Northeast Site Solutions
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October 27, 2021

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

RE: Tower Share Application
109 Schofield Road, Willington CT 06279
Latitude: 41.9222611 N
Longitude: -72.293650 W
Site# BOBDL00147A_Dish_Willington_TS_Zoning

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 109 Schofield Road, Willington, Connecticut 06279

Dish Wireless LLC proposes to install three (3) 600/19005G MHz antenna and six (6) RRUs, at the 145-foot level of the existing 149 foot guyed tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, stamped October 22, 2021, Exhibit C. Also included is a structural analysis prepared by Aerosmith Engineering, dated April 21, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Connecticut Siting Council, Docket No. 429, on February 7, 2013. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to First Selectman Erika Wiecenski for the Town of Willington, Michael D'Amato, Zoning Agent, Planning & Zoning Commission for the Town of Willington, as well as the property owner Joseph J. Mottes Co. and Tarpon Towers II, LLC tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the tower is 149-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 145-feet.

2.The proposed modification will not result in the increase of the site boundary as depicted on the attached site plan.

3.The proposed modification will not increase the noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.

4.The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 1.42% as evidenced by Exhibit F.

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

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included in Exhibit D.

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

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 145-foot level of the existing 149-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

Sincerely,

Denise Sabo

Denise Sabo
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Attachments
Cc: First Selectman Erika Wiecenski
Town of Willington
40 Old Farms Road
Willington, CT 06279

Michael D'Amato, Zoning Agent
Town of Willington
40 Old Farms Road
Willington, CT 06279

Joseph J. Mottes Co
P.O. Box 535
Willington, CT 06270

Tarpon Tower II, LLC, Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 429 - New Cingular Wireless PCS, LLC (AT&T) application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at one of two sites: Willington Tax Assessor Parcel ID #M23-P62 Tolland Turnpike, Willington, Connecticut; or Willington Tax Assessor Parcel ID #M18-19 Old South Willington Road, Willington, Connecticut.	} } }	Connecticut Siting Council February 7, 2013

Findings of Fact

Introduction

1. New Cingular Wireless PCS, LLC (AT&T), in accordance with provisions of Connecticut General Statutes (CGS) § 16-50g et. seq., applied to the Connecticut Siting Council (Council) on July 24, 2012 for the construction, maintenance, and operation of a telecommunications facility at one of two proposed locations in the Town of Willington (Town), Connecticut. (AT&T 1, pp. 1)

2. AT&T's Candidate A site would be located off of Tolland Turnpike and would include a 160-foot monopole tower. AT&T's Candidate B site would be located off of Old South Willington Road and would include a 190-foot monopole tower. (AT&T 1, p. 2)

3. AT&T is a Delaware limited liability company with an office at 500 Enterprise Drive, Rocky Hill, Connecticut. AT&T is licensed by the Federal Communications Commission (FCC) to construct and operate a personal wireless services system. (AT&T 1, p. 3)

4. The party in this proceeding is the applicant. Robert and Marissa Golden are intervenors. (Transcript, October 11, 2012, 3:00 p.m. [Tr. 1], pp. 4, 9)

5. The purpose of the proposed facility would be to provide service along Tolland Turnpike (State Route 74), Willington Hill Road (Route 320) , Ruby Road, and surrounding areas in the Town of Willington. (AT&T 1, p. 1)

6. AT&T originally submitted a Certificate application for these two locations on May 19, 2011. AT&T subsequently withdrew the application without prejudice. (AT&T 1, p. 23)

7. Pursuant to CGS § 16-50*l*(b), AT&T published public notice of its intent to submit this application on July 17 and July 18, 2012 in the Willimantic Chronicle. (AT&T 1, p. 4, Attachment 7; AT&T 2 – Affidavit of Publication, dated September 5, 2012)

8. Pursuant to CGS § 16-50*l*(b), AT&T sent, via certified mail, notices of its intent to file an application with the Council to each person appearing of record as owner of property abutting the properties on which the two candidate sites are located. (AT&T 1, p. 4; Attachment 7)

9. Of 33 notice letters sent to abutting property owners, AT&T received 19 return receipts and confirmed the delivery of another nine letters through the U.S. Postal Service website's Track and Confirm tool. Five notice letters were re-sent via first class mail to the abutting property owners from whom receipts were not received. (AT&T 3, A1)

10. Pursuant to CGS § 16-50*l* (b), AT&T provided copies of its application to all federal, state and local officials and agencies listed therein. (AT&T 1, p. 4; Attachment 6)

11. AT&T posted signs at each of the two candidate sites on September 28, 2012. The signs gave the date of the public hearing and contact information for the Council. (AT&T 6 – Affidavit of Sign Posting)

12. The Council and its staff conducted an inspection of the proposed sites on October 11, 2012, beginning at 1:30 p.m. The applicant attempted to fly a balloon at each of the two sites to simulate the heights of the proposed towers but gusty wind conditions resulted in several lost balloons and made it difficult for the balloons to fly at the intended heights. (Tr. 1, pp. 32-33)

13. Pursuant to CGS § 16-50m, the Council, after giving due notice thereof, held a public hearing on October 11, 2012, beginning at 3:00 p.m. and continuing at 7:00 p.m. in the Old Senior Center Room in the Willington Town Office Building at 40 Old Farms Road in Willington, Connecticut. (Tr. 1, p. 3 ff.)

14. On November 29, 2012, the Council ruled that cross examination of late filed exhibits was not necessary and closed the evidentiary record. (Council Memorandum from Linda Roberts to Parties and Intervenors, dated November 30, 2012)

State Agency Comment

15. Pursuant to CGS § 16-50j(h), on August 13, 2012, the Council solicited comments on this application from the following state agencies: Department of Agriculture, Department of Energy & Environmental Protection (DEEP), Department of Public Health, Council on Environmental Quality, Public Utilities Regulatory Authority, Office of Policy and Management, Department of Economic and Community Development, the Department of Transportation (ConnDOT), and the Department of Emergency Management and Homeland Security. (CSC Hearing Package dated August 13, 2012)

16. ConnDOT submitted comments in which it stated that AT&T would need a Highway Encroachment Permit should it need to do any work within the right-of-way of Route 74 (Tolland Turnpike) for the Candidate A site. ConnDOT had no comment on the Candidate B site. (ConnDOT Comment Letter, August 24, 2012)

17. The Council did not receive comments from any of the other state agencies. (Record)

Municipal Consultation

18. AT&T first contacted the Town about its interest in the two candidate sites on October 4, 2010 when it submitted to the Town a Technical Report that provided details about the two sites. (AT&T 1, p. 22)

19. After some discussions with AT&T, the First Selectman and Town staff indicated a preference for the proposed Candidate A Site (off of Tolland Turnpike) because the 160-foot tower at this location appeared to minimally impact the Willington Green and this location was in an existing gravel mining operation near other commercial ventures. (AT&T 1, p. 23; Docket 418 Application, p. 8)

20. The Candidate B Site was less preferred by Town officials due to its proximity to residential homes and Old Willington Road, a local dirt road of rural nature. Town officials also noted that should Candidate B become the preferred site they would want AT&T to consider utilizing an alternate route across an existing driveway for access rather than building an entirely new gravel access drive. (AT&T 1, p. 23)

21. AT&T contacted the Town again on May 31, 2012 to indicate that it was going to re-apply for a facility at one of the two potential sites. (AT&T 1, p. 23; Attachment 6)

22. In response to AT&T's notice of the re-submittal of its application, the Town stated that no further consultation was necessary and added that it requested that the Council add an "ultimate height" stipulation that would limit the height of the tower at its preferred Candidate A site to the proposed 160 feet. (AT&T 1, Attachment 6 – Letter of Willington First Selectman dated July 10, 2012)

23. AT&T would offer space on its proposed tower for public safety users at no cost. (Transcript, October 11, 2012, 7:00 p.m. [Tr. 2], p. 27)

Public Need for Service

24. In 1996, the United States Congress recognized a nationwide need for high quality wireless telecommunications services, including cellular telephone service. Through the Federal Telecommunications Act of 1996, Congress seeks to promote competition, encourage technical innovations, and foster lower prices for telecommunications services. (Council Administrative Notice Item No. 4 - Telecommunications Act of 1996; AT&T 1, p. 5)

25. In issuing cellular licenses, the Federal government has preempted the determination of public need for cellular service by the states, and has established design standards to ensure technical integrity and nationwide compatibility among all systems. (Council Administrative Notice Item No. 4 - Telecommunications Act of 1996)

26. The Telecommunications Act of 1996 prohibits local and state bodies from discriminating among providers of functionally equivalent services. (Council Administrative Notice Item No. 4 - Telecommunications Act of 1996)

27. The Telecommunications Act of 1996 prohibits any state or local entity from regulating telecommunications towers on the basis of the environmental effects, which include human health effects, of radio frequency emissions to the extent that such towers and equipment comply with FCC's regulations concerning such emissions. This Act also blocks the Council from prohibiting or acting with the effect of prohibiting the provision of personal wireless service. (Council Administrative Notice Item No. 4 - Telecommunications Act of 1996)

28. The Wireless Communications and Public Safety Act of 1999 (911 Act) was enacted by Congress to promote and enhance public safety by making 9-1-1 the universal emergency assistance number, by furthering deployment of wireless 9-1-1 capabilities, and by encouraging construction and operation of seamless ubiquitous and reliable networks for wireless services. (Council Administrative Notice Item No. 6 - Wireless Communications and Public Safety Act of 1999, as amended)

29. AT&T would provide "Enhanced 911" services from the proposed facility as required by the 911 Act. (AT&T 1, p. 9)

30. The Tolland County Mutual Aid Fire Service, one of the largest regional 911 centers in the State of Connecticut, would be interested in locating antennas on the proposed tower, preferably at the Candidate A site. (Tr. 2, pp. 14-15)

31. Approximately 70 percent of the 40,000 911 calls received annually by the Tolland County Mutual Aid Fire Service are made from wireless devices. (Tr. 2, p. 15)

32. In December 2009, President Barack Obama recognized cell phone towers as critical infrastructure vital to the United States. The Department of Homeland Security, in collaboration with other Federal stakeholders, State, local, and tribal governments, and private sector partners, has developed the National Infrastructure Protection Plan (NIPP) to establish a framework for securing our resources and maintaining their resilience from all hazards during an event or emergency. (Council Administrative Notice Item No. 10 -Barack Obama Presidential Proclamation 8460, Critical Infrastructure Protection)

33. In 2009, the U.S. Congress directed the FCC to develop a national broadband plan to ensure that every American would have access to broadband capability whether by wire or wireless. As a result of this directive, the FCC produced a plan entitled, "Connecting America: The National Broadband Plan." The goal of this plan was to: Advance consumer welfare, civic participation, public safety and homeland security, community development, healthcare delivery, energy independence and efficiency, education, employee training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes. (AT&T 1, p. 6)

34. Pursuant to the tower sharing policy of the State of Connecticut under C.G.S. §16-50aa, if the Council finds that a request for shared use of a facility by a municipality or other person, firm, corporation or public agency is technically, legally, environmentally and economically feasible, and the Council finds that the request for shared use of a facility meets public safety concerns, the Council shall issue an order approving such shared use to avoid the unnecessary proliferation of towers in the state. (Conn. Gen. Stat. §16-50aa)

Existing and Proposed Wireless Coverage

35. Within the area to be covered from the proposed facility, AT&T is licensed to operate within the Cellular B-Band; the D-Block, E-Block, A3 Block and C1 Block at the 1900 MHz PCS frequencies; and the Lower C Block, the Lower E Block, and the Lower B Block within the 700 MHz frequency range. (AT&T 3, A9)

36. AT&T's design criteria for satisfactory coverage are -74 dBm for in-building coverage and -82 dBm for in-vehicle coverage. These criteria are the same for each of the different frequencies utilized by AT&T. (AT&T 3, A11)

37. AT&T's existing signal strengths in the area that would be covered from the proposed site(s) range from -82 dBm to less than -100 dBm. (AT&T 3, A12)

38. AT&T experiences a coverage gap of 2.17 miles on Route 74 (Tolland Turnpike) and a gap of 2.6 miles on Route 320 (Willington Hill Road). (AT&T 1, Attachment 2 – Radio Frequency Analysis Report, p. 2)

39. The distances that the proposed sites would allow AT&T to cover on its target roads are indicated in the following table.

Road	Distance Covered from Candidate A	Distance Covered from Candidate B
Route 74, Tolland Turnpike	1.46 miles	0.86 miles
Route 320, Willington Hill Road	1.93 miles	1.93 miles

(AT&T 3, A14)

40. The Candidate A site would provide unique incremental coverage on Tolland Turnpike of approximately 0.25 miles west of State Route 320 and 0.35 miles east of State Route 320. This incremental coverage would enable AT&T to provide continuous coverage on close to 2.5 miles along Tolland Turnpike. (AT&T 1, Attachment 1, p. 4)

41. AT&T could achieve a majority of its coverage objectives from Candidate B, but each of the remaining coverage gaps on Route 74 west of Route 320 and on Route 74 east of Route 320 would likely require another site to provide adequate coverage. (AT&T 1, Attachment 2 – Radio Frequency Analysis Report, p. 5)

42. The incremental coverage that would result from each site is listed in the table below.

Signal Level	Sq. Mi. covered from Candidate A	Sq. Mi. covered from Candidate B
In-building (-74 dBm)	7.49	6.22
In-vehicle (-82 dBm)	6.11	4.88

(AT&T 3, A15; Tr. 1, p. 30-31)

43. From either proposed facility, AT&T's antennas would hand off signals to the adjacent sites identified in the table below.

Site Location	Distance and Direction from Candidate A	Distance and Direction From Candidate B
5 Barbara Road, Tolland	3.6 miles, W	3.4 miles, W
1298 Storrs Road, Mansfield	4.3 miles, S	3.5 miles, S
426 River Road, Willington	1.5 miles, NW	2.0 miles, NW
1725 Stafford Road, Mansfield	3.4 miles, SW	2.6 miles, SW
99 Knowlton Hill Road, Ashford	4.0 miles, SE	3.8 miles, SE
20 Seles Road, Ashford	4.5 miles, E	4.7 miles, E
497 Middle Turnpike, Mansfield	3.5 miles, S	2.6 miles, S

(AT&T 7, Attachments 3 and 4)

44. The lowest feasible height at which AT&T could fulfill its coverage objectives from the Candidate A site is 157 feet above ground level. From the Candidate B site, it is 187 feet above ground level. (AT&T 3, A16)

45. The Candidate A site would provide better coverage and is AT&T's preferred site. (AT&T 1, p. 13)

46. The Candidate B site would allow AT&T to achieve a majority of its coverage objectives, but a remaining coverage gap on Tolland Turnpike east of Route 320 would likely require an additional site. (AT&T 1, Attachment 1, p. 5)

Site Selection

47. AT&T established a search ring for a site in this vicinity on December 17, 2008. The search ring was centered at 41º 51' 59.1" north latitude and 72º 16' 26.4" west longitude and was approximately one mile in diameter. (AT&T 3, A2)

48. There are 16 existing telecommunications towers and a church steeple located within approximately four miles of AT&T's search area. AT&T has antennas on eight of these facilities, but none of these facilities would be able to provide the service needed in the area that AT&T is seeking to cover. The existing facilities are listed in the following table.

Owner	Approx. Height	Location	AT&T at site	Distance from Candidate A	Direction from Candidate A
Willington Hill FD	75'	24 Old Farms Rd, Willington	No	.5 mi.	SE
Federated Churches of Willington	50'	236 Tolland Tpk, Willington	No	.2 mi.	E
State of CT	75'	Jared Sparks Road, Willington	No	.4 mi.	NE

(table continued on next page)

Owner	Approx. Height	Location	AT&T at site	Distance from Candidate A	Direction from Candidate A
Verizon	140’	Cosgrove Road, Willington	No	1.3 mi.	N
Willington FD	110’	126 River Road, Willington	Yes	1.5 mi.	NW
Cordless Data	170’	Turnpike Road, Willington	Yes	3.6 mi.	N
DPS	120’	Tolland Stage Rd, Tolland	No	2.9 mi.	W
American Tower	150’	5 Barbara Road, Tolland	Yes	3.6 mi.	W
Town of Mansfield	170’	1725 Stafford Rd, Mansfield	Yes	3.4 mi.	SW
AT&T	120’	497 Middle Tpk, Mansfield	Yes	3.5 mi.	S
UConn tower farm	80’ – 320’	North Eagleville Road, Mansfield	Yes	4.3 mi.	S
SBA	150’	Knowlton Hill Rd, Ashford	Yes	4.0 mi.	SE
Ray Baker	190’	20 Seles Road, Ashford	Yes	4.5 mi.	E
North Atlantic Towers	149’	155 Schofield Rd, Willington	No	3.5 mi.	NW

(AT&T 1, Attachment 2 – Existing Tower/Cell Site Listing)

49. AT&T investigated a total of nine properties as possible locations. These properties and the determinations of their suitability are listed below.

    a. Tolland Turnpike – This is the Candidate A property. It is approximately 47.7 acres.

    b. 180 Tolland Turnpike – This is a 128.5-acre parcel. A facility on this property would interfere with an ongoing gravel operation.

    c. Old South Willington Road – This is a 170-acre parcel, which is the site of the proposed Candidate B facility.

    d. 236 Tolland Turnpike – This is the Federated Churches of Willington property. The church steeple at this location was rejected by AT&T’s radio frequency engineers.

    e. 24 Old Farms Road – This is a .84-acre parcel owned by the Willington Hill Fire Department. There is an existing 75-foot tower, but it is too short for AT&T’s needs. There is limited ground space for a tower replacement, and there is less natural screening on this property. With a tower on this property, AT&T would require a second tower to achieve coverage comparable to the proposed facility sites.

    f. 74 Willington Hill Road - This is a 25.3-acre parcel that was rejected by AT&T’s radio frequency engineers.

g. 49 Hancock Road – This is a 49.85-acre parcel that was rejected by AT&T's radio frequency engineers.

h. Luchon Road – This is a 3.26-acre parcel owned by the Town of Willington. It was rejected by AT&T's radio frequency engineers. Furthermore, a facility on this property would likely impact on-site wetlands.

i. Jared Sparks Road – This is a 20-acre parcel owned by the Town of Willington. It was rejected by AT&T's radio frequency engineers.

(AT&T 1, Attachment 2)

50. In addition to the nine sites identified in the preceding finding of fact, AT&T also reviewed a site at 343 Daleville Road in Willington, which was the subject of the Council's Docket No. 400. AT&T's radio frequency engineers determined that the Daleville Road site would not satisfy the coverage needs it is seeking to satisfy from the proposed sites. (AT&T 4, A1)

51. Repeaters, microcell transmitters, distributed antenna systems (DAS) and other types of transmitting technologies would not be practicable or feasible means for AT&T's provision of service in the area surrounding the proposed facility. These technologies are better suited for specifically defined areas where new coverage is necessary, such as commercial buildings, shopping malls, and tunnels. (AT&T 1, p. 11)

Facility Description

Candidate A

52. The Candidate A site is located on a 47.7-acre parcel on Tolland Turnpike. It is owned by Lawrence Becker. There is an active gravel pit on the property. (AT&T 1, p. 13; Tr. 1, p. 17)

53. Mr. Becker also owns the Candidate Site B. He prefers that the facility be located at the Candidate A site. (Tr. 2, pp. 8-9)

54. The Candidate A property is zoned R-80, a single-family residential zoning district requiring a minimum lot size of 80,000 square feet. Wireless telecommunications facilities are permitted in R-80 zones with a Special Permit. (AT&T 1, p. 14; AT&T Bulk Filing – Zoning Regulations for the Town of Willington)

55. The Candidate A site would be located in the northerly portion of the Becker property. AT&T would lease a 100-foot by 100-foot parcel, within which it would erect a 160-foot monopole tower inside a 40-foot by 80-foot equipment compound enclosed by an eight-foot high chain link fence. AT&T's ground equipment would be installed inside a 12-foot by 20-foot equipment shelter (AT&T 1, p. 13; Attachment 3A – Drawings C01 and Compound Plan)

56. For backup power, AT&T would utilize a 50 kW diesel generator. AT&T would also have a battery backup in order avoid a "re-boot" condition during the generator start-up delay period. The typical run time of the generator before it requires refueling is 48 hours. (AT&T 3, A17; Tr. 1, p. 73)

57. The generator would be designed with secondary containment capable of retaining 110 percent of the oil fill. (Tr. 1, p. 32)

58. The proposed tower would be located at 41º 52' 32.4" North latitude and 72º 16' 9.7" West longitude. Its elevation at ground level would be approximately 768 feet above mean sea level. (AT&T 1, Attachment 3 – Site A: Site Evaluation Report)

59. AT&T's proposed tower would be designed in accordance with American National Standards Institute EIA/TIA-222-G "Structural Standards for Steel Antenna Towers and Antenna Support Structures" and the 2003 International Building Code with 2005 Connecticut Amendment. The foundation design would be based on existing soil conditions. The diameter of the tower would be approximately four and one-half feet at its base and two feet at its top. (AT&T 1, Attachment 3 – Candidate A Tolland Turnpike: Facilities and Equipment Specification)

60. AT&T would initially install nine multi-band antennas on a low profile platform at a centerline height of 157 feet above ground level (agl). (AT&T 1, Attachment 3 – Candidate A Tolland Turnpike: Facilities and Equipment Specification; Tr. 1, p. 14)

61. The tower would be designed to accommodate three other carriers, in addition to AT&T. (AT&T 1, Attachment 3 – Candidate A Tolland Turnpike: Facilities and Equipment Specification; Tr. 1, p. 28)

62. Development of the Candidate A site would require 111 cubic yards of cut and 151 cubic yards of fill. (AT&T 3, A5)

63. Vehicular access to the facility would be provided over an existing drive for a distance of 331 feet and then over a new gravel access drive that would be 581 feet long and 12 feet wide. (AT&T 1, Attachment 3 – Candidate A: General Facility Description)

64. Underground electric and telephone utilities would be extended to the site from an existing offsite utility pole along the edge of the access drive. (AT&T 1, Attachment 3 – Candidate A: General Facility Description; Attachment 3A – Drawing Sheet C02)

65. AT&T does not anticipate the need for blasting. If ledge is encountered, mechanical means would be the preferred method of removal. (AT&T 3, A6)

66. The setback radius of the proposed tower would be contained within the host property. (AT&T 1, Attachment 3A – Drawing Sheet C02)

67. There are six residences within 1,000 feet of the Candidate A site. (AT&T 1, Attachment 3A)

68. The nearest residence to the Candidate A site is located 445 feet to the northwest at 202 Tolland Turnpike. It is owned by Jean Paul Landry. (AT&T 1, Attachment 3A)

69. Land uses within one-quarter mile of the proposed facility include a sand and gravel mining operation, a cemetery, and commercial and residential properties. (AT&T 1, Attachment 3 – Site A: Site Evaluation Report)

70. The estimated cost of the proposed facility is:

Tower and foundation	$ 90,000
Site development costs	45,000
Utility installation	27,360
Facility installation	93,000
Antennas and equipment	250,000
Total cost	$505,360

(AT&T 1, p. 23)

Candidate B

71. The Candidate B site is located on a 170-acre parcel on Old South Willington Road. It is owned by Lawrence Becker. A portion of the gravel pit on the Candidate A property spills onto this property. (AT&T 1, p. 14; Tr. 1, p. 17)

72. The Candidate B property is zoned R-80, a single-family residential zoning district requiring a minimum lot size of 80,000 square feet. Wireless telecommunications facilities are permitted in R-80 zones with a Special Permit. (AT&T 1, p. 15; AT&T Bulk Filing – Zoning Regulations for the Town of Willington)

73. The Candidate B site would be located in the southerly portion of this property. AT&T would lease a 100-foot by 100-foot parcel, within which it would erect a 190-foot monopole tower inside a 75-foot by 75-foot equipment compound enclosed by an eight-foot high chain link fence. AT&T's ground equipment would be installed inside a 12-foot by 20-foot equipment shelter. (AT&T 1, p. 14; Attachment 4A – Drawings C01 and Compound Plan)

74. For backup power, AT&T would utilize a 50 kW diesel generator. AT&T would also have a battery backup in order avoid a "re-boot" condition during the generator start-up delay period. The typical run time of the generator before it requires refueling is 48 hours. (AT&T 3, A17; Tr. 1, p. 73)

75. The generator would be designed with secondary containment capable of retaining 110 percent of the oil fill. (Tr. 1, p. 32)

76. The proposed tower would be located at 41º 51' 48.3" North latitude and 72º 16' 28.3" West longitude. Its elevation at ground level would be approximately 682 feet above mean sea level. (AT&T 1, Attachment 4 – Site B: Site Evaluation Report)

77. AT&T's proposed tower would be designed in accordance with American National Standards Institute EIA/TIA-222-G "Structural Standards for Steel Antenna Towers and Antenna Support Structures" and the 2003 International Building Code with 2005 Connecticut Amendment. The foundation design would be based on existing soil conditions. The diameter of the tower would be approximately four and one-half feet at its base and two feet at its top. (AT&T 1, Attachment 4 – Candidate B: Facilities and Equipment Specification)

78. AT&T would initially install nine multi-band antennas on a low profile platform at a centerline height of 187 feet agl. (AT&T 1, Attachment 4 – Candidate B: Facilities and Equipment Specification; Attachment 4A – Drawing Sheet Tower Elevation; Tr. 1, p. 14)

79. The tower would be designed to accommodate three other carriers, in addition to AT&T. (AT&T 1, Attachment 4 – Candidate B: Facilities and Equipment Specification; Tr. 1, p. 28)

80. Development of the Candidate B site would require 590 cubic yards of cut and 286 cubic yards of fill. (AT&T 3, A5)

81. Vehicular access to the Candidate B site would be over a new gravel access drive from Old South Willington Road that would be 958 feet long and 12 feet wide. (AT&T 1, Attachment 4 – Candidate B: General Facility Description)

82. Underground electric and telephone utilities would be extended from a proposed riser utility pole to the Candidate B site within the easement for the access drive. (AT&T 1, Attachment 4 – Candidate B: General Facility Description; Attachment 4A – Drawing Sheets C01 and Compound Plan)

83. AT&T does not anticipate the need for blasting. If ledge is encountered, mechanical means would be the preferred method of removal. (AT&T 3, A6)

84. The setback radius of the proposed tower would be contained within the host property. (AT&T 1, Attachment 4A – Drawing Sheet C02B)

85. There are eight residences within 1,000 feet of the Candidate B site. (AT&T 1, Attachment 4A)

86. The nearest residence to the Candidate B site is located 550 feet to the southwest at 52 Old South Willington Road. It is owned by Robert and Marissa Golden. (AT&T 1, Attachment 4A)

87. Land uses within one-quarter mile of the proposed facility include a sand and gravel mining operation, and commercial and residential properties. (AT&T 1, Attachment 4 – Site B: Site Evaluation Report)

88. The estimated cost of the proposed facility is:

Tower and foundation	$ 90,000
Site development costs	47,900
Utility installation	28,740
Facility installation	93,000
Antennas and equipment	250,000
Total cost	$509,640

(AT&T 1, p. 23)

Environmental Considerations

Candidate A

89. The State Historic Preservation Office (SHPO) initially expressed concerns about potentially adverse effects on visual resources of a 160-foot tower at the Candidate A site. However, this conclusion was based on an understanding that a nearby historic cemetery was located on the south side of Tolland Turnpike instead of on the north side, where it is actually located. AT&T requested SHPO to reconsider its proposal given the proximity and visibility of other existing utility infrastructure in the vicinity of the cemetery. (AT&T 1, p. 17; Attachment 3 – Candidate A Tolland Turnpike: Environmental Assessment Statement, II. Scenic, Natural, Historic & Recreational Values)

90. SHPO issued a later opinion based on revisions AT&T made to its originally proposed Candidate A Site. This SHPO opinion concluded that AT&T's revised proposal would have no adverse effect if the project were designed to be as unobtrusive as possible and, if not in use for six months, the tower and all related equipment would be removed. (Council Administrative Notice #51: SHPO letter dated November 28, 2012)

91. After reviewing the viewshed analysis, the Willington Planning and Zoning Commission concluded that the tower at the Candidate A site would have a miniscule impact on the town's historic district. (AT&T 1, Attachment 6 – Memorandum from Willington Planning and Zoning Commission, dated November 10, 2010)

92. A facility at the Candidate A site would not impact any extant populations of Federal or State Endangered, Threatened or Special Concern Species. (AT&T 1, Attachment 3D – Letter from DEEP, dated July 11, 2012)

93. Both proposed sites are located within the Willimantic Reservoir Public Water Supply Watershed of the Mansfield Hollow Reservoir. AT&T would adopt measures recommended by the Drinking Water Section of the Connecticut Department of Public Health to protect this water supply area. (AT&T 1, Attachment 5, Public Water Supply Assessment)

94. A facility at the Candidate A site would comply with the recommended guidelines of the US Fish and Wildlife Service for minimizing the potential for telecommunications towers to impact bird species. (AT&T 3, A7)

95. The Candidate A site is not located within an Important Bird Area (IBA) as designated by the National Audubon Society. The nearest IBA is located approximately 5.2 miles to the east. (AT&T 3, A8)

96. There is an isolated forested wetland system on the property, the nearest point of which is located approximately 47 feet from the proposed access drive to the Candidate A site. (AT&T 1, p. 22; Attachment 5 – Wetland Investigation)

97. A drainage swale on the property is 33 feet at its nearest point from the proposed access road for Candidate A. (Tr. 1, p. 29)

98. AT&T would establish and maintain appropriate soil erosion and sedimentation control measures, in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control established by the Connecticut Council for Soil and Water Conservation, in cooperation with the Connecticut Department of Energy and Environmental Protection, throughout the construction period of the proposed facility. (AT&T 1, p. 22)

99. With erosion controls in place, the proposed facility at the Candidate A site should have no impact on any wetlands or watercourses. (NAT 1, p. 22; Attachment 5 – Wetland Investigation)

100. The development of the Candidate A site would require the clearing of 55 trees with a diameter at breast height of six inches or greater. (AT&T 3, A18)

101. The proposed facility would not constitute an obstruction or hazard to air navigation and, therefore, would not require any obstruction marking or lighting. (AT&T 1, pp. 18-19; Attachment 3C)

102. The cumulative worst-case maximum power density from the radio frequency emissions from the operation of AT&T's proposed antennas at the Candidate A site would be 5.2% of the standard for Maximum Permissible Exposure, as adopted by the FCC, at the base of the proposed tower. This calculation was based on methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997) that assumes all antennas would be pointed at the base of the tower and all channels would be operating simultaneously, which creates the highest possible power density levels. Under normal operation, the antennas would be oriented outward, directing radio frequency emissions away from the tower, thus resulting in significantly lower power density levels in areas around the tower. (AT&T 1, Attachment 3C – C Squared Systems RF Power Density Calculation)

Candidate B

103. According to the SHPO, the proposed facility at the Candidate B site would have no adverse effect. (AT&T 1, p. 17; Attachment 4D – Letter stamped by State Historic Preservation Office)

104. A facility at the Candidate B site would not impact any extant populations of Federal or State Endangered, Threatened or Special Concern Species. (AT&T 1, Attachment 4D – Letter from DEEP, dated July 11, 2012)

105. A facility at the Candidate B site would comply with the recommended guidelines of the US Fish and Wildlife Service for minimizing the potential for telecommunications towers to impact bird species. (AT&T 3, A7)

106. The Candidate B site is not located within an Important Bird Area (IBA) as designated by the National Audubon Society. The nearest IBA is located approximately 5.2 miles to the east. (AT&T 3, A8)

107. The access drive AT&T has proposed for the Candidate B site would pass approximately 100 feet from a wetland system. There is also a drainage culvert that is 79 feet at its nearest point to the access drive proposed for Candidate B. (AT&T 1, p. 22; Tr. 1, pp. 29-30)

108. AT&T would establish and maintain appropriate soil erosion and sedimentation control measures, in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control established by the Connecticut Council for Soil and Water Conservation, in cooperation with the Connecticut Department of Energy and Environmental Protection, throughout the construction period of the proposed facility. (AT&T 1, p. 22)

109. With erosion controls in place, the proposed facility at the Candidate B site should have no impact on any wetlands or watercourses. (NAT 1, p. 22; Attachment 5 – Wetland Investigation)

110. The development of the Candidate B site would require the clearing of 115 trees with a diameter at breast height of six inches or greater. (AT&T 1, Attachment 4A, Tree Inventory)

111. The proposed facility would not constitute an obstruction or hazard to air navigation and, therefore, would not require any obstruction marking or lighting. (AT&T 1, pp. 18-19; Attachment 4C)

112. The cumulative worst-case maximum power density from the radio frequency emissions from the operation of AT&T's proposed antennas at the Candidate B site would be 3.62% of the standard for Maximum Permissible Exposure, as adopted by the FCC, at the base of the proposed tower. This calculation was based on methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997) that assumes all antennas would be pointed at the base of the tower and all channels would be operating simultaneously, which creates the highest possible power density levels. Under normal operation, the antennas would be oriented outward, directing radio frequency emissions away from the tower, thus resulting in significantly lower power density levels in areas around the tower. (AT&T 1, Attachment 4C – C Squared Systems RF Power Density Calculation)

Visibility

Candidate A

113. The proposed 160-foot tower at the Candidate A site would be visible on a year-round basis from approximately 71.7 acres within a two-mile radius of the site. (AT&T 1, Attachment 3B – Visual Analysis Report)

114. From the Willington Historic District, the proposed 160-foot tower at the Candidate A site would appear to clip the treetops from the highest point on the town green and a larger portion of the tower would be visible through the trees on a seasonal basis. (Tr. 1, p. 16)

115. The proposed tower would be visible year round from Willington Hill Cemetery and Old West Cemetery. (AT&T 1, Attachment 3B – Visual Analysis Report)

116. The proposed tower would be visible on a seasonal basis from approximately 16.3 acres within a two-mile radius of the Candidate A site. (AT&T 1, Attachment 3B – Visual Analysis Report)

117. The table below lists the distances along which the proposed tower would be visible year-round from nearby streets and the number of residences within these stretches of roadway which would have year-round views of the tower.

