

July 28, 2022

Melanie A. Bachman Executive Director Connecticut Siting Council 10 Franklin Square New Britain, CT 06051

Re:

Tower Share Application – Dish Wireless Site # 13754334

Dish Wireless Telecommunications Facility @ 48 Ritch Avenue West, Greenwich, CT 06830

AKA 36 Ritch Avenue West

Dear Ms. Bachman,

Dish Wireless requests Tower Share approval for a new wireless telecommunications facility on an existing tower at 48 Ritch Avenue West in Greenwich. Enclosed please find Check Number 034941 in the amount of Six Hundred and Twenty Five Dollars (\$625.00); an original and two (2) copies of the following documents: the CSC Tower Share Request letter; a Letter of Authorization from the tower owner; the GIS map of the property; the original CSC Tower Approval, a set of Construction Drawings; a Structural Analysis Report; an Antenna Mount Analysis Report; an EME Study Report; and Four (4) Notice Confirmations.

I will email a .pdf copy of these documents to the Council.

If you have any questions, please feel free to contact me; I can be reached at 443-677-0144 or via email at jmandrews@clinellc.com. Thank you for your kind cooperation in this matter.

Respectfully Submitted,

Jack Andrews

Zoning Manager, Centerline Communications 10130 Donleigh Drive

Columbia, MD 21046

443-677-0144



July 6, 2022

Melanie A. Bachman Executive Director Connecticut Siting Council 10 Franklin Square New Britain, CT 06051

Re: Tower Share Application – Dish Wireless Site # 13754334

Dish Wireless Telecommunications Facility @ 48 Ritch Avenue West, Greenwich, CT 06830 AKA 36 Ritch Avenue West

Dear Ms. Bachman,

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing eighty three (83) foot tall "monopine" disguised tower at 48 Ritch Avenue West, Greenwich, CT 06830 (Latitude: 41.00506388, Longitude: -73.64831111) and within the existing fenced compound on the above referenced property. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by 36 Ritch Avenue LLC. The tower was approved by the Siting Council in Docket Number 414, dated July 14, 2011 (copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound to accommodate two (2) cabinets and related equipment, and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at forty five (45) feet as more particularly detailed and described on the enclosed Construction Drawings. No tower height increase, or compound expansion are proposed.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A §16-50j-73, a copy of this letter is being sent to the following individuals: American Tower Corporation as Tower Operator/Owner; 36 Ritch Avenue LLC as Property Owners; the Honorable Fred Camillo, the First Selectman of Greenwich, and Katie DeLuca, the Director of Greenwich Planning and Zoning.

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

- 1. The proposed modifications will NOT result in an increase in the height of the existing structure.
- 2. The proposed modifications will NOT require an extension of the site boundary.



- 3. The proposed modifications will NOT increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
- 4. The operation of the modified facility will NOT increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Please see the RF emissions calculation for Dish's facility enclosed herewith.
- 5. The proposed modifications will NOT cause an ineligible change or alteration in the physical or environmental characteristics of the site.
- 6. The existing structure and its foundation can support the proposed loading. Please see the structural analysis enclosed herewith.

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

- A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish's proposed loading (see attached Structural Analysis).
- 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. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish to obtain a building permit for the proposed installation. Further, a Letter of Authorization is attached, authorizing Dish to file this application.
- C. Environmental Feasibility. The proposed use of this facility would have a minimal environmental impact. The installation of Dish equipment at the 83-foot level of the existing 110-foot tower would have an insignificant visual impact on the area around the tower. Dish ground equipment would be installed within the existing facility compound. The Dish proposal would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by the attached EME study, 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 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 with this tower sharing application.
- E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting the proposed loading. Dish is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish's 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 the area.



For the foregoing reasons, Dish respectfully requests that the Council approve this request for the shared use of this tower located at 48 Ritch Avenue West, Greenwich, CT 06830.

If you have any questions, please feel free to contact me.

Sincerely,

Jack Andrews

Zoning Manager, Centerline Communications 10130 Donleigh Drive Columbia, MD 21046

443-677-0144

Enclosures: Exhibit 1 – Letter of Authorization from tower owner

Exhibit 2 – Property Card and GIS Exhibit 3 – Construction Drawings Exhibit 4 – Structural Analysis Report

Exhibit 5 – EME Study Report

Exhibit 6 – Original Tower Approval Exhibit 7 – (4) Notice Confirmations

cc: American Tower Corporation - Tower Operator/Owner 36 Ritch Avenue LLC - Property Owner Fred Camillo - First Selectman of Greenwich Katie DeLuca - Director of Planning and Zoning.



## LETTER OF AUTHORIZATION

#### CENTERLINE COMMUNICATIONS LLC/ AT&T MOBILITY

I, Margaret Robinson, Vice President, US Tower Legal Division on behalf of American Tower\*, owner/operator of the tower facility located at the address identified below (the "Tower Facilities"), do hereby authorize AT&T MOBILITY, CENTERLINE COMMUNICATIONS LLC, its successors and assigns, to act as American Tower's non-exclusive agent for the purpose of filing and securing any zoning, land-use, building permit and/or electrical permit application(s) and approvals of the applicable jurisdiction for and to conduct the construction of the installation of antennas and related telecommunications equipment on the Tower Facility located at the above address. This installation shall not affect adjoining lands and will occur only within the area leased by American Tower.

American Tower understands that the application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by American Tower of conditions related to American Tower's installation. Any such conditions of approval or modifications will not be effective unless approved in writing by American Tower.

The above authorization does not permit AT&T MOBILITY, CENTERLINE COMMUNICATIONS LLC to modify or alter any existing permit(s) and/or zoning or land-use conditions or impose any additional conditions unrelated to American Tower's installation of telecommunications equipment without the prior written approval of American Tower.

\*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

ATC Asset #	Site Name	Project Number	Site Address
283420	STONEYBROOK RD CT	13682835	23 Stonybrook Road, Stratford, Connecticut
243036	WEST HAVEN & RT 162 CT	13682841	668 Jones Hill Road, West Haven, Connecticut
302479	Rkhl - Rocky Hill	13683394	699 West Street, Rocky Hill, Connecticut
302537	Middletown CT 3	13747862	47 Inwood Road, Rocky Hill, Connecticut
302535	Milford CT 2	13748383	185 Research Drive, Milford, Connecticut
302473	E H F R - Prestige Park	13748397	310 Prestige Park Road, East Hartford, Connecticut
302505	Wshn - West Haven	13748405	204 Burwell Street, West Haven, Connecticut
302489	Enfd - Enfield	13753208	77 Town Farm Road, Enfield, Connecticut
302524	Beacon Falls	13753210	664 Rimmon Hill Road, Seymour, Connecticut
310968	WSPT-WESTPORT REBUILD CT	13753216	180A Bayberry Lane, Westport, Connecticut
302526	Naugatuck (telephone Pole)	13753218	585 South Main St. (soc. Club), Naugatuck, Connecticut
310972	WATERFORD REBUILD CT	13753547	15 Miner Lane, Waterford, Connecticut
302538	Parsonage Hill Aka Wallin	13753549	922 Northrop Road, Wallingford, Connecticut
370624	Mankes Silo	13754283	1338 Highland Ave, Cheshire, Connecticut



		ATION
SHELTON-TRUMBULL	13755484	14 OXFORD DRIVE/BOOTH HILL RD, Shelton, Connecticut
Byram Park CT	13755490	48 RITCH AVENUE WEST, Greenwich, Connecticut
NAUGATUCK CT	13755758	880 Andrew Mountain Road, Naugatuck, Connecticut
Woodbridge CT 1	13756843	77 Pease Road, Woodbridge, Connecticut
WATERFORD CT	13756866	53 Dayton Rd. Waterford, Connecticut
Madison CT 6	13757740	8 Old 79, Madison, Connecticut
CT Collinsville CAC 802816 CT	13757764	650 Albany Turnpike, Collinsville, Connecticut
CANTON CT	13757774	14 CANTON SPRINGS ROAD, Canton, Connecticut
Nrwc - Norwich	13757776	225 Rogers Road, Norwich, Connecticut
Wtbr - Waterbury	13757794	352 Garden Circle, Waterbury, Connecticut
Sttn - Southington	13757796	80 Shuttle Meadow Road, Southington, Connecticut
Hddm - Haddam	13757798	139 Morris Hubbard Rd, Higganum, Connecticut
PINE ORCHARD BRANFORD CT	13757800	123 Pine Orchard Road, Brrandford, Connecticut
North Havent CT 1	13757802	15 Dewight Street, North Haven, Connecticut
Mdfd - Middlefield	13757806	134 Kikapoo Road, Middlefield, Connecticut
Brst - Bristol	13757810	790 Willis Street, Bristol, Connecticut
Bilkays Express	13757812	90 North Plains Industrial Rd. Wallingford, Connecticut
Cherry Hill-branford	13759895	4 Beaver Road, Brandford, Connecticut
North Havent CT 1	14050356	15 Dewight Street, North Haven, Connecticut
GLFD-GUILFORD REBUILD CT	14050358	10 Tanner Marsh Road, Guilford, Connecticut
CROMWELLSW CT	14089799	99 Christian Hill Road, Cromwell, Connecticut
Hrfr - South	14090117	289 Mountain Street, Hartford, Connecticut
	Byram Park CT  NAUGATUCK CT  Woodbridge CT 1  WATERFORD CT  Madison CT 6  CT Collinsville CAC 802816 CT  CANTON CT  Nrwc - Norwich  Wtbr - Waterbury  Sttn - Southington  Hddm - Haddam  PINE ORCHARD BRANFORD CT  North Havent CT 1  Mdfd - Middlefield  Brst - Bristol  Bilkays Express  Cherry Hill-branford  North Havent CT 1  GLFD-GUILFORD REBUILD CT  CROMWELLSW CT	Byram Park CT 13755490  NAUGATUCK CT 13755758  Woodbridge CT 1 13756843  WATERFORD CT 13756866  Madison CT 6 13757740  CT Collinsville CAC 802816 CT 13757774  Nrwc - Norwich 13757776  Wtbr - Waterbury 13757794  Sttn - Southington 13757796  Hddm - Haddam 13757798  PINE ORCHARD 13757800  BRANFORD CT 13757800  Morth Havent CT 1 13757802  Mdfd - Middlefield 13757810  Bilkays Express 13757812  Cherry Hill-branford 13759895  North Havent CT 1 14050356  GLFD-GUILFORD REBUILD CT 14089799

Signature:

Margaret Robinson, Vice President

US Tower Legal Division

See attached Notary Block



# LETTER OF AUTHORIZATION CENTERLINE COMMUNICATIONS LLC/ AT&T MOBILITY

#### **NOTARY BLOCK**

COMMONWEALTH OF MASSACHUSETTS County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Vice President, UST Legal of American Tower (Tower Facility owner), personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESS my hand and official seal, this 30th day of June, 2022.

NOTARY SEAL

MELISSA ANN METZLER
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 14, 2025

Notary Public My Commission Expires: March 14, 2025

#### **Decision and Order**

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Cellco Partnership d/b/a Verizon Wireless, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 36 Ritch Avenue in Greenwich, Connecticut.

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

- 1. The tower shall be constructed as a 77-foot monopole, designed as a simulated pine tree. Simulated branches shall not extend higher than 84 feet above ground level. The tower shall be no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Cellco, T-Mobile, AT&T and other entities, both public and private.
- 2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Greenwich for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
  - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
  - b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the <u>2002 Connecticut Guidelines for Soil Erosion and Sediment Control</u>, as amended.
  - c) simulated pine tree tower designs and photographs of actual installations from various manufacturers.
  - d) construction schedule.
- 3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, and at the nearest point of abutting property lines consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. Additionally, the Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

- 4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
- 5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
- 6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Greenwich public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.
- 7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.
- 8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Greenwich. Any proposed modifications to this Decision and Order shall likewise be so served.
- 9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
- 10. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.
- 11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.
- 12. The Certificate Holder 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.

Docket No. 414 Decision and Order Page 3

- 13. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.
- 14. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.
- 15. If the Certificate Holder 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 Certificate Holder within 30 days of the sale and/or transfer.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the *Greenwich Time*.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

#### **Applicant**

Cellco Partnership d/b/a Verizon Wireless

#### Its Representative

Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597

Alexandria Carter Regulatory Manager Verizon Wireless 99 East River Drive East Hartford, CT 06108

## **Party**

John Hartwell 42 Ritch Avenue W. Greenwich, CT 06830

#### **Intervenor**

T-Mobile Northeast LLC

### **Its Representative**

Julie D. Kohler, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604 Regional Map Viewer July 6, 2022





# Pinnacle Telecom Group

Professional and Technical Services

# Antenna Site FCC RF Compliance Assessment and Report for Municipal Submission



**Prepared for:** DISH Wireless, LLC

Site ID: NJJER01066B

Site Address: 48 Ritch Avenue West

Greenwich, CT

 Latitude:
 N 41.005064

 Longitude:
 W 73.648311

 Structure type:
 Monopole

 Report date:
 June 3, 2022

Compliance Conclusion: DISH Wireless, LLC will be in compliance with the rules

and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in

THE REPORT.

14 Ridgedale Avenue - Suite 260 • Cedar Knolls, NJ 07927 • 973-451-1630

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## **Introduction and Summary**

At the request of DISH Wireless, LLC ("DISH"), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 48 Ritch Avenue West, Greenwich, CT. DISH refers to the antenna site by the code "NJJER01066B", and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

The FCC requires all wireless antenna operators to perform an assessment of potential human exposure to radiofrequency (RF) fields emanating from all the transmitting antennas at a site whenever antenna operations are added or modified, and to ensure compliance with the Maximum Permissible Exposure (MPE) limit in the FCC's regulations. In this case, the compliance assessment needs to take into account the RF effects of other existing antenna operations at the site by the Town of Greenwich, T-Mobile, AT&T, and Verizon Wireless. Note that FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

This report describes a mathematical analysis of RF levels resulting around the site in areas of unrestricted public access, that is, at street level around the site. The compliance analysis employs a standard FCC formula for calculating the effects of the antennas in a very conservative manner, in order to overstate the RF levels and to ensure "safe-side" conclusions regarding compliance with the FCC limit for safe continuous exposure of the general public.

The results of a compliance assessment can be described in layman's terms by expressing the calculated RF levels as simple percentages of the FCC MPE limit. If the normalized reference for that limit is 100 percent, then calculated RF levels higher than 100 percent indicate the MPE limit is exceeded and there is a need to mitigate the potential exposure. On the other hand, calculated RF levels consistently below 100 percent serve as a clear and sufficient demonstration of

compliance with the MPE limit. We can (and will) also describe the overall worstcase result via the "plain-English" equivalent "times-below-the-limit" factor.

The result of the RF compliance assessment in this case is as follows:

- □ At street level, the conservatively calculated maximum RF level from the combination of proposed and existing antenna operations at the site is 31.1735 percent of the FCC general population MPE limit well below the 100-percent reference for compliance. In other words, the worst-case calculated RF level intentionally and significantly overstated by the calculations is still more than 3 times below the FCC limit for safe, continuous exposure of the general public.
- A supplemental analysis of the RF levels at the same height as the DISH antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that two Caution signs be installed six feet below the antennas. In addition, NOC Information signs are to be installed at the base of the monopole.
- The results of the calculations, along with the proposed mitigation, combine to satisfy the FCC requirements and associated guidelines on RF compliance at street level around the site and on the subject roof. Moreover, because of the significant conservatism incorporated in the analysis, RF levels actually caused by the antennas will be lower than these calculations indicate.

The remainder of this report provides the following:

- relevant technical data on the proposed DISH antenna operations at the site, as well as on the other existing antenna operations;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of the results of the calculations against the FCC MPE limit, and the compliance conclusion for the site.

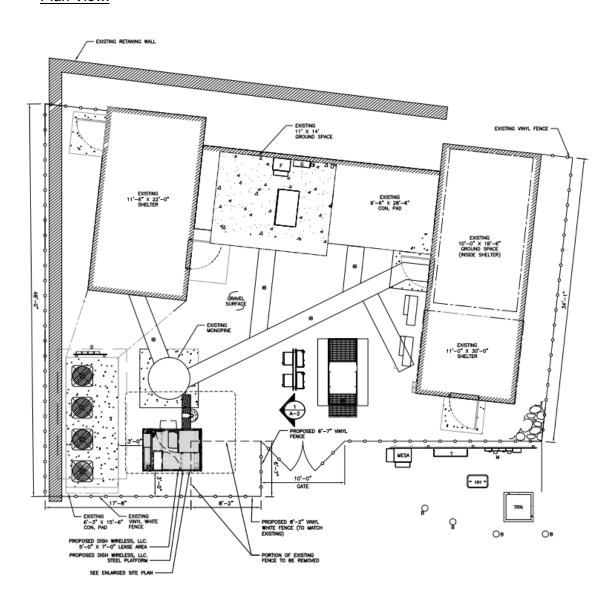
In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the

FCC MPE limit. Appendix C details the proposed mitigation to satisfy the FCC requirements and associated guidelines on RF compliance. Appendix D provides a summary of the qualifications of the expert certifying FCC compliance for this site.

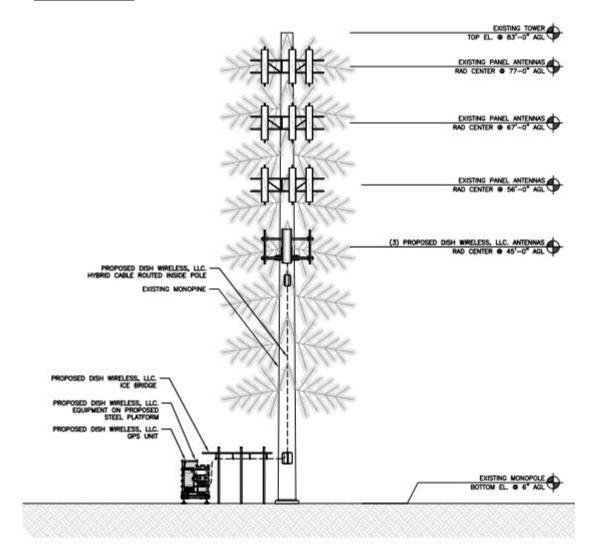
## Antenna and Transmission Data

The plan and elevation views that follow, extracted from the site drawings, illustrate the mounting positions of the DISH antennas at the site.

## Plan View:



## Elevation View:



The table that follows summarizes the relevant data for the proposed DISH antenna operations. Note that the "Z" height references the centerline of the antenna.

Ant. ID	Carrier	Antenna Manufacturer	Antenna Model	Туре	Freq (MHz)	Ant. Dim. (ft.)	Total ERP (watts)	Z (ft)	Ant. Gain (dBd)	B/W	Azimuth	EDT	MDT
0	DISH	Commscope	FFVV-65B-R2	Panel	600	6	2114	45	12.46	64	0	2	0
0	DISH	Commscope	FFVV-65B-R2	Panel	700	6	2819	45	12.46	64	0	2	0
0	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	7415	45	16.66	67	0	2	0
0	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	7415	45	16.66	67	0	2	0
0	DISH	Commscope	FFVV-65B-R2	Panel	600	6	2114	45	12.46	64	100	2	0
0	DISH	Commscope	FFVV-65B-R2	Panel	700	6	2819	45	12.46	64	100	2	0
0	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	7415	45	16.66	67	100	2	0
0	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	7415	45	16.66	67	100	2	0
•	DISH	Commscope	FFVV-65B-R2	Panel	600	6	2114	45	12.46	64	240	2	0
•	DISH	Commscope	FFVV-65B-R2	Panel	700	6	2819	45	12.46	64	240	2	0
•	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	7415	45	16.66	67	240	2	0
•	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	7415	45	16.66	67	240	2	0

The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

By way of illustration, Figure 1 that follows shows the vertical-plane radiation pattern of the proposed antenna model in the 600 MHz frequency band. In this type of antenna radiation pattern diagram, the antenna is effectively pointed at the three o'clock position (the horizon) and the relative strength of the pattern at different angles is described using decibel units.

Note that the use of a decibel scale to describe the relative pattern at different angles actually serves to significantly understate the actual focusing effects of the antenna. Where the antenna pattern reads 20 dB the relative RF energy emitted at the corresponding downward angle is 1/100<sup>th</sup> of the maximum that occurs in the main beam (at 0 degrees); at 30 dB, the energy is only 1/1000<sup>th</sup> of the maximum.

Finally, note that the automatic pattern-scaling feature of our internal software may skew side-by-side visual comparisons of different antenna models, or even different parties' depictions of the same antenna model.

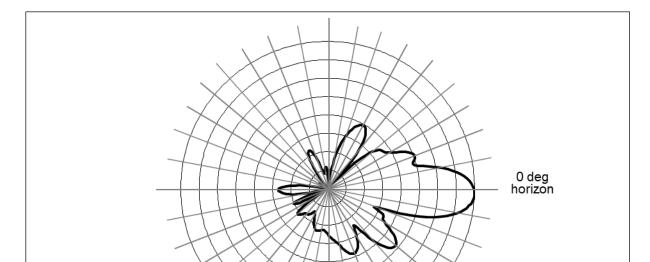


Figure 1. Commscope FFVV-65B-R2 – 600 MHz Vertical-plane Pattern

As noted at the outset, there are existing antenna operations to include in the compliance assessment. For T-Mobile, AT&T, and Verizon, we will conservatively assume operation with maximum channel capacity and at maximum transmitter power per channel to be used in each of its FCC-licensed frequency bands. For the other operator, we will rely on the transmission parameters in its associated FCC licenses.

The table that follows summarizes the relevant data for the collocated antenna operations.

5 dB / division

Carrier	Antenna Manufacturer	Antenna Model	Туре	Freq (MHz)	Total ERP (watts)	Ant. Gain (dBd)	Azimuth
Town Of Greenwich	Generic	Generic	WHIP	851	99	7.86	N/A
AT&T	Generic	Generic	Panel	700	4945	11.26	N/A
AT&T	Generic	Generic	Panel	850	2400	11.76	N/A
AT&T	Generic	Generic	Panel	1900	5756	15.56	N/A
AT&T	Generic	Generic	Panel	2100	5890	15.66	N/A
AT&T	Generic	Generic	Panel	2300	4131	16.16	N/A
T-Mobile	Generic	Generic	Panel	600	3163	12.96	N/A
T-Mobile	Generic	Generic	Panel	700	867	13.36	N/A
T-Mobile	Generic	Generic	Panel	1900	4123	15.36	N/A
T-Mobile	Generic	Generic	Panel	1900	1452	15.60	N/A
T-Mobile	Generic	Generic	Panel	2100	4626	15.86	N/A
T-Mobile	Generic	Generic	Panel	1900	1419	15.50	N/A
T-Mobile	Generic	Generic	Panel	2500	12804	22.35	N/A
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A

## Compliance Analysis

FCC Office of Engineering and Technology Bulletin 65 ("OET Bulletin 65") provides guidelines for mathematical models to calculate the RF levels at various points around transmitting antennas. Different models apply in different areas around antennas, with one model applying to street level around a site, and another applying to the rooftop near the antennas. We will address each area of interest in turn in the subsections that follow.

#### Street Level Analysis

At street-level around an antenna site (in what is called the "far field" of the antennas), the RF levels are directly proportional to the total antenna input power and the relative antenna gain in the downward direction of interest – and the levels are otherwise inversely proportional to the square of the straight-line distance to the antenna.

Conservative calculations also assume the potential RF exposure is enhanced by reflection of the RF energy from the intervening ground. Our calculations will assume a 100% "perfect", mirror-like reflection, which is the absolute worst-case scenario.

The formula for street-level compliance assessment for any given wireless antenna operation is as follows:

MPE% = 
$$(100 * Chans * TxPower * 10 (Gmax-Vdisc/10) * 4) / (MPE * 4 $\pi$  * R<sup>2</sup>)$$

where

MPE% = RF level, expressed as a percentage of the MPE limit

applicable to continuous exposure of the general

public

= factor to convert the raw result to a percentage

Chans = maximum number of RF channels per sector

TxPower = maximum transmitter power per channel, in milliwatts

10 (Gmax-Vdisc/10)	=	numeric equivalent of the relative antenna gain in the downward direction of interest; data on the antenna vertical-plane pattern is taken from manufacturer specifications			
4	=	factor to account for a 100-percent-efficient energy reflection from the ground, and the squared relationship between RF field strength and power density $(2^2 = 4)$			
MPE	=	FCC general population MPE limit			
R	=	straight-line distance from the RF source to the point of interest, centimeters			

The MPE% calculations are performed out to a distance of 500 feet from the facility to points 6.5 feet (approximately two meters, the FCC-recommended standing height) off the ground, as illustrated in Figure 2, below.

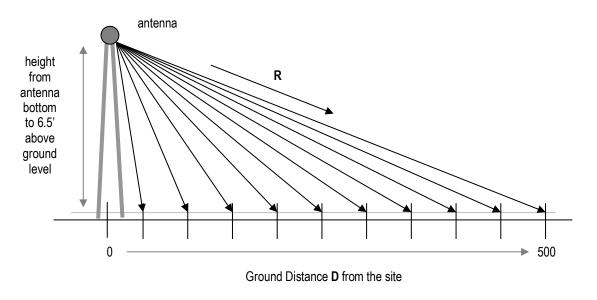


Figure 2. Street-level MPE% Calculation Geometry

It is popularly understood that the farther away one is from an antenna, the lower the RF level – which is generally but not universally correct. The results of MPE% calculations fairly close to the site will reflect the variations in the vertical-plane antenna pattern as well as the variation in straight-line distance to the antenna.

Therefore, RF levels may actually increase slightly with increasing distance within the range of zero to 500 feet from the site. As the distance approaches 500 feet and beyond, though, the antenna pattern factor becomes less significant, the RF levels become primarily distance-controlled and, as a result, the RF levels generally decrease with increasing distance. In any case, the RF levels more than 500 feet from a wireless antenna site are well understood to be sufficiently low to be comfortably in compliance.

According to the FCC, when directional antennas (such as panels) are used, compliance assessments are based on the RF effect of a single (facing) antenna sector, as the effects of directional antennas pointed away from the point(s) of interest are considered insignificant. If the different parameters apply in the different sectors, compliance is based on the worst-case parameters.

Street level FCC compliance for a collocated antenna site is assessed in the following manner. At each distance point along the ground, an MPE% calculation is made for each antenna operation (including each frequency band), and the sum of the individual MPE% contributions at each point is compared to 100 percent, the normalized reference for compliance with the MPE limit. We refer to the sum of the individual MPE% contributions as "total MPE%", and any calculated total MPE% result exceeding 100 percent is, by definition, higher than the FCC limit and represents non-compliance and a need to mitigate the potential exposure. If all results are consistently below 100 percent, on the other hand, that set of results serves as a clear and sufficient demonstration of compliance with the MPE limit.

Note that the following conservative methodology and assumptions are incorporated into the MPE% calculations on a general basis:

- 1. The antennas are assumed to be operating continuously at maximum power and maximum channel capacity.
- 2. The power-attenuation effects of shadowing or other obstructions to the line-of-sight path from the antenna to the point of interest are ignored.
- 3. The calculations intentionally minimize the distance factor (R) by assuming a 6'6" human and performing the calculations from the bottom (rather than

- the centerline) of each operator's lowest-mounted antenna, as applicable.
- 4. The calculations also conservatively take into account, when applicable, the different technical characteristics and related RF effects of the use of multiple antennas for transmission in the same frequency band.
- 5. The RF exposure at ground level is assumed to be 100-percent enhanced (increased) via a "perfect" field reflection from the intervening ground.

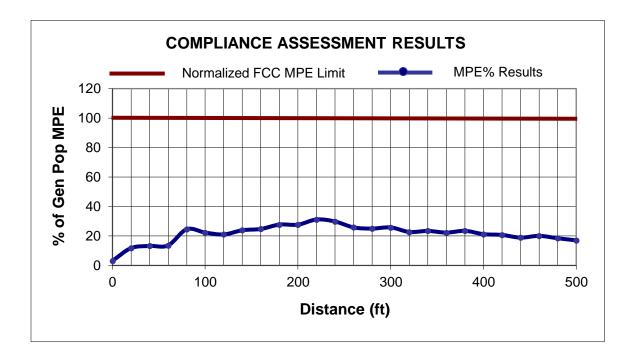
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safeside" conclusions about compliance.

