



May 9, 2022

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

Re: Tower Share Application – Dish Site 13709691
Dish Wireless Telecommunications Facility @ 180A Bayberry Lane, Westport, CT 06880

Dear Ms. Bachman,

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing one hundred forty three (143) foot tall monopole tower at 180A Bayberry Lane, Westport, CT 06880 (Latitude: 41.17166667, Longitude: -73.32846667) and within the existing fenced compound. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by the Town of Westport.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at seventy seven (77) feet as more particularly detailed and described on the enclosed Construction Drawings. There are no proposed changes to the tower height or compound dimensions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A §16-50j-73, a copy of this letter is being sent to the following individuals: American Tower Corporation as Tower Operator/Owner; the Town of Westport as Property Owner; the Honorable Jennifer Tooker, First Selectwoman of Westport, and Mary Young, the Westport Director of Planning and Zoning.

The applicant's proposal falls squarely within those activities explicitly provided for in R.C.S.A. §16-50j-89. Specifically:

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



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

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

- A. **Technical Feasibility.** The existing monopole has been deemed structurally capable of supporting Dish's proposed loading (see attached Structural Analysis).
- B. **Legal Feasibility.** As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish to obtain a building permit for the proposed installation. Further, a Letter of Authorization is attached, authorizing Dish to file this application for shared use.
- C. **Environmental Feasibility.** The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish equipment at the 79-foot level of the existing 130-foot tower would have an insignificant visual impact on the area around the tower. Dish ground equipment would be installed within the existing facility compound. DISH shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by the attached EME study, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.
- D. **Economic Feasibility.** Dish will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish with this tower sharing application.
- E. **Public Safety Concerns.** As discussed above, the tower is structurally capable of supporting the proposed loading. Dish is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish's intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through the area.



For the foregoing reasons, Dish respectfully requests that the Council approve this request for the shared use of this tower located at 180A Bayberry Lane, Westport, CT 06880.

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

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over the printed name.

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

Enclosures: Exhibit 1 – Letter of Authorization from tower owner
Exhibit 2 – Property Card and GIS
Exhibit 3 – Construction Drawings
Exhibit 4 – Structural Analysis Report
Exhibit 5 – Antenna Mount Analysis Report
Exhibit 6 – EME Study Report
Exhibit 7 – Original Tower Approval
Exhibit 8 – (4) Notice Confirmations

cc: American Tower Corporation – Tower Operator/Owner
Town of Westport – Property Owner
The Honorable Jennifer Tooker - First Selectwoman of Westport
Mary Young - Westport Director of Planning and Zoning



LETTER OF AUTHORIZATION

SITE NO: See Site List Below

SITE NAME: See Site List Below

ADDRESS: See Site List Below

I, Margaret Robinson, Senior Counsel, US Tower Division on behalf of American Tower*, owner and/or operator of the tower facilities located at the addresses identified below (the "Tower Facilities"), do hereby authorize Centerline Communications, LLC ("Centerline"), its agents, successors and assigns, to act as American Tower's non-exclusive agent for the purpose of filing and securing any zoning, land-use, building permit and/or electrical permit application(s) and approvals of the applicable jurisdiction for and to conduct the construction of the installation of antennas and related telecommunications equipment owned and operated by DISH Network on the Tower Facilities located at the addresses identified below. This installation shall not affect adjoining lands and will occur only within the areas leased or owned by American Tower.

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

The above authorization does not permit Centerline to modify or alter any existing permit(s) and/or zoning or land-use conditions or impose any additional conditions unrelated to American Tower's installations of telecommunications equipment without the prior written approval of American Tower.

Site Authorized:

| ATC PROJECT# | ATC SITE# | DISH SITE# | ADDRESS |
|--------------|-----------|-------------|---|
| 13683503 | 302472 | BOBDL00010A | 104 Bunker Hill Road, Andover, Connecticut |
| 13701209 | 302470 | BOHVN00141A | 401 Wakelee Ave, Ansonia, Connecticut |
| 13702524 | 370641 | BOHVN00148A | 401-411 Lopus Road, Beacon Falls, Connecticut |
| 13709244 | 88008 | BOHVN00151A | 9 Meyers Road, Bethany, Connecticut |
| 13694329 | 283419 | BOHVN00136A | 123 Pine Orchard Road, Branford, Connecticut |
| 13694332 | 283422 | BOHVN00137A | 171 Short Beach Road, Branford, Connecticut |
| 13701211 | 302484 | BOHVN00142A | 405 Brushy Plain Rd, Branford, Connecticut |
| 13709418 | 281862 | BOHVN00200A | 111 SECOND HILL RD, BRIDGEWATER, Connecticut |
| 13733440 | 411216 | BOBOS00893A | 123 Palmer Road, Chaplin, Connecticut |
| 13733449 | 208478 | BOHVN00033A | 1325 Cheshire Street, Cheshire, Connecticut |
| 13694579 | 302496 | BOBOS00887A | Chestnut Hill Road, Colchester, Connecticut |
| 13694582 | 302465 | BOBOS00890A | 355 Route 85, Colchester, Connecticut |
| 13733436 | 6270 | BOBOS00031A | Rt 101 off Rt. 395 @1385 North Rd., Dayville, Connecticut |
| 13702522 | 311305 | BOHVN00147A | 10 Tanner Marsh Road, Guilford, Connecticut |
| 13733446 | 10029 | BOBOS00894A | 185 Fisk Road, Hampton, Connecticut |
| 14046283 | 302466 | BOBDL00079B | 305 W. Service Rd., Hartford, Connecticut |



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| 13746611 | 302503 | BOBOS00068B | 20 Mel Road, Jewett City, Connecticut |
| 13702514 | 302540 | BOHVN00146A | 8 Old 79, Madison, Connecticut |
| OAA745087 | 411260 | Middlefield CT | 484 Meriden Rd., Middlefield, Connecticut |
| 13698061 | 283564 | BOHVN00139A | 234 Melba Street, Milford, Connecticut |
| 13702496 | 302516 | BOHVN00144A | 438 Bridgeport Ave, Milford, Connecticut |
| 13693709 | 411182 | BOHVN00005A | 20 Antolini Road, New Hartford, Connecticut |
| 13702509 | 302523 | BOHVN00145A | 4 Elkington Farm Rd, New Milford, Connecticut |
| 13693659 | 283418 | BOHVN00135A | 50 Devine Street, North Haven, Connecticut |
| 13694578 | 6260 | BOBOS00884A | 118C Wintechog Hill Rd., North Stonington, Connecticut |
| 13693124 | 311014 | BOBOS00023A | 202 N Wawecus Hill Rd, Norwich, Connecticut |
| 13726721 | 302532 | BOBOS00022A | 1337 Route 85, Oakdale, Connecticut |
| 13693120 | 284984 | BOBOS00021A | 166 Pawcatuck Ave, Pawcatuck, Connecticut |
| 13701212 | 302501 | BOHVN00143A | 297 North Street, Plymouth, Connecticut |
| 13693135 | 411184 | BOBOS00026A | 399 West Road, SALEM, Connecticut |
| 13729958 | 208205 | BOHVN00035A | 80 Great Hill Road, Seymour, Connecticut |
| 13693705 | 411188 | BOHVN00006A | 111 Upper Fishrock Road, Southbury, Connecticut |
| 13733433 | 415784 | BOBOS00029A | 165 Elmwood Hill Road, THOMPSON, Connecticut |
| 13693127 | 370623 | BOBOS00024A | 139 Sharp Hill Road, Uncasville, Connecticut |
| 13701206 | 302467 | BOHVN00140A | 90 North Plains Industrial Rd., Wallingford, Connecticut |
| 13693131 | 411183 | BOBOS00025A | 53 Dayton Rd., Waterford, Connecticut |
| 13693702 | 243036 | BOHVN00132A | 668 Jones Hill Road, West Haven, Connecticut |
| 13729960 | 207941 | BOHVN00036A | 164 County Road, Wolcott, Connecticut |
| 13702538 | 411180 | BOHVN00150A | 481 GOOD HILL ROAD, Woodbury, Connecticut |
| 13733429 | 415439 | BOBOS00027A | 40 Sherman Road, Woodstock, Connecticut |
| 13733431 | 415484 | BOBOS00028A | 445 Prospect St, Woodstock, Connecticut |
| 13733434 | 418609 | BOBOS00030A | 87 West Quasset Road, Woodstock, Connecticut |
| 13733438 | 6300 | BOBOS00032A | 156 Lebanon Hill Rd., Woodstock, Connecticut |
| 13741553 | 283425 | BOBOS00019A | 350 Route 198, WOODSTOCK VALLEY, Connecticut |
| 13743708 | 305310 | BOPWM00004A | 491 Court Street, Auburn, Maine |
| 13743725 | 371976 | BOPWM00007A | 840 North River Rd, Auburn, Maine |
| 13741457 | 371989 | BOAUG00001A | 627 Coldbrook Rd, BANGOR, Maine |
| 13741460 | 416485 | BOAUG00002A | 237 Bomarc Rd, BANGOR, Maine |
| 13735679 | 305311 | BOBOS00433A | 19 Little Harbor Road, Berwick, Maine |
| 13746623 | 416552 | BOPWM00012A | 60 Andrews Road, Biddeford, Maine |
| 13741463 | 305313 | BOBOS00434A | 71 Brixham Road, Eliot, Maine |
| 13743702 | 10044 | BOPWM00002A | 26 Dorrington Drive, Freeport, Maine |
| 13743704 | 281252 | BOPWM00003A | 71 Finn Parker Road, GORHAM, Maine |



