



Northeast Site Solutions
Victoria Masse
420 Main St Unit 1 Box 2
Sturbridge, MA 01566
victoria@northeastitesolutions.com

February 9, 2023

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

RE: Tower Share Application
250 Olcott Street, Manchester CT 06040
Latitude: 41.769903 N
Longitude: -72.557367 W
Site#: BOBDL00105B

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 250 Olcott Street, Manchester, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 115-foot level of the existing 180-foot self support lattice tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by All-Points Technology Corp, dated January 3, 2023, Exhibit C. Also included is a structural analysis prepared by All-Points Technology Corp, dated December 6, 2022 confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Connecticut Siting Council, Petition No. 1346 on July 20, 2018. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Steve Stephanou, Town Manager, James Davis, Zoning Enforcement Officer, as well as the property owner and tower owner.

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the tower is 180-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 115-feet.
2. The proposed modification will not result in the increase of the site boundary as depicted on the attached site plan.
3. The proposed modification will not increase the noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligible.

420 Main Street, Unit 1 Box 2, Sturbridge, MA 01566



4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 3.89% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully indicates that the shared use of this facility satisfies these criteria.

A. **Technical Feasibility.** The existing self-support lattice tower has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included in Exhibit D.

B. **Legal Feasibility.** As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this lattice tower in Manchester. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. **Environmental Feasibility.** The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 115-foot level of the existing 180-foot tower would have an insignificant visual impact on the area around the self-support lattice tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. **Economic Feasibility.** Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish Wireless LLC with this tower share application.

E. **Public Safety Concerns.** As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Manchester.

Sincerely,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 1 Box 2, Sturbridge, MA 01566
Email: victoria@northeastsitesolutions.com



Attachments

Cc:

Steve Stephanou, Town Manager

Town of Manchester

41 Center Street

Manchester, CT 06045

James Davis, Zoning Enforcement Officer

Town of Manchester

41 Center Street

Manchester, CT 06045

Connecticut Light & Power Company, Property & Tower Owners

PO BOX 270

Hartford, CT 06141

Exhibit A

Original Facility Approval



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

CERTIFIED MAIL RETURN RECEIPT REQUESTED

July 20, 2018

Kathleen M. Shanley
Manager-Transmission Siting
Eversource Energy
P.O. Box 270
Hartford, CT 06141-0270

RE: **PETITION NO. 1346** - The Connecticut Light and Power Company d/b/a Eversource Energy petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed replacement and relocation of an existing telecommunications facility and an existing relay and control enclosure located at Manchester Substation, 250 Olcott Street, Manchester, Connecticut, and related substation improvements.

Dear Ms. Shanley:

At a public meeting held on July 19, 2018, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need, with the following conditions:

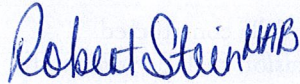
1. Approval of any minor project changes be delegated to Council staff;
2. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;
3. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the Town of Manchester;
4. Unless otherwise approved by the Council, the existing tower shall be removed within 180 days of the installation of the new self-supporting lattice tower;
5. The Council shall be notified in writing within 45 days of when the existing tower is removed and the new self-supporting lattice tower is operational unless a written request for an extension is submitted to the Council within that timeframe;

6. Within 45 days after completion of construction of the control enclosure, the Council shall be notified in writing that construction has been completed;
7. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v;
8. This Declaratory Ruling may be transferred, provided the facility owner/operator/transferor is current with payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v and the transferee provides written confirmation that the transferee agrees to comply with the terms, limitations and conditions contained in the Declaratory Ruling, including timely payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v; and
9. If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition dated June 1, 2018 and additional information received on June 7, 2018, July 9, 2018 and July 10, 2018.

Enclosed for your information is a copy of the staff report on this project.

Sincerely,



Robert Stein
Chairman

RS/MP/lm

Enclosure: Staff Report dated July 19, 2018

- c: The Honorable Jay Moran, Mayor, Town of Manchester
Scott A. Shanley, General Manager, Town of Manchester
James Davis, Zoning Enforcement Officer, Town of Manchester



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

Petition No. 1346

Eversource

Manchester Substation, Manchester, Connecticut

Staff Report

July 19, 2018

Introduction

On June 1, 2018, The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource) submitted a petition to the Connecticut Siting Council (Council) for a declaratory ruling pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k for the proposed replacement and relocation of an existing telecommunications facility and an existing relay and control enclosure and related substation improvements at Manchester Substation, 250 Olcott Street, Manchester, Connecticut.

Council member Daniel P. Lynch, Jr. and Council staff member Michael Perrone conducted a field review of the proposed project on June 19, 2018. Paul Melzen, Substation Engineer, Eversource; Steven Florio, Construction Manager, Eversource; Ryan Ericson, Telecom Engineer, Eversource; Matthew LeClair, Substation Engineer, Eversource; Shodan Patel, Project Manager, Eversource; Susan Bellion, Project Siting Specialist, Eversource; Ian Cole, Environmental, Eversource; and Kyle Shiel, Senior Planner, Town of Manchester Planning Department also attended the field review.

Eversource met with the Town of Manchester officials in February 2018. Notice of the Petition was provided to the Town of Manchester and abutting property owners on or about May 30, 2018. To date, the Council has not received any comments regarding the Petition filing.

The Council issued interrogatories to Eversource on June 22, 2018 and July 2, 2018. Eversource submitted responses to Council interrogatories on July 9, 2018 and July 10, 2018, respectively.

On June 21, 2018, pursuant to CGS §4-176(e) of the Uniform Administrative Procedure Act (UAPA), which requires an administrative agency to take action on a petition within 60 days of receipt, the Council voted to set the date by which to render a decision on the above-referenced petition by November 28, 2018. November 28, 2018, is the statutorily-mandated 180-day decision deadline for this petition under CGS §4-176(i).

Proposed Project

Manchester Substation is located on a 30.4-acre parcel surrounded by a mix of municipal, commercial and industrial facilities including the Town of Manchester Landfill, Transfer Station, and Sewage Treatment Plant located north of the subject property and residential areas located to the east and southwest. The nearest residence is located off of Olcott Street West, approximately 540 feet southwest of the proposed replacement tower compound.

Eversource would remove an existing communications tower and existing 345-kV relay and control enclosure from the center of the substation and replace them with a new communications tower and new 115-kV/345-kV relay and control enclosure to the west of the current positions. The proposed replacement tower would be located outside of the substation fence line, and the replacement enclosure would be located within an expanded area of the substation.

The replacement tower and replacement control enclosure project is being proposed to allow for future upgrades and newer telecommunications technologies to be installed at the site. It would provide future capacity for Eversource, municipal and emergency communications and commercial wireless service providers. The control enclosure portion of the project is identified in Eversource's 2018 Forecast of Loads and Resources dated March 1, 2018 and in the June 2018 ISO-New England Regional System Plan Asset Condition Update as the proposed "Manchester Control House Expansion" with an estimated in-service date of 2019.

Tower Replacement

The existing tower is an approximately 200-foot self-supporting lattice tower located inside the fenced substation. It is 30 feet wide at the base, and it tapers to 8-feet 6-inches wide at the top. The existing tower contains antennas of multiple entities including, but not limited to, Eversource, Hartford Ops/Meter & Service, Talcott Microwave, DSCADA, EDACS/Voice Radio, Bolton Microwave, Sprint¹, Yankee Gas, and Hartford Underground.

The proposed replacement tower would be a 180-foot self-supporting lattice tower. It would be 23 feet wide at the base and tapering to 5-feet wide at the top. It would be located approximately 435 feet to the west of the existing tower location (and outside of the fenced substation). The proposed (and future) antenna inventory is listed below.

Antenna Type ¹	Antenna Make/Model or Capacity ²	Antenna Center Line Elevation (ft. AGL)	Comments	Frequency (MHz)
14-ft. Omni	(1) Kreco CO-41-AN	±187.0	Hartford Ops / Meter & Service	RX: 49.02
19.2-ft. Dual Omni w/TTA	(1) dbSpectra DS9A09F36D-N (1) Bird 430-94C-09168-M-110_48	±189.4	DSCADA	TX: 936.95 & 938.95 RX: 897.95 & 899.95
23.3-ft. Dual Omni	(1) Sinclair SC351D-HF2LDF(D00-G6)	±187.3	EDACS / Voice Radio	TX: 451.675 RX: 456.675
8' Dish w/ Radome	(1) RFS PADX8-W59AC	±175.0	Bolton Microwave	TX: 6093.45 RX: 6345.49
8' Dish w/ Radome	(1) RFS PADX8-W59AC	±175.0	Talcott Microwave	TX: 6004.50 RX: 6256.54
8' Dish w/ Radome	(1) RFS PADX8-W59AC	±175.0	Future Eversource	NA - Future Dish
8' Dish w/ Radome	(1) RFS PADX8-W59AC	±164.0	Future Eversource	NA - Future Dish
23.3-ft. Dual Omni	(1) Sinclair SC351D-HF2LDF(D00-G6)	±156.4	Future Eversource	NA - Future Antenna
10-ft Dipole	(1) Sinclair SD212-SF2P2SNF(D00)	±163.0	Yankee Gas	TX & RX: 173.39625
15.75-ft Dipole	(1) Comprod 531-70HD*8	±158.1	Hartford Underground	TX & RX: 47.90
Wireless Carrier	(12) Panel Antennas (8'x1'), (12) RRHs, (3) MDB	±135.0	Future Carrier	TBD
Wireless Carrier	(12) Panel Antennas (8'x1'), (12) RRHs, (3) MDB	±125.0	Future Carrier	TBD
Wireless Carrier	(12) Panel Antennas (8'x1'), (12) RRHs, (3) MDB	±115.0	Future Carrier	TBD
Wireless Carrier	(12) Panel Antennas (8'x1'), (12) RRHs, (3) MDB	±105.0	Future Carrier	TBD

¹ Sprint PCS is the only commercial wireless telecommunications carrier on the existing tower. The relocation of Sprint onto the replacement tower would require a separate filing with the Council for review and approval. Thus, it is not yet known which height Sprint would co-locate at on the replacement tower in the future.

The total height with appurtenances would be approximately 199 feet, i.e. the tops of the 19.2-foot and 23.3-foot omni antennas would reach a maximum height of approximately 199 feet.

A Professional Engineer duly licensed in the State of Connecticut has certified that the proposed replacement tower is structurally adequate to support the proposed (and future) loading as identified above. Specifically, the proposed replacement tower is designed support all existing entities and a total of four future wireless carriers (i.e. Sprint plus three other carriers).

Once the replacement tower is constructed and operational, the existing tower would be removed.

The proposed replacement tower radius would remain within the boundaries of the subject property.

An existing fenced laydown area located to the west of the substation (but still on the subject property) would be removed to accommodate the proposed approximately 69-foot 9-inch by 94-foot 4-inch tower compound. The proposed compound fence would be eight feet tall anti-climb mesh fence with three strands of barbed wire on top that would add approximately one foot of additional height. Eversource would install a 10-foot by 20-foot equipment shelter inside the proposed tower compound.

A new electrical power supply for the proposed replacement tower would be trenched underground from an existing Eversource utility pole (#3343), located approximately 217 feet to the west on Olcott Road to a new electrical service panel located just outside of the proposed compound. For backup power, Eversource's proposed 20-kW propane-fueled generator would be located on a 4-foot by 6-foot concrete pad within the proposed tower compound. Eversource's generator is sized for its needs only. Eversource's proposed 1,000-gallon propane tank would be located within the tower compound and would provide approximately five days of run time at 100-percent load.

Substation Modifications/Expansion

The proposed substation modifications would require the removal of the existing 11-foot by 16-foot control enclosure from the interior of the substation and the removal of approximately 400 feet of existing substation security fencing from the western side of the substation. These modifications would allow for an approximately 21,470 square foot expansion of the substation to the west to accommodate the new 150-foot by 32-foot replacement control enclosure.

New water and sewer lines would be run to the new control enclosure. The existing water and sewer lines that currently supply the 345-kV control enclosure would be removed from the substation and capped at a location just inside the substation fence line.

Additional substation modifications would include the replacement of three existing 115-kV oil-filled circuit breakers with new gas-insulated circuit breakers and the installation of two new station service transformers to feed the replacement enclosure.

The base of the substation expansion area would match the existing ground surface with gravel, and the final fence design of the proposed substation expansion area would match the fence design of the existing substation.

Environmental Effects and Mitigation Measures

The substation expansion area for the new control enclosure and new tower compound would require minimal grading. However, the proposed project would require soil removal for the new tower foundation excavation and fill to remediate below grade facilities and foundations. Approximately 460 cubic yards of material would be removed for the construction of the tower and compound. Approximately 5,200 cubic yards of material would be removed for the construction of the new control enclosure, below-grade facilities and the new security fence. The removal of the obsolete 345-kV control enclosure and existing below-grade facilities would require approximately 3,500 cubic yards of fill.

If the quality of the excavated material is acceptable, it would be reused on site. If soil cannot be reused on-site, it would be field sampled for characterization and disposed of at a pre-approved soil disposal facility in accordance with Eversource polices and state and federal regulations.

Approximately 12 conifers greater than six inches diameter and several small deciduous saplings would be removed for the expansion of the substation and replacement control enclosure. No additional tree removal is anticipated for construction, but if needed, areas to the north and south of the proposed substation modifications would be cleared and re-graded to allow for additional work/laydown areas. Specifically, a small scrub/shrub habitat block exists in the southwest corner of the site. This habitat block totals approximately 4.1 acres. If needed, a portion of this habitat block would be cleared and converted to additional work zone and gravel laydown areas to provide additional space for work zones. Due to the relatively small size of this area and the minor clearing proposed, the removal of portions of scrub/shrub habitat block would not be expected to result in a significant negative impact on any dependent wildlife populations.

The foundation design for the proposed station service transformers do not include measures for insulating oil containment because the oil volumes are not significant and do not trigger such requirement under 40 Code of Federal Regulations (CFR) 112. However, in accordance with Federal Spill Prevention Containment & Countermeasure (SPCC) rules under 40 CFR 112, there would be above-ground oil volume triggers that require spill plans and either engineered secondary containment or a strong response plan. Eversource notes that all of its substations are covered under a SPCC Multi Plan, which includes a strong contingency in the event of oil release.

The proposed replacement 115-kV circuit breakers would be gas-insulated using sulfur hexafluoride (SF₆); therefore, oil containment measures are not required.

The project would be located in an upland area and would not be expected to have a significant adverse impact on wetland resources or watercourses because such project area would be limited to areas within or immediately west of the substation footprint. Such wetland/watercourse resources are located east of the substation. An inspection to field delineate wetlands was conducted on February 14, 2018. One wetland area, consisting of a contributing unnamed intermittent watercourse and backwater wetlands/floodplains to the South Fork Hockanum River is located approximately 160 feet north of the existing control enclosure and approximately 356 feet east of the proposed substation fence expansion.

The proposed project is located within the Federal Emergency Management Agency (FEMA) unshaded Zone X, an area outside of the 100-year and 500-year flood zones.

The proposed project is not located with a Connecticut Department of Energy and Environmental Protection (DEEP) Aquifer Protection Area.

Eversource developed and submitted a Stormwater Pollution Control Plan (SWPCP) to DEEP to register under a *General Permit for the Discharge of Stormwater and Remediation Wastewaters from Construction Activities*.

Eversource would conform to its Best Management Practices Manual for Massachusetts and Connecticut, *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*, and the *2004 Connecticut Stormwater Manual*, as applicable. No soil remediation would be required for this proposed project.

The proposed project is located about 0.4 mile outside of the shaded area of the DEEP Natural Diversity Database (NDDB) Map. Because such distance is greater than 0.25 mile, no consultation with DEEP regarding the NDDB is required.

Connecticut is within the range of the northern long-eared bat (NLEB), a federally-listed Threatened species and state-listed Endangered species. There are no known NLEB hibernacula within 0.25 mile of the project or known maternity roost trees within 150 feet of the proposed project area. The existing white pines slated for removal, originally planted as landscape evergreens, do not provide optimal NLEB roosting habitat. Thus, the proposed project is not likely to adversely affect the NLEB.

The proposed replacement tower would not be located near an Important Bird Area (IBA), as designated by the National Audubon Society. The nearest IBA to the proposed replacement tower site is Meshomasic State Forest Block in Manchester, located approximately 2.6 miles to the southeast. The proposed replacement tower would not be expected to adversely impact this IBA because of the distance.

The proposed replacement tower would comply with the United States Fish and Wildlife Service guidelines for minimizing the potential for telecommunications towers to impact bird species.

By letter dated March 26, 2018, the State Historic Preservation Office (SHPO) notes that the area possesses a low potential to contain intact archaeological resources². SHPO also indicated that no historic properties would be affected by the proposed project.

The final fence design of the proposed substation expansion area would be visually consistent with the existing fence design of the substation. While the proposed replacement tower would be located closer to the nearest residence versus the existing tower, it would be 20 feet shorter than the existing tower, and it would be narrower in width.

Construction-related noise is exempt per DEEP noise regulations. Post-construction noise levels would not increase beyond the property boundaries. Therefore, noise emissions would be consistent with present day levels.

Aviation Safety

According to Eversource's TOWAIR analysis, notification to the Federal Aviation Administration is not required.

Magnetic Fields and Radio Frequency Power Density

Magnetic field levels at the property boundaries would not be materially affected by the proposed substation expansion.

The proposed replacement telecommunications facility would have a cumulative worst-case power density of 3.29 percent of the applicable limit using a -10 dB off-beam adjustment.

² SHPO incorrectly refers to the replacement tower height as 280 feet.

Construction Schedule

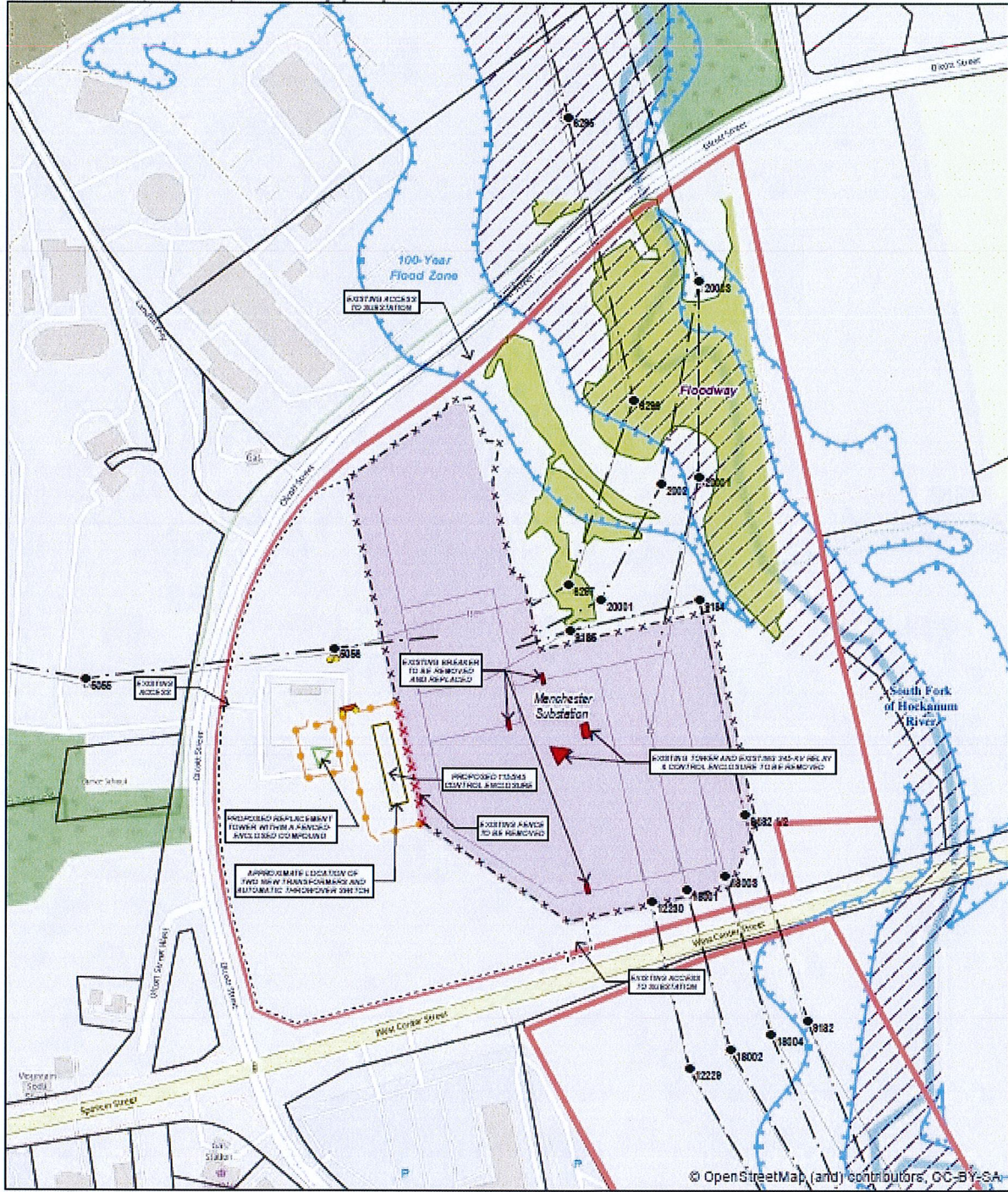
Eversource intends to begin construction in August 2018 and complete construction and restoration by the end of 2020. Removal of the existing tower and existing enclosure would be completed following the installation of the replacement facilities. In general, work hours would be from 7 AM to 7 PM Monday through Saturday. Eversource would submit a request to the Council in advance of the need for any non-standard work hours.

Staff Recommendations

Staff recommends the following:

1. Approval of any minor project changes be delegated to Council staff.

Proposed Site Plan



- Legend**
- Proposed Control Enclosure
 - Replacement Tower
 - Existing Fence
 - Existing Fence to be Removed
 - Proposed Fence
 - Proposed Pedestrian Gate
 - Strongarm Gate
 - Limit of Work/Laydown Area
 - Structures to be removed
 - Bollard
 - Transmission Tower
 - Transmission Line
 - Eversource Owned Property
 - Approximate Parcel Boundary
 - Wetland Boundary
 - Wetland Area
 - FEMA 100-Year Flood Zone
 - FEMA Floodway
 - Watercourse (CTDEEP)

Map Notes:
 Base Map Source: ©2018 Open Street Map
 Map Scale: 1 in = 250 feet
 Map Date: May 2018

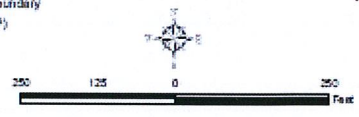
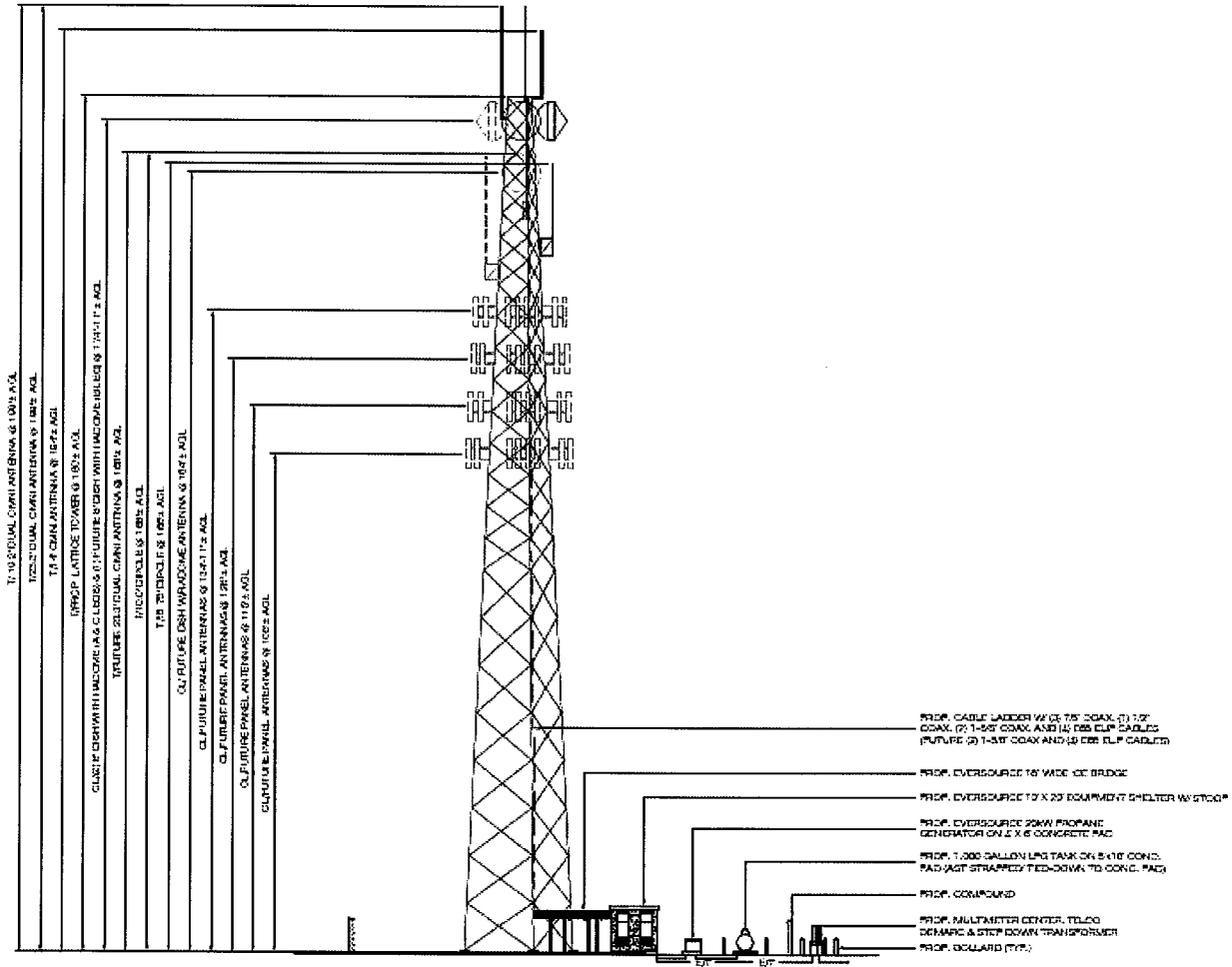


Figure 2
Site Schematic Map
 Manchester 3A Substation Expansion and
 Replacement Communications Facility Project
 250 Olcott Street
 Manchester, Connecticut

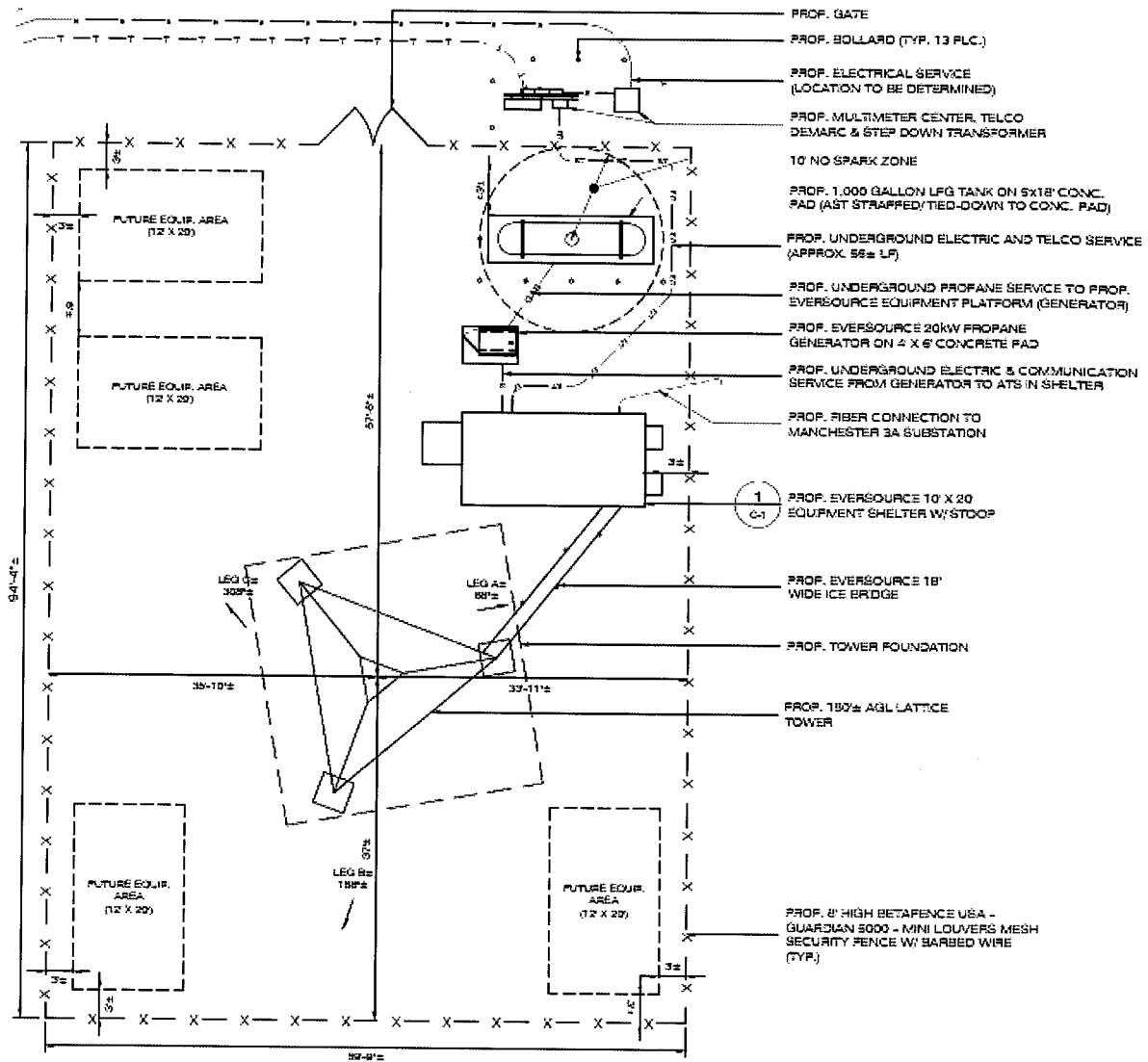


Proposed Replacement Tower



2 EAST ELEVATION
 A-1 SCALE: 1" = 16'-0"

Proposed Tower Compound



1 **COMPOUND PLAN**
A-1 SCALE: 1" = 10'-0"
 2

Exhibit B

Property Card

250 OLCOTT STREET

Location 250 OLCOTT STREET

Mblu 33/ 4300/ 250/ /

Acct# 430000250

Owner CONNECTICUT LIGHT &
POWER CO

Assessment \$329,200

Appraisal \$470,300

PID 12560

Building Count 1

DISTRICT T

CONCRETE

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2021	\$49,600	\$420,700	\$470,300

Assessment			
Valuation Year	Improvements	Land	Total
2021	\$34,700	\$294,500	\$329,200

Owner of Record

Owner CONNECTICUT LIGHT & POWER CO
Address PO BOX 270
HARTFORD, CT 06141-0270

Sale Price \$0
Certificate C
Book & Page 0422/0507
Sale Date

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
CONNECTICUT LIGHT & POWER CO	\$0	C	0422/0507	

Building Information

Building 1 : Section 1

Year Built: 1950
Living Area: 900
Replacement Cost: \$49,320

Replacement Cost
Less Depreciation:

\$27,100

Building Attributes

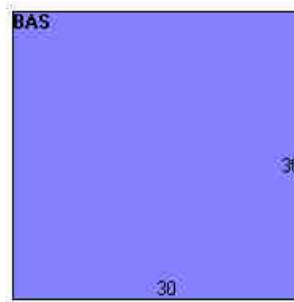
Field	Description
Style:	Light Indust
Model	Ind/Comm
Grade	Average
Stories:	1
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar + Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Electr Basebrd
AC Type	None
Struct Class	
Bldg Use	Pub Util. 96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	400
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Min WI
Rooms/Prtns	Average
Wall Height	12.00
% Comn Wall	0.00

Building Photo



(<https://images.vgsi.com/photos2/ManchesterCTPhotos/\00\03\84\38.jpg>)

Building Layout



(https://images.vgsi.com/photos2/ManchesterCTPhotos/Sketches/12560_)

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	900	900
		900	900

Extra Features

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

Land

Land Use

Use Code 400
Description Pub Util. 96
Zone IND
Neighborhood 3000
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 30.4
Frontage 0
Depth 0
Assessed Value \$294,500
Appraised Value \$420,700

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
SHD2	Shed W/Imp			900.00 S.F.	\$9,900	1
FN3	Fence 6' Chain			600.00 L.F.	\$6,900	1
PAV1	Paving Asphalt			1000.00 S.F.	\$1,300	1
SHD2	Shed W/Imp			160.00 S.F.	\$1,800	1
SHD2	Shed W/Imp			240.00 S.F.	\$2,600	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$51,200	\$420,700	\$471,900
2015	\$52,700	\$420,700	\$473,400
2010	\$56,000	\$426,300	\$482,300

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$35,800	\$294,500	\$330,300
2015	\$36,900	\$294,500	\$331,400
2010	\$39,100	\$298,400	\$337,500

Town of Manchester, CT

Address: 250 OLCOTT ST

RPKEY: 430000250



Property Information:

Mailing Address: 250 OLCOTT ST
MANCHESTER, CT

Owner Name: CONNECTICUT LIGHT & POWER CO

Owner Address: PO BOX 270
HARTFORD, CT 06141-0270

Land Class: Pub Util 96

Land Use Code: 400

Acreage: 30.4

Zoning: IND

Year Built: 1950

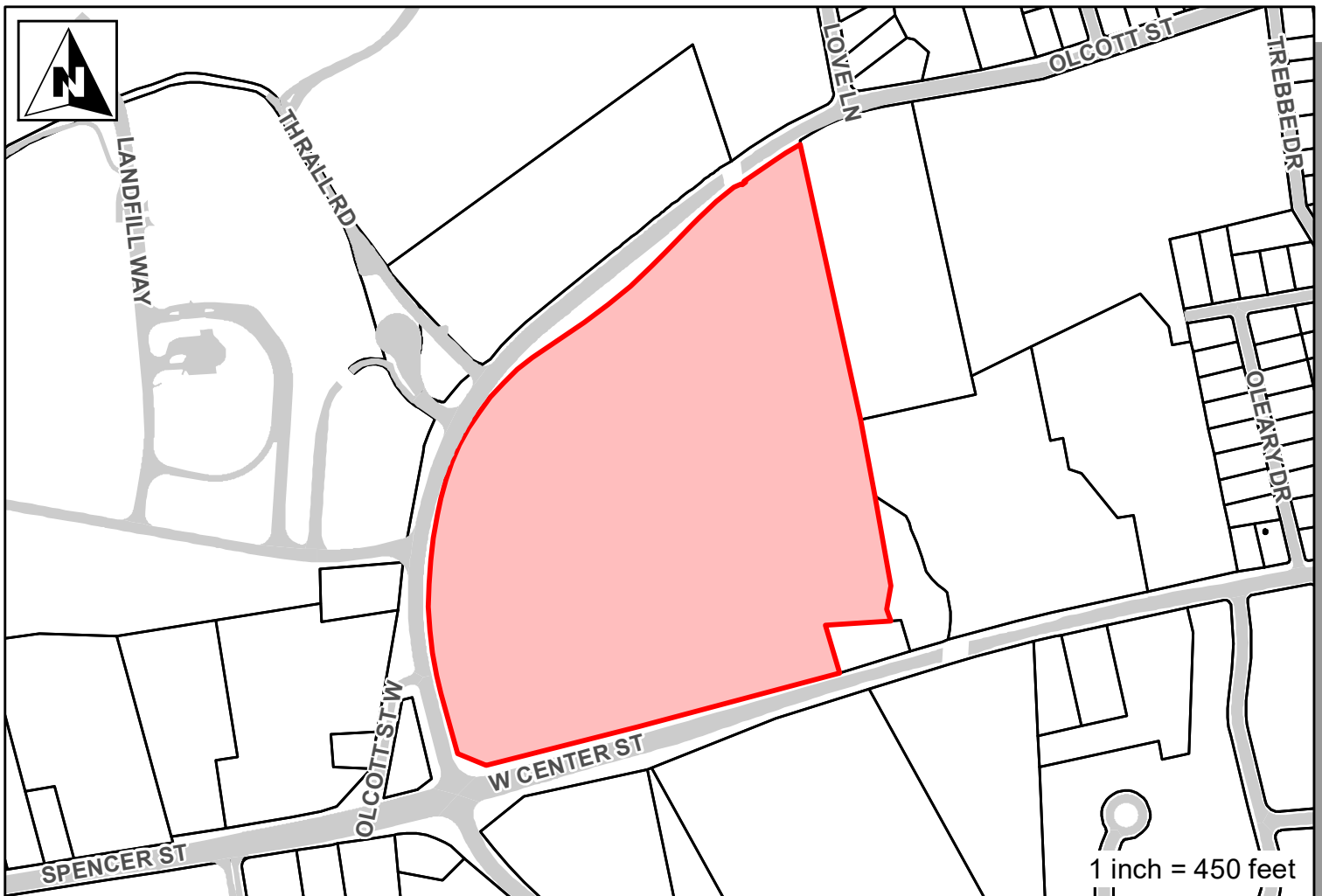
Appraisal: 470300

Assessment: 329200

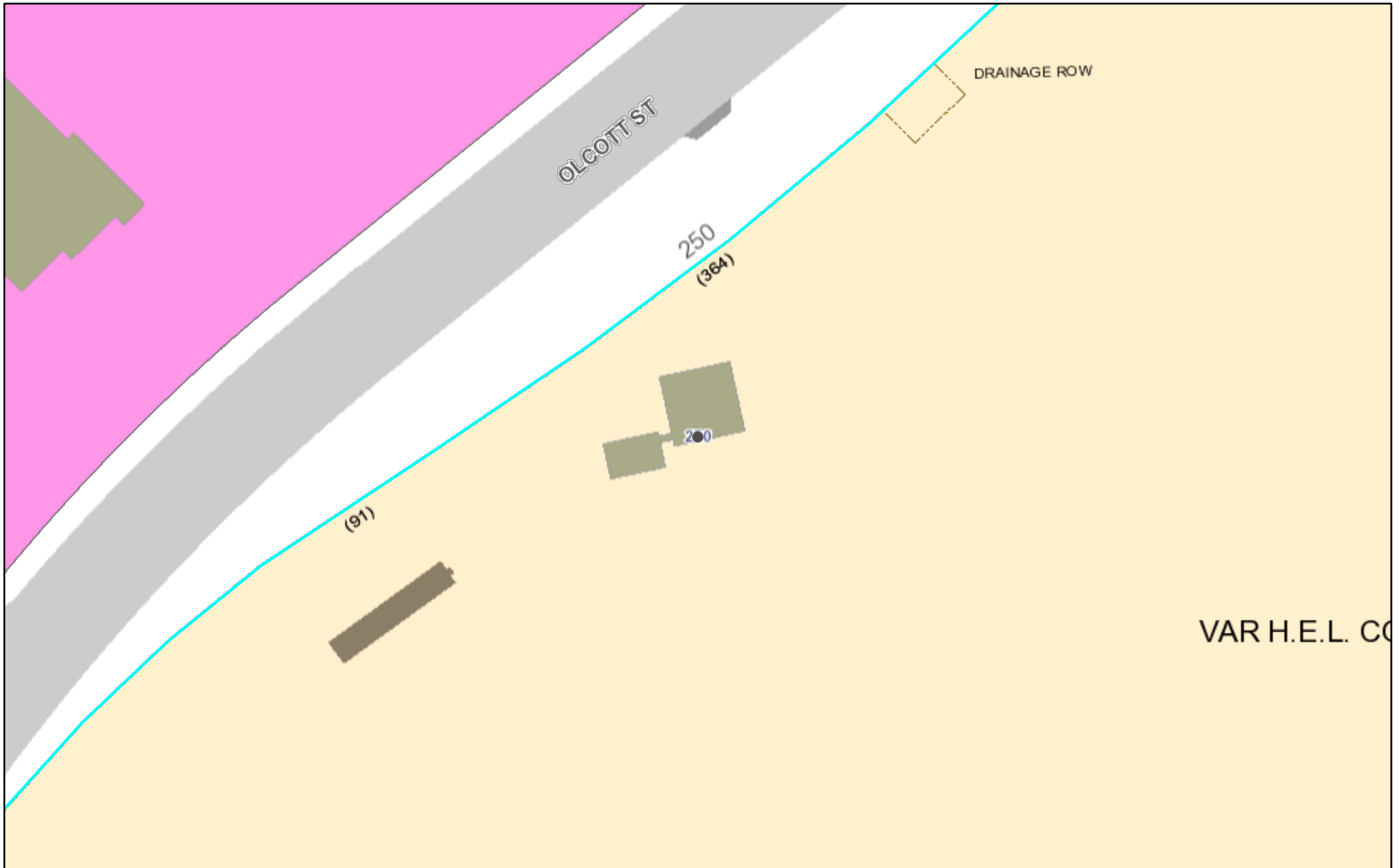
Sale Price: \$0.00

Sale Date:

Book/Page: 422/ 507

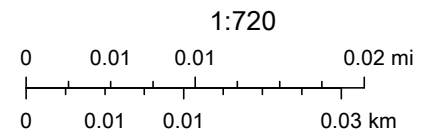


250 South Olcott Street, Manchester, CT



12/9/2021, 11:16:08 PM

-  Parcels
-  Plot Plans
-  Easement Lines



Manchester GIS

Exhibit C

Construction Drawings



DISH WIRELESS, LLC. SITE ID:

BOBDL00105B

DISH WIRELESS, LLC. SITE ADDRESS:

**250 OLCOTT STREET
MANCHESTER, CT 06040**

SCOPE OF WORK

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

- TOWER SCOPE OF WORK:**
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
 - INSTALL (3) PROPOSED ANTENNA MOUNTS (1 PER SECTOR)
 - INSTALL PROPOSED JUMPERS
 - INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
 - INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
 - INSTALL (1) PROPOSED HYBRID CABLE

- GROUND SCOPE OF WORK:**
- INSTALL (1) PROPOSED METAL PLATFORM
 - INSTALL (1) PROPOSED ICE BRIDGE
 - INSTALL (1) PROPOSED PPC CABINET
 - INSTALL (1) PROPOSED EQUIPMENT CABINET
 - INSTALL (1) PROPOSED POWER CONDUIT
 - INSTALL (1) PROPOSED TELCO CONDUIT
 - INSTALL (1) PROPOSED TELCO-FIBER BOX
 - INSTALL (1) PROPOSED GPS UNIT
 - INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
 - INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)
 - INSTALL (1) PROPOSED METER SOCKET

SITE INFORMATION

PROPERTY OWNER: EVERSOURCE
 ADDRESS: PO BOX 270
 HARTFORD, CT 06151

TOWER TYPE: SELF SUPPORT LATTICE TOWER

TOWER CO SITE ID: BOBDL00105B

TOWER APP NUMBER: X

COUNTY: HARTFORD

LATITUDE (NAD 83): 41° 46' 11.78847" N
 41.769941 N

LONGITUDE (NAD 83): 72° 33' 32.7228" W
 72.559090 W

ZONING JURISDICTION: TOWN OF MANCHESTER

ZONING DISTRICT: IND

PARCEL NUMBER: 33-4300-0250

OCCUPANCY GROUP: N/A

CONSTRUCTION TYPE: ?

POWER COMPANY: EVERSOURCE

TELEPHONE COMPANY: CROWN CASTLE

PROJECT DIRECTORY

APPLICANT: DISH WIRELESS, LLC.
 5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120
 (XXX) XXX-XXXX

TOWER OWNER: THE CONNECTICUT LIGHT &
 POWER COMPANY
 P.O. BOX 270
 HARTFORD, CT 06141

SITE DESIGNER: ALL-POINTS TECHNOLOGY
 CORPORATION, P.C.
 567 VAUXHALL STREET EXTENSION
 SUITE 311
 WATERFORD, CT 06385
 (860) 663-1697

SITE ACQUISITION: NORTHEAST SITE SOLUTIONS, LLC
 (860) 394-7021

CONSTRUCTION MANAGER: CHAD WILCOX
 (860) 634-9600

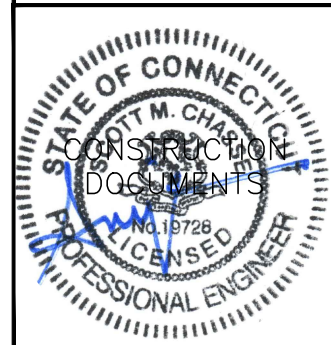
RF ENGINEER: DIPESH PARIKH
 (312) 929-9086



5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
 SUITE 311
 WATERFORD, CT 06385
 PH: (860) 663-1697
 FAX: (860) 663-0935
 WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CSH CHECKED BY: JRM APPROVED BY: SMC

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/03/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
 PROJECT INFORMATION

**BOBDL00105B
 250 OLCOTT STREET
 MANCHESTER, CT 06040**

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

CONNECTICUT CODE COMPLIANCE

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

CODE TYPE	CODE
BUILDING	2022 CT STATE BUILDING CODE/2021 IBC W/ CT AMENDMENTS
MECHANICAL	2022 CT STATE BUILDING CODE/2021 IMC W/ CT AMENDMENTS
ELECTRICAL	2022 CT STATE BUILDING CODE/2020 NEC W/ CT AMENDMENTS

SHEET INDEX

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

SITE PHOTO



UNDERGROUND SERVICE ALERT CBYD 811
 UTILITY NOTIFICATION CENTER OF CONNECTICUT
 (800) 922-4455
 WWW.CBYD.COM

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

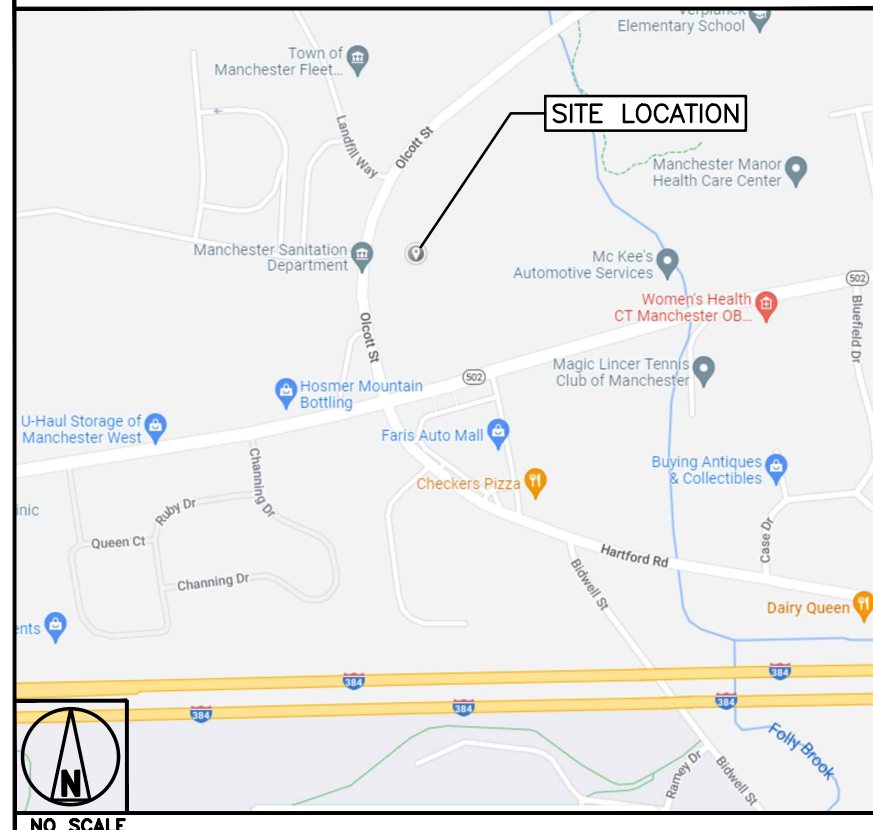
11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

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

DIRECTIONS

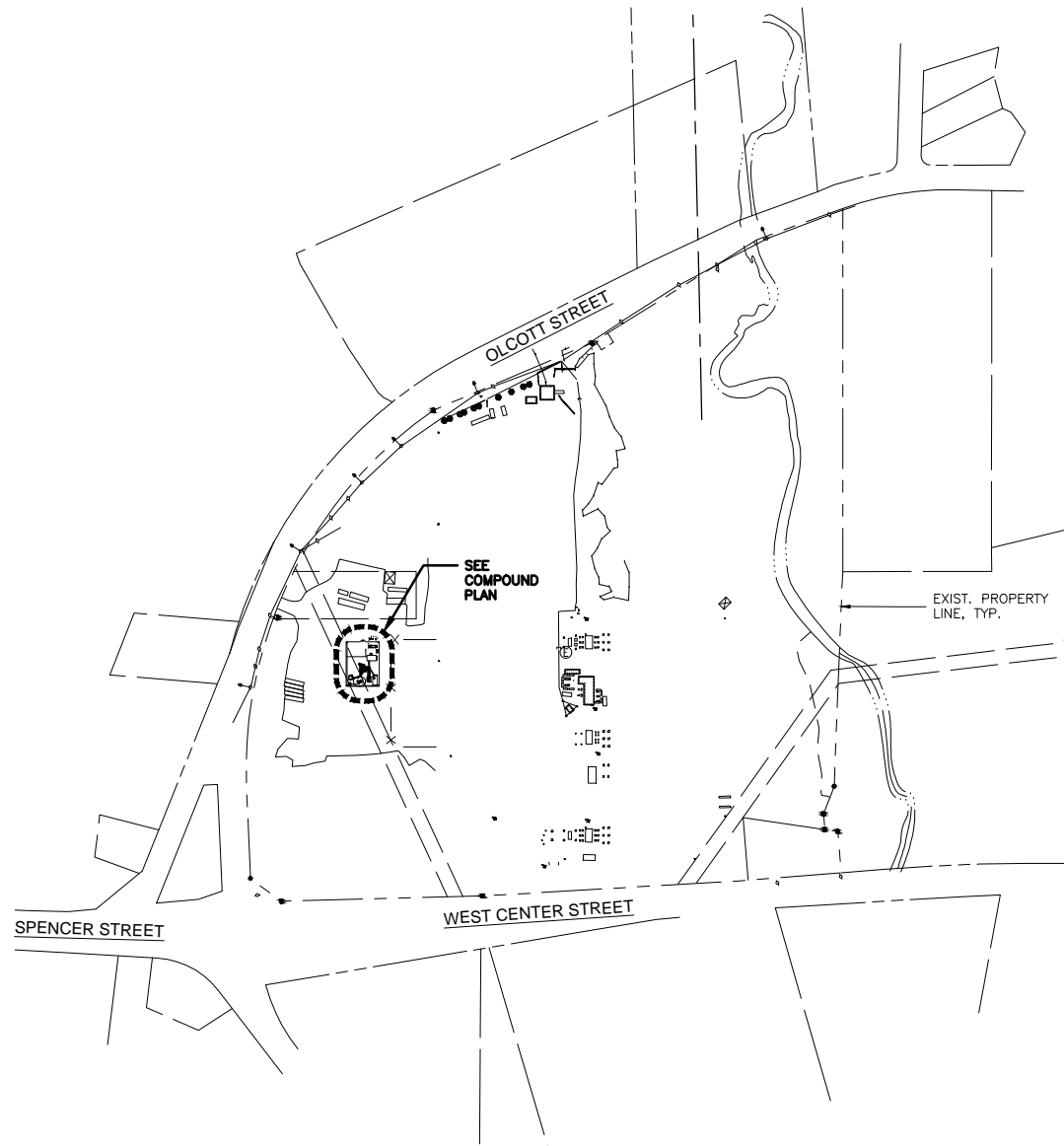
DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:
 KEEP RIGHT TO MERGE ONTO I-91. KEEP RIGHT ON BRADLEY INTERNATIONAL AIRPORT CONN E TOWARD HARTFORD. CONTINUE ONTO I-91S. TAKE EXIT 35A ON THE RIGHT TO MERGE ONTO I-291E TOWARD MANCHESTER. KEEP RIGHT ON I-384. KEEP LEFT TO MERGE ONTO I-384E TOWARD SPENCER STREET, SILVER LANE. TAKE EXIT 1 ONTO SPENCER STREET. TURN LEFT ONTO SPENCER STREET TOWARD PARK & RIDE, MANCHESTER. TURN LEFT ONTO OLCOTT STREET. 324 OLCOTT STREET IS 700FT AHEAD ON THE RIGHT.

VICINITY MAP

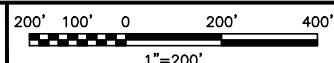


NOTES

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



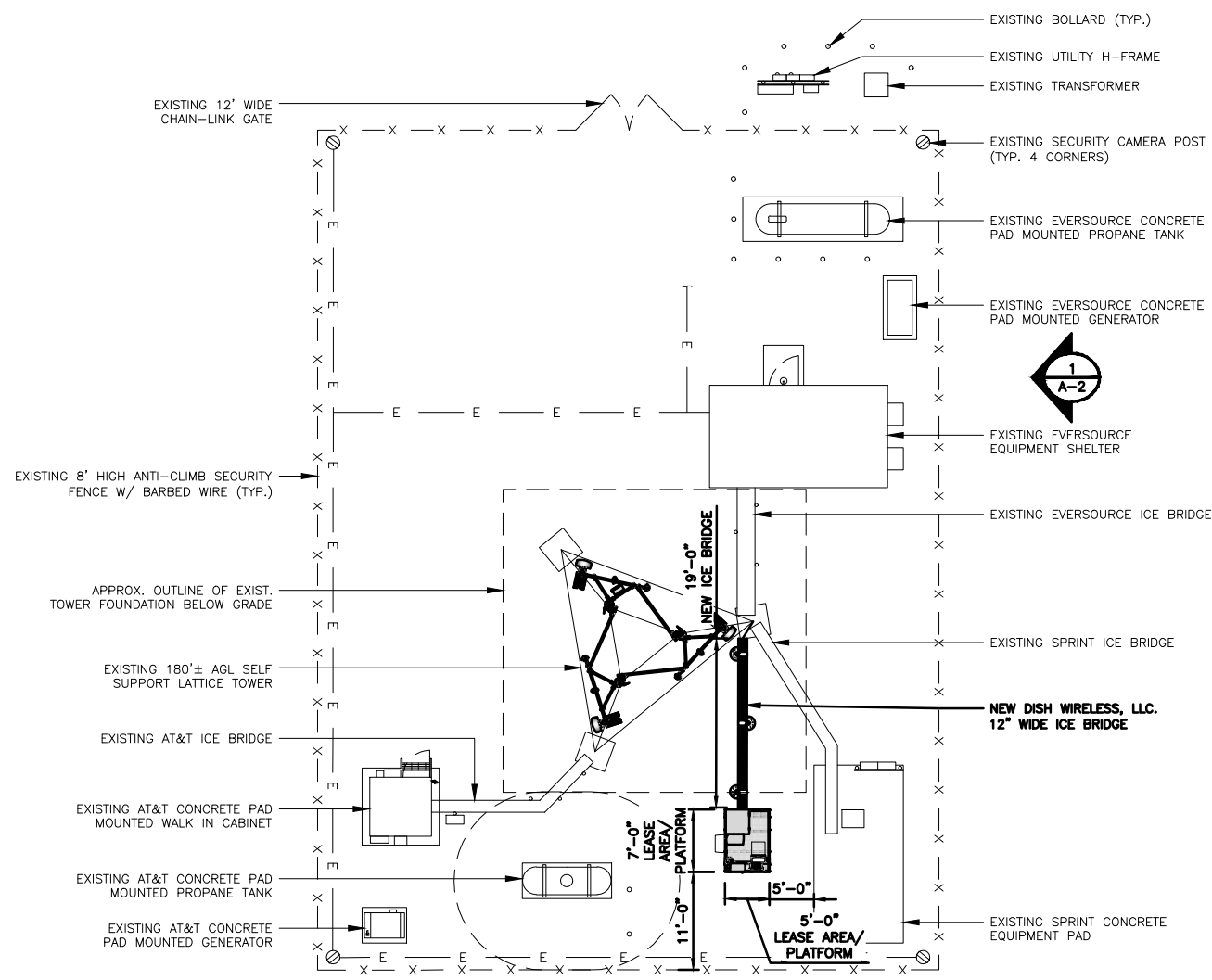
OVERALL SITE PLAN



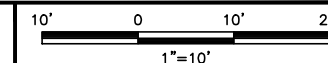
1

NOTES

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



COMPOUND PLAN



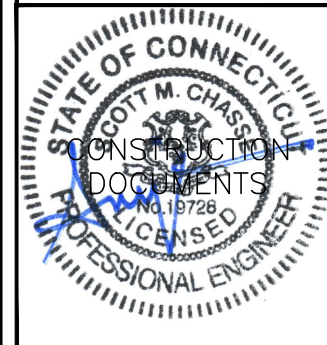
2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CHECKED BY: APPROVED BY:
CSH JCM SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

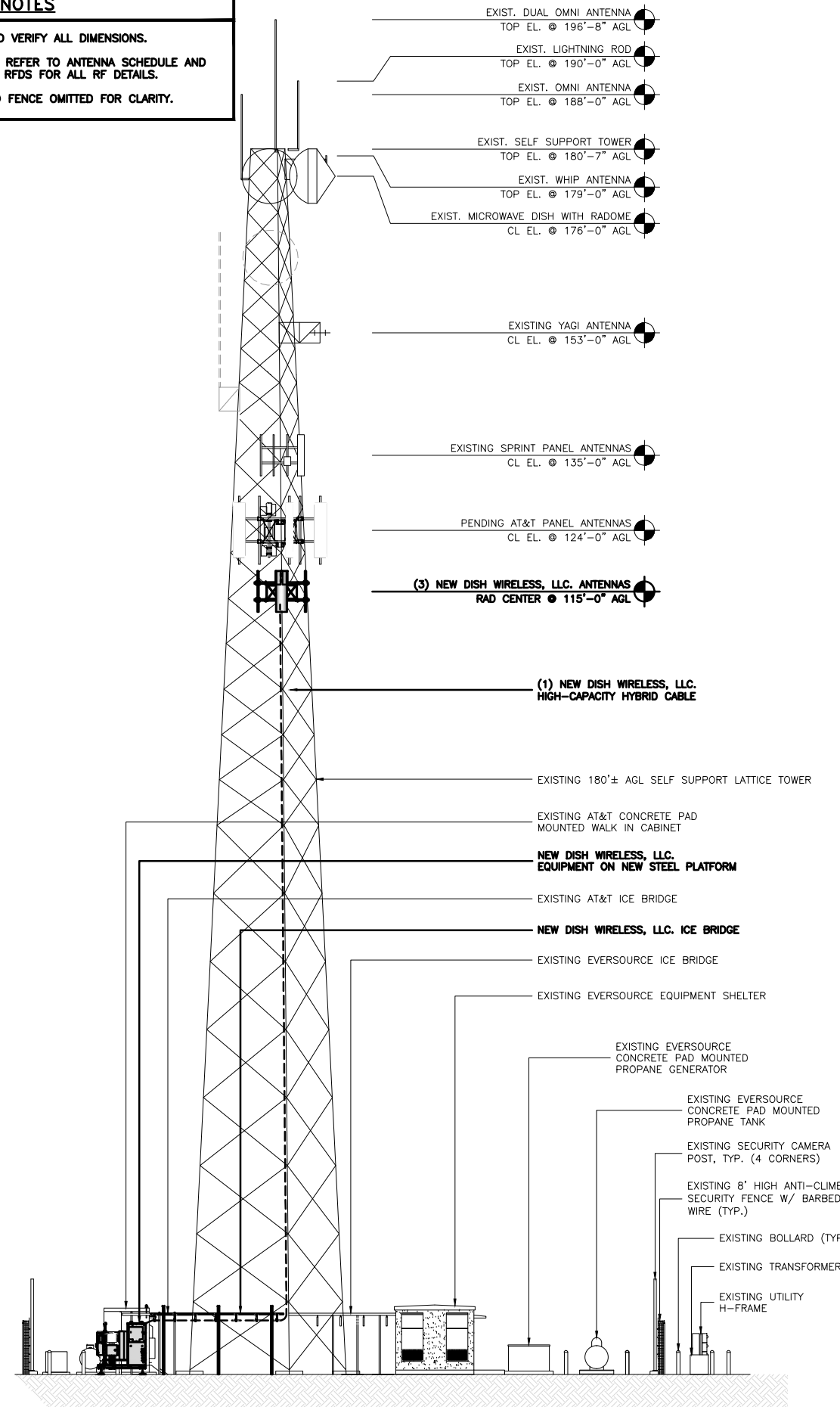
SHEET TITLE
OVERALL AND ENLARGED
SITE PLAN

SHEET NUMBER

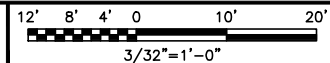
A-1

NOTES

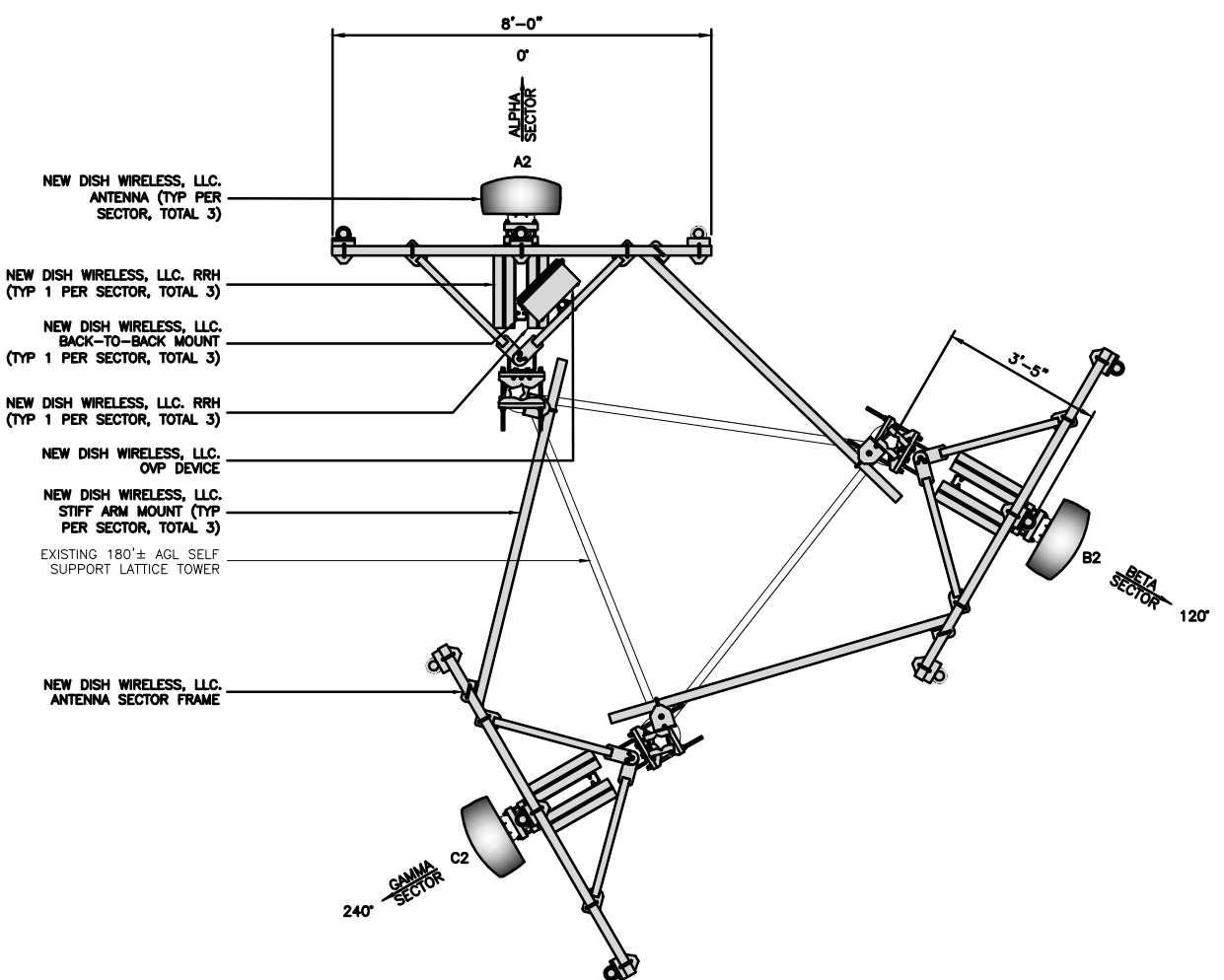
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



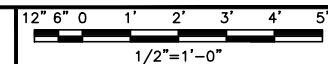
EAST ELEVATION



1



ANTENNA LAYOUT



2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	
ALPHA	A2	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	0°	115'-0"	(1) HIGH-CAPACITY HYBRID CABLE (150' LONG)	
BETA	B2	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	120°	115'-0"		
GAMMA	C2	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	240°	115'-0"		

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A2	FUJITSU - TA08025-B805	LOW BAND	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.
	A2	FUJITSU - TA08025-B804	MID BAND	
BETA	B2	FUJITSU - TA08025-B805	LOW BAND	
	B2	FUJITSU - TA08025-B804	MID BAND	
GAMMA	C2	FUJITSU - TA08025-B805	LOW BAND	
	C2	FUJITSU - TA08025-B804	MID BAND	

ANTENNA SCHEDULE

NO SCALE

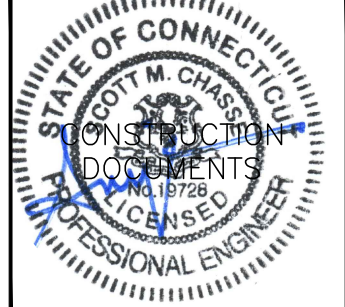
3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CSH CHECKED BY: JCM APPROVED BY: SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

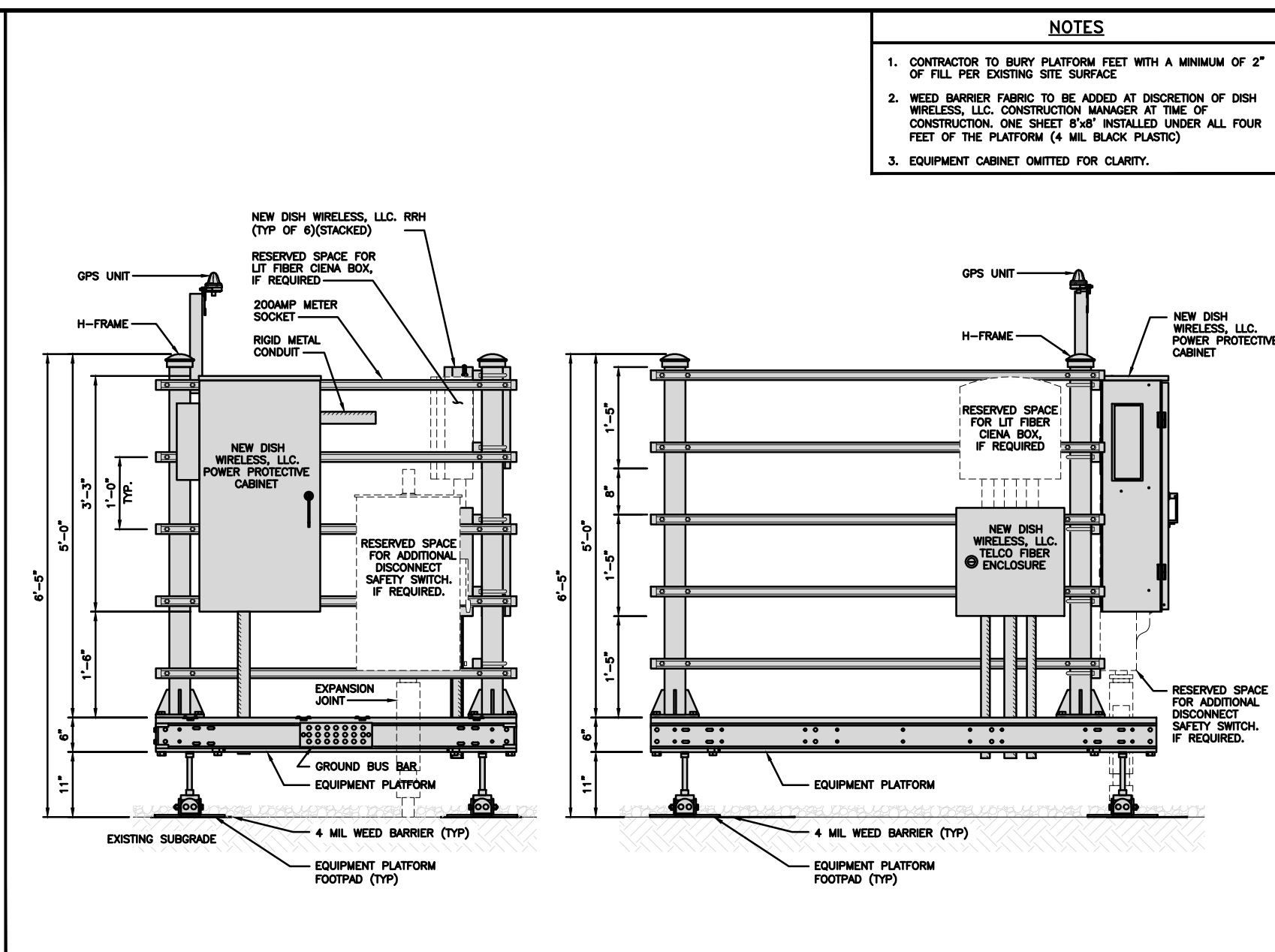
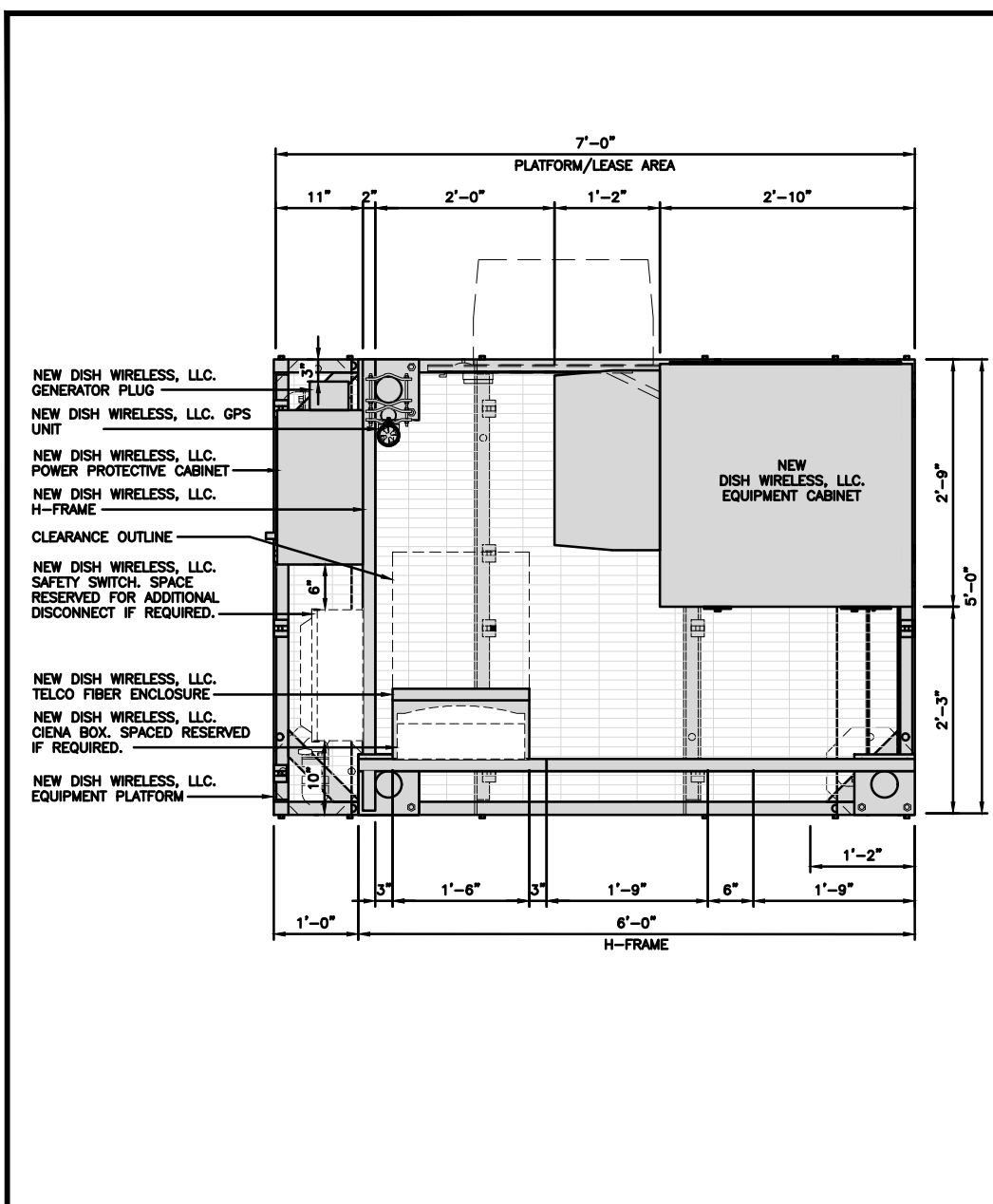
APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