Name of Street	Distance Visible	Number of residential properties with potential year round views
Glass Factory Road	1,150’	1
Willington Hill Road (State Route 320)	285’	0
Tolland Turnpike (State Route 74)	370’, 670’, 1,635’	10

(AT&T 1, Attachment 3B – Visual Analysis Report)

118. The table below lists the distances along which the proposed tower would be seasonally visible from nearby streets and the number of residences within these stretches of roadway that would have seasonal views of the tower.

Name of Street	Distance Visible	Number of residential properties with potential year-round views
Old Farms Road	1,500’	6
Jared Sparks Road	465’	0
Common Road	575’	0
Tolland Turnpike (State Route 74)	705’	0

(AT&T 1, Attachment 3B – Visual Analysis Report)

119. The proposed tower would be seasonally visible from the Willington Common Historic District, St. Jude Church and Rectory, and two town-designated historic properties on Old Farms Road. (AT&T 1, Attachment 3B – Visual Analysis Report)

120. The visibility of the proposed tower at Candidate A site from different vantage points in the surrounding vicinity is summarized in the following table. The vantage points listed are identified by their corresponding number in the Visual Analysis Report contained in Attachment 3B of AT&T’s application.

Location	Visibility	Approx. Portion of (160’) Tower Visible	Approx. Distance and Direction to Tower
1 – Willington Hill Cemetery	Year-round	35’	1,410 feet, SE
2 – Old West Cemetery	Year-round	20’	1,600 feet, SE
3 – Tolland Turnpike	Year-round	75’	1,525 feet, SE
4 – Tolland Turnpike	Year-round	105’	7,090 feet, E

(Table continued on next page)

Location	Visibility	Approx. Portion of (160') Tower Visible	Approx. Distance and Direction to Tower
5 – Tolland Turnpike	Year-round	80'	5,700 feet, E
6 – Koller Road	None	n/a	4,060 feet, E
7 – Glass Factory Road	Year-round	10'	6,990 feet, E
8 – Old Farms Road	Seasonal	30'	4,550 feet, NW
9 – Green of Willington Common Historic District	Seasonal	75'	1,510 feet, W
10 – Hiram Rider House (Willington Common Historic District)	Seasonal	10'	1,430 feet, W
11 – Daniel Glazier Tavern (Willington Common Historic District)	Seasonal	10'	1,030 feet, W
12 – Old Baptist Parsonage (Willington Common Historic District)	Seasonal	30'	1,365 feet, SW
13 – Old Congregational Church (Willington Common Historic District)	Seasonal	60'	1,550 feet, W
14 – Crossgrove Road	None	n/a	5,480 feet, SW

(AT&T 1, Attachment 3B – Visual Analysis Report)

Candidate B

121. The proposed 190-foot tower at the Candidate B site would be visible on a year-round basis from approximately 20 acres within a two-mile radius of the site. Most of this acreage occurs over open water on undeveloped land, part of a large wetland area south of the site, and open land located to the northeast. (AT&T 1, Attachment 4B – Visual Analysis Report)

122. Approximately six residential properties, within a two-mile radius of the site, would have at least partial year-round views of the tower at this location. Two of these properties are located along Route 320. One property is along Mirtl Road. One property is located along Luchon Road. One property is located along Glass Factory Road. One property is located along Lindsey Lane. (AT&T 1, Attachment 4B – Visual Analysis Report)

123. The proposed Candidate B tower would be visible on a seasonal basis from approximately 18 acres within a two-mile radius of its proposed location. (AT&T 1, Attachment 4B – Visual Analysis Report)

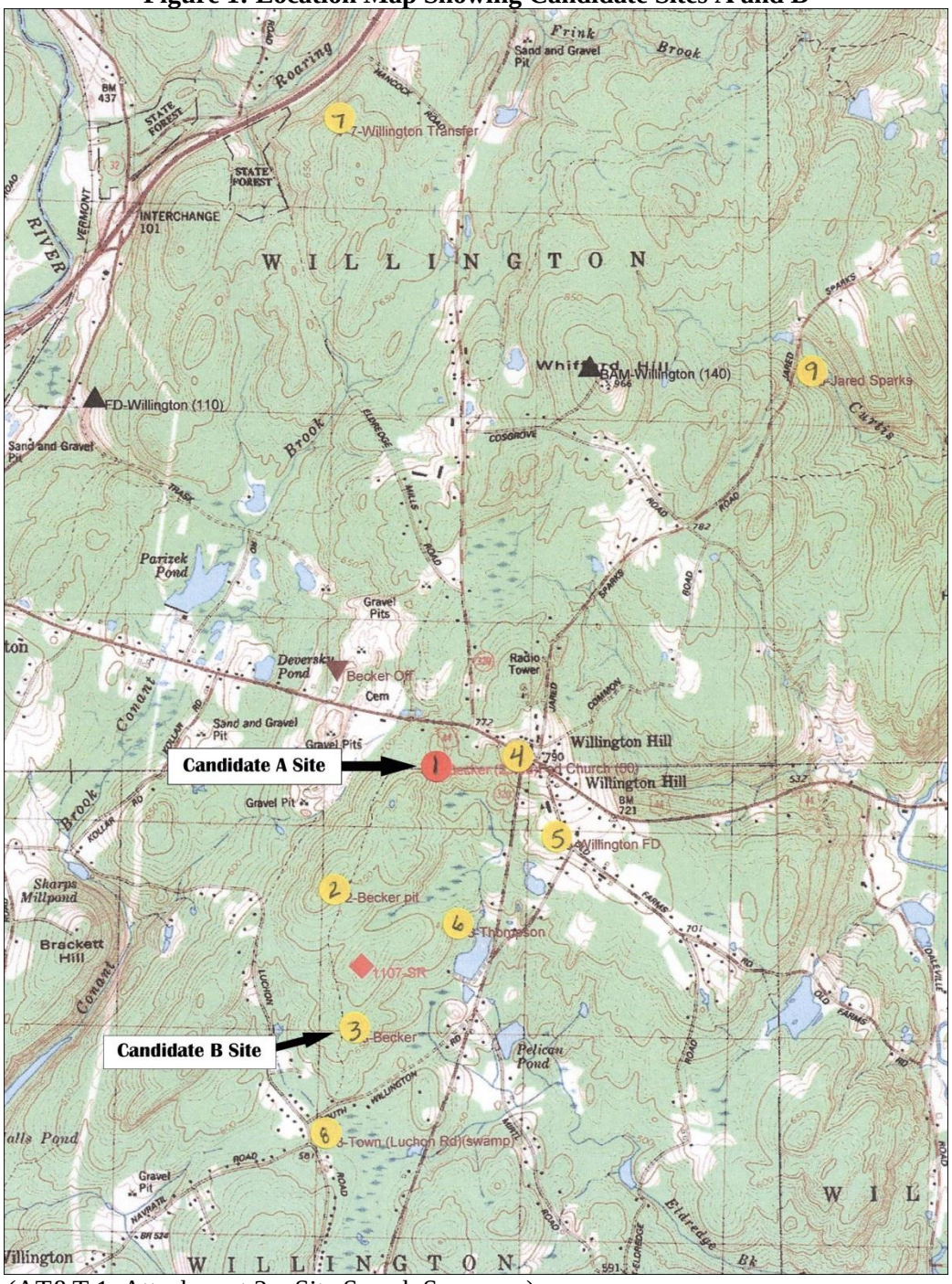
124. Approximately three residential properties within a two-mile radius would have seasonal views of the tower at the Candidate B site. One of these properties is located along Route 320; one property is located along Luchon Road; and one property is located off of Old South Willington Road. (AT&T 1, Attachment 4B – Visual Analysis Report)

125. The visibility of the proposed tower at Candidate B site from different vantage points in the surrounding vicinity is summarized in the following table. The vantage points listed are identified by their corresponding number in the Visual Analysis Report contained in Attachment 4B of AT&T's application.

Location	**Visibility**	**Approx. Portion of (190') Tower Visible**	**Approx. Distance and Direction to Tower**
1 – Intersection of Y Road and Route 320	Year-round	10'	2,640 feet, SW
2 – Tolland Turnpike	None	n/a	5,170 feet, S
3 – Willington Town Green	None	n/a	5,330 feet, S
4 – Willington Town Hall parking lot	None	n/a	4,750 feet, SW
5 – Willington Center School parking lot	None	n/a	4,700 feet, SW
6 – Lindsey Lane cul-de-sac	None	n/a	4,700 feet, NE
7 – #4 Lindsey Lane	Year-round	50'	1,850 feet, E
8 – 87 Luchon Road	None	n/a	1,530 feet, E
9 – Willington Woods Senior Housing – Old Farms Road	None	n/a	4,700 feet, SW
10 – Willington Hill Cemetery	None	n/a	5,540 feet, S

(AT&T 1, Attachment 4B – Visual Analysis Report)

Figure 1: Location Map Showing Candidate Sites A and B

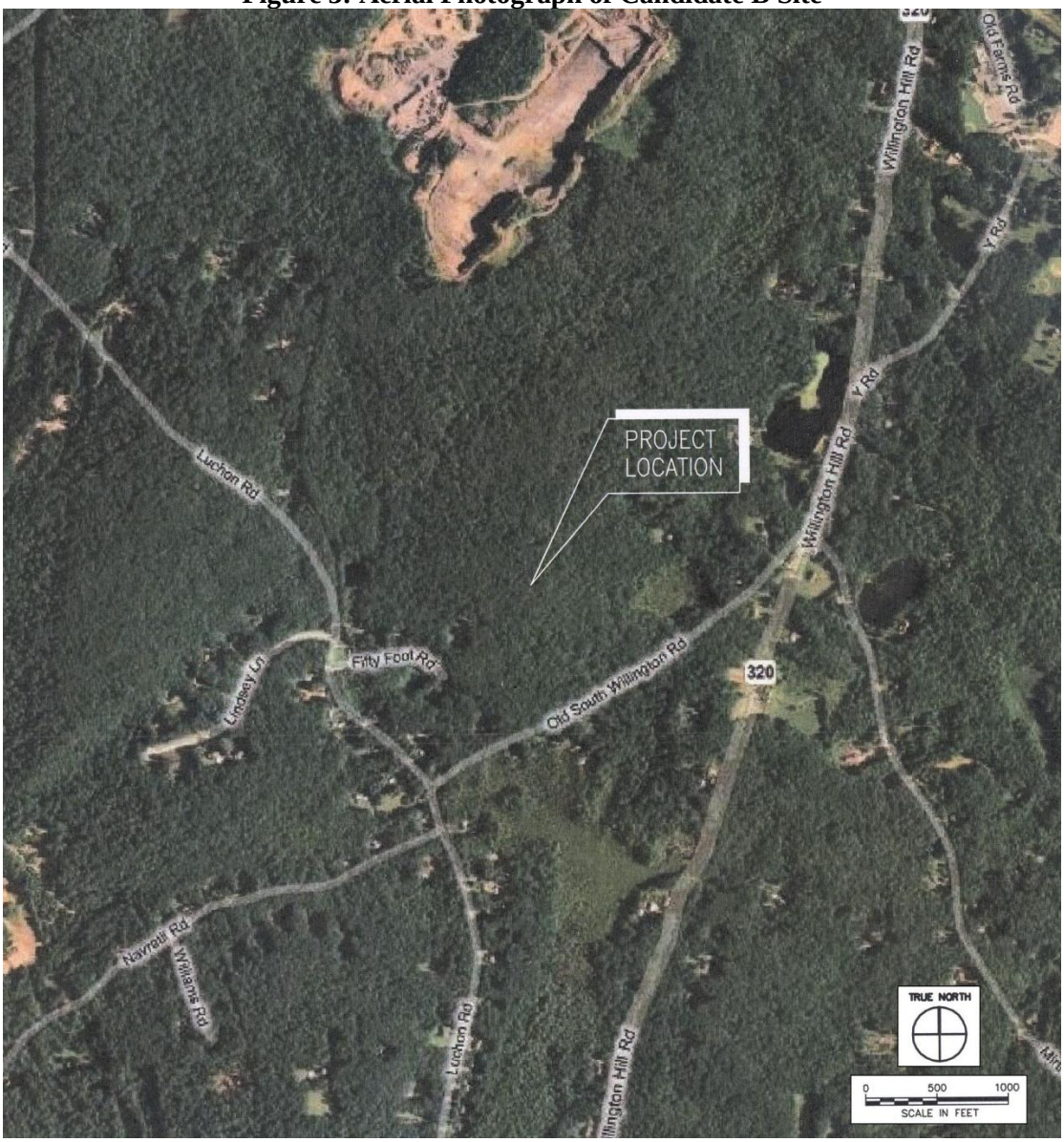


(AT&T 1, Attachment 2 – Site Search Summary)

Figure 2: Aerial Photograph of Candidate A Site

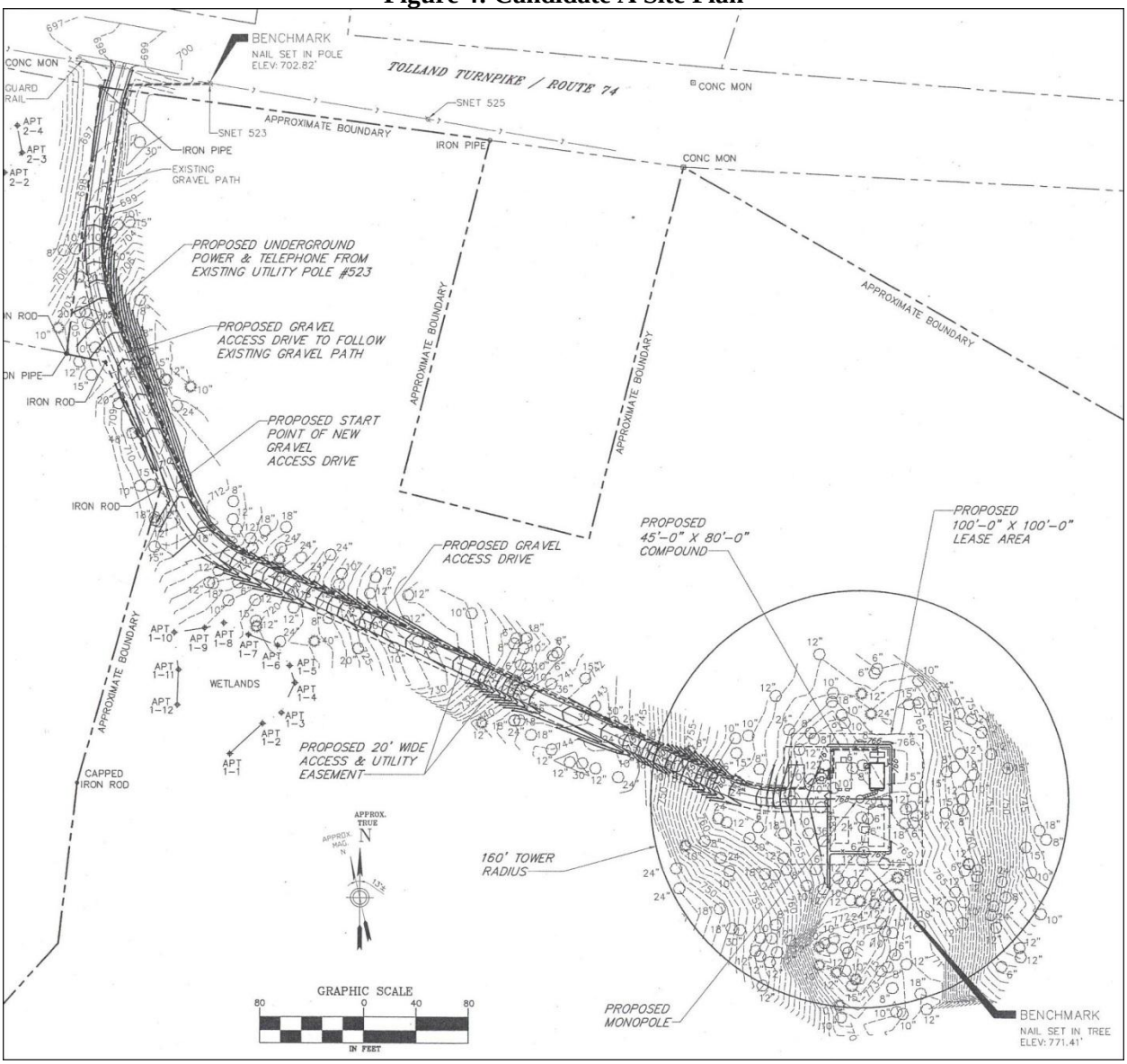
(AT&T 1, Attachment 3 – Candidate A: General Facility Description)

Figure 3: Aerial Photograph of Candidate B Site



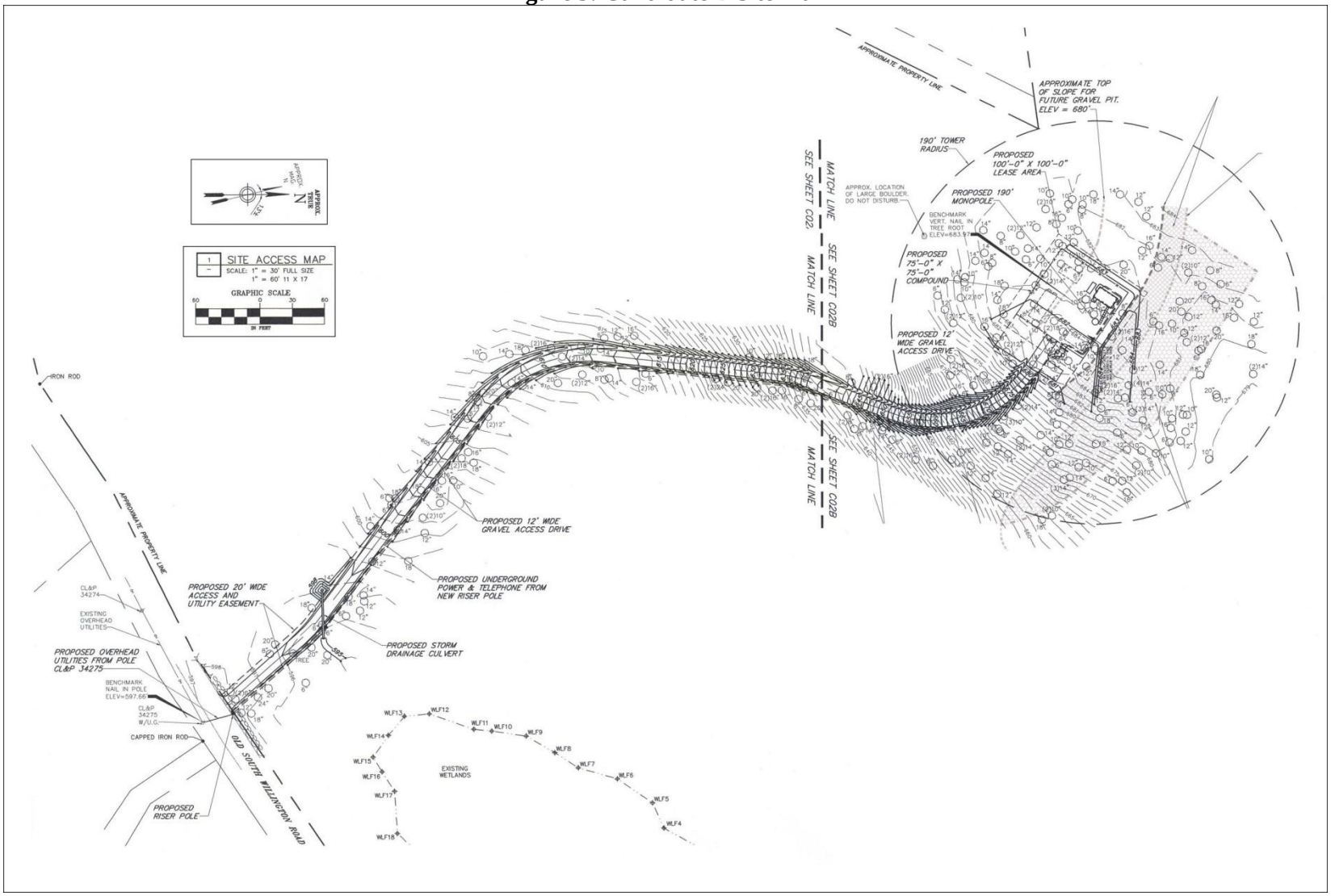
(AT&T 1, Attachment 4 – Candidate B: General Facility Description)

Figure 4: Candidate A Site Plan



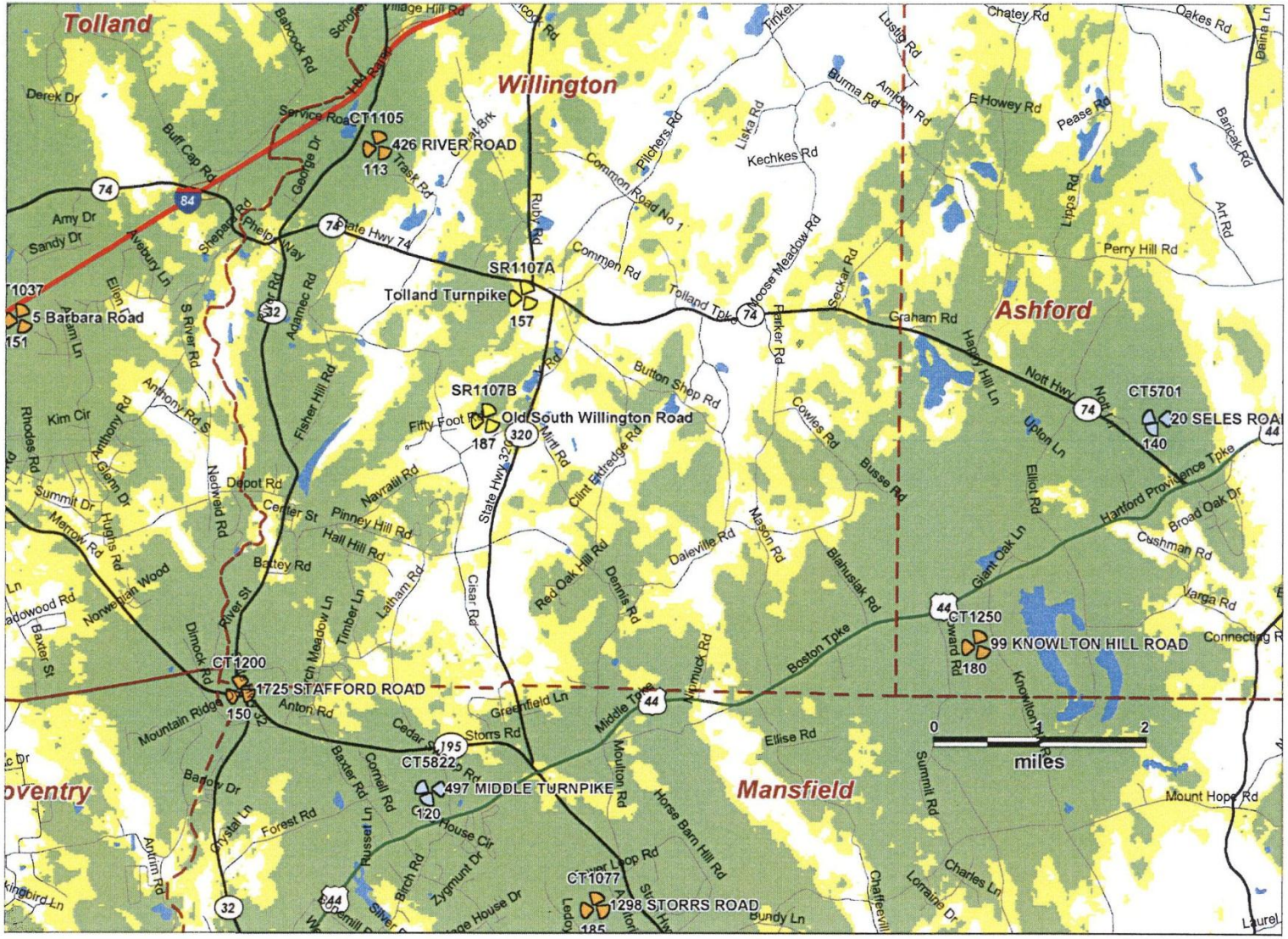
(AT&T 1, Attachment 3A, Sheet C02, Site Access Map)

Figure 5: Candidate B Site Plan



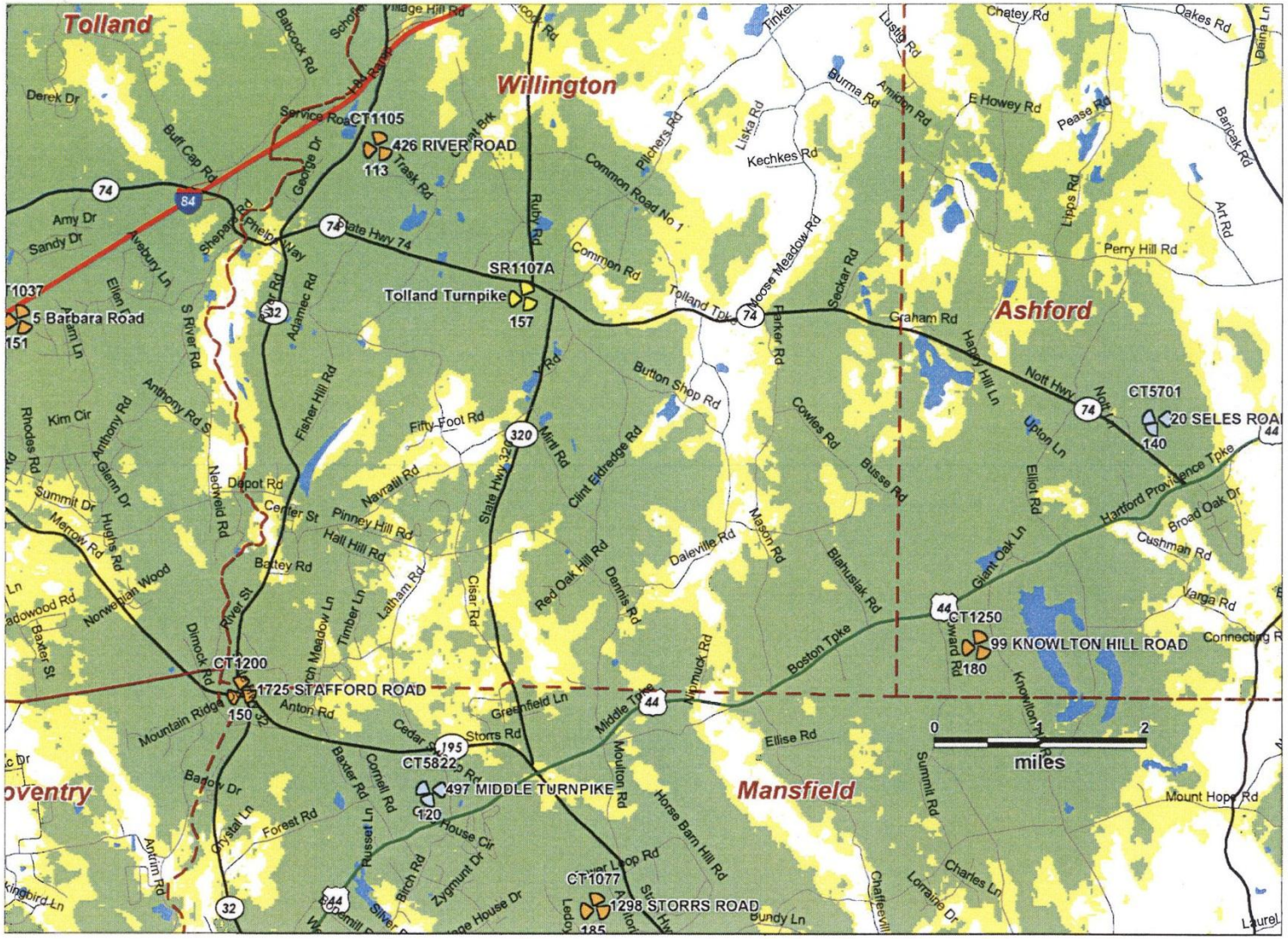
(AT&T 1, Attachment 4A – Sheets C02A and C02B)