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| 13746621 | 371994 | BOPWM00011A | 4 Burnham Rd, Gorham, Maine |
| 13746617 | 371990 | BOPWM00009A | 58 Buzzell Ln, Greene, Maine |
| 13743722 | 371965 | BOPWM00006A | 67 Commercial Street, Lewiston, Maine |
| 13746678 | 421397 | BOPWM00013A | 50 Potter Road, Lisbon, Maine |
| 13743712 | 371964 | BOPWM00005A | Pleasant Hill Rd, Sabattus, Maine |
| 13738176 | 371992 | BOBOS00777A | 78 York Woods Rd, Rt 236, South Berwick, Maine |
| 13743727 | 371978 | BOPWM00008A | 988 Roosevelt Trail, Windham, Maine |
| 13746619 | 371993 | BOPWM00010A | 413 Roosevelt Tr, Windham, Maine |
| 13734197 | 222167 | BOBOS00393A | 36 Knox trail, Acton, Massachusetts |
| 13738223 | 371800 | BOBOS00698A | 107 South Main Street, Acushnet, Massachusetts |
| 13738186 | 203692 | BOBOS00788A | 149 Haggets Pond Road, Andover, Massachusetts |
| 13738208 | 371807 | BOBOS00820A | 165 South Main Street, ASSONET, Massachusetts |
| 13728723 | 305010 | BOBOS00387C | 15 Washington Street, Attleboro, Massachusetts |
| 13729951 | 92225 | BOBOS00135A | 55 Starkey Ave, Attleboro, Massachusetts |
| 13729930 | 91563 | BOBOS00133A | 21 Parker Drive, Avon, Massachusetts |
| 13738187 | 371838 | BOBOS00791A | 30 Shawsheen Ave, Bedford, Massachusetts |
| 13734227 | 91567 | BOBOS00612A | 236 Maple Street, Bellingham, Massachusetts |
| 13738231 | 88025 | BOBOS00832A | 39 Green Street, Berkley, Massachusetts |
| 13746597 | 207264 | BOBOS00281A | 62R Anthony Street, Berkley, Massachusetts |
| 13738152 | 283474 | BOBOS00658A | 347 Old Middlesex Turnpike, Billerica, Massachusetts |
| 13734192 | 371816 | BOBOS00616A | 500 Morton Street, Boston, Massachusetts |
| 13735268 | 305088 | BOBOS00626A | 22 Freeport Way, Boston, Massachusetts |
| 13735650 | 262364 | BOBOS00016A | 53 C Pond Street, Boxford, Massachusetts |
| 13729495 | 371820 | BOBOS00004B | #26 Freemans Way Industrial Park, Brewster, Massachusetts |
| 13735663 | 305054 | BOBOS00111A | 240 Burrill Avenue, Bridgewater, Massachusetts |
| 13738201 | 414820 | BOBOS00809A | 434 Elm St., BRIDGEWATER, Massachusetts |
| 13735259 | 371833 | BOBOS00619A | 1001 N Montello Street, Brockton, Massachusetts |
| 13735275 | 371797 | BOBOS00629A | 500 Belmont Street, Brockton, Massachusetts |
| 13735419 | 10008 | BOBOS00646A | 995 Belmont St., Brockton, Massachusetts |
| 13738182 | 10342 | BOBOS00670A | 110 Mulberry Street, Brockton, Massachusetts |
| 13738228 | 15456 | BOBOS00389A | 51 North Avenue, Burlington, Massachusetts |
| 13746607 | 210761 | BOBOS00139A | 8 Springdale Avenue, Canton, Massachusetts |
| 13734206 | 5870 | BOBOS00395A | Off Montello Street, Carver, Massachusetts |
| 13734212 | 15482 | BOBOS00396A | 31R Main Street, Carver, Massachusetts |
| 13741598 | 10252 | BOBOS00428A | 31 J Hammond Road, Charlton, Massachusetts |
| 13735290 | 371819 | BOBOS00638A | 7 Doris Drive, Chelmsford, Massachusetts |
| 13759832 | 274893 | BOBOS00636A | 490 Stafford St., CHERRY VALLEY, Massachusetts |