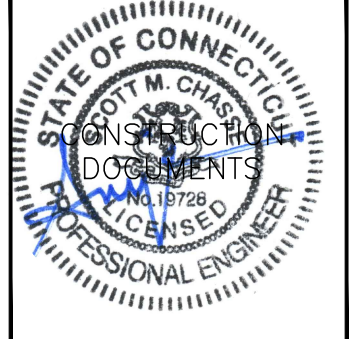
- NOTES**
- CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
 - WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH WIRELESS, LLC. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CSH	CHECKED BY: JCM	APPROVED BY: SMC
RFDS REV #:		0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

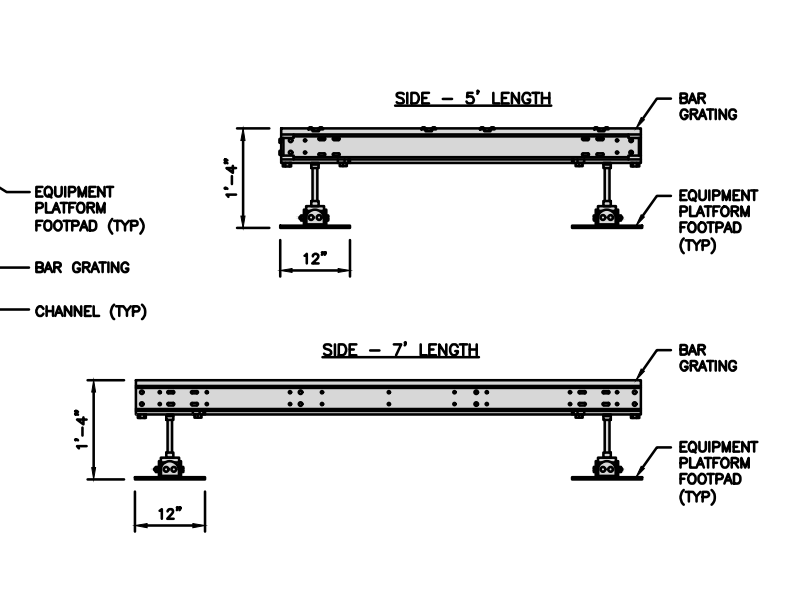
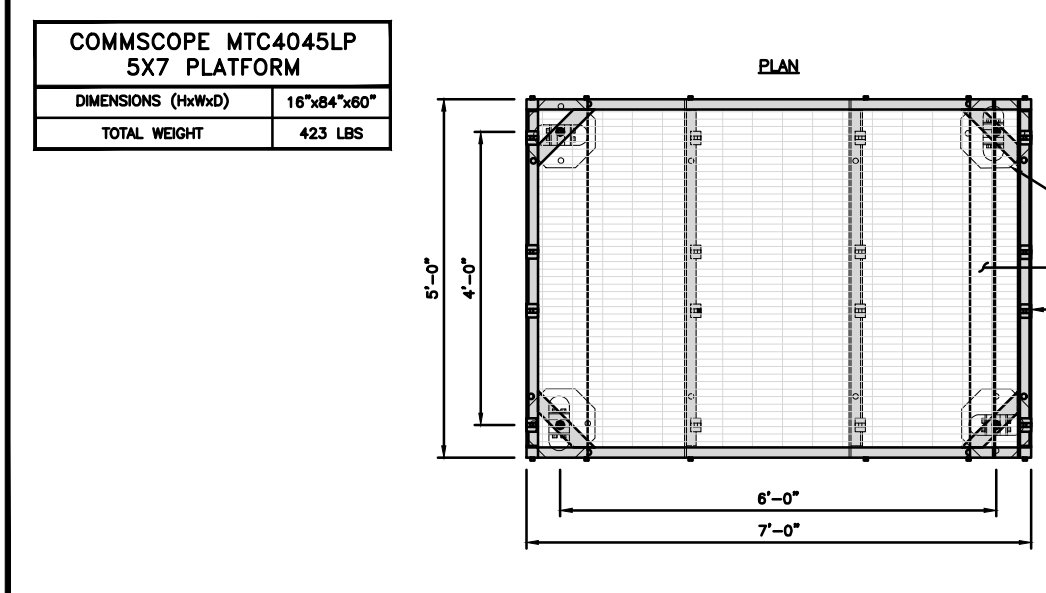
BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER

PLATFORM EQUIPMENT PLAN NO SCALE 1

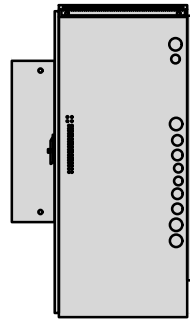
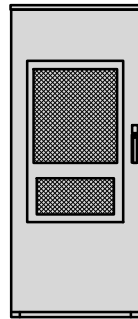
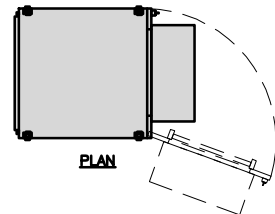
H-FRAME EQUIPMENT ELEVATION/SECTION NO SCALE 2



PLATFORM DETAIL NO SCALE 3

H-FRAME DETAIL NO SCALE 4

ENERSYS HEX CABINET 200005996	
DIMENSIONS (HxWxD):	73"x30"x32"
WEIGHT:	292 LB
HEATER	800W
POWER SYSTEM	-48V 3kw, 625A



BACK

FRONT

SIDE

CABINET DETAIL

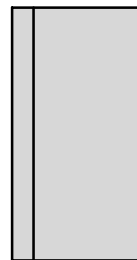
NO SCALE

1

CHARLES FIBER TELCO ENCLOSURE CUBE-MP1818WB-A	
ENCLOSURE DIM (HxWxD)	18.0"x18.0"x9.25"
NEMA RATING	4X
THERMAL	SEALED
MOUNTING BACKBOARD	WOOD



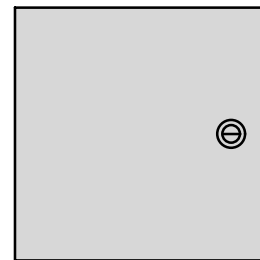
PLAN



SIDE



BACK



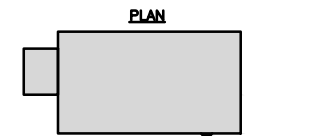
FRONT

FIBER TELCO ENCLOSURE DETAIL

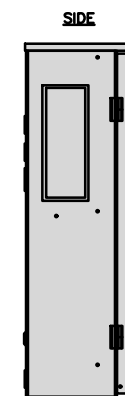
NO SCALE

2

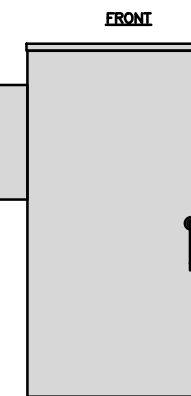
RAYCAP RDIAC-6512-P-240-MTS POWER & TELCO PROTECTION CABINET	
DIMENSIONS (HxWxD)	40"x20"x10"
WEIGHT/ VOLUME	124 LBS
MANUAL TRANSFER SWITCH	200A
LOAD CENTER	30 POSITION
MAIN BREAKER	200A, 65KA AIC
GENERATOR RECEPTACLE	CAMLOCK
NEMA RATING	3R POWDER COATED ALUMINUM
SURGE PROTECTION DEVICE	UL 1449 4TH EDITION LISTED



PLAN



SIDE



FRONT

POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

3

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9

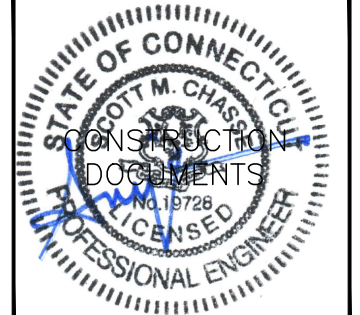
dish

wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

 ALL-POINTS
TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CHECKED BY: APPROVED BY:

CSH JCM SMC

RFDS REV #: 0

CONSTRUCTION
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

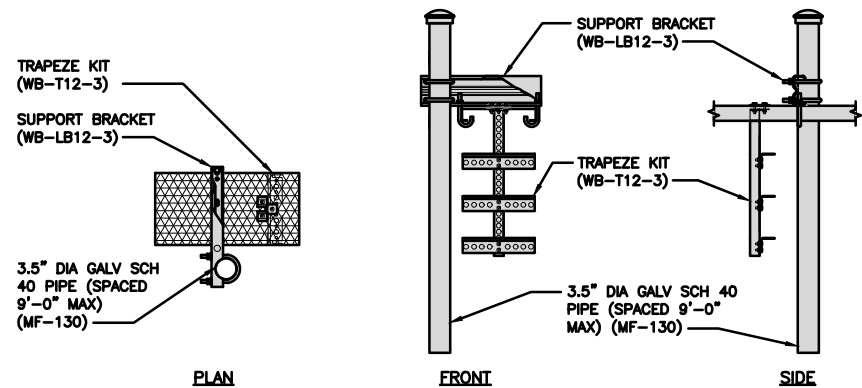
BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-4

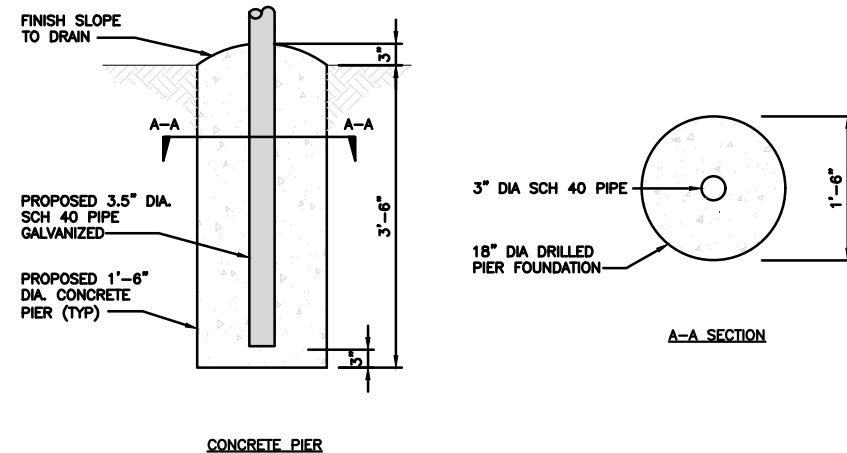
COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT		INCLUDED PRODUCTS: WB-T12-3 TRAPEZE KIT, 3 RUNGS WB-LB12-3 SUPPORT BRACKET MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"
DIMENSIONS (HxL)	160"x10'	
WEIGHT/ VOLUME	325.0 LBS	
CABLE RUN (QTY)	12	



ICE BRIDGE DETAIL

NO SCALE

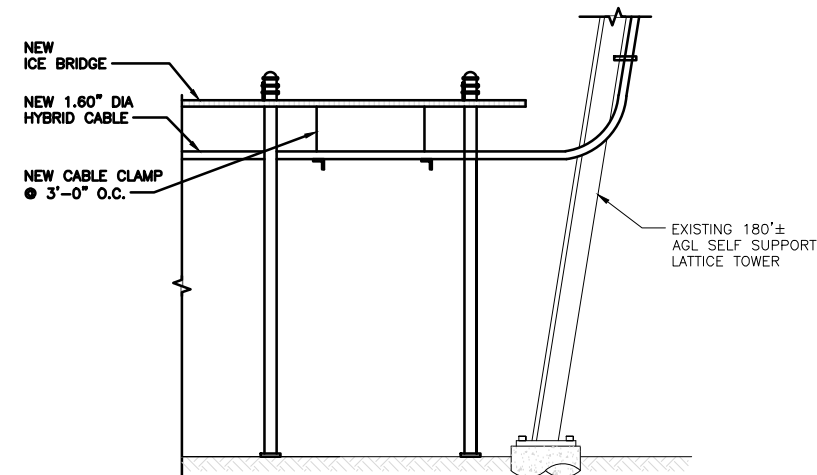
1



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

2

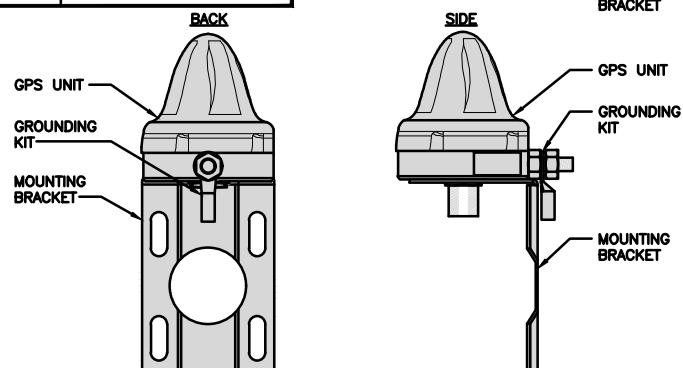


HYBRID CABLE RUN

NO SCALE

3

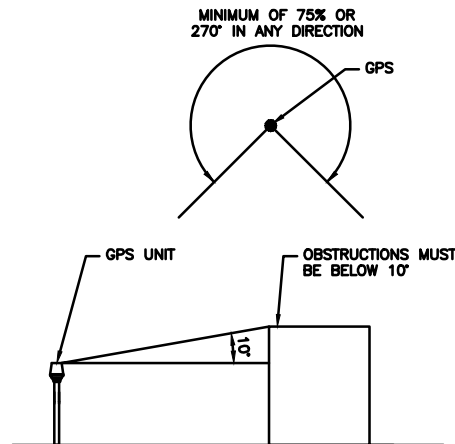
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL

NO SCALE

4



GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

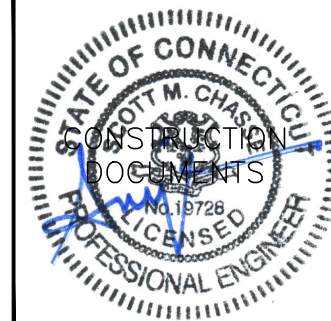
9

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

ALL-POINTS
TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CHECKED BY: APPROVED BY:

CSH JCM SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

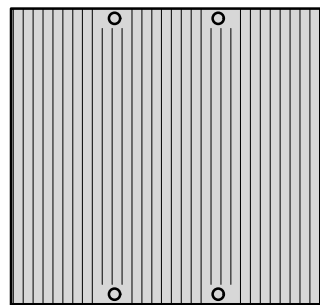
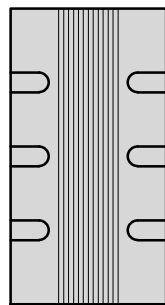
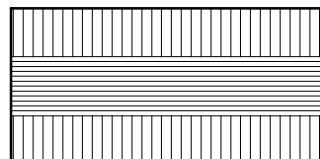
BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
EQUIPMENT DETAILS

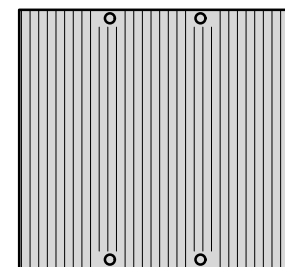
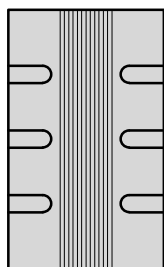
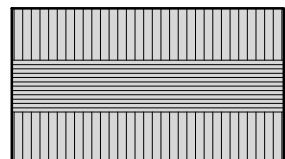
SHEET NUMBER

A-5

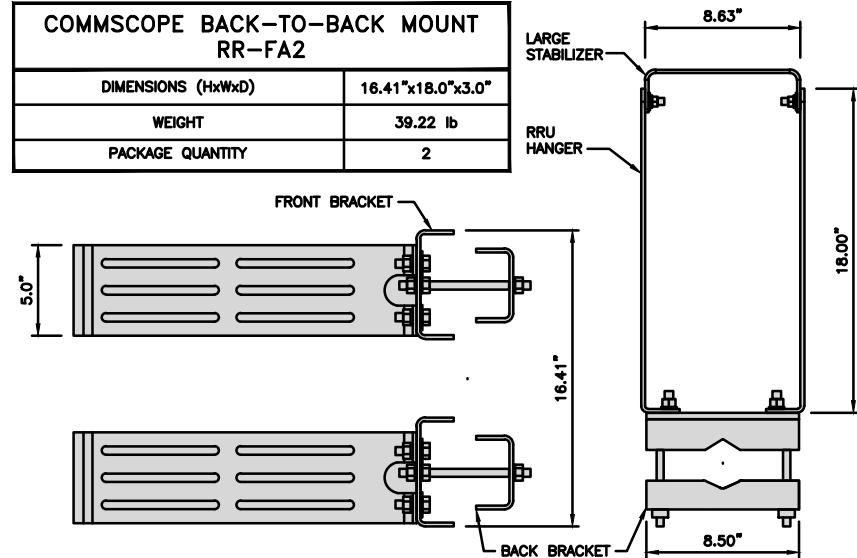
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~36V



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



COMMSCOPE BACK-TO-BACK MOUNT RR-FA2	
DIMENSIONS (HxWxD)	16.41"x18.0"x3.0"
WEIGHT	39.22 lb
PACKAGE QUANTITY	2

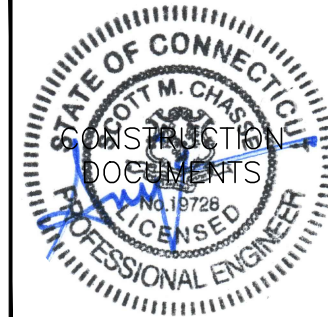


dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

ALL-POINTS
TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CHECKED BY: APPROVED BY:
CSH JCM SMC

RFDS REV #: 0

**CONSTRUCTION
DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

REMOTE RADIO HEAD DETAIL

NO SCALE

1

REMOTE RADIO HEAD DETAIL

NO SCALE

2

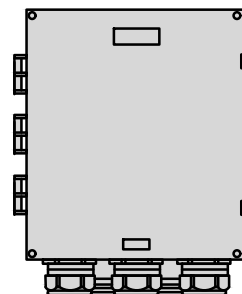
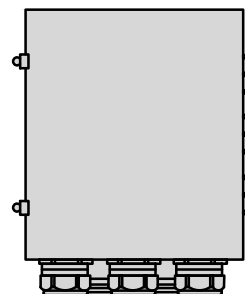
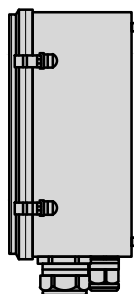
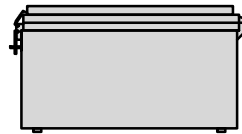
REMOTE RADIO MOUNT DETAIL

NO SCALE

3

RAYCAP RDIDC-9181-PF-48
DC SURGE PROTECTION (OVP)

DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



JMA
MX08FRO665-21

DIMENSIONS (HxWxD)(MM/IN)	1829x805x203/ 72.0"x20.0"x8.0"
TOTAL WEIGHT (kg/lb)	29.48kg/65.00lb
RF CONNECTOR INTERFACE	4.3-10 FEMALE



SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

4

ANTENNA DETAIL

NO SCALE

5

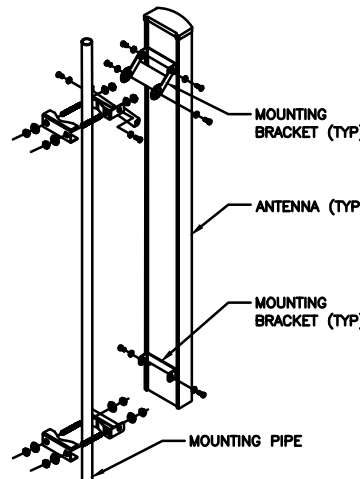
ANTENNA DETAIL

NO SCALE

6

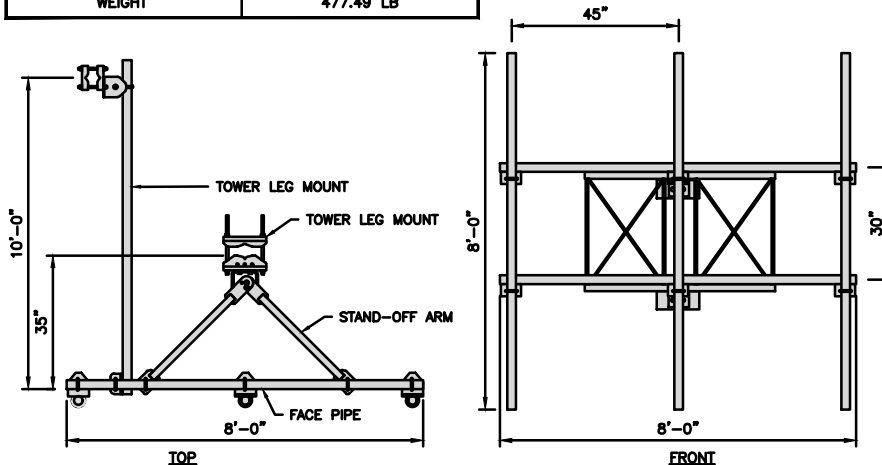
M04 MOUNTING BRACKET
HPA-33R-BUU-H4-K

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



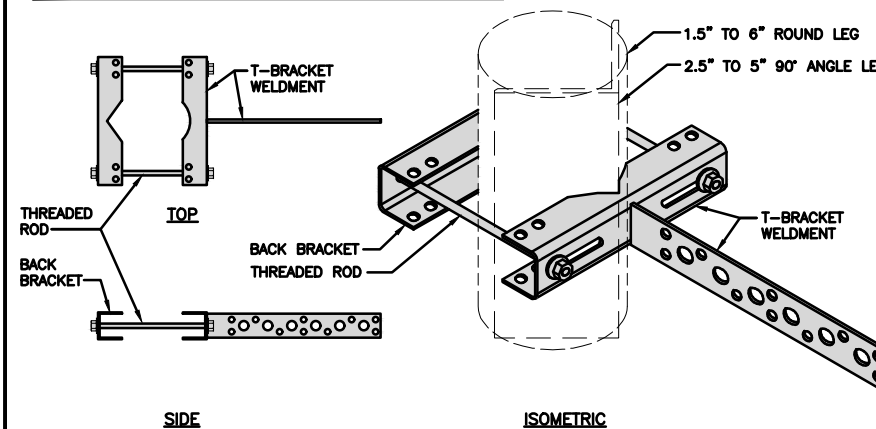
COMMSCOPE V-FRAME
MTC 3975083

FACE SIZE	8'-0"
WEIGHT	477.49 LB



SITEPRO1 T600
UNIVERSAL T-BRACKET

DIMENSIONS (HxWxD)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS



ANTENNA MOUNTING DETAIL

NO SCALE

7

ANTENNA FRAME DETAIL

NO SCALE

8

VERTICAL CABLE SUPPORT DETAIL

NO SCALE

9

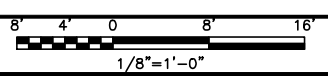
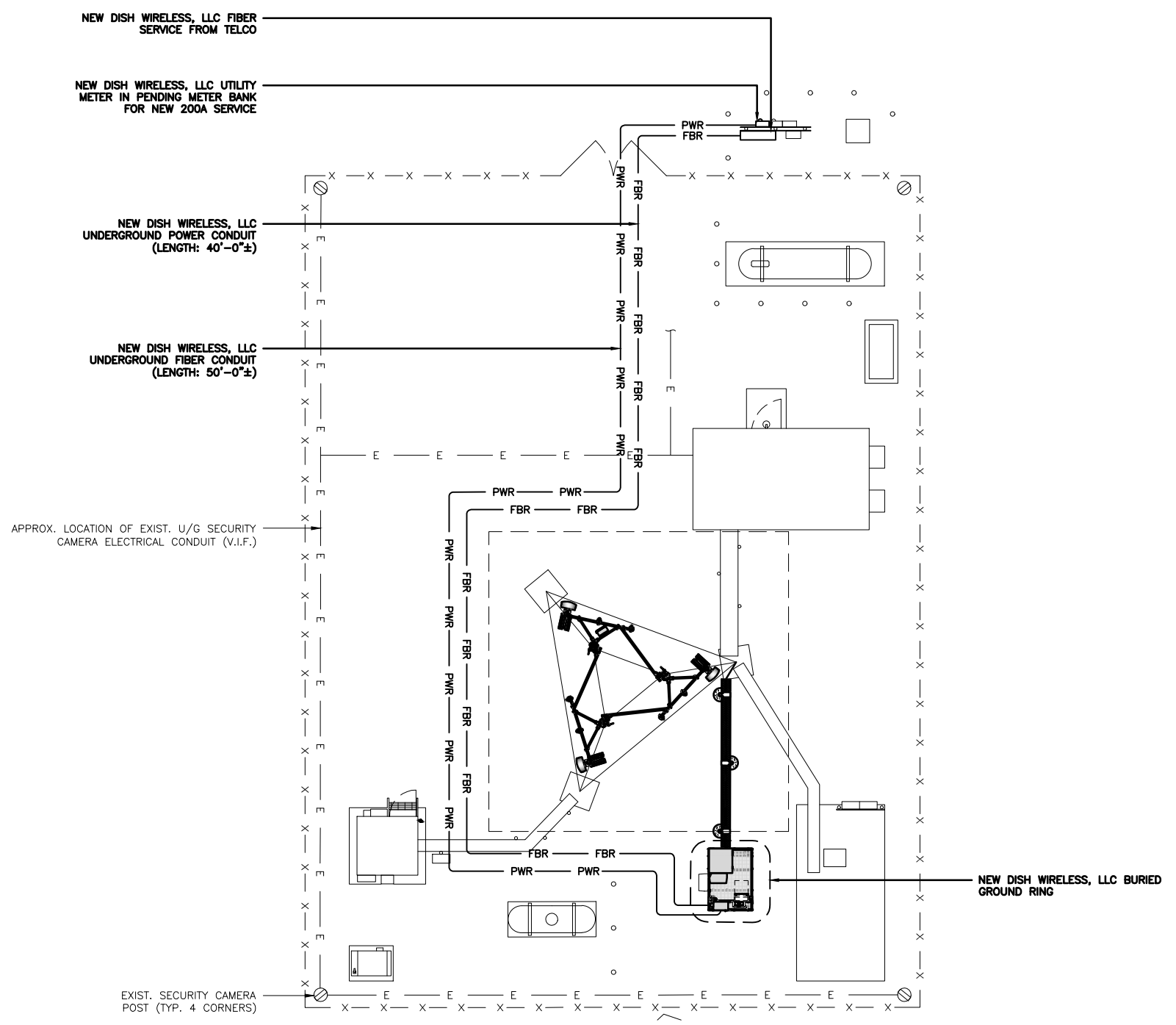
NOTE:
CONTRACTOR TO USE CAUTION WHEN EXCAVATING FOR ELEC. & FIBER CONDUIT IN PROXIMITY TO TOWER FOUNDATION & GROUND RING.

NOTES

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

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

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



UTILITY ROUTE PLAN

1

ELECTRICAL NOTES

NO SCALE

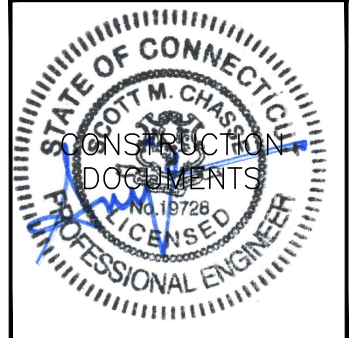
2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CSH CHECKED BY: JCM APPROVED BY: SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

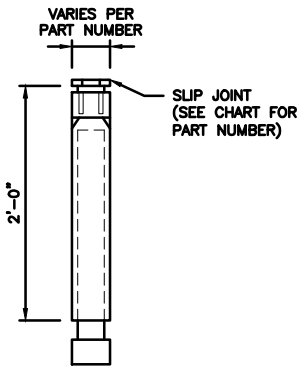
DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
ELECTRICAL/FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER
E-1

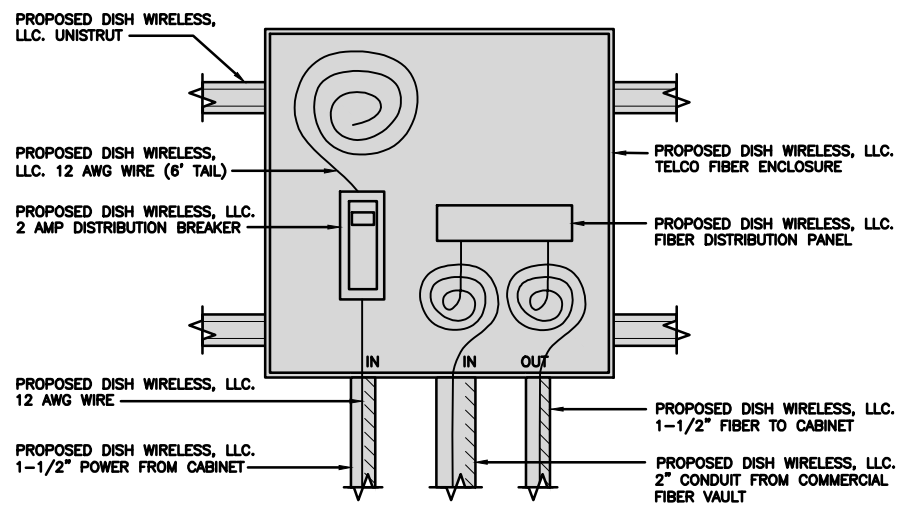
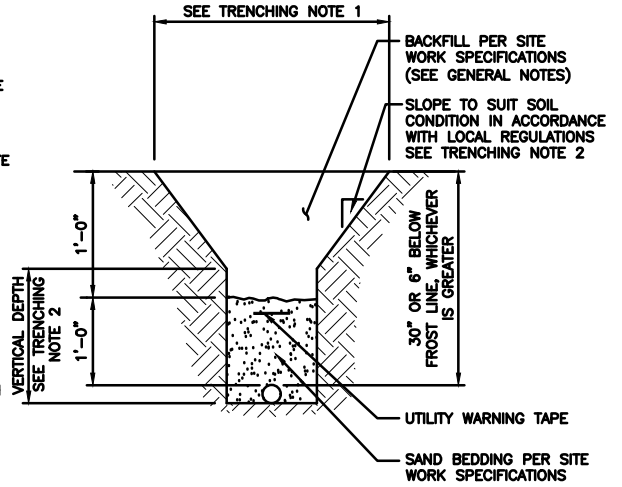
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"



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

TRENCHING NOTES

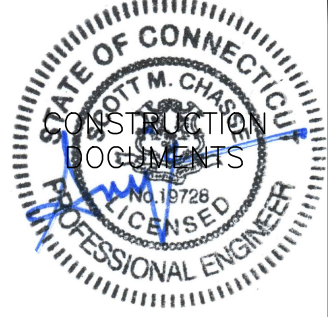
- CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CSH CHECKED BY: JCM APPROVED BY: SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

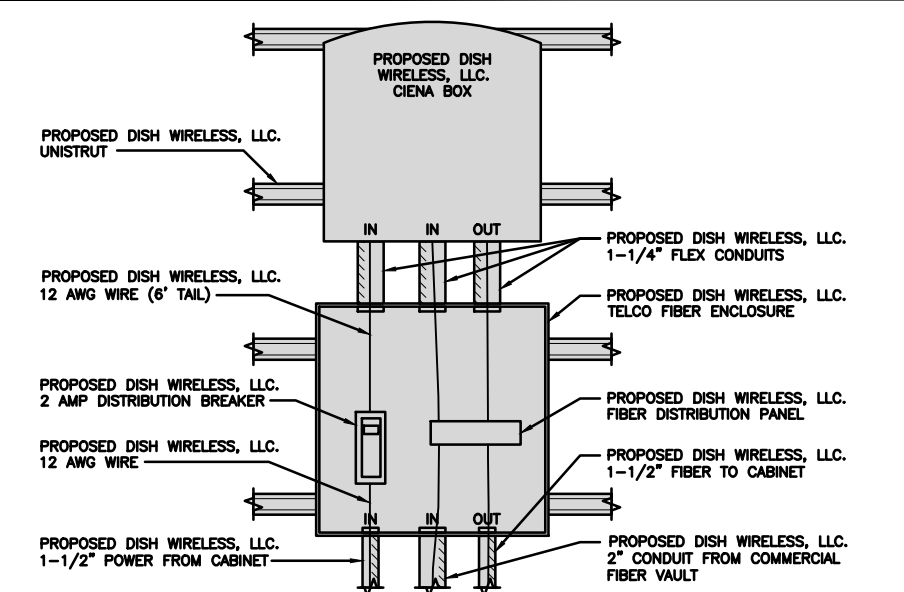
SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER
E-2

EXPANSION JOINT DETAIL NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL NO SCALE 2

DARK TELCO BOX - INTERIOR WIRING LAYOUT NO SCALE 3



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

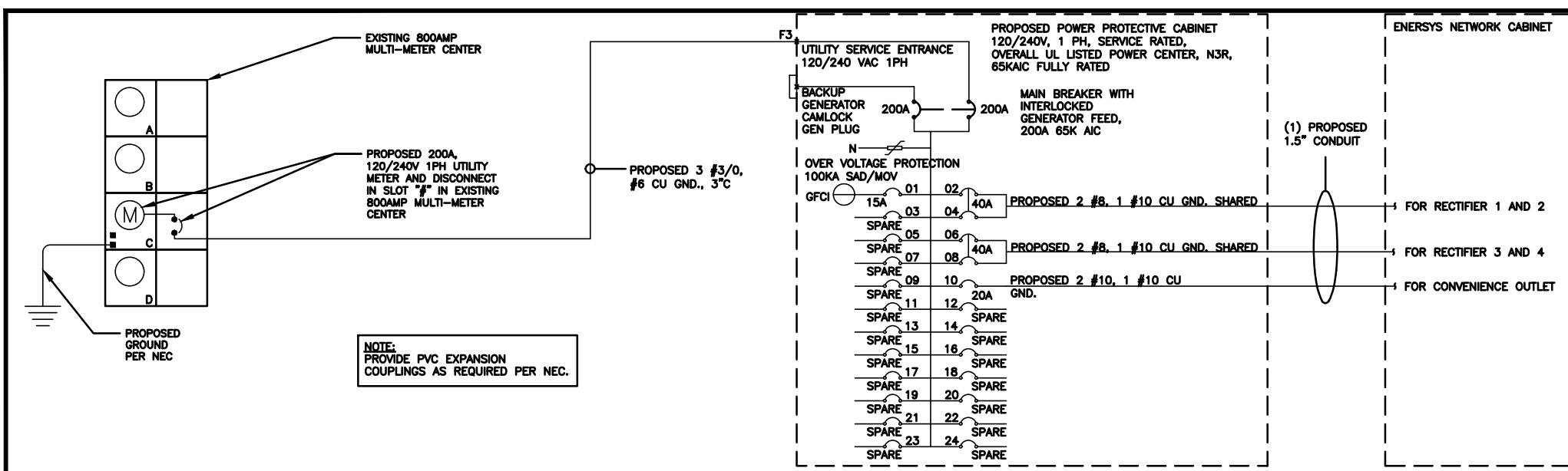
NOT USED NO SCALE 5

NOT USED NO SCALE 6

NOT USED NO SCALE 7

NOT USED NO SCALE 8

NOT USED NO SCALE 9



NOTES

THERE ARE A TOTAL OF (6) CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT. ADJUSTABLE FACTOR OF 70% PER NEC TABLE 310.15(B)(3)(a) SHALL APPLY.

