
	193	x	-0.006	0.00	0.00	No	0.00	No
	194	x	-0.006	0.00	0.00	No	0.00	No
	205	x	-0.006	0.00	0.00	No	0.00	No
	206	x	-0.006	0.00	0.00	No	0.00	No
	207	x	-0.006	0.00	0.00	No	0.00	No
	208	x	-0.006	0.00	0.00	No	0.00	No
	209	x	-0.006	0.00	0.00	No	0.00	No
	210	x	-0.006	0.00	0.00	No	0.00	No
	223	x	-0.013	0.00	0.00	No	0.00	No
	224	x	-0.013	0.00	0.00	No	0.00	No
	225	x	-0.013	0.00	0.00	No	0.00	No
	226	x	-0.013	0.00	0.00	No	0.00	No
	227	x	-0.013	0.00	0.00	No	0.00	No
	228	x	-0.013	0.00	0.00	No	0.00	No
Di	63	y	-0.008	0.00	0.00	No	0.00	No
	65	y	-0.008	0.00	0.00	No	0.00	No
	87	y	-0.007	0.00	0.00	No	0.00	No
	88	y	-0.008	0.00	0.00	No	0.00	No
	89	y	-0.008	0.00	0.00	No	0.00	No
	90	y	-0.007	0.00	0.00	No	0.00	No
	91	y	-0.007	0.00	0.00	No	0.00	No
	92	y	-0.007	0.00	0.00	No	0.00	No
	93	y	-0.007	0.00	0.00	No	0.00	No
	94	y	-0.004	0.00	0.00	No	0.00	No
	95	y	-0.004	0.00	0.00	No	0.00	No
	96	y	-0.004	0.00	0.00	No	0.00	No
	97	y	-0.004	0.00	0.00	No	0.00	No
	98	y	-0.004	0.00	0.00	No	0.00	No
	99	y	-0.004	0.00	0.00	No	0.00	No
	100	y	-0.004	0.00	0.00	No	0.00	No
	101	y	-0.004	0.00	0.00	No	0.00	No
	102	y	-0.007	0.00	0.00	No	0.00	No
	107	y	-0.009	0.00	0.00	No	0.00	No
	108	y	-0.009	0.00	0.00	No	0.00	No
	109	y	-0.009	0.00	0.00	No	0.00	No
	110	y	-0.009	0.00	0.00	No	0.00	No

123	y	-0.009	0.00	0.00	No	0.00	No
124	y	-0.009	0.00	0.00	No	0.00	No
125	y	-0.009	0.00	0.00	No	0.00	No
126	y	-0.009	0.00	0.00	No	0.00	No
127	y	-0.023	0.00	0.00	No	0.00	No
128	y	-0.023	0.00	0.00	No	0.00	No
130	y	-0.008	0.00	0.00	No	0.00	No
132	y	-0.008	0.00	0.00	No	0.00	No
134	y	-0.007	0.00	0.00	No	0.00	No
135	y	-0.008	0.00	0.00	No	0.00	No
136	y	-0.008	0.00	0.00	No	0.00	No
137	y	-0.007	0.00	0.00	No	0.00	No
138	y	-0.007	0.00	0.00	No	0.00	No
139	y	-0.007	0.00	0.00	No	0.00	No
140	y	-0.007	0.00	0.00	No	0.00	No
141	y	-0.004	0.00	0.00	No	0.00	No
142	y	-0.004	0.00	0.00	No	0.00	No
143	y	-0.004	0.00	0.00	No	0.00	No
144	y	-0.004	0.00	0.00	No	0.00	No
145	y	-0.004	0.00	0.00	No	0.00	No
146	y	-0.004	0.00	0.00	No	0.00	No
147	y	-0.004	0.00	0.00	No	0.00	No
148	y	-0.004	0.00	0.00	No	0.00	No
149	y	-0.007	0.00	0.00	No	0.00	No
150	y	-0.009	0.00	0.00	No	0.00	No
151	y	-0.009	0.00	0.00	No	0.00	No
152	y	-0.009	0.00	0.00	No	0.00	No
153	y	-0.009	0.00	0.00	No	0.00	No
164	y	-0.009	0.00	0.00	No	0.00	No
165	y	-0.009	0.00	0.00	No	0.00	No
166	y	-0.009	0.00	0.00	No	0.00	No
167	y	-0.009	0.00	0.00	No	0.00	No
168	y	-0.023	0.00	0.00	No	0.00	No
169	y	-0.023	0.00	0.00	No	0.00	No
171	y	-0.008	0.00	0.00	No	0.00	No
173	y	-0.008	0.00	0.00	No	0.00	No
175	y	-0.007	0.00	0.00	No	0.00	No
176	y	-0.008	0.00	0.00	No	0.00	No
177	y	-0.008	0.00	0.00	No	0.00	No
178	y	-0.007	0.00	0.00	No	0.00	No
179	y	-0.007	0.00	0.00	No	0.00	No
180	y	-0.007	0.00	0.00	No	0.00	No
181	y	-0.007	0.00	0.00	No	0.00	No
182	y	-0.004	0.00	0.00	No	0.00	No
183	y	-0.004	0.00	0.00	No	0.00	No
184	y	-0.004	0.00	0.00	No	0.00	No
185	y	-0.004	0.00	0.00	No	0.00	No
186	y	-0.004	0.00	0.00	No	0.00	No
187	y	-0.004	0.00	0.00	No	0.00	No
188	y	-0.004	0.00	0.00	No	0.00	No
189	y	-0.004	0.00	0.00	No	0.00	No
190	y	-0.007	0.00	0.00	No	0.00	No
191	y	-0.009	0.00	0.00	No	0.00	No
192	y	-0.009	0.00	0.00	No	0.00	No
193	y	-0.009	0.00	0.00	No	0.00	No
194	y	-0.009	0.00	0.00	No	0.00	No
205	y	-0.009	0.00	0.00	No	0.00	No
206	y	-0.009	0.00	0.00	No	0.00	No
207	y	-0.009	0.00	0.00	No	0.00	No
208	y	-0.009	0.00	0.00	No	0.00	No

209	y	-0.023	0.00	0.00	No	0.00	No
210	y	-0.023	0.00	0.00	No	0.00	No
223	y	-0.007	0.00	0.00	No	0.00	No
224	y	-0.007	0.00	0.00	No	0.00	No
225	y	-0.007	0.00	0.00	No	0.00	No
226	y	-0.007	0.00	0.00	No	0.00	No
227	y	-0.007	0.00	0.00	No	0.00	No
228	y	-0.007	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	63	y	-0.049	1.50	No
		y	-0.049	8.50	No
	65	y	-0.049	1.50	No
		y	-0.049	8.50	No
	130	y	-0.049	1.50	No
		y	-0.049	8.50	No
	132	y	-0.049	1.50	No
		y	-0.049	8.50	No
	171	y	-0.049	1.50	No
		y	-0.049	8.50	No
	173	y	-0.049	1.50	No
		y	-0.049	8.50	No
	223	y	-0.06	3.00	No
	224	y	-0.073	3.00	No
		y	-0.072	3.00	No
		y	-0.029	0.75	No
	225	y	-0.06	3.00	No
	226	y	-0.073	3.00	No
		y	-0.072	3.00	No
	227	y	-0.06	3.00	No
	228	y	-0.073	3.00	No
		y	-0.072	3.00	No
		y	-0.029	0.75	No
W0	63	z	-0.512	1.50	No
		z	-0.512	8.50	No
	65	z	-0.512	1.50	No
		z	-0.512	8.50	No
	130	z	-0.278	1.50	No
		z	-0.278	8.50	No
	132	z	-0.278	1.50	No
		z	-0.278	8.50	No
	171	z	-0.278	1.50	No
		z	-0.278	8.50	No
	173	z	-0.278	1.50	No
		z	-0.278	8.50	No
	223	z	-0.104	3.00	No
	224	z	-0.103	3.00	No

		z	-0.088	0.75	No
	225	z	-0.071	3.00	No
	226	z	-0.079	3.00	No
	227	z	-0.104	3.00	No
	228	z	-0.103	3.00	No
		z	-0.088	0.75	No
W30	63	x	-0.20	1.50	No
		x	-0.20	8.50	No
	65	x	-0.20	1.50	No
		x	-0.20	8.50	No
	130	x	-0.434	1.50	No
		x	-0.434	8.50	No
	132	x	-0.434	1.50	No
		x	-0.434	8.50	No
	171	x	-0.434	1.50	No
		x	-0.434	8.50	No
	173	x	-0.434	1.50	No
		x	-0.434	8.50	No
	223	x	-0.082	3.00	No
	224	x	-0.087	3.00	No
		x	-0.088	0.75	No
	225	x	-0.114	3.00	No
	226	x	-0.111	3.00	No
	227	x	-0.082	3.00	No
	228	x	-0.087	3.00	No
		x	-0.088	0.75	No
Di	63	y	-0.167	1.50	No
		y	-0.167	8.50	No
	65	y	-0.167	1.50	No
		y	-0.167	8.50	No
	130	y	-0.167	1.50	No
		y	-0.167	8.50	No
	132	y	-0.167	1.50	No
		y	-0.167	8.50	No
	171	y	-0.167	1.50	No
		y	-0.167	8.50	No
	173	y	-0.167	1.50	No
		y	-0.167	8.50	No
	223	y	-0.046	3.00	No
	224	y	-0.047	3.00	No
		y	-0.041	3.00	No
		y	-0.054	0.75	No
	225	y	-0.046	3.00	No
	226	y	-0.047	3.00	No
		y	-0.041	3.00	No
	227	y	-0.046	3.00	No
	228	y	-0.047	3.00	No
		y	-0.041	3.00	No
		y	-0.054	0.75	No
Wi0	63	z	-0.089	1.50	No
		z	-0.089	8.50	No
	65	z	-0.089	1.50	No
		z	-0.089	8.50	No
	130	z	-0.053	1.50	No
		z	-0.053	8.50	No
	132	z	-0.053	1.50	No
		z	-0.053	8.50	No
	171	z	-0.053	1.50	No
		z	-0.053	8.50	No
	173	z	-0.053	1.50	No