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| 13729557 | 412707 | BOBOS00125A | 40y Annursnac Hill Road, CONCORD, Massachusetts |
| 13738190 | 240688 | BOBOS00793A | 323 Locust St, Danvers, Massachusetts |
| 13735284 | 371805 | BOBOS00631A | 303 Broadway, Dracut, Massachusetts |
| 13729926 | 5820 | BOBOS00131A | 32 Old County Road, East Wareham, Massachusetts |
| 13734265 | 207267 | BOBOS00282A | Upper Union Street, Franklin, Massachusetts |
| 13735297 | 371782 | BOBOS00644A | 119 Dean Avenue, Franklin, Massachusetts |
| 13735315 | 16228 | BOBOS00649A | 60 EARL'S WAY, Franklin, Massachusetts |
| 13735654 | 10321 | BOBOS00102A | 16 Kondelin Rd, Gloucester, Massachusetts |
| 13735670 | 305111 | BOBOS00192B | 400 Blackburn Drive, Gloucester, Massachusetts |
| 13746594 | 210758 | BOBOS00137A | 434-438 Asbury Street, Hamilton, Massachusetts |
| 13735658 | 283651 | BOBOS00108A | 263 Winter Street, Hanover, Massachusetts |
| 13735666 | 371796 | BOBOS00114A | 171 Phillips Street, Hanson, Massachusetts |
| 13741290 | 283476 | BOBOS00615A | 75 Willow Avenue, Haverhill, Massachusetts |
| 13741718 | 283472 | BOBOS01024A | 1 Masys Way, Haverhill, Massachusetts |
| 13743700 | 15659 | BOBOS00903A | 260 River Street, Jefferson, Massachusetts |
| 13738229 | 305004 | BOBOS00831A | 23 Freetown Steet, Lakeville, Massachusetts |
| 13735281 | 305117 | BOBOS00630A | 670 South Union Street, LAWRENCE, Massachusetts |
| 13735286 | 371778 | BOBOS00633A | 576 Haverhill St, Lawrence, Massachusetts |
| 13735709 | 210759 | BOBOS00138A | 280 New Lancaster Road, Leominster, Massachusetts |
| 13743687 | 371808 | BOBOS00853A | 650 Willard Street, Leominster, Massachusetts |
| 13735656 | 222165 | BOBOS00105A | 2005 Mass Ave, Lunenburg, Massachusetts |
| 13734270 | 207263 | BOBOS00283A | 13 Mill Street, Marion, Massachusetts |
| 13729921 | 412712 | BOBOS00128A | 860 BOSTON POST ROAD, Marlborough, Massachusetts |
| 13738193 | 284981 | BOBOS00806A | 969 Ocean Street, Marshfield, Massachusetts |
| 13746615 | 207266 | BOBOS00284A | Holyoke Avenue, Marshfield, Massachusetts |
| 13772780 | 202550 | BOBOS01156C | 0 Snow Road, Marshfield, Massachusetts |
| 13735659 | 305027 | BOBOS00109A | 34 Topalian Street, Mattapan, Massachusetts |
| 13734275 | 208176 | BOBOS00285A | Summer Hill Road, Maynard, Massachusetts |
| 13734201 | 16489 | BOBOS00391A | 31 BEDFORD ST, Middleboro, Massachusetts |
| 13738205 | 305006 | BOBOS00813A | 164 Everett Street, Middleboro, Massachusetts |
| 13735294 | 283071 | BOBOS00641A | 11 Natsue Way, MIDDLETON, Massachusetts |
| 13735657 | 283070 | BOBOS00107A | 197 N. Main Street, MIDDLETON, Massachusetts |
| 13743676 | 283767 | BOBOS00842A | 120 Highland Street, MILFORD, Massachusetts |
| 13749484 | 91566 | BOBOS00355B | 111 Cedar Street, Milford, Massachusetts |
| 13729925 | 412713 | BOBOS00129A | 25 Glenwood Street, Natick, Massachusetts |
| 13734249 | 5762 | BOBOS00614A | 1555 Central Ave, Needham, Massachusetts |
| 13735272 | 5860 | BOBOS00628A | 148 Penniman St., New Bedford, Massachusetts |