#10 FOR 15A/1P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A-40A/2P BREAKER: 0.8 x 55A = 44.0A

CONDUIT SIZING: ASSUME 1.5" EMT AT 40% FILL PER NEC 358, TABLE 4 - 0.814A SQ. IN AREA

WIRES: USING THWN-2, CU. (INCLUDING 3 GROUND WIRES)

#4 - 0.0824 SQ. IN X 4 = 0.3296 SQ. IN
#8 - 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN <GROUND
#12 - 0.0133 SQ. IN X 1 = 0.0133 SQ. IN <GROUND

TOTAL = 0.4583 SQ. IN

1.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OR (8) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

CONDUIT SIZING: ASSUME 3.0" SCH 40 PVC AT 40% FILL PER NEC 352, TABLE 4 - 1.216A SQ. IN AREA

WIRES: USING THHN, CU. (INCLUDING 2 GROUND WIRES)

#3/0 - 0.1318 SQ. IN X 3 = 0.3954 SQ. IN
#2 - 0.0521 SQ. IN X 1 = 0.0521 SQ. IN

TOTAL = 0.4475 SQ. IN

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

(ENERSYS ALPHA CORDEX DC PLANT) WITH MULTI-METER CENTER 120V240V 1PH SOURCE

NO SCALE 1

PROPOSED PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
GFCI IN PPC CAB.	1440		15A	1	A	2	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIER 1 & 2
-SPARE-				3	B	4	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIER 3 & 4
-SPARE-				5	A	6	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIER 3 & 4
-SPARE-				7	B	8	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIER 3 & 4
-SPARE-				9	A	10	20A	1920	1920	ENERSYS GFCI OUTLET
-SPARE-				11	B	12				-SPARE-
-SPARE-				13	A	14				-SPARE-
-SPARE-				15	B	16				-SPARE-
-SPARE-				17	A	18				-SPARE-
-SPARE-				19	B	20				-SPARE-
-SPARE-				21	A	22				-SPARE-
-SPARE-				23	B	24				-SPARE-
VOLT AMPS	1440							9600	7680	
200A MCB, 1φ, 3W, 120/240V			L1	L2						
MB RATING: 65,000 AIC			11040	7680						
			92	64						VOLT AMPS
										AMPS
										MAX AMPS
										MAX 125%

PANEL SCHEDULE (ENERSYS ALPHA CORDEX DC PLANT) WITH MULTI-METER CENTER 120V240V 1PH SOURCE

NO SCALE 2

FAULT CURRENT CALCULATION (POINT TO POINT METHOD)

FAULT CURRENT AT METER/DISCONNECT PANEL		
AVAILABLE FAULT CURRENT FROM UTILITY COMPANY TRANSFORMER (I _{SCA})**	38230	AMPS
CABLE LENGTH FROM TRANSFORMER TO NEW T-MOBILE METER/DISCONNECT	200	FEET
TYPE OF CABLE ("Cu" FOR COPPER, "Alu" FOR ALUMINUM)	CU	3 CORE CABLE
SYSTEM LINE - LINE VOLTAGE (E _{L-L})	480	VOLTS
VOLTAGE SYSTEM, NUMBER OF PHASES	3	
SYSTEM LINE - NEUTRAL VOLTAGE (E _{L-N})	277	VOLTS
NUMBER OF CONDUCTORS PER PHASE ("N")	3	
CABLE SIZE AWG***	#3/0	
TYPE OF RACEWAY***	MAGNETIC	
PHASE CONDUCTOR CONSTANT ("C ₁ ")	12844	
NEUTRAL CONDUCTOR CONSTANT ("C ₂ ")	12844	
$F_{L-L} = (1.732 \times L \times I_{SCA}) / (N \times C \times E_{L-L})$	0.7160	
$F_{L-N} = (2 \times L \times I_{SCA}) / (N \times C \times E_{L-N})$	1.4327	
$M_{L-L} [M_{L-L} = 1 / (1 + F_{L-L})]$	0.5827	
$M_{L-N} [M_{L-N} = 1 / (1 + F_{L-N})]$	0.4111	
LINE-LINE FAULT CURRENT AT NEW T-MOBILE METER/DISCONNECT: [2Sca=I _{SCA} x M _{L-L}]	22278	AMPS
LINE-NEUTRAL FAULT CURRENT AT NEW T-MOBILE METER/DISCONNECT: [2Sca=I _{SCA} x M _{L-N}]	15715	AMPS
FAULT CURRENT AT NEW T-MOBILE STEP DOWN TRANSFORMER		
CABLE LENGTH FROM NEW ELECTRIC METER TO NEW STEP DOWN TRANSFORMER	15	FEET
TYPE OF CABLE ("Cu" FOR COPPER, "Alu" FOR ALUMINUM)	CU	1 CORE CABLE
SYSTEM LINE - LINE VOLTAGE (E _{L-L})	480	VOLTS
VOLTAGE SYSTEM, NUMBER OF PHASES	3	
SYSTEM LINE - NEUTRAL VOLTAGE (E _{L-N})	277	VOLTS
NUMBER OF CONDUCTORS PER PHASE ("N")	3	
CABLE SIZE AWG	#3/0	
TYPE OF RACEWAY	MAGNETIC	
PHASE CONDUCTOR CONSTANT ("C ₁ ")	12844	
NEUTRAL CONDUCTOR CONSTANT ("C ₂ ")	12844	
$F_{L-L} = (1.732 \times L \times 2Sca) / (N \times C \times E_{L-L})$	0.0313	
$F_{L-N} = (2 \times L \times 2Sca) / (N \times C \times E_{L-N})$	0.0442	
$M_{L-L} [M_{L-L} = 1 / (1 + F_{L-L})]$	0.9697	
$M_{L-N} [M_{L-N} = 1 / (1 + F_{L-N})]$	0.9577	
LINE-LINE FAULT CURRENT AT NEW T-MOBILE STEP DOWN TRANSFORMER: [3Sca=2Sca x M _{L-L}]	21602	AMPS
LINE-NEUTRAL FAULT CURRENT AT NEW T-MOBILE STEP DOWN TRANSFORMER: [3Sca=2Sca x M _{L-N}]	15050	AMPS
FAULT CURRENT AT TRANSFER SWITCH PANEL		
CABLE LENGTH FROM NEW T-MOBILE TRANSFORMER TO TRANSFER SWITCH PANEL	10	FEET
TYPE OF CABLE ("Cu" FOR COPPER, "Alu" FOR ALUMINUM)	CU	1 CORE CABLE
SYSTEM LINE - LINE VOLTAGE (E _{L-L})	240	VOLTS
VOLTAGE SYSTEM, NUMBER OF PHASES	1	
SYSTEM LINE - NEUTRAL VOLTAGE (E _{L-N})	120	VOLTS
NUMBER OF CONDUCTORS PER PHASE ("N")	3	
CABLE SIZE AWG	#3/0	
TYPE OF RACEWAY	MAGNETIC	
PHASE CONDUCTOR CONSTANT ("C ₁ ")	12844	
NEUTRAL CONDUCTOR CONSTANT ("C ₂ ")	12844	
$F_{L-L} = (2 \times L \times 3Sca) / (N \times C \times E_{L-L})$	0.1402	
$F_{L-N} = (2 \times L \times 3Sca) / (N \times C \times E_{L-N})$	0.0651	
$M_{L-L} [M_{L-L} = 1 / (1 + F_{L-L})]$	0.8771	
$M_{L-N} [M_{L-N} = 1 / (1 + F_{L-N})]$	0.9389	
LINE-LINE FAULT CURRENT AT NEW T-MOBILE TRANSFER SWITCH: [4Sca=3Sca x M _{L-L}]	18947	AMPS
LINE-NEUTRAL FAULT CURRENT AT NEW T-MOBILE TRANSFER SWITCH: [4Sca=3Sca x M _{L-N}]	14130	AMPS

NOT USED

NO SCALE 3

FAULT CALCULATIONS

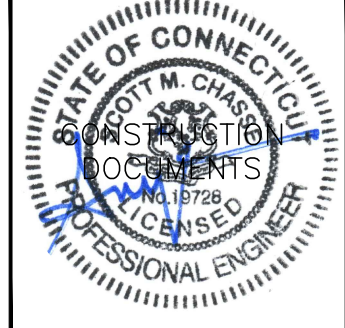
NO SCALE 4



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CHECKED BY: APPROVED BY:
CSH JCM SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

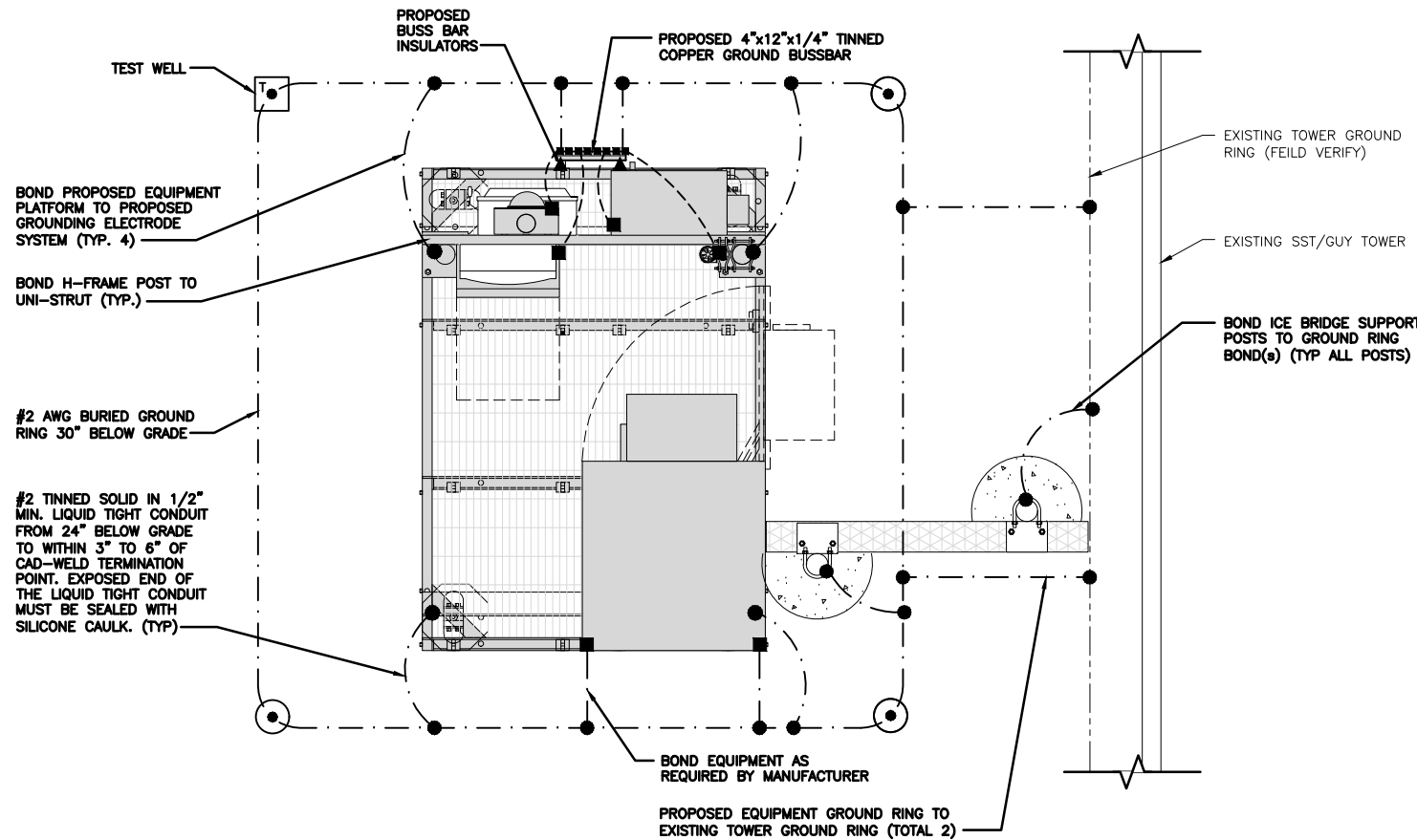
APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

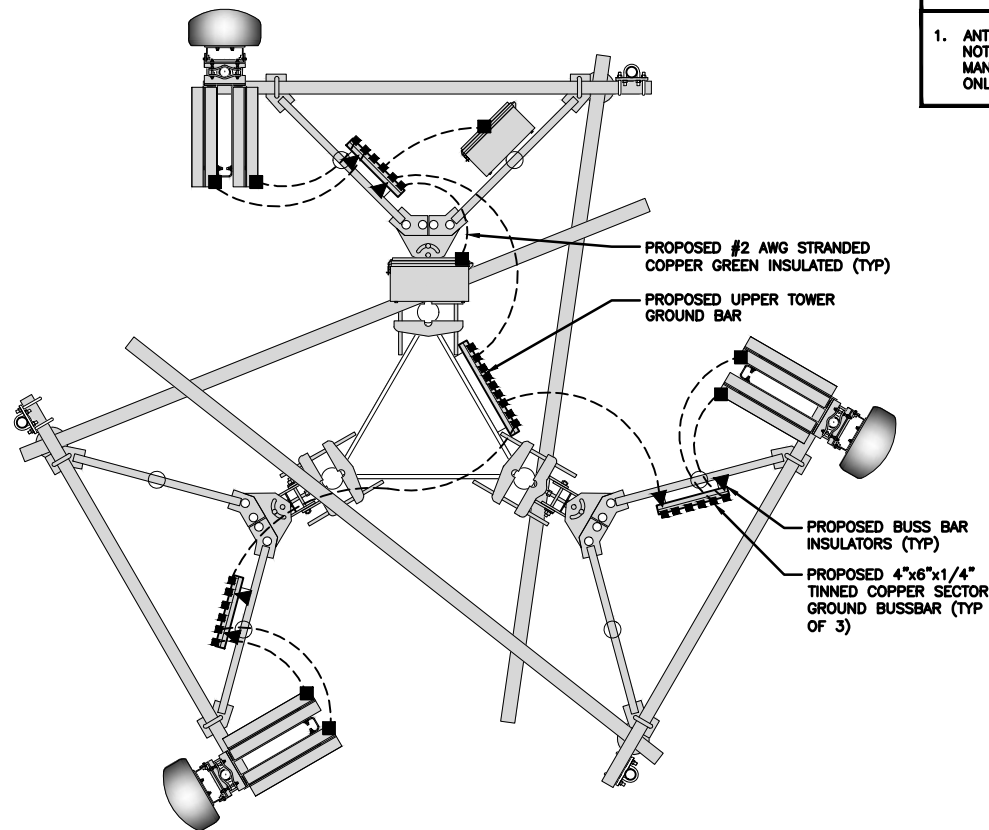
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT
CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



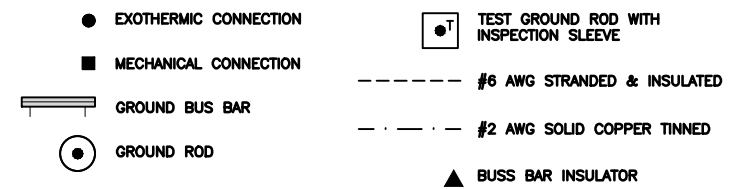
TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH WIRELESS, LLC. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
- ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

- (A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- (B) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- (C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- (D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- (E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.
- (F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- (G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- (H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- (J) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR AND EXTERIOR GROUND RING.
- (K) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- (L) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.
- (M) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.
- (N) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE
- (P) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.
- (Q) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR
- (R) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT. REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CSH CHECKED BY: JCM APPROVED BY: SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

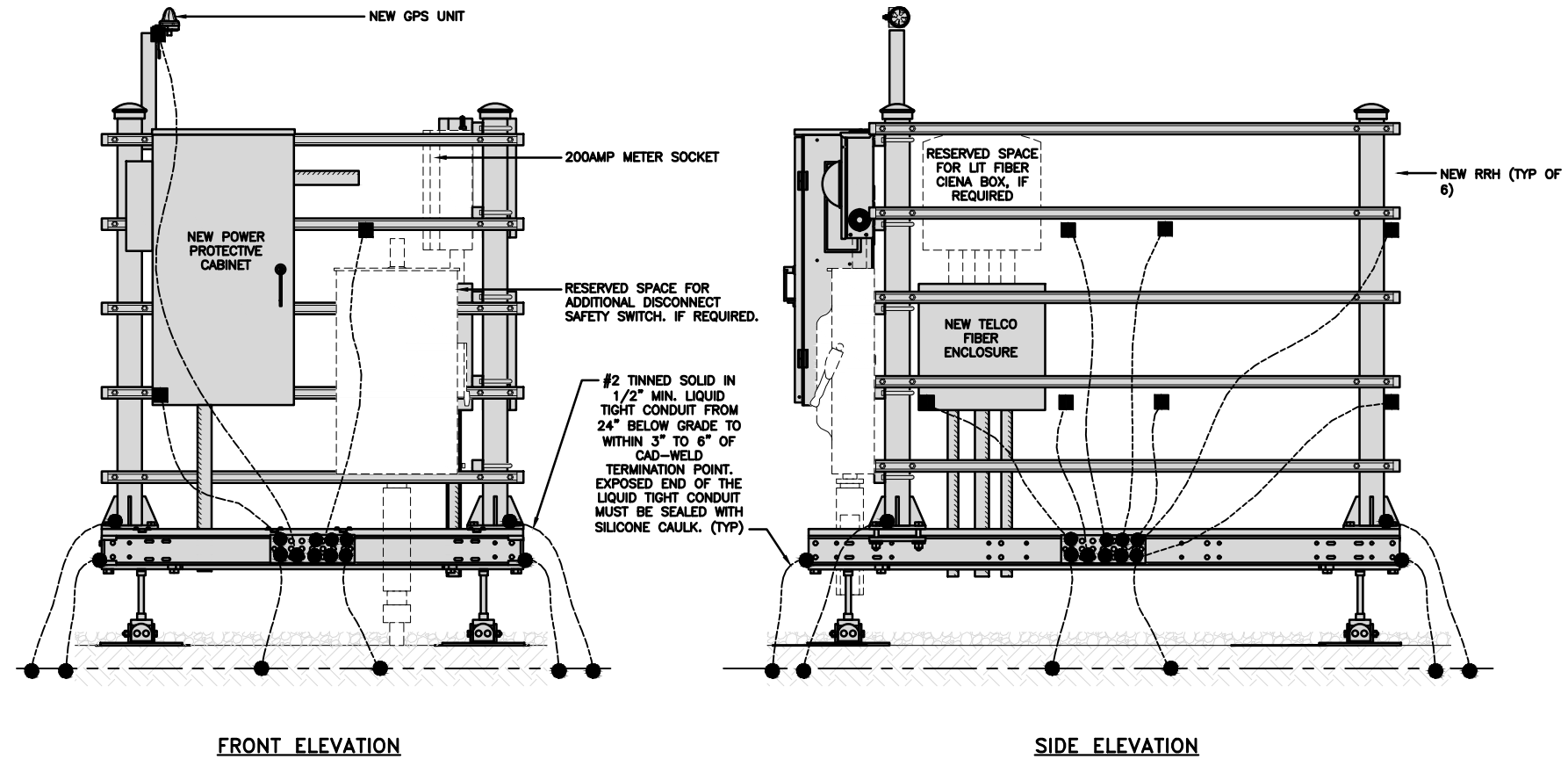
SHEET TITLE
GROUNDING PLANS
AND NOTES

SHEET NUMBER

G-1

NOTES

EQUIPMENT CABINET OMITTED FOR CLARITY



NOT USED

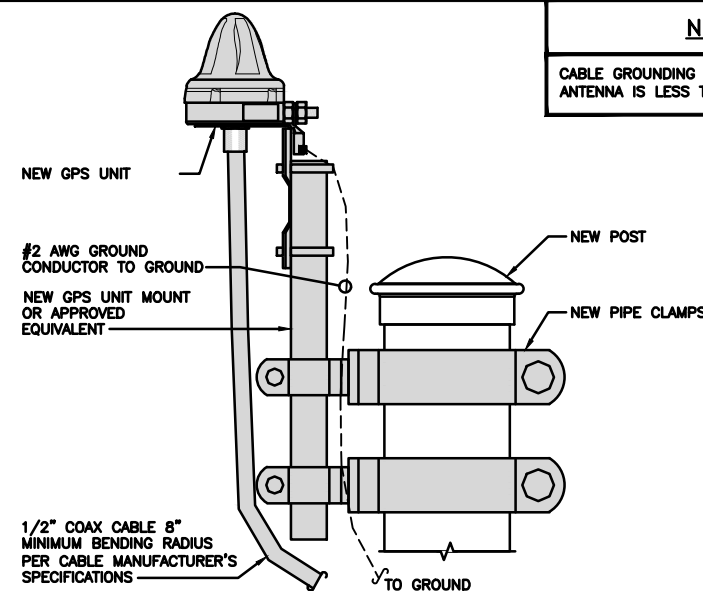
NO SCALE

1

H-FRAME GROUNDING DETAIL

NO SCALE

4



NOT USED

NO SCALE

5

TYPICAL GPS UNIT GROUNDING

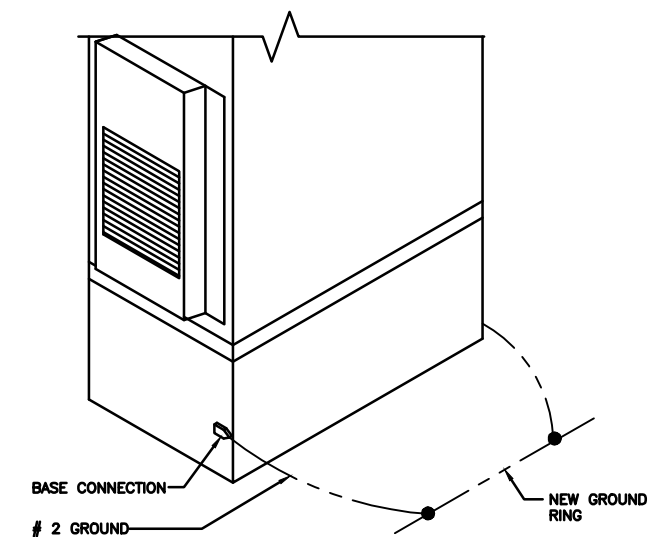
NO SCALE

6

OUTDOOR CABINET GROUNDING

NO SCALE

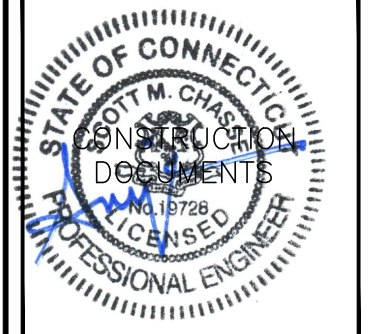
7



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CHECKED BY: APPROVED BY:

CSH JCM SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

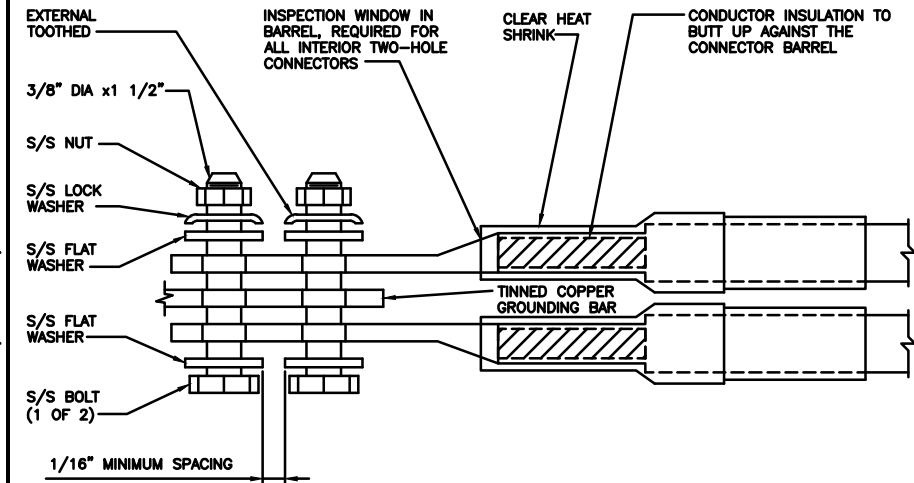
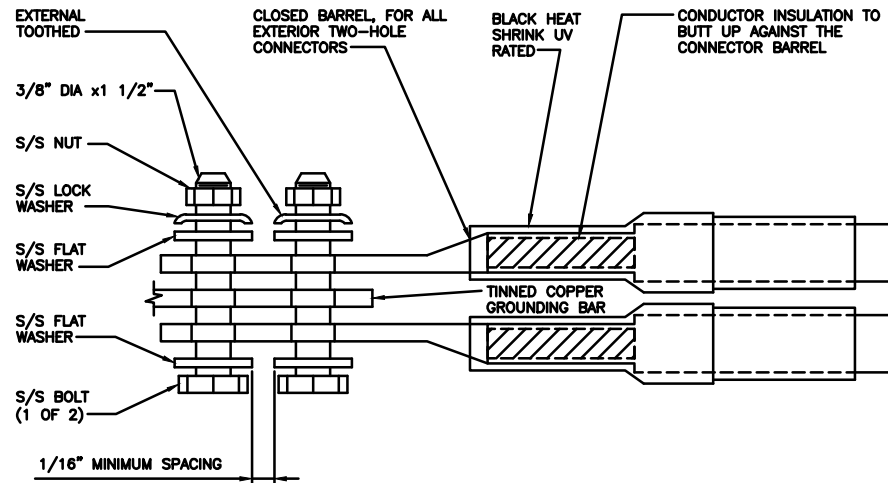
BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-2

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



TYPICAL GROUNDING NOTES

NO SCALE

1

TYPICAL EXTERIOR TWO HOLE LUG

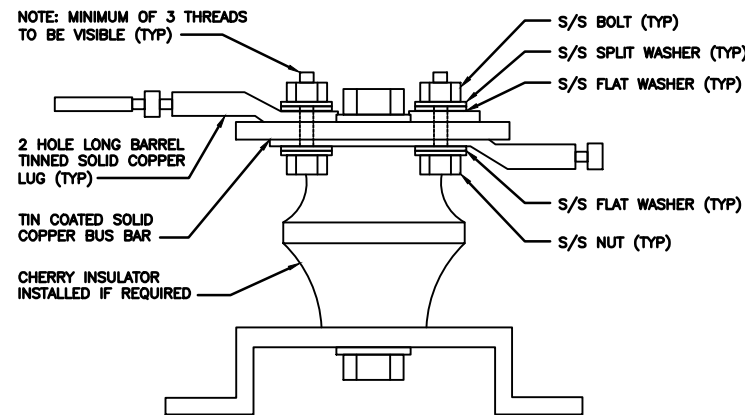
NO SCALE

2

TYPICAL INTERIOR TWO HOLE LUG

NO SCALE

3



LUG DETAIL

NO SCALE

4

NOT USED

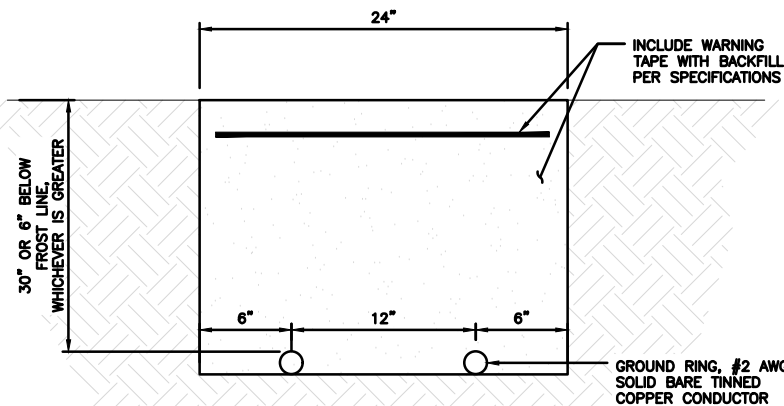
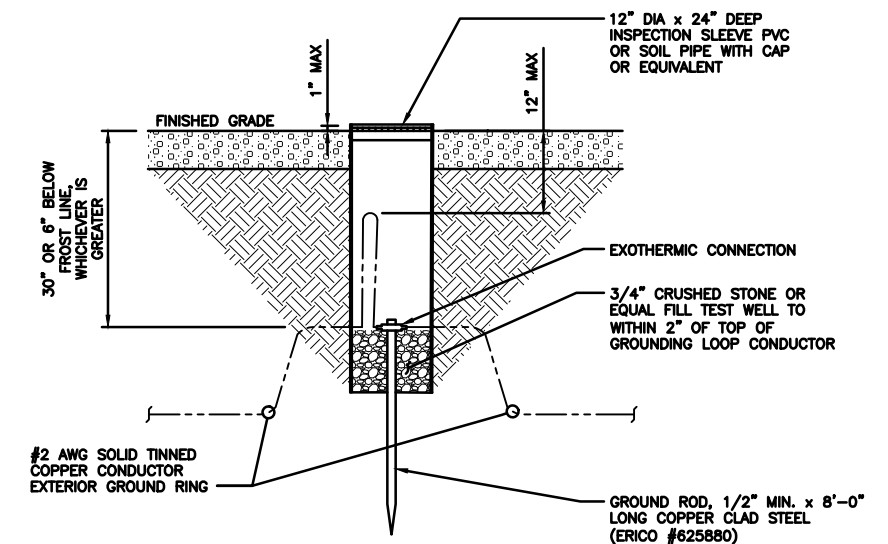
NO SCALE

5

TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE

6



TYPICAL GROUND RING TRENCH

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

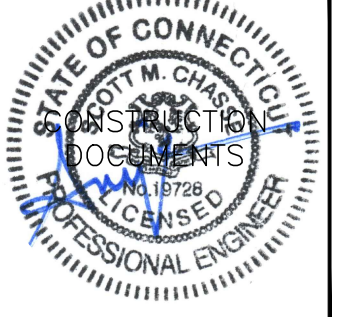
9

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

ALL-POINTS
TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CHECKED BY: APPROVED BY:
CSH JCM SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-3

RF JUMPER COLOR CODING

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

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

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

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

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

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

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (1) PORT	PURPLE	PURPLE		WHITE (1) PORT	PURPLE	PURPLE		WHITE (1) PORT	PURPLE	PURPLE
			WHITE (1) PORT				WHITE (1) PORT				WHITE (1) PORT

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM
LONG WITH FREQUENCY BANDS

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

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

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

HYBRID/DISCREET CABLES

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

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

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY

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

RET MOTORS AT ANTENNAS

PORT 1/ ANTENNA 1 "IN"	PORT 1/ ANTENNA 1 "IN"	PORT 1/ ANTENNA 1 "IN"
RED	BLUE	GREEN

MICROWAVE RADIO LINKS

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

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

PRIMARY	SECONDARY
WHITE	WHITE
RED	RED
WHITE	WHITE
	RED
	WHITE

RF CABLE COLOR CODES

NO SCALE 1

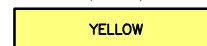
LOW BANDS (N71-N28)
OPTIONAL - (N29)



AWS
(N65+N70+H-BLOCK)



CBRS TECH
(3 GHz)



NEGATIVE SLANT PORT
ON ANTRRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE 2

NOT USED

NO SCALE 3

NOT USED

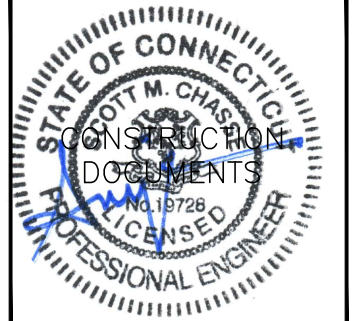
NO SCALE 4



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CSH CHECKED BY: JCM APPROVED BY: SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