Figure 6: AT&T Existing Coverage



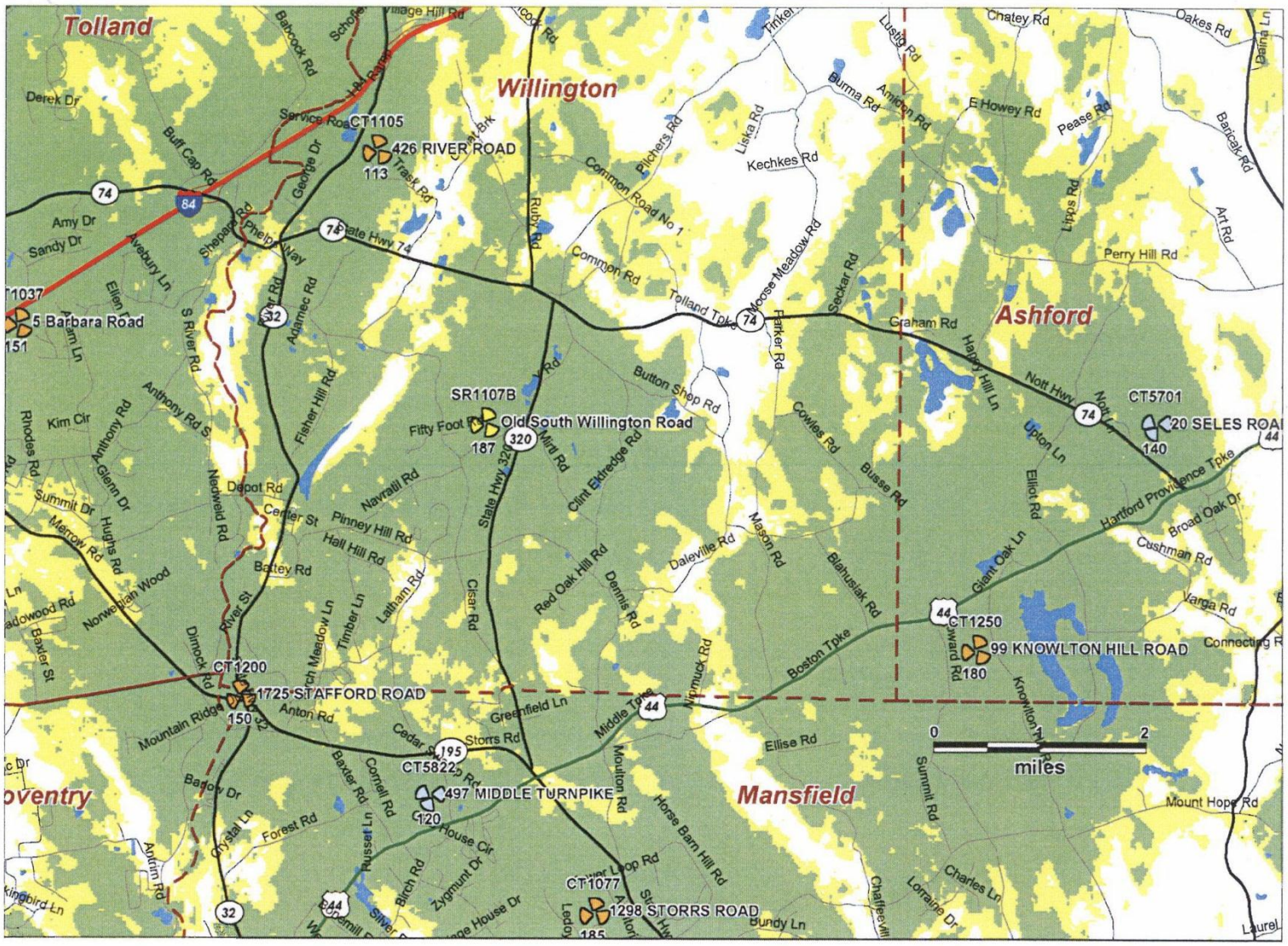
(AT&T 7, Updated RF Information – Radio Frequency Analysis Report, p. 10)

Figure 7: AT&T Coverage with Candidate A



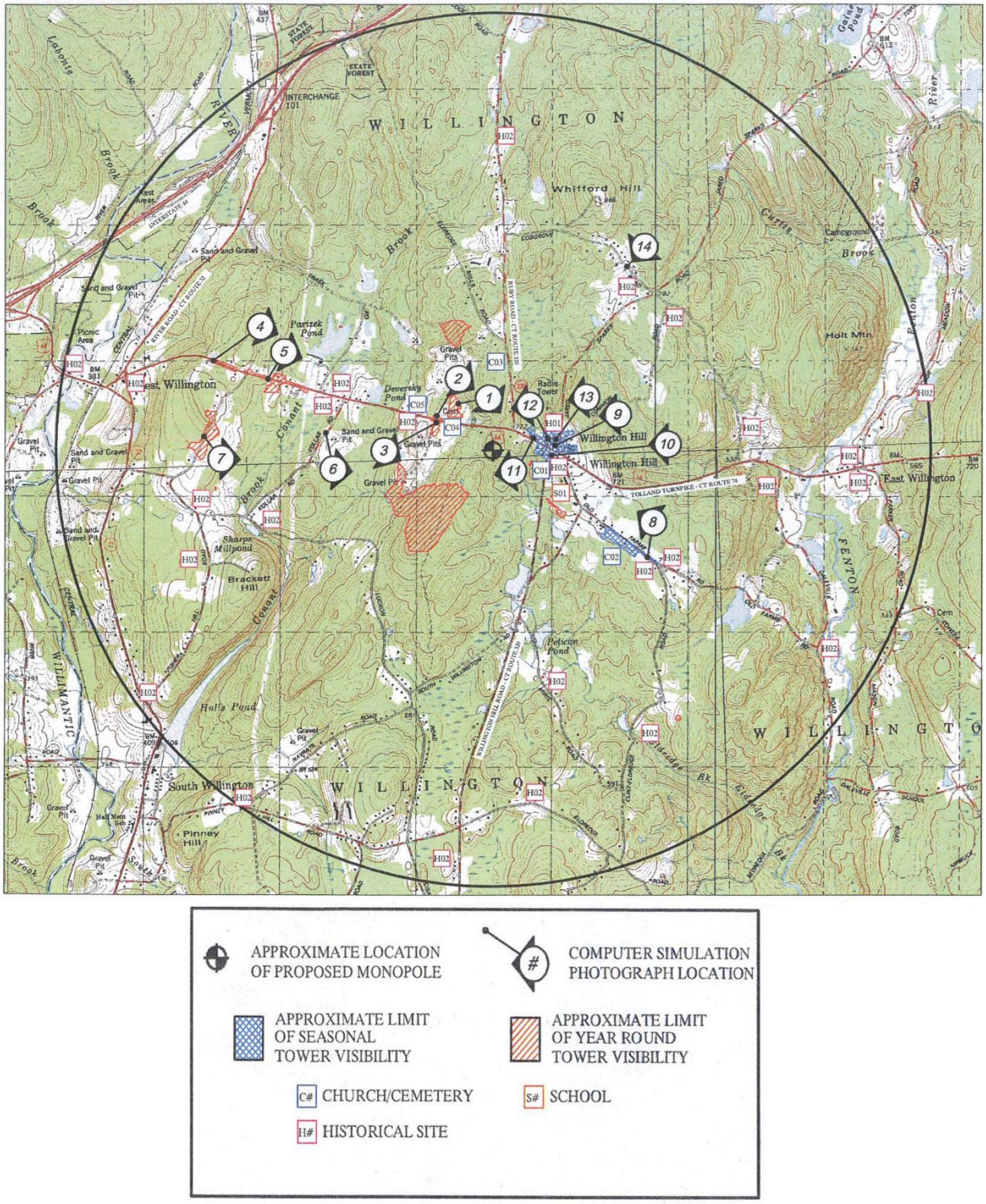
(AT&T 7, Updated RF Information – Radio Frequency Analysis Report, p. 11)

Figure 8: AT&T Coverage with Candidate B



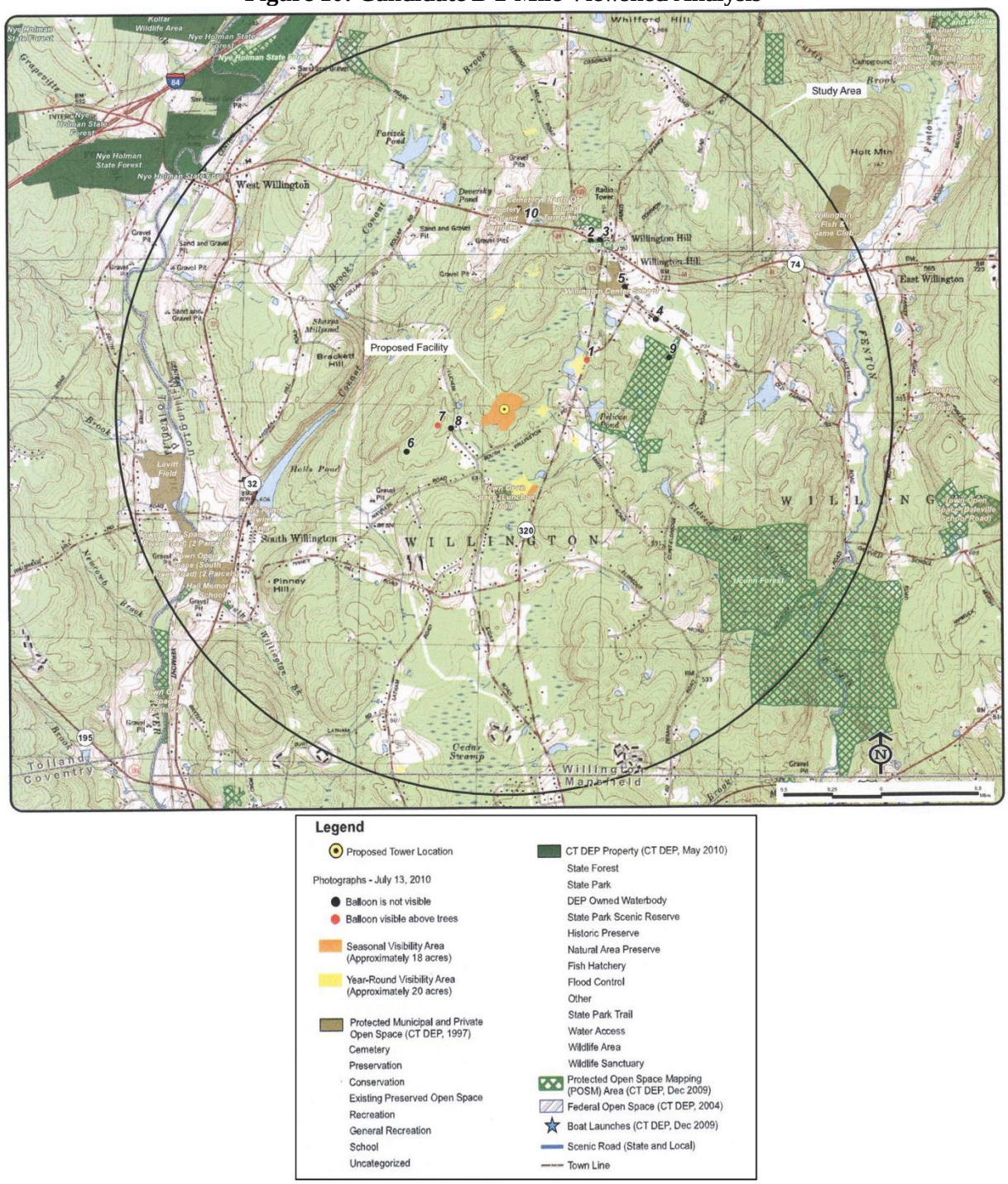
(AT&T 7, Updated RF Information – Radio Frequency Analysis Report, p. 12)

Figure 9: Candidate A 2-Mile Viewshed Analysis Map



(AT&T 1, Attachment 3B – Visual Analysis Report)

Figure 10: Candidate B 2-Mile Viewshed Analysis



(AT&T 1, Attachment 4B, Visual Resource Evaluation Report)

Exhibit B

Property Card

Please see attached Statutory Form Warranty Deed transferring ownership from Diane Becker to Tarpon Towers I, LLC dated September 13, 2021 and recorded on September 28, 2021, Book 228, Page 396-397

109 SCHOFIELD RD

Location	109 SCHOFIELD RD	**Mblu**	47/ / 009-0A/ /
Acct#	00192000	**Owner**	SCHOFIELD, CAROL E
Assessment	$214,260	**Appraisal**	$312,170
PID	4301	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$255,280	$56,890	$312,170
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$178,700	$35,560	$214,260

Owner of Record

Owner	SCHOFIELD, CAROL E	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	109 SCHOFIELD RD WILLINGTON, CT 06279	**Book & Page**	86/399
		Sale Date	08/15/2014

Building Information

Building 1 : Section 1

Year Built:	1987
Living Area:	2,499
Replacement Cost:	$290,092
Building Percent Good:	88
Replacement Cost Less Depreciation:	$255,280

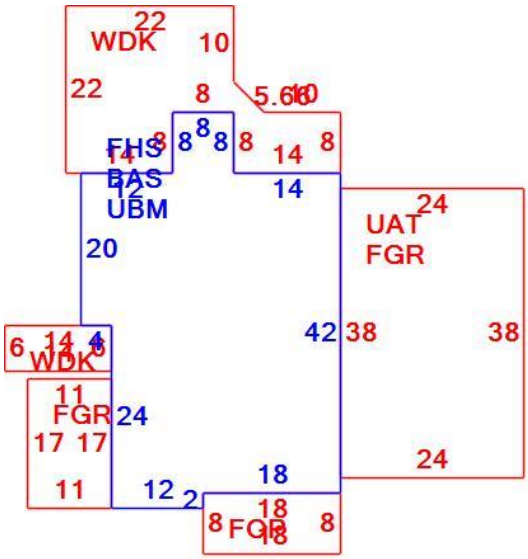
Building Attributes	
Field	**Description**
Style	Modern/Contemp
Model	Residential
Grade:	Good
Stories:	1.5
Occupancy	1

Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure:	Gable or Hip
Roof Cover	Asphalt
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Flr 1	Average
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	4 Bedrooms
Total Bthrms:	2
Total Half Baths:	0
Total Xtra Fixtrs:	2
Total Rooms:	6
Bath Style:	
Kitchen Style:	
Fireplaces	1
Bsmt Garage	None

Building Photo

(http://images.vgsi.com/photos/WillingtonCTPhotos//00\00\01\24.jpg)

Building Layout



(ParcelSketch.ashx?pid=4301&bid=4301)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,428	1,428
FHS	Half Story, Finished	1,428	1,071
FGR	Garage	1,099	0
FOP	Open Porch	144	0
UAT	Unfinished Attic	912	0
UBM	Unfinished Basement	1,428	0
WDK	Wood Deck	624	0
		7,063	2,499

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	1010
Description	Single Fam MDL-01
Zone	R80
Neighborhood	110
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	7.4
Frontage	
Depth	
Assessed Value	$35,560
Appraised Value	$56,890

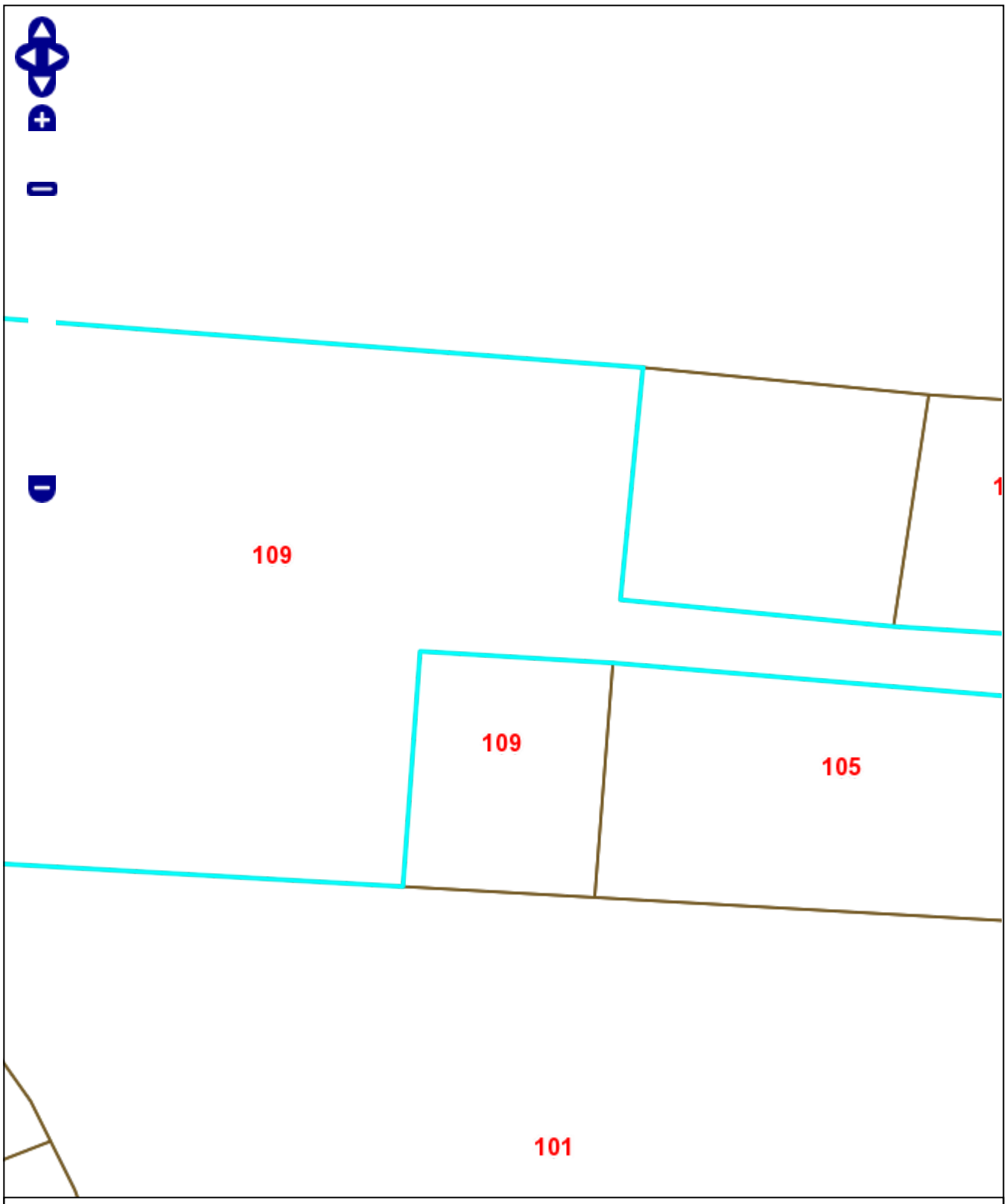
Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$255,280	$56,890	$312,170

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$178,700	$35,560	$214,260



Town of Willington, Connecticut

50 m
100 ft

N

MainStreetMaps
MainStreetGIS, LLC
www.mainstreetgis.com

Selected Parcel: 109 SCHOFIELD RD ID: 47/009-0A

Printed on 10/12/2021

Doc ID: 000769440002 Type: LAN
BK 228 PG 396-397

After Recording, return to:

AFTER RECORDING, PLEASE RETURN TO:
Fidelity National Title Group
7130 Glen Forest Dr., Ste. 300
Richmond, VA 23226
Attn: _____

STATUTORY FORM WARRANTY DEED

DIANE BECKER, of the Town of Willington, County of Tolland and State of Connecticut, for the consideration of **Two Hundred Fifty Thousand and no/100 Dollars ($250,000.00)**, grants to **TARPON TOWERS II, LLC**, a Florida limited liability company, with **WARRANTY COVENANTS**, a certain piece or parcel of land situated in the Town of Willington, County of Tolland and State of Connecticut, known as **109 Schofield Road**, and being more particularly described in **Schedule A** attached hereto and made a part hereof.

Said premises are conveyed subject to the following:

1. Real estate taxes on the List of October 1, 2018 and thereafter, which the Grantee herein assumes and agrees to pay as part consideration for this transfer.
2. Any and all provisions of any ordinance, municipal regulation, or public or private law.
3. Any declarations, restrictions, covenants, and easements of record.
4. Any state of facts an accurate survey or personal inspection of the property might reveal.

Being the same premises acquired by the grantor herein by virtue of a Warranty Deed from The Joseph J. Mottes Company, dated December 7, 2017 and recorded December 8, 2017 in Volume 216 at Page 1087 of the Willington Land Records.

Signed this 15th day of September, 2021.

Witnessed by:

Peter Jay Alter

Diane Becker

Jody L. Pearl

STATE OF CONNECTICUT)
) ss. Glastonbury September 15, 2021
COUNTY OF HARTFORD)

The foregoing instrument was acknowledged before me this 15th day of September, 2021, by Diane Becker, as her free act and deed.

CONVEYANCE TAX RECEIVED
TOWN $ 625.00 STATE $ _____
ROBIN CAMPBELL
TOWN CLERK OF WILLINGTON

Peter Jay Alter
Commissioner of the Superior Court

M684539

SCHEDULE A
Property Description

A certain piece or parcel of land situated in the Town of Willington, County of Tolland and State of Connecticut, bounded and described as follows, to wit:

BEGINNING at an iron pin at the Northeast corner of the premises herein described, said point being the Northwest corner of premises now or formerly, of Edward R. and Marian N. Dell, and situated in the Southerly line of a 50 foot right of way; thence N. 70° 09'10" W. One Hundred Eighty-nine and 20/100 (189.20) feet in the Southerly line of an extension of said right of way, to an iron pin; thence S. 19° 50'50" W. Two Hundred Thirty-one and 11/100 (231.11) feet along other land of George L. Schofield, Jr. and Rose Schofield to an iron pin at land now or formerly of Stuart S. Schofield; thence S. 70° 42' E. One Hundred Eighty-nine and 21/100 (189.21) feet along land now or formerly of said Stuart S. Schofield to an iron pin; thence N. 19° 50' 50" E. Two Hundred Twenty-nine and 30/100 (229.30) feet along land of said Dells to an iron pin which is point and place of beginning.

TOGETHER WITH the use of a right of way fifty (50) feet wide extending from the Westerly side of Schofield Road to the Westerly boundary of the herein conveyed land.

AND BEING the same property conveyed to The Joseph J. Mottes Company from George L. Schofield, Jr. and Rose Schofield by Warranty Deed dated September 16, 1968 and recorded October 05, 1968 in Deed Book 49, Page 192; AND FURTHER CONVEYED to Diane Becker from The Joseph J. Mottes Company by Quit Claim Deed dated December 07, 2017 and recorded December 08, 2017 in Deed Book 216, Page 1087.

Exhibit C

Construction Drawings

DISH WIRELESS, LLC. SITE ID:

BOBDL00147A

DISH WIRELESS, LLC. SITE ADDRESS:

109 SCHOFIELD ROAD
WILLINGTON, CT 06279

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

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

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

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	TARPON TOWER
ADDRESS:	109 SCHOFIELD ROAD WILLINGTON, CT 06279
TOWER TYPE:	GUYED TOWER
TOWER CO SITE ID:	TBD
TOWER APP NUMBER:	N/A
COUNTY:	TOLLAND
LATITUDE (NAD 83):	41° 55' 20.14" N 41.922261 N
LONGITUDE (NAD 83):	-72° 17' 37.14" W -72.293650 W
ZONING JURISDICTION:	CITY OF TOLLAND
ZONING DISTRICT:	R80
PARCEL NUMBER:	4301
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

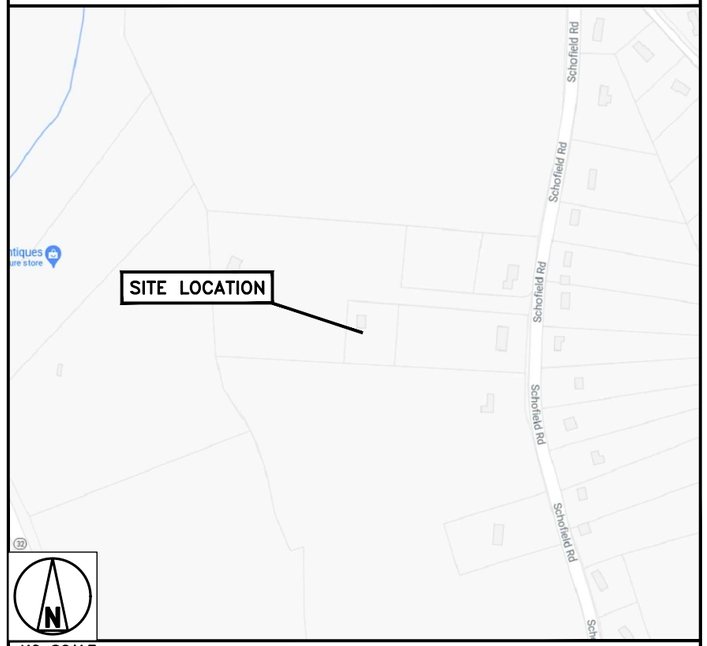
APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	TARPON TOWER 905 E MARTIN LUTHER KING JR DR, TARPON SPRINGS, FL 34689
SITE DESIGNER:	INFINIGY 1033 WATERVLIET SHAKER RD ALBANY, NY 12205 (518) 690-0790
SITE ACQUISITION:	TIMOTHY SLOAN (303) 706-4606
CONSTRUCTION MANAGER:	JAVIER SOTO (617) 839-6514
RF ENGINEER:	BOSSENER CHARLES (917) 567-9837

DIRECTIONS

DIRECTIONS FROM SIMSBURY AIRPORT:

DEPART AND HEAD TOWARD WOLCOTT RD, TURN RIGHT ONTO WOLCOTT RD, BEAR RIGHT ONTO FLOYDVILLE RD, BEAR RIGHT ONTO CT-189 / HARTFORD AVE, TAKE THE RAMP ON THE RIGHT FOR CT-187 SOUTH AND HEAD TOWARD BLOOMFIELD / HARTFORD, CONTINUE ON DAY HILL RD, TAKE THE RAMP ON THE RIGHT FOR I-91 SOUTH AND HEAD TOWARD HARTFORD, AT EXIT 35A, HEAD RIGHT ON THE RAMP FOR I-291 TOWARD MANCHESTER, TAKE THE RAMP ON THE LEFT FOR I-84 EAST AND HEAD TOWARD BOSTON, AT EXIT 70, HEAD RIGHT ON THE RAMP FOR CT-32 TOWARD STAFFORD SPRINGS, TURN LEFT ONTO CT-32 / RIVER RD TOWARD STAFFORD SPRINGS, TURN RIGHT ONTO SCHOFIELD RD, ARRIVE AT 109 SCHOFIELD ROAD WILLINGTON, CT 06279

VICINITY MAP



NO SCALE

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/22/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/24/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

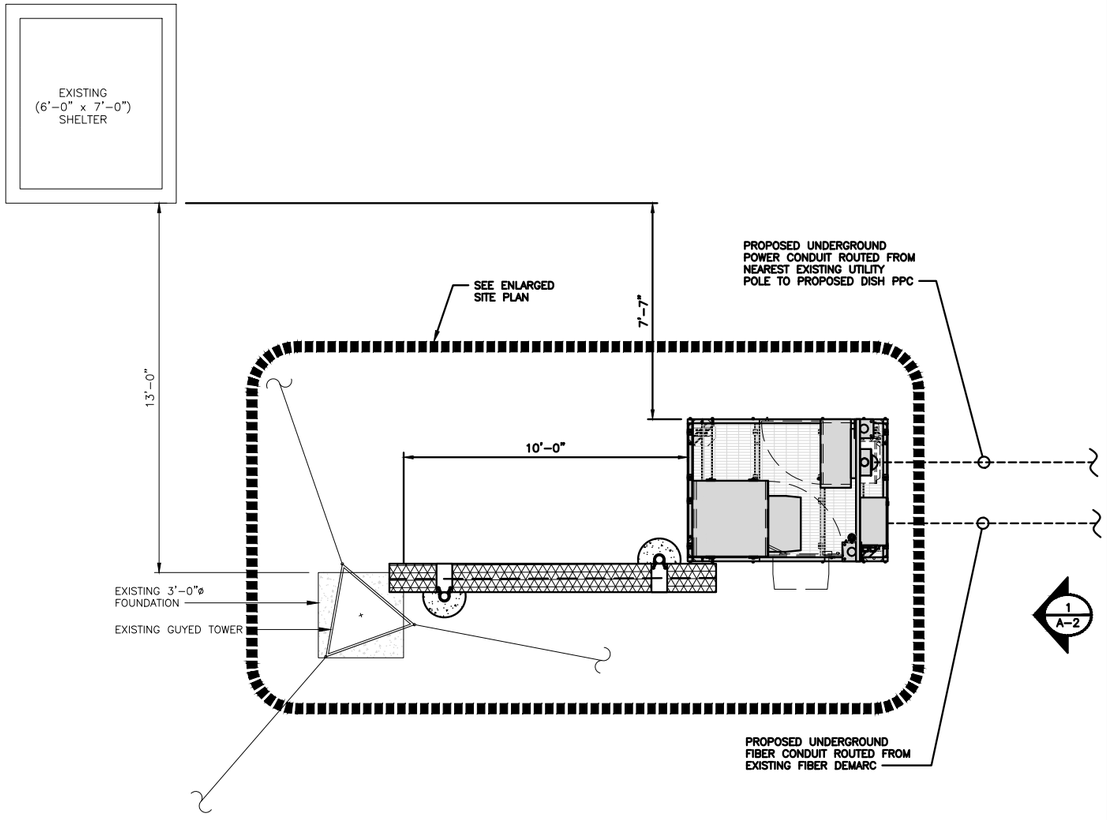
109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