		z	-0.053	8.50	No
	223	z	-0.022	3.00	No
	224	z	-0.022	3.00	No
		z	-0.018	0.75	No
	225	z	-0.016	3.00	No
	226	z	-0.018	3.00	No
	227	z	-0.022	3.00	No
	228	z	-0.022	3.00	No
		z	-0.018	0.75	No
Wi30	63	x	-0.041	1.50	No
		x	-0.041	8.50	No
	65	x	-0.041	1.50	No
		x	-0.041	8.50	No
	130	x	-0.076	1.50	No
		x	-0.076	8.50	No
	132	x	-0.076	1.50	No
		x	-0.076	8.50	No
	171	x	-0.076	1.50	No
		x	-0.076	8.50	No
	173	x	-0.076	1.50	No
		x	-0.076	8.50	No
	223	x	-0.018	3.00	No
	224	x	-0.019	3.00	No
		x	-0.018	0.75	No
	225	x	-0.024	3.00	No
	226	x	-0.023	3.00	No
	227	x	-0.018	3.00	No
	228	x	-0.019	3.00	No
		x	-0.018	0.75	No
WL0	63	z	-0.028	1.50	No
		z	-0.028	8.50	No
	65	z	-0.028	1.50	No
		z	-0.028	8.50	No
	130	z	-0.015	1.50	No
		z	-0.015	8.50	No
	132	z	-0.015	1.50	No
		z	-0.015	8.50	No
	171	z	-0.015	1.50	No
		z	-0.015	8.50	No
	173	z	-0.015	1.50	No
		z	-0.015	8.50	No
	223	z	-0.006	3.00	No
	224	z	-0.006	3.00	No
		z	-0.005	0.75	No
	225	z	-0.004	3.00	No
	226	z	-0.004	3.00	No
	227	z	-0.006	3.00	No
	228	z	-0.006	3.00	No
		z	-0.005	0.75	No
WL30	63	x	-0.011	1.50	No
		x	-0.011	8.50	No
	65	x	-0.011	1.50	No
		x	-0.011	8.50	No
	130	x	-0.024	1.50	No
		x	-0.024	8.50	No
	132	x	-0.024	1.50	No
		x	-0.024	8.50	No
	171	x	-0.024	1.50	No
		x	-0.024	8.50	No
	173	x	-0.024	1.50	No

		x	-0.024	8.50	No
	223	x	-0.004	3.00	No
	224	x	-0.005	3.00	No
		x	-0.005	0.75	No
	225	x	-0.006	3.00	No
	226	x	-0.006	3.00	No
	227	x	-0.004	3.00	No
	228	x	-0.005	3.00	No
		x	-0.005	0.75	No
LL1	88	y	-0.25	50.00	Yes
LL2	88	y	-0.25	0.00	Yes
LLa1	63	y	-0.50	50.00	Yes
LLa2	65	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

Current Date: 2/15/2022 3:37 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.4DL
LC14=1.2DL+1.6LL1
LC15=1.2DL+1.6LL2
LC16=1.2DL+WL0+1.6LLa1
LC17=1.2DL+WL30+1.6LLa1
LC18=1.2DL-WL0+1.6LLa1
LC19=1.2DL-WL30+1.6LLa1
LC20=1.2DL+WL0+1.6LLa2
LC21=1.2DL+WL30+1.6LLa2
LC22=1.2DL-WL0+1.6LLa2
LC23=1.2DL-WL30+1.6LLa2

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**63**	LC3 at 66.67%	0.37	OK	
		65	LC3 at 33.33%	0.37	OK	
		88	LC1 at 73.21%	0.30	OK	
		89	LC3 at 70.00%	0.37	OK	
		130	LC4 at 33.33%	0.37	OK	
		132	LC2 at 64.58%	0.35	OK	
		135	LC4 at 73.21%	0.34	OK	
		136	LC2 at 30.00%	**0.40**	**OK**	
		171	LC4 at 64.58%	0.34	OK	
		173	LC2 at 33.33%	0.38	OK	
		176	LC2 at 26.79%	0.34	OK	
		177	LC4 at 70.00%	0.39	OK	
	PIPE 2x0.154	**87**	LC2 at 100.00%	0.16	OK	
		90	LC22 at 93.75%	0.24	OK	
		91	LC20 at 93.75%	0.20	OK	
		92	LC16 at 93.75%	0.20	OK	
		93	LC18 at 93.75%	0.23	OK	
		102	LC2 at 100.00%	0.16	OK	
		134	LC2 at 100.00%	0.16	OK	
		137	LC2 at 100.00%	0.23	OK	
		138	LC2 at 93.75%	0.18	OK	
		139	LC10 at 93.75%	0.16	OK	
		140	LC4 at 88.75%	0.32	OK	
		149	LC1 at 59.38%	0.07	OK	
		175	LC3 at 100.00%	0.08	OK	
		178	LC2 at 88.75%	**0.32**	**OK**	

	179	LC12 at 93.75%	0.17	OK
	180	LC4 at 93.75%	0.17	OK
	181	LC4 at 100.00%	0.22	OK
	190	LC2 at 100.00%	0.16	OK
	223	LC2 at 25.00%	0.10	OK
	224	LC3 at 25.00%	0.14	OK
	225	LC4 at 25.00%	0.08	OK
	226	LC2 at 25.00%	0.09	OK
	227	LC3 at 25.00%	0.09	OK
	228	LC4 at 25.00%	0.12	OK
PL 11-1/4x5/8	**127**	LC11 at 100.00%	0.19	OK
	128	LC11 at 100.00%	0.15	OK
	168	LC12 at 100.00%	**0.20**	**OK**
	169	LC12 at 100.00%	0.16	OK
	209	LC10 at 100.00%	0.20	OK
	210	LC10 at 100.00%	0.16	OK
PL 3-1/2x5/8	**107**	LC23 at 100.00%	0.27	OK
	108	LC17 at 100.00%	0.27	OK
	109	LC17 at 100.00%	0.29	OK
	110	LC23 at 100.00%	0.29	OK
	123	LC22 at 100.00%	0.36	OK
	124	LC18 at 0.00%	0.34	OK
	125	LC23 at 100.00%	**0.38**	**OK**
	126	LC17 at 0.00%	0.36	OK
	150	LC2 at 100.00%	0.21	OK
	151	LC3 at 100.00%	0.21	OK
	152	LC12 at 100.00%	0.17	OK
	153	LC9 at 100.00%	0.17	OK
	164	LC2 at 100.00%	0.35	OK
	165	LC3 at 0.00%	0.31	OK
	166	LC10 at 100.00%	0.33	OK
	167	LC11 at 0.00%	0.29	OK
	191	LC3 at 100.00%	0.21	OK
	192	LC4 at 100.00%	0.21	OK
	193	LC9 at 100.00%	0.17	OK
	194	LC10 at 100.00%	0.17	OK
	205	LC3 at 100.00%	0.32	OK
	206	LC4 at 0.00%	0.33	OK
	207	LC11 at 100.00%	0.33	OK
	208	LC12 at 0.00%	0.29	OK
RndBar 3_4	**98**	LC17 at 0.00%	0.12	OK
	99	LC16 at 0.00%	0.13	With warnings
	100	LC21 at 0.00%	0.13	OK
	101	LC20 at 100.00%	**0.15**	**With warnings**
	145	LC12 at 0.00%	0.10	OK
	146	LC11 at 0.00%	0.11	With warnings
	147	LC12 at 100.00%	0.13	OK
	148	LC10 at 100.00%	0.14	With warnings
	186	LC10 at 0.00%	0.10	OK
	187	LC12 at 0.00%	0.11	With warnings
	188	LC10 at 100.00%	0.13	OK
	189	LC11 at 100.00%	0.14	With warnings
RndBar 5_8	**94**	LC20 at 87.50%	**0.49**	**OK**
	95	LC23 at 87.50%	0.42	OK
	96	LC17 at 87.50%	0.41	OK
	97	LC16 at 87.50%	0.47	OK
	141	LC10 at 87.50%	0.38	OK
	142	LC9 at 87.50%	0.33	OK
	143	LC12 at 87.50%	0.29	OK
	144	LC11 at 87.50%	0.33	OK