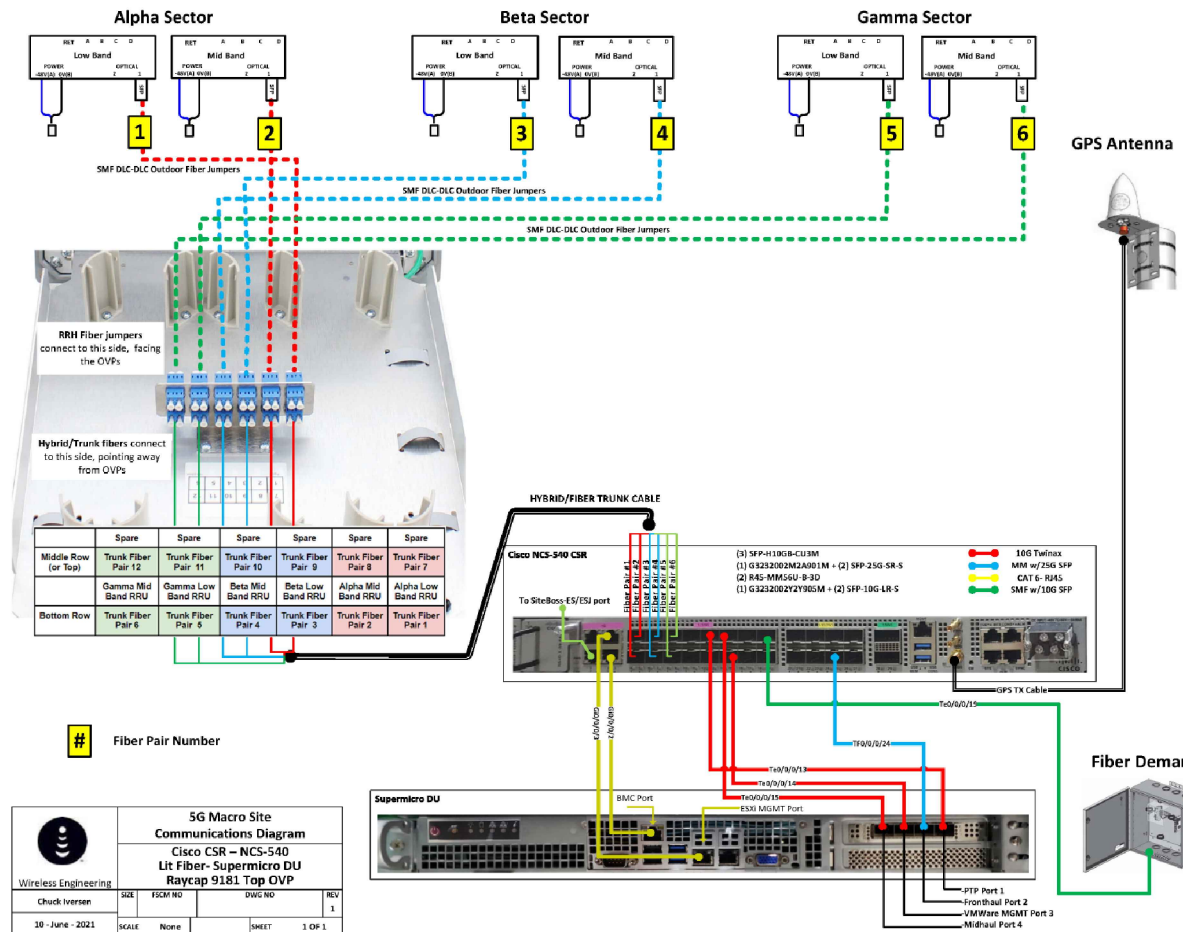
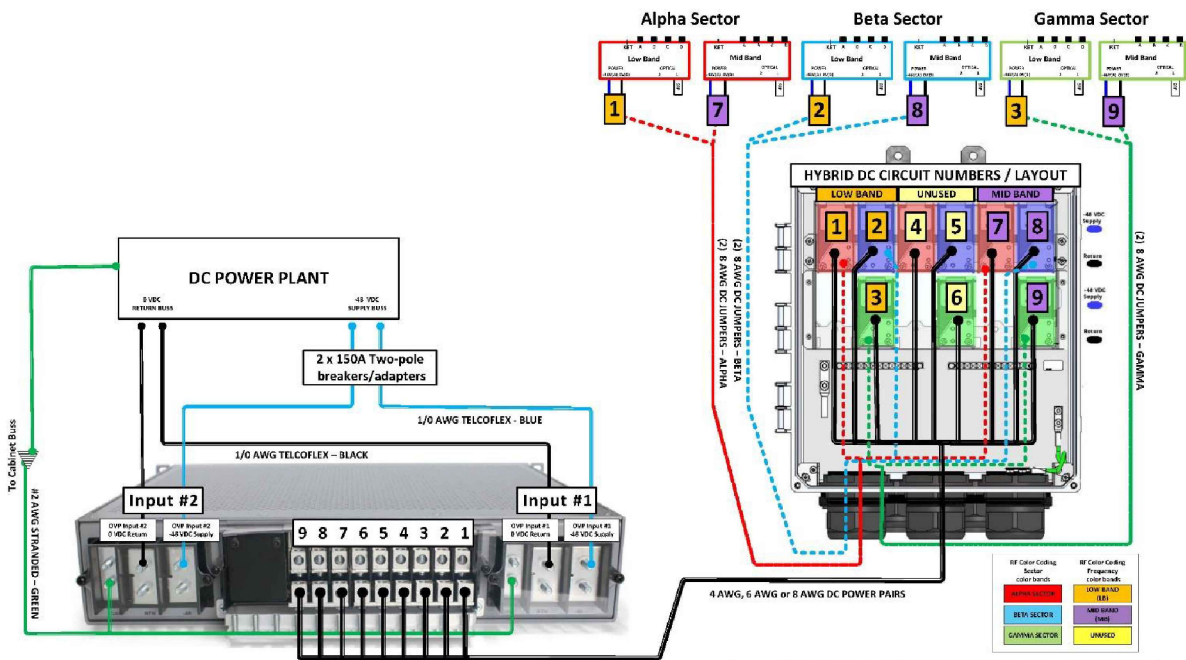
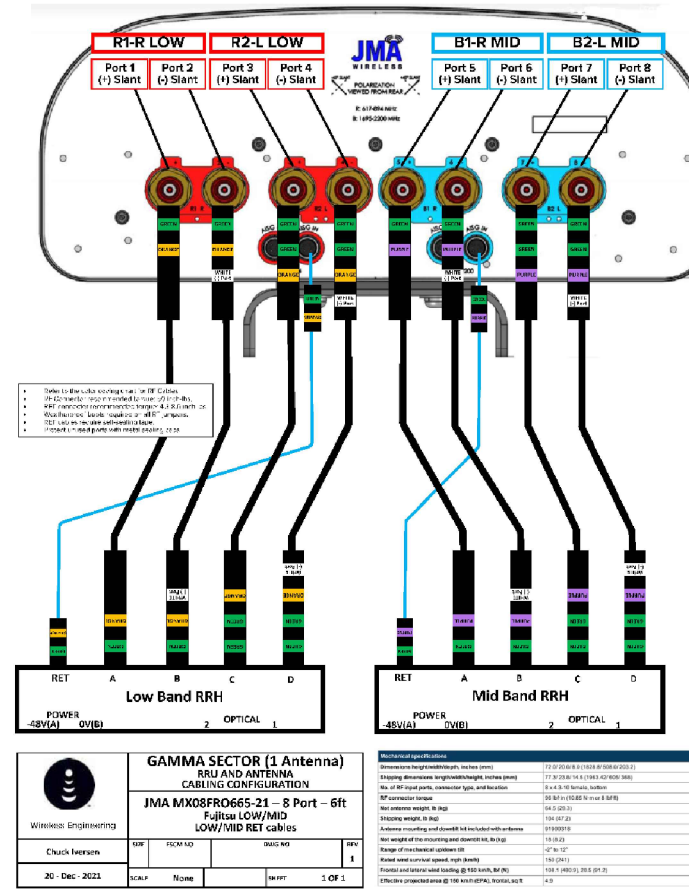
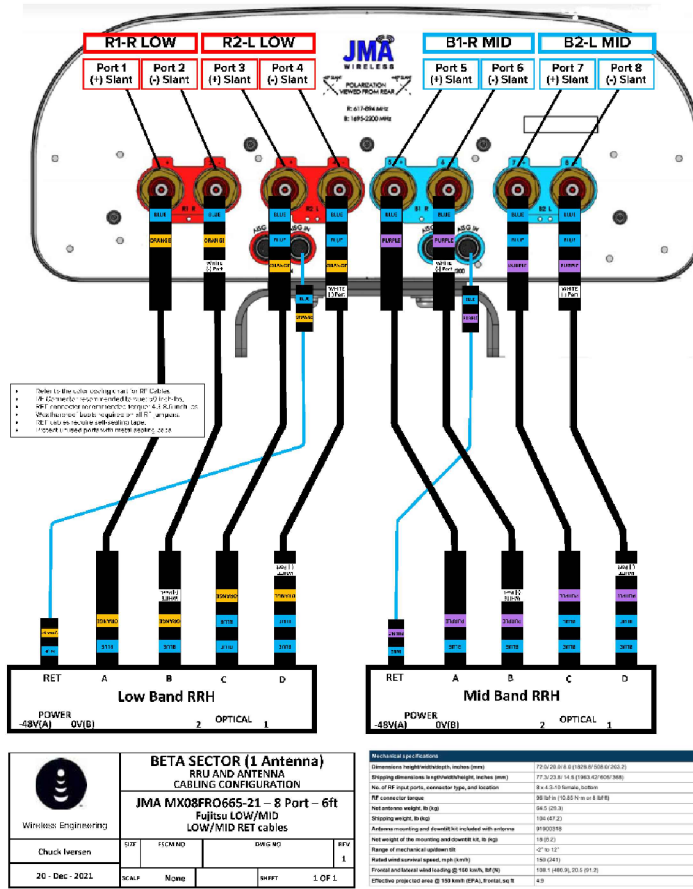
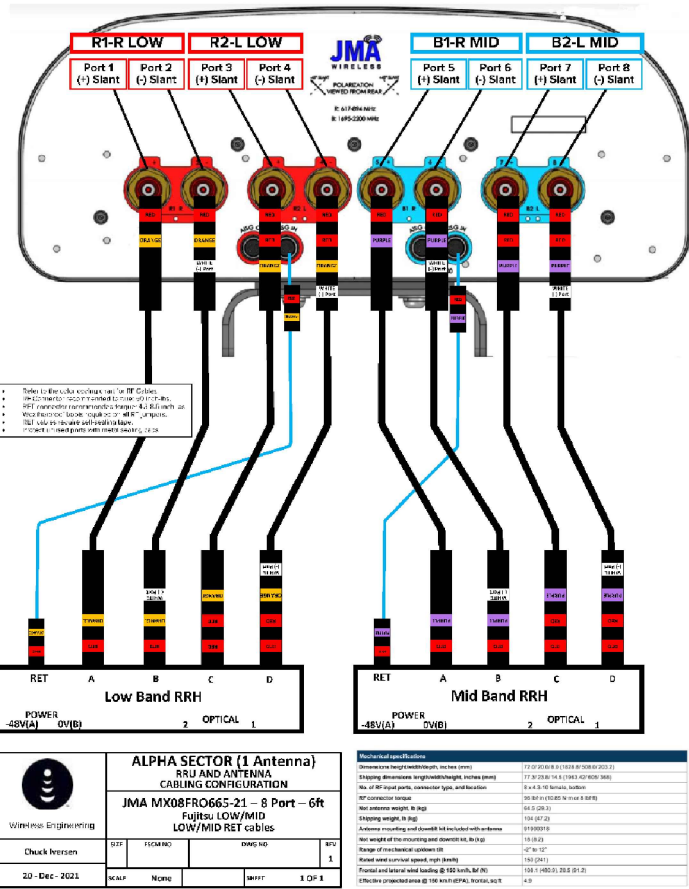
APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1



Input Circuit #2	Input Circuit #1
NO	NO
ALL	ALL
Alpha	Alpha
Beta	Beta
Gamma	Gamma
Alpha/Beta	Alpha/Beta
Beta/Gamma	Beta/Gamma
Alpha/Gamma	Alpha/Gamma

Check Item	REV	DESCRIPTION	DATE	BY
30-June-2021	1	None	2021	JCP

Check Item	REV	DESCRIPTION	DATE	BY
20-June-2021	1	None	2021	JCP

PLUMBING DIAGRAM

NO SCALE 1



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CHECKED BY: APPROVED BY:
CSH JCM SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

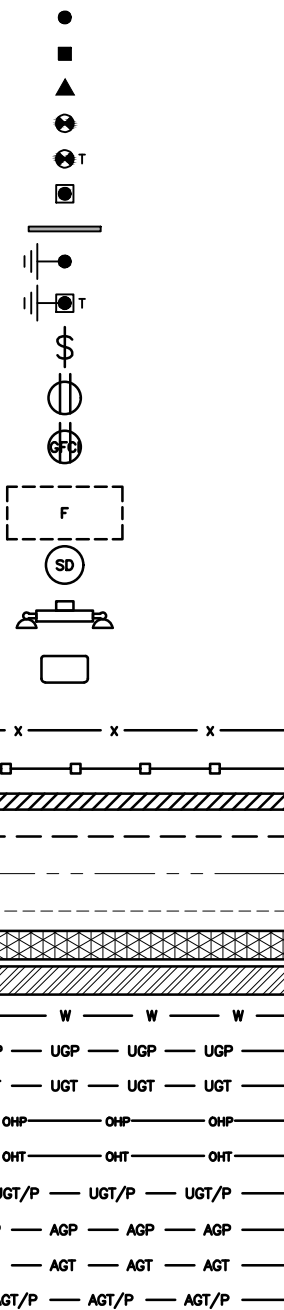
BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
RF
PLUMBING DIAGRAM

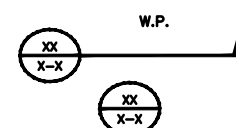
SHEET NUMBER

RF-2

EXOTHERMIC CONNECTION
 MECHANICAL CONNECTION
 BUSS BAR INSULATOR
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 EXOTHERMIC WITH INSPECTION SLEEVE
 GROUNDING BAR
 GROUND ROD
 TEST GROUND ROD WITH INSPECTION SLEEVE
 SINGLE POLE SWITCH
 DUPLEX RECEPTACLE
 DUPLEX GFCI RECEPTACLE
 FLUORESCENT LIGHTING FIXTURE
 (2) TWO LAMPS 48-TB
 SMOKE DETECTION (DC)
 EMERGENCY LIGHTING (DC)
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
 CANNON LUMINA 4000 BK-SR4-120-PE-DBTDXD
 WOOD/WROUGHT IRON FENCE
 WALL STRUCTURE
 LEASE AREA
 PROPERTY LINE (PL)
 SETBACKS
 ICE BRIDGE
 CABLE TRAY
 WATER LINE
 UNDERGROUND POWER
 UNDERGROUND TELCO
 OVERHEAD POWER
 OVERHEAD TELCO
 UNDERGROUND TELCO/POWER
 ABOVE GROUND POWER
 ABOVE GROUND TELCO
 ABOVE GROUND TELCO/POWER
 WORKPOINT



SECTION REFERENCE
 DETAIL REFERENCE



LEGEND

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

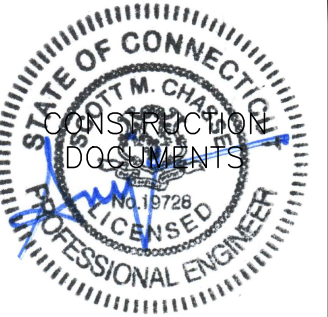
ABBREVIATIONS



5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
 SUITE 311
 WATERFORD, CT 06385
 PH: (860) 663-1697
 FAX: (860) 663-0935
 WWW.ALLPOINTSTECH.COM



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

DRAWN BY: CSH CHECKED BY: JCM APPROVED BY: SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
 CT411870

DISH WIRELESS, LLC.
 PROJECT INFORMATION
 BOBDL00105B
 250 OLCOTT STREET
 MANCHESTER, CT 06040

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH WIRELESS, LLC. AND TOWER OWNER NOC & THE DISH WIRELESS, LLC. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH WIRELESS, LLC. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH WIRELESS, LLC. AND DISH WIRELESS, LLC. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS, LLC. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH DISH WIRELESS, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH WIRELESS, LLC. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH WIRELESS, LLC. AND TOWER OWNER, AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

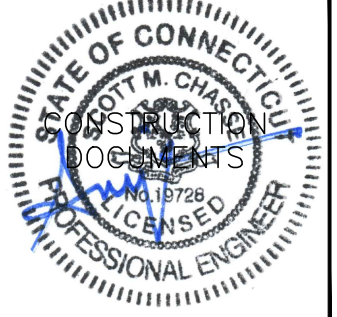
1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
CARRIER: DISH WIRELESS, LLC.
TOWER OWNER: TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH WIRELESS, LLC. AND TOWER OWNER
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
CSH	JCM	SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
 #4 BARS AND SMALLER 40 ksi
 #5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
 - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
 - CONCRETE EXPOSED TO EARTH OR WEATHER:
 - #6 BARS AND LARGER 2"
 - #5 BARS AND SMALLER 1-1/2"
 - CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
 - SLAB AND WALLS 3/4"
 - BEAMS AND COLUMNS 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

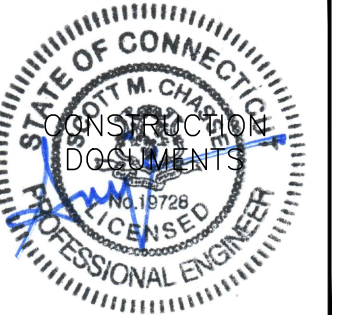
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH WIRELESS, LLC. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH WIRELESS, LLC."
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
CSH	JCM	SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

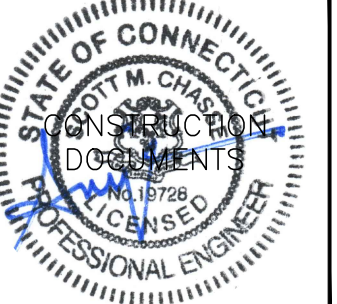
1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



567 VAUXHALL STREET EXTENSION
SUITE 311
WATERFORD, CT 06385
PH: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
CSH	JCM	SMC

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	02/10/22	ISSUED FOR REVIEW
1	12/14/22	ISSUED FOR REVIEW
2	01/13/23	ISSUED FOR CONSTRUCTION

APT PROJECT NUMBER
CT411870

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00105B
250 OLCOTT STREET
MANCHESTER, CT 06040

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

Exhibit D

Structural Analysis Report



STRUCTURAL ANALYSIS REPORT
FOR PROPOSED ANTENNA & APPURTENANCE
INSTALLATION ON AN EXISTING 180-ft SELF-SUPPORTING TOWER
MANCHESTER, CONNECTICUT



Prepared for
Northeast Site Solutions



Dish Wireless Site Ref:
BOBDL00105B; CLPC Manchester

Site Address: 250 Olcott Street, Manchester, Connecticut 06040
APT Filing No. CT411870

Rev. 0 August 27, 2021
Rev. 1 March 9, 2022
Rev. 2 March 11, 2022
Rev. 3 December 6, 2022



**Structural Analysis Report
180' Self-Supporting Tower
Manchester, Connecticut
prepared for
Northeast Site Solutions**

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural evaluation of an existing 180' self-supporting lattice tower structure to support a proposed Dish Wireless (Dish) equipment installation, utilizing an industry recognized FEA tower modeling software. The subject tower is owned and operated by Northeast Utilities (Eversource Energy).

The proposed Dish antenna and appurtenance modification consists of the installation of Three (3) new panel antennas, six (6) new radios, and one (1) OVP. The proposed Dish equipment will be mounted on three (3) new Commscope sector mounts and fed by one new hybrid line, as referenced in the following table.

In coordination with Eversource, it was decided that APT should include the reserve wireless communication carrier's equipment that was part of the original tower design. Additionally, APT incorporated a Service Wind Speed of 101-mph to evaluate the twist and sway based on Eversource's SUB 090 requirements and per TIA-222-H Annex D.

Our analysis indicates that the subject tower structure meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with the existing, proposed, and reserved equipment loading.

The steel component structure usage is summarized in the table below:

Component/Member	Usage (%)
Diagonal (0'-20')	78% ¹

Notes:

1. Member connection controls.

INTRODUCTION:

A structural analysis was performed on the above-mentioned communications tower by APT for Northeast Site Solutions. The subject tower is located at 250 Olcott Street, in Manchester, Connecticut.

The following information was utilized in the preparation of this analysis:

- J Construction Drawings prepared by APT (Project No. CT411870), marked Rev. 1, dated 12/06/22.
- J Structural Analysis Report prepared by APT (Project No. CT411870), marked Rev. 2, dated 03/11/22.
- J Structural Analysis Report prepared by APT (Project No. CT1931643), marked Rev. 2, dated 06/15/22.
- J RFDS detailing Dish's proposed equipment changes, dated 03/02/21.
- J Tower Mapping Report prepared by APT (Project No. CT1931640), dated 10/20/20.
- J Field observations conducted by APT on numerous occasions, including most recently 10/15/20. APT climbed the structure in its entirety and recorded information regarding physical and dimensional properties of the structure and its appurtenances.
- J Mount Analysis Report prepared by Hudson Design Group, LLC, dated 10/14/20.

The analysis was conducted using the following equipment inventory (proposed equipment shown in **bold text**):

Carrier	Antenna and Appurtenance Make/Model	Elevation (AGL)	Status ²	Mount Type	Coax/Feed-Line
N/A	Lightning Rod	179'	ETR	18' x 2-3/8" pipe	N/A
Eversource	Kreco CO-41AN omnidirectional whip	178'	ETR	Leg	7/8"
Eversource	4' x 2" omnidirectional whip (SO9627), Bird Technologies 430-946-09168-T TTA, db Spectra DS9A09F36D-N omnidirectional whip, Sinclair SC351D-HF2LDF	177'	ETR	6' sidearm	1-5/8"
			ETR	Leg	1/2"
			ETR	Leg	(2) 1-5/8"
			R	Leg	7/8"
Eversource	(2) 8' dish w/ radome (PAD8X)	176'	ETR	(2) 8' x 4-1/2" pipe	(2) EW63
Eversource	8' dish w/ radome	164'	R	8' x 4-1/2" pipe	(2) EW65
Eversource	Sinclair SD212-SF2P2SNF 2-bay dipole,	158'	R	Sidearm below	(2) 7/8"
Eversource	Comprod 531-7071D dipole, Sinclair SC351D-HP2LDF omnidirectional whip	156'	R	Sidearm below	7/8"
Eversource	3' yagi	153'	ETR	8' x 4-1/2" pipe, 6' sidearm	7/8"
Sprint	(3) 6' x 6" x 18" panel antennas, (3) RRH1900-4x45 RRHs, (6) RRH2x50-800 RRHs	135'	ETR	(3) 14' sector mounts	(3) 1-1/4"
AT&T	(3) cci TPA65R-BU8DA-K, (3) cci HPA-65R-BU8A & (3) cci DMP65R-BU8DA-K antennas, (3) 4478 RRHs, (3) RRUS-E2 RRHs (3) 4415 RRHs, (3) 4449 RRHs, (3) 8843 RRHs, (2) "squid" D-boxes	124	R	(3) 12' sector mounts (SitePro VFA12-WLL-30120)	(5) DC power, (2) fiber
Dish	(3) JMA MX08FRO665-21 antennas, (3) Fujitsu TA08025-B605 RRHs, (3) Fujitsu TA08025-B604 RRHs, (1) Raycap RDIDC-9181-PF-48 OVP	115'	P	(3) 8' sector mounts (Commscope MTC3975083)	(1) 1.6" hybrid
Reserved	(12) 8' x 1' x 6" antennas, (12) Ericsson RRUS 11 RRHs, (3) Raycap RCMDC-3315-PF-48 OVPs	105'	R	(3) 14' sector mounts	(21) 1-5/8"

Notes:

2. ETR = Existing to Remain; P = Proposed; R = Reserve/Future.

RIGOROUS STRUCTURAL ANALYSIS:

Methodology:

This analysis has been prepared in accordance with the ANSI/TIA-222-H standard entitled “Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures,” the American Institute of Steel Construction (AISC) Manual of Steel Construction, and the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, utilizing the following criteria:

- o Load Case 1: 130 mph (3-second gust), 0” ice
- o Load Case 2: 50 mph (3-second gust) w/ 1.5” ice thickness
- o Load Case 3: 101 mph (3-second gust) (Service Load)
- o Risk Category III
- o Exposure Category C
- o Topographic Category 1.

ANALYSIS RESULTS:

The analysis was conducted in accordance with the criteria outlined above with the aforementioned existing and proposed equipment loading. The following table summarizes the results of the analysis:

Elevation	Legs ³	Bracing ⁴
160'-180'	23%	48% ⁵
140'-160'	40%	49%
120'-140'	25%	49%
100'-120'	40%	70% ⁵
80'-100'	57%	75% ⁵
60'-80'	45%	69% ⁵
40'-60'	55%	60% ⁵
20'-40'	64%	62% ⁵
0'-20'	56%	78% ⁵

Notes:

3. Based on ASTM A572 Gr. 50 pipes. Pipe diameter and thickness vary.
4. Based on ASTM A572 Gr. 50 angles. Angle dimensions and thickness vary.
5. Member connection controls.

Bracing, Splice and Anchor Bolts:

Bracing, splice, and anchor bolts were evaluated under the proposed loading. All bolts were found to be adequately sized to support the proposed loads.

Foundation:

Evaluation of the existing base foundation was performed from original Sabre foundation drawings. The base foundation was determined to be adequately sized to support the proposed equipment. Factored base reactions imposed with the additional equipment were calculated as follows:

Load Effect	Calculated Reactions ⁽³⁾
Compression	383.3 k
Uplift	-331.3 k
Base Shear	74.7 k
Overturning Moment	7,197 ft-k

Deflection:

Combined twist and sway was evaluated per Northeast Utilities Substation Standard SUB 090, Section 7, utilizing the service wind speed, as outlined in the criteria above. Results are summarized as follows:

Load Case	Tilt	Twist	Combined Max. ⁴	Eversource Allowable
Service Wind – 101-mph	0.3657°	0.1590°	0.3988°	0.500°

Notes:

6. Twist and sway was evaluated at the highest dish elevation at 176'.

APT also evaluated the allowable twist and sway based on the provisions included within TIA-222-H Annex D. Results are summarized as follows:

Dish Model	Allowable Radio Frequency	Dish Diameter (ft)	Dish Frequency	TIA-222-H Allowable
8' dish w/ radome (PAD8X)	3 dB	8-ft	5.925-6.875 GHz	0.5636°-0.6540°

CONCLUSIONS AND RECOMMENDATIONS:

In conclusion, we find that the existing 180' tall self-supporting lattice tower structure located in Manchester, Connecticut meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code and the ANSI/TIA-222-H standard with the existing, proposed, and reserved equipment loading.

Sincerely,
All-Points Technology



Michael S. Trodden, P.E.
 Senior Structural Engineer



Prepared By:
All-Points Technology



Ali M. Adair
 Project Scientist

LIMITATIONS:

This report is based on the following:

1. Tower/structure is properly installed and maintained.
2. All members and components are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower/structure is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing members in any manner.
3. Installing antenna mounts or waveguide cables.
4. Adding or relocating antennas.
5. Extending tower/structure.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Tower Schematic

DESIGNED APPURTENANCE LOADING

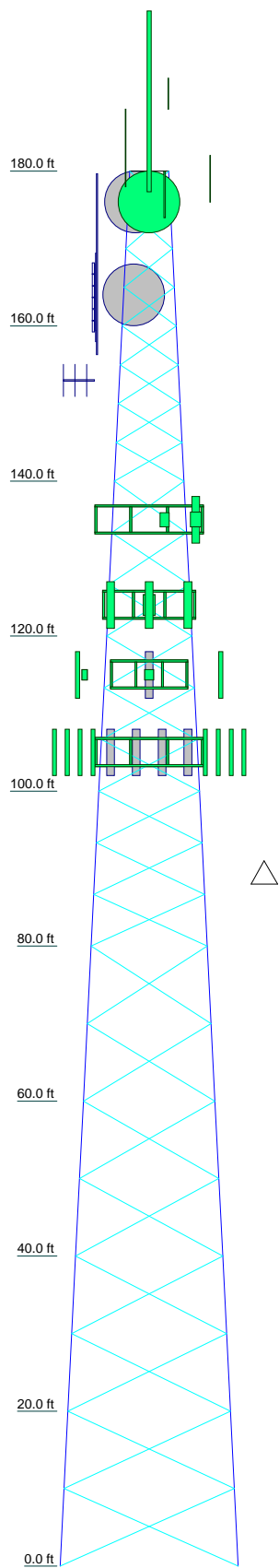
TYPE	ELEVATION	TYPE	ELEVATION
Generic Lightning Rod 4' copper	180	HPA-65R-BU8A (AT)	124
Sinclair SC351D-HF2LDF (Reserved)	180 - 156	DMP65R-BU8DA-K (AT)	124
18'x2 3/8" Pipe Mount	179	DMP65R-BU8DA-K (AT)	124
Kreco CO-41AN	178	DMP65R-BU8DA-K (AT)	124
6' sidearm	177	Radio 4478 (AT)	124
db Spectra DS9A09F36D-N	177	Radio 4478 (AT)	124
Bird Technologies 430-496-09168 TTA	177	Radio 4478 (AT)	124
Sinclair SC351D-HF2LDF (Reserved)	177	Ericsson RRUS-E2 (AT)	124
4' x 2" omni whip	177	Ericsson RRUS-E2 (AT)	124
8'x4 1/2" Pipe Mount	176	Ericsson RRUS-E2 (AT)	124
8'x4 1/2" Pipe Mount	176	Radio 4415 (AT)	124
8' dish with radome	176	Radio 4415 (AT)	124
8' dish with radome	176	Radio 4415 (AT)	124
Comprod 531-7071D (Reserved)	170.83 - 158	TPA65R-BU8DA-K (AT)	124
SD212 2-bay dipole (Reserved)	168 - 158	TPA65R-BU8DA-K (AT)	124
8'x4 1/2" Pipe Mount	164	TPA65R-BU8DA-K (AT)	124
8' dish with radome	164	Fujitsu TA08025-B604 Radio (Dish)	115
8'x4 1/2" Pipe Mount	153	Fujitsu TA08025-B604 Radio (Dish)	115
3' Yagi	153	Fujitsu TA08025-B604 Radio (Dish)	115
6' sidearm	153	Fujitsu TA08025-B605 Radio (Dish)	115
6' x 18" x 6" panel (Sprint)	135	Fujitsu TA08025-B605 Radio (Dish)	115
6' x 18" x 6" panel (Sprint)	135	Fujitsu TA08025-B605 Radio (Dish)	115
6' x 18" x 6" panel (Sprint)	135	Raycap RDIDC-9181-PF-48 (Dish)	115
1900 MHz RRH (Sprint)	135	Commscope MTC3975083 (Dish)	115
1900 MHz RRH (Sprint)	135	Commscope MTC3975083 (Dish)	115
1900 MHz RRH (Sprint)	135	Commscope MTC3975083 (Dish)	115
800 MHz RRH (Sprint)	135	JMA MX08FRO665-21 w/ pipe mount (Dish)	115
800 MHz RRH (Sprint)	135	JMA MX08FRO665-21 w/ pipe mount (Dish)	115
800 MHz RRH (Sprint)	135	JMA MX08FRO665-21 w/ pipe mount (Dish)	115
800 MHz RRH (Sprint)	135	JMA MX08FRO665-21 w/ pipe mount (Dish)	115
800 MHz RRH (Sprint)	135	JMA MX08FRO665-21 w/ pipe mount (Dish)	115
800 MHz RRH (Sprint)	135	JMA MX08FRO665-21 w/ pipe mount (Dish)	115
800 MHz RRH (Sprint)	135	JMA MX08FRO665-21 w/ pipe mount (Dish)	115
14' sector mount (Sprint)	135	(4) Ericsson RRUS-11 (Reserve)	105
14' sector mount (Sprint)	135	(4) Ericsson RRUS-11 (Reserve)	105
14' sector mount (Sprint)	135	(4) Ericsson RRUS-11 (Reserve)	105
14' sector mount (Sprint)	135	(4) Ericsson RRUS-11 (Reserve)	105
Radio 4449 (AT)	124	Raycap RDC-3315-PF-48 J-box (Reserve)	105
Radio 4449 (AT)	124	Raycap RDC-3315-PF-48 J-box (Reserve)	105
Radio 4449 (AT)	124	Raycap RDC-3315-PF-48 J-box (Reserve)	105
Radio 8843 (AT)	124	Raycap RDC-3315-PF-48 J-box (Reserve)	105
Radio 8843 (AT)	124	Raycap RDC-3315-PF-48 J-box (Reserve)	105
Radio 8843 (AT)	124	Raycap RDC-3315-PF-48 J-box (Reserve)	105
DC9-48-60-24-8C-EV (AT)	124	14' sector mount (Reserve)	105
DC9-48-60-24-8C-EV (AT)	124	14' sector mount (Reserve)	105
SitePro VFA12-WLL-30120 (AT)	124	14' sector mount (Reserve)	105
SitePro VFA12-WLL-30120 (AT)	124	(4) 8' x 1' x 6" panel (Reserve)	105
SitePro VFA12-WLL-30120 (AT)	124	(4) 8' x 1' x 6" panel (Reserve)	105
SitePro VFA12-WLL-30120 (AT)	124	(4) 8' x 1' x 6" panel (Reserve)	105
HPA-65R-BU8A (AT)	124	(4) 8' x 1' x 6" panel (Reserve)	105
HPA-65R-BU8A (AT)	124		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 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 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 105 mph wind.
5. Tower Risk Category III.
6. Topographic Category 1 with Crest Height of 0.00 ft



Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs	P2.875x.276	P3.5x.3	P5.5625x.500	P8.625x.5	P10.75x.5				
Leg Grade	L2x2x1/8	L2x2x3/16	L2 1/2x2 1/2x1/4	L3x3 1/2x1/4	L3 1/2x4x3/8	L4x4x3/8	L5x5x5/16		
Diagonals									
Diagonal Grade									
Top Girts									
Face Width (ft)	5	7	9	11	13	15	17	19	21
# Panels @ (ft)		8 @ 5		9 @ 6.66667				8 @ 10	
Weight (lb) 31216.2	794.9	1168.0	2502.7	2938.3	3108.2	4343.9	4855.4	5221.8	6283.0

All Points Technology		Job: 180' Self-Supporting Tower	
567 Vauxhall St. Ext., Suite 3		Project: CT411870 Manchester	
Waterford, CT 06385		Client: NSS; Dish Site #BOBDL00105B	Drawn by: AMA App'd:
Phone: (860) 663-1697		Code: TIA-222-H	Date: 12/02/22 Scale: NTS
FAX: (860) 663-0935		Path:	Dwg No. E-1

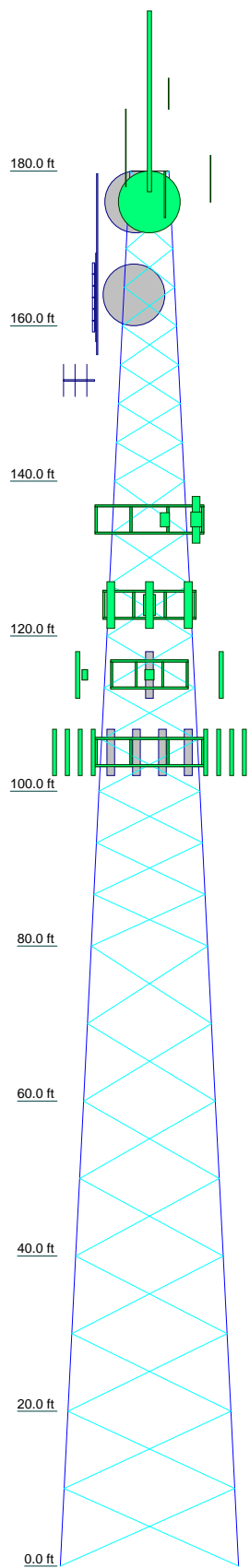
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 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 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 105 mph wind.
5. Tower Risk Category III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 78.3%

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs	P2.875x.276	P3.5x.3		P5.5625x.500	A572-50	P8.625x.5		P10.75x.5	
Leg Grade									
Diagonals	L2x2x1/8	L2x2x3/16	L2 1/2x2 1/2x1/4	L3x3 1/2x1/4	L3 1/2x4x5/16	L3 1/2x4x3/8	L4x4x3/8	L5x5x5/16	
Diagonal Grade									
Top Girts	L2x2x1/8				N.A.				
Face Width (ft)	5	7	9	11	13	15	17	19	21
# Panels @ (ft)		8 @ 5		9 @ 6.66667		8 @ 10		8 @ 10	
Weight (lb) 31216.2		1168.0	2502.7	2938.3	3108.2	4343.9	4855.4	5221.8	6283.0

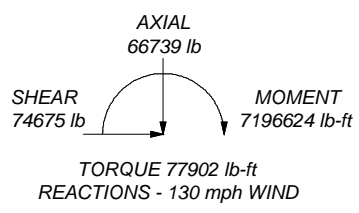
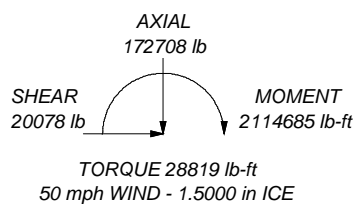


ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 383313 lb
SHEAR: 45763 lb

UPLIFT: -331313 lb
SHEAR: 40607 lb

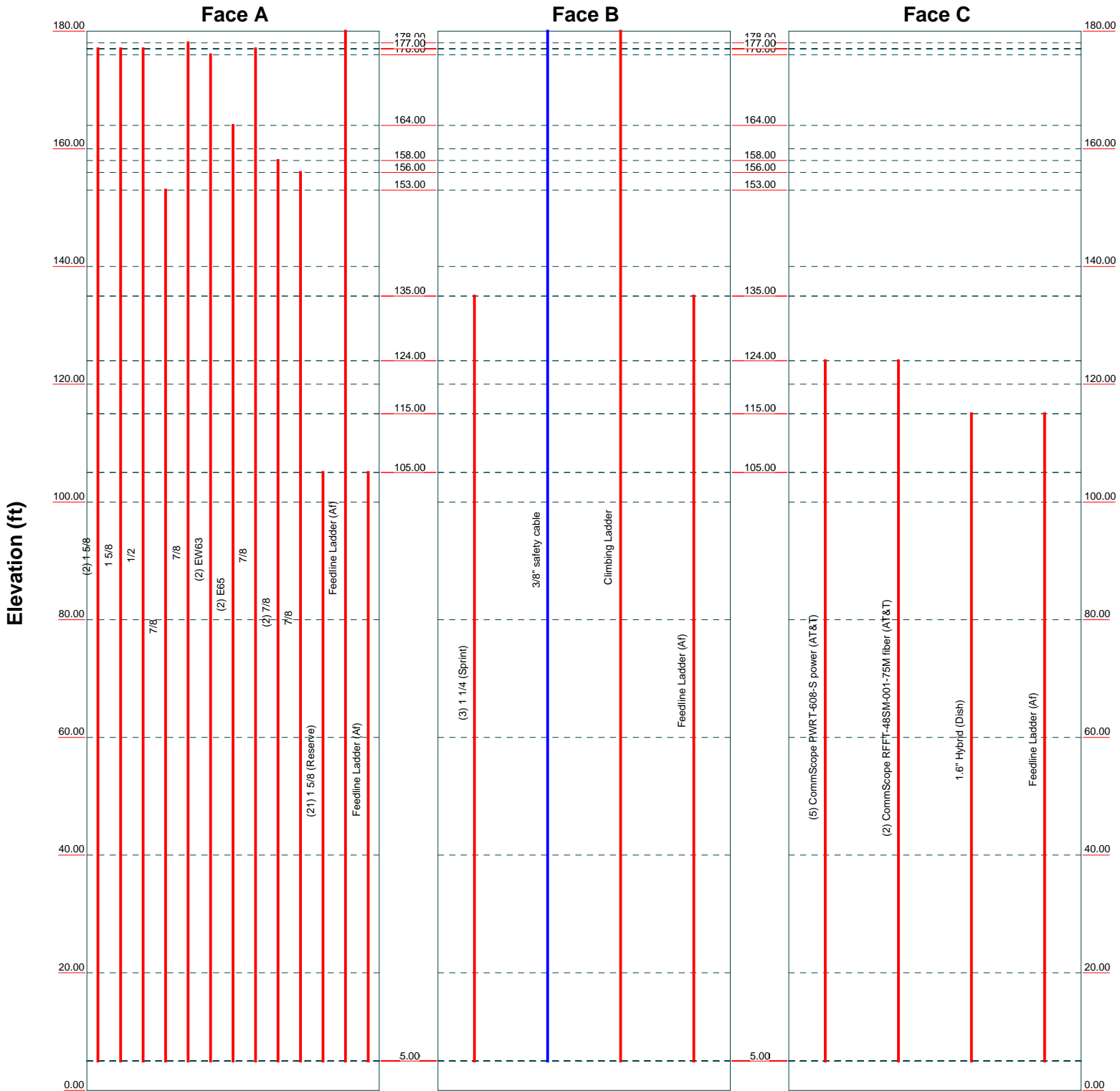


<p>All Points Technology 567 Vauxhall St. Ext., Suite 300 Waterford, CT 06385 Phone: (860) 663-1697 FAX: (860) 663-0935</p>	<p>Job: 180' Self-Supporting Tower</p>
	<p>Project: CT411870 Manchester</p>
	<p>Client: NSS; Dish Site #BOBDL00105B</p>
	<p>Code: TIA-222-H</p>
	<p>Path: C:\Users\User\Documents\APPT\NorthEast Site Solutions\CT411870 Manchester\Rev 3\CT411870 Manchester.dwg</p>
<p>Drawn by: AMA</p>	<p>App'd:</p>
<p>Date: 12/02/22</p>	<p>Scale: N.T.S.</p>
<p>Dwg No. E-1</p>	

Feed Line Distribution Chart

0° - 180°

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



All Points Technology		Job: 180' Self-Supporting Tower	
567 Vauxhall St. Ext., Suite 3		Project: CT411870 Manchester	
Waterford, CT 06385		Client: NSS; Dish Site #BOBDL00105B	Drawn by: AMA
Phone: (860) 663-1697		Code: TIA-222-H	Date: 12/02/22
FAX: (860) 663-0935		Path:	Scale: NTS
		Dwg No. E-7	

All-Points Technology Corp., P.C.