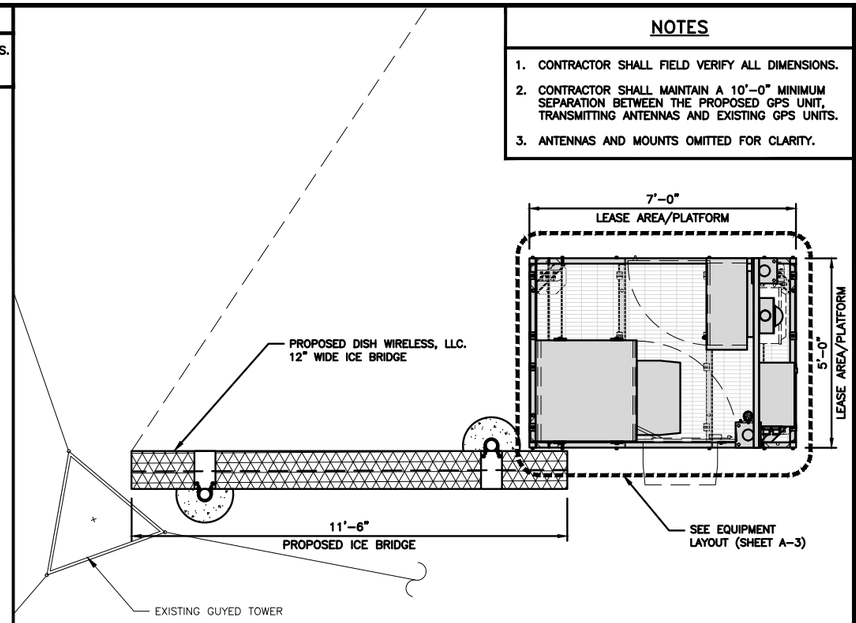
COMPOUND PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

1

NOTES

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



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5'
1/2"=1'-0"

2

SITE PLAN

60' 30' 0 60' 120'
1"=60'

3

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2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

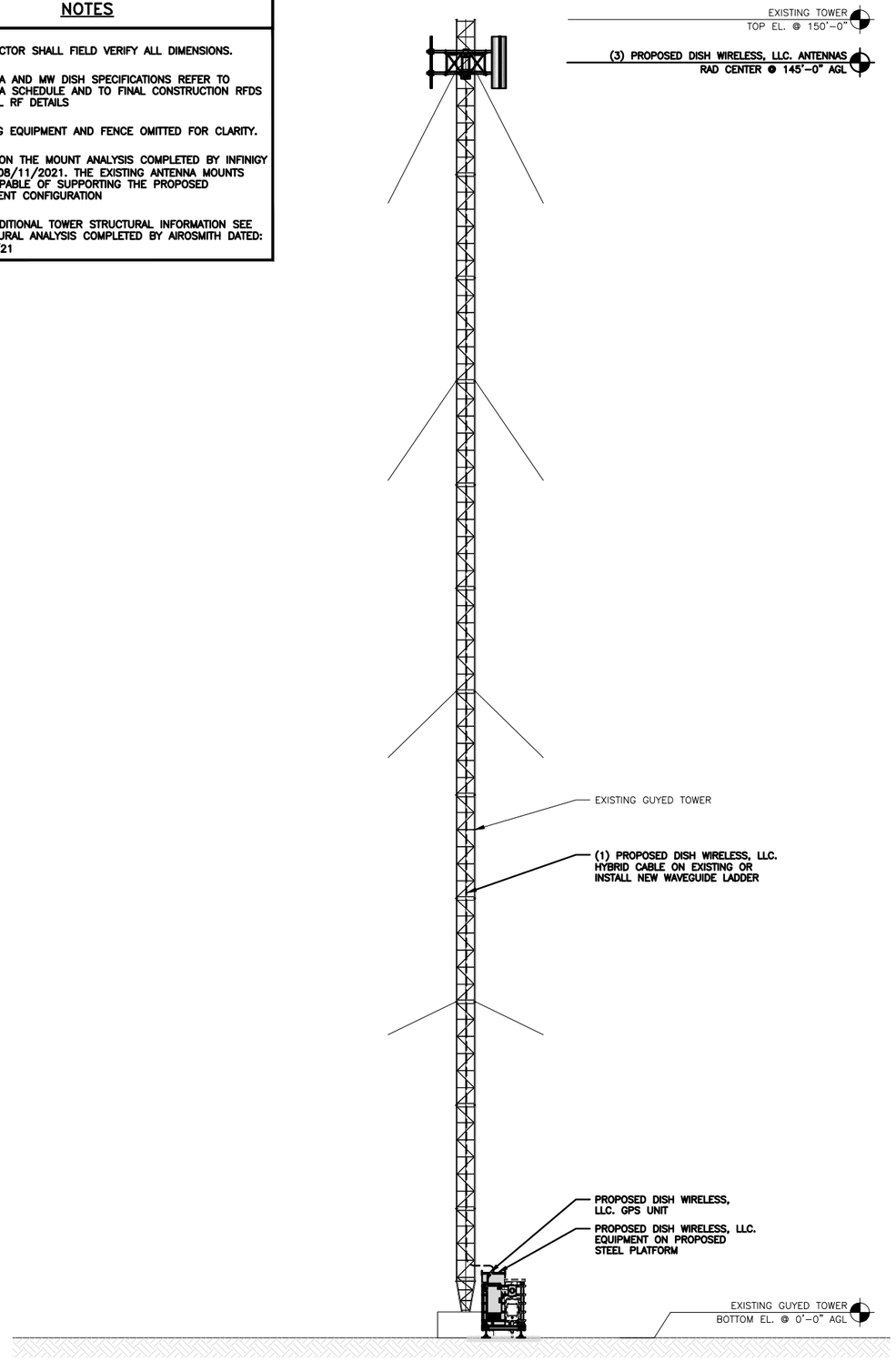
109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

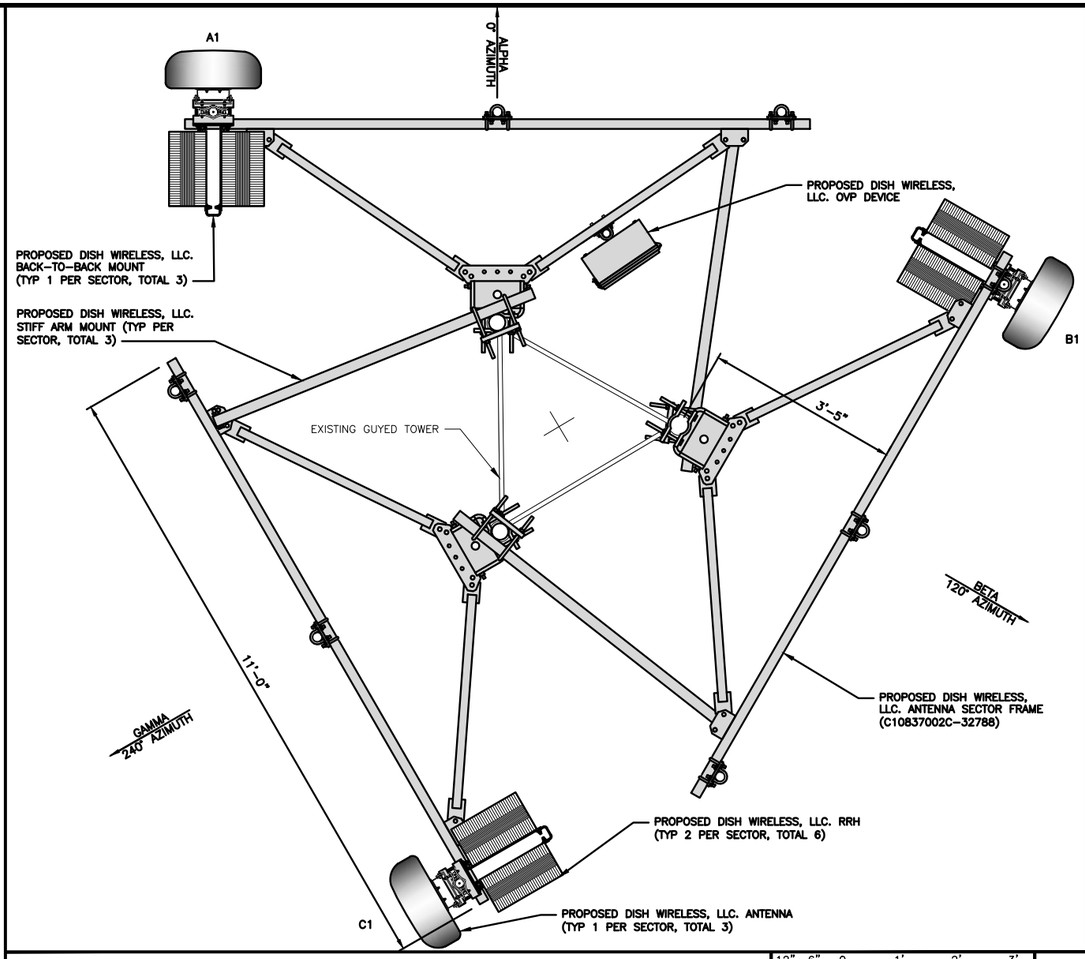
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. BASED ON THE MOUNT ANALYSIS COMPLETED BY INFINIGY DATED 08/11/2021. THE EXISTING ANTENNA MOUNTS ARE CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION
5. FOR ADDITIONAL TOWER STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY AIROSMITH DATED: 04/21/21



PROPOSED EAST ELEVATION

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

1



ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
3/4"=1'-0"

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUITH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	0°	145'-0"	(1) HIGH-CAPACITY HYBRID CABLE (165' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	120°	145'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	240°	145'-0"	

NOTES

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

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

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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10/22/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: N/A

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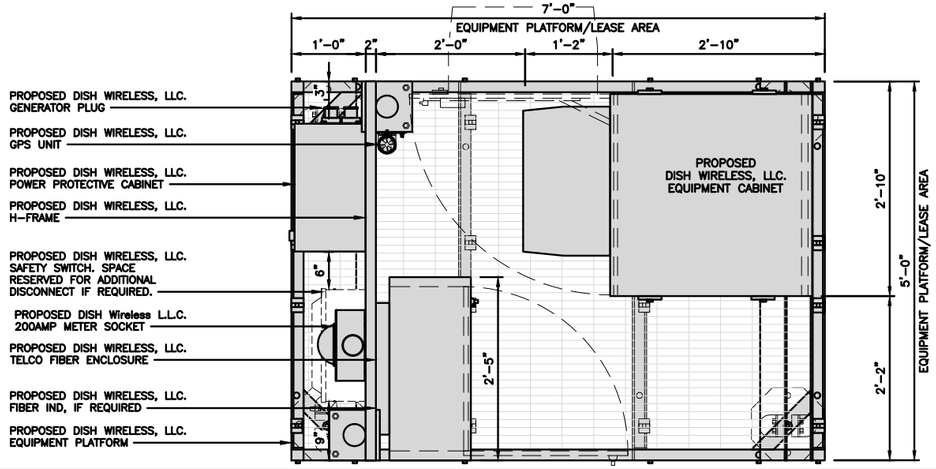
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2

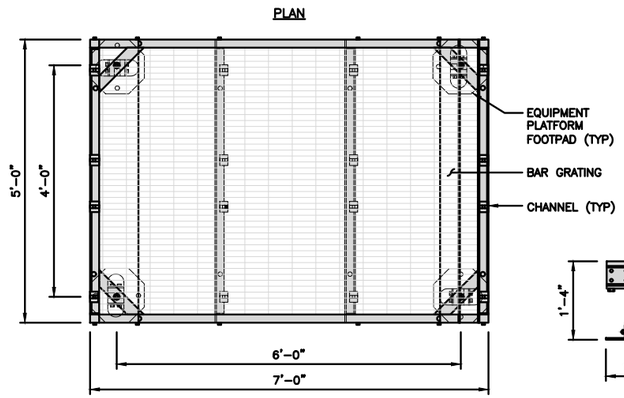


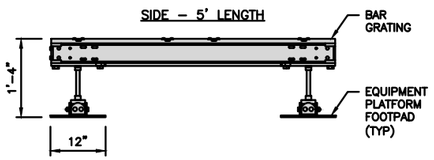
PLATFORM EQUIPMENT PLAN

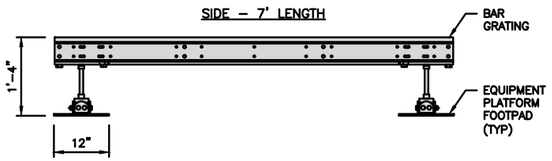
12" 9" 6" 3" 0 1' 2"
1"=1'-0"

1

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





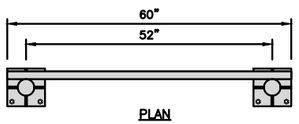


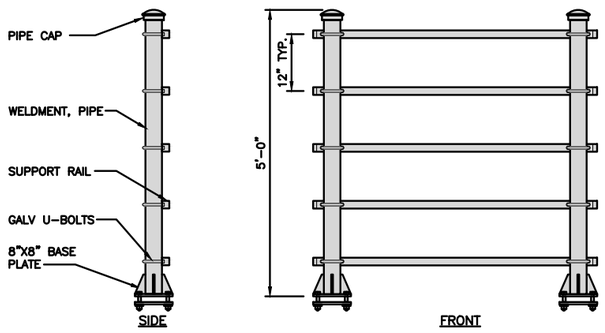
PLATFORM DETAIL

NO SCALE

2

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





H-FRAME DETAIL

NO SCALE

3

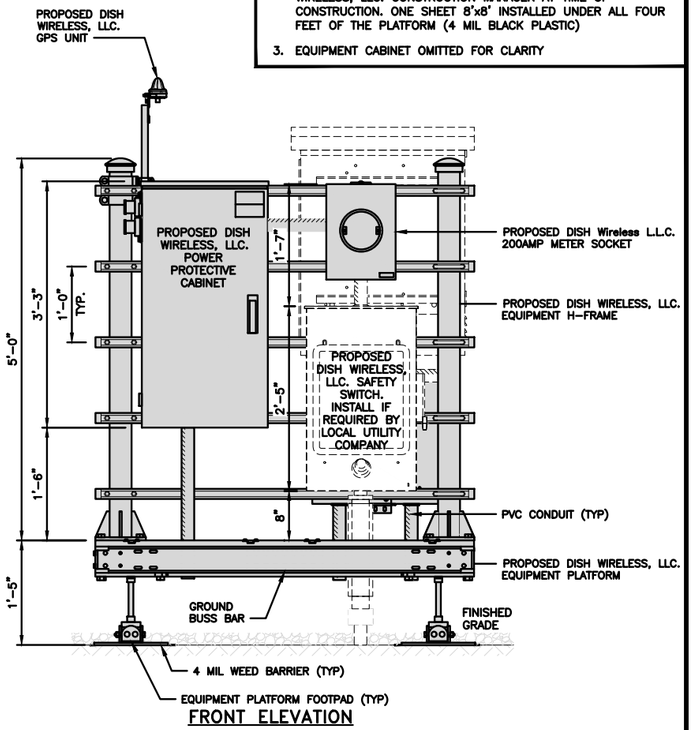
NOT USED

NO SCALE

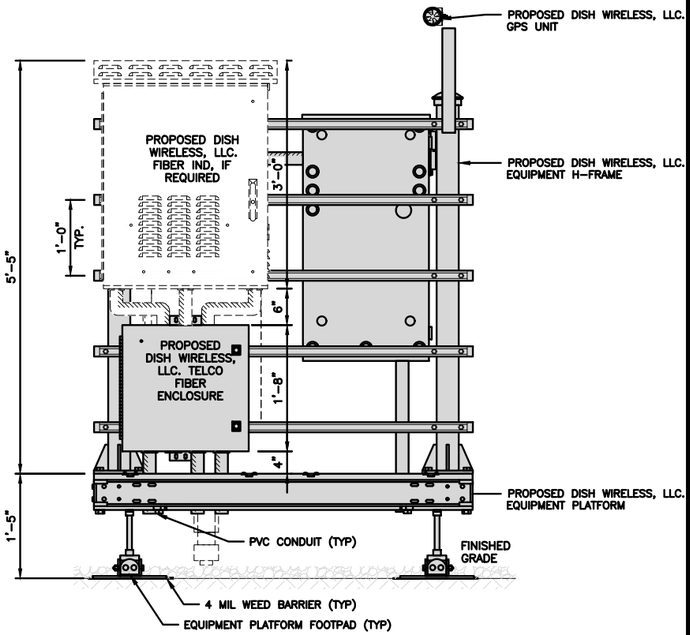
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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LICENSED PROFESSIONAL ENGINEER
10/22/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

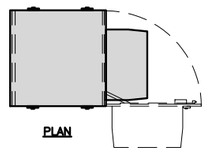
109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

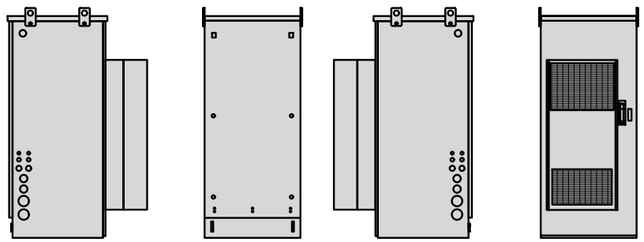
SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS



PLAN



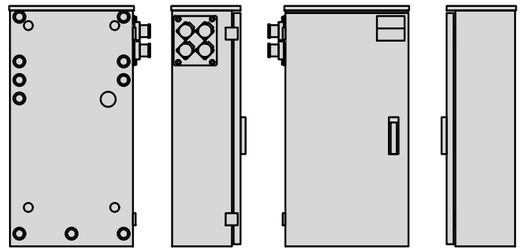
SIDE BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS

ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

TOP



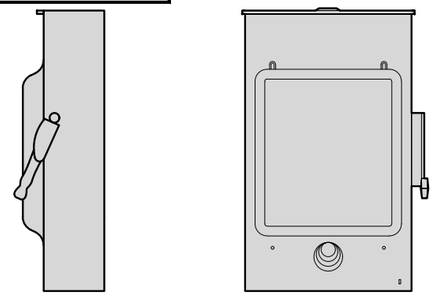
BACK SIDE FRONT SIDE

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

SQUARE D SAFETY SWITCHES D224NRB

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

TOP

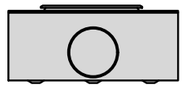


SIDE FRONT

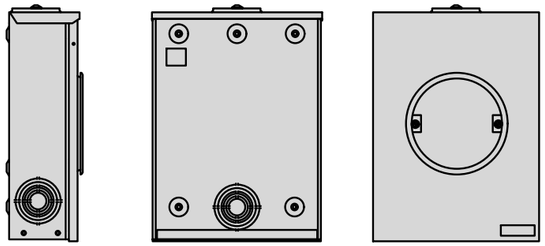
SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE

METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS



PLAN



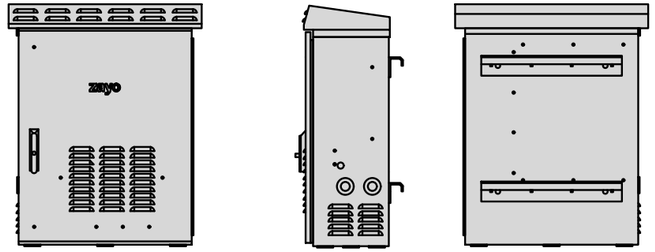
SIDE BACK FRONT

METER SOCKET DETAIL | NO SCALE | 4

ZAYO 5RU CABINET ("LIT" SITES)

DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC

PLAN

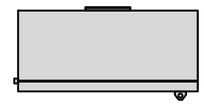


FRONT SIDE BACK

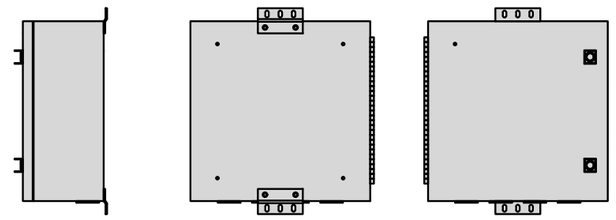
NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



FRONT



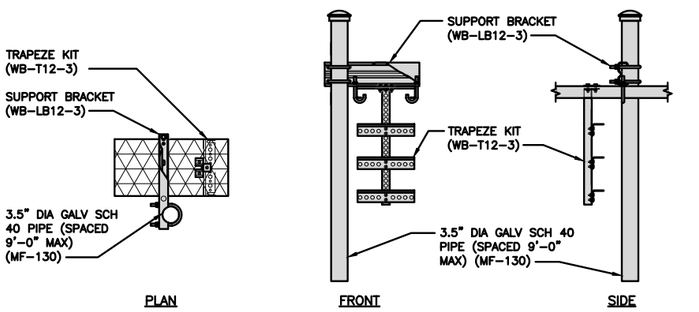
SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

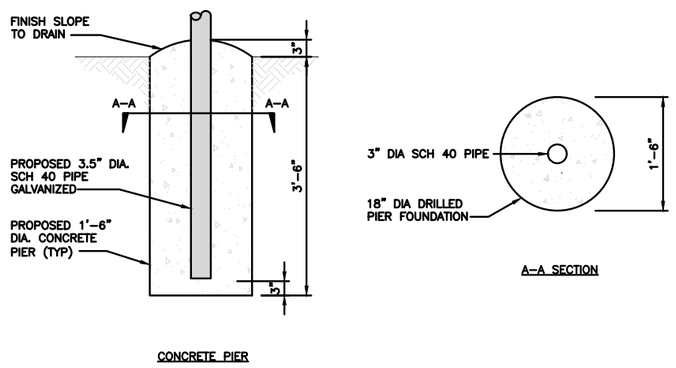
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



PLAN FRONT SIDE

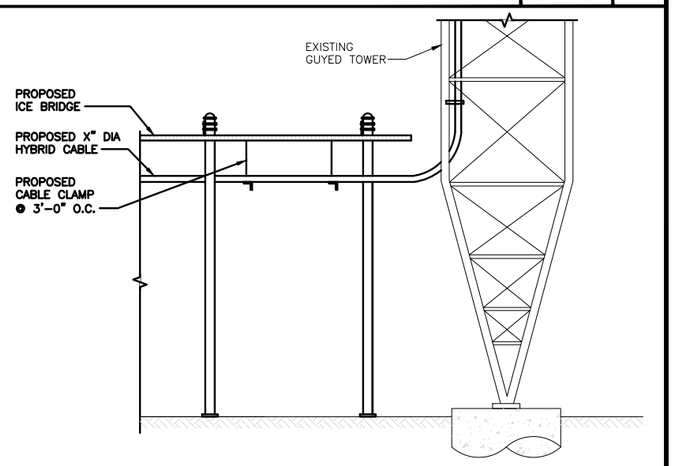
ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER

A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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34916
LICENSED PROFESSIONAL ENGINEER
10/22/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/24/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039–Z5555C

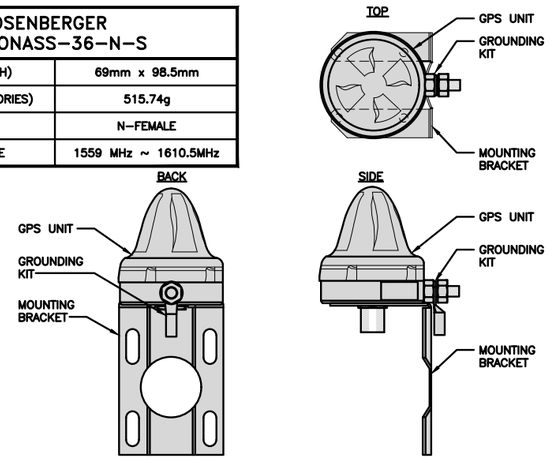
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

109 SCHOFIELD ROAD
WILLINGTON, CT 06279

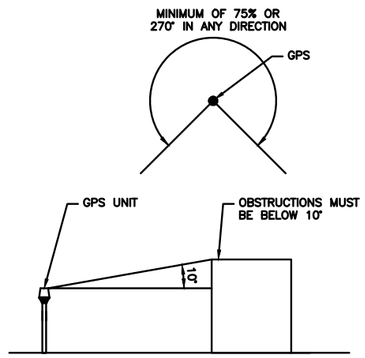
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

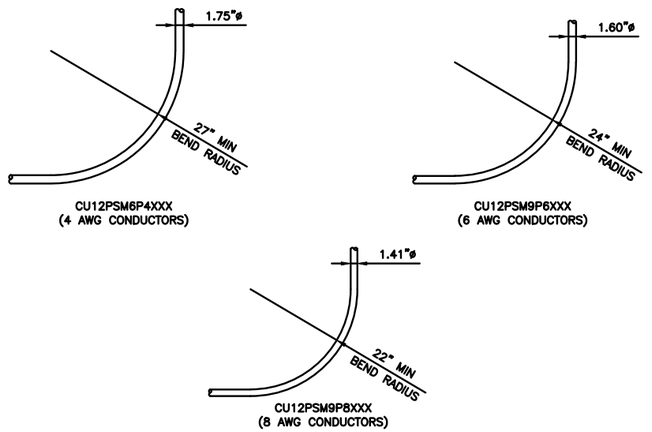
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES | NO SCALE | 3

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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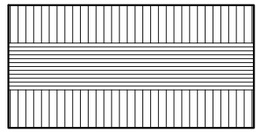
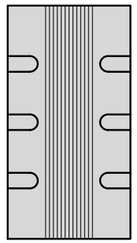
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

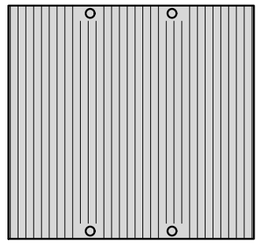
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



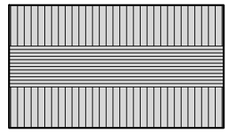
SIDE



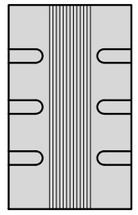
FRONT

REMOTE RADIO HEAD DETAIL — NO SCALE — 1

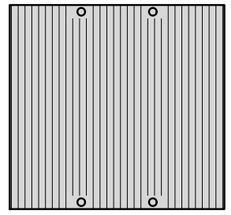
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE

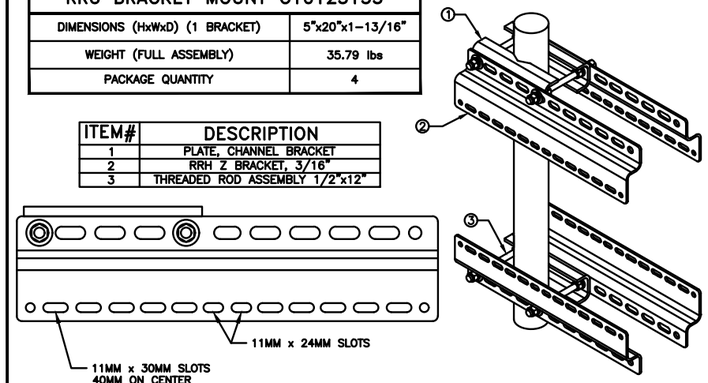


FRONT

REMOTE RADIO HEAD DETAIL — NO SCALE — 2

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

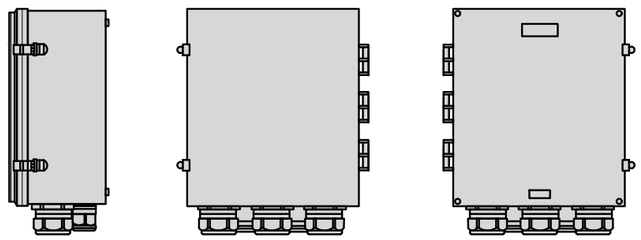
ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



REMOTE RADIO MOUNT DETAIL — NO SCALE — 3

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

PLAN

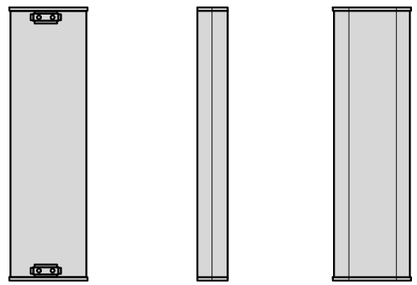


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL — NO SCALE — 4

JMA WIRELESS MX08FRO665-20 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	54 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



BACK SIDE FRONT

NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

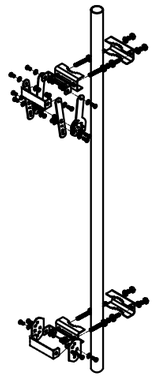
ANTENNA DETAIL — NO SCALE — 5

JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

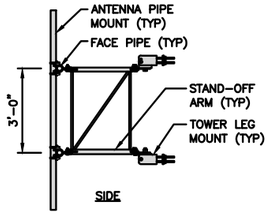
ANTENNA BRACKET NOT PART OF KIT

NOTE:
OR DISH Wireless L.L.C. APPROVED EQUIVALENT

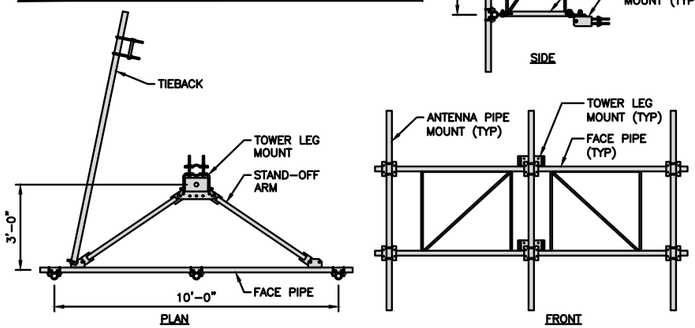


ANTENNA BRACKET DETAIL — NO SCALE — 6

SABRE INDUSTRIES C10837002C-32788 HD V-BOOM ASSEMBLY WITH TIEBACK	
FACE SIZE	10'-0"
WEIGHT	676 LB
TOWER LEG SIZE	1-1/2" TO 5-9/16" DIA ROUND LEG



SIDE



PLAN

FRONT

ANTENNA FRAME DETAIL — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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PROJECT INFORMATION
BOBDL00147A