The table that follows provides the results of the MPE% calculations for each antenna operation, with the overall worst-case calculated result highlighted in bold in the last column. Note that the transmission parameters for each DISH antenna sector are identical, and the calculations reflect the worst-case result for any/all sectors.

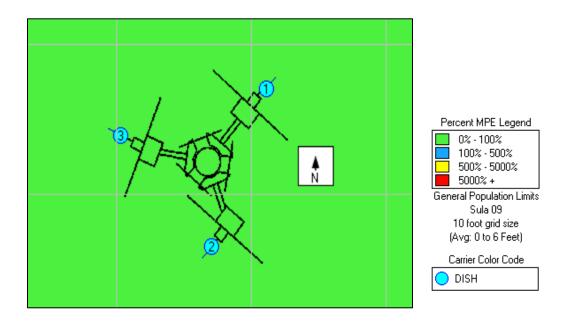
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	Town Of Greenwich MPE%	T-Mobile MPE%	AT&T MPE%	Verizon Wireless MPE%	Total MPE%
0	0.3654	0.0173	0.0027	0.0005	1.8950	0.7304	0.1563	3.1676
20	0.7688	0.4900	0.7034	0.0040	6.6013	2.2879	0.8876	11.743
40	2.3834	1.8732	2.4131	0.0088	2.4491	3.2733	0.8300	13.2309
60	0.3600	0.1891	0.4579	0.0033	5.5206	5.2543	1.8091	13.5943
80	0.1340	0.2585	1.0011	0.0359	12.2966	7.5514	3.2995	24.577
100	0.1352	0.8679	0.5230	0.0003	15.1203	3.9471	1.6919	22.2857
120	1.2151	0.0388	0.2742	0.0040	17.7811	1.3483	0.3750	21.0365
140	2.0682	0.0267	0.0257	0.0014	20.0424	1.3636	0.3574	23.8854
160	2.9932	0.1943	0.0747	0.0025	17.5929	2.7752	1.1223	24.7551
180	3.0786	0.3906	0.2289	0.0041	15.9399	5.7083	2.3680	27.7184
200	3.1269	0.4748	0.3806	0.0025	14.0146	6.8110	2.8546	27.665
220	3.1388	0.3405	0.3717	0.0016	13.1273	9.7957	4.3979	31.1735
240	3.1049	0.1036	0.1916	0.0027	11.5730	10.0705	4.7673	29.8136
260	3.0268	0.0637	0.0727	0.0039	9.9141	8.6270	4.0840	25.7922
280	2.6168	0.0551	0.0628	0.0049	9.0433	8.8755	4.3596	25.018
300	2.5397	0.4151	0.2925	0.0050	8.6543	9.1744	4.7030	25.784
320	2.2361	0.3655	0.2576	0.0045	7.6280	8.0864	4.1452	22.7233
340	1.9837	0.3242	0.2285	0.0040	7.8154	8.5825	4.4766	23.4149
360	1.9202	0.9370	0.7669	0.0029	6.9850	7.6706	4.0010	22.2836
380	1.7252	0.8418	0.6890	0.0015	7.5459	8.2593	4.4104	23.4731
400	1.5584	0.7604	0.6224	0.0014	6.8200	7.4647	3.9861	21.2134
420	1.4984	1.3709	1.2417	0.0005	6.1936	6.7791	3.6200	20.7042
440	1.3662	1.2500	1.1321	0.0005	5.6494	6.1835	3.3020	18.8837
460	1.2507	1.1443	1.0364	0.0005	6.2617	6.7023	3.6736	20.0695
480	1.1493	1.0515	0.9524	0.0005	5.7556	6.1605	3.3766	18.4464
500	1.0596	0.9695	0.8781	0.0004	5.3082	5.6817	3.1142	17.0117

As indicated, the maximum calculated overall RF level is 31.1735 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

A graph of the overall calculation results, shown below, perhaps provides a clearer *visual* illustration of the relative compliance of the calculated RF levels. The line representing the overall calculation results shows an obviously clear, consistent margin to the FCC MPE limit.



The graphic output for the areas at street level surrounding the site is reproduced on the next page.

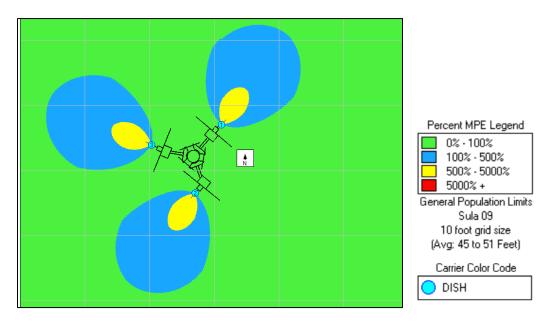


### Near-field Analysis

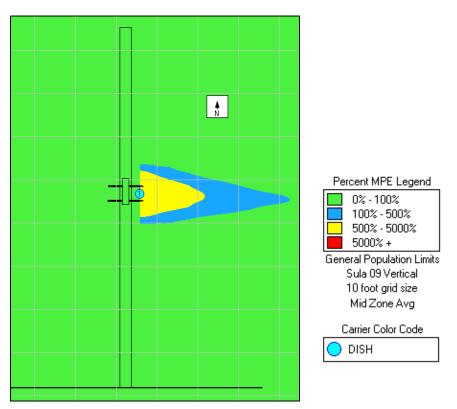
The compliance analysis for the same height as the antennas is performed using the RoofMaster program by Waterford Consultants.

RF levels in the near field of an antenna depend on the power input to the antenna, the antenna's length and horizontal beamwidth, the mounting height of the antenna above nearby roof, and one's position and distance from the antenna. RF levels in front of a directional antenna are higher than they are to the sides or rear, and in any given horizontal direction are inversely proportional to the straight-line distance to the antenna.

The RoofMaster graphic outputs for the same height as the DISH antennas are reproduced on the next page.



RoofMaster – Same Height as the Antennas – Alpha / Beta / Gamma sectors



RoofMaster – Same Height as the Antennas – Alpha / Beta / Gamma sectors

## Compliance Conclusion

According to the FCC, the MPE limit has been constructed in such a manner that continuous human exposure to RF fields up to and including 100 percent of the MPE limit is acceptable and safe.

The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at the site at the site is 31.1735 percent of the FCC general population MPE limit. At the same height as the antennas, the analysis shows that the calculated RF levels potentially exceed the FCC MPE limit. Per DISH guidelines, and consistent with FCC guidance on compliance, it is recommended that two Caution signs be six feet below the antennas. In addition, NOC Information signs be installed at the base of the monopole.

The results of the calculations, along with the described RF mitigation, combine to satisfy the FCC's RF compliance requirements and associated guidelines on compliance.

Moreover, because of the extremely conservative calculation methodology and operational assumptions we applied in the analysis, RF levels actually caused by the antennas will be significantly lower than the calculation results here indicate.

## **Certification**

It is the policy of Pinnacle Telecom Group that all FCC RF compliance assessments are reviewed, approved, and signed by the firm's Chief Technical Officer who certifies as follows:

- 1. I have read and fully understand the FCC regulations concerning RF safety and the control of human exposure to RF fields (47 CFR 1.1301 et seq).
- 2. To the best of my knowledge, the statements and information disclosed in this report are true, complete and accurate.
- 3. The analysis of site RF compliance provided herein is consistent with the applicable FCC regulations, additional guidelines issued by the FCC, and industry practice.
- 4. The results of the analysis indicate that the subject antenna operations will be in compliance with the FCC regulations concerning the control of potential human exposure to the RF emissions from antennas.

Pinnacle Telecom Group, LLC

6/3/2022

Date

# Appendix A. Documents Used to Prepare the Analysis

**RFDS:** RFDS-NJJER01066B-Final-20220307-v.0\_20220308092430

**CD:** NJJER01066B\_FinalStampedCDs\_20220224191845

## Appendix B. Background on the FCC MPE Limit

As directed by the Telecommunications Act of 1996, the FCC has established limits for maximum continuous human exposure to RF fields.

The FCC maximum permissible exposure (MPE) limits represent the consensus of federal agencies and independent experts responsible for RF safety matters. Those agencies include the National Council on Radiation Protection and Measurements (NCRP), the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), the American National Standards Institute (ANSI), the Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA). In formulating its guidelines, the FCC also considered input from the public and technical community – notably the Institute of Electrical and Electronics Engineers (IEEE).

The FCC's RF exposure guidelines are incorporated in Section 1.301 *et seq* of its Rules and Regulations (47 CFR 1.1301-1.1310). Those guidelines specify MPE limits for both occupational and general population exposure.

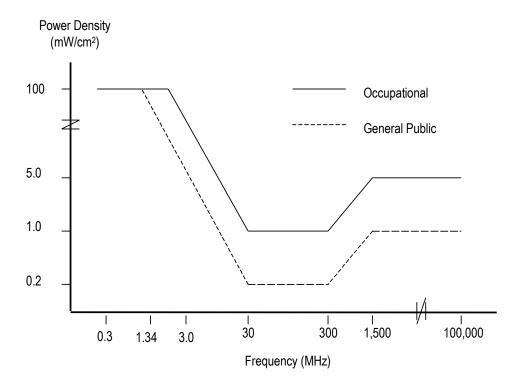
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in the form of heat). The occupational MPE guidelines incorporate a safety factor of 10 or greater with respect to RF levels known to represent a health hazard, and an additional safety factor of five is applied to the MPE limits for general population exposure. Thus, the general population MPE limit has a built-in safety factor of more than 50. The limits were constructed to appropriately protect humans of both sexes and all ages and sizes and under all conditions – and continuous exposure at levels equal to or below the applicable MPE limits is considered to result in no adverse health effects or even health risk.

The reason for *two* tiers of MPE limits is based on an understanding and assumption that members of the general public are unlikely to have had appropriate RF safety training and may not be aware of the exposures they receive; occupational exposure in controlled environments, on the other hand, is assumed to involve individuals who have had such training, are aware of the exposures, and know how to maintain a safe personal work environment.

The FCC's RF exposure limits are expressed in two equivalent forms, using alternative units of field strength (expressed in volts per meter, or V/m), and power density (expressed in milliwatts per square centimeter, or mW/cm<sup>2</sup>). The table on the next page lists the FCC limits for both occupational and general population exposures, using the mW/cm<sup>2</sup> reference, for the different radio frequency ranges.

Frequency Range (F) (MHz )	Occupational Exposure ( mW/cm²)	General Public Exposure ( mW/cm²)
0.3 - 1.34	100	100
1.34 - 3.0	100	180 / F <sup>2</sup>
3.0 - 30	900 / F <sup>2</sup>	180 / F <sup>2</sup>
30 - 300	1.0	0.2
300 - 1,500	F/300	F / 1500
1,500 - 100,000	5.0	1.0

The diagram below provides a graphical illustration of both the FCC's occupational and general population MPE limits.



Because the FCC's RF exposure limits are frequency-shaped, the exact MPE limits applicable to the instant situation depend on the frequency range used by the systems of interest.

The most appropriate method of determining RF compliance is to calculate the RF power density attributable to a particular system and compare that to the MPE limit applicable to the operating frequency in question. The result is usually expressed as a percentage of the MPE limit.

For potential exposure from multiple systems, the respective percentages of the MPE limits are added, and the total percentage compared to 100 (percent of the limit). If the result is less than 100, the total exposure is in compliance; if it is more than 100, exposure mitigation measures are necessary to achieve compliance.

Note that the FCC "categorically excludes" all "non-building-mounted" wireless antenna operations whose mounting heights are more than 10 meters (32.8 feet) from the routine requirement to demonstrate compliance with the MPE limit, because such operations "are deemed, individually and cumulatively, to have no significant effect on the human environment". The categorical exclusion also applies to *all* point-to-point antenna operations, regardless of the type of structure they're mounted on. Note that the FCC considers any facility qualifying for the categorical exclusion to be automatically in compliance.

In addition, FCC Rules and Regulations Section 1.1307(b)(3) describes a provision known in the industry as "the 5% rule". It describes that when a specific location – like a spot on a rooftop – is subject to an overall exposure level exceeding the applicable MPE limit, operators with antennas whose MPE% contributions at the point of interest are less than 5% are exempted from the obligation otherwise shared by all operators to bring the site into compliance, and those antennas are automatically deemed by the FCC to satisfy the rooftop compliance requirement.

#### FCC References on RF Compliance

47 CFR, FCC Rules and Regulations, Part 1 (Practice and Procedure), Section 1.1310 (Radiofrequency radiation exposure limits).

FCC Second Memorandum Opinion and Order and Notice of Proposed Rulemaking (FCC 97-303), In the Matter of Procedures for Reviewing Requests for Relief From State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934 (WT Docket 97-192), Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (ET Docket 93-62), and Petition for Rulemaking of the Cellular Telecommunications Industry Association Concerning Amendment of the Commission's Rules to Preempt State and Local Regulation of Commercial Mobile Radio Service Transmitting Facilities, released August 25, 1997.

FCC First Memorandum Opinion and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released December 24, 1996.

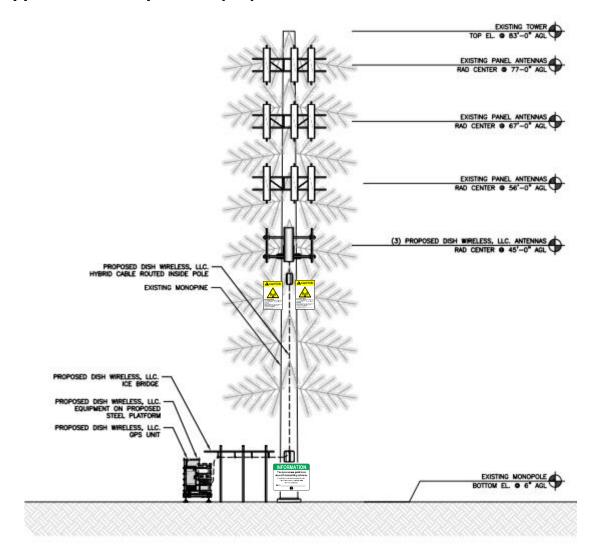
FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies, released December 4, 2019.

FCC Office of Engineering and Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", Edition 97-01, August 1997.

FCC Office of Engineering and Technology (OET) Bulletin 56, "Questions and Answers About Biological Effects and Potential Hazards of RF Radiation", edition 4, August 1999.

# Appendix C. Proposed Signage





# Appendix D. Summary of Expert Qualifications

Daniel J. Collins, Chief Technical Officer, Pinnacle Telecom Group, LLC

Synopsis:	<ul> <li>40+ years of experience in all aspects of wireless system engineering, related regulation, and RF exposure</li> <li>Has performed or led RF exposure compliance assessments on more than 20,000 antenna sites since the latest FCC regulations went into effect in 1997</li> <li>Has provided testimony as an RF compliance expert more than 1,500 times since 1997</li> <li>Have been accepted as an FCC compliance expert in New York, New Jersey, Connecticut, Pennsylvania and more than 40 other states, as well as by the FCC</li> </ul>
Education:	<ul> <li>B.E.E., City College of New York (Sch. Of Eng.), 1971</li> <li>M.B.A., 1982, Fairleigh Dickinson University, 1982</li> <li>Bronx High School of Science, 1966</li> </ul>
Current Responsibilities:	Leads all PTG staff work involving RF safety and FCC compliance, microwave and satellite system engineering, and consulting on wireless technology and regulation
Prior Experience:	<ul> <li>Edwards &amp; Kelcey, VP – RF Engineering and Chief Information Technology Officer, 1996-99</li> <li>Bellcore (a Bell Labs offshoot after AT&amp;T's 1984 divestiture), Executive Director – Regulation and Public Policy, 1983-96</li> <li>AT&amp;T (Corp. HQ), Division Manager – RF Engineering, and Director – Radio Spectrum Management, 1977-83</li> <li>AT&amp;T Long Lines, Group Supervisor – Microwave Radio System Design, 1972-77</li> </ul>
Specific RF Safety / Compliance Experience:	<ul> <li>Involved in RF exposure matters since 1972</li> <li>Have had lead corporate responsibility for RF safety and compliance at AT&amp;T, Bellcore, Edwards &amp; Kelcey, and PTG</li> <li>While at AT&amp;T, helped develop the mathematical models for calculating RF exposure levels</li> <li>Have been relied on for compliance by all major wireless carriers, as well as by the federal government, several state and local governments, equipment manufacturers, system integrators, and other consulting / engineering firms</li> </ul>
Other Background:	<ul> <li>Author, Microwave System Engineering (AT&amp;T, 1974)</li> <li>Co-author and executive editor, A Guide to New Technologies and Services (Bellcore, 1993)</li> <li>National Spectrum Management Association (NSMA) – former three-term President and Chairman of the Board of Directors; was founding member, twice-elected Vice President, long-time member of the Board, and was named an NSMA Fellow in 1991</li> <li>Have published more than 35 articles in industry magazines</li> </ul>



## **Structural Analysis Report**

Structure : 83 ft Monopine

ATC Site Name : Byram Park CT,CT

ATC Site Number : 414240

Engineering Number : 13754334\_C3\_03

Proposed Carrier : DISH WIRELESS L.L.C.

Carrier Site Name : NJJER01066B

Carrier Site Number : NJJER01066B

Site Location : 48 RITCH AVENUE WEST

**GREENWICH, CT 06830-9992** 

41.0051, -73.6483

County : Fairfield

Date : January 7, 2022

Max Usage : 89%

Result : Pass

Prepared By: Reviewed By:

Sarah Kramer Structural Engineer

Sarah D. Kramer

red By:

COA: PEC.0001553



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#### Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 83 ft Monopine to reflect the change in loading by DISH WIRELESS L.L.C..

#### **Supporting Documents**

<b>Tower Drawings</b> EEI Project #16733 Rev. 3, dated December 9, 2011			
Foundation Drawing Centek Engineering Job #09129 Rev. 0, dated February 14, 2012			
Geotechnical Report DET Job #2010.14, dated October 4, 2010			
Modifications ATC Project #OAA711130_C6_09, dated October 26, 2018			

#### **Analysis**

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed: 116 mph (3-second gust)			
Basic Wind Speed w/ Ice: 50 mph (3-second gust) w/ 1.00" radial ice concurrent			
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code		
Exposure Category:	С		
Risk Category:			
Topographic Factor Procedure:	Method 1		
Topographic Category:	1		
Crest Height (H):	0 ft		
Crest Length (L):	0 ft		
Spectral Response:	$Ss = 0.28, S_1 = 0.06$		
Site Class:	D - Stiff Soil - Default		

#### **Conclusion**

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



### **Existing and Reserved Equipment**

Elev.1 (ft)	Qty	Equipment	Mount Type	Lines	Carrier	
00.0	2	dbSpectra DS7C09P36U-D	Dala Massat	(2) 1/2" Coax	TOWN OF	
89.0	1	Bird 428D-83I-01-T	Pole Mount	(2) 7/8" Coax	GREENWICH, CT	
	3	Ericsson AIR32 B66Aa/B2a		(0) + 4 (4) (4 (2))		
	3	Ericsson RRUS 32 B66		(6) 1 1/4" (1.25"-		
	3	Ericsson Air6449 B41		31.8mm) Fiber		
77.0	3	RFS APXVAARR24_43-U-NA20	T-Arm	(1) 1 1/4" Hybriflex Cable	T-MOBILE	
	3	Ericsson Radio 4449 B71 B85A		(3) 1 5/8" (1.63"-		
	3	Commscope CBC1923Q-43		41.3mm) Fiber		
	3	Ericsson RRUS 4415 B25		41.511111) 1 1001		
	3	CCI OPA-65R-LCUU-H6				
	6	CCI DMP65R-BU4D				
	3	Powerwave Allgon P65-16-XLH-RR		(2) 0.39" (10mm)		
	3	Ericsson RRUS-32 (77 lbs)	T-Arm	Fiber Trunk	AT&T MOBILITY	
	3	Ericsson RRUS 32 B2		(8) 0.78" (19.7mm)		
67.0	3	Ericsson RRUS 4478 B14		8 AWG 6		
	3 Ericsson RRUS 4426 B66			(12) 1 5/8" Coax		
	3	Ericsson RRUS 4449 B5, B12		(1) 2" conduit (3) 3" conduit		
	2	Raycap DC6-48-60-18-8F(32.8 lbs)				
	1 Raycap DC6-48-60-0-8C-EV					
	6	CCI DTMABP7819VG12A				
	1	Raycap RCMDC-6627-PF-48				
	3	Samsung B5/B13 RRH-BR04C				
	3	Samsung B2/B66A RRH-BR049		(1) 1 1 (4) 1 1 1 1 1 million		
	1	VZW Unused Reserve (14306.88 sqin)		(1) 1 1/4" Hybriflex Cable		
56.0	2	Commscope JAHH-65A-R3B	T-Arm	(17) 1 5/8" Coax	VERIZON WIRELESS	
	4	Commscope JAHH-45A-R3B		(2) 1 5/8" Hybriflex		
	6	Amphenol Antel LPA-80063-6CF-EDIN-X		(2) 1 3/6 Hybrillex		
	3	Samsung MT6407-77A				
	3	Commscope CBC78T-DS-43-2X				

### **Equipment to be Removed**

Elev.1 (ft) Qty	Equipment	Mount Type	Lines	Carrier		
	No loading was considered as removed as part of this analysis.					

#### **Proposed Equipment**

Elev.1 (ft)	Qty	Equipment	Mount Type	Lines	Carrier
	1	Raycap RDIDC-9181-PF-48			
45.0	3	Fujitsu TA08025-B604	T-Arm	(1) 1.41" (35.8mm)	DISH WIRELESS L.L.C.
45.0	3	Fujitsu TA08025-B605	I-AIIII	Hybrid	DISH WIRELESS L.L.C.
	3	Commscope FFVV-65B-R2			

<sup>&</sup>lt;sup>1</sup>Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.



#### **Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	36%	Pass
Shaft	89%	Pass
Base Plate	20%	Pass
Flanges	6%	Pass

### **Foundations**

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design	
Moment (Kips-Ft)	Moment (Kips-Ft) 4725.0		53%	
Shear (Kips)	75.6	46.8	62%	

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

#### **Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
	Raycap RDIDC-9181-PF-48			
45.0	Commscope FFVV-65B-R2	DISH WIRELESS L.L.C.	0.102	0.250
45.0	Fujitsu TA08025-B605	DISTI WINELESS L.L.C.	0.102	0.250
	Fujitsu TA08025-B604			

<sup>\*</sup>Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



#### **Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

Asset: 414240, Byram Park CT Client: DISH WIRELESS L.L.C. Code: ANSI/TIA-222-H Height: 83.2 ft
Base Width: 52
Shape: 18 Sides

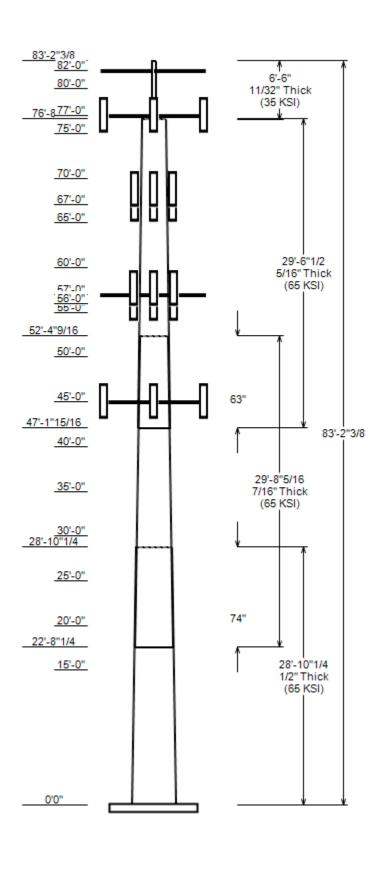
#### SITE PARAMETERS

Base Elev (ft): 0.00 Structure Class: II
Taper: 0.33600 (In/ft) Exposure: C
Topographic Category: 1 Topographic Feature:

Topo Method: Method 1

SECTION PROPERTIES								
Shaft	Length-		ter (in) ss Flats	Thick		Overlap Length		Steel Grade
Section	(ft)		Bottom		Joint Type	(in)	Shape	(ksi)
1	28.852	42.31	52.00	0.500		0.000	18 Sides	65
2	29.693	35.29	45.26	0.438	Slip Joint	73.970	18 Sides	65
3	29.541	27.75	37.67	0.312	Slip Joint	62.660	18 Sides	65
4	6.500	4.50	4.50	0.337	<b>Butt Joint</b>	0.000	Round	35

#### **DISCRETE APPURTENANCE** Attach Force Elev (ft) Elev (ft) Qty Description 89.0 89.0 1 Bird 428D-83I-01-T 89.0 89.0 dbSpectra DS7C09P36U-D 2 82.0 82.0 2 Pole Mount 80.0 80.0 1 Pine Branches 77.0 77.0 3 Commscope CBC1923Q-43 77.0 77.0 3 Ericsson Radio 4449 B71 B85A 77.0 77.0 3 Ericsson RRUS 4415 B25 77.0 77.0 Ericsson RRUS 32 B66 77.0 77.0 Ericsson Air6449 B41 77.0 77.0 3 Ericsson AIR32 B66Aa/B2a 77.0 77.0 3 Generic Flat T-Arm 77.0 77.0 RFS APXVAARR24 43-U-NA20 3 75.0 75.4 1 Pine Branches 70.0 70.0 Pine Branches 1 CCI DTMABP7819VG12A 67.0 68.0 6 67.0 Raycap DC6-48-60-0-8C-EV 67.0 1 67.0 68.0 2 Raycap DC6-48-60-18-8F(32.8 lb 67.0 68.0 Ericsson RRUS 4426 B66 67.0 67.0 3 Ericsson RRUS 4449 B5, B12 67.0 Ericsson RRUS 4478 B14 67.0 Ericsson RRUS 32 B2 67.0 68.0 3 67.0 68.0 3 Ericsson RRUS-32 (77 lbs) 67.0 68.0 Powerwave Allgon P65-16-XLH-RR 3 67.0 6 CCI DMP65R-BU4D 67.0 68.0 3 CCI OPA-65R-LCUU-H6 67.0 67.0 67.0 3 Site PRO1, RMV12-496 65.0 65.0 1 Pine Branches 60.0 60.0 1 Pine Branches 57.0 57.0 3 Generic Flat T-Arm 56.0 56.0 3 Commscope CBC78T-DS-43-2X 56.0 56.0 3 Samsung B5/B13 RRH-BR04C 56.0 56.0 3 Samsung B2/B66A RRH-BR049 56.0 56.0 1 Raycap RCMDC-6627-PF-48 56.0 56.0 3 Samsung MT6407-77A 56.0 56.0 2 Commscope JAHH-65A-R3B 56.0 56.0 4 Commscope JAHH-45A-R3B 56.0 57.0 6 Amphenol Antel LPA-80063-6CF-E VZW Unused Reserve (14306.88 s 56.0 56.0 1 Pine Branches 55.0 55.0 1 50.0 50.0 1 Pine Branches 45.0 45.0 Raycap RDIDC-9181-PF-48 45.0 45.0 3 Fujitsu TA08025-B605 45.0 45.0 3 Fujitsu TA08025-B604 45.0 45.0 Commscope FFVV-65B-R2



#### JOB INFORMATION

Asset: 414240, Byram Park CT Client: DISH WIRELESS L.L.C. Code: ANSI/TIA-222-H Height: 83.2 ft
Base Width: 52
Shape: 18 Sides

	DISCRETE APPURTENANCE						
Attach Elev (ft)	Force Elev (ft)	Qty	Description				
45.0	45.0	3	Generic Flat T-Arm				
45.0	45.0	1	Pine Branches				
40.0	40.0	1	Pine Branches				
35.0	35.0	1	Pine Branches				
30.0	30.0	1	Pine Branches				
25.0	25.0	1	Pine Branches				
20.0	20.0	1	Pine Branches				
15.0	15.0	1	Pine Branches				

	LINEAR APPURTENANCE										
Elev From (ft)	Elev To (ft)	Description	Exp To Wind								
		7/01/0									
0.0	89.0	7/8" Coax	No								
0.0	89.0	1/2" Coax	No								
0.0	77.0	1 5/8" (1.63"-41.3mm) Fiber	No								
0.0	77.0	1 1/4" Hybriflex Cable	No								
0.0	77.0	1 1/4" (1.25"- 31.8mm) Fiber	No								
0.0	77.0	1 1/4" (1.25"- 31.8mm) Fiber	No								
0.0	67.0	3" conduit	No								
0.0	67.0	2" conduit	No								
0.0	67.0	1 5/8" Coax	No								
0.0	67.0	0.78" (19.7mm) 8 AWG 6	No								
0.0	67.0	0.78" (19.7mm) 8 AWG 6	No								
0.0	67.0	0.39" (10mm) Fiber Trunk	No								
0.0	57.0	1 5/8" Coax	No								
0.0	57.0	1 1/4" Hybriflex Cable	No								
0.0	56.0	1 5/8" Hybriflex	No								
0.0	56.0	1 5/8" Coax	No								
0.0	45.0	1.41" (35.8mm) Hybrid	No								