182	LC11 at 87.50%	0.38	OK
183	LC11 at 87.50%	0.32	OK
184	LC9 at 87.50%	0.29	OK
185	LC4 at 87.50%	0.34	OK

RAM® Elements
CONNECT Edition

Current Date: 2/15/2022 3:37 PM
Units system: English

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
142	0.00	0.00	2.00	0
143	-0.6362	0.00	2.4783	0
144	0.00	-3.3333	2.00	0
145	-0.6362	-3.3333	2.4783	0
146	0.6362	-3.3333	2.4783	0
147	0.6362	0.00	2.4783	0
156	2.8958	0.00	4.63	0
157	2.7378	0.00	-0.6135	0
158	-6.25	0.00	4.63	0
159	6.25	0.00	4.63	0
160	-6.25	-3.3333	4.63	0
161	6.25	-3.3333	4.63	0
162	-2.4126	0.00	4.2374	0
163	-2.4126	-3.3333	4.2374	0
164	2.4126	-3.3333	4.2374	0
165	2.4126	0.00	4.2374	0
166	-2.2835	0.00	4.1096	0
167	-2.2835	-3.3333	4.1096	0
168	-0.7653	0.00	2.6062	0
169	-0.7653	-3.3333	2.6062	0
170	0.7653	0.00	2.6062	0
171	0.7653	-3.3333	2.6062	0
172	2.2835	0.00	4.1096	0

173	2.2835	-3.3333	4.1096	0
174	-2.8958	0.00	4.63	0
175	-2.7378	0.00	-0.6135	0
176	-4.50	-6.6667	4.83	0
177	-4.50	3.3333	4.83	0
180	4.50	-6.6667	4.83	0
181	4.50	3.3333	4.83	0
184	-2.4792	0.00	4.63	0
185	2.4792	0.00	4.63	0
186	2.4792	-3.3333	4.63	0
187	-2.4792	-3.3333	4.63	0
208	0.00	0.00	2.4783	0
209	0.00	-3.3333	2.4783	0
211	1.7321	0.00	-1.00	0
212	2.4644	0.00	-0.6882	0
213	1.7321	-3.3333	-1.00	0
214	2.4644	-3.3333	-0.6882	0
215	1.8282	-3.3333	-1.7901	0
216	1.8282	0.00	-1.7901	0
221	2.5618	0.00	-4.8229	0
222	-1.9002	0.00	-2.0642	0
223	7.1347	0.00	3.0977	0
224	0.8847	0.00	-7.7277	0
225	7.1347	-3.3333	3.0977	0
226	0.8847	-3.3333	-7.7277	0
227	4.876	0.00	-0.0293	0
228	4.876	-3.3333	-0.0293	0
229	2.4634	-3.3333	-4.2081	0
230	2.4634	0.00	-4.2081	0
231	4.7008	0.00	-0.0772	0
232	4.7008	-3.3333	-0.0772	0
233	2.6396	0.00	-0.6404	0
234	2.6396	-3.3333	-0.6404	0
235	1.8744	0.00	-1.9658	0
236	1.8744	-3.3333	-1.9658	0
237	2.4173	0.00	-4.0324	0
238	2.4173	-3.3333	-4.0324	0
239	5.4576	0.00	0.1929	0
240	0.8376	0.00	2.6778	0
241	6.4329	-6.6667	1.4821	0
242	6.4329	3.3333	1.4821	0
243	1.9329	-6.6667	-6.3121	0
244	1.9329	3.3333	-6.3121	0
245	5.2493	0.00	-0.168	0
246	2.7701	0.00	-4.462	0
247	2.7701	-3.3333	-4.462	0
248	5.2493	-3.3333	-0.168	0
267	2.1463	0.00	-1.2392	0
268	2.1463	-3.3333	-1.2392	0
270	-1.7321	0.00	-1.00	0
271	-1.8282	0.00	-1.7901	0
272	-1.7321	-3.3333	-1.00	0
273	-1.8282	-3.3333	-1.7901	0
274	-2.4644	-3.3333	-0.6882	0
275	-2.4644	0.00	-0.6882	0
280	-5.4576	0.00	0.1929	0
281	-0.8376	0.00	2.6778	0
282	-0.8847	0.00	-7.7277	0
283	-7.1347	0.00	3.0977	0
284	-0.8847	-3.3333	-7.7277	0

285	-7.1347	-3.3333	3.0977	0
286	-2.4634	0.00	-4.2081	0
287	-2.4634	-3.3333	-4.2081	0
288	-4.876	-3.3333	-0.0293	0
289	-4.876	0.00	-0.0293	0
290	-2.4173	0.00	-4.0324	0
291	-2.4173	-3.3333	-4.0324	0
292	-1.8744	0.00	-1.9658	0
293	-1.8744	-3.3333	-1.9658	0
294	-2.6396	0.00	-0.6404	0
295	-2.6396	-3.3333	-0.6404	0
296	-4.7008	0.00	-0.0772	0
297	-4.7008	-3.3333	-0.0772	0
298	-2.5618	0.00	-4.8229	0
299	1.9002	0.00	-2.0642	0
300	-1.9329	-6.6667	-6.3121	0
301	-1.9329	3.3333	-6.3121	0
302	-6.4329	-6.6667	1.4821	0
303	-6.4329	3.3333	1.4821	0
304	-2.7701	0.00	-4.462	0
305	-5.2493	0.00	-0.168	0
306	-5.2493	-3.3333	-0.168	0
307	-2.7701	-3.3333	-4.462	0
326	-2.1463	0.00	-1.2392	0
327	-2.1463	-3.3333	-1.2392	0
352	3.6184	-4.5833	-0.1656	0
353	1.9526	-4.5833	-3.0509	0
354	1.6658	-4.5833	3.2165	0
355	-1.6658	-4.5833	3.2165	0
356	-1.9526	-4.5833	-3.0509	0
357	-3.6184	-4.5833	-0.1656	0
358	3.6184	1.4167	-0.1656	0
359	1.9526	1.4167	-3.0509	0
360	1.6658	1.4167	3.2165	0
361	-1.6658	1.4167	3.2165	0
362	-1.9526	1.4167	-3.0509	0
363	-3.6184	1.4167	-0.1656	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
142	1	1	1	1	0	1
144	1	1	1	1	0	1
211	1	1	1	1	0	1
213	1	1	1	1	0	1
270	1	1	1	1	0	1
272	1	1	1	1	0	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
63	181	180		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
65	177	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
87	156	157		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	158	159		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	160	161		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
90	162	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	163	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
92	164	146		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	165	147		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	166	167		RndBar 5_8	A36	0.00	0.00	0.00
95	168	169		RndBar 5_8	A36	0.00	0.00	0.00
96	170	171		RndBar 5_8	A36	0.00	0.00	0.00
97	172	173		RndBar 5_8	A36	0.00	0.00	0.00
98	170	173		RndBar 3_4	A36	0.00	0.00	0.00
99	171	172		RndBar 3_4	A36	0.00	0.00	0.00
100	167	168		RndBar 3_4	A36	0.00	0.00	0.00
101	166	169		RndBar 3_4	A36	0.00	0.00	0.00
102	174	175		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
107	162	184		PL 3-1/2x5/8	A36	0.00	0.00	0.00
108	165	185		PL 3-1/2x5/8	A36	0.00	0.00	0.00
109	164	186		PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	163	187		PL 3-1/2x5/8	A36	0.00	0.00	0.00
123	143	208		PL 3-1/2x5/8	A36	0.00	0.00	0.00
124	208	147		PL 3-1/2x5/8	A36	0.00	0.00	0.00
125	145	209		PL 3-1/2x5/8	A36	0.00	0.00	0.00
126	209	146		PL 3-1/2x5/8	A36	0.00	0.00	0.00
127	208	142		PL 11-1/4x5/8	A36	11.25	9.25	0.00
128	209	144		PL 11-1/4x5/8	A36	11.25	9.25	0.00
130	244	243		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
132	242	241		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
134	221	222		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
135	223	224		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
136	225	226		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
137	227	212		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
138	228	214		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
139	229	215		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
140	230	216		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
141	231	232		RndBar 5_8	A36	0.00	0.00	0.00
142	233	234		RndBar 5_8	A36	0.00	0.00	0.00
143	235	236		RndBar 5_8	A36	0.00	0.00	0.00
144	237	238		RndBar 5_8	A36	0.00	0.00	0.00
145	235	238		RndBar 3_4	A36	0.00	0.00	0.00
146	236	237		RndBar 3_4	A36	0.00	0.00	0.00
147	232	233		RndBar 3_4	A36	0.00	0.00	0.00
148	231	234		RndBar 3_4	A36	0.00	0.00	0.00
149	239	240		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
150	227	245		PL 3-1/2x5/8	A36	0.00	0.00	0.00
151	230	246		PL 3-1/2x5/8	A36	0.00	0.00	0.00
152	229	247		PL 3-1/2x5/8	A36	0.00	0.00	0.00
153	228	248		PL 3-1/2x5/8	A36	0.00	0.00	0.00
164	212	267		PL 3-1/2x5/8	A36	0.00	0.00	0.00
165	267	216		PL 3-1/2x5/8	A36	0.00	0.00	0.00
166	214	268		PL 3-1/2x5/8	A36	0.00	0.00	0.00
167	268	215		PL 3-1/2x5/8	A36	0.00	0.00	0.00
168	267	211		PL 11-1/4x5/8	A36	11.25	9.25	0.00
169	268	213		PL 11-1/4x5/8	A36	11.25	9.25	0.00
171	303	302		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
173	301	300		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
175	280	281		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
176	282	283		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