109 SCHOFIELD ROAD
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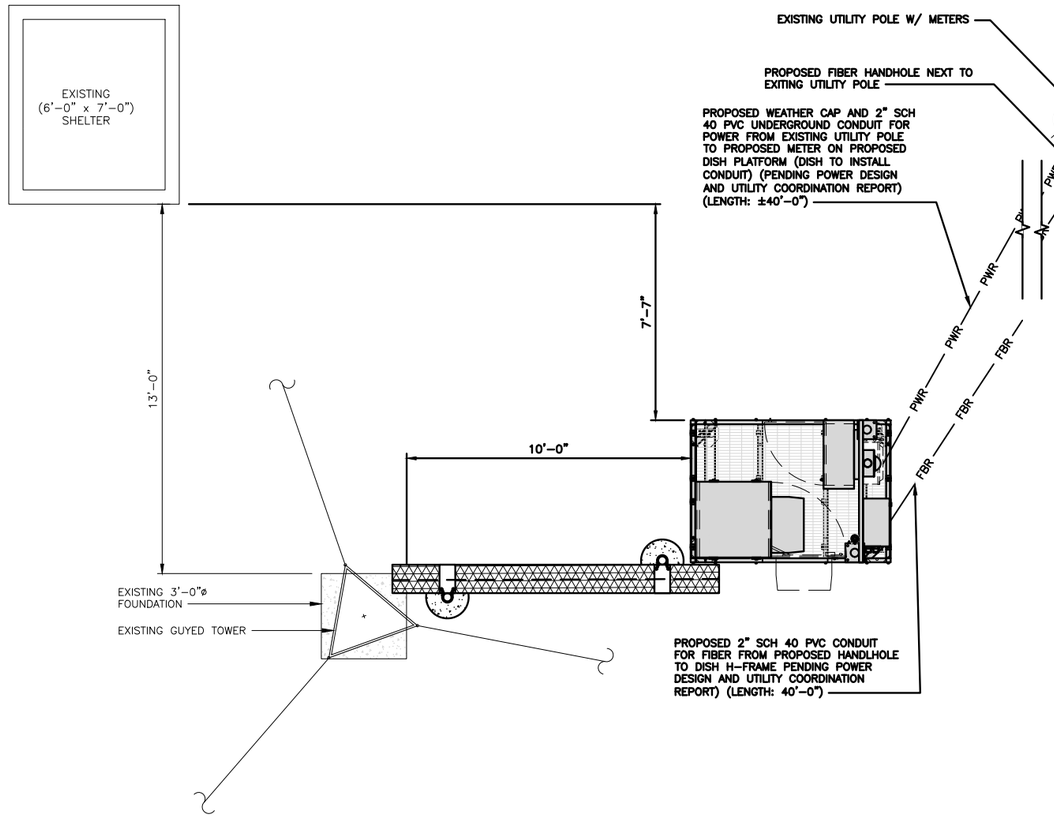
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



UTILITY ROUTE PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

1

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

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

ELECTRICAL NOTES

2

OVERALL UTILITY ROUTE PLAN

60' 30' 0 60' 120'
1"=60'

3

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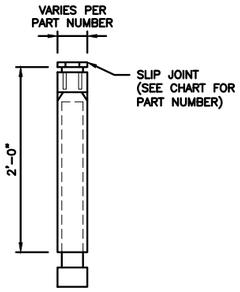
SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

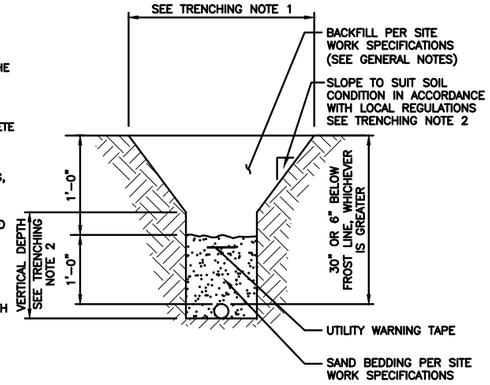


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

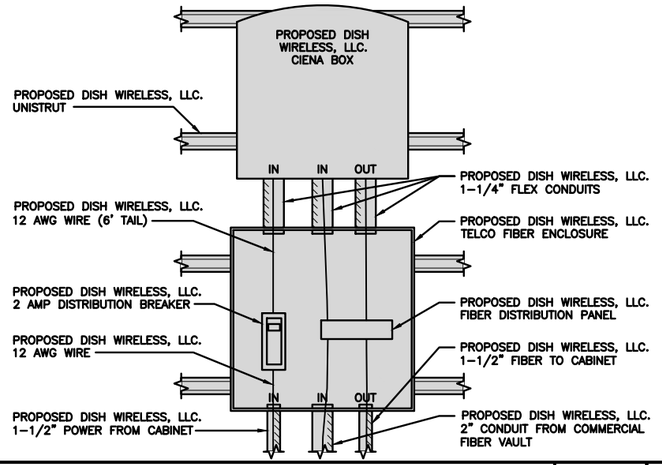
TRENCHING NOTES

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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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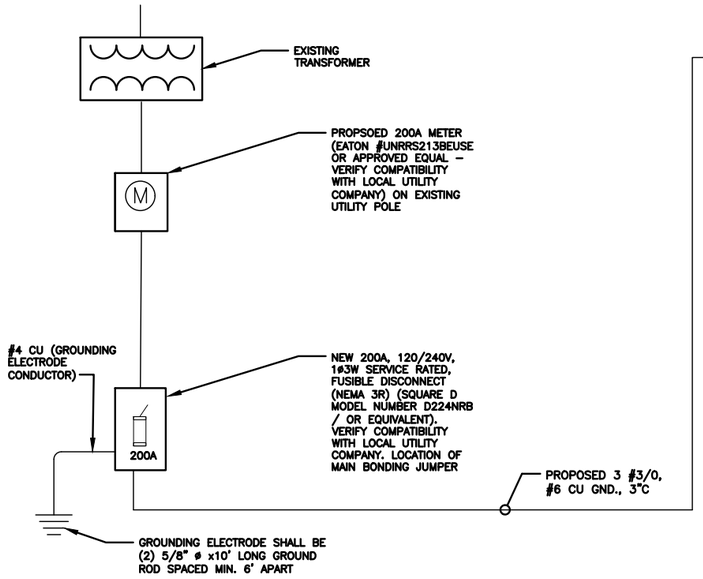
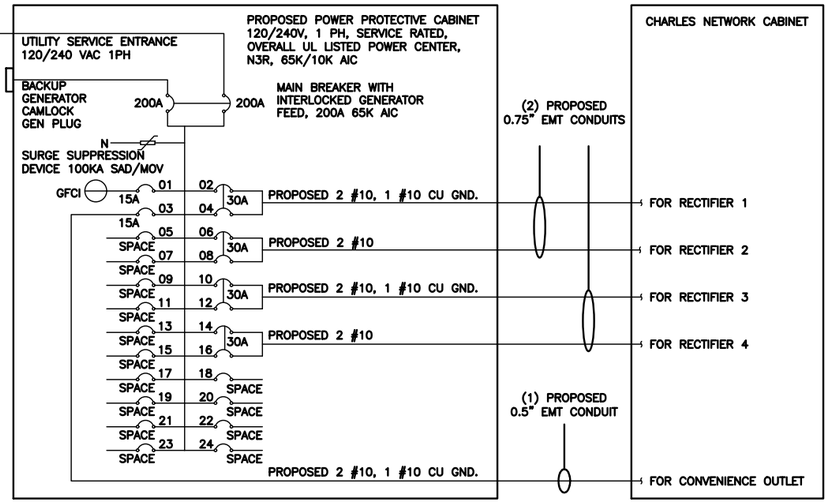
ELECTRICAL DETAILS

SHEET NUMBER
E-2





NOTE:
BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105°C, 600V, AND PVC INSULATED, IN THE SIZES SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER – SQUARE D P/N:QO230
(1) 15A, 1P BREAKER – SQUARE D P/N:QO115

NOTES

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2014/17 NEC TABLE 310.15(B)(3)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

#12 FOR 15A–20A/1P BREAKER: 0.8 x 30A = 24.0A
#10 FOR 25A–30A/2P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A–40A/2P BREAKER: 0.8 x 55A = 44.0A
#6 FOR 45A–60A/2P BREAKER: 0.8 x 75A = 60.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
0.5" CONDUIT – 0.122 SQ. IN AREA
0.75" CONDUIT – 0.213 SQ. IN AREA
2.0" CONDUIT – 1.316 SQ. IN AREA
3.0" CONDUIT – 2.907 SQ. IN AREA

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN–2, CU.

#10 – 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 – 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

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

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 – 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 – 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

1

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.

3/0 – 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 – 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC ONE–LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	
–SPACE–				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
–SPACE–				7	B	8			2880	
–SPACE–				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
–SPACE–				11	B	12			2880	
–SPACE–				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
–SPACE–				15	B	16			2880	
–SPACE–				17	A	18				–SPACE–
–SPACE–				19	B	20				–SPACE–
–SPACE–				21	A	22				–SPACE–
–SPACE–				23	B	24				–SPACE–
VOLTAGE AMPS	180	180						11520	11520	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			11700		11700		VOLTAGE AMPS			
			98		98		AMPS			
			98				MAX AMPS			
			123				MAX 125%			

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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LICENSED PROFESSIONAL ENGINEER
10/22/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

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1	10/18/21	REVISED PER COMMENTS

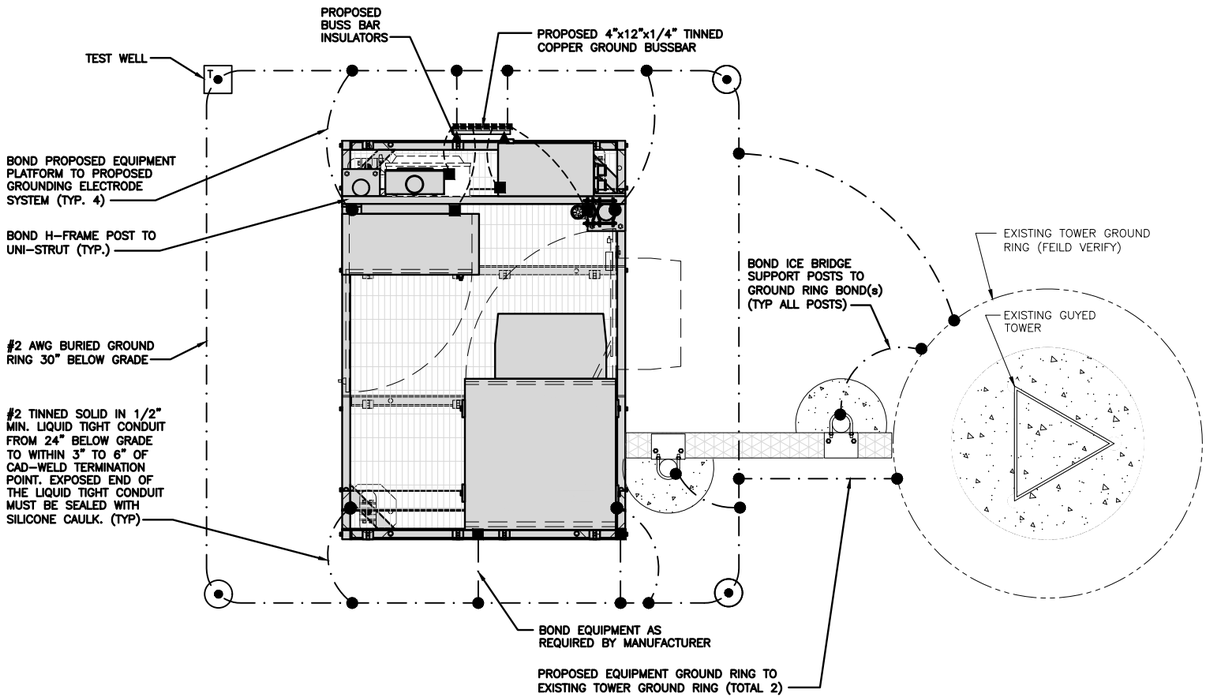
A&E PROJECT NUMBER
2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

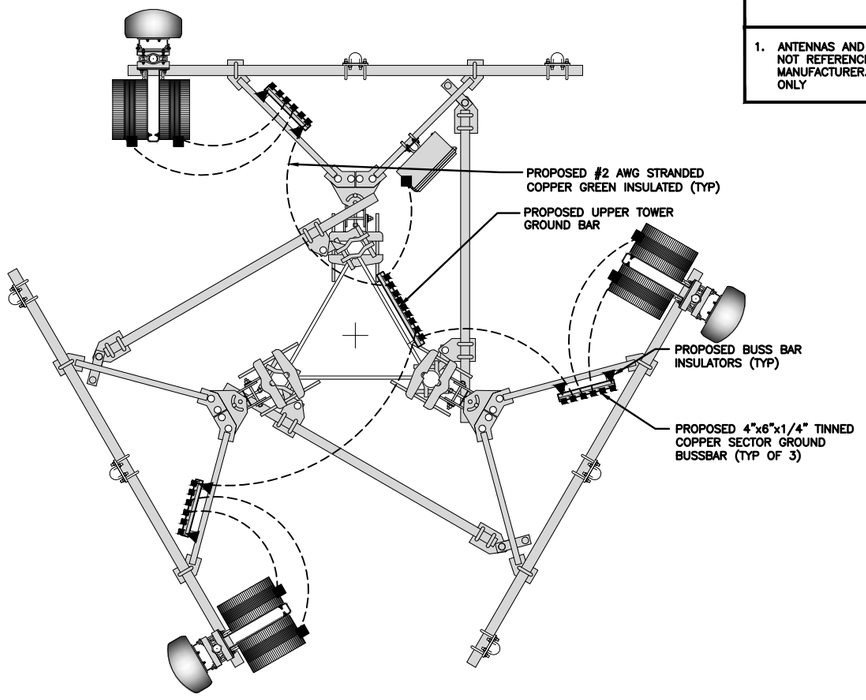
109 SCHOFIELD ROAD
WILLINGTON, CT 06279

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

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

NOTES

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

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- GROUND BUS BAR
- GROUND ROD
- TEST GROUND ROD WITH INSPECTION SLEEVE
- #2 AWG STRANDED & INSULATED
- #2 AWG SOLID COPPER TINNED

GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH WIRELESS, 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) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.

(C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.

(D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

(F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.

(G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.

(H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.

(J) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

(K) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

(L) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.

(M) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.

(N) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

(P) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.

(Q) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR

(R) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR.

REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES | NO SCALE | 3

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DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

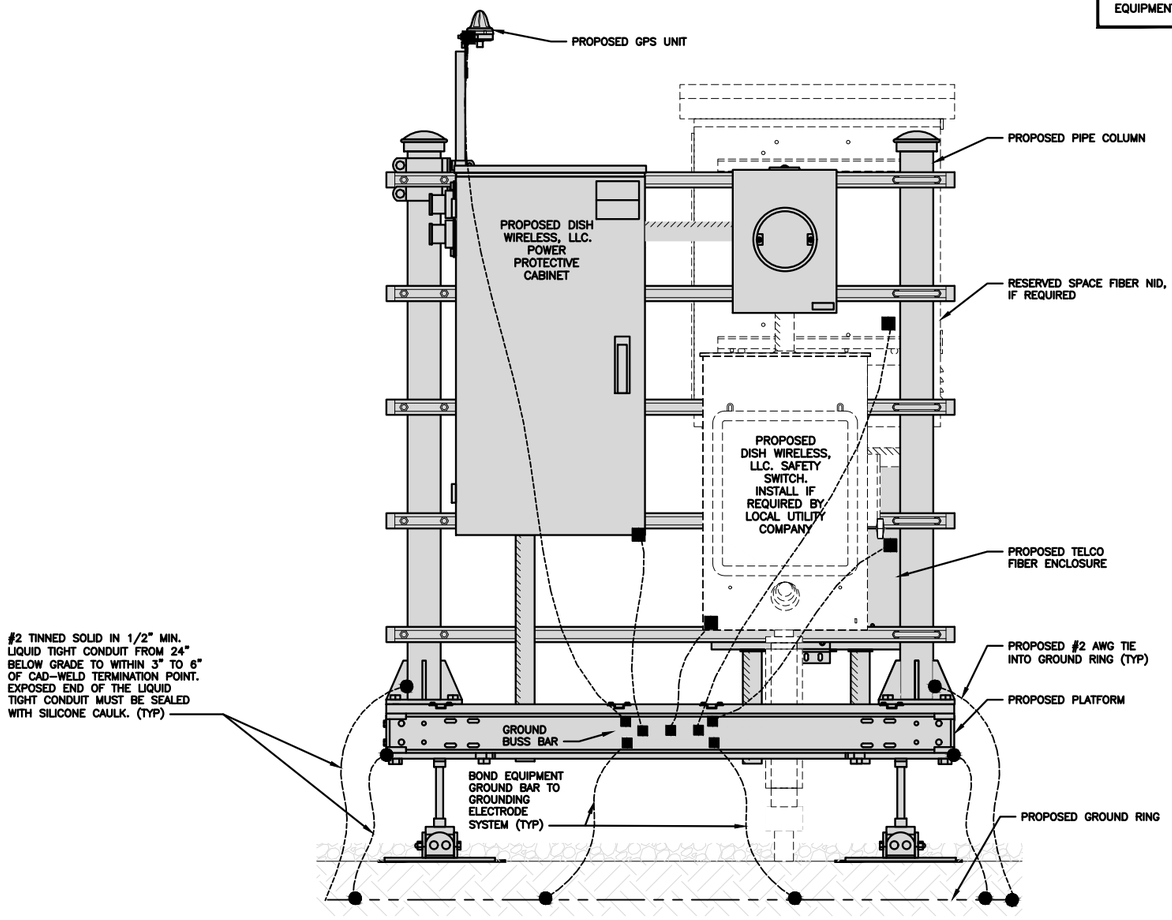
109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

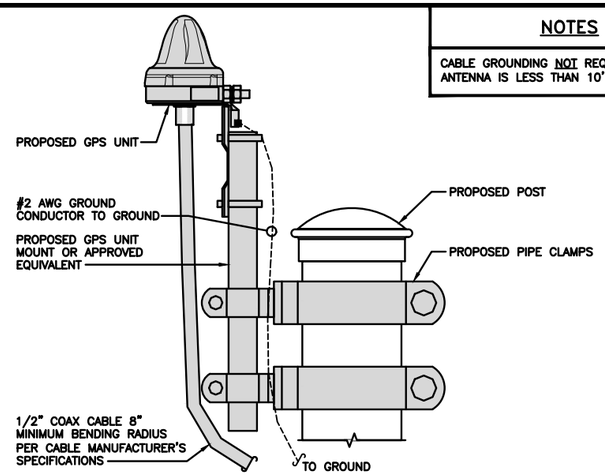
EQUIPMENT CABINET OMITTED FOR CLARITY



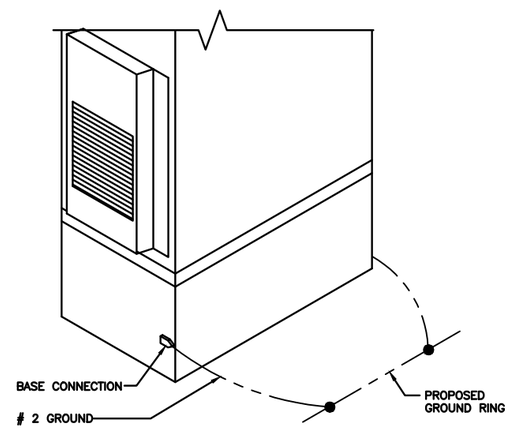
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

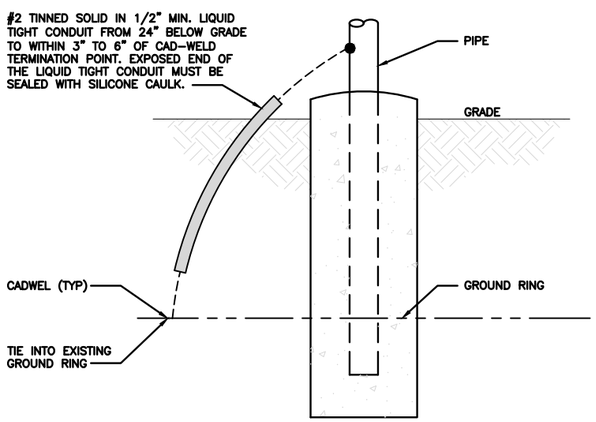
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



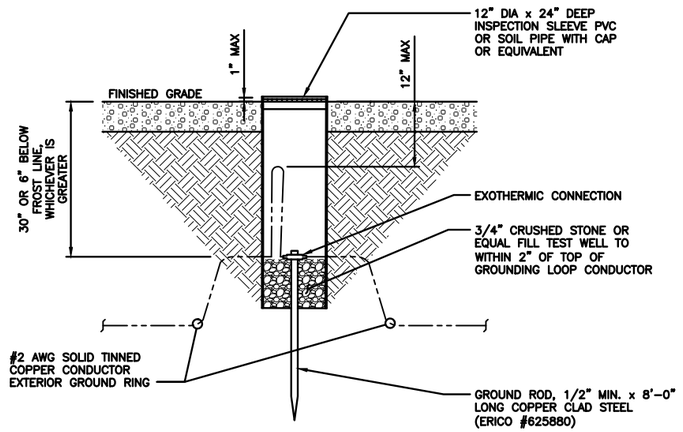
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



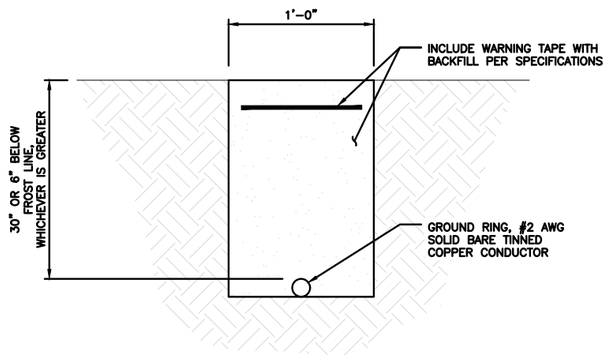
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 5



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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10/22/2021

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RCD	SS	CJW

RFDS REV #: N/A

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DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

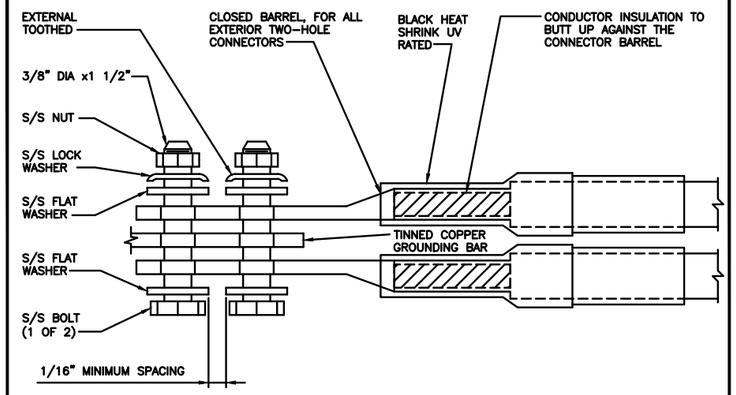
109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE
GROUNDING DETAILS

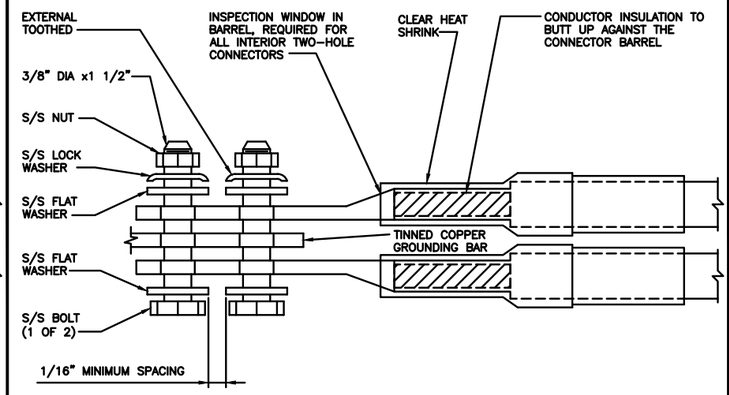
SHEET NUMBER
G-2

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

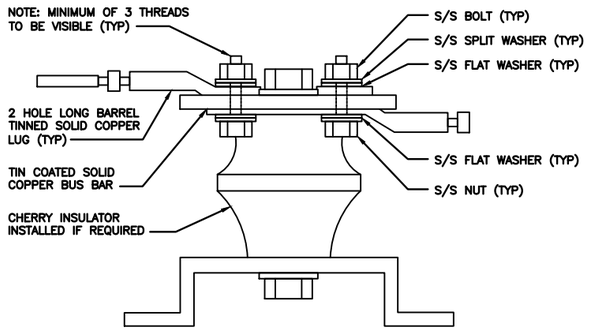
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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SHEET TITLE
GROUNDING DETAILS

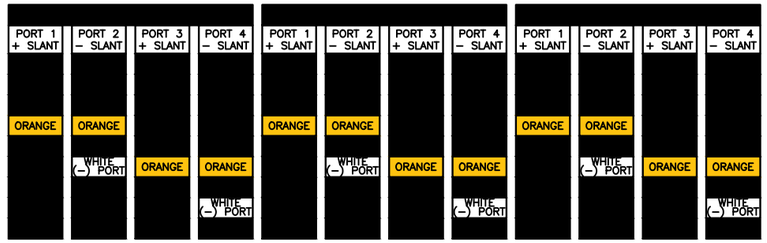
SHEET NUMBER
G-3

HYBRID/DISCREET CABLES

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

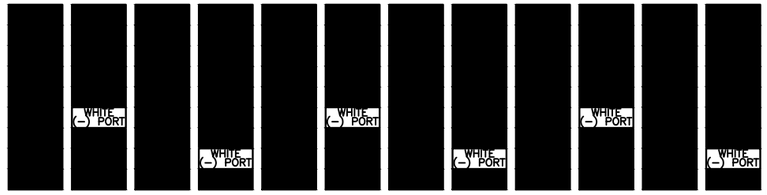
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) - OPTIONAL PER MARKET

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



MID-BAND RRH
(AWS BANDS N66+N70)

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



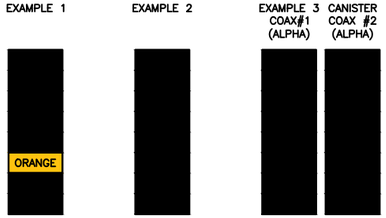
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

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

EXAMPLE 3 - MAIN COAX WITH GROUND MOUNTED RRHs.



FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

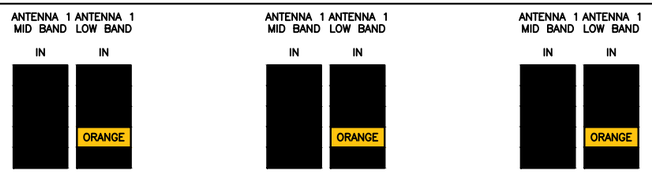
POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID-BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

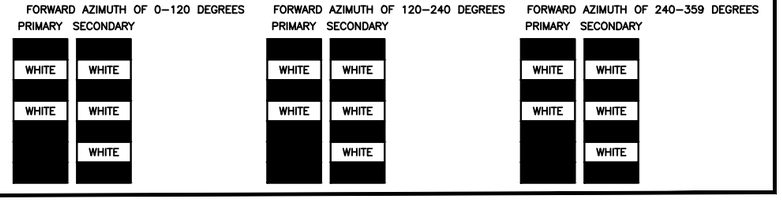
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS (N66+N70+H-BLOCK)

CBRS TECH (3 GHz)

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR | BETA SECTOR | GAMMA SECTOR

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NOT USED | NO SCALE | 3

NOT USED | NOT USED | NO SCALE | 4

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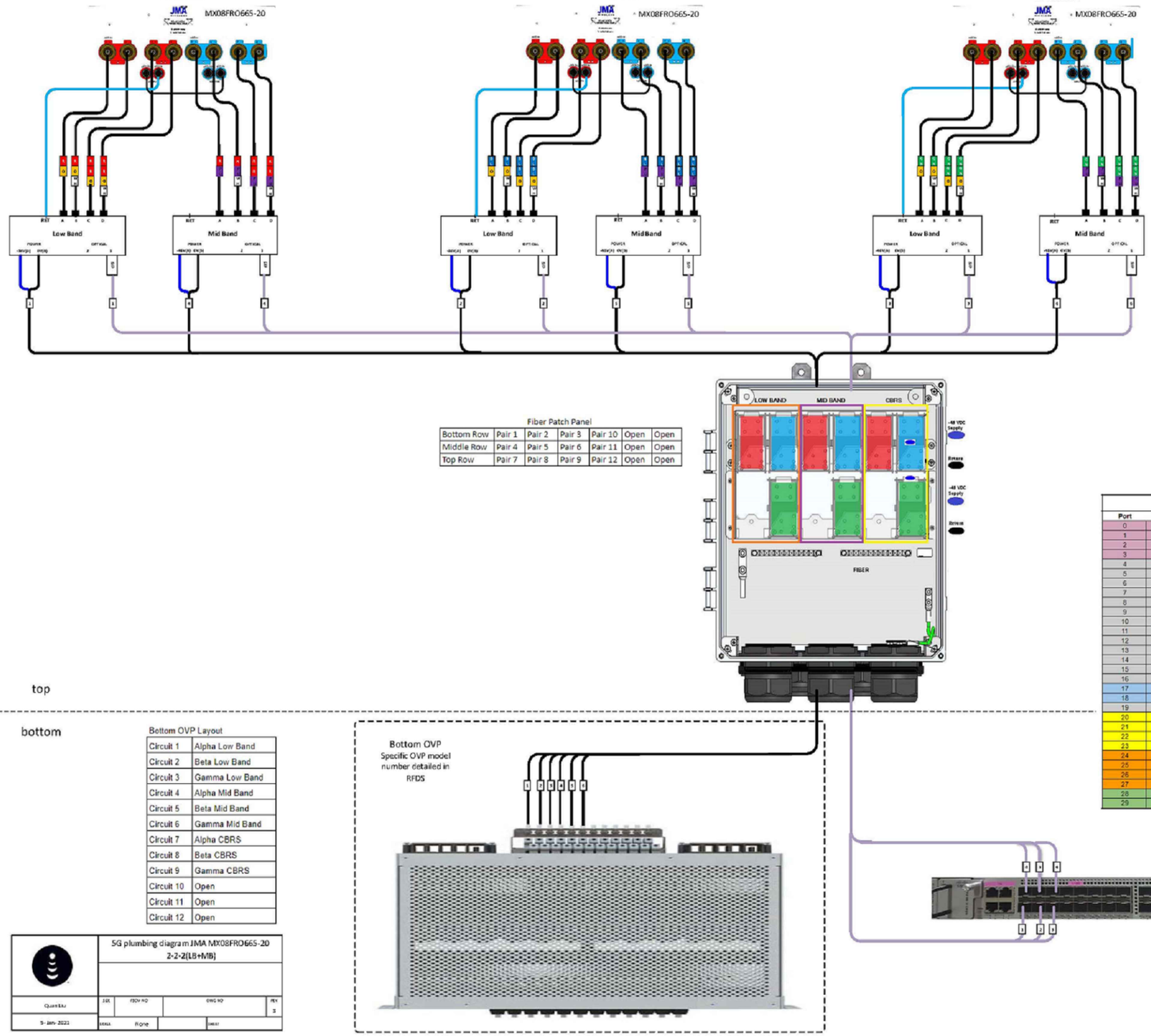
PROJECT INFORMATION
BOBDL00147A

109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1



Fiber Patch Panel

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

Bottom OVP Layout

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

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

Quantity: 1 | ISSUED FOR: | DWG NO: | REV: 1
5-Jan-2021 | SCALE: None | SHEET:

CSR NCS540

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

PLUMBING DIAGRAM | NO SCALE | 1

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RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/24/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER
RF-2

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
LED–1–25A400/51K–SR4–120–PE–DDBTXD

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

W.P.