#### LOAD CASES

 1.2D + 1.0W Normal
 116 mph wind with no ice

 0.9D + 1.0W Normal
 116 mph wind with no ice

 1.2D + 1.0Di + 1.0Wi Nor
 50 mph wind with 1" radial ice

 1.2D + 1.0Ev + 1.0Eh Nor
 Seismic

 0.9D - 1.0Ev + 1.0Eh Nor
 Seismic (Reduced DL)

 1.0D + 1.0W Service Norm
 60 mph Wind with No Ice

	REACTIONS		
Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	2489.97	46.85	48.55
0.9D + 1.0W Normal	2483.89	46.84	36.40
1.2D + 1.0Di + 1.0Wi Normal	649.14	12.30	62.14
1.2D + 1.0Ev + 1.0Eh Normal	183.09	3.25	48.78
0.9D - 1.0Ev + 1.0Eh Normal	182.48	3.25	32.63
1.0D + 1.0W Service Normal	595.56	11.22	40.50

DISH DEFLECTIONS									
	Attach	Deflection	Rotation						
Load Case	Elev (ft)	(in)	(deg)						

1/7/2022 12:35:50

Model ID: 28831

ASSET: 414240, Byram Park CT CODE: ANSI/TIA-222-H DISH WIRELESS L.L.C. CUSTOMER: ENG NO: 13754334\_C3\_03

**ANALYSIS PARAMETERS** 

Location: Fairfield County,CT Height: 83.2 ft Type and Shape: Custom, Round Base Diameter: 52.00 in Manufacturer: EEI Top Diameter: 4.50 in 0.95 0.3360 in/ft K<sub>d</sub> (non-service): Taper: 0.000° K<sub>e</sub>: 1.00 Rotation:

**ICE & WIND PARAMETERS** 

**Exposure Category:** С Design Wind Speed w/o Ice: 116 mph Risk Category: Ш Design Wind Speed w/Ice: 50 mph **Topo Factor Procedure:** Method 1 **Operational Wind Speed:** 60 mph **Topographic Category:** 1 **Design Ice Thickness:** 1.00 in 0 ft HMSL: **Crest Height:** 53.00 ft

SEISMIC PARAMETERS

**Analysis Method:** Equivalent Lateral Force Method

Site Class: D - Stiff Soil 0.80 Period Based on Rayleigh Method (sec): T<sub>L</sub> (sec): 6 P: 1 0.080 Cs: S<sub>s:</sub> 0.277 S<sub>1:</sub> 0.060 C<sub>s</sub> Max: 0.080 1.578  $F_{v:}$ 2.400 C<sub>s</sub> Min: 0.030 Fa:

S<sub>ds:</sub> 0.291 0.096 S<sub>d1:</sub>

LOAD CASES

1.2D + 1.0W Normal 116 mph wind with no ice 0.9D + 1.0W Normal 116 mph wind with no ice 1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice Seismic

1.2D + 1.0Ev + 1.0Eh Normal

0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL) 1.0D + 1.0W Service Normal 60 mph Wind with No Ice

#### SHAFT SECTION PROPERTIES **Bottom** Top Slip Sect Length Thick Fy Joint Joint Weight Dia Elev Area lx W/t D/t Dia Elev Area lx W/t D/t Taper (in<sup>4</sup>)Ratio Ratio $(in^4)$ Ratio Ratio (in/ft) Info (ft) (in) (ksi) Type len (in) (lb) (in) (ft) (in<sup>2</sup>) (in) (in) $(in^2)$ 1-18 28.85 0.5000 7.269 52.00 -0.002 81.73 27,386.5 16.93 104.00 42.31 28.85 66.36 65 0.00 14,658.7 13.51 84.63 0.3357 2-18 29.69 0.4375 65 Slip 73.97 5,589 45.26 22.687 62.24 15,797.0 16.83 103.45 35.29 52.38 48.40 7,427.8 12.81 80.66 0.3357 3-18 29.54 0.3125 65 Slip 62.66 76.70 27.22 3,230 37.67 47.159 37.05 6,532.6 19.84 120.54 27.75 2,588.9 14.25 88.80 0.3357 4-R 6.50 0.3370 35 Butt 0.00 97 4.50 76.700 4.41 9.6 0.00 13.35 4.50 83.20 4.41 9.6 0.00 13.35 0.0000

Shaft Weight 16,185

#### DISCRETE APPURTENANCE PROPERTIES

Attach				Vert	No Ice			lce		
Elev				Ecc	Weight	EPAa	Orientation	Weight	EPAa	Orientation
(ft)	Description	Qty	Ka	(ft)	(lb)	(sf)	Factor	(lb)	(sf)	Factor
00.00	# 0		4.00	0.000	70.00	0.550	4.00	407.70	0.707	4.00
89.00	dbSpectra DS7C09P36U-D	2	1.00	0.000	70.00	3.550	1.00	127.73	6.727	1.00
89.00	Bird 428D-83I-01-T	1	1.00	0.000	8.90	0.465	1.00	19.92	0.763	1.00
82.00	Pole Mount	2	1.00	0.000	40.00	1.630	1.00	69.63	2.343	1.00
80.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	861.73	64.629	1.00
77.00	Ericsson RRUS 4415 B25	3	0.80	0.000	46.00	1.842	0.50	76.64	2.402	0.50
77.00	Ericsson Radio 4449 B71 B85A	3	0.80	0.000	75.00	1.650	0.50	112.58	2.181	0.50
77.00	Commscope CBC1923Q-43	3	0.80	0.000	7.30	0.318	0.50	14.21	0.570	0.50
77.00	Ericsson RRUS 32 B66	3	0.80	0.000	53.00	2.743	0.67	98.96	3.474	0.67
77.00	Ericsson AIR32 B66Aa/B2a	3	0.80	0.000	132.20	6.510	0.71	231.92	7.879	0.71
77.00	Generic Flat T-Arm	3	0.75	0.000	312.50	12.900	0.67	475.73	18.010	0.67
77.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.243	0.63	373.19	22.560	0.63
77.00	Ericsson Air6449 B41	3	0.80	0.000	104.00	5.682	0.63	189.15	6.674	0.63
75.00	Pine Branches	1	1.00	0.400	600.00	45.000	1.00	859.65	64.474	1.00
70.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	858.18	64.364	1.00
67.00	CCI OPA-65R-LCUU-H6	3	0.80	1.000	73.00	9.658	0.66	198.25	11.364	0.66
67.00	CCI DMP65R-BU4D	6	0.80	0.000	67.90	8.280	0.62	179.04	9.526	0.62
67.00	Powerwave Allgon P65-16-XLH-RR	3	0.80	1.000	53.00	8.133	0.67	154.36	9.848	0.67
67.00	Ericsson RRUS-32 (77 lbs)	3	0.80	1.000	77.00	3.314	0.71	136.85	4.104	0.71
67.00	Ericsson RRUS 32 B2	3	0.80	1.000	53.00	2.743	0.67	98.26	3.463	0.67
67.00	Site PRO1, RMV12-496	3	0.75	0.000	452.60	9.700	0.67	646.63	13.858	0.67
67.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.969	0.50	110.66	2.543	0.50
67.00	Ericsson RRUS 4426 B66	3	0.80	1.000	48.40	1.650	0.50	75.87	2.173	0.50
67.00	Raycap DC6-48-60-18-8F(32.8 lb	2	0.80	1.000	32.80	1.470	1.00	70.77	1.900	1.00
67.00	Raycap DC6-48-60-0-8C-EV	1	0.80	0.000	16.00	1.020	1.00	43.87	1.368	1.00
67.00	CCI DTMABP7819VG12A	6	0.80	1.000	19.20	0.972	0.50	34.87	1.375	0.50
67.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.021	0.67	97.17	2.602	0.67
65.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	855.83	64.187	1.00
60.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	854.14	64.061	1.00
57.00	Generic Flat T-Arm	3	0.75	0.000	312.50	12.900	0.67	470.79	17.855	0.67
56.00	Amphenol Antel LPA-80063-6CF-E	6	0.80	1.000	27.00	9.732	0.75	184.82	11.389	0.75
56.00	VZW Unused Reserve (14306.88 s	1	0.80	0.000	1151.60	99.353	0.90	1636.82	141.215	0.90
56.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.61	143.25	5.628	0.61
56.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	104.90	2.421	0.50
56.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	122.98	2.421	0.50
56.00	Commscope CBC78T-DS-43-2X	3	0.80	0.000	20.70	0.552	0.50	34.06	0.859	0.50
56.00	Commscope JAHH-45A-R3B	4	0.80	0.000	70.50	8.420	0.63	178.51	9.747	0.63
56.00	Commscope JAHH-65A-R3B	2	0.80	0.000	50.70	6.673	0.76	146.36	7.966	0.76
56.00	Raycap RCMDC-6627-PF-48	1	0.80	0.000	32.00	4.056	1.00	108.87	4.881	1.00
55.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	851.97	63.898	1.00
50.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	849.46	63.710	1.00
45.00	Raycap RDIDC-9181-PF-48	1	0.80	0.000	21.90	1.867	1.00	55.41	2.397	1.00
45.00	Fujitsu TA08025-B604	3	0.80	0.000	63.90	1.962	0.50	98.24	2.504	0.50
45.00	Fujitsu TA08025-B605	3	0.80	0.000	75.00	1.962	0.50	111.89	2.504	0.50
45.00	Commscope FFVV-65B-R2	3	0.80	0.000	70.80	12.271	0.64	218.79	13.922	0.64
45.00	Generic Flat T-Arm	3	0.75	0.000	312.50	12.900	0.67	466.34	17.716	0.67
45.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	846.15	63.461	1.00
40.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	843.09	63.232	1.00
35.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	839.63	62.973	1.00
30.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	837.26	62.795	1.00
25.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	832.33	62.424	1.00
20.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	825.25	61.894	1.00
15.00	Pine Branches	1	1.00	0.000	600.00	45.000	1.00	817.80	61.335	1.00
Totals	Num Loadings: 52	124	DUDTE		19,495.00			32,217.77		

rals Num Loadings: 52 124 19,495.00

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg): \_

Dist													
Elev	Elev			Coax	Coax		Max	Dist	Dist		From		
From	To			Dia	Wt		Coax/	Between	Between	Azimuth	Face	Exposed	
(ft)	(ft)	Qty	Description	(in)	(lb/ft)	Flat	Row	Rows(in)	Cols(in)	(deg)	(in)	To Wind	
	1		•	` '	,			, ,	, ,	`	, ,		
0.00	89.00		7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	TOWN OF GREEN
0.00	89.00	2	1/2" Coax	0.63	0.15	Ν	0	0	0	0	0	N	TOWN OF GREEN
0.00	77.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0	0	0	0	N	T-MOBILE
0.00	77.00	3	1 1/4" (1.25"- 31.8mm	1.25	1.05	Ν	0	0	0	0	0	N	T-MOBILE
0.00	77.00	3	1 1/4" (1.25"- 31.8mm	1.25	1.05	Ν	0	0	0	0	0	N	T-MOBILE
0.00	77.00	1	1 1/4" Hybriflex Cabl	1.54	1	Ν	0	0	0	0	0	N	T-MOBILE
0.00	67.00	12	1 5/8" Coax	1.98	0.82	Ν	0	0	0	0	0	N	AT&T MOBILITY
0.00	67.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	Ν	0	0	0	0	0	N	AT&T MOBILITY
0.00	67.00	3	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	67.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	Ν	0	0	0	0	0	N	AT&T MOBILITY
0.00	67.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	67.00	1	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	57.00	1	1 1/4" Hybriflex Cabl	1.54	1	Ν	0	0	0	0	0	N	VERIZON WIREL
0.00	57.00	1	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	56.00	16	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	56.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL
0.00	45.00		1.41" (35.8mm) Hybrid	1.41	1.66	Ν	0	0	0	0	0	N	DISH WIRELESS

SEGMENT PROPERTIES												
Seg Top	Description	Thick	Flat Dia	Area	lx	W/t	D/t	F'y	S	Z	Weight	
Elev (ft)	<u>'</u>	(in)	(in)	(in²)	(in <sup>4</sup> )	Ratio	Ratio	(ksi)	(in³)	(in³)	(lb)	
0.00		0.5000	52.000	81.728	27,386.50	16.93	104.00	81.5	1037.3	0.0	0.0	
5.00		0.5000	50.322	79.064	24,795.00	16.34	100.64	82.2	970.5	0.0	1,367.8	
10.00		0.5000	48.643	76.400	22,372.50	15.74	97.29	82.6	905.9	0.0	1,322.5	
15.00		0.5000	46.965	73.737	20,113.10	15.15	93.93	82.6	843.5	0.0	1,277.2	
20.00		0.5000	45.286	71.073	18,011.10	14.56	90.57	82.6	783.4	0.0	1,231.9	
22.69	Bot - Section 2	0.5000	44.384	69.641	16,944.40	14.24	88.77	82.6	751.9	0.0	643.4	
25.00		0.5000	43.608	68.409	16,061.00	13.97	87.22	82.6	725.4	0.0	1,028.6	
28.85	Top - Section 1	0.4375	43.190	59.364	13,708.60	16.00	98.72	82.6	625.2	0.0	1,672.9	
30.00		0.4375	42.804	58.829	13,341.10	15.84	97.84	82.6	613.9	0.0	230.9	
35.00		0.4375	41.126	56.498	11,817.40	15.16	94.00	82.6	566.0	0.0	981.1	
40.00		0.4375	39.447	54.168	10,414.40	14.49	90.16	82.6	520.0	0.0	941.4	
45.00		0.4375	37.769	51.837	9,127.10	13.81	86.33	82.6	476.0	0.0	901.8	
47.16	Bot - Section 3	0.4375	37.044	50.831	8,605.70	13.52	84.67	82.6	457.6	0.0	377.1	
50.00		0.4375	36.090	49.506	7,950.50	13.13	82.49	82.6	433.9	0.0	838.6	
52.38	Top - Section 2	0.3125	35.916	35.313	5,655.50	18.85	114.93	79.2	310.1	0.0	685.7	
55.00		0.3125	35.037	34.441	5,246.70	18.36	112.12	79.8	294.9	0.0	310.9	
56.00		0.3125	34.701	34.108	5,096.00	18.17	111.04	80	289.2	0.0	116.6	
57.00		0.3125	34.365	33.775	4,948.20	17.98	109.97	80.3	283.6	0.0	115.5	
60.00		0.3125	33.358	32.776	4,522.00	17.41	106.75	80.9	267.0	0.0	339.7	
65.00		0.3125	31.680	31.111	3,867.30	16.46	101.37	82	240.4	0.0	543.5	
67.00		0.3125	31.008	30.445	3,624.30	16.09	99.23	82.5	230.2	0.0	209.5	
70.00		0.3125	30.001	29.446	3,279.10	15.52	96.00	82.6	215.3	0.0	305.7	
75.00		0.3125	28.323	27.781	2,753.80	14.57	90.63	82.6	191.5	0.0	486.8	
76.70	Top - Section 3	0.3125	27.752	27.215	2,588.90	14.25	88.81	82.6	183.7	0.0	159.1	
76.70	Bot - Section 4	0.3370	4.500	4.407	9.60	0.00	13.35	35	4.2	5.9		
77.00		0.3370	4.500	4.407	9.60	0.00	13.35	35	4.2	5.9	4.5	
80.00		0.3370	4.500	4.407	9.60	0.00	13.35	35	4.2	5.9	45.0	
82.00		0.3370	4.500	4.407	9.60	0.00	13.35	35	4.2	5.9	30.0	
83.20		0.3370	4.500	4.407	9.60	0.00	13.35	35	4.2	5.9	18.0	

Totals: 16,185.7

Model Id : 28831 Scenario Id: 189383 1/7/2022 12:35:55

Load Case: 1.2D + 1.0W Normal 116 mph wind with no ice 16 Iterations

Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

#### **CALCULATED FORCES**

Seg Elev	Pu FY (-)	Vu FX (-)	Tu MY	Mu MZ	Mu MX	Resultant Moment	Phi Pn	Phi Vn	Phi Tn	Phi Mn	Total Deflect	Rotation	
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	Ratio
0.00	-48.55	-46.85	0.00	-2.490.0	0.00	2.489.97	5.994.05	1.434.32	6.672.27	6.339.93	0	0	0.402
5.00	-46.37	-46.65 -46.48	0.00	-2,490.0 -2,255.7	0.00	2,469.97	5,994.03	1,434.32	6.244.49	5,982.15	0.07	-0.12	0.402
10.00	-40.37 -44.25	-46.46 -46.11	0.00	-2,233.7	0.00	2,233.70	5,676.15	1,367.37	5,830.89	5,608.58	0.07	-0.12	0.370
15.00	-44.23 -41.47	-44.35	0.00	-1,792.8	0.00	1.792.80	5.478.25	1,340.02	5,431,45	5,000.38	0.20	-0.23	0.370
20.00	-38.78	-44.55 -42.59	0.00	-1,792.0	0.00	1,792.00	5,280.36	1,247.33	5,046.18	4,849.95	1.04	-0.37	0.332
22.69	-37.73	-42.39	0.00	-1,456.6	0.00	1,456.57	5,173.98	1,222.20	4.844.96	4,655.46	1.33	-0.49	0.332
25.00	-35.54	-40.60	0.00	-1,450.6	0.00	1.358.55	5.082.46	1,222.20	4.675.09	4.491.29	1.62	-0.55	0.321
28.85	-33.16	-40.37	0.00	-1,202.2	0.00	1,202.19	4,410.48	1,041.84	4,023.35	3,870.56	2.14	-0.69	0.320
30.00	-32.03	-38.52	0.00	-1,155.8	0.00	1,155.83	4,370.71	1,032.45	3,951.12	3,800.72	2.31	-0.72	0.313
35.00	-29.66	-36.44	0.00	-963.2	0.00	963.22	4,197.54	991.55	3,644.30	3,504.05	3.13	-0.83	0.283
40.00	-27.34	-34.31	0.00	-781.0	0.00	781.00	4,024.38	950.64	3,349.87	3,219.43	4.06	-0.94	0.251
45.00	-23.22	-30.51	0.00	-609.4	0.00	609.44	3,851.22	909.74	3,067.84	2,946.87	5.09	-1.03	0.214
47.16	-22.56	-30.29	0.00	-543.6	0.00	543.59	3,776.46	892.08	2,949.90	2,832.91	5.57	-1.07	0.199
50.00	-20.61	-28.26	0.00	-457.5	0.00	457.54	3,678.06	868.83	2,798.22	2,686.37	6.22	-1.12	0.177
52.38	-19.57	-28.03	0.00	-390.3	0.00	390.27	2,517.86	619.74	1,993.02	1,842.82	6.79	-1.15	0.222
55.00	-18.28	-26.05	0.00	-316.8	0.00	316.82	2,473.76	604.43	1.895.79	1.765.43	7.43	-1.19	0.189
56.00	-15.18	-19.99	0.00	-289.4	0.00	289.36	2,456.68	598.59	1,859.31	1,736.14	7.69	-1.21	0.174
57.00	-13.86	-19.01	0.00	-269.4	0.00	269.37	2,439.47	592.75	1,823.19	1,707.00	7.94	-1.22	0.165
60.00	-12.57	-16.82	0.00	-212.3	0.00	212.34	2,387.04	575.22	1,716.96	1,620.46	8.72	-1.26	0.137
65.00	-10.91	-14.63	0.00	-128.2	0.00	128.24	2,296.98	546.00	1,546.99	1,479.38	10.08	-1.32	0.092
67.00	-6.70	-10.54	0.00	-97.1	0.00	97.09	2,260.03	534.31	1,481.49	1,424.11	10.63	-1.33	0.072
70.00	-5.62	-8.30	0.00	-65.5	0.00	65.48	2,187.71	516.78	1,385.88	1,332.86	11.48	-1.35	0.052
75.00	-4.28	-6.09	0.00	-23.2	0.00	23.19	2,064.02	487.56	1,233.63	1,185.66	12.91	-1.37	0.022
76.70	-4.07	-6.02	0.00	-12.8	0.00	12.84	2,021.97	477.63	1,183.88	1,137.58	13.4	-1.37	0.013
76.70	-4.07	-6.02	0.00	-12.8	0.00	12.84	138.83	41.65	15.24	15.36	13.4	-1.37	0.886
77.00	-1.04	-2.54	0.00	-11.0	0.00	11.03	138.83	41.65	15.24	15.36	13.48	-1.38	0.729
80.00	-0.32	-0.53	0.00	-3.4	0.00	3.42	138.83	41.65	15.24	15.36	14.59	-2.02	0.225
82.00	-0.19	-0.35	0.00	-2.4	0.00	2.37	138.83	41.65	15.24	15.36	15.47	-2.19	0.156
83.20	0.00	-0.35	0.00	-2.0	0.00	1.95	138.83	41.65	15.24	15.36	16.03	-2.27	0.127

Load Case: 0.9D + 1.0W Normal 116 mph wind with no ice 16 Iterations

Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

#### **CALCULATED FORCES**

Seg Elev	Pu FY (-)	Vu FX (-)	Tu MY	Mu MZ	Mu MX	Resultant Moment	Phi Pn	Phi Vn	Phi Tn	Phi Mn	Total Deflect	Rotation	
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	Ratio
(11)	(Kips)	(Rips)	(It Rips)	(It Rips)	(It Rips)	(It Rips)	(Kip3)	(Rips)	(it kips)	(it kips)	(111)	(ucg)	Italio
0.00	-36.40	-46.84	0.00	-2,483.9	0.00	2,483.89	5,994.05	1,434.32	6,672.27	6,339.93	0	0	0.399
5.00	-34.74	-46.44	0.00	-2,249.7	0.00	2,249.69	5,848.23	1,387.57	6,244.49	5,982.15	0.07	-0.12	0.383
10.00	-33.12	-46.04	0.00	-2,017.5	0.00	2,017.51	5,676.15	1,340.82	5,830.89	5,608.58	0.26	-0.25	0.367
15.00	-31.02	-44.27	0.00	-1,787.3	0.00	1,787.28	5,478.25	1,294.08	5,431.45	5,222.38	0.59	-0.37	0.349
20.00	-28.99	-42.50	0.00	-1,565.9	0.00	1,565.91	5,280.36	1,247.33	5,046.18	4,849.95	1.04	-0.48	0.330
22.69	-28.19	-42.29	0.00	-1,451.7	0.00	1,451.69	5,173.98	1,222.20	4,844.96	4,655.46	1.33	-0.55	0.318
25.00	-26.54	-40.49	0.00	-1,353.9	0.00	1,353.89	5,082.46	1,200.58	4,675.09	4,491.29	1.61	-0.6	0.308
28.85	-24.75	-40.26	0.00	-1,197.9	0.00	1,197.93	4,410.48	1,041.84	4,023.35	3,870.56	2.14	-0.69	0.317
30.00	-23.90	-38.41	0.00	-1,151.7	0.00	1,151.69	4,370.71	1,032.45	3,951.12	3,800.72	2.3	-0.72	0.310
35.00	-22.10	-36.33	0.00	-959.6	0.00	959.64	4,197.54	991.55	3,644.30	3,504.05	3.12	-0.83	0.280
40.00	-20.36	-34.19	0.00	-778.0	0.00	778.01	4,024.38	950.64	3,349.87	3,219.43	4.05	-0.93	0.248
45.00	-17.28	-30.39	0.00	-607.1	0.00	607.06	3,851.22	909.74	3,067.84	2,946.87	5.08	-1.03	0.212
47.16	-16.78	-30.17	0.00	-541.4	0.00	541.44	3,776.46	892.08	2,949.90	2,832.91	5.55	-1.07	0.197
50.00	-15.32	-28.16	0.00	-455.7	0.00	455.71	3,678.06	868.83	2,798.22	2,686.37	6.2	-1.11	0.175
52.38	-14.54	-27.93	0.00	-388.7	0.00	388.69	2,517.86	619.74	1,993.02	1,842.82	6.77	-1.15	0.219
55.00	-13.58	-25.96	0.00	-315.5	0.00	315.52	2,473.76	604.43	1,895.79	1,765.43	7.41	-1.19	0.186
56.00	-11.28	-19.90	0.00	-288.2	0.00	288.15	2,456.68	598.59	1,859.31	1,736.14	7.66	-1.2	0.172
57.00	-10.29	-18.93	0.00	-268.2	0.00	268.25	2,439.47	592.75	1,823.19	1,707.00	7.92	-1.22	0.162
60.00	-9.33	-16.75	0.00	-211.5	0.00	211.46	2,387.04	575.22	1,716.96	1,620.46	8.7	-1.26	0.135
65.00	-8.10	-14.57	0.00	-127.7	0.00	127.73	2,296.98	546.00	1,546.99	1,479.38	10.05	-1.31	0.091
67.00	-4.97	-10.49	0.00	-96.7	0.00	96.70	2,260.03	534.31	1,481.49	1,424.11	10.6	-1.33	0.070
70.00	-4.16	-8.27	0.00	-65.2	0.00	65.22	2,187.71	516.78	1,385.88	1,332.86	11.44	-1.35	0.051
75.00	-3.18	-6.06	0.00	-23.1	0.00	23.10	2,064.02	487.56	1,233.63	1,185.66	12.86	-1.37	0.021
76.70	-3.02	-5.99	0.00	-12.8	0.00	12.80	2,021.97	477.63	1,183.88	1,137.58	13.35	-1.37	0.013
76.70	-3.02	-5.99	0.00	-12.8	0.00	12.80	138.83	41.65	15.24	15.36	13.35	-1.37	0.875
77.00	-0.76	-2.53	0.00	-11.0	0.00	11.00	138.83	41.65	15.24	15.36	13.44	-1.37	0.725
80.00	-0.23	-0.52	0.00	-3.4	0.00	3.41	138.83	41.65	15.24	15.36	14.54	-2.01	0.224
82.00	-0.14	-0.35	0.00	-2.4	0.00	2.37	138.83	41.65	15.24	15.36	15.42	-2.19	0.155
83.20	0.00	-0.35	0.00	-2.0	0.00	1.95	138.83	41.65	15.24	15.36	15.98	-2.26	0.127

Load Case: 1.2D + 1.0Di +	1.0Wi Normal	50 mph wind with	n 1" radial ice		15 Iterations
Gust Response Factor: Dead load Factor:	1.10 1.20	Ice Dead Load Factor	1.00	Ice Importance Factor	1.00
Wind Load Factor:	1.00			ioo importanoo i aotoi	1.00