177	284	285	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
178	286	271	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
179	287	273	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
180	288	274	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
181	289	275	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
182	290	291	RndBar 5_8	A36	0.00	0.00	0.00
183	292	293	RndBar 5_8	A36	0.00	0.00	0.00
184	294	295	RndBar 5_8	A36	0.00	0.00	0.00
185	296	297	RndBar 5_8	A36	0.00	0.00	0.00
186	294	297	RndBar 3_4	A36	0.00	0.00	0.00
187	295	296	RndBar 3_4	A36	0.00	0.00	0.00
188	291	292	RndBar 3_4	A36	0.00	0.00	0.00
189	290	293	RndBar 3_4	A36	0.00	0.00	0.00
190	298	299	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
191	286	304	PL 3-1/2x5/8	A36	0.00	0.00	0.00
192	289	305	PL 3-1/2x5/8	A36	0.00	0.00	0.00
193	288	306	PL 3-1/2x5/8	A36	0.00	0.00	0.00
194	287	307	PL 3-1/2x5/8	A36	0.00	0.00	0.00
205	271	326	PL 3-1/2x5/8	A36	0.00	0.00	0.00
206	326	275	PL 3-1/2x5/8	A36	0.00	0.00	0.00
207	273	327	PL 3-1/2x5/8	A36	0.00	0.00	0.00
208	327	274	PL 3-1/2x5/8	A36	0.00	0.00	0.00
209	326	270	PL 11-1/4x5/8	A36	11.25	9.25	0.00
210	327	272	PL 11-1/4x5/8	A36	11.25	9.25	0.00
223	359	353	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
224	358	352	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
225	360	354	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
226	361	355	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
227	363	357	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
228	362	356	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
63	0.00	2	0.7071	0.00	-0.7071
65	0.00	2	0.7071	0.00	-0.7071
94	0.00	2	0.00	0.00	1.00
95	0.00	2	0.00	0.00	1.00
96	0.00	2	0.00	0.00	1.00
97	0.00	2	0.00	0.00	1.00
107	90.00	0	0.00	0.00	0.00
108	90.00	0	0.00	0.00	0.00
109	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
123	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00
126	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00
128	90.00	0	0.00	0.00	0.00
130	0.00	2	-0.9659	0.00	-0.2588
132	0.00	2	-0.9659	0.00	-0.2588
141	0.00	2	0.866	0.00	-0.50
142	0.00	2	0.866	0.00	-0.50
143	0.00	2	0.866	0.00	-0.50

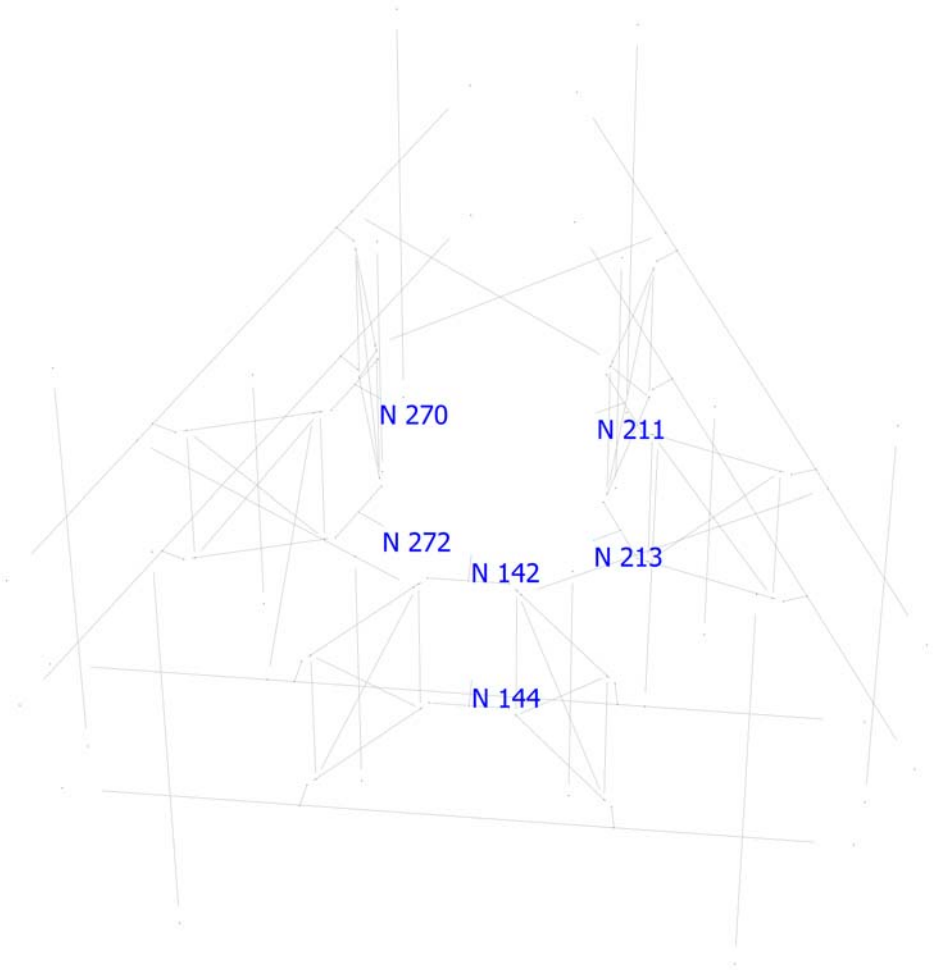
144	0.00	2	0.866	0.00	-0.50
150	90.00	0	0.00	0.00	0.00
151	90.00	0	0.00	0.00	0.00
152	90.00	0	0.00	0.00	0.00
153	90.00	0	0.00	0.00	0.00
164	90.00	0	0.00	0.00	0.00
165	90.00	0	0.00	0.00	0.00
166	90.00	0	0.00	0.00	0.00
167	90.00	0	0.00	0.00	0.00
168	90.00	0	0.00	0.00	0.00
169	90.00	0	0.00	0.00	0.00
171	0.00	2	0.2588	0.00	0.9659
173	0.00	2	0.2588	0.00	0.9659
182	0.00	2	-0.866	0.00	-0.50
183	0.00	2	-0.866	0.00	-0.50
184	0.00	2	-0.866	0.00	-0.50
185	0.00	2	-0.866	0.00	-0.50
191	90.00	0	0.00	0.00	0.00
192	90.00	0	0.00	0.00	0.00
193	90.00	0	0.00	0.00	0.00
194	90.00	0	0.00	0.00	0.00
205	90.00	0	0.00	0.00	0.00
206	90.00	0	0.00	0.00	0.00
207	90.00	0	0.00	0.00	0.00
208	90.00	0	0.00	0.00	0.00
209	90.00	0	0.00	0.00	0.00
210	90.00	0	0.00	0.00	0.00
223	0.00	2	-0.50	0.00	-0.866
224	0.00	2	-0.50	0.00	-0.866
225	0.00	2	-0.50	0.00	-0.866
226	0.00	2	-0.50	0.00	-0.866
227	0.00	2	-0.50	0.00	-0.866
228	0.00	2	-0.50	0.00	-0.866

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
98	0.00	-3.50	0.00	0.00	3.50	0.00
99	0.00	3.50	0.00	0.00	-3.50	0.00
100	0.00	3.50	0.00	0.00	-3.50	0.00
101	0.00	-3.50	0.00	0.00	3.50	0.00
127	0.00	-0.625	0.00	0.00	-0.625	0.00
128	0.00	-0.625	0.00	0.00	-0.625	0.00
145	0.00	-3.50	0.00	0.00	3.50	0.00
146	0.00	3.50	0.00	0.00	-3.50	0.00
147	0.00	3.50	0.00	0.00	-3.50	0.00
148	0.00	-3.50	0.00	0.00	3.50	0.00
168	0.00	-0.625	0.00	0.00	-0.625	0.00
169	0.00	-0.625	0.00	0.00	-0.625	0.00
186	0.00	-3.50	0.00	0.00	3.50	0.00
187	0.00	3.50	0.00	0.00	-3.50	0.00
188	0.00	3.50	0.00	0.00	-3.50	0.00
189	0.00	-3.50	0.00	0.00	3.50	0.00
209	0.00	-0.625	0.00	0.00	-0.625	0.00
210	0.00	-0.625	0.00	0.00	-0.625	0.00

Hinges

Member	Node-J				Node-K				TOR	AXL	Axial rigidity
	M33	M22	V3	V2	M33	M22	V3	V2			
87	1	1	0	0	0	0	0	0	0	0	Full
99	0	0	0	0	0	0	0	0	0	0	Tension only
101	0	0	0	0	0	0	0	0	0	0	Tension only
102	1	1	0	0	0	0	0	0	0	0	Full
107	1	1	0	0	0	0	0	0	0	0	Full
108	1	1	0	0	0	0	0	0	0	0	Full
109	1	1	0	0	0	0	0	0	0	0	Full
110	1	1	0	0	0	0	0	0	0	0	Full
134	1	1	0	0	0	0	0	0	0	0	Full
146	0	0	0	0	0	0	0	0	0	0	Tension only
148	0	0	0	0	0	0	0	0	0	0	Tension only
149	1	1	0	0	0	0	0	0	0	0	Full
150	1	1	0	0	0	0	0	0	0	0	Full
151	1	1	0	0	0	0	0	0	0	0	Full
152	1	1	0	0	0	0	0	0	0	0	Full
153	1	1	0	0	0	0	0	0	0	0	Full
175	1	1	0	0	0	0	0	0	0	0	Full
187	0	0	0	0	0	0	0	0	0	0	Tension only
189	0	0	0	0	0	0	0	0	0	0	Tension only
190	1	1	0	0	0	0	0	0	0	0	Full
191	1	1	0	0	0	0	0	0	0	0	Full
192	1	1	0	0	0	0	0	0	0	0	Full
193	1	1	0	0	0	0	0	0	0	0	Full
194	1	1	0	0	0	0	0	0	0	0	Full