567 Vauxhall St. Ext., Suite 311
Waterford, CT 06385
(860) 663-1697

Client: **Northeast Site Solutions**
Job: **Manchester Eversource**
Calculated By: **A. Adair**

Site No.: **BOBDL00105I**
Job No.: **CT411870**
Date: **06-Dec-22**

Program assumes:

Mat is square in plan view.
Water table is below bottom of mat.
Unit weight of concrete = 150 pcf
Unit weight of soil = 100 pcf
Self-supporting tower with 3 piers

Information to be provided:

Piers are round or square in plan dimension ("R" or "S")	Shape =	R
Sh = Total shear force at base of tower	Sh =	74.7 kips
OTM = Overturning Moment at base of tower	OTM =	7197 ft-kips
Total OTM to be resisted	OTMt =	7683 ft-kips
H = Height from ground surface to top of mat (if buried)	H =	4.25 ft.
P _M = Projection of pier above mat	P _M =	4.75 ft.
y = Thickness of mat	y =	1.75 ft.
x = Width of mat	x =	34.00 ft.
d = Diameter of round piers	d =	4.0 ft.
S = Size of tension bars	S =	10

Mass of tower and appurtenances (below)

Results:

<u>Component</u>	<u>Mass</u>	<u>Moment Arm</u>	<u>Moment Resist.</u>
Pier	8.1 kips	17 ft.	137.0 ft-kips
Overburden	505.7 kips	17 ft.	8597.7 ft-kips
Mat	273.1 kips	17 ft.	4642.8 ft-kips

Overturning Moment Resistance = 13377.47 ft-kips
Factor of Safety = 1.74
Concrete Quantity = 81.6 c.y.

SATISFACTORY

Exhibit E

Mount Analysis

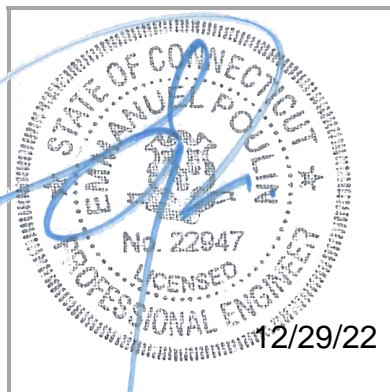
INFINIGY

MOUNT ANALYSIS REPORT

December 29, 2022

Dish Wireless Site Name	BOBDL00105B
Dish Wireless Site Number	BOBDL00105B
Infinigy Job Number	1197-F0001-B
Client	NSS/ATC
Carrier	Dish Wireless
Site Location	250 Olcott Street Manchester, CT 06040 Hartford County 41.769903° N NAD83 72.557367° W NAD83
Mount Type	8.0 ft Sector Frames
Mount Elevation	115.0 ft AGL
Structural Usage Ratio	37.0%
Overall Result	Pass

The enclosed mount structural analysis has been performed in accordance with the 2022 Connecticut State Building Code (2021 IBC) based on an ultimate 3-second gust wind speed of 118 mph. The evaluation criteria and applicable standards are presented in the next section of this report.



structural@infinigy.com

CONTENTS

1. Introduction
2. Design/Analysis Parameters
3. Proposed Loading Configuration
4. Supporting Documentation
5. Results
6. Recommendations
7. Assumptions
8. Liability Waiver and Limitations
9. Calculations

1. INTRODUCTION

Infinigy performed a structural analysis on the Dish Wireless proposed telecommunication equipment supporting Sector Frames mounted to the existing structure located at the aforementioned address. All referenced supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D version 20.0.5 analysis software.

2. DESIGN/ANALYSIS PARAMETERS

Wind Speed	118 mph (3-Second Gust)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 1.5" ice
Adopted Code	2021 International Building Code
Standard(s)	TIA-222-H
Risk Category	II
Exposure Category	C
Topographic Factor	1
Seismic Spectral Response	$S_s = 0.191 \text{ g} / S_1 = 0.055 \text{ g}$
Live Load Wind Speed	60 mph
Man Live Load at Mid/End Points	250 lbs
Man Live Load at Mount Pipes	500 lbs
Ground Elevation (HMSL)	104.7 ft

3. PROPOSED LOADING CONFIGURATION - 115.0 ft. AGL Sector Frames

Centerline (ft)	Qty.	Appurtenance Manufacturers	Appurtenance Models
115.0	3	JMA WIRELESS	MX08FRO665-21
	3	FUJITSU	TA08025-B605
	3	FUJITSU	TA08025-B604
	1	RAYCAP	RDIDC-9181-PF-48

4. SUPPORTING DOCUMENTATION

Construction Drawings	Infinigy Engineering dated March 8, 2021
Dish Wireless Proposed Loading	RFDS Revision: 3 dated February 16, 2022
Mount Manufacturer Drawings	Commscope Document # MTC3975083, dated March 17, 2021

5. RESULTS

Components	Capacity	Pass/Fail
Pipe Mount(s)	19.1%	Pass
Horizontal(s)	12.2%	Pass
Standoff(s)	37.0%	Pass
Connection(s)	5.1%	Pass
RATING =	37.0%	Pass

Notes:

- See additional documentation in Appendix for calculations supporting the capacity consumed and detailed mount connection calculations.

6. RECOMMENDATIONS

Infinigy recommends installing Dish Wireless's proposed equipment loading configuration on the Sector Frames at 115.0 ft. The installation shall be performed in accordance with the construction documents issued for this site.

If you have any questions, require additional information, or believe the actual conditions differ from those detailed in this report, please contact us immediately.

Matt Gall, E.I.T.
Project Engineer II | **INFINIGY**

7. ASSUMPTIONS

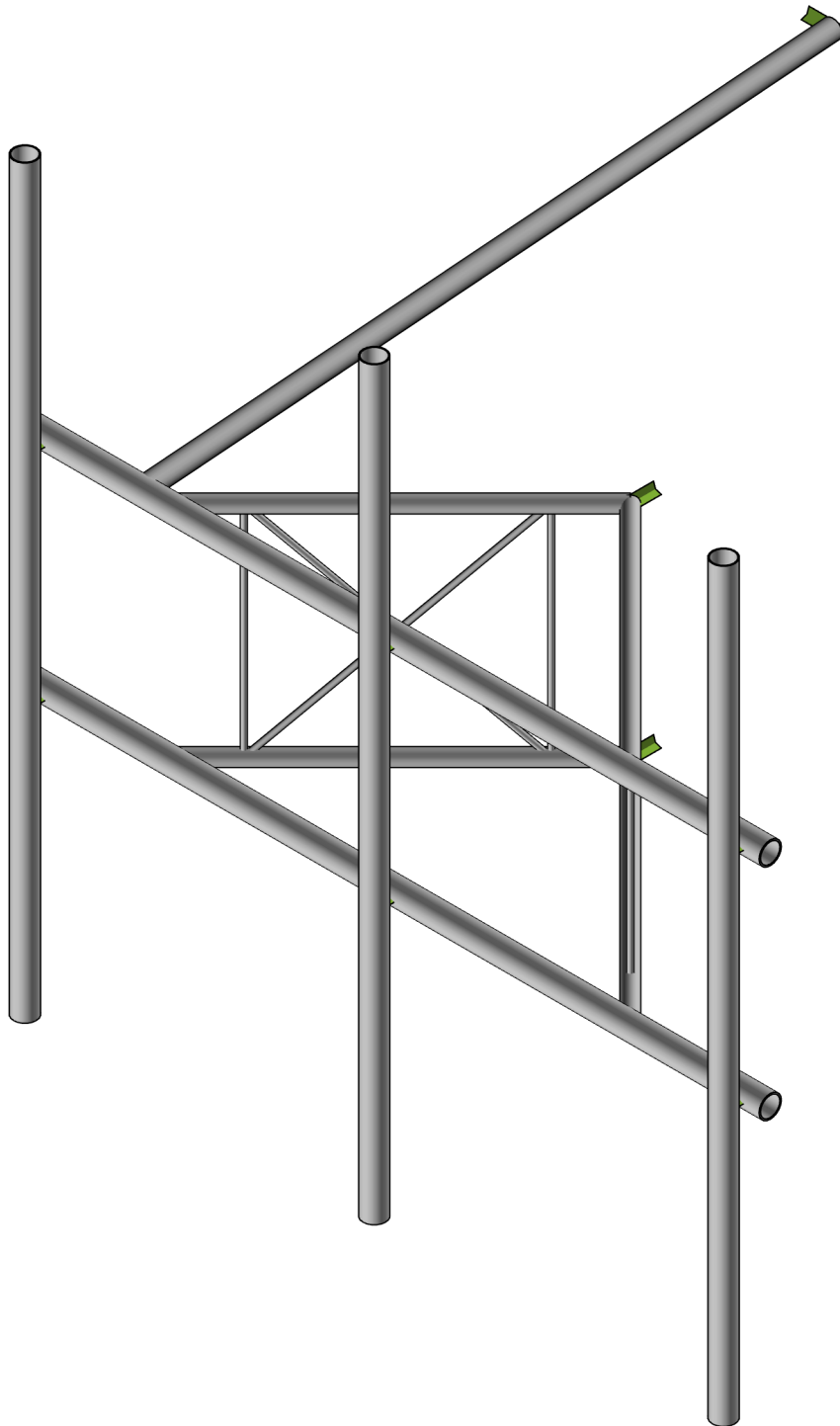
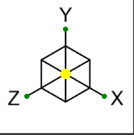
The antenna mounting system was properly fabricated, installed and maintained in accordance with its original design and manufacturer's specifications.	
The configuration of antennas, mounts, and other appurtenances are as specified in the proposed loading configuration table.	
All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.	
The analysis will require revisions if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.	
Steel grades have been assumed as follows, unless noted otherwise:	
Channel, Solid Round, Angle, Plate	ASTM A36
HSS (Rectangular)	ASTM A500-B GR 46
HSS (Circular)	ASTM A500-B GR 42
Pipe	ASTM A53-B GR 35
Connection Bolts	ASTM A325
U-Bolts	ASTM A307
All bolted connections are pretensioned in accordance with Table 8.2 of the RCSC 2014 Standard.	

8. LIABILITY WAIVER AND LIMITATIONS

Our structural calculations are completed assuming all information provided to Infinigy is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition as erected and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report, Infinigy should be notified immediately to assess the impact on the results of this report.

Our evaluation is completed using industry standard methods and procedures. The structural results, conclusions and recommendations contained in this report are proprietary and should not be used by others as their own. Infinigy is not responsible for decisions made by others that are or are not based on the stated assumptions and conclusions in this report.

This report is an evaluation of the mount structure only and does not determine the adequacy of the supporting structure, other carrier mounts or cable mounting attachments. The analysis of these elements is outside the scope of this analysis, are assumed to be adequate for the purpose of this report and to have been installed per their manufacturer requirements. This document is not for construction purposes.



Envelope Only Solution

Infinigy Engineering

Matt Gall, E.I.T.

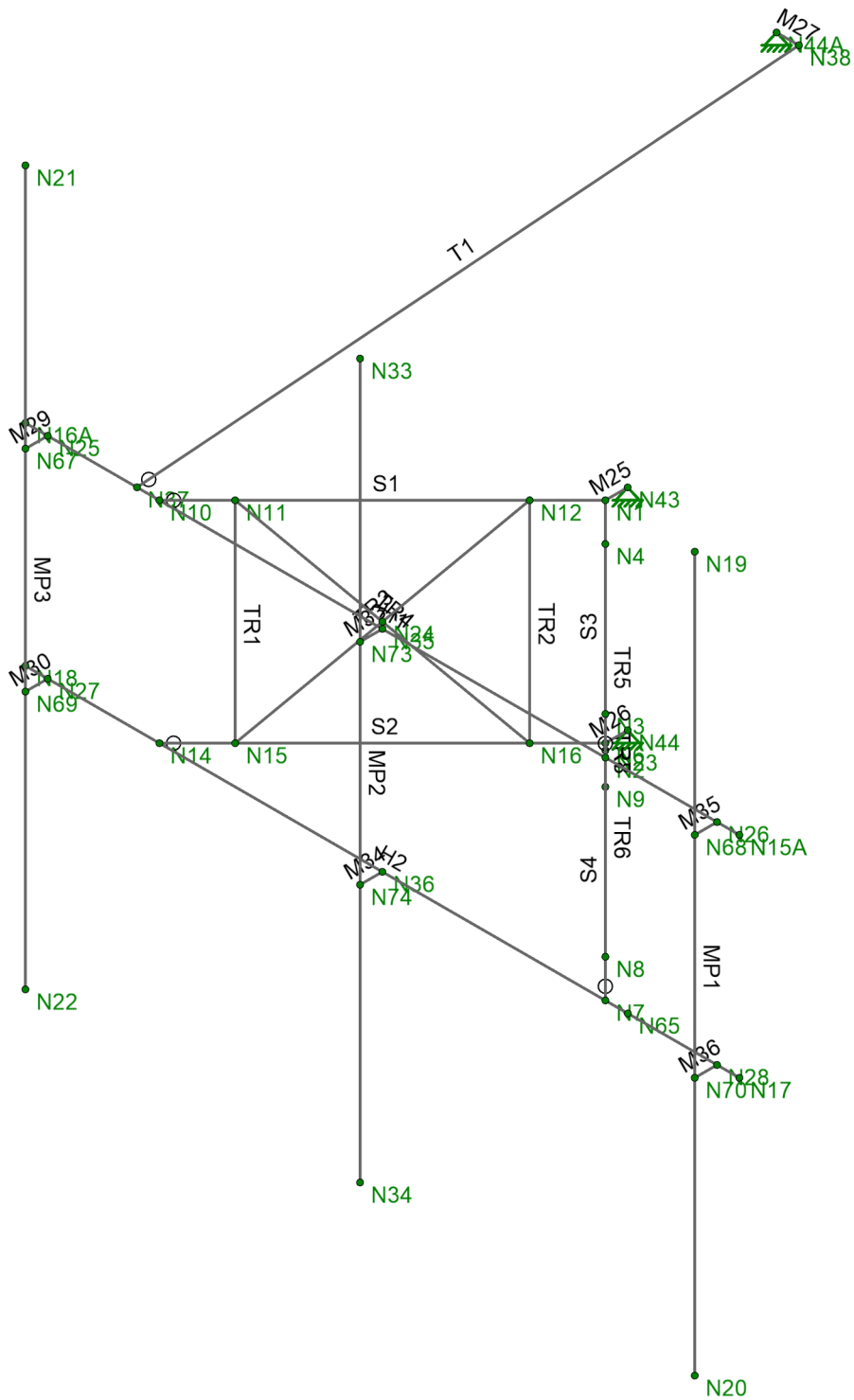
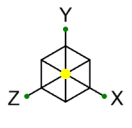
1197-F0001-B

BOBDL00105B

Rendered Model1

Dec 29, 2022

BOBDL00105B_loaded.r3d



Envelope Only Solution

Infinigy Engineering

Matt Gall, E.I.T.

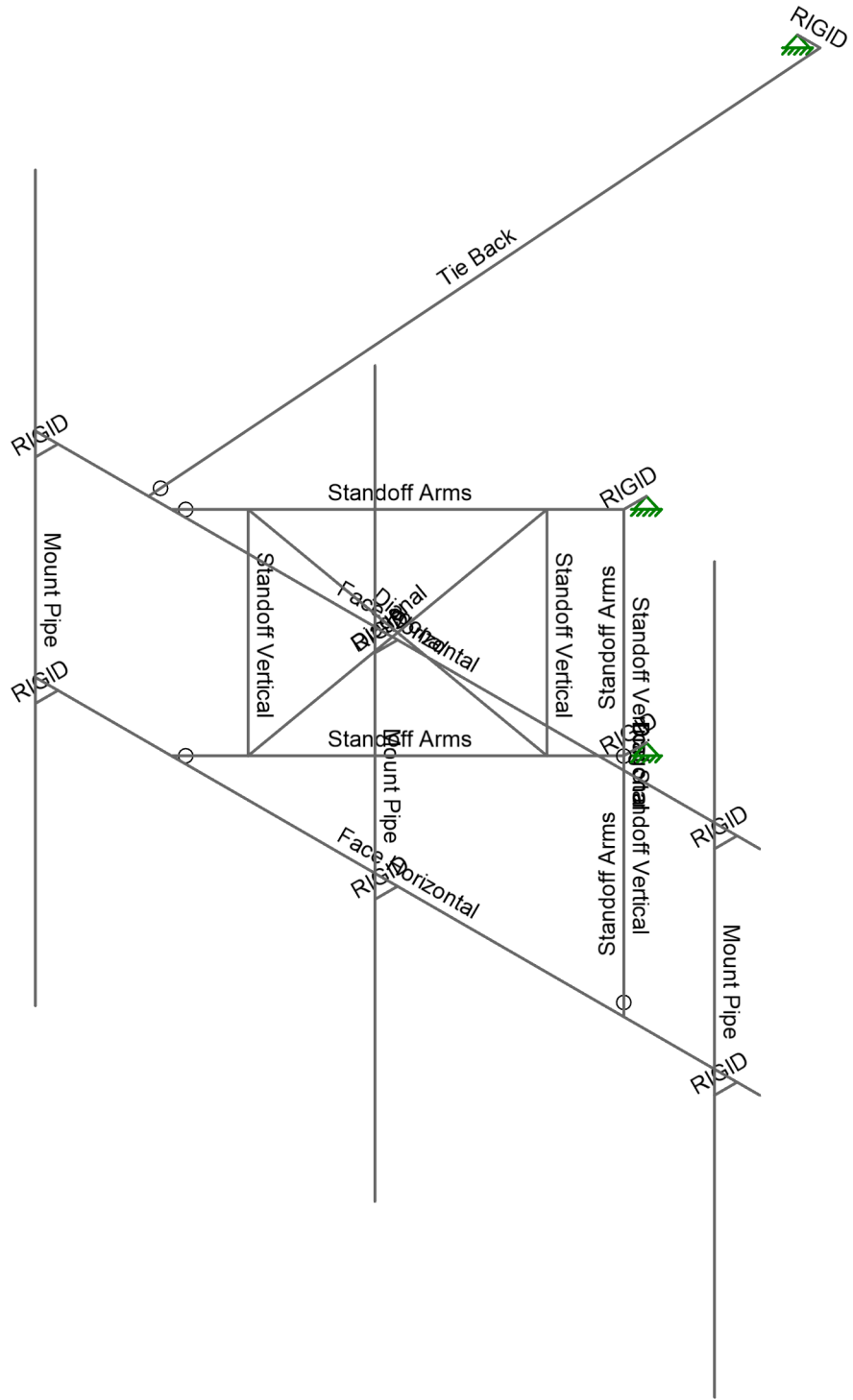
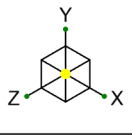
1197-F0001-B

BOBDL00105B

Wireframe Model1

Dec 29, 2022

BOBDL00105B_loaded.r3d



Envelope Only Solution

Infinigy Engineering

Matt Gall, E.I.T.

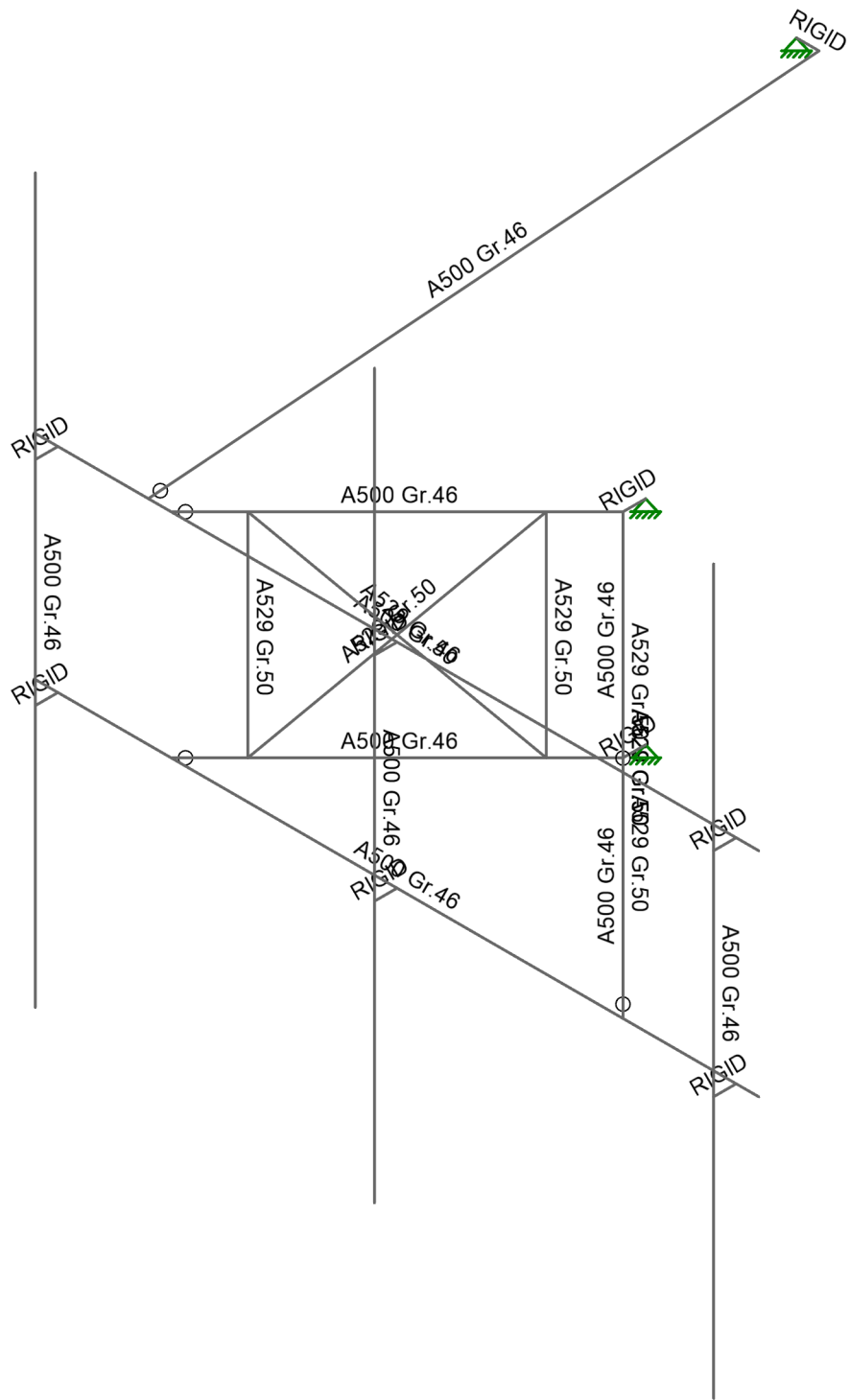
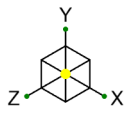
1197-F0001-B

BOBDL00105B

Section Sets1

Dec 29, 2022

BOBDL00105B_loaded.r3d



Envelope Only Solution

Infinigy Engineering

Matt Gall, E.I.T.

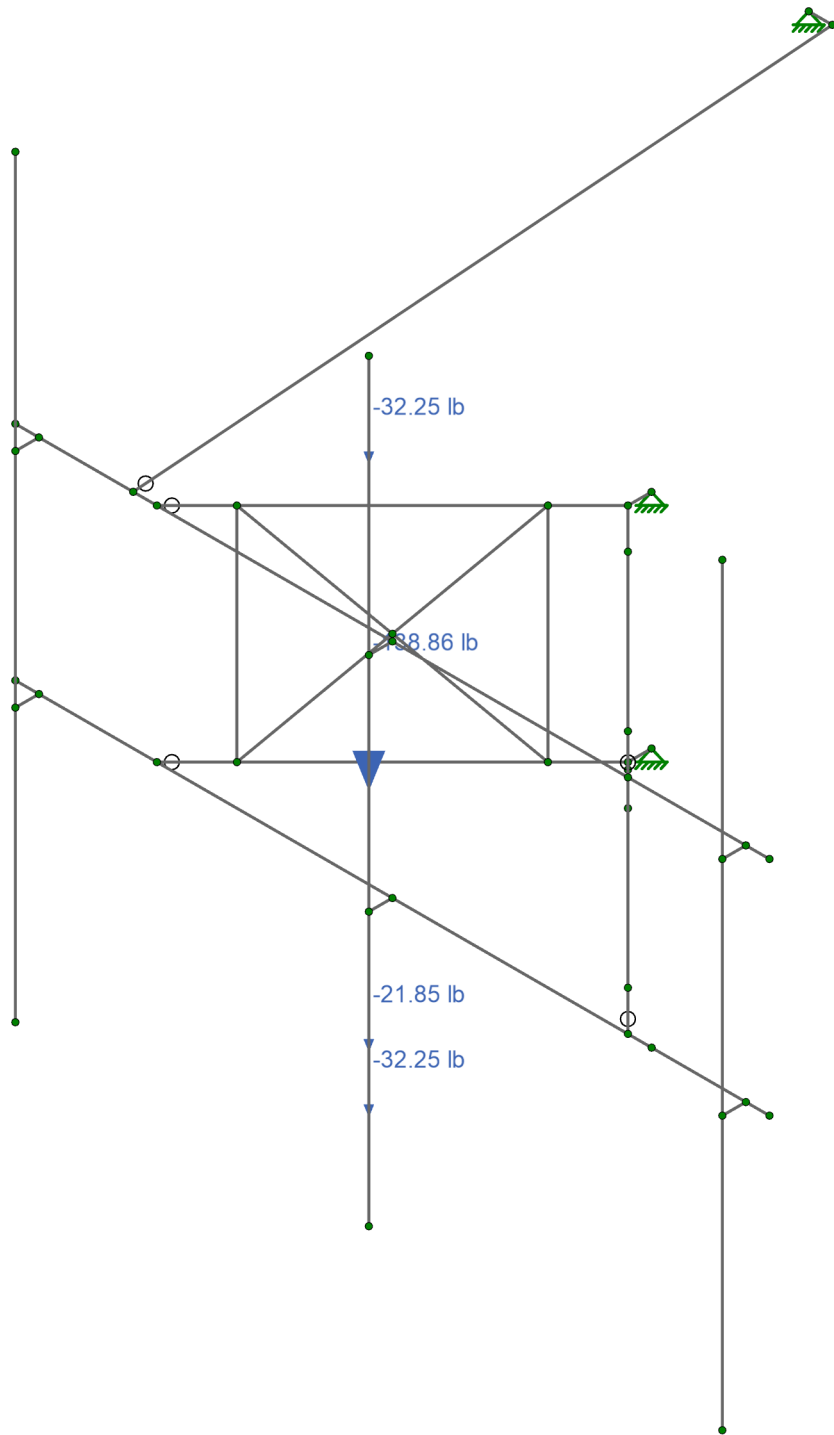
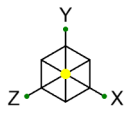
1197-F0001-B

BOBDL00105B

Material Sets1

Dec 29, 2022

BOBDL00105B_loaded.r3d

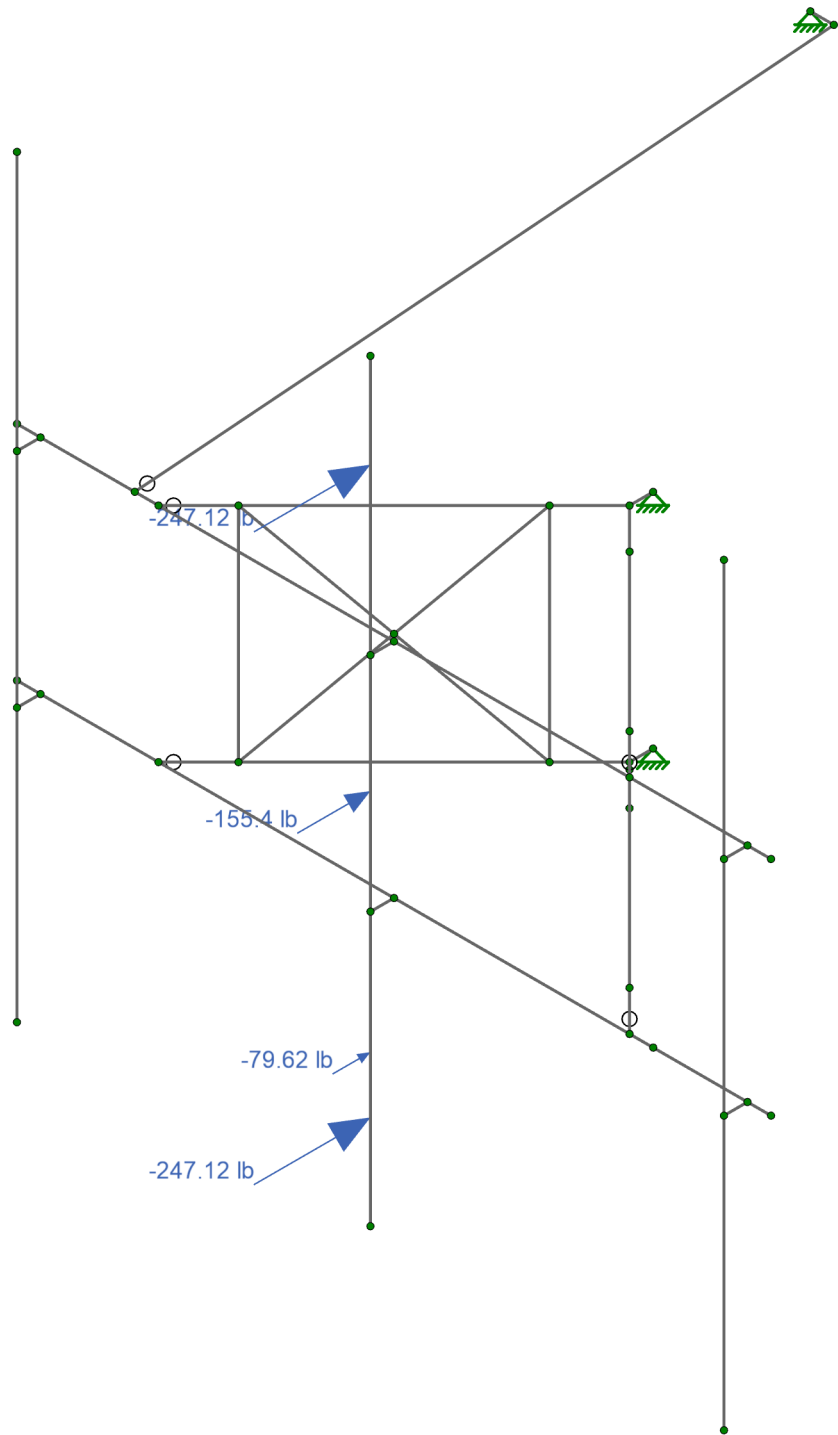
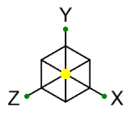


Loads: BLC 1, Self Weight
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Self Weight1
Dec 29, 2022
BOBDL00105B_loaded.r3d