#### **CALCULATED FORCES**

CALCULATED FORCES													
Seg	Pu	Vu	Tu	Mu	Mu	Resultant	Phi	Phi	Phi	Phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	Ratio
0.00	-62.14	-12.30	0.00	-649.1	0.00	649.14	5,994.05	1,434.32	6,672.27	6,339.93	0	0	0.113
5.00	-59.80	-12.18	0.00	-587.6	0.00	587.64	5,848.23	1,387.57	6,244.49	5,982.15	0.02	-0.03	0.109
10.00	-57.50	-12.07	0.00	-526.7	0.00	526.73	5,676.15	1,340.82	5,830.89	5,608.58	0.07	-0.06	0.104
15.00	-54.37	-11.60	0.00	-466.4	0.00	466.39	5,478.25	1,294.08	5,431.45	5,222.38	0.15	-0.1	0.099
20.00	-51.29	-11.13	0.00	-408.4	0.00	408.39	5,280.36	1,247.33	5,046.18	4,849.95	0.27	-0.13	0.094
22.69	-50.13	-11.07	0.00	-378.5	0.00	378.46	5,173.98	1,222.20	4,844.96	4,655.46	0.35	-0.14	0.091
25.00	-47.68	-10.60	0.00	-352.9	0.00	352.86	5,082.46	1,200.58	4,675.09	4,491.29	0.42	-0.16	0.088
28.85	-45.12	-10.52	0.00	-312.0	0.00	312.05	4,410.48	1,041.84	4,023.35	3,870.56	0.56	-0.18	0.091
30.00	-43.78	-10.03	0.00	-300.0	0.00	299.97	4,370.71	1,032.45	3,951.12	3,800.72	0.6	-0.19	0.089
35.00	-40.99	-9.47	0.00	-249.8	0.00	249.81	4,197.54	991.55	3,644.30	3,504.05	0.81	-0.22	0.081
40.00	-38.26	-8.89	0.00	-202.5	0.00	202.48	4,024.38	950.64	3,349.87	3,219.43	1.06	-0.24	0.072
45.00	-32.81	-7.91	0.00	-158.0	0.00	158.05	3,851.22	909.74	3,067.84	2,946.87	1.33	-0.27	0.062
47.16	-32.06	-7.85	0.00	-141.0	0.00	140.96	3,776.46	892.08	2,949.90	2,832.91	1.45	-0.28	0.058
50.00	-29.77	-7.30	0.00	-118.7	0.00	118.67	3,678.06	868.83	2,798.22	2,686.37	1.62	-0.29	0.052
52.38	-28.62	-7.23	0.00	-101.3	0.00	101.30	2,517.86	619.74	1,993.02	1,842.82	1.77	-0.3	0.066
55.00	-26.99	-6.69	0.00	-82.4	0.00	82.37	2,473.76	604.43	1,895.79	1,765.43	1.93	-0.31	0.058
56.00	-21.76	-5.21	0.00	-75.4	0.00	75.36	2,456.68	598.59	1,859.31	1,736.14	2	-0.31	0.052
57.00	-20.02	-4.95	0.00	-70.2	0.00	70.15	2,439.47	592.75	1,823.19	1,707.00	2.07	-0.32	0.049
60.00	-18.37	-4.35	0.00	-55.3	0.00	55.32	2,387.04	575.22	1,716.96	1,620.46	2.27	-0.33	0.042
65.00	-16.26	-3.75	0.00	-33.6	0.00	33.58	2,296.98	546.00	1,546.99	1,479.38	2.62	-0.34	0.030
67.00	-9.76	-2.77	0.00	-25.7	0.00	25.66	2,260.03	534.31	1,481.49	1,424.11	2.76	-0.35	0.022
70.00	-8.31	-2.15	0.00	-17.4	0.00	17.36	2,187.71	516.78	1,385.88	1,332.86	2.98	-0.35	0.017
75.00	-6.53	-1.54	0.00	-6.4	0.00	6.40	2,064.02	487.56	1,233.63	1,185.66	3.36	-0.36	0.009
76.70	-6.25	-1.52	0.00	-3.8	0.00	3.77	2,021.97	477.63	1,183.88	1,137.58	3.48	-0.36	0.006
76.70	-6.25	-1.52	0.00	-3.8	0.00	3.77	138.83	41.65	15.24	15.36	3.48	-0.36	0.292
77.00	-1.50	-0.71	0.00	-3.3	0.00	3.31	138.83	41.65	15.24	15.36	3.51	-0.36	0.227
80.00	-0.50	-0.17	0.00	-1.2	0.00	1.17	138.83	41.65	15.24	15.36	3.8	-0.56	0.080
82.00	-0.31	-0.12	0.00	-0.8	0.00	0.83	138.83	41.65	15.24	15.36	4.05	-0.62	0.056
83.20	0.00	-0.12	0.00	-0.7	0.00	0.68	138.83	41.65	15.24	15.36	4.21	-0.64	0.044

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 15 Iterations
Gust Response Factor: 1.10

Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

#### **CALCULATED FORCES**

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	Phi	Phi	Phi	Phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	Ratio
0.00	-40.50	-11.22	0.00	-595.6	0.00	595.56	5,994.05	1,434.32	6,672.27	6,339.93	0	0	0.101
5.00	-38.76	-11.12	0.00	-539.5	0.00	539.46	5,848.23	1,387.57	6,244.49	5,982.15	0.02	-0.03	0.097
10.00	-37.07	-11.03	0.00	-483.8	0.00	483.84	5,676.15	1,340.82	5,830.89	5,608.58	0.06	-0.06	0.093
15.00	-34.82	-10.61	0.00	-428.7	0.00	428.68	5,478.25	1,294.08	5,431.45	5,222.38	0.14	-0.09	0.089
20.00	-32.62	-10.19	0.00	-375.6	0.00	375.63	5,280.36	1,247.33	5,046.18	4,849.95	0.25	-0.12	0.084
22.69	-31.77	-10.14	0.00	-348.2	0.00	348.25	5,173.98	1,222.20	4,844.96	4,655.46	0.32	-0.13	0.081
25.00	-29.97	-9.71	0.00	-324.8	0.00	324.81	5,082.46	1,200.58	4,675.09	4,491.29	0.39	-0.14	0.078
28.85	-28.02	-9.65	0.00	-287.4	0.00	287.42	4,410.48	1,041.84	4,023.35	3,870.56	0.51	-0.17	0.081
30.00	-27.10	-9.21	0.00	-276.3	0.00	276.33	4,370.71	1,032.45	3,951.12	3,800.72	0.55	-0.17	0.079
35.00	-25.15	-8.71	0.00	-230.3	0.00	230.29	4,197.54	991.55	3,644.30	3,504.05	0.75	-0.2	0.072
40.00	-23.24	-8.20	0.00	-186.7	0.00	186.73	4,024.38	950.64	3,349.87	3,219.43	0.97	-0.22	0.064
45.00	-19.78	-7.29	0.00	-145.7	0.00	145.73	3,851.22	909.74	3,067.84	2,946.87	1.22	-0.25	0.055
47.16	-19.25	-7.24	0.00	-130.0	0.00	129.99	3,776.46	892.08	2,949.90	2,832.91	1.33	-0.26	0.051
50.00	-17.61	-6.76	0.00	-109.4	0.00	109.42	3,678.06	868.83	2,798.22	2,686.37	1.49	-0.27	0.046
52.38	-16.75	-6.70	0.00	-93.3	0.00	93.34	2,517.86	619.74	1,993.02	1,842.82	1.62	-0.28	0.057
55.00	-15.66	-6.23	0.00	-75.8	0.00	75.79	2,473.76	604.43	1,895.79	1,765.43	1.78	-0.28	0.049
56.00	-12.97	-4.78	0.00	-69.2	0.00	69.22	2,456.68	598.59	1,859.31	1,736.14	1.84	-0.29	0.045
57.00	-11.87	-4.54	0.00	-64.4	0.00	64.44	2,439.47	592.75	1,823.19	1,707.00	1.9	-0.29	0.043
60.00	-10.77	-4.02	0.00	-50.8	0.00	50.81	2,387.04	575.22	1,716.96	1,620.46	2.09	-0.3	0.036
65.00	-9.35	-3.50	0.00	-30.7	0.00	30.71	2,296.98	546.00	1,546.99	1,479.38	2.41	-0.31	0.025
67.00	-5.77	-2.52	0.00	-23.3	0.00	23.26	2,260.03	534.31	1,481.49	1,424.11	2.54	-0.32	0.019
70.00	-4.83	-1.99	0.00	-15.7	0.00	15.69	2,187.71	516.78	1,385.88	1,332.86	2.74	-0.32	0.014
75.00	-3.68	-1.46	0.00	-5.6	0.00	5.57	2,064.02	487.56	1,233.63	1,185.66	3.09	-0.33	0.006
76.70	-3.50	-1.44	0.00	-3.1	0.00	3.09	2,021.97	477.63	1,183.88	1,137.58	3.2	-0.33	0.004
76.70	-3.50	-1.44	0.00	-3.1	0.00	3.09	138.83	41.65	15.24	15.36	3.2	-0.33	0.227
77.00	-0.92	-0.61	0.00	-2.6	0.00	2.65	138.83	41.65	15.24	15.36	3.22	-0.33	0.180
80.00	-0.28	-0.13	0.00	-0.8	0.00	0.82	138.83	41.65	15.24	15.36	3.49	-0.48	0.056
82.00	-0.17	-0.08	0.00	-0.6	0.00	0.57	138.83	41.65	15.24	15.36	3.7	-0.53	0.038
83.20	0.00	-0.08	0.00	-0.5	0.00	0.47	138.83	41.65	15.24	15.36	3.83	-0.54	0.030

Model Id: 28831 Scenario Id: 189383 1/7/2022 12:35:55

#### **EQUIVALENT LATERAL FORCES METHOD ANALYSIS**

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S <sub>S</sub> ):	0.277
Spectral Response Acceleration at 1.0 Second Period (S <sub>1</sub> ):	0.060
Long-Period Transition Period (T <sub>L</sub> – Seconds):	6
Importance Factor (I <sub>e</sub> ):	1.000
Site Coefficient F <sub>a:</sub>	1.578
Site Coefficient F <sub>v</sub> :	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S <sub>ds</sub> ):	0.291
Design Spectral Response Acceleration at 1.0 Second Period (S <sub>d1</sub> ):	0.096
Seismic Response Coefficient (C <sub>s</sub> ):	0.080
Upper Limit C <sub>S</sub> :	0.080
Lower Limit C <sub>S</sub> :	0.030
Period based on Rayleigh Method (sec):	0.800
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.150
Total Unfactored Dead Load:	40.510 k
Seismic Base Shear (E):	3.250 k

1.2D + 1.0Ev + 1.0Eh Normal

Seismic

Pine Branches	65	600	72	0.023	74	75
Pine Branches	70	600	79	0.025	81	75
Pine Branches	75	600	85	0.027	87	75
Pine Branches	80	600	92	0.029	94	75
Pole Mount	82	80	13	0.004	13	10
dbSpectra DS7C09P36U-D	83.2	140	22	0.007	23	17
Bird 428D-83I-01-T	83.2	9	1	0.000	1	, 1
1	2.5	1,735	5	0.002	5	2,18
2	7.5	1,689	17	0.005	17	2,12
3	12.5	1,644	30	0.009	31	2,06
4	17.5	1,599	43	0.013	44	2,0
5	21.3438	841	28	0.009	29	1,0
6	23.8438	1,198	46	0.014	47	1,50
7	26.9258	1,955	86	0.027	88	2,46
8	29.4258	315	15	0.005	16	39
9	32.5	1,348	73	0.023	75	1,69
10	37.5	1,308	84	0.026	86	1,6
11	42.5	1,269	94	0.030	96	1,5
12	46.0794	532	43	0.014	44	60
13	48.5794	1,042	90	0.028	92	1,3
14	51.1901	856	79	0.025	80	1,0
15	53.6901	499	48	0.015	49	62
16	55.5	188	19	0.006	19	2:
17	56.5	171	18	0.006	18	2
18	58.5	502	54	0.017	55	6
19	62.5	814	94	0.030	96	1,02
20	66	318	39	0.012	40	40
21	68.5	345	44	0.014	45	43
22	72.5	552	76	0.024	77	69
23	75.85	181	26	0.008	27	22
24	76.85	8	1	0.000	1	•
25	78.5	48	7	0.002	7	(
26	81	32	5	0.002	5	4
27	82.6	19	3	0.001	3	2
Segment	(ft)	(lb)	(lb-ft)	$C_{vx}$	(lb)	(It
•	Base	Weight	W <sub>z</sub>	•	Force	Ford
	Above				Horizontal	Vertica
	Height				I I and a sector I	\ / t' -

	Height					
	Above				Horizontal	Vertical
	Base	Weight	$W_z$		Force	Force
Segment	(ft)	(lb)	(lb-ft)	$C_{vx}$	(lb)	(lb)
	(1-)	(112)	(12 11)	- vx	(10)	()
Pine Branches	60	600	66	0.021	68	755
Pine Branches	55	600	60	0.019	61	755
Pine Branches	50	600	54	0.017	55	755
Pine Branches	45	600	47	0.015	49	755
Pine Branches	40	600	41	0.013	42	755
Pine Branches	35	600	36	0.011	36	755
Pine Branches	30	600	30	0.009	30	755
Pine Branches	25	600	24	0.008	25	755
Pine Branches	20	600	19	0.006	19	755
Pine Branches	15	600	13	0.004	14	755
Commscope CBC1923Q-43	77	22	3	0.001	3	28
Ericsson Radio 4449 B71 B85A	77	225	33	0.010	34	283
Ericsson RRUS 4415 B25	77	138	20	0.006	21	174
Ericsson RRUS 32 B66	77	159	23	0.007	24	200
Ericsson Air6449 B41	77	312	46	0.014	47	393
Ericsson AIR32 B66Aa/B2a	77	397	58	0.018	59	499
Generic Flat T-Arm	 77	938	137	0.043	140	1,180
Generic Flat T-Arm	57	938	97	0.031	99	1,180
Generic Flat T-Arm	45	938	74	0.023	76	1,180
RFS APXVAARR24 43-U-NA20	77	384	56	0.023	57	483
CCI DTMABP7819VG12A	67	115	14	0.004	15	145
Raycap DC6-48-60-0-8C-EV	67	16	2	0.004	2	20
Raycap DC6-48-60-18-8F(32.8 lbs)	67	66	8	0.003	8	83
Ericsson RRUS 4426 B66	67	145	18	0.006	19	183
Ericsson RRUS 4449 B5. B12	67	213	27	0.008	27	268
Ericsson RRUS 4478 B14	67	178	22	0.007	23	224
Ericsson RRUS 32 B2	67	159	20	0.007	20	200
Ericsson RRUS-32 (77 lbs)	67	231	29	0.009	29	291
Powerwave Allgon P65-16-XLH-RR	67	159	20	0.009	20	200
CCI DMP65R-BU4D	67	407	51	0.016	52	513
CCI OPA-65R-LCUU-H6	67	219	27	0.009	28	276
Site PRO1, RMV12-496	67	1.358	170	0.053	173	1.709
Commscope CBC78T-DS-43-2X	56	62	6	0.003	6	78
Samsung B2/B66A RRH-BR049	56	253	26	0.002	26	319
Samsung B5/B13 RRH-BR04C	56	233 211	21	0.008	22	265
Raycap RCMDC-6627-PF-48	56	32	3	0.007	3	40
Samsung MT6407-77A	56	245	25	0.001	25	308
Commscope JAHH-65A-R3B	56	101	10	0.008	25 11	128
•	56	282	29	0.003	29	355
Commscope JAHH-45A-R3B Amphenol Antel LPA-80063-6CF-EDIN-X	56 56	262 162	29 16	0.009	29 17	305 204
•	56				17 120	
VZW Unused Reserve (14306.88 sqin)		1,152	117	0.037	_	1,449
Raycap RDIDC-9181-PF-48	45 45	22	2	0.000	2	28
Fujitsu TA08025-B604	45 45	192	15	0.005	16	241
Fujitsu TA08025-B605	45 45	225	18	0.006	18	283
Commscope FFVV-65B-R2	45	212	17	0.005	17	267
		40,505	3,185	1.001	3,254	50,968

0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
27	82.6	19	3	0.001	3	16
26	81	32	5	0.002	5	27
25	78.5	48	7	0.002	7	40
24	76.85	8	1	0.000	1	7
23	75.85	181	26	0.008	27	153
22	72.5	552	76	0.024	77	465
21	68.5	345	44	0.014	45	290
20	66	318	39	0.012	40	267
19	62.5	814	94	0.030	96	685
18	58.5	502	54	0.017	55	423
17	56.5	171	18	0.006	18	144
16	55.5	188	19	0.006	19	159

	Height					
	Above				Horizontal	Vertical
Segment	Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	$C_{vx}$	Force (lb)	Force (lb)
	. ,	` /			( )	,
15 14	53.6901 51.1901	499 856	48 79	0.015 0.025	49 80	420 721
13	48.5794	1,042	90	0.028	92	877
12	46.0794	532	43	0.014	44	448
11 10	42.5 37.5	1,269 1,308	94 84	0.030 0.026	96 86	1,068 1,101
9	37.5 32.5	1,348	73	0.020	75	1,135
8	29.4258	315	15	0.005	16	265
7	26.9258	1,955	86	0.027	88	1,646
6 5	23.8438 21.3438	1,198 841	46 28	0.014 0.009	47 29	1,009 708
4	17.5	1,599	43	0.013	44	1,346
3	12.5	1,644	30	0.009	31	1,384
2	7.5	1,689	17	0.005	17	1,422
1 Bird 428D-83I-01-T	2.5 83.2	1,735 9	5 1	0.002 0.000	5 1	1,460 7
dbSpectra DS7C09P36U-D	83.2	140	22	0.007	23	118
Pole Mount	82	80	13	0.004	13	67
Pine Branches	80	600	92	0.029	94	505
Pine Branches Pine Branches	75 70	600 600	85 79	0.027 0.025	87 81	505 505
Pine Branches	65	600	72	0.023	74	505
Pine Branches	60	600	66	0.021	68	505
Pine Branches	55	600	60	0.019	61	505
Pine Branches	50	600	54	0.017	55 40	505
Pine Branches Pine Branches	45 40	600 600	47 41	0.015 0.013	49 42	505 505
Pine Branches	35	600	36	0.011	36	505
Pine Branches	30	600	30	0.009	30	505
Pine Branches	25	600	24	0.008	25	505
Pine Branches Pine Branches	20 15	600 600	19 13	0.006 0.004	19 14	505 505
Commscope CBC1923Q-43	77	22	3	0.004	3	18
Ericsson Radio 4449 B71 B85A	77	225	33	0.010	34	189
Ericsson RRUS 4415 B25	77	138	20	0.006	21	116
Ericsson RRUS 32 B66 Ericsson Air6449 B41	77 77	159 312	23 46	0.007 0.014	24 47	134 263
Ericsson AIR32 B66Aa/B2a	77	397	58	0.014	59	334
Generic Flat T-Arm	77	938	137	0.043	140	789
Generic Flat T-Arm	57	938	97	0.031	99	789
Generic Flat T-Arm RFS APXVAARR24_43-U-NA20	45 77	938 384	74 56	0.023	76 57	789 323
CCI DTMABP7819VG12A	67	115	14	0.018 0.004	15	97
Raycap DC6-48-60-0-8C-EV	67	16	2	0.001	2	13
Raycap DC6-48-60-18-8F(32.8 lbs)	67	66	8	0.003	8	55
Ericsson RRUS 4426 B66	67 67	145	18	0.006	19	122
Ericsson RRUS 4449 B5, B12 Ericsson RRUS 4478 B14	67 67	213 178	27 22	0.008 0.007	27 23	179 150
Ericsson RRUS 32 B2	67	159	20	0.006	20	134
Ericsson RRUS-32 (77 lbs)	67	231	29	0.009	29	194
Powerwave Allgon P65-16-XLH-RR	67 67	159	20	0.006	20	134
CCI DMP65R-BU4D CCI OPA-65R-LCUU-H6	67 67	407 219	51 27	0.016 0.009	52 28	343 184
Site PRO1, RMV12-496	67	1,358	170	0.053	173	1,143
Commscope CBC78T-DS-43-2X	56	62	6	0.002	6	52
Samsung B2/B66A RRH-BR049	56	253	26	0.008	26	213
Samsung B5/B13 RRH-BR04C Raycap RCMDC-6627-PF-48	56 56	211 32	21 3	0.007 0.001	22 3	178 27
Samsung MT6407-77A	56	245	25	0.001	25	206
Commscope JAHH-65A-R3B	56	101	10	0.003	11	85
Commscope JAHH-45A-R3B	56	282	29	0.009	29	237
Amphenol Antel LPA-80063-6CF-EDIN-X VZW Unused Reserve (14306.88 sqin)	56 56	162 1,152	16 117	0.005 0.037	17 120	136 969
Raycap RDIDC-9181-PF-48	45	1,152	2	0.007	2	18
Fujitsu TA08025-B604	45	192	15	0.005	_ 16	161
Fujitsu TA08025-B605	45	225	18	0.006	18	189
Commscope FFVV-65B-R2	45	212	17	0.005	17	179
		40,505	3,185	1.001	3,254	34,093

1.2D + 1.0Ev + 1.0Eh Normal Seismic

					(	CALCULAT	TED FOR	CES					
Seg	Pu	Vu	Tu	Mu	Mu	Resultant	Phi	Phi	Phi	Phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	Mx	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	
(ft)	(kips)	(kips)	(ft-kips)	(fr-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(kips)	(kips)	(in)	(deg)	Ratio
0.00	-48.78	-3.25	0.00	-183.09	0.00	183.09	5,994.05	1,434.32	6,672	6,339.93	0.00	0.00	0.04
5.00	-46.66	-3.24	0.00	-166.82	0.00	166.82	5,848.23	1,387.57	6,244	5,982.15	0.00	-0.01	0.04
10.00	-44.59	-3.22	0.00	-150.61	0.00	150.61	5,676.15	1,340.82	5,831	5,608.58	0.02	-0.02	0.04
15.00	-41.82	-3.17	0.00	-134.51	0.00	134.51	5,478.25	1,294.08	5,431	5,222.38	0.04	-0.03	0.03
20.00	-40.01	-3.12	0.00	-118.68	0.00	118.68	5,280.36	1,247.33	5,046	4,849.95	0.08	-0.04	0.03
22.69	-38.50	-3.08	0.00	-110.29	0.00	110.29	5,173.98	1,222.20	4,845	4,655.46	0.10	-0.04	0.03
25.00	-35.29	-2.97	0.00	-103.17	0.00	103.17	5,082.46	1,200.58	4,675	4,491.29	0.12	-0.05	0.03
28.85	-34.89	-2.95	0.00	-91.75	0.00	91.75	4,410.48	1,041.84	4,023	3,870.56	0.16	-0.05	0.03
30.00	-32.44	-2.85	0.00	-88.35	0.00	88.35	4,370.71	1,032.45	3,951	3,800.72	0.17	-0.05	0.03
35.00	-30.04	-2.73	0.00	-74.11	0.00	74.11	4,197.54	991.55	3,644	3,504.05	0.23	-0.06	0.03
40.00	-27.68	-2.59	0.00	-60.47	0.00	60.47	4,024.38	950.64	3,350	3,219.43	0.30	-0.07	0.03
45.00	-24.26	-2.37	0.00	-47.52	0.00	47.52	3,851.22	909.74	3,068	2,946.87	0.38	-0.08	0.02
47.16	-22.95	-2.27	0.00	-42.41	0.00	42.41	3,776.46	892.08	2,950	2,832.91	0.42	-0.08	0.02
50.00	-21.12	-2.14	0.00	-35.94	0.00	35.94	3,678.06	868.83	2,798	2,686.37	0.47	-0.08	0.02
52.38	-20.49	-2.09	0.00	-30.85	0.00	30.85	2,517.86	619.74	1,993	1,842.82	0.51	-0.09	0.03
55.00	-19.50	-2.01	0.00	-25.38	0.00	25.38	2,473.76	604.43	1,896	1,765.43	0.56	-0.09	0.02
56.00	-16.14	-1.72	0.00	-23.37	0.00	23.37	2,456.68	598.59	1,859	1,736.14	0.58	-0.09	0.02
57.00	-14.33	-1.57	0.00	-21.65	0.00	21.65	2,439.47	592.75	1,823	1,707.00	0.60	-0.09	0.02
60.00	-12.55	-1.40	0.00	-16.94	0.00	16.94	2,387.04	575.22	1,717	1,620.46	0.66	-0.10	0.02
65.00	-11.39	-1.29	0.00	-9.93	0.00	9.93	2,296.98	546.00	1,547	1,479.38	0.76	-0.10	0.01
67.00	-6.85	-0.82	0.00	-7.36	0.00	7.36	2,260.03	534.31	1,481	1,424.11	0.80	-0.10	0.01
70.00	-5.40	-0.66	0.00	-4.90	0.00	4.90	2,187.71	516.78	1,386	1,332.86	0.87	-0.10	0.01
75.00	-4.42	-0.54	0.00	-1.62	0.00	1.62	2,064.02	487.56	1,234	1,185.66	0.98	-0.10	0.00
76.70	-4.40	-0.54	0.00	-0.70	0.00	0.70	138.83	41.65	15	15.36	1.01	-0.10	0.08
76.70	-4.40	-0.54	0.00	-0.70	0.00	0.70	2,021.97	477.63	1,184	1,137.58	1.01	-0.10	0.00
77.00	-1.11	-0.14	0.00	-0.54	0.00	0.54	138.83	41.65	15	15.36	1.02	-0.10	0.04
80.00	-0.31	-0.04	0.00	-0.11	0.00	0.11	138.83	41.65	15	15.36	1.10	-0.13	0.01
82.00	-0.19	-0.02	0.00	-0.03	0.00	0.03	138.83	41.65	15	15.36	1.15	-0.14	0.00
83.20	0.00	-0.02	0.00	0.00	0.00	0.00	138.83	41.65	15	15.36	1.19	-0.14	0.00

O OD A OF C. A OF L Name of	Calamia (Daduard DI)
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)

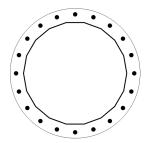
					(	CALCULA	ΓED FOR	CES					
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00 5.00 10.00 20.00 22.69 25.00 28.85 30.00 35.00 40.00 47.16 50.00 52.38 55.00 56.00 57.00 60.00	(kips)  -32.63 -31.21 -29.83 -27.98 -26.76 -25.75 -23.60 -23.34 -21.70 -20.09 -18.52 -16.23 -15.35 -14.12 -13.71 -13.04 -10.79 -9.58 -8.39	(kips)  -3.25 -3.24 -3.21 -3.16 -3.11 -3.07 -2.96 -2.94 -2.84 -2.72 -2.58 -2.36 -2.26 -2.13 -2.08 -2.00 -1.72 -1.56 -1.40	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	-182.48 -166.22 -150.03 -133.97 -118.17 -109.80 -102.71 -91.32 -87.94 -73.76 -60.17 -47.28 -42.19 -35.76 -30.70 -25.25 -23.26 -21.54 -16.86	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	182.48 166.22 150.03 133.97 118.17 109.80 102.71 91.32 87.94 73.76 60.17 47.28 42.19 35.76 30.70 25.25 23.26 21.54 16.86	5,994.05 5,848.23 5,676.15 5,478.25 5,280.36 5,173.98 5,082.46 4,410.48 4,370.71 4,197.54 4,024.38 3,851.22 3,776.46 3,678.06 2,517.86 2,473.76 2,456.68 2,439.47 2,387.04	1,434.32 1,387.57 1,340.82 1,294.08 1,247.33 1,222.20 1,200.58 1,041.84 1,032.45 991.55 950.64 909.74 892.08 868.83 619.74 604.43 598.59 592.75 575.22	6,672 6,244 5,831 5,431 5,046 4,845 4,675 4,023 3,951 3,644 3,350 3,068 2,950 2,798 1,993 1,896 1,859 1,823 1,717	6,339.93 5,982.15 5,608.58 5,222.38 4,849.95 4,655.46 4,491.29 3,870.56 3,800.72 3,504.05 3,219.43 2,946.87 2,832.91 2,686.37 1,842.82 1,765.43 1,736.14 1,707.00 1,620.46	0.00 0.00 0.02 0.04 0.08 0.10 0.12 0.16 0.17 0.23 0.30 0.38 0.42 0.47 0.51 0.56 0.58 0.60 0.65	(deg)  0.00 -0.01 -0.02 -0.03 -0.04 -0.05 -0.05 -0.05 -0.06 -0.07 -0.08 -0.08 -0.09 -0.09 -0.09 -0.10 -0.10	0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
65.00 67.00 70.00 75.00 76.70 76.70 77.00 80.00	-7.62 -4.58 -3.61 -2.95 -2.95 -2.95 -0.74 -0.21	-1.28 -0.81 -0.65 -0.54 -0.54 -0.54 -0.14 -0.04	0.00 0.00 0.00 0.00 0.00 0.00 0.00	-9.88 -7.32 -4.88 -1.61 -0.69 -0.69 -0.53 -0.11	0.00 0.00 0.00 0.00 0.00 0.00 0.00	9.88 7.32 4.88 1.61 0.69 0.69 0.53 0.11	2,296.98 2,260.03 2,187.71 2,064.02 138.83 2,021.97 138.83 138.83	546.00 534.31 516.78 487.56 41.65 477.63 41.65 41.65	1,547 1,481 1,386 1,234 15 1,184 15	1,479.38 1,424.11 1,332.86 1,185.66 15.36 1,137.58 15.36 15.36	0.76 0.80 0.86 0.97 1.01 1.01 1.02 1.09	-0.10 -0.10 -0.10 -0.10 -0.10 -0.10 -0.10 -0.13	0.01 0.01 0.01 0.00 0.07 0.00 0.04 0.01