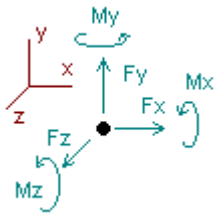

N 270
N 211
N 272
N 142
N 213
N 144
Y
X
Z

RAM® Elements
CONNECT Edition

Current Date: 2/15/2022 3:40 PM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

Node	Forces [Kip] FX	FY	FZ	Moments [Kip*ft] MX	MY	MZ
Condition **LC1=1.2DL+W0**						
142	0.00046	0.56982	0.78574	-0.22078	0.00000	-0.01476
144	-0.03291	0.50686	1.99317	-0.23784	0.00000	-0.01263
211	0.15842	0.56364	1.74529	-0.01014	0.00000	0.23886
213	0.42289	0.46447	0.76493	0.01544	0.00000	0.20149
270	-0.16911	0.56290	1.80649	0.02148	0.00000	-0.21730
272	-0.37976	0.45854	0.68391	0.04461	0.00000	-0.18350
SUM	0.00000	3.12623	7.77954	-0.38724	0.00000	0.01216
Condition **LC2=1.2DL+W30**						
142	1.04707	0.55964	-0.12127	-0.20663	0.00000	0.07908
144	0.73504	0.46248	0.51310	-0.19036	0.00000	0.05852
211	1.66726	0.58894	1.12899	0.01720	0.00000	0.25759
213	1.87115	0.50765	-0.30263	0.05989	0.00000	0.23386
270	1.73074	0.56603	-0.99514	0.19563	0.00000	-0.11891
272	0.97155	0.44148	-0.22306	0.13403	0.00000	-0.10419
SUM	8.02282	3.12623	0.00000	0.00976	0.00000	0.40595
Condition **LC3=1.2DL-W0**						
142	0.06460	0.54989	-0.96092	-0.19417	0.00000	-0.01280
144	-0.02910	0.41447	-0.96778	-0.14101	0.00000	-0.01188
211	-0.36971	0.59280	-1.72073	0.19179	0.00000	0.15243
213	0.52500	0.48714	-1.21187	0.15026	0.00000	0.15506
270	0.28986	0.59177	-1.63632	0.22747	0.00000	-0.13527
272	-0.48065	0.49015	-1.28193	0.18142	0.00000	-0.13675
SUM	0.00000	3.12623	-7.77954	0.41575	0.00000	0.01079
Condition **LC4=1.2DL-W30**						
142	-0.98211	0.55953	-0.05906	-0.20805	0.00000	-0.10662
144	-0.79708	0.45904	0.51278	-0.18872	0.00000	-0.08302
211	-1.87049	0.56745	-1.10166	0.16380	0.00000	0.13413
213	-0.92362	0.44417	-0.14469	0.10570	0.00000	0.12271
270	-1.61799	0.58912	1.16783	0.05278	0.00000	-0.23425
272	-1.83154	0.50692	-0.37520	0.09184	0.00000	-0.21597
SUM	-8.02282	3.12623	0.00000	0.01734	0.00000	-0.38302

Condition **LC5=0.9DL+W0**

142	-0.00762	0.42919	0.80777	-0.16859	0.00000	-0.01133
144	-0.02517	0.39193	1.86504	-0.19044	0.00000	-0.00958
211	0.18532	0.42040	1.74197	-0.03222	0.00000	0.19018
213	0.30468	0.34439	0.82100	-0.00544	0.00000	0.15678
270	-0.18476	0.41893	1.78506	-0.00938	0.00000	-0.17325
272	-0.27245	0.33984	0.75871	0.01645	0.00000	-0.14343
SUM	0.00000	2.34467	7.77954	-0.38962	0.00000	0.00937

Condition **LC6=0.9DL+W30**

142	1.03931	0.41985	-0.09906	-0.15474	0.00000	0.08234
144	0.74271	0.34738	0.38503	-0.14300	0.00000	0.06143
211	1.69340	0.44373	1.12559	-0.00556	0.00000	0.20832
213	1.75288	0.38889	-0.24660	0.03923	0.00000	0.18924
270	1.71529	0.42503	-1.01623	0.16451	0.00000	-0.07625
272	1.07922	0.31979	-0.14873	0.10586	0.00000	-0.06338
SUM	8.02282	2.34467	0.00000	0.00630	0.00000	0.40170

Condition **LC7=0.9DL-W0**

142	0.05649	0.41086	-0.93791	-0.14264	0.00000	-0.00933
144	-0.02136	0.29892	-1.09587	-0.09358	0.00000	-0.00881
211	-0.34332	0.44780	-1.72425	0.16885	0.00000	0.10338
213	0.40659	0.36832	-1.15616	0.12941	0.00000	0.11056
270	0.27476	0.44704	-1.65799	0.19615	0.00000	-0.09107
272	-0.37315	0.37173	-1.20737	0.15306	0.00000	-0.09679
SUM	0.00000	2.34467	-7.77954	0.41125	0.00000	0.00795

Condition **LC8=0.9DL-W30**

142	-0.99079	0.41974	-0.03649	-0.15623	0.00000	-0.10302
144	-0.78941	0.34381	0.38465	-0.14134	0.00000	-0.07986
211	-1.84334	0.42353	-1.10523	0.14112	0.00000	0.08555
213	-1.04203	0.32494	-0.08905	0.08493	0.00000	0.07817
270	-1.63305	0.44406	1.14645	0.02161	0.00000	-0.18979
272	-1.72420	0.38860	-0.30034	0.06368	0.00000	-0.17589
SUM	-8.02282	2.34467	0.00000	0.01377	0.00000	-0.38484

Condition **LC9=1.2DL+Di+Wi0**

142	0.03999	1.24093	-0.16465	-0.45543	0.00000	-0.01903
144	-0.04291	1.02594	1.44378	-0.42796	0.00000	-0.01661
211	-0.21395	1.28751	0.29320	0.19628	0.00000	0.43321
213	1.13207	1.05794	-0.45837	0.18499	0.00000	0.39610
270	0.14203	1.28555	0.41271	0.25360	0.00000	-0.39971
272	-1.05723	1.05297	-0.58866	0.23623	0.00000	-0.36446
SUM	0.00000	6.95084	0.93800	-0.01229	0.00000	0.02951

Condition **LC10=1.2DL+Di+Wi30**

142	0.18378	1.24132	-0.23759	-0.45521	0.00000	-0.00631
144	0.05120	1.02036	1.24865	-0.42116	0.00000	-0.00747
211	-0.05863	1.28992	0.21454	0.19931	0.00000	0.43442
213	1.29953	1.06232	-0.58166	0.19018	0.00000	0.40030
270	0.35432	1.28621	0.04826	0.27578	0.00000	-0.38827
272	-0.90119	1.05071	-0.69220	0.24674	0.00000	-0.35459
SUM	0.92900	6.95084	0.00000	0.03564	0.00000	0.07808

Condition **LC11=1.2DL+Di-Wi0**

142	0.05313	1.24166	-0.29775	-0.45531	0.00000	-0.01865
144	-0.04209	1.01413	1.05345	-0.41402	0.00000	-0.01646
211	-0.29751	1.29083	-0.15902	0.22149	0.00000	0.42170
213	1.14447	1.05927	-0.68572	0.20085	0.00000	0.39049
270	0.21138	1.28876	-0.03518	0.27960	0.00000	-0.38909
272	-1.06938	1.05620	-0.81378	0.25251	0.00000	-0.35883
SUM	0.00000	6.95084	-0.93800	0.08512	0.00000	0.02918

Condition **LC12=1.2DL+Di-Wi30**

142	-0.09066	1.24126	-0.22489	-0.45551	0.00000	-0.03137
144	-0.13620	1.01970	1.24857	-0.42082	0.00000	-0.02559
211	-0.45271	1.28841	-0.08031	0.21845	0.00000	0.42050
213	0.97701	1.05489	-0.56243	0.19567	0.00000	0.38630
270	-0.00104	1.28811	0.32931	0.25741	0.00000	-0.40054
272	-1.22541	1.05846	-0.71025	0.24200	0.00000	-0.36869
SUM	-0.92900	6.95084	0.00000	0.03719	0.00000	-0.01939

Condition **LC13=1.4DL**

142	0.03808	0.65289	-0.10558	-0.24198	0.00000	-0.01607
144	-0.03620	0.53742	0.59784	-0.22110	0.00000	-0.01427
211	-0.12521	0.67474	0.01608	0.10594	0.00000	0.22841
213	0.55217	0.55511	-0.26050	0.09671	0.00000	0.20797
270	0.07229	0.67383	0.10078	0.14524	0.00000	-0.20585
272	-0.50112	0.55327	-0.34862	0.13186	0.00000	-0.18678
SUM	0.00000	3.64726	0.00000	0.01665	0.00000	0.01341