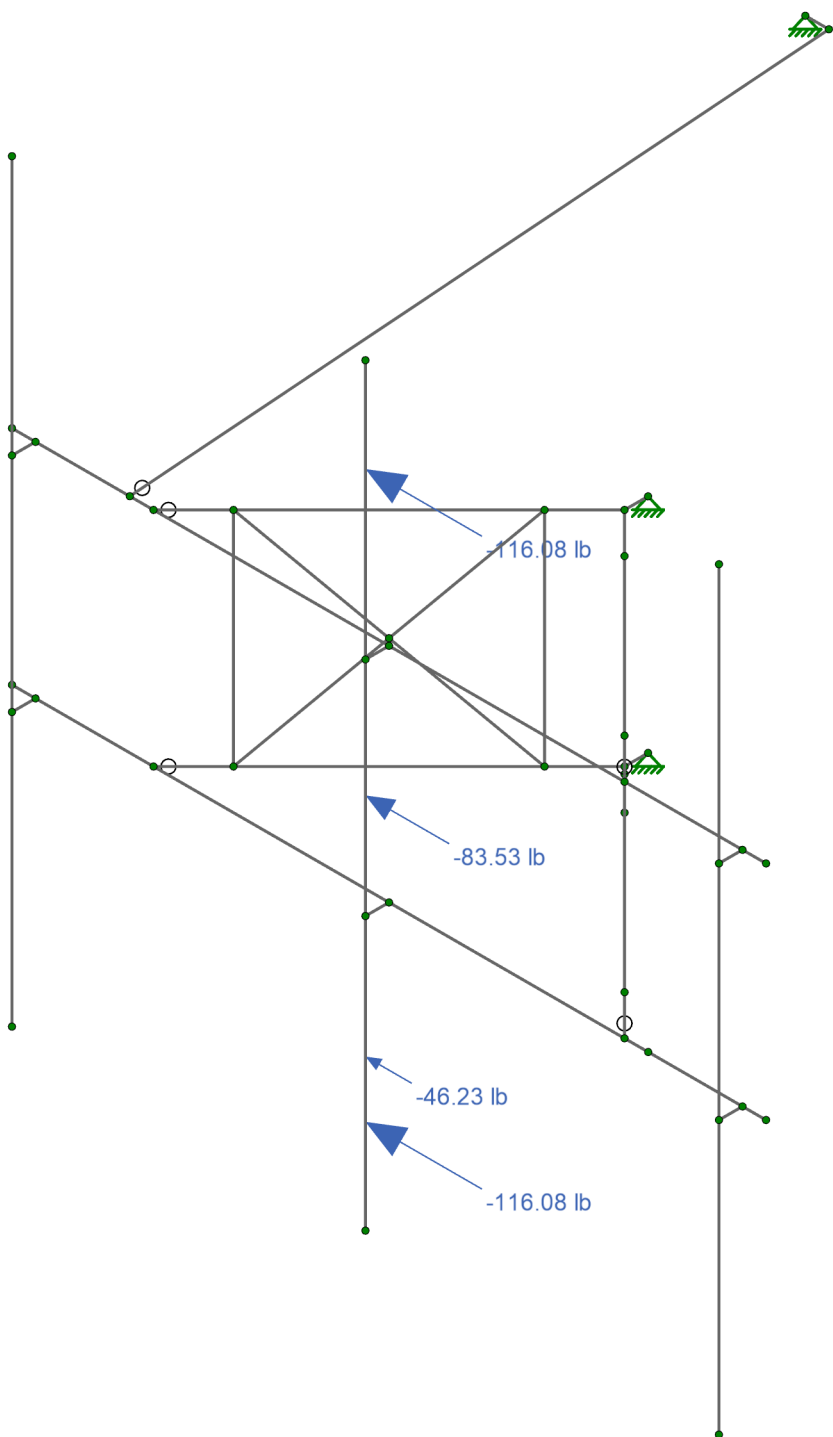
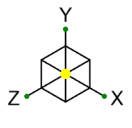


Loads: BLC 2, Wind Load AZI 0
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Wind Load -Z1
Dec 29, 2022
BOBDL00105B_loaded.r3d

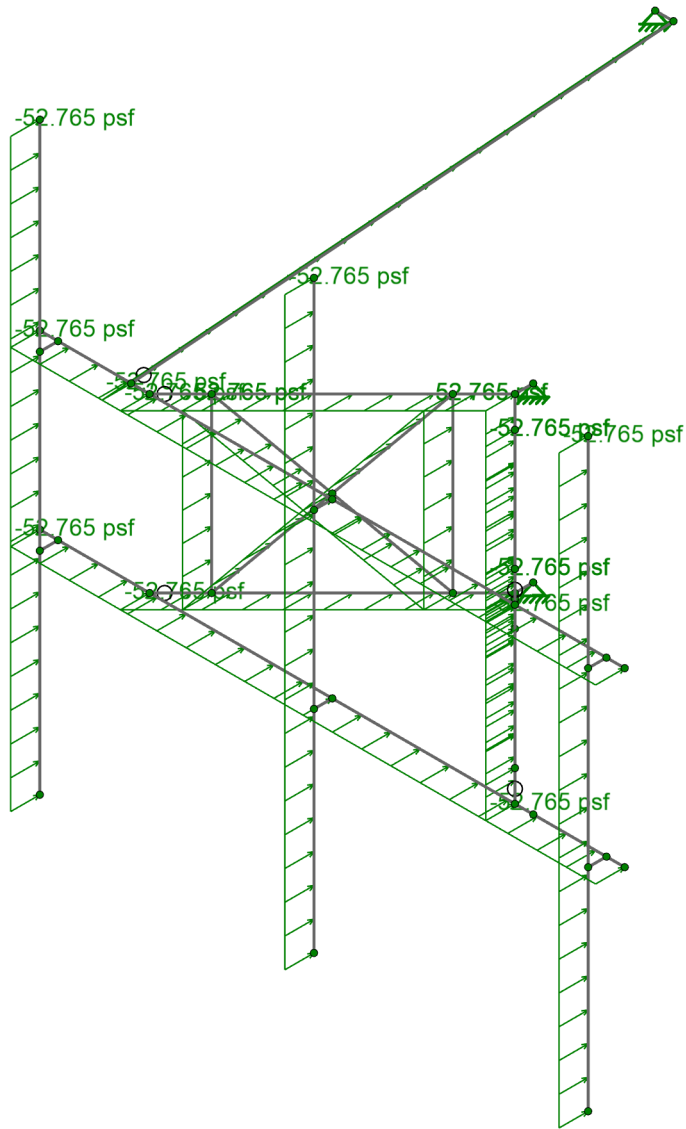
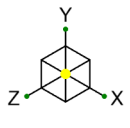


Loads: BLC 5, Wind Load AZI 90
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Wind Load -X1
Dec 29, 2022
BOBDL00105B_loaded.r3d



Loads: BLC 14, Distr. Wind Load Z
Envelope Only Solution

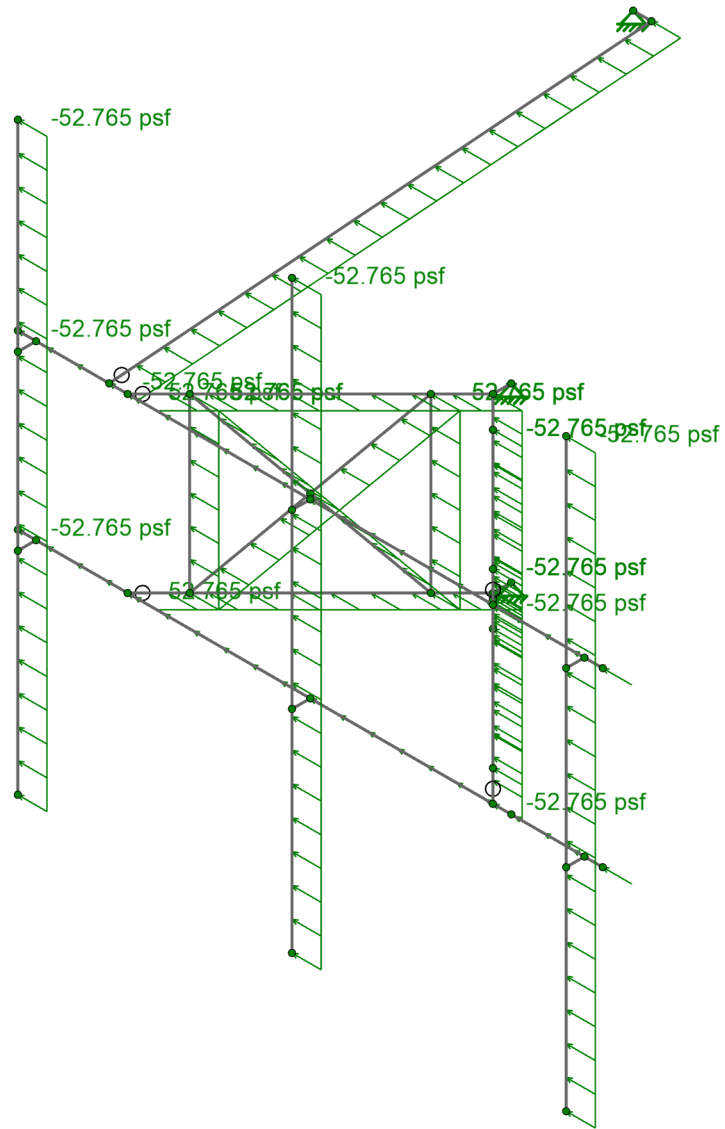
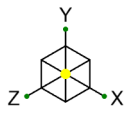
Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Distributed Wind Load -Z1

Dec 29, 2022

BOBDL00105B_loaded.r3d



Loads: BLC 15, Distr. Wind Load X
Envelope Only Solution

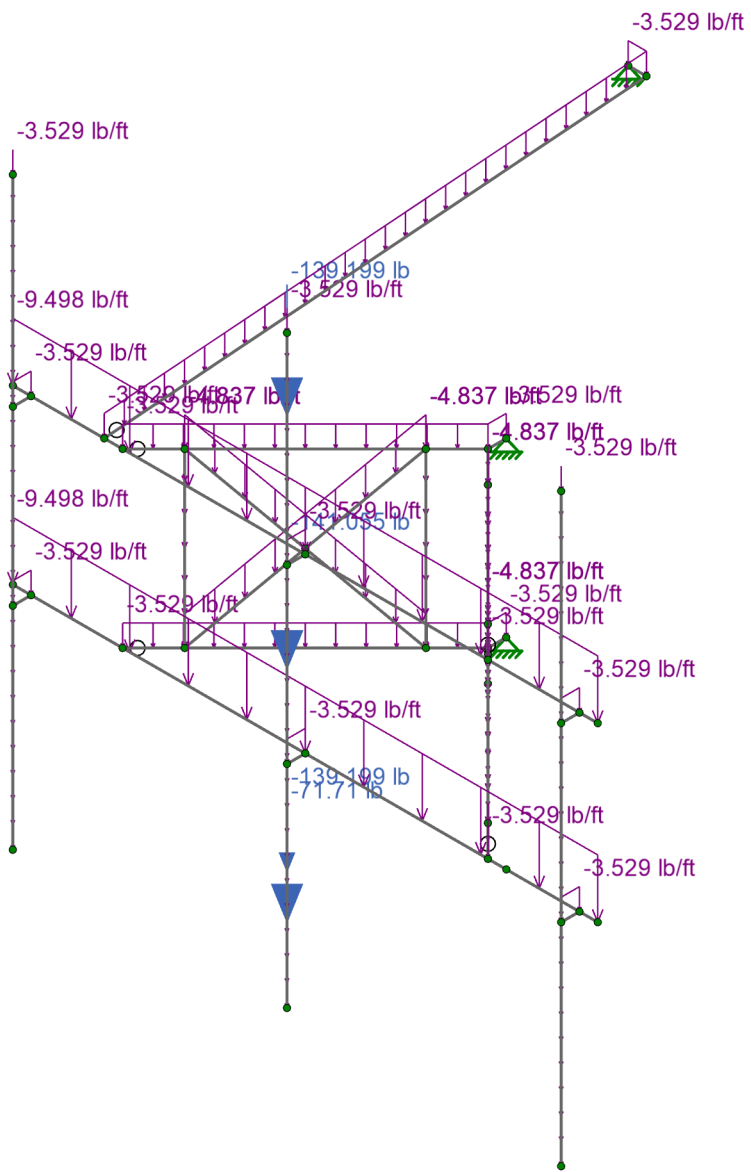
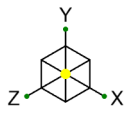
Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Distributed Wind Load -X1

Dec 29, 2022

BOBDL00105B_loaded.r3d

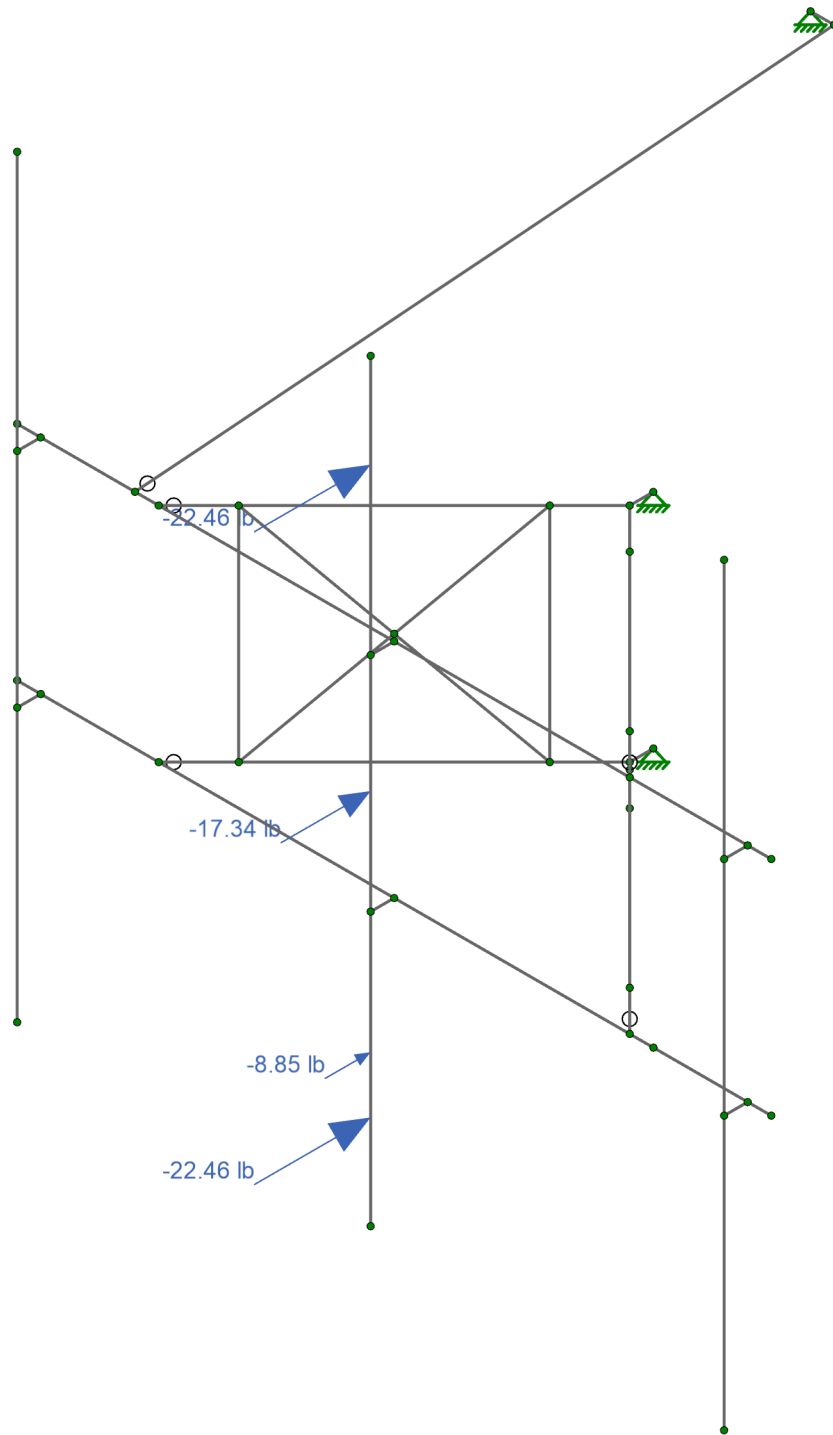
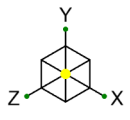


Loads: BLC 16, Ice Weight
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Ice Weight1
Dec 29, 2022
BOBDL00105B_loaded.r3d



Loads: BLC 17, Ice Wind Load AZI 0
Envelope Only Solution

Infinigy Engineering

Matt Gall, E.I.T.

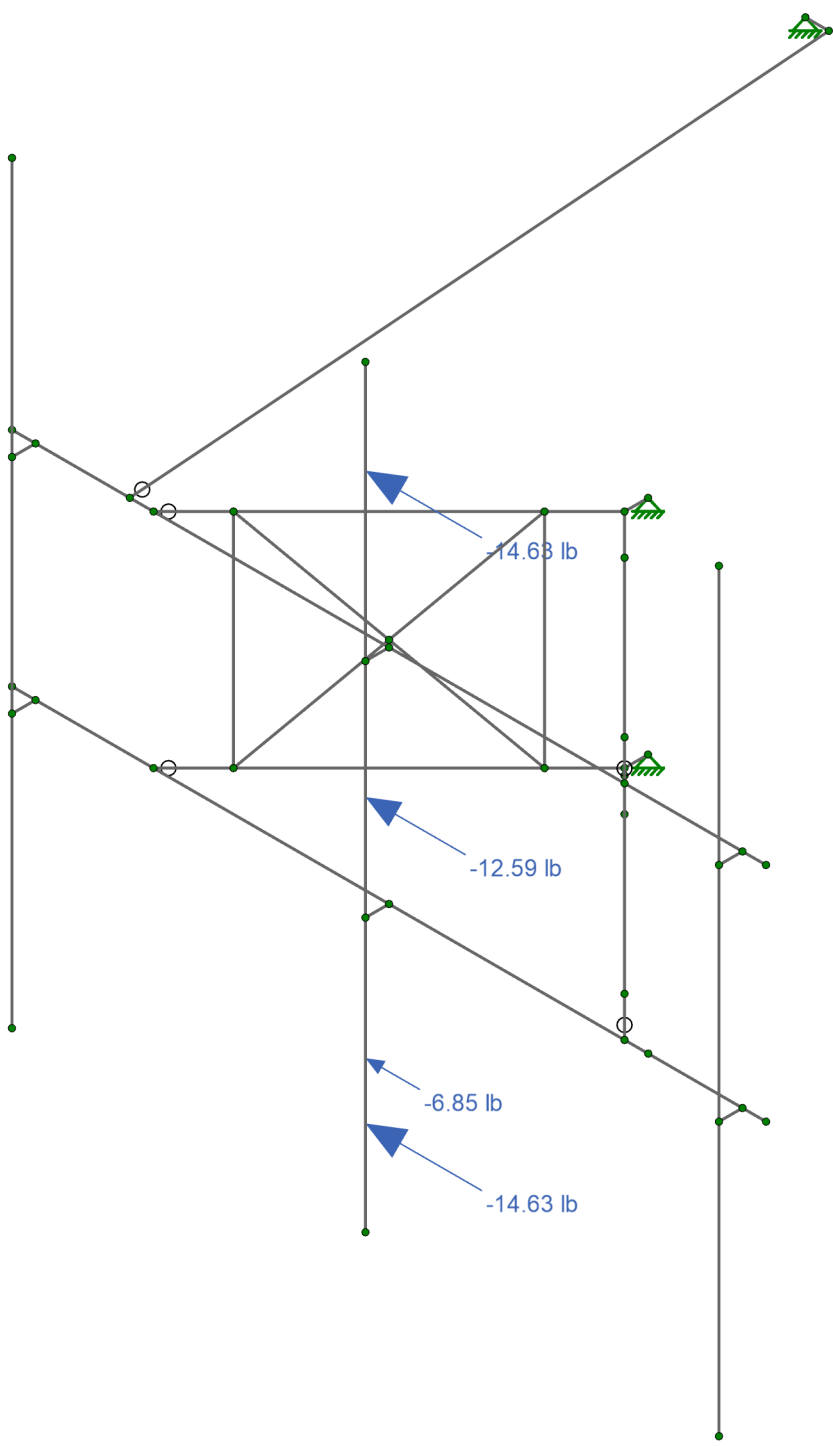
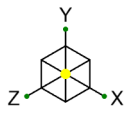
1197-F0001-B

BOBDL00105B

Ice Wind Load -Z1

Dec 29, 2022

BOBDL00105B_loaded.r3d

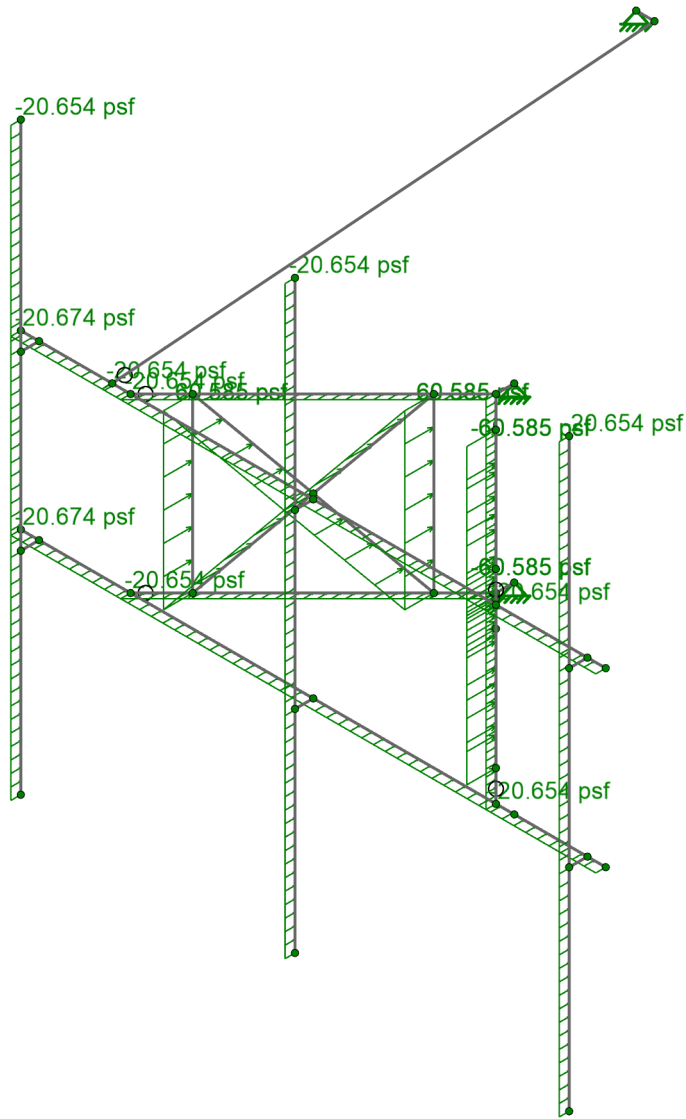
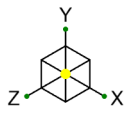


Loads: BLC 20, Ice Wind Load AZI 90
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Ice Wind Load -X1
Dec 29, 2022
BOBDL00105B_loaded.r3d

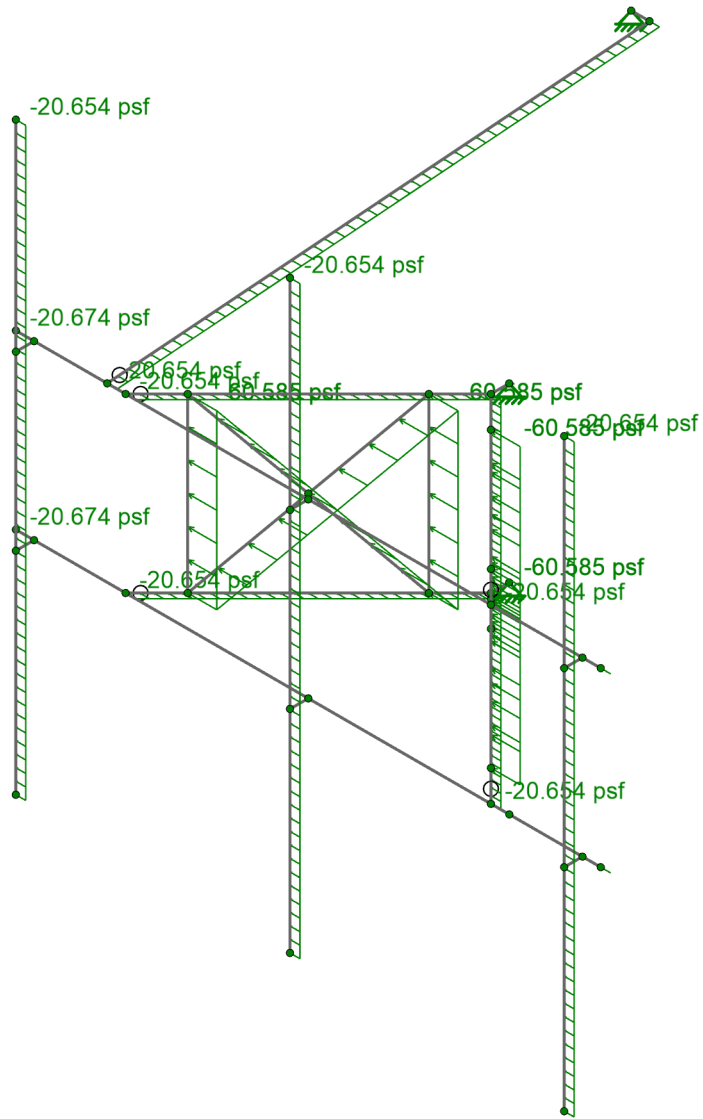
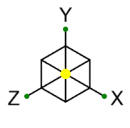


Loads: BLC 29, Distr. Ice Wind Load Z
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Distributed Ice Wind Load -Z1
Dec 29, 2022
BOBDL00105B_loaded.r3d

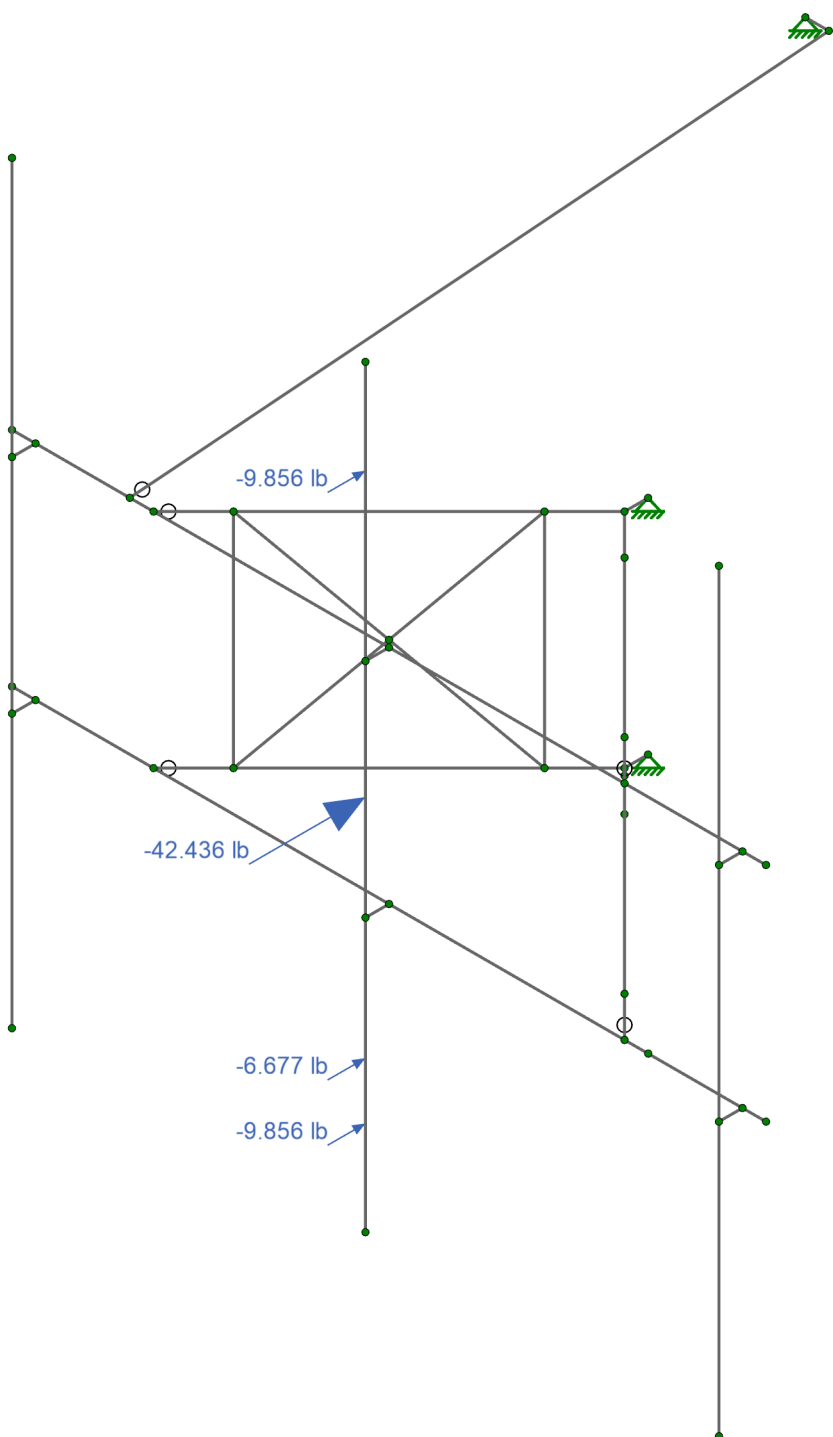
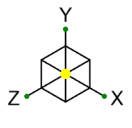


Loads: BLC 30, Distr. Ice Wind Load X
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Distributed Ice Wind Load -X1
Dec 29, 2022
BOBDL00105B_loaded.r3d

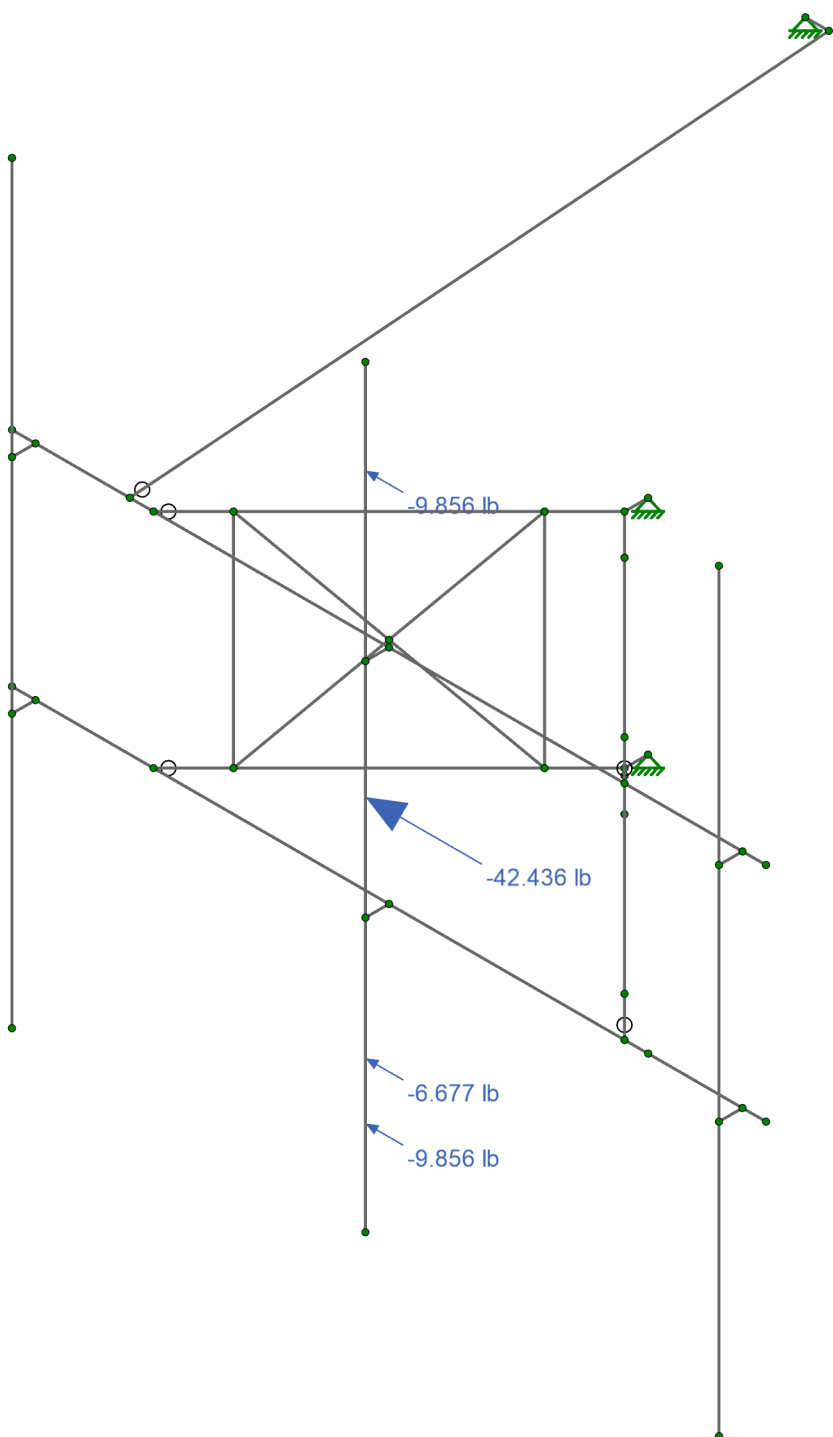
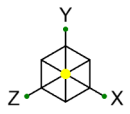


Loads: BLC 31, Seismic Load Z
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

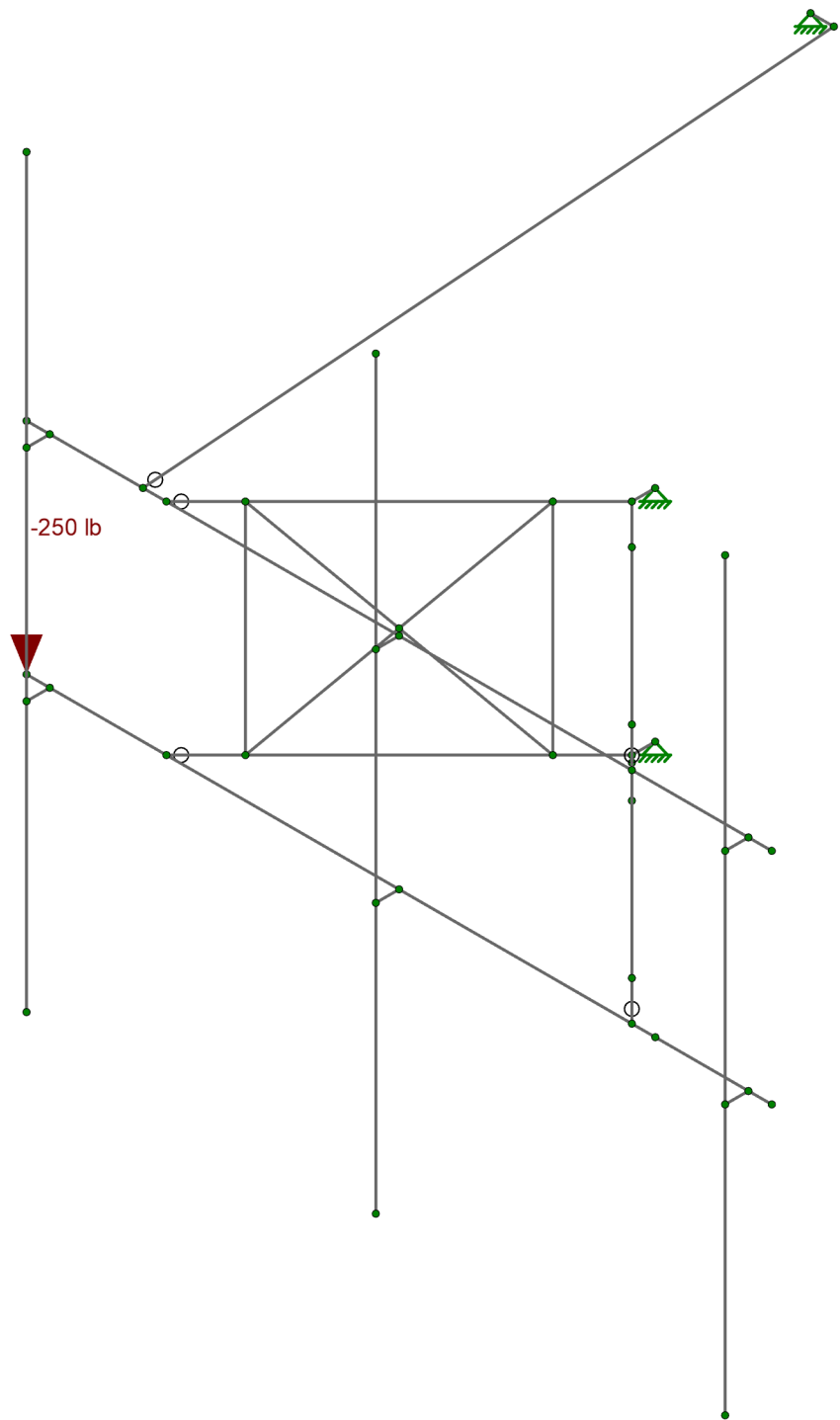
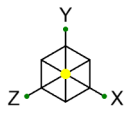
BOBDL00105B