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	Phi	Phi	Phi	Phi	Total	Detetion	
Elev	FY (-)	FX (-)	MY	MZ	Mx	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	
 (ft)	(kips)	(kips)	(ft-kips)	(fr-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(kips)	(kips)	(in)	(deg)	Ratio
 82.00	-0.13	-0.02	0.00	-0.03	0.00	0.03	138.83	41.65	15	15.36	1.15	-0.14	0.00
83.30	0.00	-U U3	0.00	0.00	0.00	0.00	138 83	41.65	15	15 36	1 12	-O 1 <i>1</i>	0.00

		А	NALYSIS	SUMMAR	Υ						
	Reactions										
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio			
	· · ·		, , ,	` ' '	` ' '	, ,					
1.2D + 1.0W Normal 0.9D + 1.0W Normal	46.85 46.84	0.00 0.00	48.55 36.40	0.00 0.00	0.00 0.00	2489.97 2483.89	76.70 76.70	0.89 0.88			
1.2D + 1.0Di + 1.0Wi Normal	12.30	0.00	62.14	0.00	0.00	649.14	76.70	0.29			
1.2D + 1.0Ev + 1.0Eh Normal 0.9D - 1.0Ev + 1.0Eh Normal	3.25 3.25	0.00 0.00	48.78 32.63	0.00 0.00	0.00 0.00	183.09 182.48	76.70 76.70	0.08 0.07			
1.0D + 1.0W Service Normal	11.22	0.00	40.50	0.00	0.00	595.56	76.70	0.23			

### **BASE PLATE ANALYSIS @ 0 FT**

ı	PLATE PARAMETERS (ID# 300	4)
Diameter:	66	in
Shape:	Round	
Thickness:	2.75	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Rod Detail Type:	d	
Clear Distance	4.5	in
Base Weld Size:	0.125	in
Orientation Offset:	-	•
Analysis Type:	Plastic	
Neutral Axis:	324	۰



ANCHOR ROD PARAMETERS												
Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)			
Original [ID# 9222]	Radial	20	2.25	60	A615-75	75	100	-	-			

#### ANCHOR ROD GEOMETRY AND APPLIED LOADS --- Original (20) 2.25"ø [ID 9222]

#### GEOMETRY AND APPLIED LOADS (UNFACTORED)

Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in <sup>4</sup> )	Axial Load (k)	Shear Load (k)
0.314	28.532	9.271	23.209	1750.183	87.338	2.181
0.628	24.271	17.634	27.283	2418.374	87.338	1.147
0.942	17.634	24.271	28.688	2673.599	87.338	0.000
1.257	9.271	28.532	27.283	2418.373	87.338	1.147
1.571	0.000	30.000	23.209	1750.184	87.338	2.181
1.885	-9.271	28.532	16.862	924.254	87.338	3.002
2.199	-17.634	24.271	8.865	256.065	87.338	3.529
2.513	-24.271	17.634	0.000	0.839	87.338	3.710
2.827	-28.532	9.271	-8.865	256.065	-77.628	3.529
3.142	-30.000	0.000	-16.862	924.256	-77.628	3.002
3.456	-28.532	-9.271	-23.209	1750.183	-77.628	2.181
3.770	-24.271	-17.634	-27.283	2418.373	-77.628	1.147
4.084	-17.634	-24.271	-28.688	2673.599	-77.628	0.000
4.398	-9.271	-28.532	-27.283	2418.373	-77.628	1.147
4.712	0.000	-30.000	-23.209	1750.183	-77.628	2.181
5.027	9.271	-28.532	-16.862	924.256	-77.628	3.002
5.341	17.634	-24.271	-8.865	256.064	-77.628	3.529
5.655	24.271	-17.634	0.000	0.839	87.338	3.710
5.969	28.532	-9.271	8.865	256.065	87.338	3.529
6.283	30.000	0.000	16.862	924.254	87.338	3.002
	0.314 0.628 0.942 1.257 1.571 1.885 2.199 2.513 2.827 3.142 3.456 3.770 4.084 4.398 4.712 5.027 5.341 5.655 5.969	0.314 28.532 0.628 24.271 0.942 17.634 1.257 9.271 1.571 0.000 1.885 -9.271 2.199 -17.634 2.513 -24.271 2.827 -28.532 3.142 -30.000 3.456 -28.532 3.770 -24.271 4.084 -17.634 4.398 -9.271 4.712 0.000 5.027 9.271 5.341 17.634 5.655 24.271 5.969 28.532	Radians         (in)         (in)           0.314         28.532         9.271           0.628         24.271         17.634           0.942         17.634         24.271           1.257         9.271         28.532           1.571         0.000         30.000           1.885         -9.271         28.532           2.199         -17.634         24.271           2.513         -24.271         17.634           2.827         -28.532         9.271           3.142         -30.000         0.000           3.456         -28.532         -9.271           3.770         -24.271         -17.634           4.084         -17.634         -24.271           4.398         -9.271         -28.532           4.712         0.000         -30.000           5.027         9.271         -28.532           5.341         17.634         -24.271           5.655         24.271         -17.634           5.969         28.532         -9.271	Radians         (in)         (in)         (in)           0.314         28.532         9.271         23.209           0.628         24.271         17.634         27.283           0.942         17.634         24.271         28.688           1.257         9.271         28.532         27.283           1.571         0.000         30.000         23.209           1.885         -9.271         28.532         16.862           2.199         -17.634         24.271         8.865           2.513         -24.271         17.634         0.000           2.827         -28.532         9.271         -8.865           3.142         -30.000         0.000         -16.862           3.456         -28.532         -9.271         -23.209           3.770         -24.271         -17.634         -27.283           4.084         -17.634         -24.271         -28.688           4.398         -9.271         -28.532         -27.283           4.712         0.000         -30.000         -23.209           5.027         9.271         -28.532         -16.862           5.341         17.634         -24.271         -8.865<	Radians         (in)         (in)         (in)         (in)           0.314         28.532         9.271         23.209         1750.183           0.628         24.271         17.634         27.283         2418.374           0.942         17.634         24.271         28.688         2673.599           1.257         9.271         28.532         27.283         2418.373           1.571         0.000         30.000         23.209         1750.184           1.885         -9.271         28.532         16.862         924.254           2.199         -17.634         24.271         8.865         256.065           2.513         -24.271         17.634         0.000         0.839           2.827         -28.532         9.271         -8.865         256.065           3.142         -30.000         0.000         -16.862         924.256           3.456         -28.532         -9.271         -23.209         1750.183           3.770         -24.271         -17.634         -27.283         2418.373           4.084         -17.634         -24.271         -28.688         2673.599           4.398         -9.271         -28.532	Radians         (in)         (in)         (in)         (in)         (in)         (in)         (k)           0.314         28.532         9.271         23.209         1750.183         87.338           0.628         24.271         17.634         27.283         2418.374         87.338           0.942         17.634         24.271         28.688         2673.599         87.338           1.257         9.271         28.532         27.283         2418.373         87.338           1.571         0.000         30.000         23.209         1750.184         87.338           1.885         -9.271         28.532         16.862         924.254         87.338           2.199         -17.634         24.271         8.865         256.065         87.338           2.513         -24.271         17.634         0.000         0.839         87.338           2.827         -28.532         9.271         -8.865         256.065         -77.628           3.142         -30.000         0.000         -16.862         924.256         -77.628           3.456         -28.532         -9.271         -23.209         1750.183         -77.628           4.084         -17

#### MOMENT APPLIED TO PLATE (UNFACTORED)

	Pole Flat Be	end Line	Pole Corner E	Bend Line	Circumferential	Bend Line
Position	Moment Arm (in)	Moment (k-in)	Moment Arm (in)	Moment (k-in)	Moment Arm (in)	Moment (k-in)
1	-	-	-	-	-	-
2	1.221	123.832	0.819	83.054	2.223	225.458
3	2.625	279.609	2.223	236.783	2.223	236.783
4	1.221	123.831	0.819	83.053	2.223	225.458
5	-	-	-	-	-	-
6	-	-	-	-	-	-
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	=	-	-	-	-	-
11	-	-	-	-	-	-
12	=	-	-	-	-	-
13	-	-	=	-	=	-
14	=	-	-	-	-	-
15	=	-	-	-	-	-
16	=	-	-	-	-	-
17	=	-	-	-	-	-
18	-	-	-	-	-	-
19	-	-	-	-	-	-
20	-	-	-	-	=	-

Task ID: 101428 Page 2 of 9 1/7/2022 12:36:29

ASSET: 414240, Byram Park CT CUSTOMER: DISH WIRELESS L.L.C.

CODE: ENG NO: ANSI/TIA-222-H

13754334

ASSET: 414240, Byram Park CT CODE: ANSI/TIA-222-H CUSTOMER: DISH WIRELESS L.L.C. ENG NO: 13754334

			REACTIO	ON DISTRIBUTION				
Component	ID			Moment Mu (k-ft)	Axial Lo Pu		Shear Vu (k)	Fact
Pole	52"ø x 0.5" (18 S	ides)		2490.0	48	.55	46.85	1.00
Bolt Group	Original (20) 2.2	5"ø		2490.0		-	46.85	1.00
_	TOTALS			2489.97	48	.55	46.85	
			COMPONI	ENT PROPERTIES	;			
Component	ID		Gross Area (in <sup>2</sup> )		Individual I	nertia M (in <sup>4</sup> )	loment of Inertia (in <sup>4</sup> )	Threads
Pole	52"ø x 0.5" (18 S	Sides)	80.4859	-		-	26690.34	
Bolt Group	Original (20) 2.2	5"ø	3.9761	3.2477	0	.8393	26744.38	4
			EXTERNAL BASE PLA	TE BEND LINE AN	IALYSIS @ 0	FT		
POLE PROPERTIES				PLATE PRO	PERTIES			
Flat-to-Flat Diameter:	52.125	in		Neutral Axis	:	324	o	
Point-to-Point Diamete	r: 52.929	in		Bend Line L	ower Limit:	0.469	rad	
Flat Width:	9.191	in		Bend Line U	lpper Limit:	1.416	rad	
Flat Radians:	0.349	rac	d					
Bend Line	Chord Len	gth (in)	Additional Length (in)	Section Modulus (in <sup>3</sup> )	Applied Mo Mu	oment M (k-in)	oment Capacity φMn (k-in)	Ratio
Flat	36.0	073	-	68.201		527.3	3069.0	0.172
Corner	34.8	383	-	65.950		402.9	2967.8	0.136
Circumferential	41.0	030	-	77.572		687.7	3490.7	0.197
			PLASTIC AND	CHOR ROD ANAL	YSIS			
Class	Group Qua	antity	Rod Diameter (in)		xial Load Pu (k)	Compi	essive Capacity φPn (k)	Ratio

2.25

87.5

243.6

0.359

Original

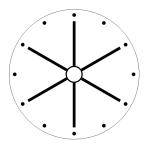
20

ASSET: 414240, Byram Park CT CODE: CUSTOMER: DISH WIRELESS L.L.C. ENG NO:

### **UPPER FLANGE PLATE ANALYSIS @ 76.7 FT**

#### PLATE PARAMETERS (ID# 2286)

Diameter:	35	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Pole Weld Size:	0.125	in
Orientation Offset:	-	0
Analysis Type:	Plastic	
Neutral Axis:	14	0



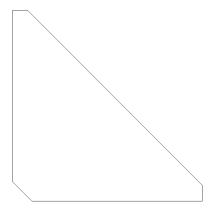
ANSI/TIA-222-H

13754334

	FLANGE BOLT PARAMETERS										
Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)		
Original	Radial	12	1	32	A325	92	120	-	-		

#### STIFFENER PARAMETERS

Arrangement:	Radial	
Quantity:	6	
Height:	12	in
Width:	12	in
Thickness:	0.75	in
Notch:	1.25	in
Grade:	Not Listed	
Yield Strength:	0	ksi
Tensile Strength:	0	ksi
Horizontal Weld Type:	Fillet	
Horizontal Weld Fillet Size:	0.125	in
Vertical Weld Fillet Size:	0.125	in
Weld Strength:	70	ksi
Orientation Offset:	-	0



ASSET: 414240, Byram Park CT
CUSTOMER: DISH WIRELESS L.L.C.

CODE:

ANSI/TIA-222-H

ENG NO: 13754334

#### FLANGE BOLT GEOMETRY AND APPLIED LOADS --- Original (12) 1"ø [ID 9223]

#### GEOMETRY AND APPLIED LOADS (UNFACTORED)

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in <sup>4</sup> )	Axial Load (k)	Shear Load (k)
1	0.524	13.856	8.000	4.238	10.908	1.975	0.749
2	1.047	8.000	13.856	11.060	74.124	1.975	0.541
3	1.571	0.000	16.000	14.918	134.841	1.975	0.188
4	2.094	-8.000	13.856	14.779	132.343	1.975	0.215
5	2.618	-13.856	8.000	10.680	69.127	1.975	0.560
6	3.142	-16.000	0.000	3.720	8.410	1.975	0.756
7	3.665	-13.856	-8.000	-4.238	10.908	-0.619	0.749
8	4.189	-8.000	-13.856	-11.060	74.124	-0.619	0.541
9	4.712	0.000	-16.000	-14.918	134.841	-0.619	0.188
10	5.236	8.000	-13.856	-14.779	132.343	-0.619	0.215
11	5.760	13.856	-8.000	-10.680	69.127	-0.619	0.560
12	6.283	16.000	0.000	-3.720	8.410	-0.619	0.756

#### **MOMENT APPLIED TO PLATE (UNFACTORED)**

	Pole Flat Be	end Line	Pole Corner E	Bend Line	Circumferential Bend Line	
Position	Moment Arm (in)	Moment (k-in)	Moment Arm (in)	Moment (k-in)	Moment Arm (in)	Moment (k-in)
1	1.925	1.539	1.925	1.539	13.063	10.442
2	8.747	13.472	8.747	13.472	13.063	20.118
3	12.606	24.696	12.606	24.696	13.063	25.591
4	12.467	24.236	12.467	24.236	13.063	25.394
5	8.368	12.543	8.368	12.543	13.063	19.580
6	1.407	1.046	1.407	1.046	13.063	9.706
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	-	-	-	-

#### STIFFENER GEOMETRY AND APPLIED LOADS

Max Moment Arm: 8 in Group Diameter: 16.5 in RISA Factor: 1

#### GEOMETRY AND APPLIED LOADS (UNFACTORED)

Position	Radians	Moment Arm (in)	Inertia (in <sup>4</sup> )	Axial Load (k)	Shear Load (k)
1	0.524	2.274	137.350	2.074	1.483
2	1.571	8.005	471.692	5.601	0.373
3	2.618	5.731	294.409	4.202	1.110
4	3.665	-2.274	137.349	-0.725	1.483
5	4.712	-8.005	471.692	-4.252	0.373
6	5.760	-5.731	294.409	-2.852	1.110

#### ADDITIONAL LENGTH FOR BEND LINES FROM STIFFENERS

Position	Pole Flat Be	end Line	Pole Corner B	Bend Line	Circumferential Bend Line	
	Moment Arm (in)	Addition (in)	Moment Arm (in)	Addition (in)	Moment Arm (in)	Addition (in)
1	-	_	-	-	6.000	12.750
2	5.692	12.135	5.692	12.135	6.000	12.750
3	3.418	7.587	3.418	7.587	6.000	12.750
4	-	-	-	-	6.000	12.750
5	-	-	-	-	-	-
6	-	_	-	-	-	-

				5	OTION!					
Component	ID			REA	М	DISTRIBUTION oment u (k-ft)	Axial Lo	oad (k)	Shear Vu (k)	Facto
Pole	4.5"ø x	"ø x 0.337" (Round)				12.8	4	.07	6.02	1.00
Bolt Group		(12) 1"ø	, u u,			12.8	·	-	6.02	1.00
Stiffeners	_	(	0.75"T			12.8		-	5.99	0.99
	TOTAL					12.84	4	.07	6.02	
				COMF	PONENT	PROPERTIES				
Component	ID			Gross	Area (in²)	Net Area (in²)	Individual I	nertia (in <sup>4</sup> )	Moment of Inertia (in <sup>4</sup> )	Threads/i
Pole	4.5"ø x	0.337" (Ro	ound)	4.	4074	-		_	9.72	
Bolt Group	Original	(12) 1"ø	,	0.	7854	0.6057	0	.0292	859.51	8.0
Stiffeners	(6) 12"H	I x 12"W x	0.75"T	8.	0625	7.2563	432	.0000	1806.90	
			EXTE	RNAL UPPER FLAN	GE PLA	TE BEND LINE	ANALYSIS	@ 76.7 F	т	
POLE PROPERTIE	s					PLATE PRO	PERTIES			
Flat-to-Flat Diamete	er:	4.625	in			Neutral Axis	:	14	٥	
Point-to-Point Diam	eter:	4.625	in			Bend Line Lower Limit: 6.10		09 rad		
Flat Width:		0.04	in			Bend Line U	d Line Upper Limit: 3.839 rad			
Flat Radians:		0.017	rad							
Bend Line	С	hord Leng (i	th n)	Additional Length (in)	Sect	ion Modulus (in³)	Applied Mo	oment (k-in)	Moment Capacity φMn (k-in)	Ratio
Flat		33.2	55	19.722		29.799		77.5	1341.0	0.058
Corner		33.2	55	19.722		29.799		77.5	1341.0	0.058
Circumferential		50.39	98	51.000		57.036		110.8	2566.6	0.043
				PLASTIC	FLANG	E BOLT ANAL	YSIS			
Class	G	roup Quai	ntity	Bolt Diar	neter (in)	Applied A	xial Load Pu (k)	C	ompressive Capacity φPn (k)	Ratio
Original			12		1		2.0		54.5	0.036

#### **UPPER FLANGE PLATE STIFFENER ANALYSIS**

Quantity:	6	
Height:	12	in
Width:	12	in
Effective Width:	12	in
Thickness:	0.75	in
Notch:	1.25	in
Grade:	Not Listed	
Yield Strength:	0	ksi
Tensile Strength:	0	ksi
Horizontal Weld Type:	Fillet	
Horizontal Weld Fillet Size:	0.125	in
Horizontal Weld Bevel Size:	-	in
Vertical Weld Fillet Size:	0.125	in
Weld Strength:	70	ksi
Electrode Coefficient:	1	

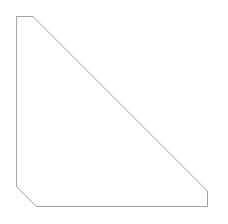


PLATE COMPRESSION			
Radius of Gyration:		0.217	in <sup>3</sup>
kl/r:		33.26	
4.71 √(E/Fy):		0.00	
Buckling Stress, Fe:		0.00	ksi
Crit. Buckling Stress, Fcr:		0.00	ksi
Applied Compression, Pu:		5.60	k
Compressive Capacity, $\phi Pn$ :		0.00	k
	Pu/φPn:	0.000	

PLATE TENSION			
Gross Cross Section:	8.	0625	in²
Net Cross Section:	7.	2563	in <sup>2</sup>
Applied Tension, Tu:	4.	25	k
Tensile Capacity, φTn:	0.	00	k
	Tu/φTn:	0.000	

VERTICAL WELD TO POLE		
Vertical Eccentricity Ratio, a=e <sub>x</sub> /l:	0.333	
Spacing Ratio, k:	0.063	
Weld Coefficient, C:	3.090	
Applied Compression, Pu:	5.60	k
Compressive Capacity, φPn:	55.62	k
Horizontal Eccentricity Ratio, a=e <sub>x</sub> /l:	0.333	
Weld Coefficient, C:	2.940	
Applied Shear, Vu	0.37	k
Shear Capacity, φVn:	52.92	k
Pu/φPn + Vu/φVn:	0.108	

HORIZONTAL WELD TO PLATE		
Horizontal Eccentricity Ratio, a=e <sub>x</sub> /l:	0.167	
Spacing Ratio, k:	0.063	
Weld Coefficient, C:	3.900	
Effective Fillet Size:	0.125	in
Applied Compression, Pu:	5.60	k
Compressive Capacity, φPn:	70.20	k
Vertical Eccentricity Ratio, a=e <sub>x</sub> /l:	0.167	
Weld Coefficient, C:	3.670	
Applied Shear, Vu	0.37	k
Shear Capacity, φVn:	66.06	k
Pu/φPn + Vu/φVn:	0.085	



## **Mount Analysis Report**

ATC Site Name : Byram Park CT, CT

ATC Site Number : 414240

Engineering Number : 13754334\_C8\_05

Mount Elevation : 45 ft

Carrier : Dish Wireless L.L.C.

Carrier Site Name : NJJER01066B

Carrier Site Number : NJJER01066B

Site Location : 48 RITCH AVENUE WEST

**GREENWICH, CT 06830-9992** 

41.00506654, -73.64830301

County : Fairfield

Date : March 24, 2022

Max Usage : 65%

Result : Pass

Prepared By: Reviewed By:

Joseph Swier

Structural Engineer

Joseph Swier

30575 OCENSED HELLINGSONAL ENGINEER

COA: PEC.0001553



### **Table of Contents**

Introduction	1
Supporting Documents	1
Analysis	1
Conclusion	1
Application Loading	2
Structure Usages	
Mount Layout	
Equipment Layout	
Standard Conditions	5
Calculations	Attached



#### **Introduction**

The purpose of this report is to summarize results of the mount analysis performed for Dish Wireless L.L.C. at 45 ft.

#### **Supporting Documents**

Specifications Sheet	Commscope MC-K6MHDX-9-96, dated March 19, 2021
Radio Frequency Data Sheet	RFDS ID #NJJER01066B, dated September 7, 2021
Reference Photos	Site photos from 2021

#### **Analysis**

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	116 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00" radial ice concurrent
Codes:	ANSI/TIA-222-H
<b>Exposure Category:</b>	С
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.277, S1 = 0.06
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

#### **Conclusion**

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report.

Analysis based on new Commscope MC-K6MHDX-9-96.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



# **Application Loading**

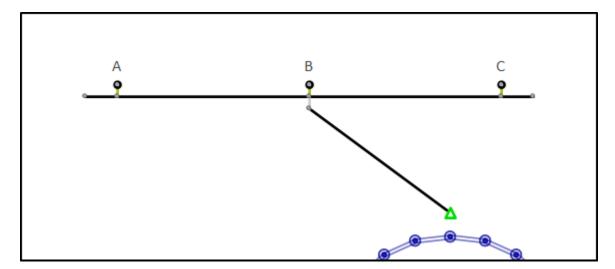
Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model		
45.0	3	Commscope FFVV-65B-R2			
	45.0	1	Raycap RDIDC-9181-PF-48		
45.0	45.0	3	Fujitsu TA08025-B604		
			3	3	Fujitsu TA08025-B605

# **Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Horizontals	39%	Pass
Mount Pipes	22%	Pass
Connection Check	65%	Pass
Serviceability	N/A	Pass



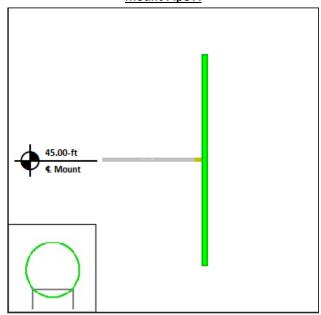
# **Mount Layout**



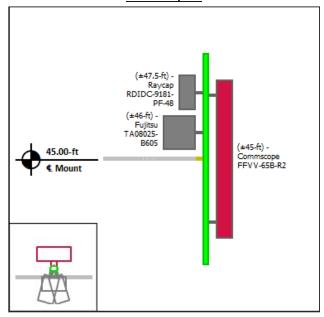


# **Equipment Layout**

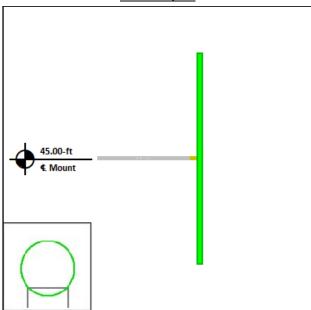
## **Mount Pipe A**



## **Mount Pipe B**



# **Mount Pipe C**





# **Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding equipment, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



 Site Number:
 414240

 Project Number:
 13754334\_C8\_05

 Carrier:
 Dish Wireless L.L.C.

 Mount Elevation:
 45 ft

 Date:
 3/24/2022

# **Mount Analysis Force Calculations**

Wind & Ice Load Calculations								
Velocity Pressure Coefficient	$K_{z}$	1.07						
Topographic Factor	$K_{zt}$	1.00						
Rooftop Wind Speed-up Factor	$K_{S}$	1.00						
Shielding Factor	$K_a$	0.90						
Ground Elevation Factor	K <sub>e</sub>	1.00						
Wind Direction Probability Factor	$\kappa_{d}$	0.95						
Basic Wind Speed	V	116	mph					
Velocity Pressure	$q_{z}$	34.9	psf					
Height Escalation Factor	$K_{iz}$	1.03						
Thickness of Radial Glaze Ice	$T_{iz}$	1.03	in					

Seismic Load Calculations									
Short Period DSRAP	$S_{DS}$	0.291							
1 Second DSRAP	$S_{D1}$	0.096							
Importance Factor	1	1.0							
Response Modification Coefficient	R	2.0							
Seismic Response Coefficient	$C_S$	0.146							
Amplification Factor	Α	1.0							
Total Weight	W	480.9	lbs						
Total Shear Force	$V_{S}$	70.1	lbs						
Horizontal Seismic Load	Eh	70.1	lbs						
Vertical Seismic Load	Ev	28.0	lbs						

Antenna Calculations (Elevations per Application/RFDS)*								
Equipment	Height	Width	Depth	Weight	$EPA_N$	$EPA_T$	EPA <sub>Ni</sub>	$EPA_Ti$
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Commscope FFVV-65B-R2	72.0	19.6	7.8	70.8	12.27	2.34	13.95	3.05
Raycap RDIDC-9181-PF-48	16.0	14.0	8.0	21.9	1.87	1.07	2.42	1.51
Fujitsu TA08025-B604	15.7	15.0	7.9	63.9	1.96	1.03	2.53	1.47
Fujitsu TA08025-B605	15.7	15.0	9.1	75.0	1.96	1.19	2.53	1.65

st Equipment with EPA values N/A were not considered in the mount analysis



 Site Number:
 414240

 Project Number:
 13754334\_C8\_05

 Carrier:
 Dish Wireless L.L.C.