Condition **LC14=1.2DL+1.6LL1**

142	0.03264	0.78368	-0.25026	-0.29382	0.00000	-0.01378
144	-0.03103	0.63762	0.77426	-0.26476	0.00000	-0.01224
211	-0.06588	0.57818	-0.03896	0.09054	0.00000	0.19571
213	0.47101	0.47545	-0.22158	0.08170	0.00000	0.17870
270	0.02051	0.57740	0.03364	0.12422	0.00000	-0.17637
272	-0.42726	0.47388	-0.29711	0.11183	0.00000	-0.16054
SUM	0.00000	3.52623	0.00000	-0.15028	0.00000	0.01148

Condition **LC15=1.2DL+1.6LL2**

142	0.63037	0.77451	-0.28285	-0.28406	0.00000	-0.11783
144	-0.65342	0.62437	0.78859	-0.25666	0.00000	-0.11948
211	-0.05481	0.57291	-0.04392	0.09482	0.00000	0.19516
213	0.46971	0.46332	-0.22824	0.08359	0.00000	0.17172
270	0.06045	0.59190	0.04678	0.11785	0.00000	-0.18190
272	-0.45230	0.49922	-0.28036	0.10832	0.00000	-0.17491
SUM	0.00000	3.52623	0.00000	-0.13612	0.00000	-0.22723

Condition **LC16=1.2DL+WL0+1.6LLa1**

142	-0.83294	0.99206	-0.43942	-0.36447	0.00000	0.14452
144	0.86859	0.79942	1.16243	-0.33255	0.00000	0.15066
211	-0.06450	0.59571	-0.02879	0.07790	0.00000	0.20413
213	0.50397	0.50862	-0.16273	0.07295	0.00000	0.19953
270	-0.05138	0.57230	0.01461	0.12648	0.00000	-0.17846
272	-0.42375	0.45813	-0.27211	0.11054	0.00000	-0.15323
SUM	0.00000	3.92623	0.27400	-0.30915	0.00000	0.36714

Condition **LC17=1.2DL+WL30+1.6LLa1**

142	-0.79599	0.99245	-0.45768	-0.36459	0.00000	0.14801
144	0.89378	0.79773	1.10219	-0.33039	0.00000	0.15322
211	-0.01484	0.59613	-0.04541	0.07842	0.00000	0.20453
213	0.55554	0.50984	-0.19775	0.07437	0.00000	0.20088
270	0.01284	0.57271	-0.10035	0.13316	0.00000	-0.17516
272	-0.37534	0.45735	-0.30100	0.11347	0.00000	-0.15025
SUM	0.27600	3.92623	0.00000	-0.29556	0.00000	0.38122

Condition **LC18=1.2DL-WL0+1.6LLa1**

142	-0.82917	0.99289	-0.47208	-0.36483	0.00000	0.14470
144	0.86887	0.79592	1.04187	-0.32818	0.00000	0.15075
211	-0.08685	0.59660	-0.16332	0.08508	0.00000	0.20089
213	0.50734	0.50887	-0.22683	0.07732	0.00000	0.19793
270	-0.03312	0.57310	-0.11804	0.13387	0.00000	-0.17545
272	-0.42708	0.45885	-0.33560	0.11503	0.00000	-0.15159
SUM	0.00000	3.92623	-0.27400	-0.28171	0.00000	0.36724

Condition **LC19=1.2DL-WL30+1.6LLa1**

142	-0.86612	0.99251	-0.45383	-0.36471	0.00000	0.14121
144	0.84368	0.79760	1.10211	-0.33033	0.00000	0.14820
211	-0.13649	0.59618	-0.14669	0.08456	0.00000	0.20049
213	0.45578	0.50764	-0.19181	0.07589	0.00000	0.19658
270	-0.09736	0.57268	-0.00308	0.12719	0.00000	-0.17875
272	-0.47549	0.45962	-0.30671	0.11210	0.00000	-0.15457
SUM	-0.27600	3.92623	0.00000	-0.29529	0.00000	0.35317

Condition **LC20=1.2DL+WL0+1.6LLa2**

142	0.89436	0.99231	-0.43939	-0.36456	0.00000	-0.17221
144	-0.93079	0.79916	1.16245	-0.33245	0.00000	-0.17519
211	0.00809	0.57305	-0.05695	0.09291	0.00000	0.19792
213	0.46746	0.45995	-0.19629	0.08047	0.00000	0.17137
270	0.02115	0.59493	0.04274	0.11146	0.00000	-0.18467
272	-0.46026	0.50682	-0.23856	0.10301	0.00000	-0.18139
SUM	0.00000	3.92623	0.27400	-0.30916	0.00000	-0.34417

Condition **LC21=1.2DL+WL30+1.6LLa2**

142	0.93137	0.99275	-0.45763	-0.36472	0.00000	-0.16877
144	-0.90572	0.79752	1.10214	-0.33031	0.00000	-0.17267
211	0.05771	0.57342	-0.07364	0.09343	0.00000	0.19830
213	0.51904	0.46114	-0.23131	0.08190	0.00000	0.17271
270	0.08543	0.59535	-0.07210	0.11815	0.00000	-0.18137
272	-0.41183	0.50605	-0.26746	0.10595	0.00000	-0.17842
SUM	0.27600	3.92623	0.00000	-0.29560	0.00000	-0.33022

Condition **LC22=1.2DL-WL0+1.6LLa2**

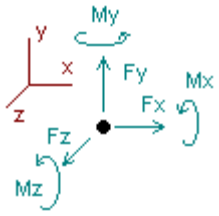
142	0.89825	0.99315	-0.47204	-0.36493	0.00000	-0.17212
144	-0.93074	0.79566	1.04188	-0.32808	0.00000	-0.17517
211	-0.01425	0.57389	-0.19167	0.10008	0.00000	0.19467
213	0.47087	0.46016	-0.26039	0.08484	0.00000	0.16976
270	0.03942	0.59578	-0.08973	0.11886	0.00000	-0.18168
272	-0.46356	0.50758	-0.30206	0.10751	0.00000	-0.17977
SUM	0.00000	3.92623	-0.27400	-0.28172	0.00000	-0.34431

Condition **LC23=1.2DL-WL30+1.6LLa2**

142	0.86124	0.99272	-0.45381	-0.36477	0.00000	-0.17556
144	-0.95581	0.79730	1.10219	-0.33022	0.00000	-0.17769
211	-0.06385	0.57352	-0.17497	0.09956	0.00000	0.19429
213	0.41929	0.45897	-0.22536	0.08341	0.00000	0.16843
270	-0.02487	0.59537	0.02512	0.11217	0.00000	-0.18498
272	-0.51199	0.50835	-0.27316	0.10457	0.00000	-0.18275
SUM	-0.27600	3.92623	0.00000	-0.29528	0.00000	-0.35827

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.4DL
LC14=1.2DL+1.6LL1
LC15=1.2DL+1.6LL2
LC16=1.2DL+WL0+1.6LLa1
LC17=1.2DL+WL30+1.6LLa1
LC18=1.2DL-WL0+1.6LLa1
LC19=1.2DL-WL30+1.6LLa1
LC20=1.2DL+WL0+1.6LLa2
LC21=1.2DL+WL30+1.6LLa2
LC22=1.2DL-WL0+1.6LLa2
LC23=1.2DL-WL30+1.6LLa2

		Forces						Moments					
Node		**Fx** [Kip]	**Ic**	**Fy** [Kip]	**Ic**	**Fz** [Kip]	**Ic**	**Mx** [Kip*ft]	**Ic**	**My** [Kip*ft]	**Ic**	**Mz** [Kip*ft]	**Ic**
142	Max	1.047	LC2	1.242	LC11	0.808	LC5	-0.14264	LC7	0.00000	LC1	0.14801	LC17
	Min	-0.991	LC8	0.411	LC7	-0.961	LC3	-0.45551	LC12	0.00000	LC1	-0.17556	LC23
144	Max	0.894	LC17	1.026	LC9	1.993	LC1	-0.09358	LC7	0.00000	LC1	0.15322	LC17
	Min	-0.956	LC23	0.299	LC7	-1.096	LC7	-0.42796	LC9	0.00000	LC1	-0.17769	LC23

211	Max	1.693	LC6	1.291	LC11	1.745	LC1	0.22149	LC11	0.00000	LC1	0.43442	LC10
	Min	-1.870	LC4	0.420	LC5	-1.724	LC7	-0.03222	LC5	0.00000	LC1	0.08555	LC8
213	Max	1.871	LC2	1.062	LC10	0.821	LC5	0.20085	LC11	0.00000	LC1	0.40030	LC10
	Min	-1.042	LC8	0.325	LC8	-1.212	LC3	-0.00544	LC5	0.00000	LC1	0.07817	LC8
270	Max	1.731	LC2	1.289	LC11	1.806	LC1	0.27960	LC11	0.00000	LC1	-0.07625	LC6
	Min	-1.633	LC8	0.419	LC5	-1.658	LC7	-0.00938	LC5	0.00000	LC1	-0.40054	LC12
272	Max	1.079	LC6	1.058	LC12	0.759	LC5	0.25251	LC11	0.00000	LC1	-0.06338	LC6
	Min	-1.832	LC4	0.320	LC6	-1.282	LC3	0.01645	LC5	0.00000	LC1	-0.36869	LC12

HUDSON
Design Group LLC

Connection Check

Date: 2/15/2022
Project Name: MONROE
Project No.: CT1156
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A325 5/8" (Threaded Rod)

Allowable Tensile Load =

F_{Tall} = 13806 lbs.