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| 13737649 | 204458 | BOBOS00651A | 9 Eighth St, NEW BEDFORD, Massachusetts |
| 13742882 | 305097 | BOBOS00426A | 127 R Duchaine Blvd., New Bedford, Massachusetts |
| 13735652 | 1028 | BOBOS00101A | 1165 Chestnut Street, Newton, Massachusetts |
| 13735266 | 305113 | BOBOS00624A | 20 Republic Road, North Billerica, Massachusetts |
| 13742899 | 91886 | BOBOS00758A | 411 FAUNCE CORNER RD, North Dartmouth, Massachusetts |
| 13738213 | 371810 | BOBOS00829A | 455 Somerset Avenue, North Dighton, Massachusetts |
| 13741485 | 88027 | BOBOS00833A | Maple Street, North Dighton, Massachusetts |
| 13743644 | 91565 | BOBOS00735A | 38 Merriam District, North Oxford, Massachusetts |
| 13735264 | 284980 | BOBOS00620A | 59 Davis Ave, Norwood, Massachusetts |
| 13746603 | 207726 | BOBOS00287A | 15 Locust Road, Orleans, Massachusetts |
| 13738197 | 15768 | BOBOS00807A | 171Mattakeesett Street, Pembroke, Massachusetts |
| 13729507 | 371799 | BOBOS00115A | 75 Washington Street, Plainville, Massachusetts |
| 13742871 | 10370 | BOBOS00422A | 50 Portside Drive, Pocasset, Massachusetts |
| 13734236 | 10341 | BOBOS00613A | 106 Mazzeo Drive, Randolph, Massachusetts |
| 13738200 | 305096 | BOBOS00808A | 1588 Broadway, Raynham, Massachusetts |
| 13738203 | 10339 | BOBOS00810A | 678 Church Street, Raynham, Massachusetts |
| 13738206 | 310959 | BOBOS00817A | 153 Cranberry Highway, Rochester, Massachusetts |
| 13734282 | 207270 | BOBOS00288A | 320 Pleasant Street, Rockland, Massachusetts |
| 13738199 | 305035 | BOBOS00673A | 488R Highland Avenue, Salem, Massachusetts |
| 13742875 | 273378 | BOBOS00423A | 413 Rt 130, Sandwich, Massachusetts |
| 13734198 | 10340 | BOBOS00394A | 1010 Chief Justice Cushing Highway, Scituate, Massachusetts |
| 13741690 | 282810 | BOBOS01155A | 361 TILDEN RD, SCITUATE, Massachusetts |
| 13729506 | 16459 | BOBOS00103A | 45 Vineyard Road, Seekonk, Massachusetts |
| 13735664 | 207271 | BOBOS00280A | 212 Lake Street, Sherborn, Massachusetts |
| 13738202 | 305051 | BOBOS00674A | 16 Kendall Avenue, Sherborn, Massachusetts |
| 13735748 | 202086 | BOBOS00659A | 271 Spring Street, Shrewsbury, Massachusetts |
| 13743636 | 91568 | BOBOS00688A | 800 Boston Turnpike, Shrewsbury, Massachusetts |
| 13710032 | 371813 | BOBOS00118A | 3 Redemption Rock Trail, Sterling, Massachusetts |
| 13741607 | 416056 | BOBOS00866A | 199 Raymond Rd., Sudbury, Massachusetts |
| 13870803 | 371774 | BOBOS00013D | 142 North Road, Sudbury, Massachusetts |
| 13743641 | 305009 | BOBOS00733A | 7 Kamaitas Road, Sutton, Massachusetts |
| 13743672 | 305014 | BOBOS00841A | 194 Stone School Road, Sutton, Massachusetts |
| 13742886 | 5830 | BOBOS00427A | 28 Dana Street, Taunton, Massachusetts |
| 13729513 | 388560 | BOBOS00122A | 89 Progress Avenue, Tyngsboro, Massachusetts |
| 13743680 | 305104 | BOBOS00845A | 87 Adams St., Upton, Massachusetts |
| 13743669 | 305110 | BOBOS00838A | 70 Quaker Street, Uxbridge, Massachusetts |
| 13734219 | 275069 | BOBOS00601A | 110 Bear Hill, Waltham, Massachusetts |