 Mount Elevation:
 45 ft

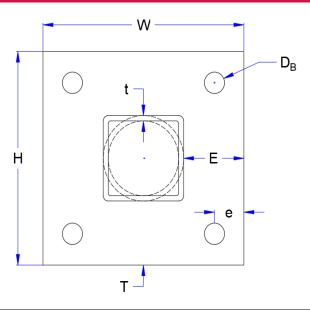
 Date:
 3/24/2022

# **Mount-to-Tower Connection Analysis**

Applied Loads from RISA 3D								
Controlling Load Combination	n	7						
Node Label		N002						
Force in X	Fx	458.3	lbs					
Force in Y	Fy	562.4	lbs					
Force in Z	Fz	-746.8	lbs					
Moment about X	Mx	-1653.8	lb-ft					
Moment about Y	Му	2766.8	lb-ft					
Moment about Z	Mz	1060.7	lb-ft					

<b>Bolt Shear and Tensile Capacity</b>							
Bolt Quantity	n	4					
Bolt Diameter	$D_B$	5/8	in				
Bolt Edge Distance	e	1	in				
Bolt Grade		A325					
Bolt Fy	$Fy_B$	92	ksi				
Bolt Fu	Fu <sub>B</sub>	120	ksi				
Applied Shear	Vu	0.34	k				
Applied Tension	Tu	3.60	k				
Tensile Strength	φTn	20.3	k				
Interaction Capacity	(Tu+Vu)/φTn	19%	Pass				

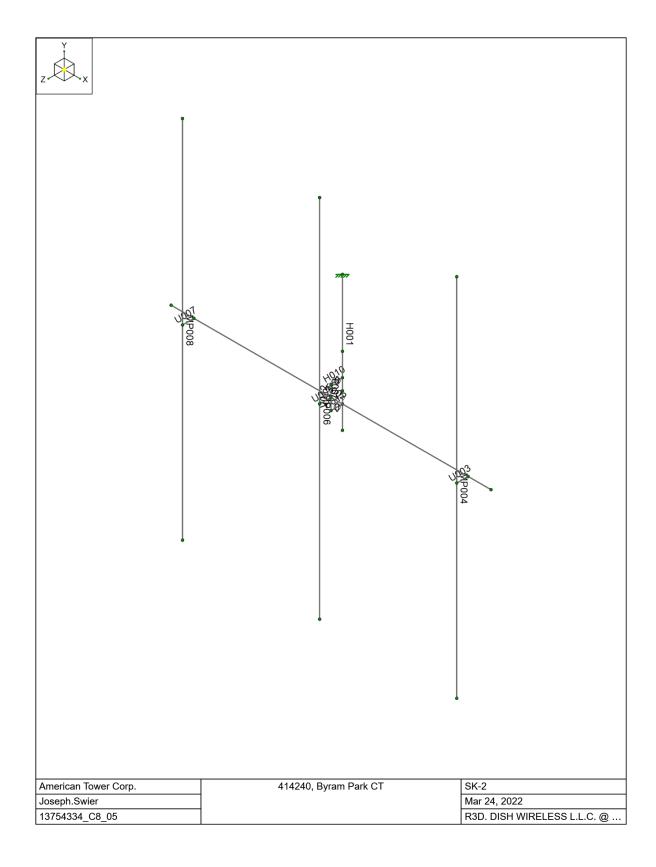
Plate Flexural Capacity								
Plate Height	Н	9	in					
Plate Width	W	9	in					
Plate Thickness	Т	3/8	in					
Plate Grade		A36						
Plate Fy	$Fy_P$	36	ksi					
Plate Fu	Fu <sub>P</sub>	58	ksi					
Shear Capacity	φVn	28.8	k					
Applied Moment	Mu	10.8	k-in					
Flexural Strength	φMn	16.5	k-in					
Flexural Capacity	Mu/φMn	65%	Pass					

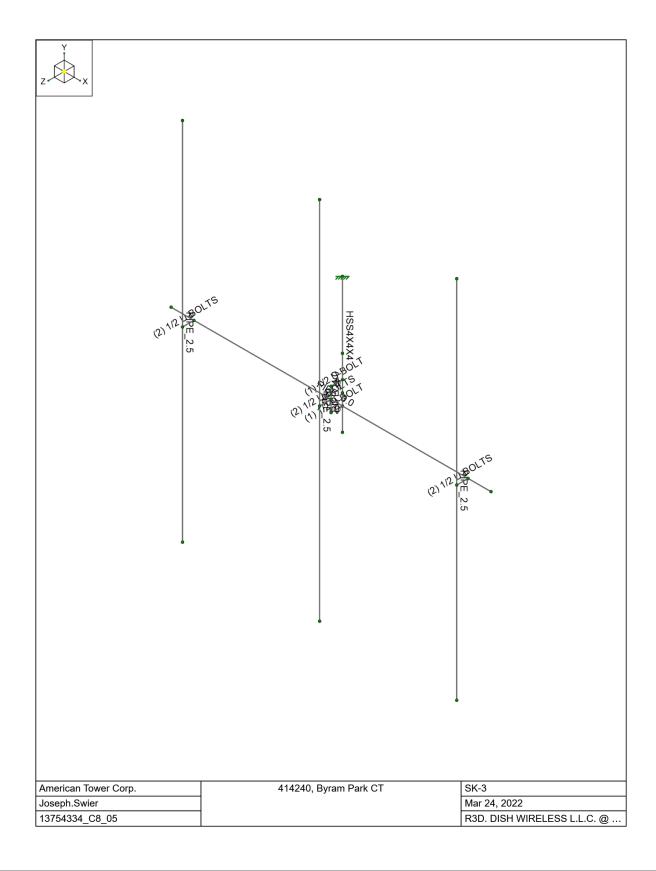


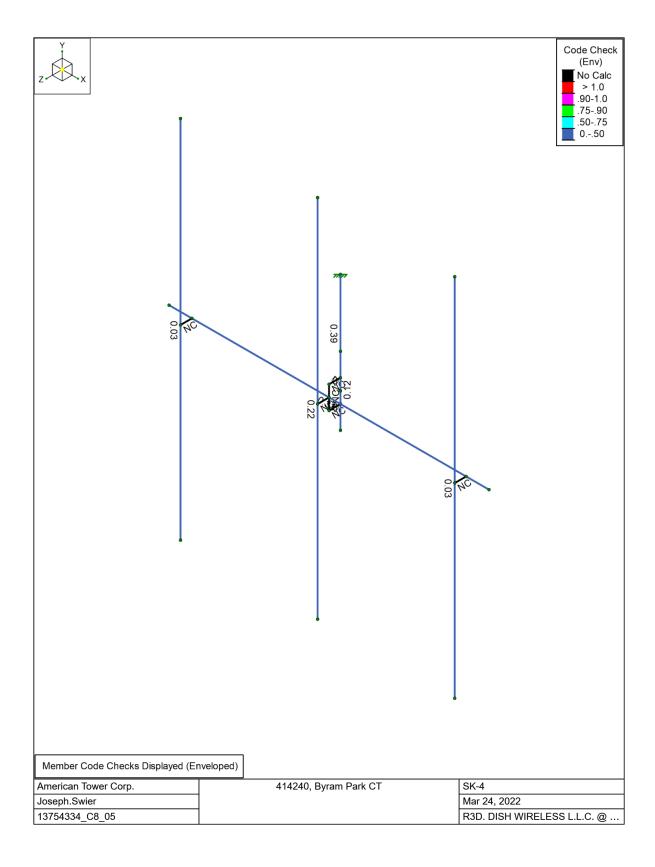
Weld and Base Metal Capacity							
Standoff Type	Tub	e					
Standoff Member		HSS4x	(4x4				
Member Edge Distance	E	2.5	in				
Member Width	w	4	in				
Member Thickness	t	0.250	in				
Member Grade		A500 Gr. B					
Member Fy	$Fy_M$	42	ksi				
Member Fu	$Fu_M$	58	ksi				
Weld Size	a	1/4	in				
Weld Length	1	16.0	in				
Applied Load	Pu	7.2	k				
Weld Strength	φRn	44.5	k				
Weld Capacity	Pu/φRn	16%	Pass				
Minimum Base Metal Thickr	ess	0.213	in				
Controlling Base Metal Thick	ness	0.250	in				
Base Metal Result		Accept	table				

Prying Action Considerations									
Moment Arm	b	1.50	in	Minimum Thickness	t <sub>min</sub>	0.22	in		
Effective Moment Arm	b'	1.19	in	No Prying Thickness	$t_{np}$	0.30	in		
Tributary Length	р	3.63	in	Min Bolt Strength Thickness	t <sub>c</sub>	0.71	k-in		
Effective Edge Distance	a'	1.31	in	Prying Action Bolt Tension	$T_{up}$	0.00	k		









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Shear Check (Env) No Calc > 1.0 .90-1.0 .75-.90 .50-.75 0.-.50 Member Shear Checks Displayed (Enveloped) 414240, Byram Park CT American Tower Corp. SK-5 Joseph.Swier Mar 24, 2022 13754334\_C8\_05 R3D. DISH WIRELESS L.L.C. @ ...



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# **Basic Load Cases**

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	D	DL	-1		5	
2	Di	IL			5	6
3	W 0	WL			5	12
4	W 30	WL			10	23
5	W 60	WL			10	23
6	W 90	WL			5	13
7	W 120	WL			10	23
8	W 150	WL			10	23
9	W 180	WL			5	12
10	W 210	WL			10	23
11	W 240	WL			10	23
12	W 270	WL			5	13
13	W 300	WL			10	23
14	W 330	WL			10	23
15	Wi 0	WL			5	12
16	Wi 30	WL			10	23
17	Wi 60	WL			10	23
18	Wi 90	WL			5	13
19	Wi 120	WL			10	23
20	Wi 150	WL			10	23
21	Wi 180	WL			5	12
22	Wi 210	WL			10	23
22 23	Wi 240	WL			10	23
24	Wi 270	WL			5	13
25	Wi 300	WL			10	23
26	Wi 330	WL			10	23
26 27	Ws 0	WL			5	12
28	Ws 30	WL			10	23
29	Ws 60	WL			10	23
30	Ws 90	WL			5	13
31	Ws 120	WL			10	23
32	Ws 150	WL			10	23
33	Ws 180	WL			5	12
34	Ws 210	WL			10	23
35	Ws 240	WL			10	23
36	Ws 270	WL			5	13
37	Ws 300	WL			10	23
38	Ws 330	WL			10	23
39	Ev -Y	ELY			. •	6
40	Eh -Z	ELZ				6
41	Eh -X	ELX				6
42	Lv (1)	LL			1	-
43	Lv (2)	LL			1	
44	Lv (3)	LL		1	,	
45	Lm (1)	LL		1		
46	Lm (2)	LL		1		
47	Lm (3)	LL		1		
	<u> </u>			'		

# Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]	
1	N002	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	



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Member Primary Data

	Label	l Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N003	HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
2	H002	N004	N005	PIPE_3.0	Beam	None	A500 Gr. C	Typical
3	U003	N007	N009	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
4	MP004	N010	N011	PIPE_2.5	Column	None	A53 Gr. B	Typical
5	U005	N006	N012	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
6	MP006	N013	N014	PIPE_2.5	Column	None	A53 Gr. B	Typical
7	U007	N008	N015	(2) 1/2 U-BOLTS	Beam	None	A36	Typical
8	MP008	N016	N017	PIPE_2.5	Column	None	A53 Gr. B	Typical
9	V009	N019	N018	PIPE_4.0	Column	None	A53 Gr. B	Typical
10	H010	N021	N020	(1) 1/2 U-BOLT	Beam	None	A36	Typical
11	H011	N022	N023	(1) 1/2 U-BOLT	Beam	None	A36	Typical
12	V012	N023	N020	RIGID	None	None	RIGID	Typical

## Member Advanced Data

	Label	I Release	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001		Yes	N/A		None
2	H002		Yes	N/A		None
3	U003		Yes	N/A	Exclude	None
4	MP004		Yes	** NA **		None
5	U005		Yes	N/A	Exclude	None
6	MP006		Yes	** NA **		None
7	U007		Yes	N/A	Exclude	None
8	MP008		Yes	** NA **		None
9	V009		Yes	** NA **		None
10	H010	OOOXOX	Yes	N/A	Exclude	None
11	H011	OOOXOX	Yes	N/A	Exclude	None
12	V012		Yes	** NA **		None

# Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	К у-у	K z-z	Function
1	H001	HSS4X4X4	37.5			Lbyy		2.1	2.1	Lateral
2	H002	PIPE_3.0	84			Lbyy		2.1	2.1	Lateral
3	U003	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
4	MP004	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
5	U005	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
6	MP006	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
7	U007	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
8	MP008	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
9	V009	PIPE_4.0	18			Lbyy		2.1	2.1	Lateral
10	H010	(1) 1/2 U-BOLT	3			Lbyy		2.1	2.1	Lateral
11	H011	(1) 1/2 U-BOLT	3			Lbyy		2.1	2.1	Lateral

# **Hot Rolled Steel Properties**

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
1	A500 Gr. B [SQR]	2.9e+07	1.115e+07	0.3	0.65	527	46000	1.4	58000	1.3
2	A500 Gr. C	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	62000	1.3
3	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
Z	4 A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2



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**Envelope Node Reactions** 

Ν	lode Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N002	max	686.879	18	1312.413	90	851.439	14	-841.314	25	2766.849	19	5179.108	75
2		min	-686.879	12	421.81	21	-851.439	8	-3497.508	94	-2772.09	25	542.379	93
3	Totals:	max	686.879	18	1312.413	90	851.439	14						
4		min	-686.879	12	421.81	21	-851.439	8						

# Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in	]LC	Shear Check	Loc[in]	Di	rLC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb Eqn
1	H001	HSS4X4X4	0.389	0	70	0.187	0	у	94	116507.601	139518	16180.5	16180.5	1.361H1-1b
2	H002	PIPE_3.0	0.334	42	66	0.066	42		89	20691.289	85698	7555.5	7555.5	1.587H1-1b
3	MP004	PIPE_2.5	0.033	47	73	0.002	47		9	29154.339	50715	3596.25	3596.25	2.859H1-1b
4	MP006	PIPE_2.5	0.218	47	7	0.026	47		7	29154.339	50715	3596.25	3596.25	2.71 H1-1b
5	MP008	PIPE_2.5	0.028	47	93	0.002	47		9	29154.339	50715	3596.25	3596.25	1.734H1-1b
6	V009	PIPE 4.0	0.118	9	73	0.23	9		73	90327.022	93240	10631.25	10631.25	1.923H1-1b

# dESh wireless...

DISH WIRELESS, LLC, SITE ID:

# **NJJER01066B**

DISH WIRELESS, LLC. SITE ADDRESS:

# **48 RITCH AVE W GREENWICH, CT 06830**

# 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 BUILDING

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

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

## SCOPE OF WORK

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

#### TOWER SCOPE OF WORK:

- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
  INSTALL (1) PROPOSED ANTENNA MOUNT
  INSTALL PROPOSED JUMPERS
  INSTALL ROPOSED RUS (2 PER SECTOR)
  INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
  INSTALL (1) PROPOSED HYBRID CABLE (LENGTH: 75'-0")

- REMOVE PORTION OF EXISTING FENCE INSTALL VINYL WHITE FENCE EXTENSION (TO MATCH EXISTING)
- (1) PROPOSED STEEL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
  INSTALL (1) PROPOSED EQUIPMENT CABINET
- (1) PROPOSED POWER CONDUIT
- INSTALL 1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- (1) PROPOSED GPS UNIT (1) PROPOSED SAFETY SWITCH (IF REQUIRED) INSTALL
- INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)

# SITE PHOTO





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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

# 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.

THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBILE REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C & 1455 (A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR & 1.61000 (B) (7)

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

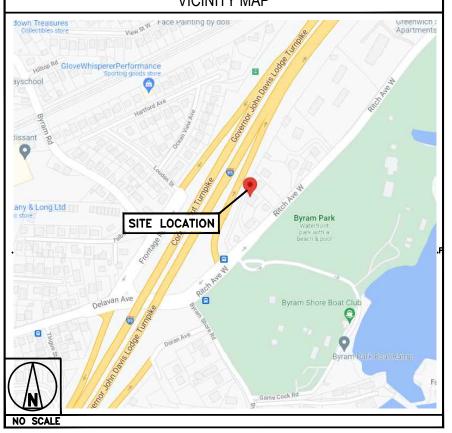
CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

#### SITE INFORMATION PROJECT DIRECTORY 36 RITCH AVENUE LLC DISH WIRELESS, LLC. 36 RITCH AVENUE 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 GREENWICH, CT 06381 (303) 706-5008 MONOPINE TOWER TYPE: TOWER OWNER: AMERICAN TOWER 10 PRESIDENTIAL WAY TOWER CO SITE ID: 414240 WOBURN, MA 01801 TOWER APP NUMBER: 13754334\_C3 COUNTY: FAIRFIELD SITE DESIGNER: FULLERTON ENGINEERING 1100 E WOODFIELD, STE 500 SCHAUMBURG, IL 60173 LATITUDE (NAD 83): N 41°00'18.2" N 41.00506388 (847) 908-8400 LONGITUDE (NAD 83): W 73'38'53.9" W 73.64831111 ZONING JURISDICTION: CONNECTICUT SITING COUNCIL SITE ACQUISITION: STEVEN LINGARD ZONING DISTRICT: CONSTRUCTION MANAGER: VICTOR CORREA victor.correa@dish.com PARCEL NUMBER: 04-2334/S OCCUPANCY GROUP: RE ENGINEER: PAWAN MADAHAR CONSTRUCTION TYPE: II-E POWER COMPANY: TELEPHONE COMPANY: TBD

# **DIRECTIONS**

FROM 3 ADP BLVD, ROSELAND, NJ 07068: HEAD NORTHEAST ON ADP BLVD TOWARD CHOCTAW WAY. TURN RIGHT ON CHOCTAW WAY. USE THE LEFT LANE TO TURN RIGHT ONTO LUVINGSTON AVE. USE THE RIGHT LANE TO TAKE THE RAMP ONO 1–280 E. MERGE ONTO 1–280 E. TAKE THE TURNPIKE EXT ON THE LEFT. MERGE ONTO 1–95. KEEP LEFT ON THE FORK TO STAY ON 1–95, FOLLOW SIGNS FOR TOLL PLAZA EZPASS. TAKE THE EXIT TO STAY ON I-95 N TOWARD US-46/FORT LEE/G WASHINGTON BR. KEEP RIGHT TO STAY ON I-95 N, FOLLOW SIGNS FOR GW BRIDGE (LOWER LEVEL)/PALISADES PKWY/US-9W. CONTINUE ONTO U.S. 9N. CONTINUE ONTO SIGNS FOR GW BRIDGE (LOWER LEVEL)/PALISADES PKWY/US-9W. CONTINUE ONTO U.S. 9N. CONTINUE ONTO I-95 LOWER LEVEL N. WEEP RIGHT TO CONTINUE ON I-95 LOWER LEVEL N./TRANS-MANHATTAN EXPY/U.S. 1 LOWER LEVEL N. SLIGHT RIGHT. I-95 LOWER LEVEL N/TRANS-MANHATTAN EXPY/U.S. 1 LOWER LEVEL N TURNS SLIGHTLY RIGHT AND BECOMES I-95 N. KEEP LEFT AT THE FORK TO STAY ON I-95 N, FOLLOW SIGNS FOR INTERSTATE 95 N/NEW HAVEN. TAKE EXIT 2 TOWARD BYRAM/DELAVAN AVE. CONTINUE ONTO DORAN AVE. TURN LEFT ONTO BYRAM SHORE RD. TURN RIGHT ONTO RITCH AVE W.

# **VICINITY MAP**





5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120

# JULLERTON

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MS		KR		ML	
DRAWN	BY:	CHECKED	BY:	APPROVED	BY

# CONSTRUCTION **DOCUMENTS**

	SUBMITTALS											
REV	DATE	DESCRIPTION										
4	01/19/2022	ISSUED FOR REVIEW										
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1	03/30/2022	ISSUED FOR CONSTRUCTION										
	A&E PROJECT NUMBER											
	44.40											

414240-13754334

DISH WIRELESS, LLC. PROJECT INFORMATION

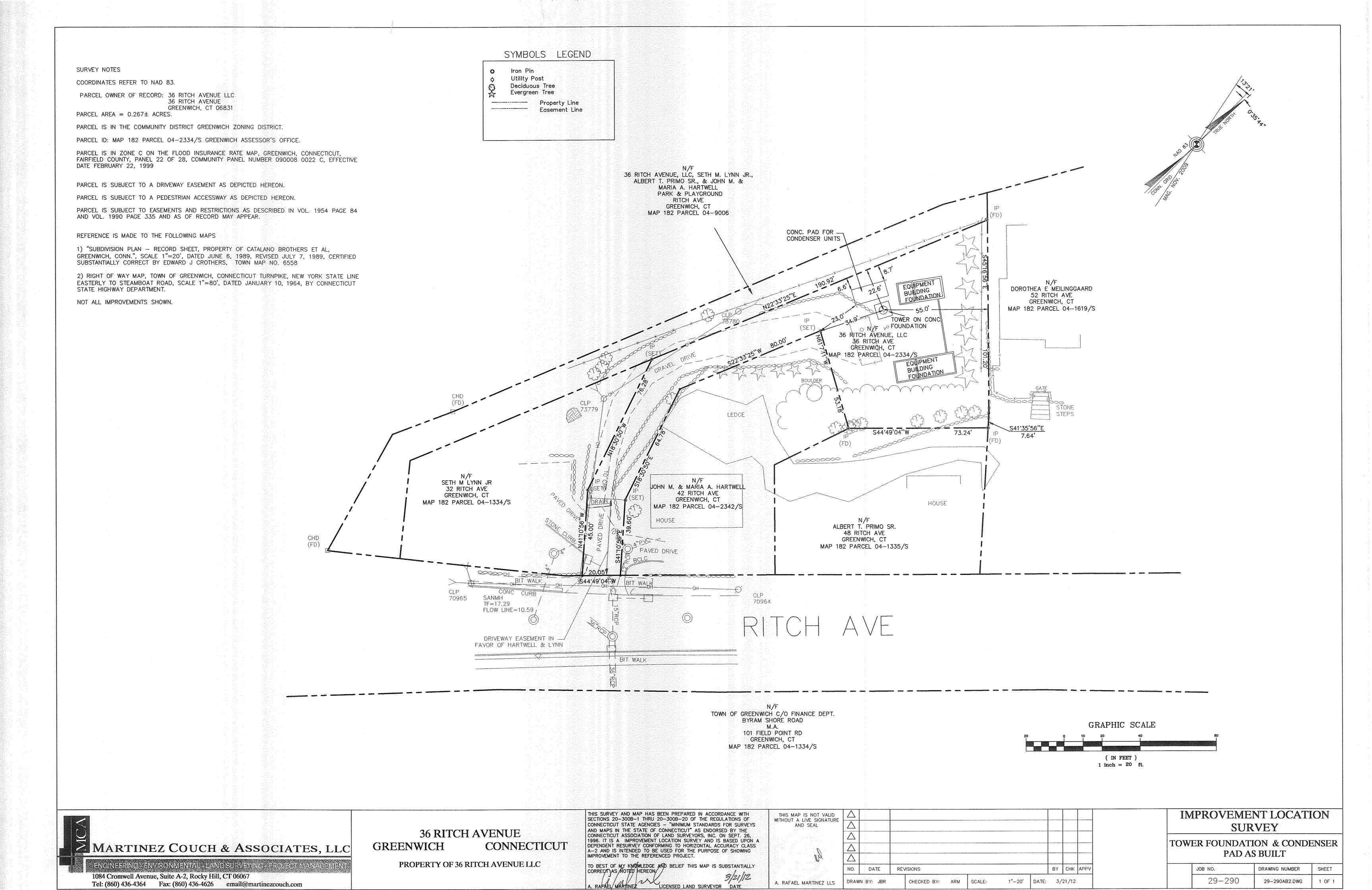
NJJER01066B 48 RITCH AVE W GREENWICH, CT 06830

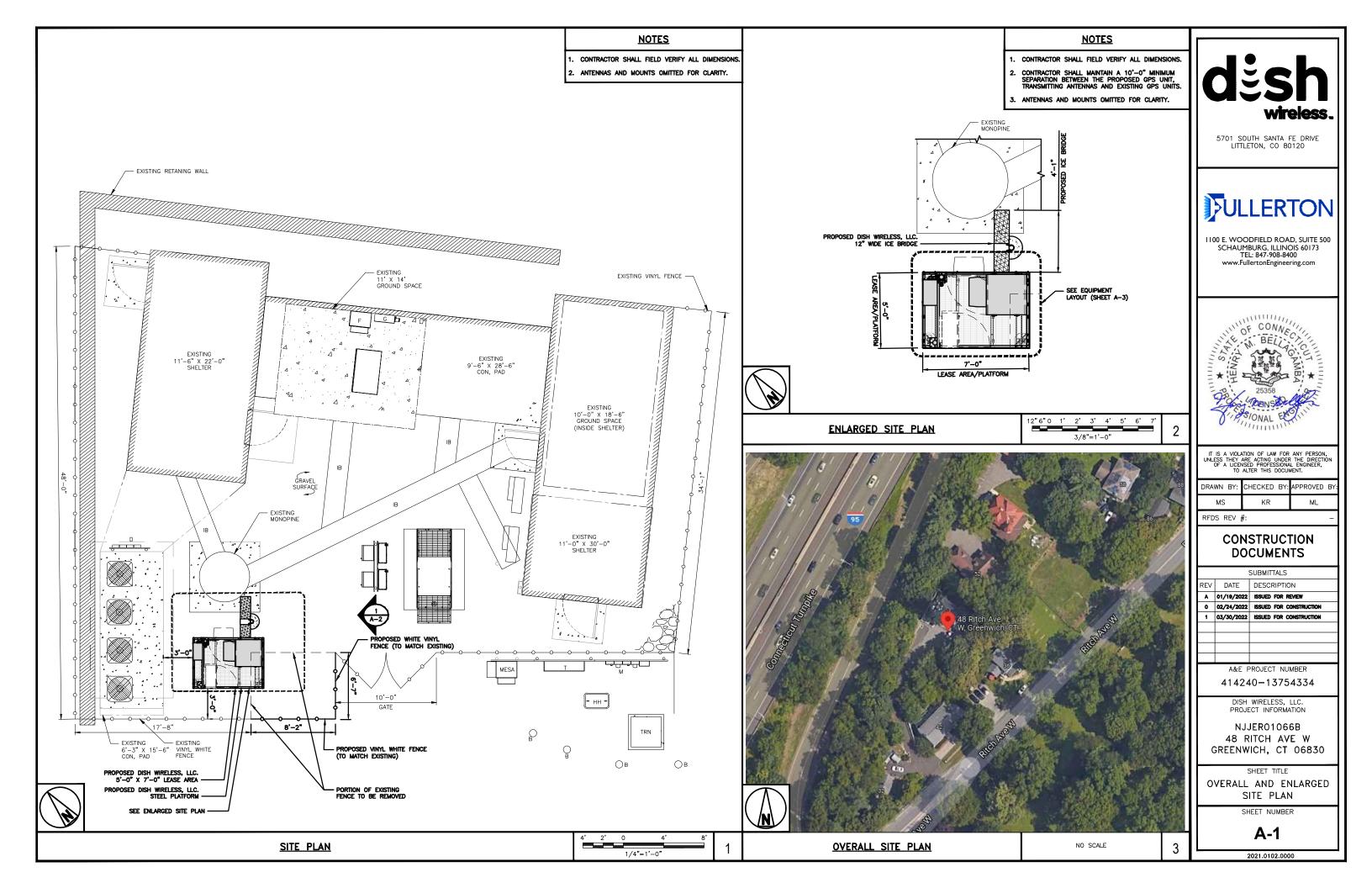
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SHEET NUMBER

T-1

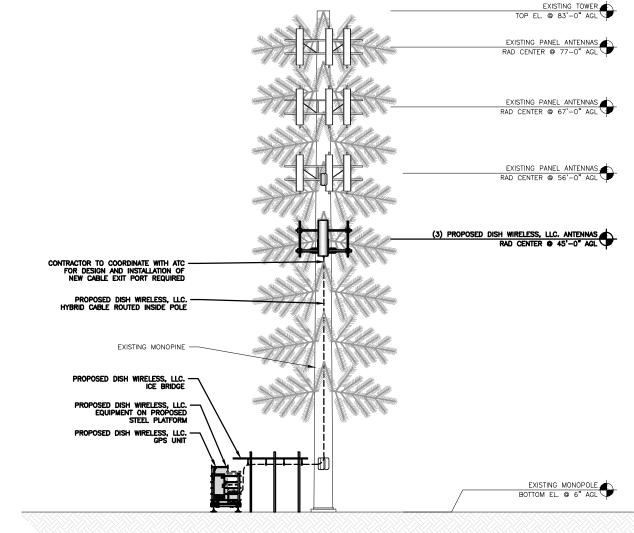
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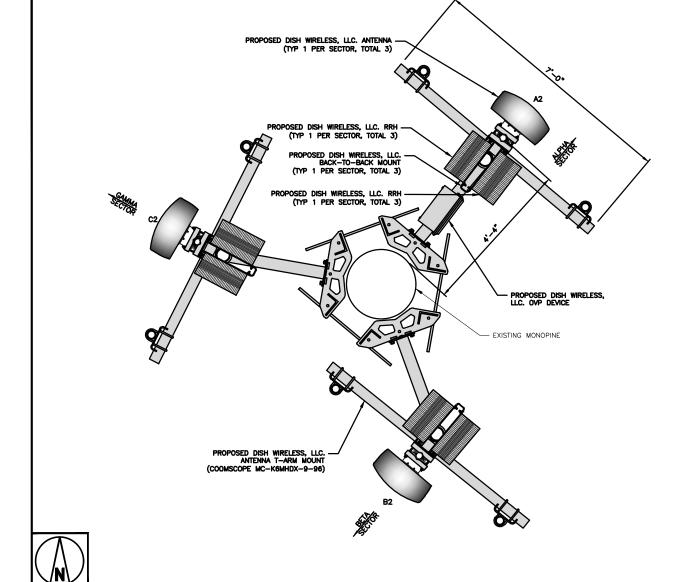




- . CALCULATIONS FOR THE STRUCTURE WERE PREPARED BY OTHERS
- 2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
- ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
- EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED SOUTH ELEVATION



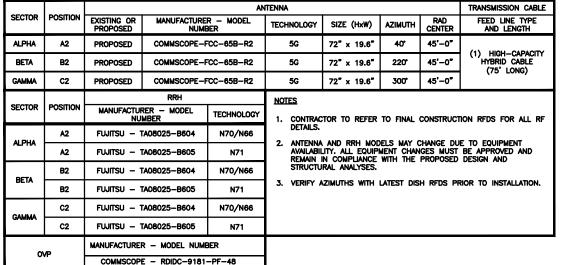
ANTENNA TRANSMISSION CABLE POSITION SECTOR EXISTING OR PROPOSED MANUFACTURER - MODEL NUMBER FEED LINE TYPE AND LENGTH RAD CENTER TECHNOLOGY SIZE (HxW) AZIMUTH ALPHA A2 COMMSCOPE-FCC-65B-R2 5G 72" x 19.6" 40° 45'-0" (1) HIGH-CAPACITY HYBRID CABLE (75' LONG) BETA **B2** PROPOSED COMMSCOPE-FCC-65B-R2 72" x 19.6" 220 45'-0" 45'-0" GAMMA C2 PROPOSED COMMSCOPE-FCC-65B-R2 5G 72" x 19.6" 300° SECTOR POSITIO MANUFACTURER — MODEL NUMBER TECHNOLOGY

3/4"=1'-0"

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

**A-2** 



5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120

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	MS	KR	ML	
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	A&E F	ROJECT NUMBER								

414240-13754334

PROJECT INFORMATION NJJER01066B 48 RITCH AVE W

GREENWICH, CT 06830

DISH WIRELESS, LLC.