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

dish wireless.

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SHUHEI SAKANOUE
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SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH WIRELESS, LLC. AND TOWER OWNER NOC & THE DISH WIRELESS, LLC. AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH WIRELESS, LLC. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH WIRELESS, LLC. AND DISH WIRELESS, LLC. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.

4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS, LLC. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).

5. ALL SITE WORK TO COMPLY WITH DISH WIRELESS, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."

6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH WIRELESS, LLC. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

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

9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.

10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.

11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.

12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH WIRELESS, LLC. AND TOWER OWNER, AND/OR LOCAL UTILITIES.

14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.

15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.

16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.

18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

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

20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS, LLC.

TOWER OWNER:TOWER OWNER

2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.

4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.

5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.

6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

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

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

10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.

12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH WIRELESS, LLC. AND TOWER OWNER

13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

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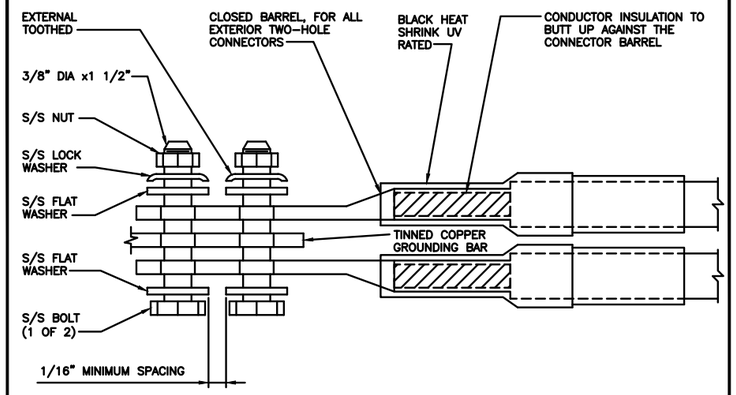
SHEET TITLE
GENERAL NOTES

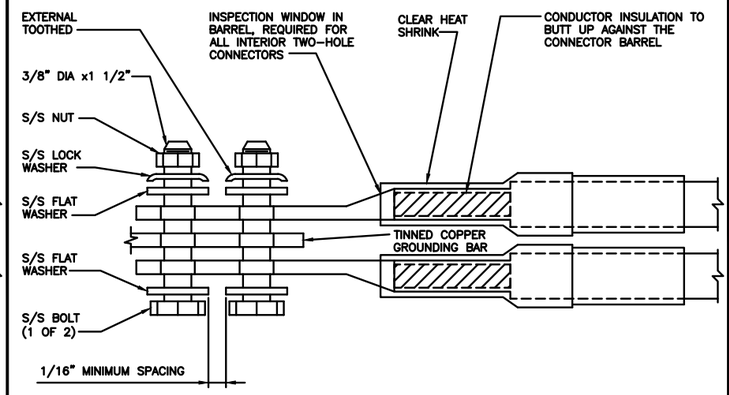
SHEET NUMBER
GN-2

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

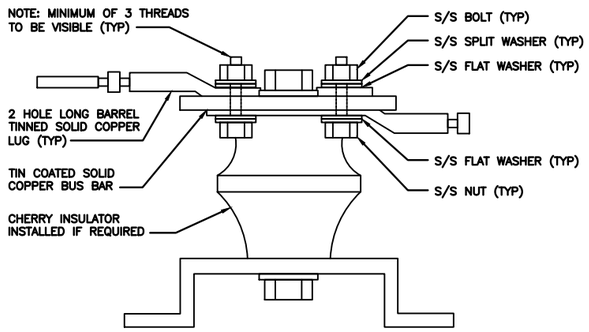
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/22/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/24/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS

A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00147A

109 SCHOFIELD ROAD
WILLINGTON, CT 06279

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Structural Analysis Report

April 21, 2021

Tarpon Site Name:	Willington
Tarpon Site ID:	CT1010
Dish Network Site ID:	BOHVN00147A
Airosmith Project ID:	Tarpon ENG 2020
Site Location	109 Schofield Road Willington, CT 06279 Tolland County
Applicable Code	2018 CT State Building Code / 2015 IBC
Applicable Design Standard	ANSI/TIA-222-H
Structure	149' Guyed Tower
Demand-Capacity Ratio (CSR)	**36.2%**
Overall Result	**Pass**

PREPARED FOR:

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
29460
LICENSED PROFESSIONAL ENGINEER
4/21/2021

APPROVED BY: Joseph R. Johnston, P.E.
CT License #: PEN.0029460

318 West Avenue, Saratoga Springs, NY 12866
Main Office / Fax: 518-306-1711
www.airosmithdevelopment.com

AIROSMITH ENGINEERING

Table of Contents

1.0 Scope

Airosmith Engineering has been requested to perform a structural analysis on the existing 149 ft Guyed Tower for Dish Network's proposed install. The structure was analyzed using tnxTower Version 8.0.7 analysis software. Selected output from the analysis is included in this report.

The proposed Dish Network install consists of installing (1) new platform mount, (3) new panel antennas, (6) new radio units, (1) new surge suppressor, and (1) new hybrid line.

2.0 Supporting Documentation

Collocation Application	Dish Network App, dated 3/8/2021
Tower Design Drawings	Sabre Job #35784, dated 10/19/2010
Foundation Design Drawings	Sabre Job #35784, dated 10/28/2010
Geotechnical Report	Welti Geotechnical, dated 9/24/2018

3.0 Analysis Code Requirements

Wind Speed	125 mph (3-Second Gust)
Wind Speed with Ice	50 mph (3-Second Gust) w/ 1.5" ice
Design Standard	ANSI/TIA-222-H
Adopted IBC	2018 CT State Building Code / 2015 IBC
Risk Category	II
Exposure Category	B
Topographic Factor Procedure	Method 1, Category 1
Crest Height	0 ft.
HSML (ft.)	785.0 ft.

4.0 Existing & Reserved Loading

RAD Center (ft.)	Qty.	Appurtenance	Mount Type	Lines	Carrier
No loading considered to be removed					

5.0 To Be Removed Loading

RAD Center (ft.)	Qty.	Appurtenance	Mount Type	Lines	Carrier
No loading considered to be removed					

6.0 Proposed Loading

RAD Center (ft.)	Qty.	Appurtenance*	Mount Type	Lines	Carrier
145.0	3	JMA Wireless MX08FRO665 -20_V0F	Platform w/ Handrails	(1) 1.65" Hybrid	Dish Network
	3	Fujitsu TA08025-B604			
	3	Fujitsu TA08025-B605			
	1	Generic Junction Box			

*The results of this analysis considers Dish Networks full 11,000 in^2 MLA loading

7.0 Final Configuration

RAD Center (ft.)	Qty.	Appurtenance*	Mount Type	Lines	Carrier
145.0	3	JMA Wireless MX08FRO665 -20_V0F	Platform w/ Handrails	(1) 1.65" Hybrid	Dish Network
	3	Fujitsu TA08025-B604			
	3	Fujitsu TA08025-B605			
	1	Generic Junction Box			

*The results of this analysis considers Dish Networks full 11,000 in^2 MLA loading

Coax lines can be installed on any tower face.

8.0 Results and Conclusions

Upon reviewing the results of this analysis, it is our opinion that the existing structure meets the specified code requirements. The 149' guyed tower structure and foundation are considered acceptable to support the final loading configuration as listed within in this report. The controlling structure and foundation usages are displayed in the tables below:

Structure Usages

Component	Controlling Usage*
Legs	29.7%
Diagonals	28.7%
Guy Wires	36.2%

*Listed usage is for the controlling component. Refer to the appendix for detailed results on each individual member

Foundation Usages

Component	Design Reaction	Analysis Reaction	Usage
Base Axial (kips)	182.5	54.2	29.7%
Anchor Uplift (kips)	36.4	12.5	34.3%
Anchor Shear (kips)	34.2	11.2	32.8%

The tower foundation is acceptable in comparison to original design reactions.

We appreciate the opportunity to be of service on this project. If you have any questions, require additional information, or actual conditions differ from those as detailed in this report, please contact me via the information below:

Brad Davenport, P.E.
engineering@airosmithdevelopment.com

9.0 Assumptions & Limitations

The following assumptions have been made for this analysis:

- Structural calculations are completed assuming all information provided to Airosmith Development is accurate and applicable to this site.
- The existing structures were designed, manufactured, and constructed in accordance with the applicable codes and standards in effect at that time
- The existing structures have been properly maintained in accordance with industry standards.
- All structural and foundation elements, unless otherwise noted, are in good condition, and are capable of supporting their original design capacity.
- Steel grades have been assumed as follows, unless otherwise noted
    - Channel, Solid Round, Angle & Plate ASTM A36 Gr. 36
    - HSS (Rectangular) ASTM A500 Gr. B
    - HSS (Pipe) ASTM A53 Gr. B
    - Threaded Rods ASTM A36 Gr. 36
- Calculation-specific assumptions are as noted in the attached appendix

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs		SR 1 3/4		SR 2			SR 1 3/4	SR 2 1/4	
Leg Grade					A572-50				
Diagonals			SR 1		SR 1 1/4	SR 1		SR 1 1/4	
Diagonal Grade					A36				
Top Girts					SR 7/8				
Horizontals					SR 7/8				
Face Width (ft)	3								
# Panels @ (ft)	3 @ 3				36 @ 3.33333			4 @ 3.33325	A
Weight (lb)	378.3	817.3	967.6	967.6	1089.0	967.6	817.3	839.6	357.9

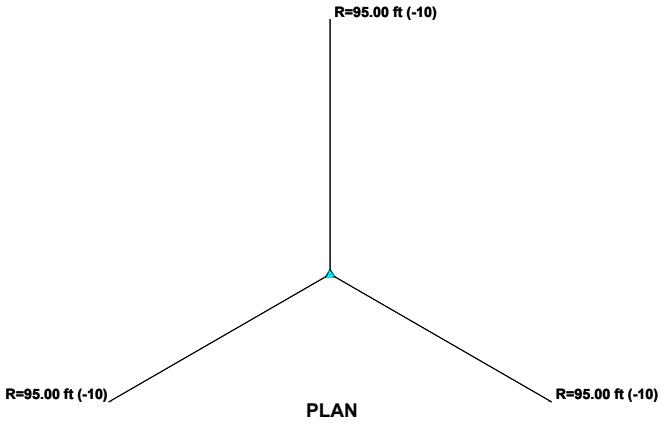
7202.2

149.0 ft
140.0 ft
136.7 ft
120.0 ft
100.0 ft
80.0 ft
66.7 ft
60.0 ft
40.0 ft
20.0 ft
6.7 ft
0.0 ft

5/8 EHS LC=173.81 ft IT=10%

3/4 EHS LC=120.73 ft IT=10%

98 lb
54235 lb (Axial)



PLAN

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Reserved Loading (1/3*11,000 sq. in) (Dish Network)	145	Reserved Loading (1/3*11,000 sq. in) (Dish Network)	145
Reserved Loading (1/3*11,000 sq. in) (Dish Network)	145		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2 @ 3.3335		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 36.2%

12540 lb
16786 lb
11160 lb
R=95.00 ft

ALL REACTIONS ARE FACTORED

Airosmith Development
318 West Avenue
Saratoga Springs, NY 12866
Phone: (518) 307-8700
FAX:

Job: ***CT1008 Naugatuck***			
Project: ***Tarpon ENG 2020***			
Client: Tarpon Towers	Drawn by: BDavenport	App'd:	
Code: TIA-222-H	Date: 04/21/21	Scale: NTS	
Path: C:\Users\bdavenport\Desktop\CT1010 Willington.eri		Dwg No. E-1	

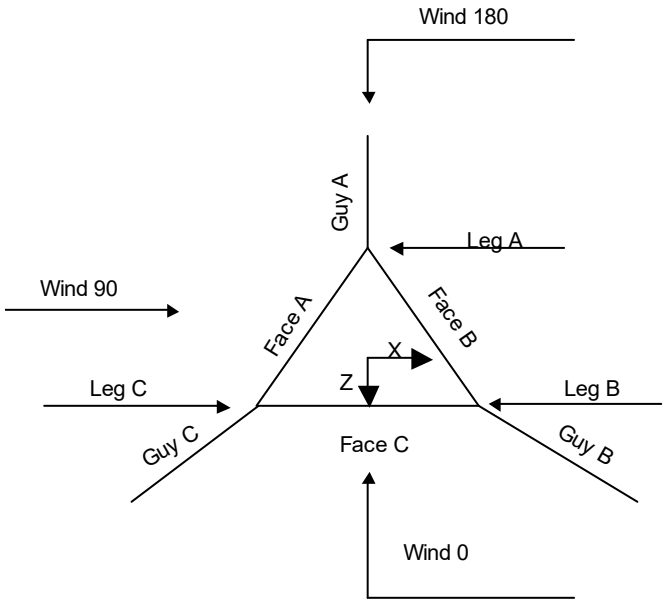
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 149.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.00 ft at the top and tapered at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 785.00 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)	√	Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Corner & Starmount Guyed Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	149.00-140.00			3.00	1	9.00
T2	140.00-120.00			3.00	1	20.00
T3	120.00-100.00			3.00	1	20.00
T4	100.00-80.00			3.00	1	20.00
T5	80.00-60.00			3.00	1	20.00
T6	60.00-40.00			3.00	1	20.00
T7	40.00-20.00			3.00	1	20.00
T8	20.00-6.67			3.00	1	13.33
T9	6.67-0.00			3.00	1	6.67

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	149.00-140.00	3.00	K Brace Left	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T2	140.00-120.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T3	120.00-100.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T4	100.00-80.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T5	80.00-60.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T6	60.00-40.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T7	40.00-20.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T8	20.00-6.67	3.33	K Brace Left	No	Yes	0.0000	0.0000
T9	6.67-0.00	3.33	K Brace Left	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 149.00-140.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T2 140.00-120.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T3 120.00-100.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T4 100.00-80.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T5 80.00-60.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T6 60.00-40.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T7 40.00-20.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T8 20.00-6.67	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T9 6.67-0.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 149.00-140.00	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T2 140.00-120.00	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T3 120.00-100.00	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T4 100.00-80.00	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T5 80.00-60.00	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T6 60.00-40.00	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T7 40.00-20.00	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T8 20.00-6.67	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T9 6.67-0.00	Solid Round	7/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 149.00-140.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T5 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 20.00-6.67	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 6.67-0.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 149.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T8 20.00-6.67	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 6.67-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	Yes	1	1	1	1	1	1	1	1
149.00-140.00				1	1	1	1	1	1	1
T2	No	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T3	No	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T4	No	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T5	No	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T6	No	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T7	No	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T8 20.00-6.67	No	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T9 6.67-0.00	No	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
149.00-140.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
140.00-120.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
120.00-100.00														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
100.00-80.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T5 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-6.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 6.67-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
136.667	EHS	A	5/8	4240.00	10%	21000	0.813	173.66	95.00	0.0000	-10.00	100%
		B	5/8	4240.00	10%	21000	0.813	173.66	95.00	0.0000	-10.00	100%
		C	5/8	4240.00	10%	21000	0.813	173.66	95.00	0.0000	-10.00	100%
66.6667	EHS	A	3/4	5830.00	10%	19000	1.155	120.62	95.00	0.0000	-10.00	100%
		B	3/4	5830.00	10%	19000	1.155	120.62	95.00	0.0000	-10.00	100%
		C	3/4	5830.00	10%	19000	1.155	120.62	95.00	0.0000	-10.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
136.667	Corner						
66.6667	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
136.67	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
66.67	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
136.667	141.19	141.19	141.19		2.85 2.9 sec/pulse	2.85 2.9 sec/pulse	2.85 2.9 sec/pulse	
66.6667	139.32	139.32	139.32		1.43 2.1 sec/pulse	1.43 2.1 sec/pulse	1.43 2.1 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
136.667	No	No			1	1	1	1
66.6667	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
136.667	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
66.6667	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
136.667	A	63.33	27	4	1.3609
	B	63.33	27	4	1.3609
	C	63.33	27	4	1.3609
66.6667	A	28.33	22	4	1.2557
	B	28.33	22	4	1.2557
	C	28.33	22	4	1.2557

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1.65" Hybird	C	No	No	Ar (CaAa)	145.00 - 0.00	1	1	1.6250	1.6500		1.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	149.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.825	0.000	5.00
T2	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.300	0.000	20.00
T3	120.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.300	0.000	20.00
T4	100.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.300	0.000	20.00
T5	80.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.300	0.000	20.00
T6	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.300	0.000	20.00
T7	40.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.300	0.000	20.00
T8	20.00-6.67	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.200	0.000	13.33
T9	6.67-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.100	0.000	6.67

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	149.00-140.00	A	1.478	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.303	0.000	33.24
T2	140.00-120.00	A	1.462	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.149	0.000	131.21
T3	120.00-100.00	A	1.438	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.053	0.000	128.52
T4	100.00-80.00	A	1.410	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.938	0.000	125.38
T5	80.00-60.00	A	1.375	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.798	0.000	121.59
T6	60.00-40.00	A	1.329	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.616	0.000	116.75
T7	40.00-20.00	A	1.263	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.352	0.000	109.89
T8	20.00-6.67	A	1.165	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	5.305	0.000	66.72
T9	6.67-0.00	A	1.014	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.452	0.000	28.66

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	149.00-140.00	0.0000	0.7722	0.0000	0.7382
T2	140.00-120.00	0.0000	1.3433	0.0000	1.3374
T3	120.00-100.00	0.0000	1.2620	0.0000	1.3022
T4	100.00-80.00	0.0000	1.2620	0.0000	1.3125
T5	80.00-60.00	0.0000	1.2155	0.0000	1.2897
T6	60.00-40.00	0.0000	1.2620	0.0000	1.3409
T7	40.00-20.00	0.0000	1.3433	0.0000	1.4048
T8	20.00-6.67	0.0000	1.1508	0.0000	1.3129
T9	6.67-0.00	0.0000	1.0416	0.0000	0.8716

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	1.65" Hybird	140.00 - 145.00	0.6000	0.5485
T2	1	1.65" Hybird	120.00 - 140.00	0.6000	0.5666
T3	1	1.65" Hybird	100.00 - 120.00	0.6000	0.5629
T4	1	1.65" Hybird	80.00 - 100.00	0.6000	0.5681
T5	1	1.65" Hybird	60.00 - 80.00	0.6000	0.5666
T6	1	1.65" Hybird	40.00 - 60.00	0.6000	0.5827
T7	1	1.65" Hybird	20.00 - 40.00	0.6000	0.6000
T8	1	1.65" Hybird	6.67 - 20.00	0.6000	0.5964
T9	1	1.65" Hybird	0.00 - 6.67	0.6000	0.4433

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Reserved Loading	A	From Face	4.00	0.0000	145.00	No Ice	25.46	25.46	1200.00
(1/3*11,000 sq. in)			0.00			1/2" Ice	26.83	26.83	1560.00
(Dish Network)			0.00			1" Ice	28.21	28.21	1920.00
						2" Ice	31.24	31.24	2640.00
Reserved Loading	B	From Face	4.00	0.0000	145.00	No Ice	25.46	25.46	1200.00
(1/3*11,000 sq. in)			0.00			1/2" Ice	26.83	26.83	1560.00
(Dish Network)			0.00			1" Ice	28.21	28.21	1920.00
						2" Ice	31.24	31.24	2640.00
Reserved Loading	C	From Face	4.00	0.0000	145.00	No Ice	25.46	25.46	1200.00
(1/3*11,000 sq. in)			0.00			1/2" Ice	26.83	26.83	1560.00
(Dish Network)			0.00			1" Ice	28.21	28.21	1920.00
						2" Ice	31.24	31.24	2640.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy

Comb. No.	Description
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	149 - 140	0.908	33	0.0579	0.0957
T2	140 - 120	0.797	33	0.0565	0.0945
T3	120 - 100	0.580	33	0.0482	0.1063
T4	100 - 80	0.386	33	0.0441	0.1068
T5	80 - 60	0.214	37	0.0354	0.1067
T6	60 - 40	0.099	37	0.0185	0.1068
T7	40 - 20	0.048	37	0.0088	0.1084
T8	20 - 6.667	0.023	27	0.0054	0.1095
T9	6.667 - 0	0.008	27	0.0055	0.1005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	Reserved Loading (1/3*11,000 sq. in)	33	0.858	0.0575	0.0955	145726
136.67	Guy	33	0.758	0.0555	0.0943	92836
66.67	Guy	37	0.129	0.0240	0.1068	66385

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	149 - 140	4.825	6	0.3134	0.3975
T2	140 - 120	4.224	6	0.3078	0.3959
T3	120 - 100	3.020	6	0.2695	0.4090
T4	100 - 80	1.938	10	0.2426	0.4109
T5	80 - 60	1.004	10	0.1903	0.4100
T6	60 - 40	0.440	12	0.0986	0.4101
T7	40 - 20	0.195	12	0.0416	0.4160
T8	20 - 6.667	0.084	12	0.0210	0.4196
T9	6.667 - 0	0.028	12	0.0202	0.4099

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	Reserved Loading (1/3*11,000 sq. in)	6	4.555	0.3117	0.3971	35707
136.67	Guy	6	4.010	0.3031	0.3943	22320
66.67	Guy	12	0.587	0.1286	0.4097	12297

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T2	136.67 (A) (297)	5/8 EHS	4240.00	42399.99	9192.33	25440.00	1.000	2.768 ✔
	136.67 (B) (296)	5/8 EHS	4240.00	42399.99	9197.02	25440.00	1.000	2.766 ✔
	136.67 (C) (295)	5/8 EHS	4240.00	42399.99	9196.95	25440.00	1.000	2.766 ✔
T5	66.67 (A) (300)	3/4 EHS	5830.00	58299.91	8600.65	34980.00	1.000	4.067 ✔
	66.67 (B) (299)	3/4 EHS	5830.00	58299.91	8601.58	34980.00	1.000	4.067 ✔
	66.67 (C) (298)	3/4 EHS	5830.00	58299.91	8601.65	34980.00	1.000	4.067 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	149 - 140	1 3/4	9.00	3.00	82.3 K=1.00	2.4053	1.00	-4834.51	65973.80	0.073 [1] ✔
T2	140 - 120	1 3/4	20.00	3.33	91.4 K=1.00	2.4053	1.00	-10275.80	58740.50	0.175 [1] ✔
T3	120 - 100	2	20.00	3.33	80.0 K=1.00	3.1416	1.00	-11228.40	88538.90	0.127 [1] ✔
T4	100 - 80	2	20.00	3.33	80.0 K=1.00	3.1416	1.00	-16570.80	88538.90	0.187 [1] ✔
T5	80 - 60	2	20.00	3.33	80.0 K=1.00	3.1416	1.00	-24545.40	88538.90	0.277 [1] ✔
T6	60 - 40	2	20.00	3.33	80.0 K=1.00	3.1416	1.00	-22053.30	88538.90	0.249 [1] ✔
T7	40 - 20	1 3/4	20.00	3.33	91.4 K=1.00	2.4053	1.00	-17452.00	58740.50	0.297 [1] ✔
T8	20 - 6.667	2 1/4	13.33	3.33	71.1 K=1.00	3.9761	1.00	-17914.20	123623.00	0.145 [1] ✔
T9	6.667 - 0	2 1/4	6.89	3.44	73.5	3.9761	1.00	-18850.70	120569.00	0.156 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00					✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	149 - 140	1	4.24	4.04	135.6 K=0.70	0.7854	-2471.73	9646.34	0.256 [1] ✔
T2	140 - 120	1	4.48	4.27	143.4 K=0.70	0.7854	-2475.60	8633.74	0.287 [1] ✔
T3	120 - 100	1	4.48	4.24	142.3 K=0.70	0.7854	-468.08	8761.17	0.053 [1] ✔
T4	100 - 80	1	4.48	4.24	142.3 K=0.70	0.7854	-932.43	8761.17	0.106 [1] ✔
T5	80 - 60	1 1/4	4.48	4.24	113.8 K=0.70	1.2272	-1189.42	20096.40	0.059 [1] ✔
T6	60 - 40	1	4.48	4.24	142.3 K=0.70	0.7854	-1097.45	8761.17	0.125 [1] ✔
T7	40 - 20	1	4.48	4.27	143.4 K=0.70	0.7854	-719.24	8633.74	0.083 [1] ✔
T8	20 - 6.667	1 1/4	4.48	4.20	113.0 K=0.70	1.2272	-437.67	20298.70	0.022 [1] ✔
T9	6.667 - 0	1 1/4	4.05	3.71	99.8 K=0.70	1.2272	-302.09	23528.10	0.013 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	149 - 140	7/8	3.00	2.85	109.6 K=0.70	0.6013	-682.32	10351.80	0.066 [1] ✔
T2	140 - 120	7/8	3.00	2.85	109.6 K=0.70	0.6013	-177.98	10351.80	0.017 [1] ✔
T3	120 - 100	7/8	3.00	2.83	108.8 K=0.70	0.6013	-194.48	10447.40	0.019 [1] ✔
T4	100 - 80	7/8	3.00	2.83	108.8 K=0.70	0.6013	-287.01	10447.40	0.027 [1] ✔
T5	80 - 60	7/8	3.00	2.83	108.8 K=0.70	0.6013	-425.14	10447.40	0.041 [1] ✔
T6	60 - 40	7/8	3.00	2.83	108.8 K=0.70	0.6013	-381.97	10447.40	0.037 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	40 - 20	7/8	3.00	2.85	109.6 K=0.70	0.6013	-302.28	10351.80	0.029 [1]
T8	20 - 6.667	7/8	3.00	2.81	108.0 K=0.70	0.6013	-310.28	10543.30	0.029 [1]
T9	6.667 - 0	7/8	1.50	1.31	79.2 K=1.10	0.6013	-334.53	14003.60	0.024 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	149 - 140	7/8	3.00	2.85	109.6 K=0.70	0.6013	-52.35	10351.80	0.005 [1]
T2	140 - 120	7/8	3.00	2.85	109.6 K=0.70	0.6013	-44.34	10351.80	0.004 [1]

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	149 - 140	1 3/4	9.00	3.00	82.3	2.4053	1707.63	108238.00	0.016 [1]
T2	140 - 120	1 3/4	20.00	3.33	91.4	2.4053	4735.82	108238.00	0.044 [1]
T4	100 - 80	2	20.00	3.33	80.0	3.1416	1228.54	141372.00	0.009 [1]
T5	80 - 60	2	20.00	3.33	80.0	3.1416	5730.82	141372.00	0.041 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	149 - 140	1	4.24	4.04	193.7	0.7854	2455.41	25446.90	0.096 [1] ✔
T2	140 - 120	1	4.48	4.27	204.8	0.7854	2453.63	25446.90	0.096 [1] ✔
T3	120 - 100	1	4.48	4.24	203.3	0.7854	326.50	25446.90	0.013 [1] ✔
T4	100 - 80	1	4.48	4.24	203.3	0.7854	780.44	25446.90	0.031 [1] ✔
T5	80 - 60	1 1/4	4.48	4.24	162.6	1.2272	1076.03	39760.80	0.027 [1] ✔
T6	60 - 40	1	4.48	4.24	203.3	0.7854	868.07	25446.90	0.034 [1] ✔
T7	40 - 20	1	4.48	4.27	204.8	0.7854	520.65	25446.90	0.020 [1] ✔
T8	20 - 6.667	1 1/4	4.48	4.20	161.4	1.2272	173.60	39760.80	0.004 [1] ✔

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	149 - 140	7/8	3.00	2.85	156.6	0.6013	688.95	19482.80	0.035 [1] ✔
T2	140 - 120	7/8	3.00	2.85	156.6	0.6013	2764.66	19482.80	0.142 [1] ✔
T3	120 - 100	7/8	3.00	2.83	155.4	0.6013	194.48	19482.80	0.010 [1] ✔
T4	100 - 80	7/8	3.00	2.83	155.4	0.6013	287.01	19482.80	0.015 [1] ✔
T5	80 - 60	7/8	3.00	2.83	155.4	0.6013	3803.71	19482.80	0.195 [1] ✔
T6	60 - 40	7/8	3.00	2.83	155.4	0.6013	381.97	19482.80	0.020 [1] ✔
T7	40 - 20	7/8	3.00	2.85	156.6	0.6013	302.28	19482.80	0.016 [1] ✔
T8	20 - 6.667	7/8	3.00	2.81	154.3	0.6013	310.28	19482.80	0.016 [1] ✔
T9	6.667 - 0	7/8	1.50	1.31	72.0	0.6013	334.53	19482.80	0.017 [1] ✔