Allowable Shear Load =

F_{Vall} = 8283 lbs.

TENSILE FORCES

Reaction **F =** 1745 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1870 lbs. (See Bentley Output)
Reactions in Y direction: 1291 lbs. (See Bentley Output)

Resultant: 2272 lbs.

No. of Supports = 1
No. of Bolts / Support = 3

Tension Design Load /Bolts =

f_t = 581.67 lbs. < 13806 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 757.45 lbs. < 8283 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.042	+	0.091	=	0.134	<	1.0	**Therefore, OK !**

ATTACHMENT 7

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
603-644-2800
support@csquaredsystems.com

Calculated Radio Frequency Exposure

CT1156
Fan Hill Road
Monroe, CT 06468

February 9, 2022

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of AT&T Mobility antenna arrays on the proposed monopole tower to be built by ARX Wireless and owned by the Town of Monroe and located at Fan Hill Road in Monroe, CT. The coordinates of the tower are 41-20-45.58 N, 73-14-4.88 W. The town of Monroe will install two omni-antennas at the top of the tower.

AT&T Mobility is proposing to:

1) Install six (6) multi-band antennas (two per sector) to support the AT&T LTE network and the FirstNet National Public Safety Broadband Network ("NPSBN").

This report uses the planned antenna configuration for AT&T Mobility[1] to derive the resulting % MPE, once the proposed installation has been completed.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As referenced to AT&T's preliminary Radio Frequency Design Sheet dated 07/30/2020.

3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

ERP = Effective Radiated Power

R = Radial Distance = $\sqrt{\left(H^2 + V^2\right)}$

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not consider actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Calculation Results

Table 1 below outlines the cumulative power density information for the AT&T equipment at the site and municipal collocators. The proposed antennas are directional in nature; therefore, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas and Attachment D for the vertical patterns of the municipal antennas. The calculated results for AT&T and municipal antennas in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	% MPE
AT&T	160	739	1	3794	0.0058	0.4927	1.17%
AT&T	160	763	1	3794	0.0058	0.5087	1.13%
AT&T	160	885	1	4066	0.0062	0.5900	1.05%
AT&T	160	1900	1	5743	0.0087	1.0000	0.87%
AT&T	160	2100	1	8614	0.0131	1.0000	1.31%
Municipal	170	453.6125	1	100	0.0001	0.3024	0.04%
Municipal	170	460.2875	1	100	0.0001	0.3069	0.04%
Municipal	170	453.7625	1	100	0.0001	0.3025	0.04%
						Total	**5.65%**

Table 1: Carrier Information

5. Conclusion

The above analysis concludes that RF exposure at ground level from the proposed site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the highest expected percent of Maximum Permissible Exposure at ground level is **5.65% of the FCC General Population/Uncontrolled limit**.

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in FCC OET Bulletin 65 Edition 97-01, ANSI/IEEE Std. C95.1 and ANSI/IEEE Std. C95.3.

Reviewed/Approved By: Martin Lavin
Sr. RF Engineer
C Squared Systems, LLC

February 9, 2022
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[2]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[3]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[2] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

[3] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

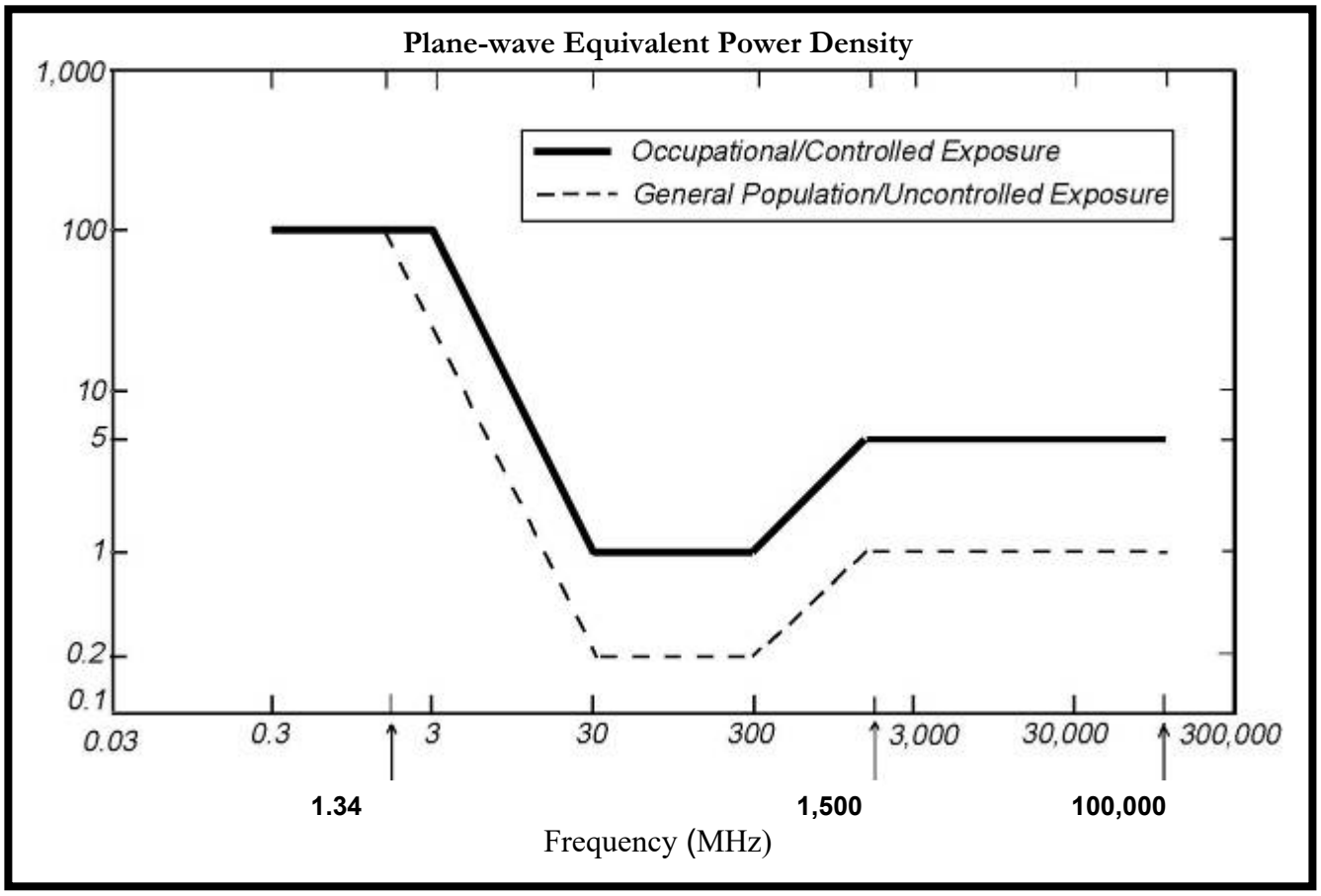
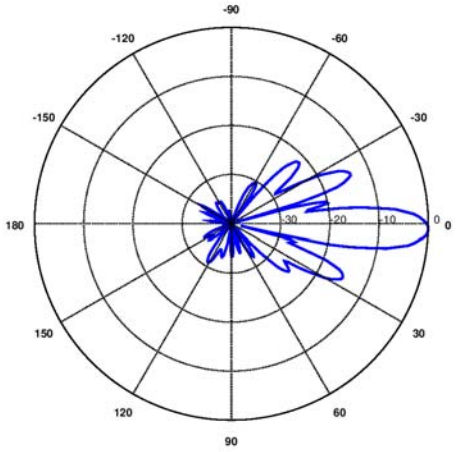
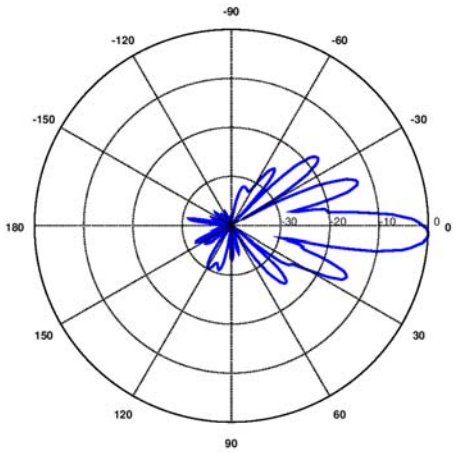
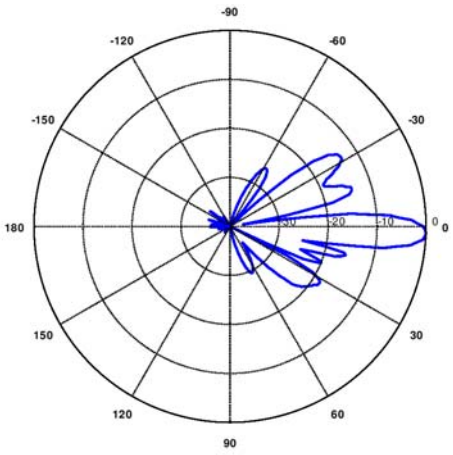
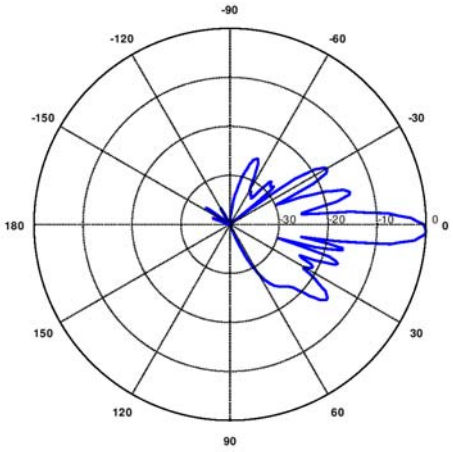