SHEET TITLE

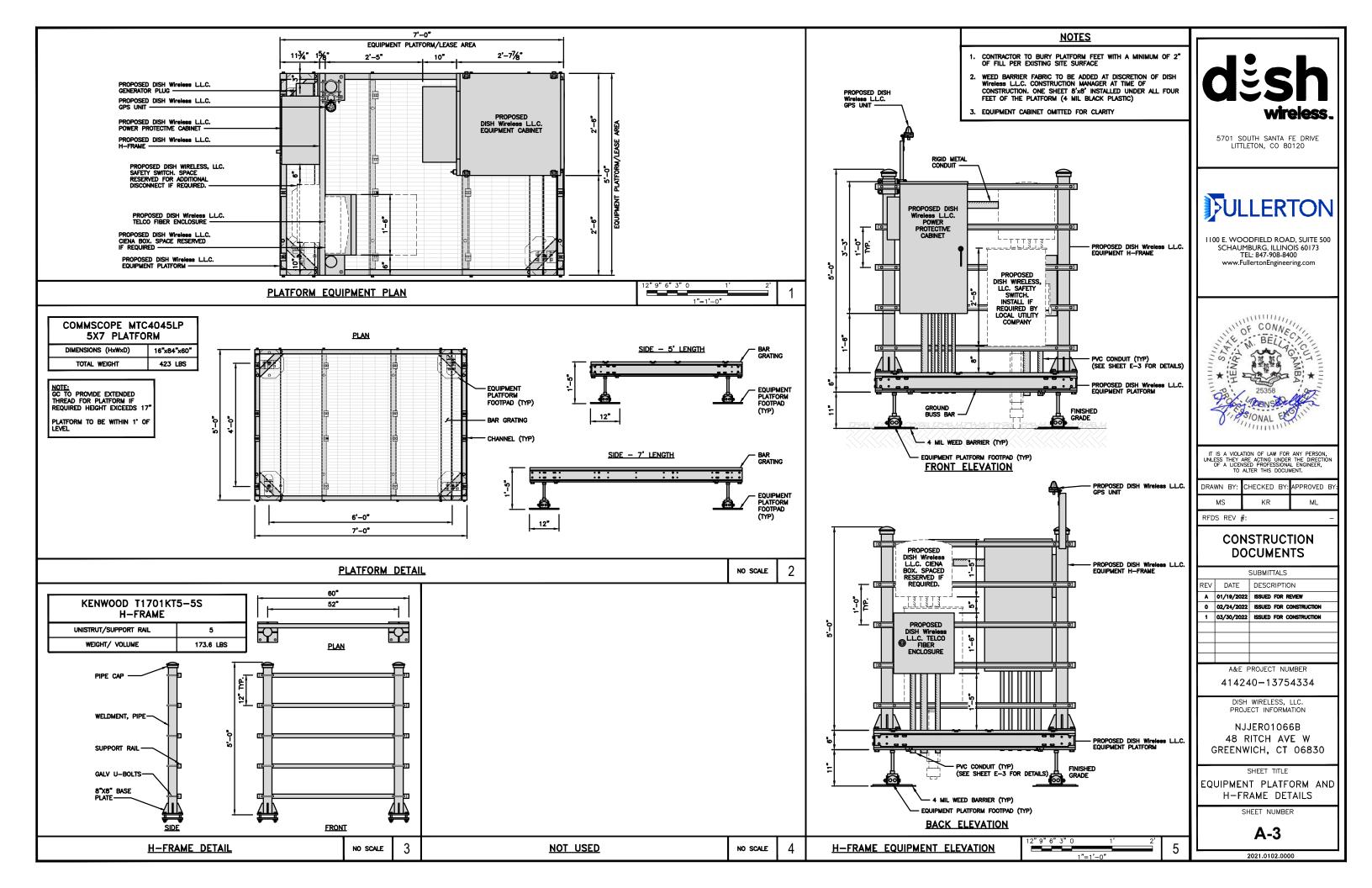
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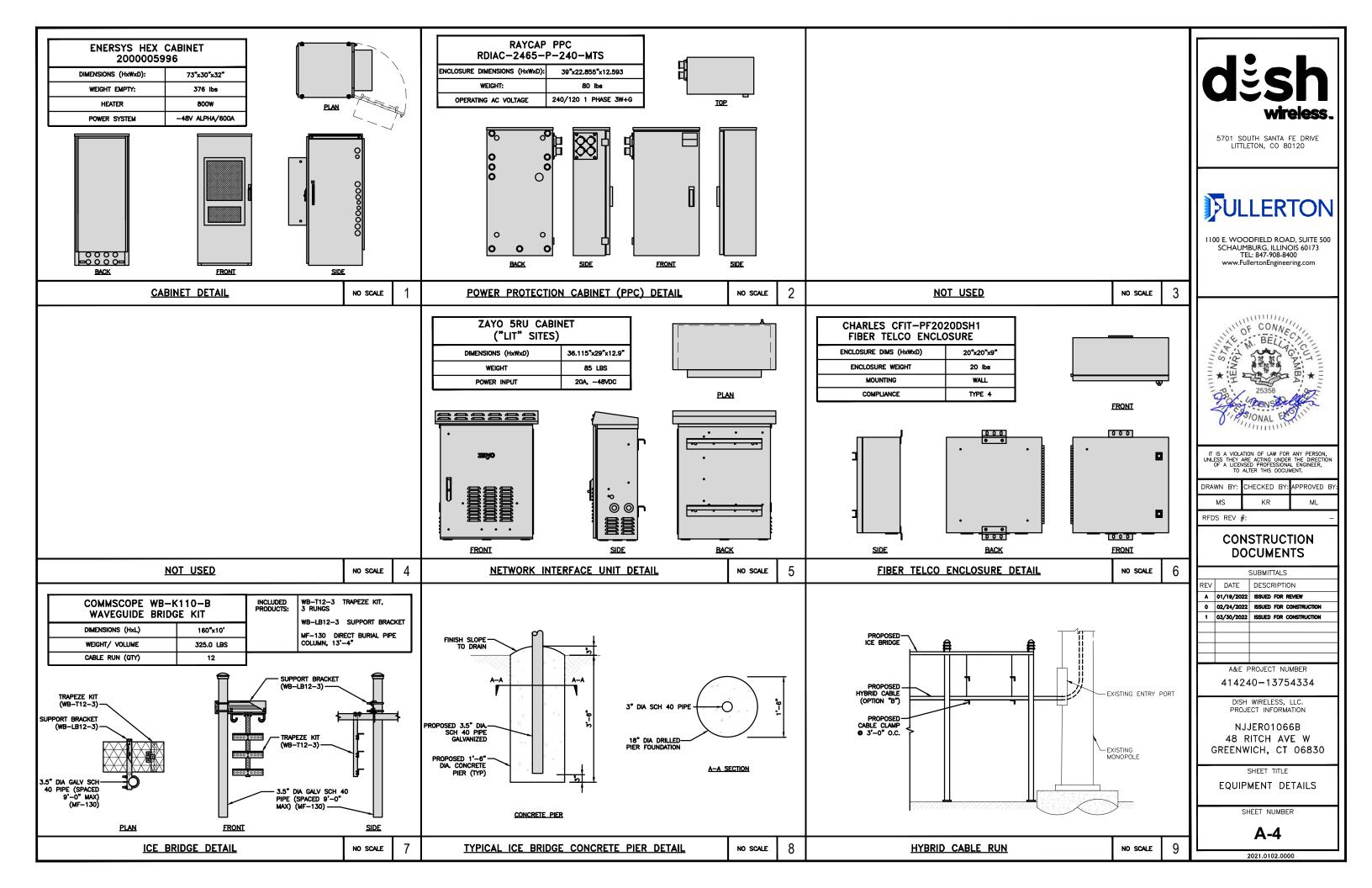
ANTENNA SCHEDULE

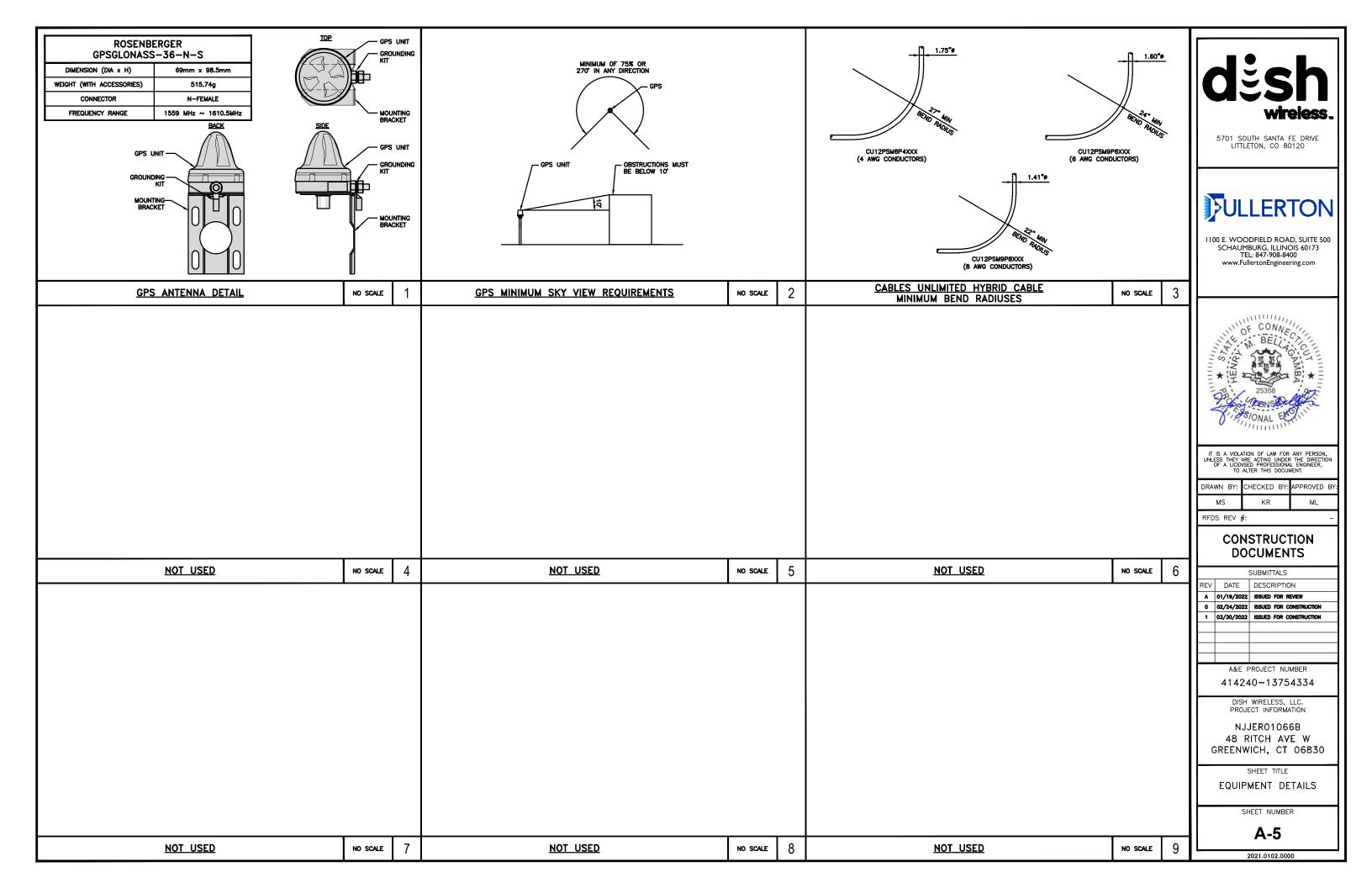
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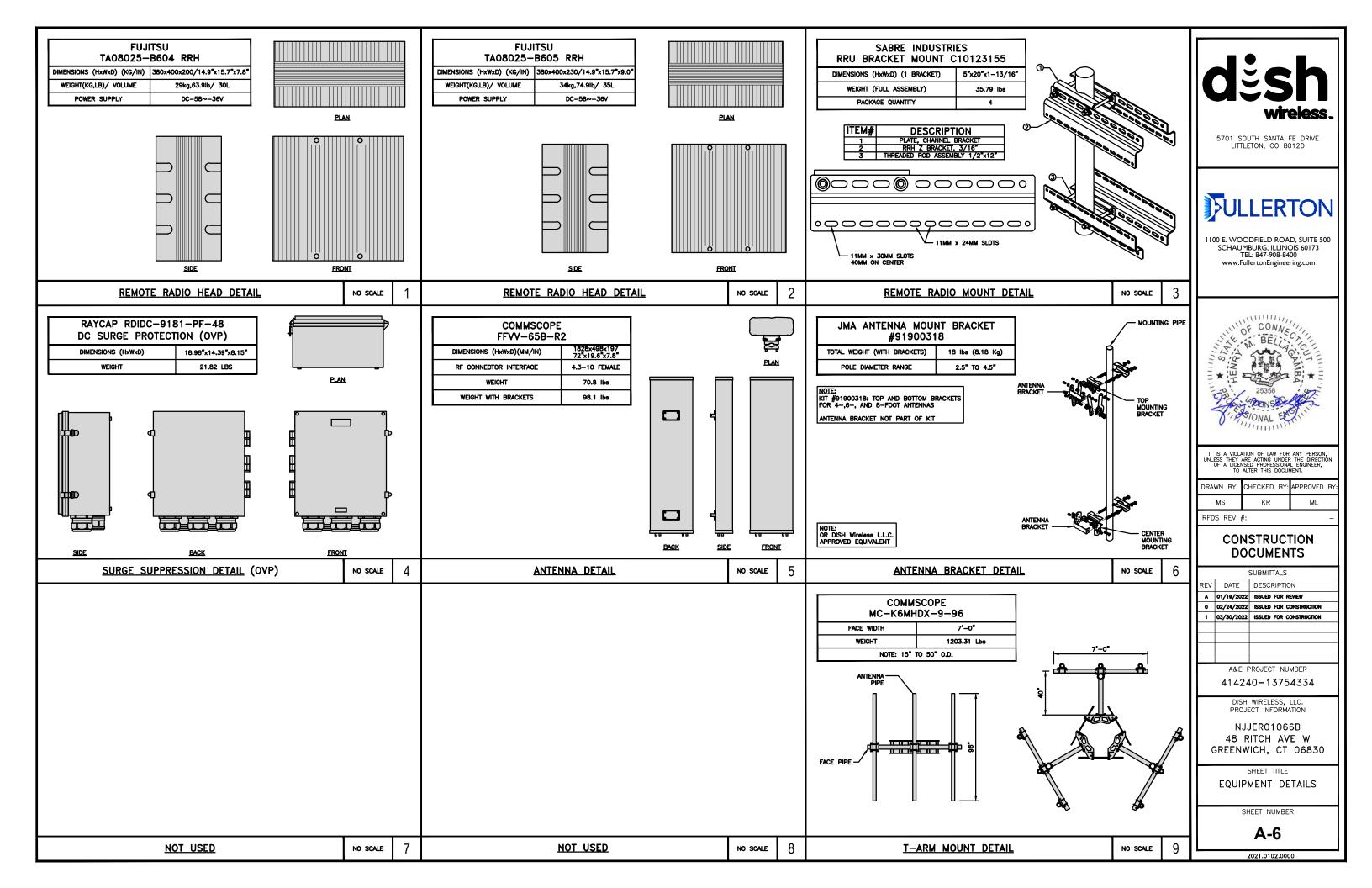
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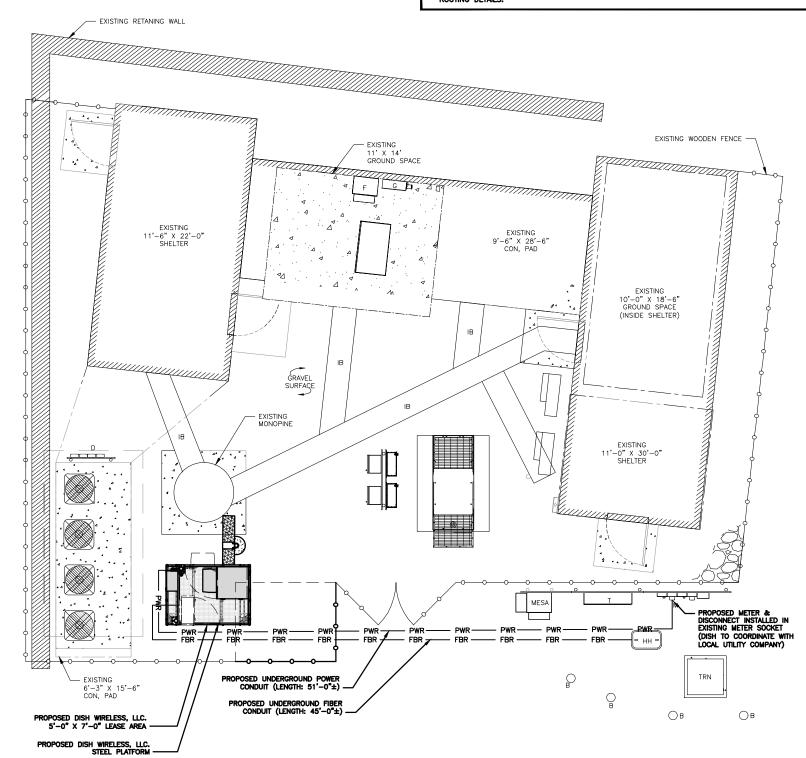






#### **NOTES**

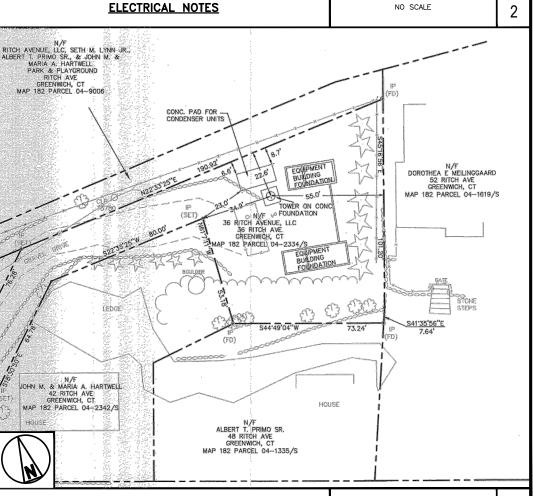
- THE EASEMENT RIGHTS FOR THIS SITE DO NOT INCLUDE A SPECIFIED AREA FOR THE LOCATION OF UTILITIES. CONSTRUCTION CONTRACTOR MUST FIELD VERIFY THE APPROPRIATENESS OF ALL PROPOSED UTILITY ROUTES
- ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
- GC TO REFER TO FINAL UTILITY COORDINATION DOCUMENT FOR ALL MEET ME POINTS AND



**UTILITY ROUTE PLAN** 

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.

- 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.
- 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.
- 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.



NO SCALE

5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120

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	MS	KR	ML	

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A&E PROJECT NUMBER						
	414240-13754334					

DISH WIRELESS, LLC. PROJECT INFORMATION

NJJER01066B 48 RITCH AVE W GREENWICH, CT 06830

SHEET TITLE

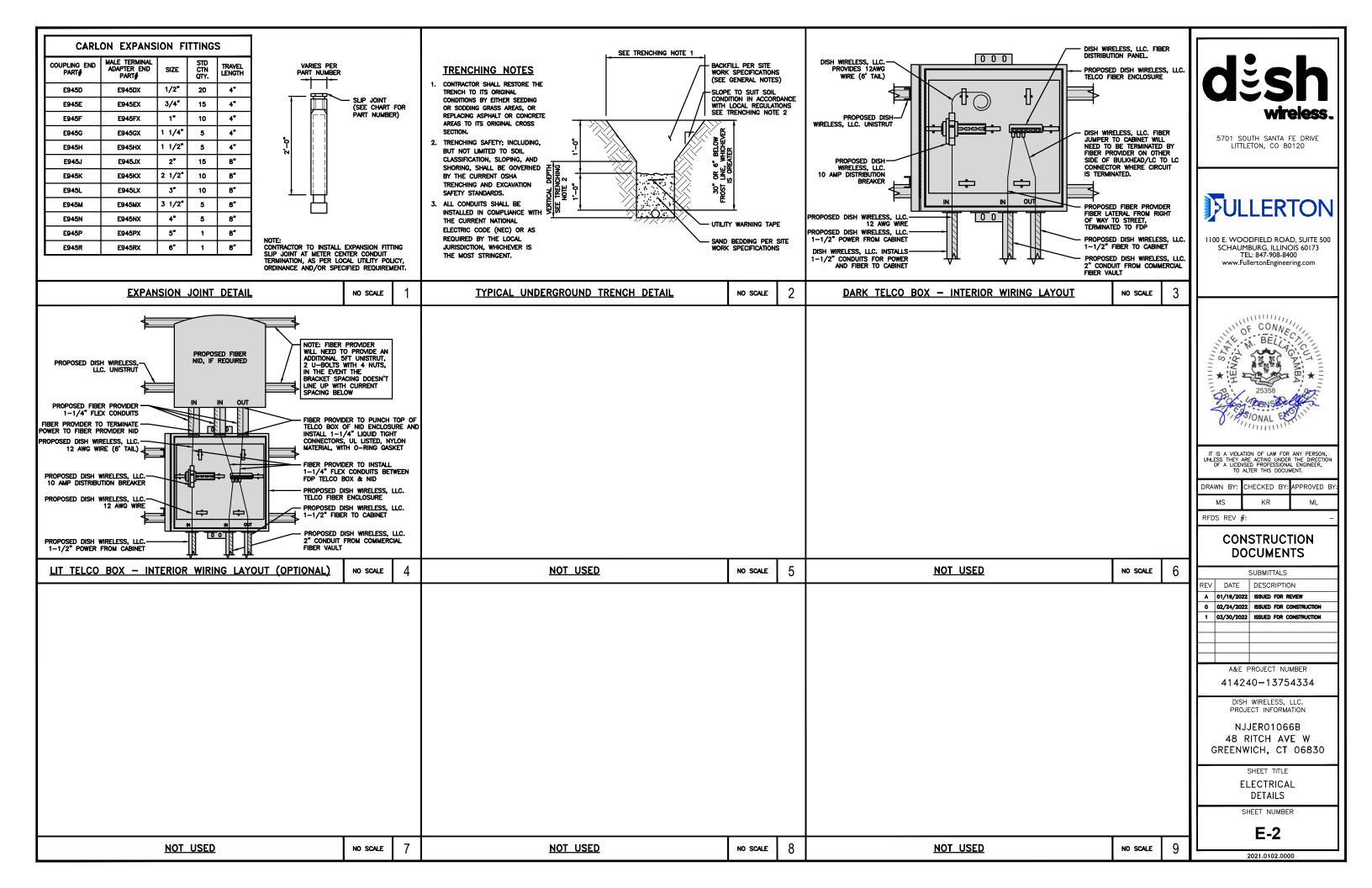
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

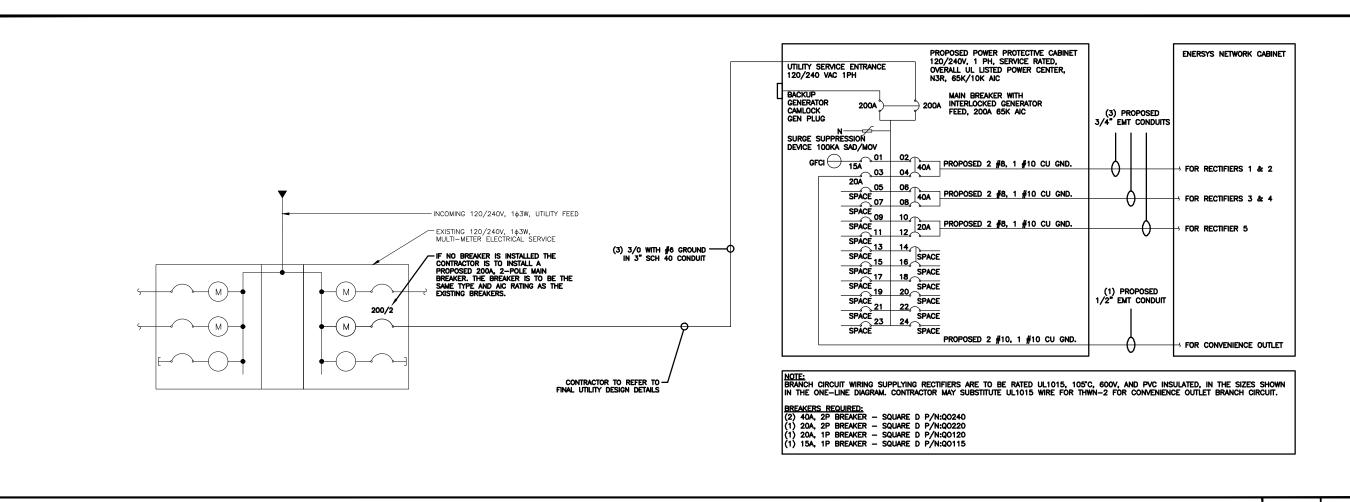
SHEET NUMBER

E-1

3/32"=1'-0'

**EXISTING SURVEY (BY OTHERS)** 



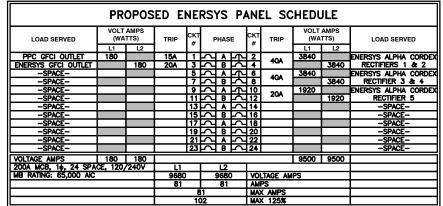


2

NO SCALE

PPC ONE-LINE DIAGRAM NO SCALE

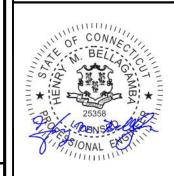
NOT USED



PANEL SCHEDULE

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DISH WIRELESS, LLC. PROJECT INFORMATION

NJJER01066B 48 RITCH AVE W GREENWICH, CT 06830

SHEET TITLE

ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER

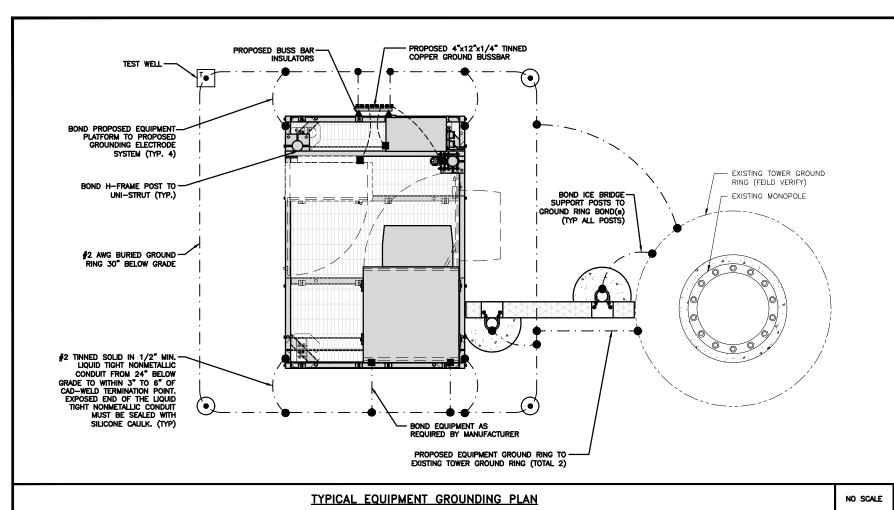
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/240V	L1			L2							
	9680	_	1 3	680		VOL	TAGE AM	PS			
		/240V L1	17 19 21 23 180 /240V L1 9680	180 /240V L1 9680 9	17 \( \times \) A   19 \( \times \) B   21 \( \times \) A   23 \( \times \) B   180   240V   L1   L2   9680   9680	17 A A A A A A A A A A A A A A A A A A A	17 \( \text{A} \) \( \text{A} \) \( \text{18} \) \( \text{19} \) \( \text{B} \) \( \text{21} \) \( \text{A} \) \( \text{22} \) \( \text{23} \) \( \text{B} \) \( \text{24} \) \( \text{180} \) \( \text{240V} \) \( \text{L1} \) \( \text{L2} \) \( \text{9680} \) \( \text{9680} \) \( \text{9680} \) \( \text{VOI} \)	17	17	17	17



**NOTES** 

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

EXOTHERMIC CONNECTION

F GROUND BUS BAR

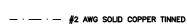
GROUND ROD

(ullet)

MECHANICAL CONNECTION

TEST GROUND ROD WITH INSPECTION SLEEVE

---- #6 AWG STRANDED & INSULATED



▲ BUSS BAR INSULATOR



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

## **GROUNDING KEY NOTES**

- A EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- (B) <u>Tower ground ring</u>: 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.
- O 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
- 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
- (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 \$\frac{1}{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.
- 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.
- 1) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- J FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- (K) Interior unit bonds: Metal frames, Cabinets and Individual Metallic units located with the area of the interior ground ring require a #6 awg stranded green insulated copper bond to the
- L FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A ∮2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH
- (M) <u>Exterior unit bonds:</u> Metallic objects, external to or mounted to the building, shall be bonded to the exterior ground ring. Using #2 tinned solid copper wire
- N ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH \$2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED
- DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR
- (P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR.

REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

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# CONSTRUCTION **DOCUMENTS**

	:	SUBMITTALS				
REV	REV DATE DESCRIPTION					
A	01/19/2022	ISSUED FOR REVIEW				
0	02/24/2022	ISSUED FOR CONSTRUCTION				
1	03/30/2022	ISSUED FOR CONSTRUCTION				
	A&F F	PROJECT NUMBER				

414240-13754334

DISH WIRELESS, LLC. PROJECT INFORMATION

NJJER01066B 48 RITCH AVE W GREENWICH, CT 06830

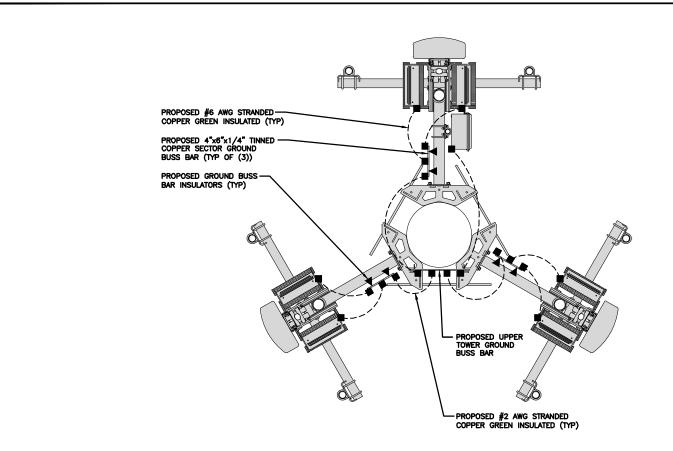
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GROUNDING PLANS AND NOTES

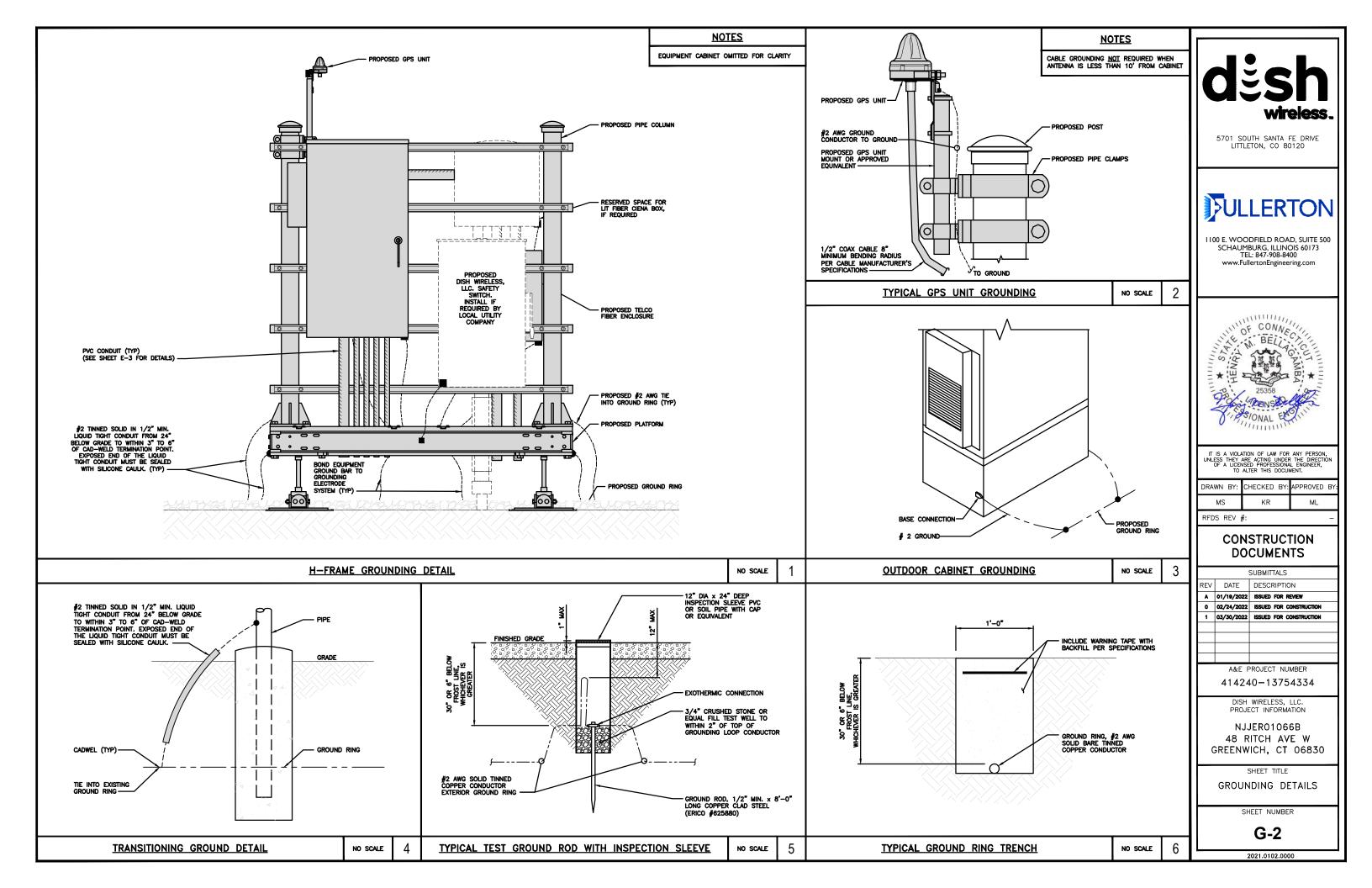
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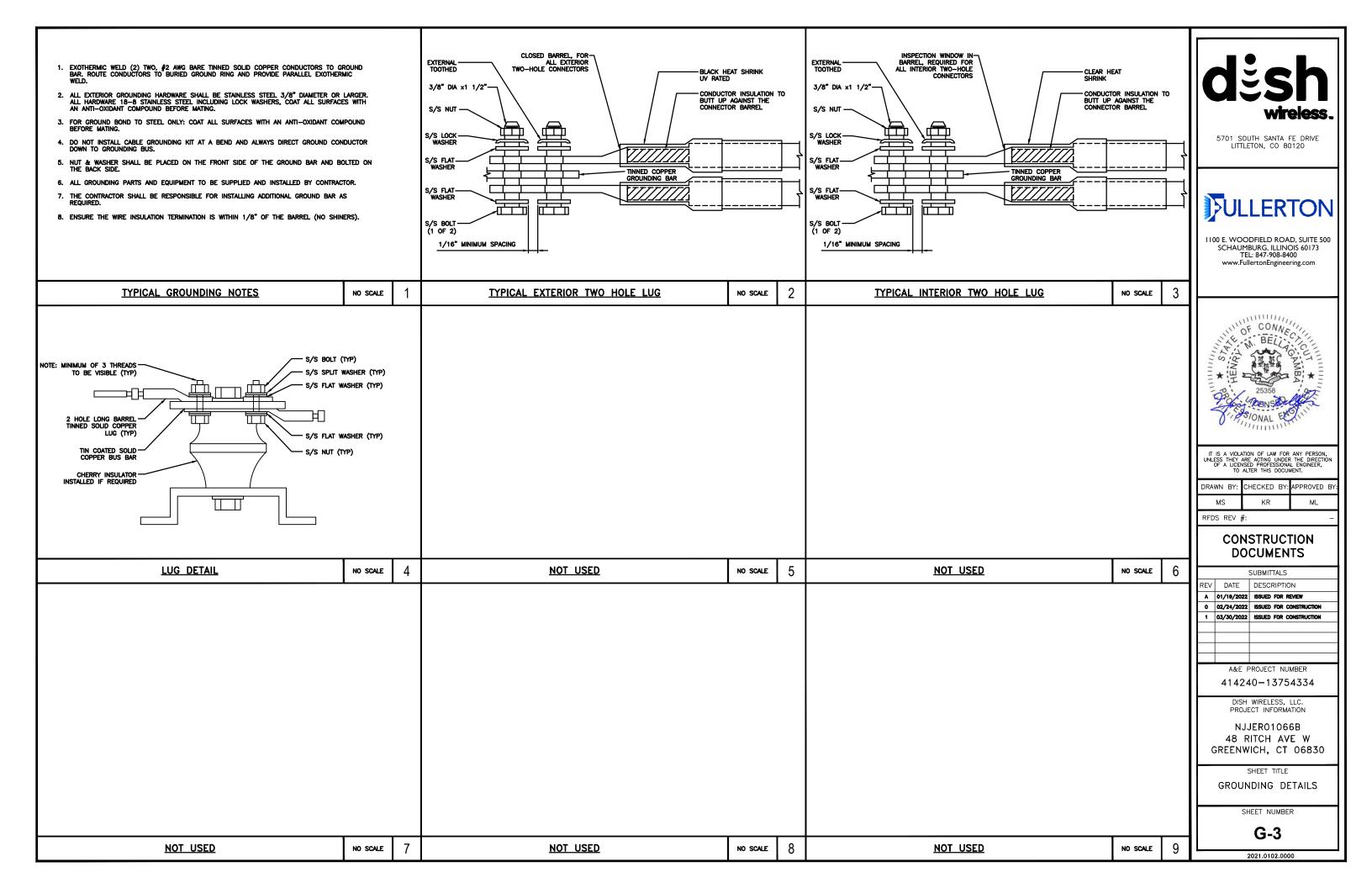
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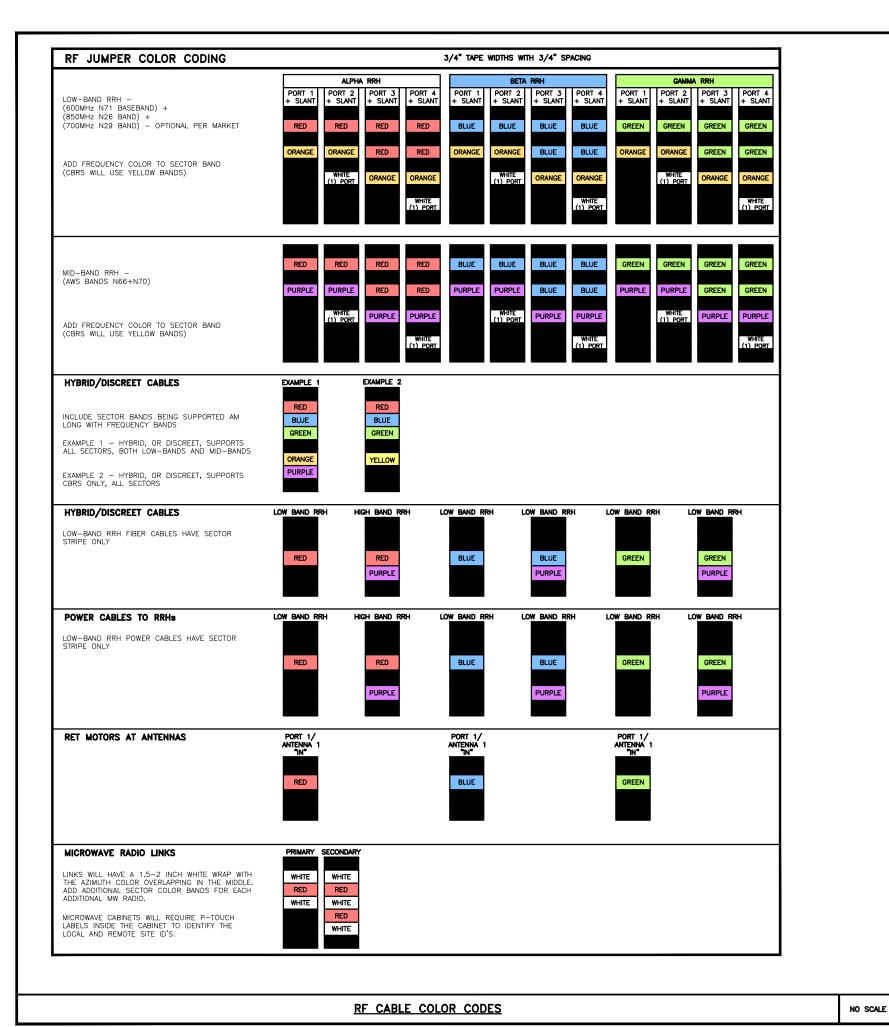
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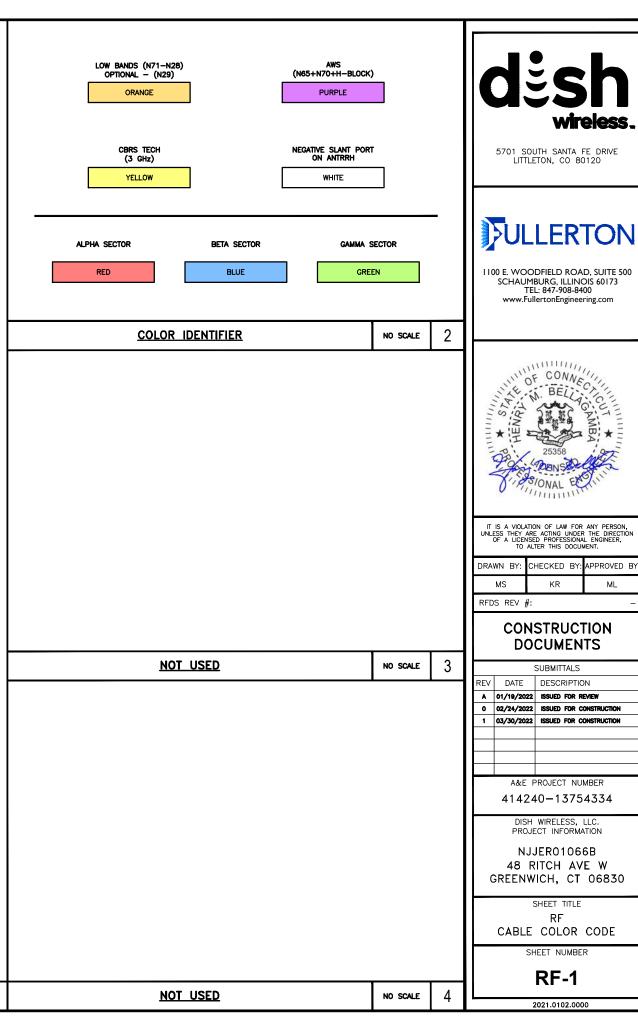


TYPICAL ANTENNA GROUNDING PLAN

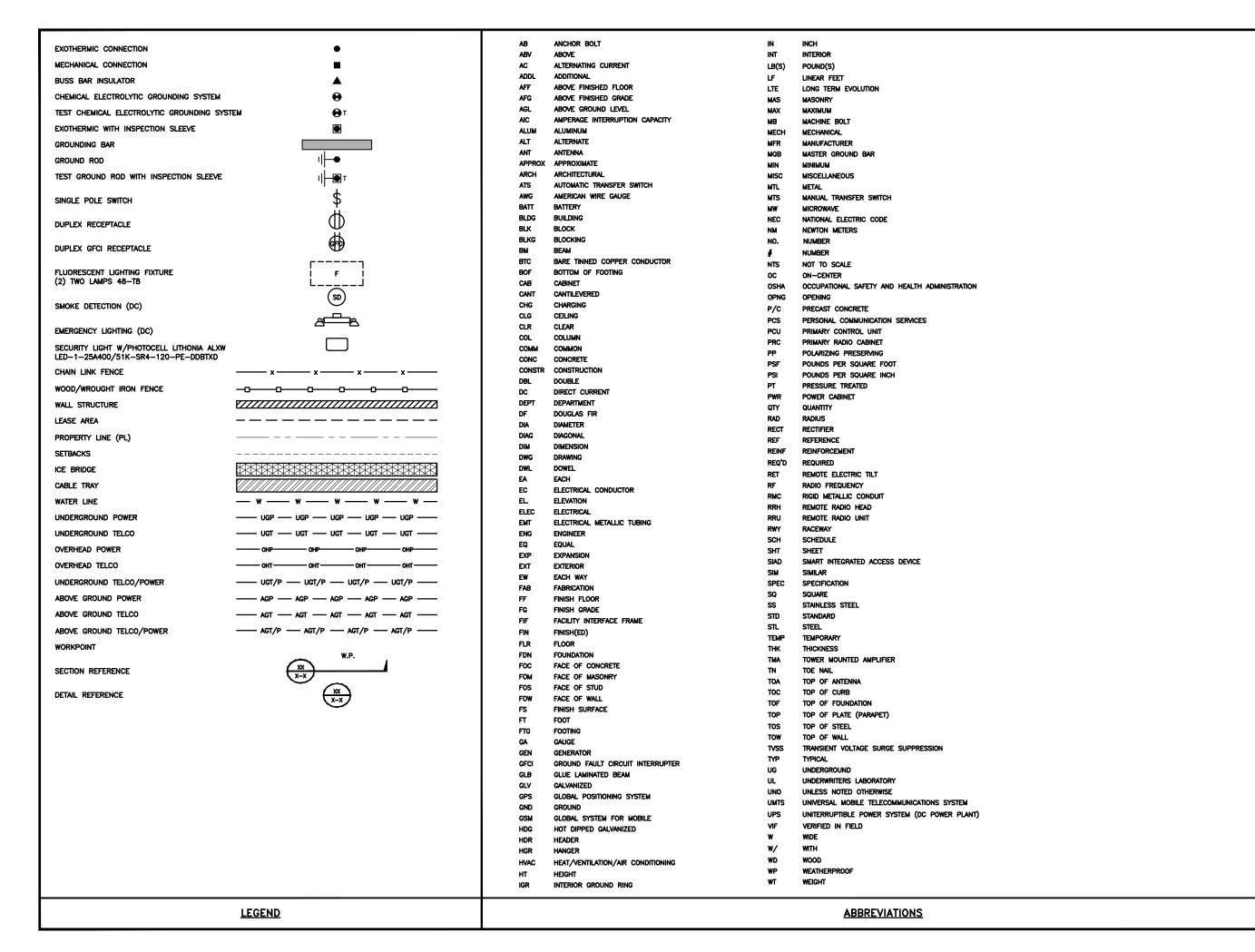








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SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

2021.0102.0000

#### 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 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.



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414240-13754334

DISH WIRELESS, LLC. PROJECT INFORMATION

NJJER01066B 48 RITCH AVE W GREENWICH, CT 06830

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

2021.0102.0000

#### 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.

- . 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 RIGILY 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



100 E. WOODFIELD ROAD, SUITE 500 SCHAUMBURG, ILLINOIS 60173 TEL: 847-908-8400 www.FullertonEngineering.com



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# CONSTRUCTION DOCUMENTS

	SUBMITTALS					
REV						
A	01/19/2022	ISSUED FOR REVIEW				
0	02/24/2022	ISSUED FOR CONSTRUCTION				
1	03/30/2022	ISSUED FOR CONSTRUCTION				
	A&E F	PROJECT NUMBER				

414240-13754334

DISH WIRELESS, LLC.
PROJECT INFORMATION

NJJER01066B 48 RITCH AVE W GREENWICH, CT 06830

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

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#### **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/O COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.



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RFDS REV #:

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A&E PROJECT NUMBER

414240-13754334

DISH WIRELESS, LLC. PROJECT INFORMATION

NJJER01066B 48 RITCH AVE W GREENWICH, CT 06830

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

2021.0102.0000



The Hororable Fred Camillo Greenwich Town Hall 101 Field Point Road Greenwich, CT 06830

> Re: Tower Share Application – Dish Wireless Site # 13754334 Dish Wireless Telecommunications Facility @ 48 Ritch Avenue West, Greenwich, CT 06830 AKA 36 Ritch Avenue West

Dear First Selectman Camillo:

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing eighty three (83) foot tall "monopine" disguised tower at 48 Ritch Avenue West, Greenwich, CT 06830 (Latitude: 41.00506388, Longitude: -73.64831111) and within the existing fenced compound on the above referenced property. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by 36 Ritch Avenue LLC. The tower was approved by the Connecticut Siting Council in Docket Number 414, dated July 14, 2011 (copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound to accommodate two (2) cabinets and related equipment, and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at forty five (45) feet as more particularly detailed and described on the enclosed Construction Drawings. No tower height increase or compound expansion are proposed.

This letter is intended to serve as the required notice to the chief elected official. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Jack Andrews

Zoning Manager, Centerline Communications 10130 Donleigh Drive

Columbia, MD 21046



Katie DeLuca Town Hall, 2nd floor 101 Field Point Road Greenwich, CT 06830

Re:

Tower Share Application – Dish Wireless Site # 13754334

Dish Wireless Telecommunications Facility @ 48 Ritch Avenue West, Greenwich, CT 06830

AKA 36 Ritch Avenue West

Dear Ms. Stephens:

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing eighty three (83) foot tall "monopine" disguised tower at 48 Ritch Avenue West, Greenwich, CT 06830 (Latitude: 41.00506388, Longitude: -73.64831111) and within the existing fenced compound on the above referenced property. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by 36 Ritch Avenue LLC. The tower was approved by the Connecticut Siting Council in Docket Number 414, dated July 14, 2011 (copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound to accommodate two (2) cabinets and related equipment, and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at forty five (45) feet as more particularly detailed and described on the enclosed Construction Drawings. No tower height increase, or compound expansion are proposed.

This letter is intended to serve as the required notice to the municipal planning agency. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Jack Andrews

Zoning Manager, Centerline Communications 10130 Donleigh Drive Columbia, MD 21046



Blake Paynter Project Manager, Site Development American Tower Corporation 10 Presidential Way Woburn, MA 01801

Re:

Tower Share Application – Dish Wireless Site # 13754334

Dish Wireless Telecommunications Facility @ 48 Ritch Avenue West, Greenwich, CT 06830

AKA 36 Ritch Avenue West

Dear Mr. Paynter:

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing eighty three (83) foot tall "monopine" disguised tower at 48 Ritch Avenue West, Greenwich, CT 06830 (Latitude: 41.00506388, Longitude: -73.64831111) and within the existing fenced compound on the above referenced property. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by 36 Ritch Avenue LLC. The tower was approved by the Connecticut Siting Council in Docket Number 414, dated July 14, 2011 (copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound to accommodate two (2) cabinets and related equipment, and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at forty five (45) feet as more particularly detailed and described on the enclosed Construction Drawings. No tower height increase, or compound expansion are proposed.

This letter is intended to serve as the required notice to the tower owner. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Zoning Manager, Centerline Communications 10130 Donleigh Drive Columbia, MD 21046



36 Ritch Ave LLC 36 Ritch Ave. Greenwich, CT 06381

Re: Tower Share Application – Dish Wireless Site # 13754334

Dish Wireless Telecommunications Facility @ 48 Ritch Avenue West, Greenwich, CT 06830

AKA 36 Ritch Avenue West

Dear Property Owner:

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing eighty three (83) foot tall "monopine" disguised tower at 48 Ritch Avenue West, Greenwich, CT 06830 (Latitude: 41.00506388, Longitude: -73.64831111) and within the existing fenced compound on the above referenced property. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by 36 Ritch Avenue LLC. The tower was approved by the Connecticut Siting Council in Docket Number 414, dated July 14, 2011 (copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound to accommodate two (2) cabinets and related equipment, and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at forty five (45) feet as more particularly detailed and described on the enclosed Construction Drawings. No tower height increase, or compound expansion are proposed.

This letter is intended to serve as the required notice to the property owners. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

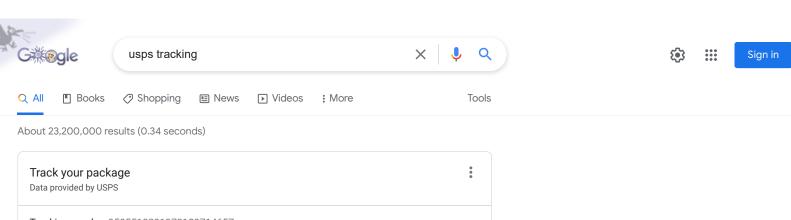
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Respectfully Submitted,

Jack Andrews

Zoning Manager, Centerline Communications

10130 Donleigh Drive Columbia, MD 21046



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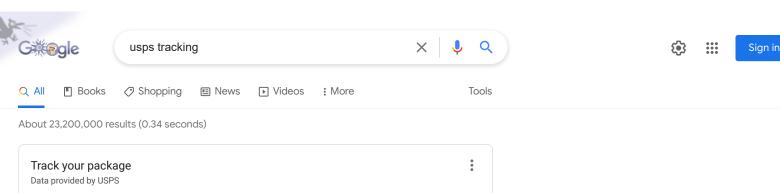
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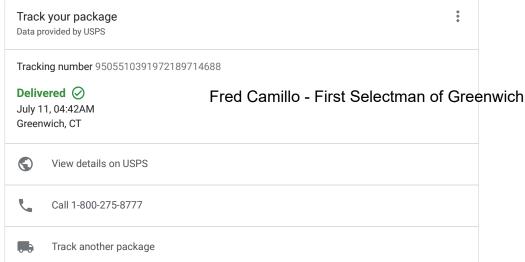
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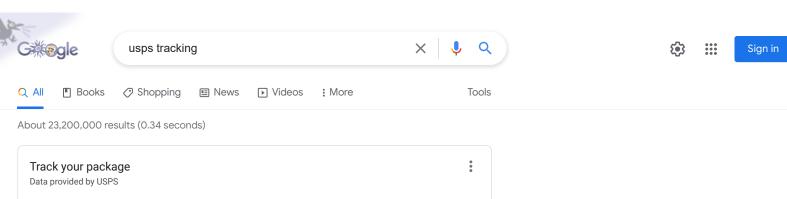
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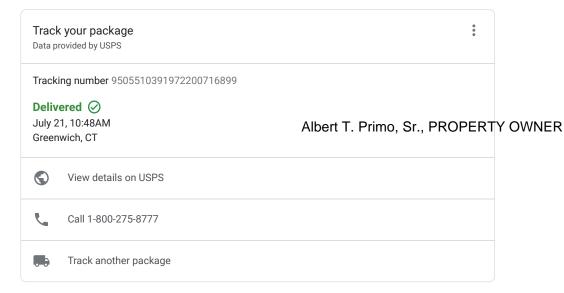
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