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	149 - 140	7/8	3.00	2.85	156.6	0.6013	54.19	19482.80	0.003 [1]
T2	140 - 120	7/8	3.00	2.85	156.6	0.6013	62.30	19482.80	0.003 [1]
T3	120 - 100	7/8	3.00	2.83	155.4	0.6013	69.34	19482.80	0.004 [1]
T4	100 - 80	7/8	3.00	2.83	155.4	0.6013	78.01	19482.80	0.004 [1]
T5	80 - 60	7/8	3.00	2.83	155.4	0.6013	83.35	19482.80	0.004 [1]
T6	60 - 40	7/8	3.00	2.83	155.4	0.6013	104.51	19482.80	0.005 [1]
T7	40 - 20	7/8	3.00	2.85	156.6	0.6013	104.48	19482.80	0.005 [1]
T8	20 - 6.667	7/8	3.00	2.81	154.3	0.6013	117.51	19482.80	0.006 [1]
T9	6.667 - 0	7/8	3.00	2.81	154.3	0.6013	2808.57	19482.80	0.144 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	149 - 140	Leg	1 3/4	2	-4834.51	65973.80	7.3	Pass
T2	140 - 120	Leg	1 3/4	22	-10275.80	58740.50	17.5	Pass
T3	120 - 100	Leg	2	61	-11228.40	88538.90	12.7	Pass
T4	100 - 80	Leg	2	101	-16570.80	88538.90	18.7	Pass
T5	80 - 60	Leg	2	140	-24545.40	88538.90	27.7	Pass
T6	60 - 40	Leg	2	179	-22053.30	88538.90	24.9	Pass
T7	40 - 20	Leg	1 3/4	218	-17452.00	58740.50	29.7	Pass
T8	20 - 6.667	Leg	2 1/4	257	-17914.20	123623.00	14.5	Pass
T9	6.667 - 0	Leg	2 1/4	283	-18850.70	120569.00	15.6	Pass
T1	149 - 140	Diagonal	1	7	-2471.73	9646.34	25.6	Pass
T2	140 - 120	Diagonal	1	58	-2475.60	8633.74	28.7	Pass
T3	120 - 100	Diagonal	1	69	-468.08	8761.17	5.3	Pass
T4	100 - 80	Diagonal	1	106	-932.43	8761.17	10.6	Pass
T5	80 - 60	Diagonal	1 1/4	157	-1189.42	20096.40	5.9	Pass
T6	60 - 40	Diagonal	1	214	-1097.45	8761.17	12.5	Pass
T7	40 - 20	Diagonal	1	253	-719.24	8633.74	8.3	Pass
T8	20 - 6.667	Diagonal	1 1/4	280	-437.67	20298.70	2.2	Pass
T9	6.667 - 0	Diagonal	1 1/4	293	-302.09	23528.10	1.3	Pass
T1	149 - 140	Horizontal	7/8	16	-682.32	10351.80	6.6	Pass
T2	140 - 120	Horizontal	7/8	55	2764.66	19482.80	14.2	Pass
T3	120 - 100	Horizontal	7/8	72	-194.48	10447.40	1.9	Pass
T4	100 - 80	Horizontal	7/8	109	-287.01	10447.40	2.7	Pass
T5	80 - 60	Horizontal	7/8	154	3803.71	19482.80	19.5	Pass
T6	60 - 40	Horizontal	7/8	193	-381.97	10447.40	3.7	Pass
T7	40 - 20	Horizontal	7/8	227	-302.28	10351.80	2.9	Pass
T8	20 - 6.667	Horizontal	7/8	266	-310.28	10543.30	2.9	Pass
T9	6.667 - 0	Horizontal	7/8	289	-334.53	14003.60	2.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	149 - 140	Top Girt	7/8	5	-52.35	10351.80	0.5	Pass
T2	140 - 120	Top Girt	7/8	26	-44.34	10351.80	0.4	Pass
T3	120 - 100	Top Girt	7/8	64	69.34	19482.80	0.4	Pass
T4	100 - 80	Top Girt	7/8	103	78.01	19482.80	0.4	Pass
T5	80 - 60	Top Girt	7/8	142	83.35	19482.80	0.4	Pass
T6	60 - 40	Top Girt	7/8	181	104.51	19482.80	0.5	Pass
T7	40 - 20	Top Girt	7/8	220	104.48	19482.80	0.5	Pass
T8	20 - 6.667	Top Girt	7/8	259	117.51	19482.80	0.6	Pass
T9	6.667 - 0	Top Girt	7/8	288	2808.57	19482.80	14.4	Pass
T2	140 - 120	Guy A@136.667	5/8	297	9192.33	25440.00	36.1	Pass
T5	80 - 60	Guy A@66.6667	3/4	300	8600.65	34980.00	24.6	Pass
T2	140 - 120	Guy B@136.667	5/8	296	9197.02	25440.00	36.2	Pass
T5	80 - 60	Guy B@66.6667	3/4	299	8601.58	34980.00	24.6	Pass
T2	140 - 120	Guy C@136.667	5/8	295	9196.95	25440.00	36.2	Pass
T5	80 - 60	Guy C@66.6667	3/4	298	8601.65	34980.00	24.6	Pass
							Summary	
						Leg (T7)	29.7	Pass
						Diagonal (T2)	28.7	Pass
						Horizontal (T5)	19.5	Pass
						Top Girt (T9)	14.4	Pass
						Guy A (T2)	36.1	Pass
						Guy B (T2)	36.2	Pass
						Guy C (T2)	36.2	Pass
						RATING =	**36.2**	**Pass**

Exhibit E

Mount Analysis

Mount Analysis Report

October 25, 2021

Dish Wireless Site Number	BOBDL00147A
Infinigy Job Number	2039-Z5555C
Client	Northeast Site Solutions
Carrier	Dish Wireless
Site Location	109 Schofield Road, Willington, CT 06249 41.9223 N NAD83 72.2936 W NAD83
Mount Centerline EL.	145 ft
Mount Classification	Sector Frame
Structural Usage Ratio	**19%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA and ASCE code requirements. The proposed antenna mounts for the proposed carrier are therefore deemed **adequate** to support the final loading configuration as listed in this report.

10-25-21

Dmitriy Albul, P.E.
Engineering Consultant to Infinigy

Contents

Introduction

Infinigy Engineering has been requested to perform a mount analysis of proposed antenna mount from the Dish Wireless equipment. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 19.0. analysis software.

Supporting Documentation

Mount Details	Mount Specification Sabre Industries C10837002C-32788
Construction Drawings	Infinigy Engineering PLLC, Job No. 2039-Z5555C, dated April 29, 2021
RF Design Sheet	Dish Wireless, dated February 15, 2021

Analysis Code Requirements

Wind Speed	125 mph (3-second Gust, $V_{ult.}$)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 1" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2018 Connecticut State Building Code (2015 IBC)
Structure Class	II
Exposure Category	B
Topographic Method	Method 2
Topographic Category	1
Spectral Response	S_S=0.174, S_1=0.063
Site Class	D – Stiff Soil
HMSL	808.17 ft.

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The proposed antenna mounts are therefore deemed adequate to support the final loading configuration as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Dmitriy Albul, P.E.
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(O) (518) 690-0790 | (M) (518) 669-4428
www.infinigy.com

Final Configuration Loading

Mount CL (ft)	Rad. HT (ft)	Vert. O/S (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
145.0	145.0	-	5	3	JMA MX08FRO665-20_VOF	Dish Wireless
			5	3	Fujitsu TA08025-B605	
			5	3	Fujitsu TA08025-B604	
			-	1	Raycap RDIDC-9181-PF-48	

***Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower.**

Structure Usages

Plates	13%	Pass
Arms	4%	Pass
Mount Pipes	19%	Pass
Stabilizer	4%	Pass
Bracing	7%	Pass
Connections	15%	Pass
Rating	**19%**	Pass

Assumptions and Limitations

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

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Date:	10/25/2021
Site Name:	BOBDL00147A
Project Engineer:	DVA
Project No:	2039-Z5555C
Customer:	Northeast Site Solutions
Carrier:	Dish Wireless

Building Code:	2015	
ASCE Standard:	ASCE 7-10	
TIA Standard:	G	
Mount Type:	Sector Frame	
	Proposed	
Mount Centerline:	145	ft
Superstructure Height:	N/A	ft
Structure Type:	Tower	

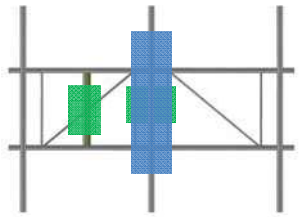
Factors	
Gh:	1.000
K_{zmin}:	0.700
K_z:	1.099
K_d:	0.950
K_{zt}:	1.000
Ka:	0.900
I wind:	1.000
I ice:	1.000

q_z:	24.66	psf
Surface Wind Pressure:	0.00	psf

Site Information		
Exposure Category:	B	
Risk Category:	II	
Ultimate Wind Speed:	124	mph
Design Wind Speed:	96	mph
Ice Thickness:	1.00	in
Ice Wind Speed:	50.0	mph
Escalated Ice Thickness:	2.32	in
Topographic Method:	2	
Topographic Category:	1	

Service Wind:	30.0	mph
Lm (man live load) =	500.0	lb
Lv (man live load) =	250.0	lb

ELEVATION VIEW



PLAN VIEW

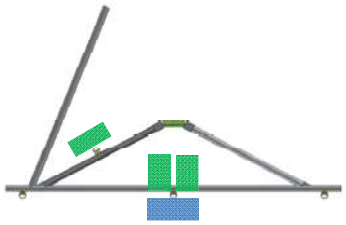


Table 1. Equipment Specifications and Wind Pressure

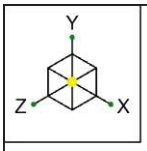
Manufacturer	Model	Elevation	Pipe Label	Weight (lb)	Height (in)	Width (in)	Depth (in)	EPA_N	EPA_T	$EPA_{N\ w/\ ice}$	$EPA_{T\ w/\ ice}$	q_z:	$q_{z\ ice}$:	$q_{z\ live}$:
JMA WIRELESS	MX08FRO665-20	145	30	64.50	72.8	20	8	8.01	3.21	9.08	4.15	24.66	6.68	2.41
FUJITSU	TA08025-B605	145	30	74.95	14.96	15.75	9.06	1.85	1.09	3.14	2.15	24.66	6.68	2.41
FUJITSU	TA08025-B604	145	30	63.93	14.96	15.75	7.87	1.85	0.96	3.14	1.97	24.66	6.68	2.41
RAYCAP	RDIDC-9181-PF-48	145	37	21.85	16	14	8	1.77	1.05	3.04	2.10	24.66	6.68	2.41

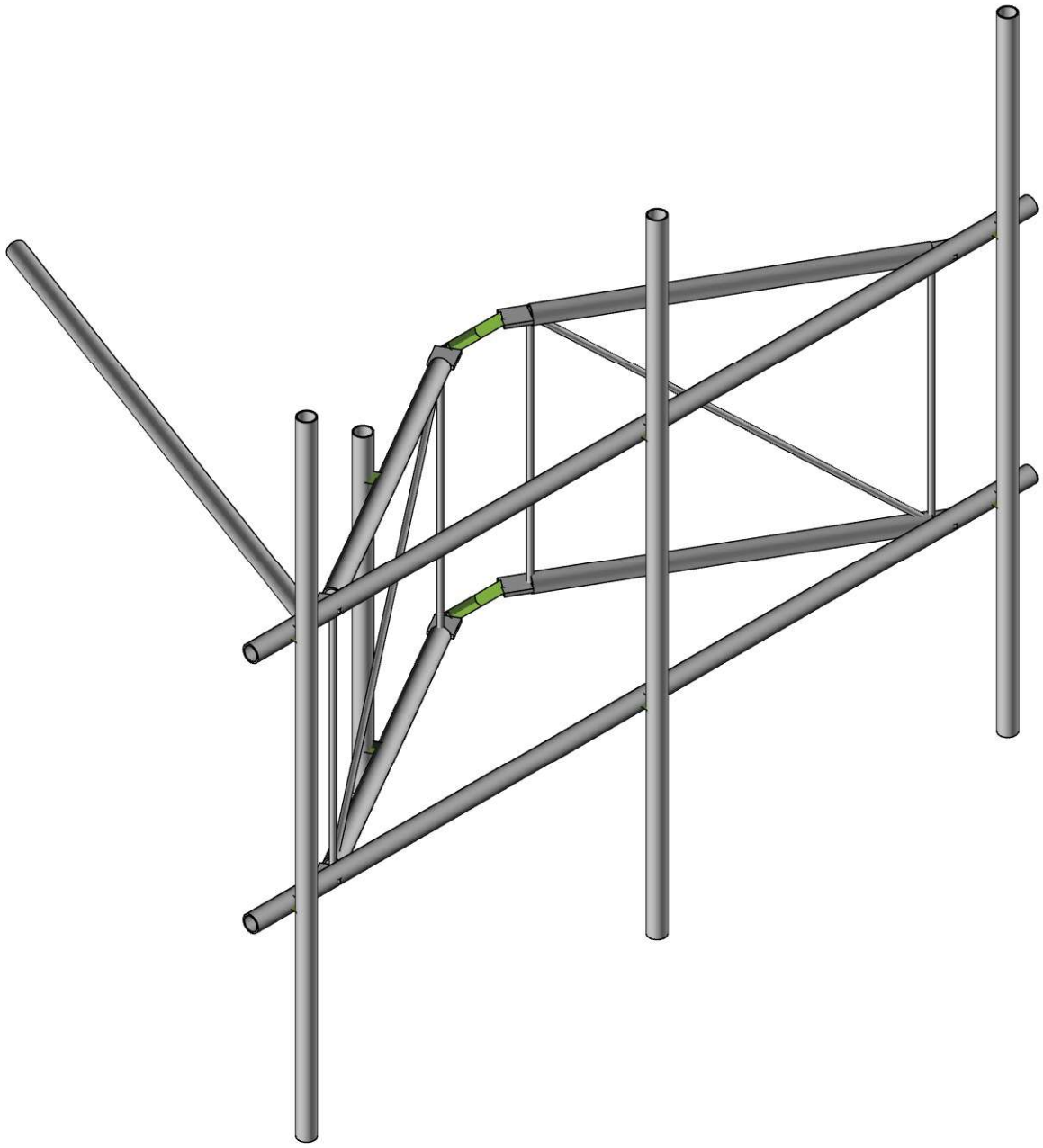
Table 2. Equipment Wind and Seismic Loads

Manufacturer	Model	Wind Load (F_A), lb		Wind Load Ice Case (F_A), lb			Wind Load Service Case		Seismic
JMA WIRELESS	MX08FRO665-20	178	71	55	25	419	17	7	0.0
FUJITSU	TA08025-B605	41	24	19	13	74	4	2	0.0
FUJITSU	TA08025-B604	41	21	19	12	72	4	2	0.0
RAYCAP	RDIDC-9181-PF-48	39	23	18	13	71	4	2	0.0

Table 3. Member Capacities

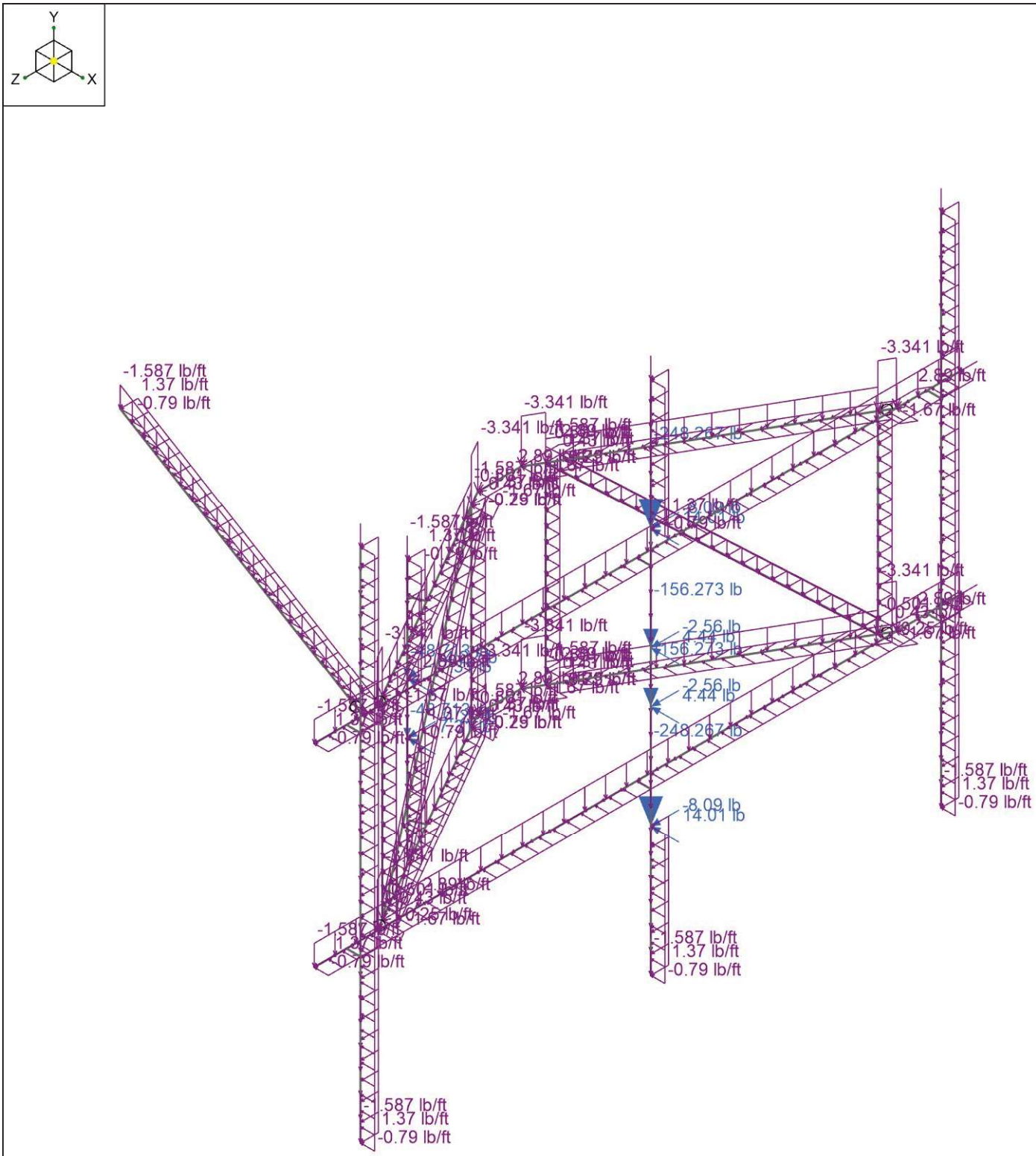
Member Name	Member Shape	Wind load (plf)	Wind Load Ice (plf)	Weight Ice (plf)	Bending Check	Shear Check	Total Capacity	Controlling Capacity
Mount Pipes	PIPE_2.0	5.86	1.59	1.69	19%	3%	19%	19%
Stabilizer	PIPE_2.0	5.86	1.59	1.69	4%	0%	4%	
Bracing	0.75" SR	1.85	0.50	1.30	7%	1%	7%	
Arms	PIPE_2.0X	5.86	1.59	1.69	4%	2%	4%	
Frame Rails	PIPE_2.0X	5.86	1.59	1.69	18%	4%	18%	
Plates	3"x.5"	12.33	3.34	1.84	13%	8%	13%	





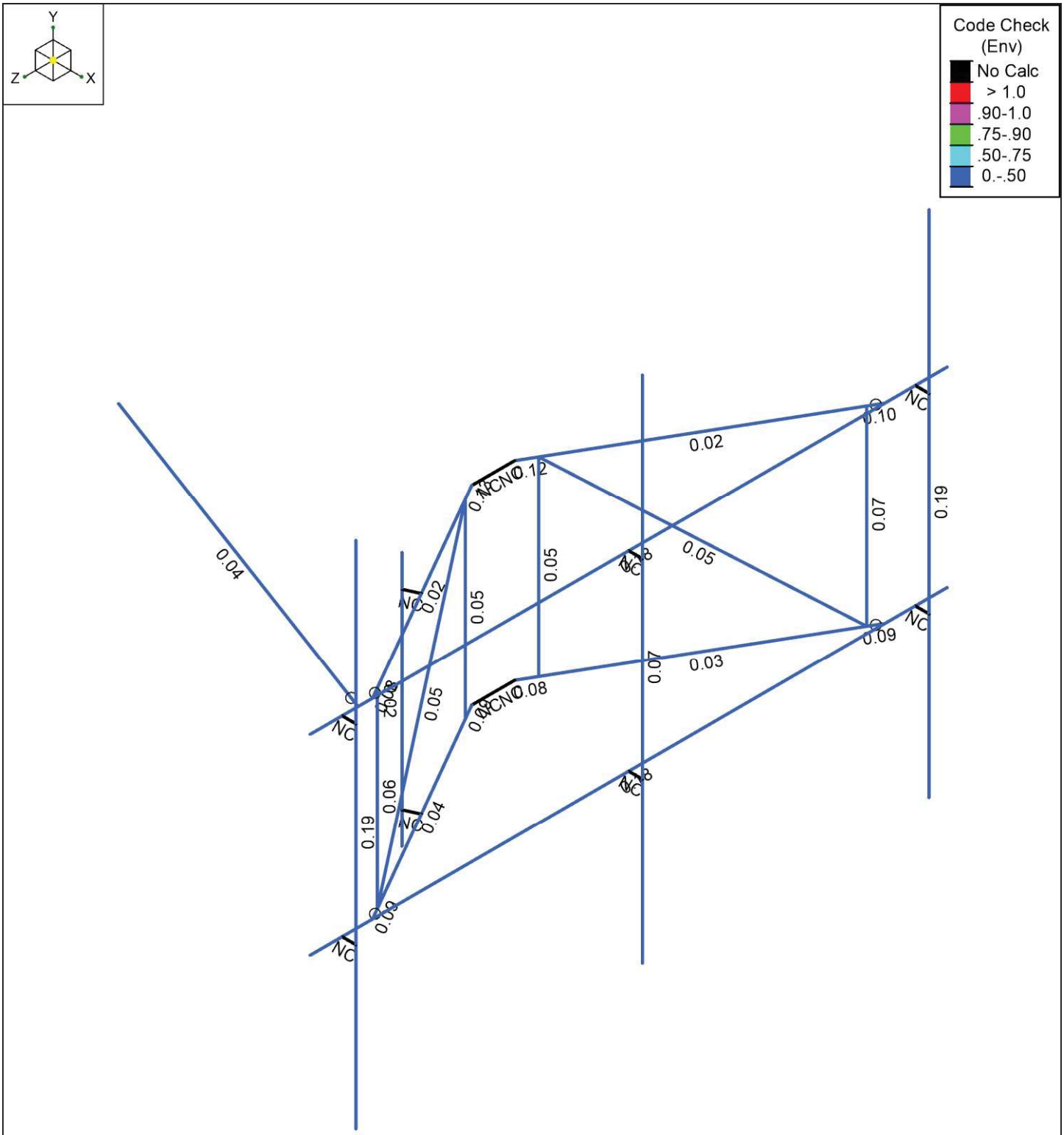
Envelope Only Solution

Infinigy Engineering, PLLC	BOBDL00147A	SK-1
DVA		Oct 25, 2021
2039-Z5555C	Proposed Configuration Model	BOBDL00147A.R3D



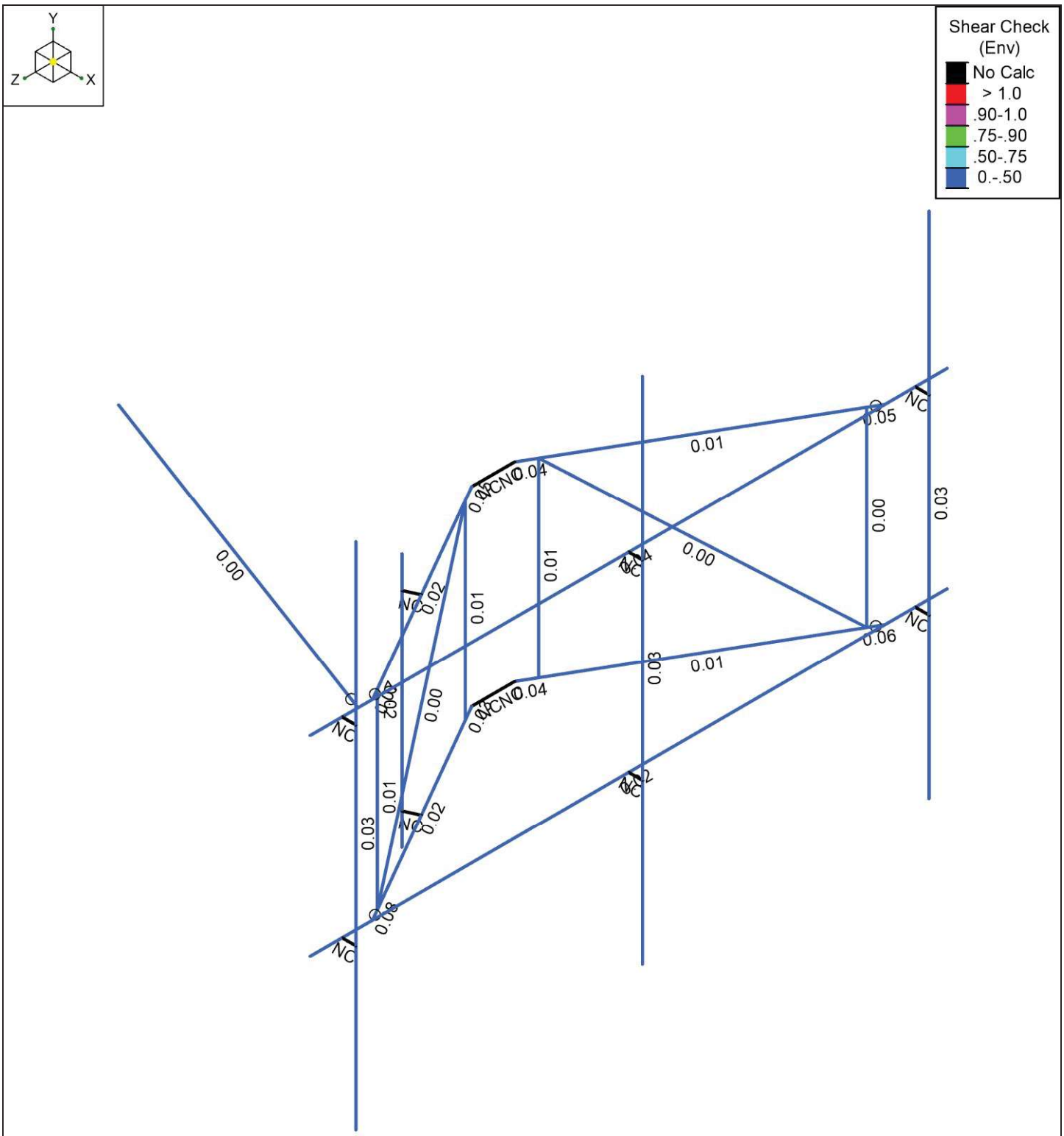
Loads: LC 37, 1.2D + 1.0Di +1.0Wi AZI 300
Envelope Only Solution

Infinigy Engineering, PLLC	BOBDL00147A	SK-2
DVA		Oct 25, 2021
2039-Z5555C	Controlling Load Case	BOBDL00147A.R3D



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Infinigy Engineering, PLLC	BOBDL00147A	SK-3
DVA		Oct 25, 2021
2039-Z5555C	Member Bending Check	BOBDL00147A.R3D



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Infinigy Engineering, PLLC	BOBDL00147A	SK-4
DVA		Oct 25, 2021
2039-Z5555C	Member Shear Check	BOBDL00147A.R3D

Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Wall Panels

Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Nodal

Codes

Hot Rolled Steel	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): LRFD
Cold Formed Steel	AISI S100-12: LRFD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-12: ASD
Temperature	< 100F
Concrete	ACI 318-11
Masonry	ACI 530-11: Strength
Aluminum	AA ADM1-10: LRFD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)

Concrete

Column Design

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No

Model Settings (Continued)

List forces which were ignored for design in the Detail Report	Yes

Rebar

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

Code	ASCE 7-10
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_S (g)	1
T_L (sec)	5

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N3		RIGID	None	None	RIGID	Typical
2	M2	N5	N8		Arms	Beam	Pipe	A500 Gr.C	Typical
3	M3	N2	N4		RIGID	None	None	RIGID	Typical
4	M4	N6	N7		Arms	Beam	Pipe	A500 Gr.C	Typical
5	M5	N8	N7		Bracing	VBrace	BAR	A572 Gr.50	Typical
6	M6	N5	N6		Bracing	VBrace	BAR	A572 Gr.50	Typical
7	M7	N6	N8		Bracing	VBrace	BAR	A572 Gr.50	Typical
8	M8	N1	N9		RIGID	None	None	RIGID	Typical
9	M9	N2	N10		RIGID	None	None	RIGID	Typical
10	M10	N16	N12		Frame Rails	Beam	Pipe	A500 Gr.C	Typical
11	M11	N15	N11		Frame Rails	Beam	Pipe	A500 Gr.C	Typical
12	M12	N7	N19	90	Plates	Beam	BAR	A572 Gr.50	Typical
13	M13	N8	N20	90	Plates	Beam	BAR	A572 Gr.50	Typical
14	M14	N4	N6	90	Plates	Beam	BAR	A572 Gr.50	Typical
15	M15	N3	N5	90	Plates	Beam	BAR	A572 Gr.50	Typical
16	M16	N21	N24		Arms	Beam	Pipe	A500 Gr.C	Typical
17	M17	N22	N23		Arms	Beam	Pipe	A500 Gr.C	Typical
18	M18	N24	N23		Bracing	VBrace	BAR	A572 Gr.50	Typical
19	M19	N21	N22		Bracing	VBrace	BAR	A572 Gr.50	Typical
20	M20	N22	N24		Bracing	VBrace	BAR	A572 Gr.50	Typical
21	M21	N23	N25	90	Plates	Beam	BAR	A572 Gr.50	Typical
22	M22	N24	N26	90	Plates	Beam	BAR	A572 Gr.50	Typical
23	M23	N10	N22	90	Plates	Beam	BAR	A572 Gr.50	Typical
24	M24	N9	N21	90	Plates	Beam	BAR	A572 Gr.50	Typical
25	M25	N28	N27		Stabilizer	HBrace	Pipe	A53 Gr.B	Typical
26	M26	N32	N30		RIGID	None	None	RIGID	Typical
27	M27	N29	N31		RIGID	None	None	RIGID	Typical
28	M28	N37	N38		Mount Pipes	Column	Pipe	A53 Gr.B	Typical
29	M29	N41	N42		Mount Pipes	Column	Pipe	A53 Gr.B	Typical
30	M30	N45	N46		Mount Pipes	Column	Pipe	A53 Gr.B	Typical
31	M31	N17	N39		RIGID	None	None	RIGID	Typical
32	M32	N18	N40		RIGID	None	None	RIGID	Typical
33	M33	N34	N44		RIGID	None	None	RIGID	Typical
34	M34	N33	N43		RIGID	None	None	RIGID	Typical
35	M35	N14	N36		RIGID	None	None	RIGID	Typical
36	M36	N13	N35		RIGID	None	None	RIGID	Typical
37	M37	N47	N48		Mount Pipes	Column	Pipe	A53 Gr.B	Typical