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| 13737625 | 5810 | BOBOS00816A | Thatcher Street, Wareham, Massachusetts |
| 13743683 | 274897 | BOBOS00851A | 0 Century Drive, West Boylston, Massachusetts |
| 13749477 | 305068 | BOBOS00664B | 225 Rivermoor St., West Roxbury, Massachusetts |
| 13682009 | 283067 | BOBDL00158A | 1201 Westfield Street, WEST SPRINGFIELD, Massachusetts |
| 13743698 | 9238 | BOBOS00878A | 972 Gilbert Road, West Warren, Massachusetts |
| 13735736 | 305105 | BOBOS00637A | 25 Brigham Street, Westborough, Massachusetts |
| 13743638 | 282319 | BOBOS00690A | 50 SMITH VALVE PKWY, WESTBOROUGH, Massachusetts |
| 13734203 | 305034 | BOBOS00392A | 8 Nixon Rd., Westford, Massachusetts |
| 13734284 | 274896 | BOBOS00334B | 19 Oak Street, Weston, Massachusetts |
| 13735662 | 305041 | BOBOS00110A | 0 Nonesuch Road, Weston, Massachusetts |
| 13742877 | 91559 | BOBOS00425A | 251 State Road, Westport, Massachusetts |
| 13729511 | 371818 | BOBOS00120A | 611 Pleasant Street, Weymouth, Massachusetts |
| 13735271 | 305028 | BOBOS00627A | 106 Finnell Dr., Weymouth, Massachusetts |
| 13735303 | 282706 | BOBOS00645A | 10 Presidential Way, Woburn, Massachusetts |
| 13772775 | 305060 | BOBOS01068A | Green Street, Wrentham, Massachusetts |
| 13741478 | 15136 | BOBOS00443A | 73 State Route 111, Atkinson, New Hampshire |
| 13743271 | 91575 | BOBOS00457A | 437 Patten Hill Road, Candia, New Hampshire |
| 13743029 | 306604 | BOBOS00446A | 359 Chester Street, Chester, New Hampshire |
| 13743257 | 373098 | BOBOS00449A | 50 Town Dump Road, Chester, New Hampshire |
| 13743267 | 88065 | BOBOS00455A | 674 Haverhill Road, Chester, New Hampshire |
| 13743035 | 373099 | BOBOS00450A | 203 Haverhill Road, East Kingston, New Hampshire |
| 13738226 | 91574 | BOBOS00768A | 49 Shirking Road, Epping, New Hampshire |
| 13743263 | 373114 | BOBOS00453A | 7 CONTINENTAL DRIVE, Exeter, New Hampshire |
| 13738179 | 373094 | BOBOS00781A | 789 Main Street, Fremont, New Hampshire |
| 13743264 | 413027 | BOBOS00454A | 169 HAYDEN ROAD, HOLLIS, New Hampshire |
| 13741480 | 15138 | BOBOS00444A | 36 Depot Road, Kingston, New Hampshire |
| 13738183 | 273268 | BOBOS00785A | 242 New Derry Rd, Litchfield, New Hampshire |
| 13738224 | 373116 | BOBOS00705A | 94 STONEHEDGE ROAD, Londonderry, New Hampshire |
| 13743269 | 88069 | BOBOS00456A | 187A Pillsbury Road, Londonderry, New Hampshire |
| 13738211 | 91571 | BOBOS00683A | 20 Daniel Webster Highway, Merrimack, New Hampshire |
| 13741468 | 10304 | BOBOS00441A | 211 Ford Farm Road, Milton, New Hampshire |
| 13743256 | 311757 | BOBOS00448A | 61 Old Coach Road, New Boston, New Hampshire |
| 13743258 | 373101 | BOBOS00451A | 85 South Main Street, Newton, New Hampshire |
| 13743031 | 311755 | BOBOS00447A | 34 Tower Hill Road, Pelham, New Hampshire |
| 13741470 | 15134 | BOBOS00442A | 36 Cross Road, Rochester, New Hampshire |
| 13743027 | 240696 | BOBOS00445A | 40 Jessie Doe Road, Rollinsford, New Hampshire |
| 13743259 | 373102 | BOBOS00452A | 393 Main Street, Sandown, New Hampshire |