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

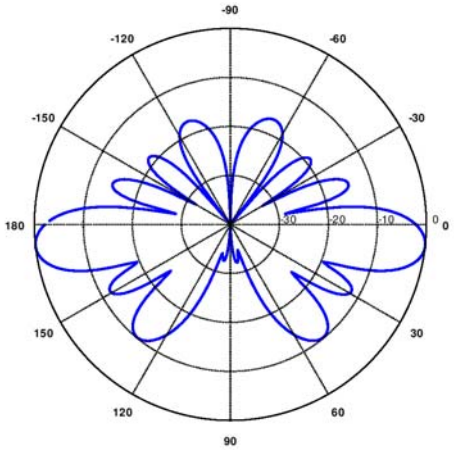
739/763 MHz Manufacturer: KMW Model #: EPBQ-654L8H8 Frequency Band: 698-806 MHz Gain: 15.9 dBi Vertical Beamwidth: 9.3° Horizontal Beamwidth: 67° Polarization: ±45° Dimensions (L x W x D): 96.0 × 21.0 × 6.3 in	
875 MHz Manufacturer: KMW Model #: EPBQ-654L8H8 Frequency Band: 806-894 MHz Gain: 16.2 dBi Vertical Beamwidth: 8.7° Horizontal Beamwidth: 66° Polarization: ±45° Dimensions (L x W x D): 96.0 × 21.0 × 6.3 in	

1900 MHz Manufacturer: KMW Model #: EPBQ-654L8H8 Frequency Band: 1910-2180 MHz Gain: 17.7 dBi Vertical Beamwidth: 7.4° Horizontal Beamwidth: 60° Polarization: ±45° Dimensions (L x W x D): 96.0 × 21.0 × 6.3 in	
2100 MHz Manufacturer: KMW Model #: EPBQ-654L8H8 Frequency Band: 1910-2180 MHz Gain: 17.7 dBi Vertical Beamwidth: 7.4° Horizontal Beamwidth: 60° Polarization: ±45° Dimensions (L x W x D): 96.0 × 21.0 × 6.3 in	

Attachment D: Municipal Antenna Data Sheets and Electrical Patterns

Municipal

Manufacturer:	dBSpectra
Model #:	DS4F06P36D6D
Frequency Band:	450-470 MHz
Gain:	8.05 dBi
Vertical Beamwidth:	15.0°
Horizontal Beamwidth:	360°
Polarization:	Vertical
Dimensions (L):	21 ft



ATTACHMENT 8

CUDDY +FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Kristen Motel
kmotel@cuddyfeder.com

April 13, 2022

FEDERAL EXPRESS
Kenneth Kellogg, First Selectman
Town of Monroe
Monroe Town Hall
7 Fan Hill Road
Monroe, CT 06468

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC
Premises: 345 Fan Hill Road, Monroe, Connecticut

Dear First Selectman Kellogg:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced request to the Connecticut Siting Council ("Council") for shared use approval to allow AT&T to install its wireless communications equipment on the approved communications tower and the associated compound currently under construction at 345 Fan Hill Road in the Town of Monroe. AT&T proposes to install 6 antennas, 9 remote radiohead units, and associated equipment at the 160-foot level of the approved 176-foot tower that is under construction.

Enclosed herein is a copy of the submission made to the Council requesting approval of the tower share which includes information regarding the technical, legal, environmental, and economic feasibility of AT&T's proposed installation.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

Kristen Motel
Enclosure

CUDDY +FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Kristen Motel
kmotel@cuddyfeder.com

April 13, 2022

FEDERAL EXPRESS
Jonathan Formichella, Chairperson
Town of Monroe Town Council
Monroe Town Hall
7 Fan Hill Road
Monroe, CT 06468

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC
Premises: 345 Fan Hill Road, Monroe, Connecticut

Dear First Selectman Kellogg:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced request to the Connecticut Siting Council ("Council") for shared use approval to allow AT&T to install its wireless communications equipment on the approved communications tower and the associated compound currently under construction at 345 Fan Hill Road in the Town of Monroe. AT&T proposes to install 6 antennas, 9 remote radiohead units, and associated equipment at the 160-foot level of the approved 176-foot tower that is under construction.

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Very truly yours,

Kristen Motel
Enclosure

CUDDY +FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Kristen Motel
kmotel@cuddyfeder.com

April 13, 2022

FEDERAL EXPRESS
Joe Chapman, CZEO, Planning and Zoning Administrator
Town of Monroe
Monroe Town Hall
7 Fan Hill Road
Monroe, CT 06468

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC
Premises: 345 Fan Hill Road, Monroe, Connecticut

Dear Mr. Schultz:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced request to the Connecticut Siting Council ("Council") for shared use approval to allow AT&T to install its wireless communications equipment on the approved communications tower and the associated compound currently under construction at 345 Fan Hill Road in the Town of Monroe. AT&T proposes to install 6 antennas, 9 remote radiohead units, and associated equipment at the 160-foot level of the approved 176-foot tower that is under construction.

Enclosed herein is a copy of the submission made to the Council requesting approval of the tower share which includes information regarding the technical, legal, environmental, and economic feasibility of AT&T's proposed installation.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

Kristen Motel
Enclosure

CUDDY +FEDER LLP

Kristen Motel
kmotel@cuddyfeder.com

April 13, 2022

FEDERAL EXPRESS
Town of Monroe Schools
Fawn Hollow + Jockey Hollow + Chalk Hill
7 Fan Hill Road
Monroe, CT 06468-1800

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC
Premises: 345 Fan Hill Road, Monroe, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced request to the Connecticut Siting Council ("Council") for shared use approval to allow AT&T to install its wireless communications equipment on the approved communications tower and the associated compound currently under construction at 345 Fan Hill Road in the Town of Monroe. AT&T proposes to install 6 antennas, 9 remote radiohead units, and associated equipment at the 160-foot level of the approved 176-foot tower that is under construction.

Enclosed herein is a copy of the submission made to the Council requesting approval of the tower share which includes information regarding the technical, legal, environmental, and economic feasibility of AT&T's proposed installation.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

Kristen Motel
Enclosure

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Kenneth Kellogg, First Selectman	Kristen Motel
Town of Monroe	Cuddy & Feder LLP
7 Fan Hill Road	445 Hamilton Avenue
Monroe Town Hall	Suite 1400
MONROE, CT	White Plains, NY
06468	10601
US	US
914-761-1300 1884	9147611300

Shipment Information:
Tracking no.: 776569364694
Ship date: 04/13/2022
Estimated shipping charges: 23.30 USD

Package Information
Pricing option: FedEx Standard Rate
Service type: Priority Overnight
Package type: FedEx Pak
Number of packages: 1
Total weight: 2 LBS
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information:
Bill transportation to: CuddyFeder-963
Your reference: 1844-3590
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Jonathan Formichella, Chairperson	Kristen Motel
Town of Monroe, Town Council	Cuddy & Feder LLP
Monroe Town Hall	445 Hamilton Avenue
7 Fan Hill Road	Suite 1400
MONROE, CT	White Plains, NY
06468	10601
US	US
914-761-1300 1884	9147611300

Shipment Information:
Tracking no.: 776575084502
Ship date: 04/13/2022
Estimated shipping charges: 23.30 USD

Package Information
Pricing option: FedEx Standard Rate
Service type: Priority Overnight
Package type: FedEx Pak
Number of packages: 1
Total weight: 2 LBS
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information:
Bill transportation to: CuddyFeder-963
Your reference: 1844-3590
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Joe Chapman, CZEO P & Z Administrat	Kristen Motel
Town of Monroe	Cuddy & Feder LLP
Monroe Town Hall	445 Hamilton Avenue
7 Fan Hill Road	Suite 1400
MONROE, CT	White Plains, NY
06468	10601
US	US
914-761-1300 1884	9147611300

Shipment Information:
Tracking no.: 776575357378
Ship date: 04/13/2022
Estimated shipping charges: 23.30 USD

Package Information
Pricing option: FedEx Standard Rate
Service type: Priority Overnight
Package type: FedEx Pak
Number of packages: 1
Total weight: 2 LBS
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information:
Bill transportation to: CuddyFeder-963
Your reference: 1844-3590
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note

FedEx Shipment Receipt

Address Information

Ship to:	Ship from:
Fawn Hollow Jockey Hollow	Kristen Motel
Town of Monroe Schools	Cuddy & Feder LLP
+ Chalk Hill	445 Hamilton Avenue
7 Fan Hill Road	Suite 1400
MONROE, CT	White Plains, NY
06468-1800	10601
US	US
9147611300 1884	9147611300

Shipment Information:

Tracking no.: 776569456173
Ship date: 04/13/2022
Estimated shipping charges: 23.30 USD

Package Information

Pricing option: FedEx Standard Rate
Service type: Priority Overnight
Package type: FedEx Pak
Number of packages: 1
Total weight: 2 LBS
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information:

Bill transportation to: CuddyFeder-963
Your reference: 1844-3590
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note