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[K]
1	General Members				
2	RIGID		12	37.3	0
3	Total General		12	37.3	0
4					
5	Hot Rolled Steel				
6	A500 Gr.C	PIPE_2.0X	6	421	0.18
7	A53 Gr.B	PIPE_2.0	5	413	0.119
8	A572 Gr.50	0.75" SR	6	259.6	0.033
9	A572 Gr.50	3"x.5"	8	23.2	0.01
10	Total HR Steel		25	1116.9	0.342

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Mount Pipes	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
2	Stabilizer	PIPE_2.0	HBrace	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
3	Bracing	0.75" SR	VBrace	BAR	A572 Gr.50	Typical	0.442	0.016	0.016	0.031
4	Arms	PIPE_2.0X	Beam	Pipe	A500 Gr.C	Typical	1.4	0.827	0.827	1.65

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
5	Frame Rails	PIPE_2.0X	Beam	Pipe	A500 Gr.C	Typical	1.4	0.827	0.827	1.65
6	Plates	3"x.5"	Beam	BAR	A572 Gr.50	Typical	1.5	0.031	1.125	0.112

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Self Weight	DL	-1	8	
2	Wind Load AZI 0	WLX		16	78
3	Wind Load AZI 30	None		16	78
4	Wind Load AZI 60	None		16	78
5	Wind Load AZI 90	WLZ		16	78
6	Wind Load AZI 120	None		16	78
7	Wind Load AZI 150	None		16	78
8	Wind Load AZI 180	None		16	78
9	Wind Load AZI 210	None		16	78
10	Wind Load AZI 240	None		16	78
11	Wind Load AZI 270	None		16	78
12	Wind Load AZI 300	None		16	78
13	Wind Load AZI 330	None		16	78
14	Ice Weight	OL1		8	37
15	Ice Wind Load AZI 0	OL2		16	78
16	Ice Wind Load AZI 30	None		16	78
17	Ice Wind Load AZI 60	None		16	78
18	Ice Wind Load AZI 90	OL3		16	78
19	Ice Wind Load AZI 120	None		16	78
20	Ice Wind Load AZI 150	None		16	78
21	Ice Wind Load AZI 180	None		16	78
22	Ice Wind Load AZI 210	None		16	78
23	Ice Wind Load AZI 240	None		16	78
24	Ice Wind Load AZI 270	None		16	78
25	Ice Wind Load AZI 300	None		16	78
26	Ice Wind Load AZI 330	None		16	78
29	Service Live Loads	LL			
30	Maintenance Load 1	LL		1	
31	Maintenance Load 2	LL		1	
32	Maintenance Load 3	LL		1	
33	Maintenance Load 4	LL		1	
34	Maintenance Load 5	LL		1	
35	Maintenance Load 6	LL		1	

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4				
2	1.2DL + 1.6WL AZI 0	Yes	Y	1	1.2	2	1.6		
3	1.2DL + 1.6WL AZI 30	Yes	Y	1	1.2	3	1.6		
4	1.2DL + 1.6WL AZI 60	Yes	Y	1	1.2	4	1.6		
5	1.2DL + 1.6WL AZI 90	Yes	Y	1	1.2	5	1.6		
6	1.2DL + 1.6WL AZI 120	Yes	Y	1	1.2	6	1.6		
7	1.2DL + 1.6WL AZI 150	Yes	Y	1	1.2	7	1.6		
8	1.2DL + 1.6WL AZI 180	Yes	Y	1	1.2	8	1.6		
9	1.2DL + 1.6WL AZI 210	Yes	Y	1	1.2	9	1.6		
10	1.2DL + 1.6WL AZI 240	Yes	Y	1	1.2	10	1.6		
11	1.2DL + 1.6WL AZI 270	Yes	Y	1	1.2	11	1.6		
12	1.2DL + 1.6WL AZI 300	Yes	Y	1	1.2	12	1.6		
13	1.2DL + 1.6WL AZI 330	Yes	Y	1	1.2	13	1.6		
14	0.9DL + 1.6WL AZI 0	Yes	Y	1	0.9	2	1.6		
15	0.9DL + 1.6WL AZI 30	Yes	Y	1	0.9	3	1.6		
16	0.9DL + 1.6WL AZI 60	Yes	Y	1	0.9	4	1.6		

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
17	0.9DL + 1.6WL AZI 90	Yes	Y	1	0.9	5	1.6		
18	0.9DL + 1.6WL AZI 120	Yes	Y	1	0.9	6	1.6		
19	0.9DL + 1.6WL AZI 150	Yes	Y	1	0.9	7	1.6		
20	0.9DL + 1.6WL AZI 180	Yes	Y	1	0.9	8	1.6		
21	0.9DL + 1.6WL AZI 210	Yes	Y	1	0.9	9	1.6		
22	0.9DL + 1.6WL AZI 240	Yes	Y	1	0.9	10	1.6		
23	0.9DL + 1.6WL AZI 270	Yes	Y	1	0.9	11	1.6		
24	0.9DL + 1.6WL AZI 300	Yes	Y	1	0.9	12	1.6		
25	0.9DL + 1.6WL AZI 330	Yes	Y	1	0.9	13	1.6		
26	1.2D + 1.0Di	Yes	Y	1	1.2	14	1		
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	14	1	15	1
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	14	1	16	1
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	14	1	17	1
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	14	1	18	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	14	1	19	1
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	14	1	20	1
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	14	1	21	1
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	14	1	22	1
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	14	1	23	1
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	14	1	24	1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	14	1	25	1
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	14	1	26	1
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.2	27	1	28	
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.2	27	0.866	28	0.5
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.2	27	0.5	28	0.866
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.2	27		28	1
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.2	27	-0.5	28	0.866
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.2	27	-0.866	28	0.5
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.2	27	-1	28	
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.2	27	-0.866	28	-0.5
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.2	27	-0.5	28	-0.866
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.2	27		28	-1
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.2	27	0.5	28	-0.866
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.2	27	0.866	28	-0.5
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.9	27	1	28	
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.9	27	0.866	28	0.5
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.9	27	0.5	28	0.866
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.9	27		28	1
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.9	27	-0.5	28	0.866
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.9	27	-0.866	28	0.5
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.9	27	-1	28	
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.9	27	-0.866	28	-0.5
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.9	27	-0.5	28	-0.866
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.9	27		28	-1
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.9	27	0.5	28	-0.866
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.9	27	0.866	28	-0.5
63	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 0	Yes	Y	1	1	2	0.098	29	1.5
64	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 30	Yes	Y	1	1	3	0.098	29	1.5
65	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 60	Yes	Y	1	1	4	0.098	29	1.5
66	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 90	Yes	Y	1	1	5	0.098	29	1.5
67	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 120	Yes	Y	1	1	6	0.098	29	1.5
68	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 150	Yes	Y	1	1	7	0.098	29	1.5
69	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 180	Yes	Y	1	1	8	0.098	29	1.5
70	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 210	Yes	Y	1	1	9	0.098	29	1.5
71	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 240	Yes	Y	1	1	10	0.098	29	1.5
72	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 270	Yes	Y	1	1	11	0.098	29	1.5
73	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 300	Yes	Y	1	1	12	0.098	29	1.5
74	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 330	Yes	Y	1	1	13	0.098	29	1.5

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
75	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.156
76	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.156
77	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.156
78	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.156
79	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.156
80	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.156
81	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.156
82	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.156
83	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.156
84	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.156
85	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.156
86	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.156
87	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.156
88	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.156
89	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.156
90	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.156
91	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.156
92	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.156
93	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.156
94	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.156
95	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.156
96	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.156
97	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.156
98	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.156
99	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.156
100	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.156
101	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.156
102	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.156
103	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.156
104	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.156
105	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.156
106	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.156
107	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.156
108	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.156
109	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.156
110	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.156
111	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.156
112	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.156
113	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.156
114	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.156
115	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.156
116	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.156
117	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.156
118	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.156
119	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.156
120	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.156
121	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.156
122	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.156
123	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.156
124	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.156
125	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.156
126	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.156
127	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.156
128	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.156
129	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.156
130	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.156
131	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.156
132	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.156

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
133	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.156
134	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	38	1.5	13	0.156
135	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	39	1.5	2	0.156
136	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	39	1.5	3	0.156
137	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	39	1.5	4	0.156
138	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	39	1.5	5	0.156
139	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	39	1.5	6	0.156
140	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	39	1.5	7	0.156
141	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	39	1.5	8	0.156
142	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	39	1.5	9	0.156
143	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	39	1.5	10	0.156
144	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	39	1.5	11	0.156
145	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	39	1.5	12	0.156
146	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	39	1.5	13	0.156

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-in]	LC	MY [lb-in]	LC	MZ [lb-in]	LC
1	N2	max	345.594	15	874.41	31	575.416	91	1259.215	97	0	146	1120.071	38
2		min	-1056.274	9	296.526	24	-654.29	12	-856.58	6	0	1	277.953	19
3	N1	max	1010.376	27	554.981	37	370.964	6	806.156	95	0	146	811.734	35
4		min	-216.27	20	190.38	18	-553.536	97	-519.862	4	0	1	225.489	16
5	N28	max	482.897	24	18.468	31	149.231	24	0	146	0	146	0	146
6		min	-487.258	18	9.982	24	-150.729	18	0	1	0	1	0	1
7	Totals:	max	1103.253	14	1444.078	37	765.315	6						
8		min	-1103.253	8	510.183	18	-826.492	24						

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-in]	phi*Mn z-z [lb-in]	Cb	Eqn
1	M28	PIPE_2.0	0.192	66	37	0.032	30		31	14916.096	32130	22459.5	22459.5	3	H1-1b
2	M29	PIPE_2.0	0.19	66	31	0.034	30		37	14916.096	32130	22459.5	22459.5	2.126	H1-1b
3	M11	PIPE_2.0X	0.182	60	34	0.04	10		12	12974.268	57960	39909.6	39909.6	1.908	H1-1b
4	M10	PIPE_2.0X	0.175	60	38	0.024	12.5		29	12974.268	57960	39909.6	39909.6	1.893	H1-1b
5	M23	3"x.5"	0.129	0	32	0.051	0	y	12	64929.826	67500	8460	50625	1.179	H1-1b
6	M14	3"x.5"	0.116	0	88	0.039	0.38	y	6	64929.826	67500	8460	50625	1.036	H1-1b
7	M12	3"x.5"	0.101	0	98	0.053	2.5	y	32	66023.816	67500	8460	50625	1.672	H1-1b
8	M22	3"x.5"	0.093	0	32	0.083	2.5	y	38	66023.816	67500	8460	50625	1.149	H1-1b
9	M24	3"x.5"	0.092	0	38	0.032	0.38	y	10	64929.826	67500	8460	50625	1.186	H1-1b
10	M13	3"x.5"	0.089	0	34	0.056	2.5	y	29	66023.816	67500	8460	50625	1.62	H1-1b
11	M21	3"x.5"	0.082	0	29	0.074	2.5	y	34	66023.816	67500	8460	50625	1.667	H1-1b
12	M15	3"x.5"	0.081	0	95	0.037	3.313	y	31	64929.826	67500	8460	50625	1.033	H1-1b
13	M30	PIPE_2.0	0.07	66	12	0.026	66		13	14916.096	32130	22459.5	22459.5	2.609	H1-1b
14	M5	0.75" SR	0.068	0	98	0.005	36		6	5691.919	19890	3072	3072	2.077	H1-1b*
15	M18	0.75" SR	0.06	0	28	0.006	36		6	5691.919	19890	3072	3072	2.275	H1-1b*
16	M6	0.75" SR	0.049	0	95	0.006	0		12	5691.919	19890	3072	3072	2.348	H1-1b*
17	M7	0.75" SR	0.049	57.824	38	0.003	57.824		12	2206.248	19890	3072	3072	2.623	H1-1b
18	M20	0.75" SR	0.048	57.824	29	0.003	57.824		4	2206.248	19890	3072	3072	2.184	H1-1b
19	M19	0.75" SR	0.046	0	29	0.006	0		12	5691.919	19890	3072	3072	2.254	H1-1b*
20	M25	PIPE_2.0	0.041	38.498	12	0.003	76.996		6	19612.716	32130	22459.5	22459.5	1.136	H1-1b
21	M16	PIPE_2.0X	0.036	22.625	28	0.017	45.25		37	45905.544	57960	39909.6	39909.6	1.465	H1-1b
22	M2	PIPE_2.0X	0.027	45.25	98	0.009	45.25		31	45905.544	57960	39909.6	39909.6	2.533	H1-1b
23	M17	PIPE_2.0X	0.024	0	6	0.015	45.25		34	45905.544	57960	39909.6	39909.6	1.408	H1-1b
24	M37	PIPE_2.0	0.022	42	4	0.021	6		12	26521.424	32130	22459.5	22459.5	2.148	H1-1b
25	M4	PIPE_2.0X	0.021	45.25	95	0.01	45.25		31	45905.544	57960	39909.6	39909.6	2.42	H1-1b

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

BOLT CONNECTION CALCULATION

BOLT PROPERTIES

Date:	10/25/2021
Site:	*BOBDL00147A*
Engineer:	*DVA*
Job No:	*2039-Z5555C*
Connection Location:	*Mount to Tower*

Bolt Capacity Equation	TIA-222-G	
Connection Type	Steel	
Bolt Size, **d**	1/2	in
Threads per Inch, **n**	13	
Steel Grade	A307	
Bolt Ultimate Tensile Stress, F_u	60	ksi
Threads Exclusion	N	
Shear Plane	1	

Net Bolt Cross-Sectional Area, **An**	0.142	in^2
Gross Bolt Cross-Sectional Area, **Ag**	0.196	in^2
Tensile Steel Strength (per bolt), φR_{nt}	6385	lbs
Shear Steel Strength (per bolt), φR_{nv}	3976	lbs

INFINIGY

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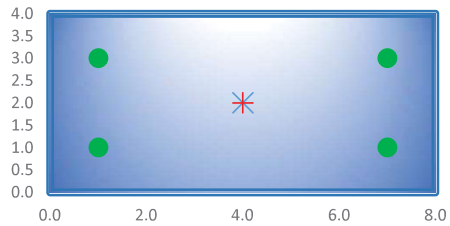
BOLT CONNECTION CALCULATION

BOLT GROUP CHECK

Date:	*10/25/2021*
Site:	*BOBDL00147A*
Engineer:	*DVA*
Job No:	*2039-Z5555C*
Connection Location:	*Mount to Tower*

Bolt Group Pattern



Loads Properties					
Controlling LC:	31				
Load Point Number:	N2				
X-Coordinate (in.)	4.00				
Y-Coordinate (in.)	2.00				
Z-Coordinate (in.)	2.00				
Shear Load, Px (lbs)	-22.000	0	0	0	0
Shear Load, Py (lbs)	-874.000	0	0	0	0
Axial Load, Pz (lbs)	863.000	0	0	0	0
Moment, Mx (lb-in)	1078.000	0	0	0	0
Moment, My (lb-in)	0.000	0	0	0	0
Moment, Mz (lb-in)	769.000	0	0	0	0

Member Properties	***X***	***Y***
Start Coordinates:	0.0	0.0
Dimentions:	8.0	4.0

Number of Bolts: 4

		Bolt Coordinates		***Bolt Loads***		***Steel Bolt Usage***			
No.	***Bolt Type***	***Xo (in)***	***Yo (in)***	***Axial (lbs)***	***Shear (lbs)***	***Tension***	***Shear***	***Combined***	***Max. Capacity***
1	Main Type	1.00	1.00	-494.42	162.71	0.0%	4.1%	4.1%	4.1%
2	Main Type	7.00	3.00	925.92	276.52	14.5%	7.0%	14.5%	14.5%
3	Main Type	1.00	3.0	918.58	161.41	14.4%	4.1%	14.4%	14.4%
4	Main Type	7.00	1.0	-487.08	277.28	0.0%	7.0%	7.0%	7.0%

Bolt Group Properties:

Xc =	4.00	in.
Yc =	2.00	in.
Ic.y =	7.07	in.^2
Ic.x =	0.79	in.^2
Ic.xy =	7.85	in.^2

Loads at Center of Gravity of Bolt Group:

Pz =	863.00	lbs
Px =	-22.00	lbs
Py =	-874.00	lbs
Mx =	2826.00	lb-in
My =	-44.00	lb-in
Mz =	769.00	lb-in

Total Capacity of Bolt Group: 14.5%

U-bolt Connection: No

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00147A

BOBDL00147A
109 Schofield Road
Willington, Connecticut 06279

October 6, 2021

EBI Project Number: 6221005579

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**1.42%**

October 6, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00147A - BOBDL00147A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **109 Schofield Road** in **Willington, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless antenna facility located at 109 Schofield Road in Willington, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 135 feet above ground level (AGL).

8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

9) Emissions from additional carriers were not included because there were no other carriers listed in the Connecticut Siting Council active database.

10) All calculations were done with respect to uncontrolled / general population threshold limits.

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	135 feet	Height (AGL):	135 feet	Height (AGL):	135 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**1.42%**	Antenna B1 MPE %:	**1.42%**	Antenna C1 MPE %:	**1.42%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.42%
no additional carriers	N/A
Site Total MPE % :	1.42%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.42%
Dish Wireless Sector B Total:	1.42%
Dish Wireless Sector C Total:	1.42%
Site Total MPE % :	1.42%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	135.0	1.93	600 MHz n71	400	0.48%
Dish Wireless 1900 MHz n70	4	542.70	135.0	4.69	1900 MHz n70	1000	0.47%
Dish Wireless 2190 MHz n66	4	542.70	135.0	4.69	2190 MHz n66	1000	0.47%
						Total:	**1.42%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.42%
Sector B:	1.42%
Sector C:	1.42%
Dish Wireless Maximum MPE % (Sector A):	1.42%
Site Total:	1.42%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **1.42%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization

October 26, 2021

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

Re: ***TARPON TOWERS II, LLC - LETTER OF AUTHORIZATION***
Tower Share Application, Tarpon Towers II, LLC Telecommunications Site at:
109 SCHOFIELD ROAD, WILLINGTON, TOLLAND COUNTY, CONNECTICUT 06279

Tarpon Towers II, LLC ("Tarpon") hereby authorizes DISH Wireless LLC, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

Tarpon ID/Name: CT1010 Willington
Customer Site ID: BOBDL00147A / TAR- Schofield Road
Site Address: 109 SCHOFIELD ROAD, WILLINGTON, TOLLAND COUNTY, CONNECTICUT -06279

Tarpon Towers II, LLC

By: _____
Name: Brett Buggeln
Title: COO
Date: October 26, 2021

Exhibit H

Recipient Mailings

BOB0L00147A

UNITED STATES POSTAL SERVICE.

UNIONVILLE
24 MILL ST
UNIONVILLE, CT 06085-9998
(800)275-8777

10/27/2021 02:01 PM

Product	Qty	Unit Price	Price
Prepaid Mail Bradenton, FL 34202 Weight: 0 lb 2.00 oz Acceptance Date: Wed 10/27/2021 Tracking #: 9405 5036 9930 0043 9220 30	1		$0.00
Prepaid Mail Willington, CT 06279 Weight: 0 lb 11.80 oz Acceptance Date: Wed 10/27/2021 Tracking #: 9405 5036 9930 0043 9220 09	1		$0.00
Prepaid Mail Willington, CT 06279 Weight: 0 lb 11.70 oz Acceptance Date: Wed 10/27/2021 Tracking #: 9405 5036 9930 0043 9219 89	1		$0.00
Prepaid Mail Willington, CT 06279 Weight: 0 lb 11.80 oz Acceptance Date: Wed 10/27/2021 Tracking #: 9405 5036 9930 0043 9219 96	1		$0.00
Grand Total:			$0.00

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

9405 5036 9930 0043 9219 89 0087 0000 0010 6279

usps.com
$8.70
US POSTAGE
Flat Rate Env

10/27/2021 Mailed from 01566

U.S. POSTAGE PAID

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 10/30/21

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

0006

R021

SHIP TO: FIRST SELECTWOMAN ERIKA WIECENSKI
TOWN OF WILLINGTON
40 OLD FARMS RD
WILLINGTON CT 06279-1720

USPS TRACKING #

9405 5036 9930 0043 9219 89

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :

9405 5036 9930 0043 9219 89

Trans. #:	546869888
Print Date:	10/26/2021
Ship Date:	10/27/2021
Expected Delivery Date:	10/30/2021

Priority Mail® Postage:	$8.70
Total:	$8.70

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

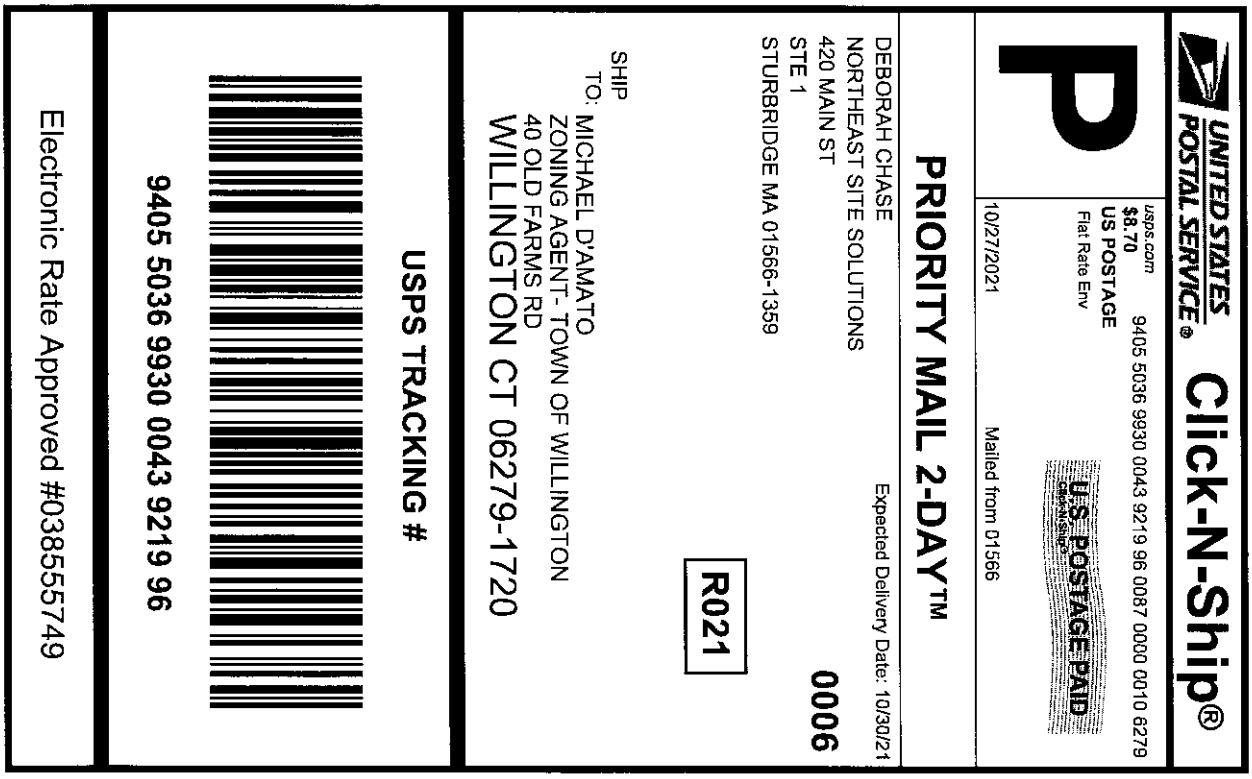
To: FIRST SELECTWOMAN ERIKA WIECENSKI
TOWN OF WILLINGTON
40 OLD FARMS RD
WILLINGTON CT 06279-1720

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

UNITED STATES POSTAL SERVICE®

Thank you for shipping with the United States Postal Service!

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



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0043 9219 96

Trans. #:	546869888
Print Date:	10/26/2021
Ship Date:	10/27/2021
Expected Delivery Date:	10/30/2021

Priority Mail® Postage:	$8.70
Total:	$8.70

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

To: MICHAEL D'AMATO
ZONING AGENT- TOWN OF WILLINGTON
40 OLD FARMS RD
WILLINGTON CT 06279-1720

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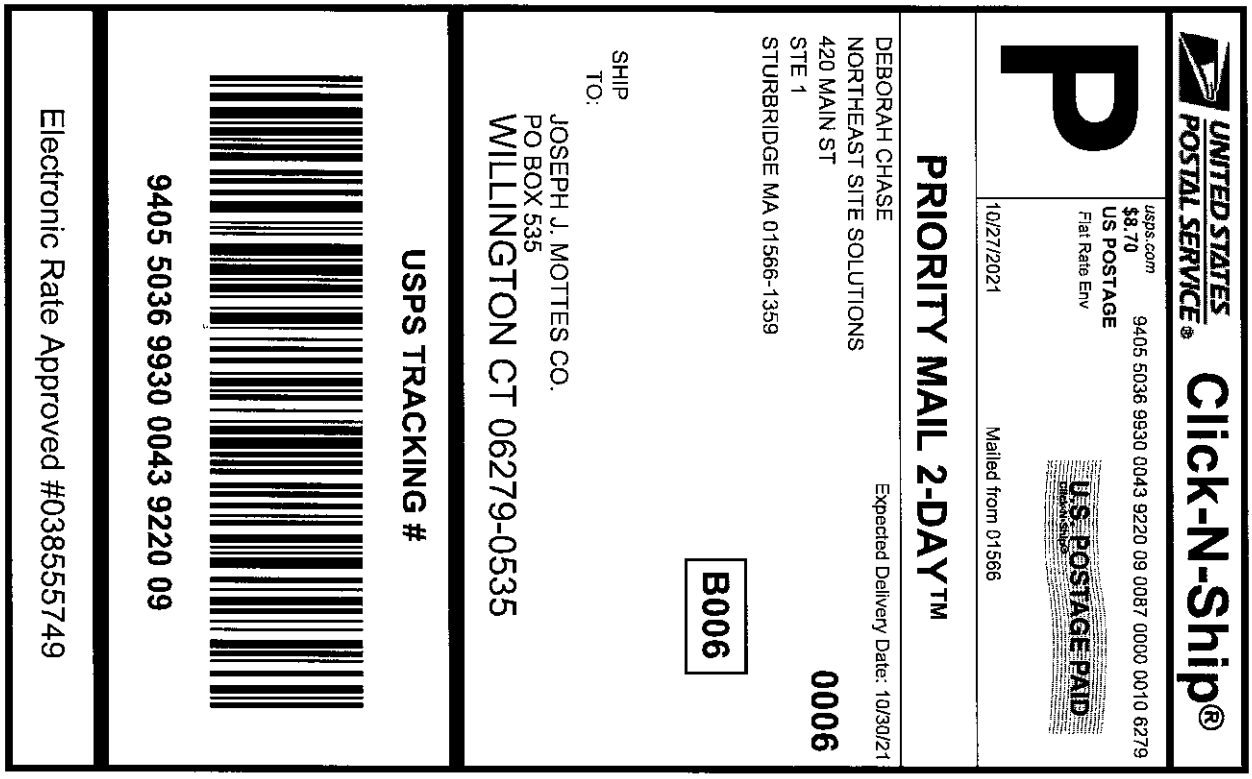

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0043 9220 09

Trans. #:	546869888
Print Date:	10/26/2021
Ship Date:	10/27/2021
Expected Delivery Date:	10/30/2021

Priority Mail® Postage:	$8.70
Total:	$8.70

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

To: JOSEPH J. MOTTES CO.
PO BOX 535
WILLINGTON CT 06279-0535

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

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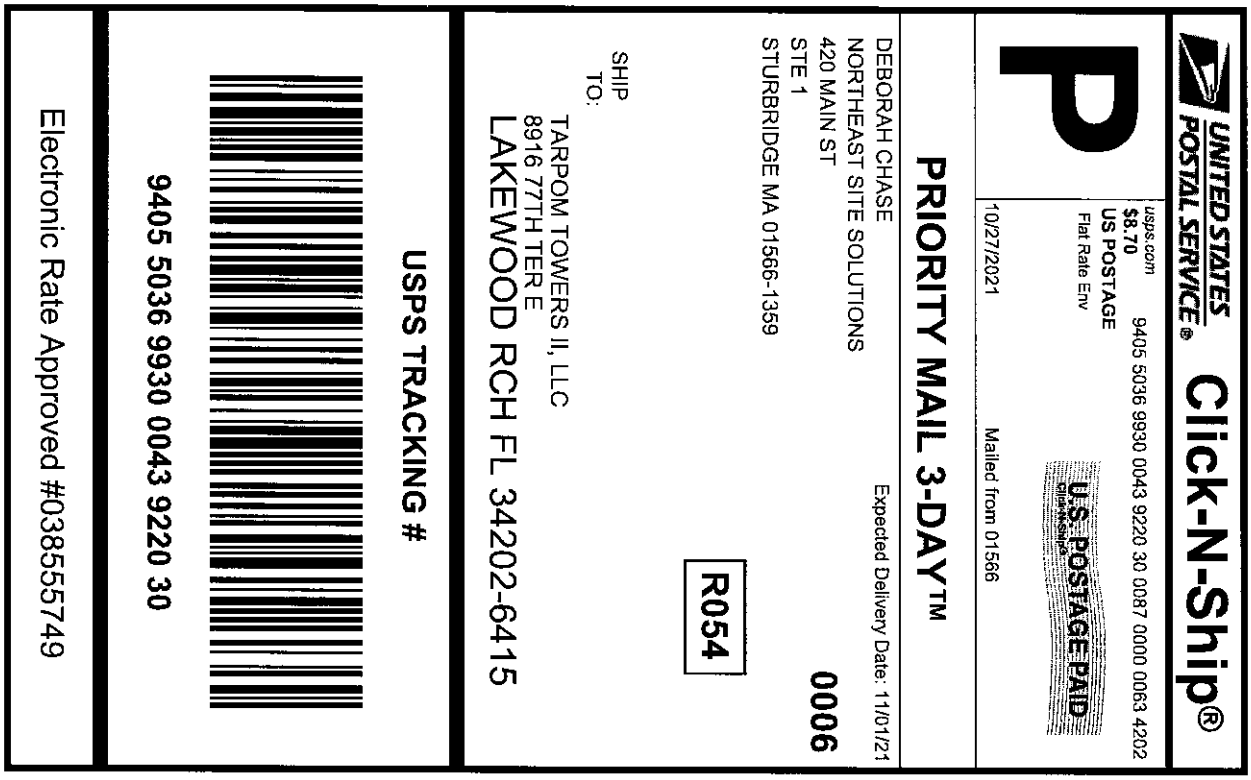

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0043 9220 30

Trans. #:	546869888
Print Date:	10/26/2021
Ship Date:	10/27/2021
Expected Delivery Date:	11/01/2021

Priority Mail® Postage:	$8.70
Total:	$8.70

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

To: TARPOM TOWERS II, LLC
8916 77TH TER E
LAKEWOOD RCH FL 34202-6415

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