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| 13714952 | 307060 | SYSYR00023A | 200 Irwin Road, Buffalo, New York |
| 13767336 | 415364 | SYSYR00507B | 183 Saltonstall Street, Canandaigua, New York |
| 13702046 | 373349 | ALALB00011A | 75 Van Dyke Road, Delmar, New York |
| 13973540 | 392593 | SYSYR00038A | 571 Main Street, East Aurora, New York |
| 13752077 | 413141 | SYSYR00517B | 91 Railroad Ave, Hamlin, New York |
| 13713785 | 16467 | SYSYR00015A | 3181 Southwestern Blvd, Orchard Park, New York |
| 13714492 | 414560 | SYSYR00061A | 4248 S. Taylor Road, Orchard Park, New York |
| 13870807 | 91916 | SYSYR00081A | County Route 6 and Fox Dr, Phoenix, New York |
| 13712307 | 413140 | SYSYR00407A | 3830 Monroe Avenue, Pittsford, New York |
| 13704766 | 91936 | ALALB00020A | 1245 Kings Road, SCHENECTADY, New York |
| OAA745429 | 280868 | 0190112-A | 10790 Taylors Store Rd, Nashville, North Carolina |
| 13741714 | 91582 | BOBOS00881A | 395 Woodville Road, Ashaway, Rhode Island |
| 13738163 | 91983 | BOBOS00662A | 99 Tupelo Street, Bristol, Rhode Island |
| 13743277 | 308765 | BOBOS00586B | 6 Minturn Farm Road, Bristol, Rhode Island |
| 13742900 | 281265 | BOBOS00899A | 1380 Putnam Pike, CHEPACHET, Rhode Island |
| 13735691 | 374117 | BOBOS00522A | 149 Laten Knight Road, Cranston, Rhode Island |
| 13738222 | 374136 | BOBOS00697A | 1000 New London Avenue, Cranston, Rhode Island |
| 13735296 | 374138 | BOBOS00642A | 500 Veterans Memorial Parkway, East Providence, Rhode Island |
| 13738188 | 308768 | BOBOS00672A | 1 Dexter Road, East Providence, Rhode Island |
| 13742895 | 1031 | BOBOS00677A | 2 Sunderland Road, Exeter, Rhode Island |
| 13741622 | 374114 | BOBOS00898A | 2185 Putnam Pike, Glocester, Rhode Island |
| 13743044 | 308772 | BOBOS00519A | 1677 Maple Valley Road, Greene, Rhode Island |
| 13774131 | 91984 | BOBOS00518B | 2612 Victory Hwy, Harrisville, Rhode Island |
| 13737644 | 91985 | BOBOS00650A | 74 Maria Ave., JOHNSTON, Rhode Island |
| 13738150 | 273282 | BOBOS00654A | 32 Breakneck Hill Road, Lincoln, Rhode Island |
| 13735720 | 6350 | BOBOS00525A | 1230 Chopmist Hill Rd. Rt. 102, North Scituate, Rhode Island |
| 13743039 | 308766 | BOBOS00517A | 316 South Main St., Pascoag, Rhode Island |
| 13738157 | 91581 | BOBOS00661A | 10 Dunnell Lane, Pawtucket, Rhode Island |
| 13741493 | 91584 | BOBOS00836A | 205 Farnum Pike, Smithfield, Rhode Island |
| 14049070 | 308759 | BOBOS00587C | 2935 Tower Hill Road, South Kingstown, Rhode Island |
| 13738210 | 374137 | BOBOS00828A | 408 Stafford Road, Tiverton, Rhode Island |
| 13738221 | 91986 | BOBOS00696A | 15 New Industrial Road, Warren, Rhode Island |
| 13743273 | 308757 | BOBOS00584B | 289 Kilvert Street, Warwick, Rhode Island |
| 13735687 | 374115 | BOBOS00521A | 244 Plain Road, West Greenwich, Rhode Island |
| 13735723 | 91578 | BOBOS00583A | 830 Nooseneck Hill Road, West Greenwich, Rhode Island |
| 13735700 | 374133 | BOBOS00524A | 226C Cowesett Avenue, West Warwick, Rhode Island |
| 13735726 | 91579 | BOBOS00585B | 195 J.P. Murphy Highway, West Warwick, Rhode Island |



AMERICAN TOWER®
CORPORATION

| | | | |
|----------|--------|-------------|---|
| 13742891 | 207962 | BOBOS00552A | 37 Laurel Avenue, Westerly, Rhode Island |
| 13735695 | 374119 | BOBOS00523A | 9 New Kings Factory Road, Wood River Junction, Rhode Island |

Signature: _____

Margaret Robinson, Senior Counsel
US Tower Division

NOTARY BLOCK

COMMONWEALTH OF MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel of American Tower (owner and/or operator of the above referenced Tower Facilities), personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESS my hand and official seal, this 24th day of March, 2022.