Seismic Load -Z1
Dec 29, 2022
BOBDL00105B_loaded.r3d



Loads: BLC 32, Seismic Load X
Envelope Only Solution

Infinigy Engineering	BOBDL00105B	Seismic Load -X1
Matt Gall, E.I.T.		Dec 29, 2022
1197-F0001-B		BOBDL00105B_loaded.r3d

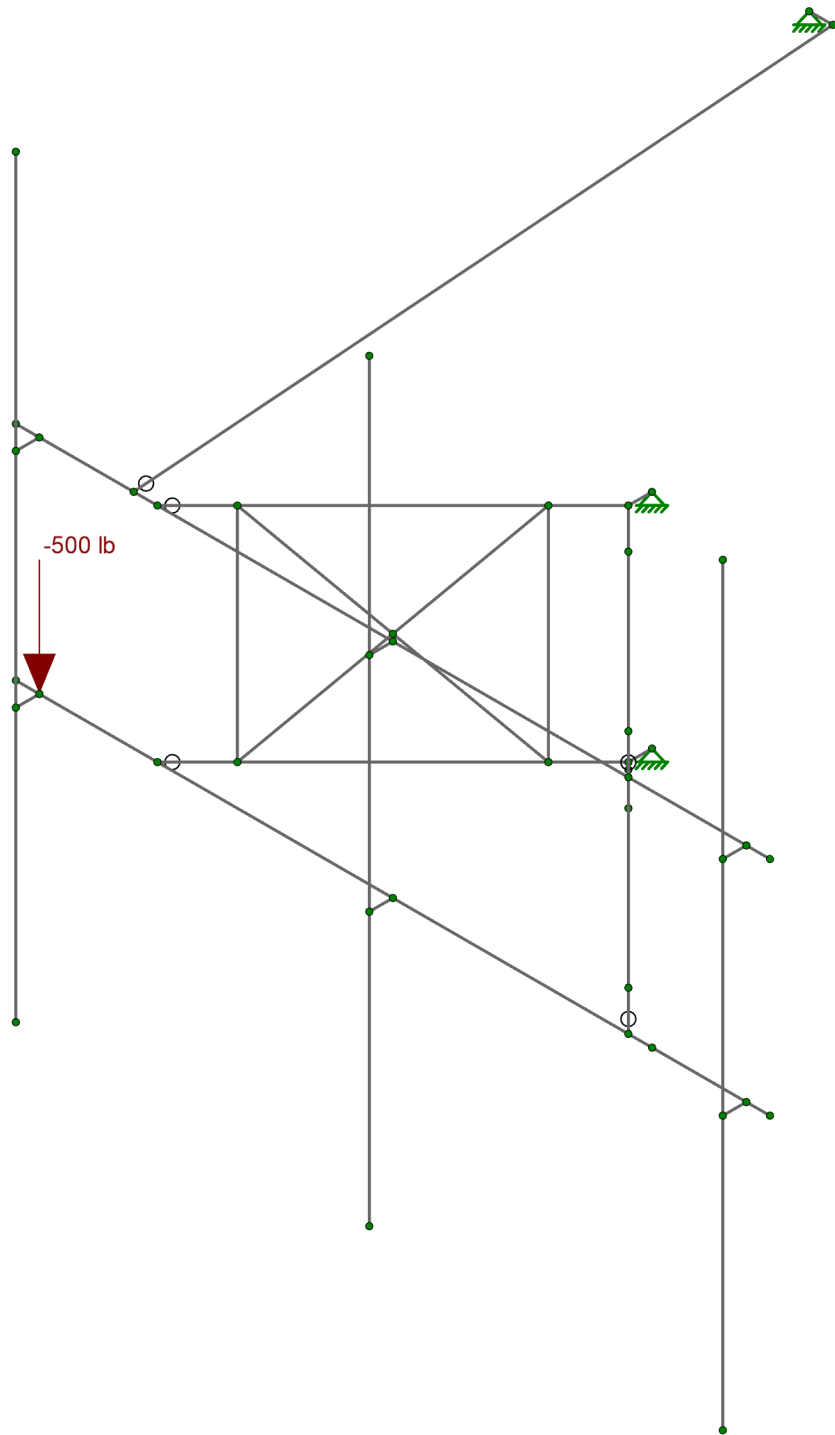
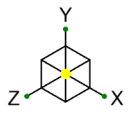


Loads: BLC 33, Service Live Loads
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Service Live Load1
Dec 29, 2022
BOBDL00105B_loaded.r3d

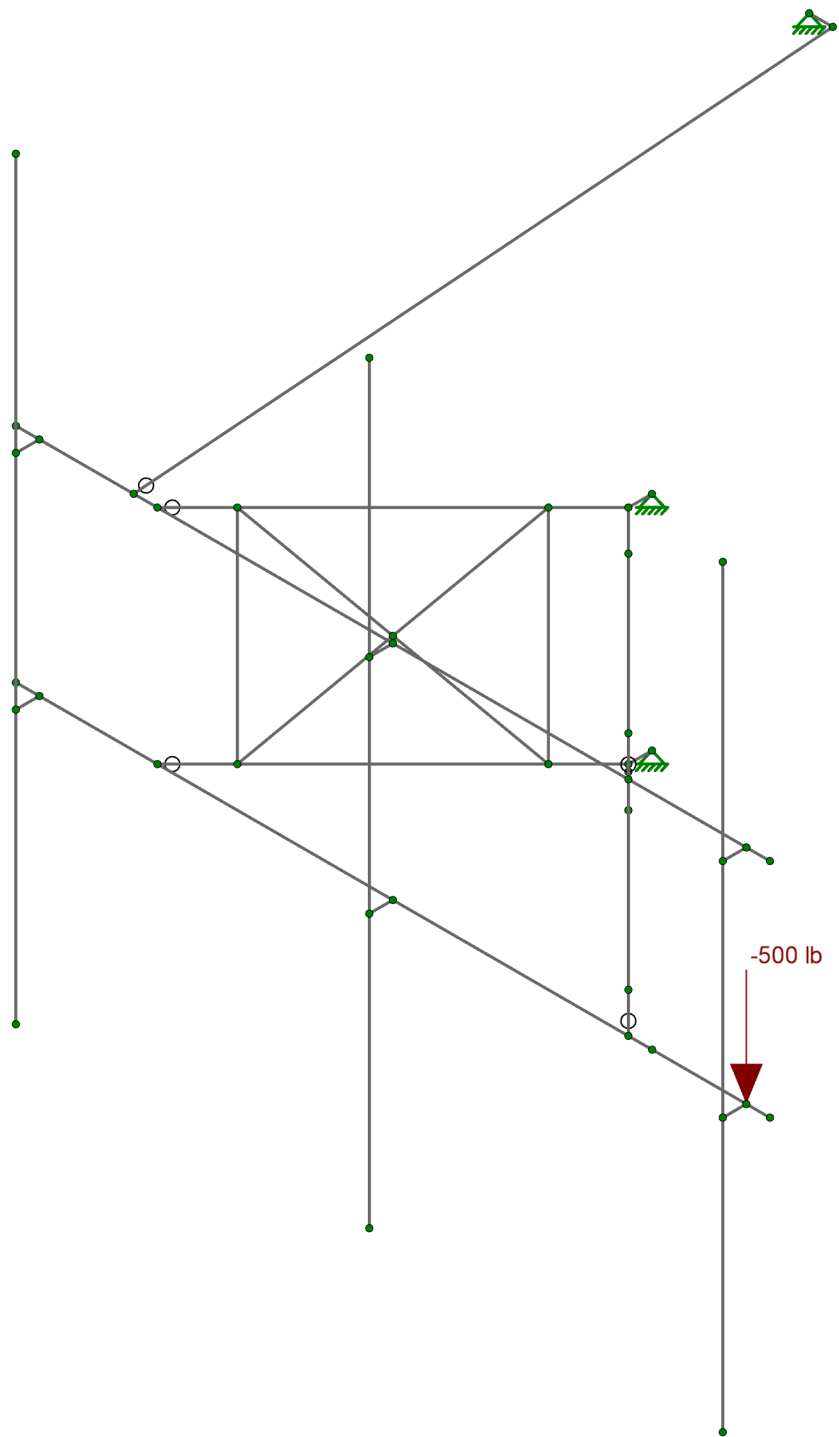
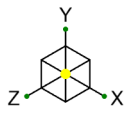


Loads: BLC 34, Maintenance Load Lm1
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Maintenance Load 1
Dec 29, 2022
BOBDL00105B_loaded.r3d

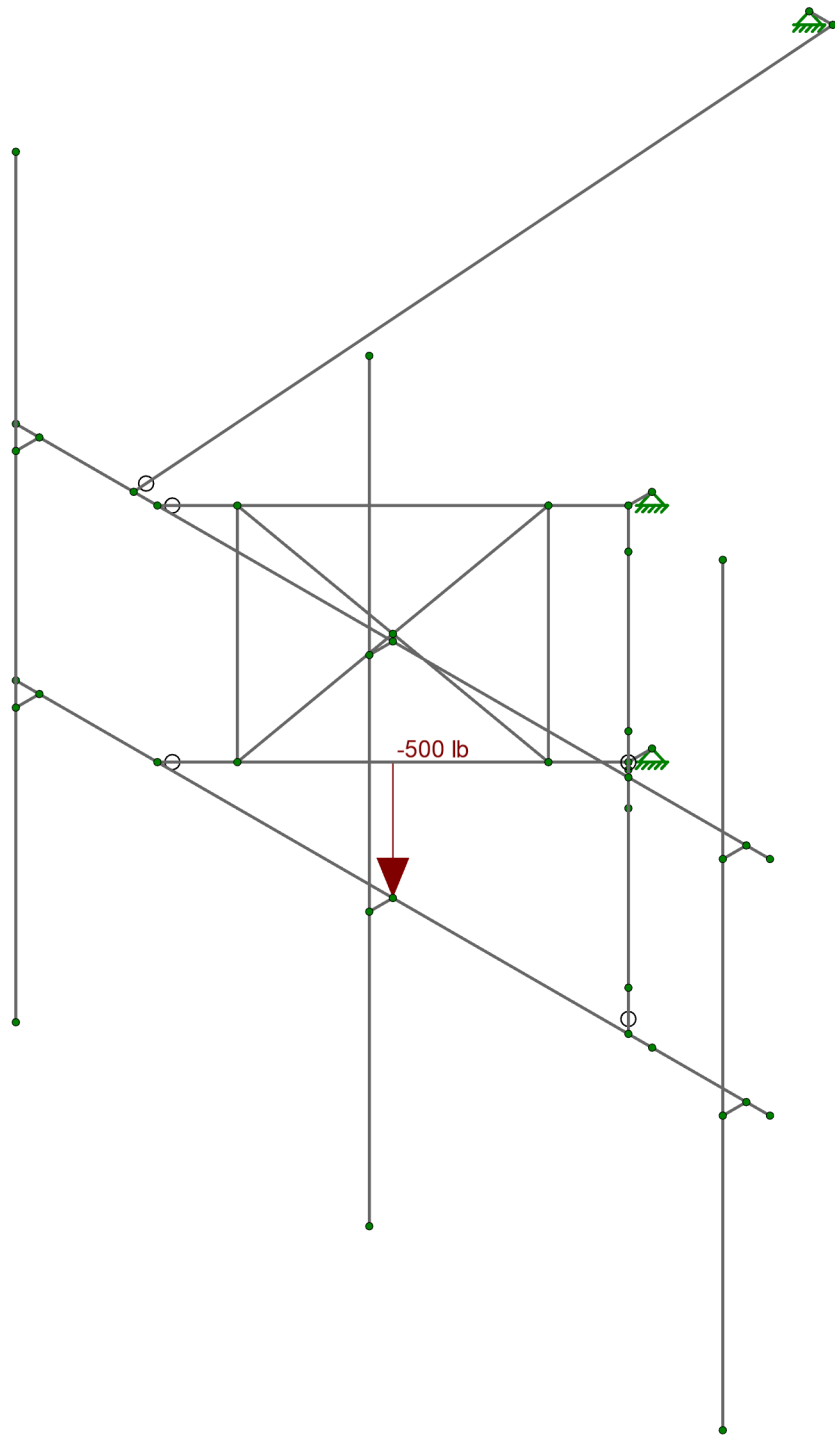
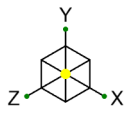


Loads: BLC 35, Maintenance Load Lm2
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Maintenance Load 2
Dec 29, 2022
BOBDL00105B_loaded.r3d



Loads: BLC 36, Maintenance Load Lm3
Envelope Only Solution

Infinigy Engineering
Matt Gall, E.I.T.
1197-F0001-B

BOBDL00105B

Maintenance Load 3
Dec 29, 2022
BOBDL00105B_loaded.r3d

Program Inputs

PROJECT INFORMATION		
Site Name:	BOBDL00105B	
Carrier:	Dish Wireless	
Engineer:	Matthew Gall	

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	104.70	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	115.00	ft
Tower Height AGL:	161.00	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.950	
Ground Ele. Factor (K_e):	0.996	*Rev H Only
Rooftop Speed-Up (K_s):	1.000	*Rev H Only
Topographic Factor (K_{zt}):	1.000	
Height Esc. Fact. (K_{iz}):	1.133	
Gust Effect Factor (G_h):	1.000	
Shielding Factor (K_a):	0.900	
Velocity Pressure Co. (K_z):	1.303	(Mount Elev)

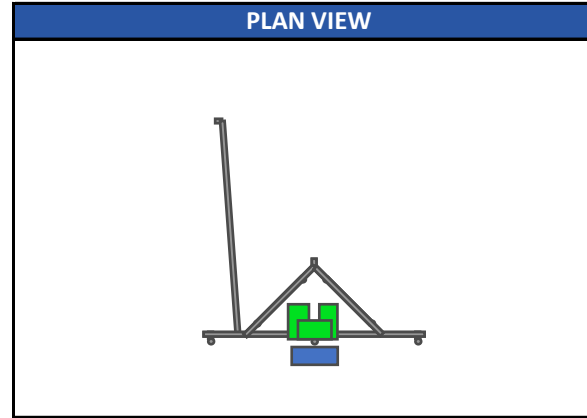
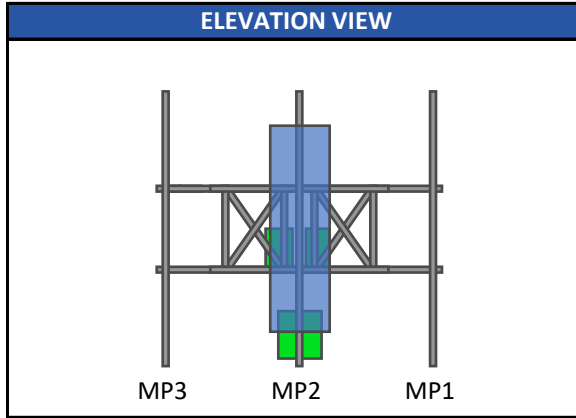
CODE STANDARDS		
Building Code:	2021 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-16	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	118	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Radial Ice Thickness (t_{iz}):	1.699	in
Flat Pressure:	87.941	psf
Round Pressure:	52.765	psf
Ice Wind Pressure:	9.474	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.191	g
1-Second Accel. (S_1):	0.055	g
Short-Period Design (S_{DS}):	0.204	
1-Second Design (S_{D1}):	0.088	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	
Seismic Importance (I_e):	1.000	
Seismic Response Co. (C_s):	0.102	
Total App. Weight:	225.210	lb
Total Shear Force (V_s):	22.941	lb
Hor. Seismic Load (E_h):	22.941	lb
Vert. Seismic Load (E_v):	9.177	lb *

*For reference only. Per TIA rev H section 16.7, E_v is not applicable to mounts

Program Inputs



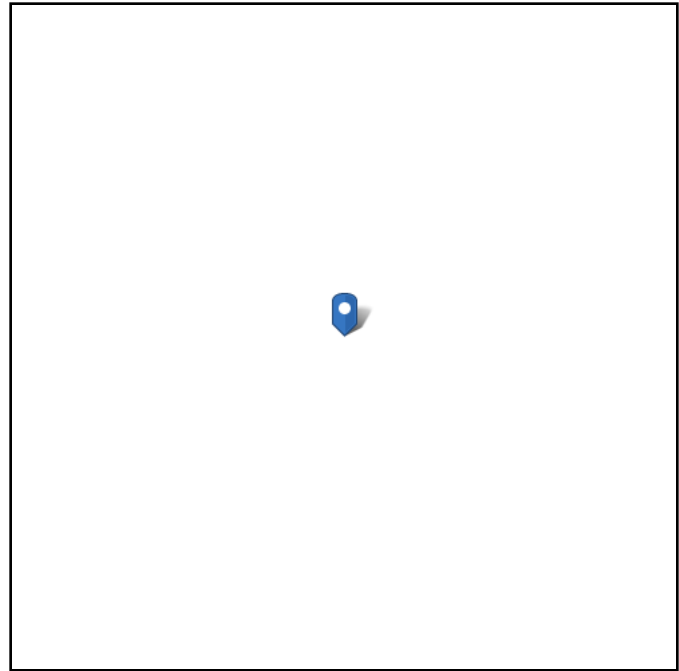
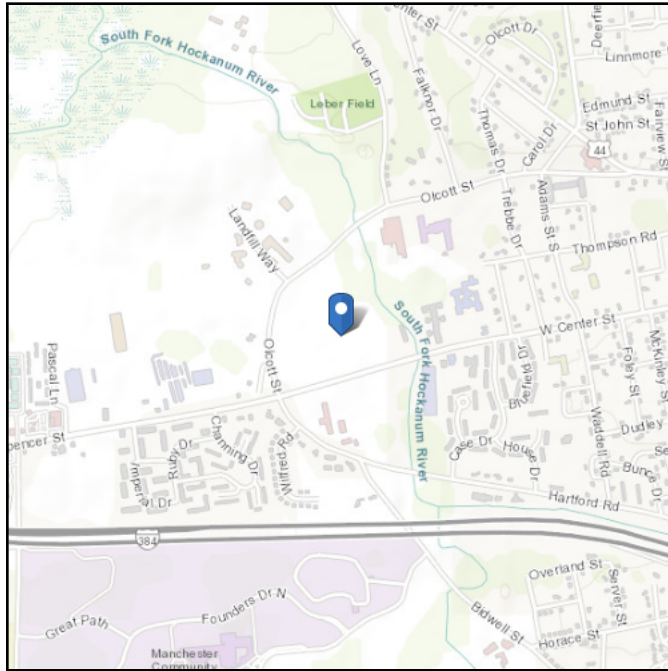
APPURTENANCE INFORMATION										
Appurtenance Name	Elevation	Qty.	Height (in)	Width (in)	Depth (in)	Weight (lbs)	EPA _N (ft ²)	EPA _T (ft ²)	Member (α sector)	
JMA WIRELESS MX08FRO665-21	115.0	3	72.00	20.00	8.00	64.50	12.49	5.87	MP2	
FUJITSU TA08025-B605	115.0	3	14.96	15.75	9.06	74.96	1.96	1.13	MP2	
FUJITSU TA08025-B604	115.0	3	14.96	15.75	7.87	63.90	1.96	0.98	MP2	
RAYCAP RDIDC-9181-PF-48	115.0	1	16.57	14.57	8.46	21.85	2.01	1.17	MP2	

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 41.769903
Longitude: -72.557367
Elevation: 104.7 ft (NAVD 88)



Wind

Results:

Wind Speed	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Thu Dec 29 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

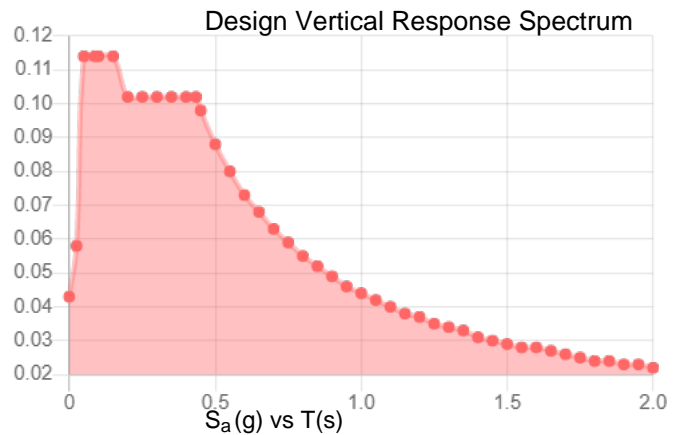
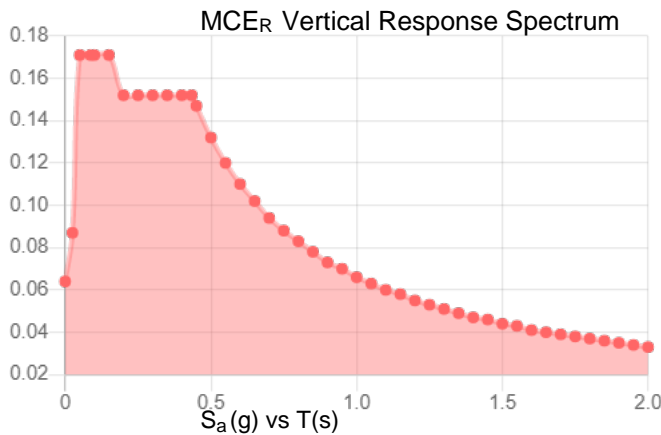
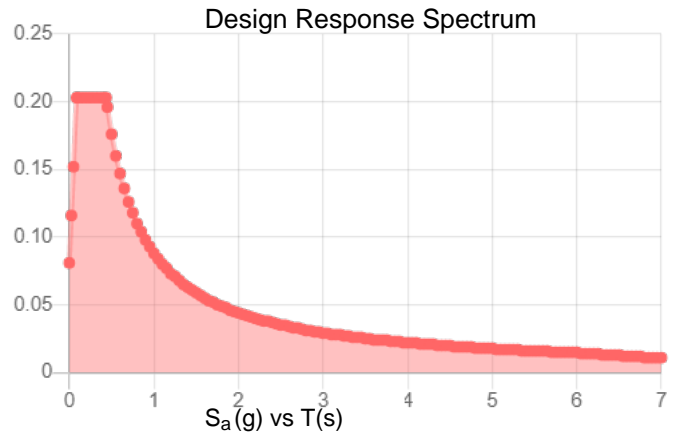
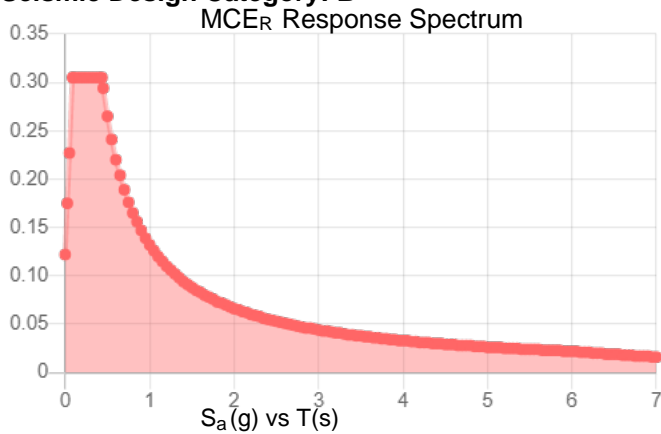
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class:

Results:

S_s :	0.191	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.103
F_v :	2.4	PGA _M :	0.164
S_{MS} :	0.305	F_{PGA} :	1.594
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.203	C_v :	0.7

Seismic Design Category: B



Data Accessed:

Thu Dec 29 2022

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.50 in.

Concurrent Temperature: 5 F

Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Thu Dec 29 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Snow

Results:

Ground Snow Load, p_g : 30 lb/ft²

Elevation: 104.7 ft

Data Source: ASCE/SEI 7-16, Table 7.2-8

Date Accessed: Thu Dec 29 2022

Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

INFINIGY

Bolt Calculation Tool, V1.6.4

PROJECT DATA	
Site Name:	BOBDL00105B
Site Number:	BOBDL00105B
Connection Description:	Sector Frame to Tower Leg

ENVELOPE BOLT LOADS		
(LC31 M25) Bolt Tension:	977.79	lbs
(LC85 M26) Bolt Shear:	703.52	lbs

MAX BOLT USAGE LOADS ¹		
Bolt Tension:	0.00	lbs
Bolt Shear:	703.52	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.625	in
Bolt Grade:	A449	-
# of Threaded Rods:	2	-
Threads Excluded?	No	-

¹ Max bolt usage loads correspond to Load combination #85 on member M26 in RISA-3D, which causes the maximum demand on the bolts.

Member Information
I nodes of M25, M26,

BOLT CHECK		
Tensile Strength	20340.15	
Shear Strength	13805.83	
Max Tensile Usage	4.8%	
Max Shear Usage	5.1%	
Interaction Check (Max Usage)	0.00	≤1.05
Result	Pass	



INFINIGY

Bolt Calculation Tool, V1.6.4

PROJECT DATA	
Site Name:	BOBDL00105B
Site Number:	BOBDL00105B
Connection Description:	Tieback to Tower Leg

ENVELOPE BOLT LOADS		
(LC23 M27) Bolt Tension:	60.05	lbs
(LC5 M27) Bolt Shear:	374.84	lbs

MAX BOLT USAGE LOADS ¹		
Bolt Tension:	0.00	lbs
Bolt Shear:	374.84	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.5	in
Bolt Grade:	A449	-
# of Threaded Rods:	2	-
Threads Excluded?	No	-

¹ Max bolt usage loads correspond to Load combination #5 on member M27 in RISA-3D, which causes the maximum demand on the bolts.

Member Information
I nodes of M27,

BOLT CHECK	
Tensile Strength	12770.86
Shear Strength	8835.73
Max Tensile Usage	0.5%
Max Shear Usage	4.2%
Interaction Check (Max Usage)	0.00 ≤1.05
Result	Pass



Exhibit F

Power Density/RF Emissions Report

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

Dish Existing Facility

Site ID: BOBDL00105B

250 Olcott Street
Manchester, Connecticut 06040

February 9, 2023

EBI Project Number: 6223000351

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	3.89%

February 9, 2023

Dish

Emissions Analysis for Site: BOBDL00105B

EBI Consulting was directed to analyze the proposed Dish facility located at **250 Olcott Street** in **Manchester, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Antenna Installation located on this property are within specified federal limits.

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

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

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

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

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless antenna facility located at 250 Olcott Street in Manchester, Connecticut using the equipment information listed below. Modeling of the antennas and associated equipment was completed using RoofMaster™ software, which is a widely-used predictive modeling program that has been developed to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications (FCC) Office of Engineering & Technology (OET) Bulletin 65, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields” (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

Since Dish is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer’s supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, telecommunications equipment was modeled using the following assumptions:

- 1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 6) The antennas used in this modeling are the JMA MX08FRO665-21 02DT 600 for the 600 MHz / 600 MHz / 2007 MHz channel(s) in Sector A, the JMA MX08FRO665-21 02DT 600 for the 600 MHz / 2007 MHz / 2100 MHz channel(s) in Sector B, the JMA MX08FRO665-21 02DT 600 for the 600 MHz / 2007 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline of the proposed antennas is 115 feet above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database or documents available on the Connecticut Siting Council website

(<https://portal.ct.gov/CSC>). Values in the database are provided by the individual carriers themselves.

- 9) Emissions values for additional carriers were calculated in Far Field utilizing the antenna models provided in the structural analysis.
- 10) All calculations were done with respect to uncontrolled / general population threshold limits.

Dish Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	I	Antenna #:	I	Antenna #:	I
Make / Model:	JMA MX08FRO665-21 02DT 600	Make / Model:	JMA MX08FRO665-21 02DT 600	Make / Model:	JMA MX08FRO665-21 02DT 600
Frequency Bands:	600 MHz / 600 MHz / 2007 MHz	Frequency Bands:	600 MHz / 2007 MHz / 2100 MHz	Frequency Bands:	600 MHz / 2007 MHz / 2100 MHz
Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd
Height (AGL):	115 feet	Height (AGL):	115 feet	Height (AGL):	115 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts
ERP (W):	13,566.01	ERP (W):	13,566.01	ERP (W):	13,566.01
Antenna AI MPE %:	4.77%	Antenna BI MPE %:	4.77%	Antenna CI MPE %:	4.77%

Site Composite MPE %	
Carrier	MPE %
Dish (Combined Sectors):	0.44%
Eversources	0.67%
Sprint	0.4%
AT&T	1.61%
Reserved	0.77%
Site Total MPE % :	3.89%

Dish MPE % Per Sector	
Dish Sector A Total:	0.44%
Dish Sector B Total:	0.44%
Dish Sector C Total:	0.44%
Dish Total MPE % :	0.44%

Dish Maximum MPE Power Values (Sector A)							
Dish Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Dish 600 MHz n71	4	364.8558002	115	4.416159918	600 MHz n71	400.0	1.10%
Dish 2007 MHz n70	4	1339.861757	115	16.21748587	2007 MHz n70	1000.0	1.62%
Dish 2100 MHz n66	4	1686.786014	115	20.41660508	2100 MHz n66	1000.0	2.04%
						Dish Total:	0.44%

- NOTE: Total Dish MPE values reflect all Dish antennas as reported by RoofMaster™ combined modeling.
- NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

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

Dish Sector	Power Density Value (%)
Sector A:	0.44%
Sector B:	0.44%
Sector C:	0.44%
Dish Maximum MPE % (Sector A):	0.44%
Dish Combined Sectors MPE %:	0.44%
Site Total:	3.89%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **3.89%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions or documents available on the Connecticut Siting Council website.

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

Exhibit G

Letter of Authorization



Christopher Gelinas
Senior Specialist – Real Estate

107 Selden St
Berlin, CT 06037
Office: (860) 665-2008
Christopher.Gelinas@Eversource.com

Mr. Chuck Regulbuto
Director of Operations
Northeast Site Solutions
420 Main Street
Sturbridge, MA 01566

RE: Letter of Authorization

**Project: Dish Wireless
Site ID: BOBDL00105B
250 Olcott St
Manchester, CT**

Owner: The Connecticut Light and Power Company d/b/a Eversource Energy

Dear Mr. Regulbuto

Eversource Energy, owner of the tower facility located at the address identified above, does hereby authorize Dish Wireless, and/ or it's agent to use this authorization letter for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for the Licensee's telecommunication's installation.


Sincerely,

Christopher Gelinas
Eversource Energy

REF: Dish Wireless
AllPoints Technology Corp
CD'S: Project # CT411870
Rev: 0
Dated 2/10/22
Structural: Project # CT411870
Rev: 2
Dated: 3/11/22

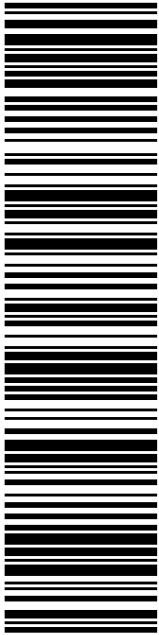
Exhibit H

Recipient Mailings



CONNECTICUT LIGHT & POWER COMPANY
PO BOX 270
HARTFORD CT 06141-0270

USPS TRACKING #



9405 5036 9930 0477 0702 77

P

usps.com 9405 5036 9930 0477 0702 77 0096 5000 0010 6141
\$9.65
US POSTAGE
 Flat Rate Env
 U.S. POSTAGE PAID
 Click-N-Ship®
 Mailed from 01566 986766275897308
 02/09/2023


PRIORITY MAIL®

DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Expected Delivery Date: 02/11/23
Ref#: DS-00105B
0000

B060

Electronic Rate Approved #038555749



Click-N-Ship®

UNITED STATES
POSTAL SERVICE®



Cut on dotted line.

Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0477 0702 77

Trans. #:	582354677	Priority Mail® Postage:	\$9.65
Print Date:	02/09/2023	Total:	\$9.65
Ship Date:	02/09/2023		
Expected			
Delivery Date:	02/11/2023		

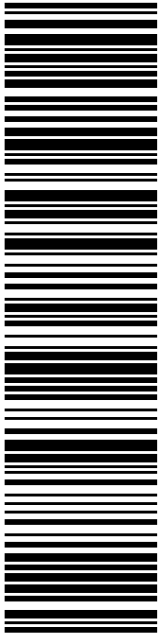
From: DEBORAH CHASE Ref#: DS-00105B
 NORTHEAST SITE SOLUTIONS
 STE 1
 420 MAIN ST
 STURBRIDGE MA 01566-1359

To: CONNECTICUT LIGHT & POWER COMPANY
 PO BOX 270
 HARTFORD CT 06141-0270

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.




Thank you for shipping with the United States Postal Service!
 Check the status of your shipment on the USPS Tracking® page at usps.com



USPS TRACKING #

9405 5036 9930 0477 0703 14

Electronic Rate Approved #038555749



JAMES DAVIS
DIRECTOR OF PLANNING-MANCHESTER
41 CENTER ST
MANCHESTER CT 06040-5090

P

USPS.com 9405 5036 9930 0477 0703 14 0096 5000 0020 6040
US POSTAGE \$9.65
 Flat Rate Env
 U.S. POSTAGE PAID
 Click-N-Ship®


02/09/2023 Mailed from 01566 986766275894938

PRIORITY MAIL®

DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359


Expected Delivery Date: 02/11/23
Ref#: DS-00105B
0000

C004



UNITED STATES POSTAL SERVICE®

Click-N-Ship®





Cut on dotted line.

Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0477 0703 14

Trans. #: 582354677	Priority Mail® Postage: \$9.65
Print Date: 02/09/2023	Total: \$9.65
Ship Date: 02/09/2023	
Expected Delivery Date: 02/11/2023	


From: DEBORAH CHASE Ref#: DS-00105B
 NORTHEAST SITE SOLUTIONS
 STE 1
 420 MAIN ST
 STURBRIDGE MA 01566-1359

To: JAMES DAVIS
 DIRECTOR OF PLANNING-MANCHESTER
 41 CENTER ST
 MANCHESTER CT 06040-5090

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

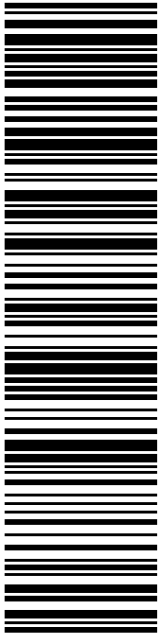


Thank you for shipping with the United States Postal Service!
 Check the status of your shipment on the USPS Tracking® page at usps.com




STEVE STEPHANOU
41 CENTER ST
MANCHESTER CT 06040-5090

USPS TRACKING #



9405 5036 9930 0477 0703 38



Electronic Rate Approved #038555749

Cut on dotted line.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0477 0703 38

Trans. #: 582354677	Priority Mail® Postage: \$9.65
Print Date: 02/09/2023	Total: \$9.65
Ship Date: 02/09/2023	
Expected Delivery Date: 02/11/2023	

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

To: STEVE STEPHANOU
41 CENTER ST
MANCHESTER CT 06040-5090

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!

Check the status of your shipment on the USPS Tracking® page at usps.com

BOBOLCOO 105 B - DISH
DIRECT



LINCOLN MALL
560 LINCOLN ST STE 8
WORCESTER, MA 01605-1925
(800)275-8777

02/10/2023

02:02 PM

Product	Qty	Unit Price	Price
---------	-----	------------	-------

Prepaid Mail	1		\$0.00
--------------	---	--	--------

Manchester, CT 06040

Weight: 1 lb 2.40 oz

Acceptance Date:

Fri 02/10/2023

Tracking #:

9405 5036 9930 0477 0703 38

Prepaid Mail	1		\$0.00
--------------	---	--	--------

Hartford, CT 06141

Weight: 1 lb 2.70 oz

Acceptance Date:

Fri 02/10/2023

Tracking #:

9405 5036 9930 0477 0702 77

Prepaid Mail	1		\$0.00
--------------	---	--	--------

Manchester, CT 06040

Weight: 1 lb 2.50 oz

Acceptance Date:

Fri 02/10/2023

Tracking #:

9405 5036 9930 0477 0703 14

Grand Total:

\$0.00