NOTARY SEAL



GERARD T. HEFFRON
Notary Public
Commonwealth of Massachusetts
My Commission Expires
August 9, 2024

Notary Public Gerard T. Heffron
My Commission Expires: August 9th, 2024

* American Tower as used herein is defined as American Tower Corporation and any of its affiliates or subsidiaries.

Connecticut Siting Council ^(/CSC)

[CT.gov Home](#) [\(/\)](#) [Connecticut Siting Council](#) [\(/CSC\)](#) DO 278 Westport Spectrasite D&O

DOCKET NO. 278 – SpectraSite Communications, Inc. application for an amendment to an existing Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility in Westport, Connecticut.

} Connecticut
 } Siting
 } Council
 May 19, 2004

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that an amended Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to SpectraSite Communications, Inc. for the construction, maintenance and operation of a wireless telecommunications facility at 180-182 Bayberry Lane in Westport, Connecticut.

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

1. The tower shall be constructed no taller than 140 feet above ground level to provide the proposed telecommunications services to both public and private entities. The overall height of the tower, taking into consideration all appurtenances attached thereto, shall not exceed a height of 150 feet above ground level and shall be designed with a yield point to reduce the setback radius to approximately 41 feet.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on all parties and intervenors, as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a. a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

1. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
2. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
3. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

4. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
5. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
6. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
7. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved. Any request for extensions of the period shall be filed with the Council not later than sixty days prior to expiration date of the Certificate and shall be served on all parties and intervenors, as listed in the service list. Any proposed modifications to this Decision and Order shall likewise be so served.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Westport News and the Norwalk Hour.

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

The parties and intervenors to this proceeding are:

| | |
|--|---|
| <p><u>Applicant</u></p> <p>SpectraSite Communications, Inc.</p> | <p><u>Its Representative</u></p> <p>Julie Donaldson Kohler, Esq. Hurwitz & Sagarin, LLC 147 N. Broad Street Milford, CT 06460 (203) 877-8000</p> |
| <p><u>Party</u></p> <p>Town of Westport</p> | <p><u>Its Representative</u></p> <p>Eugene E. Cederbaum, Esq. Town of Westport 27 Imperial Avenue Westport, CT 06880 (203) 227-9545</p> |
| <p><u>Intervenor</u></p> <p>Sprint Spectrum L.P. d/b/a Sprint PCS</p> | <p><u>Its Representative</u></p> <p>Thomas J. Regan Brown, Rudnick, Berlack, Israels, LLP City Place I 185 Asylum Avenue Hartford, CT 06103-3402 (860) 509-6500</p> |

Intervenor

AT&T Wireless, PCS, LLC

Its Representative

Christopher B. Fisher, Esq.
Cuddy & Feder LLP
90 Maple Avenue
White Plains, NY 10601

Intervenor

Omnipoint Facilities Network 2 L.L.C. ("T-Mobile")

Its Representative

Stephen J. Humes
LeBoeuf, Lamb, Greene & MacRae, LLP
Goodwin Square
225 Asylum Street
Hartford, CT 06103

180 BAYBERRY LN

Location 180 BAYBERRY LN

Mblu F15/ / 058/000 /

Acct# 29153

Owner WESTPORT TOWN OF

Assessment \$4,085,100

Appraisal \$5,835,800

PID 10353

Building Count 2

Current Value

| Appraisal | | | |
|----------------|--------------|-------------|-------------|
| Valuation Year | Improvements | Land | Total |
| 2020 | \$866,600 | \$4,969,200 | \$5,835,800 |

| Assessment | | | |
|----------------|--------------|-------------|-------------|
| Valuation Year | Improvements | Land | Total |
| 2020 | \$606,700 | \$3,478,400 | \$4,085,100 |

Owner of Record

Owner WESTPORT TOWN OF
Co-Owner NIKE SITE
Address 110 MYRTLE AVE
WESTPORT, CT 06880

Sale Price \$0
Certificate 1
Book & Page 0000/0000
Sale Date 11/14/2002
Instrument 29

Ownership History

| Ownership History | | | | | |
|-------------------|------------|-------------|-------------|------------|------------|
| Owner | Sale Price | Certificate | Book & Page | Instrument | Sale Date |
| WESTPORT TOWN OF | \$0 | 1 | 0000/0000 | 29 | 11/14/2002 |

Building Information

Building 1 : Section 1

Year Built: 1900
Living Area: 6,613
Replacement Cost: \$809,848
Building Percent Good: 66
**Replacement Cost
Less Depreciation:** \$534,500

Building Photo

 Building Photo
(<https://images.vgsi.com/photos2/WestportCTPhotos/\00\01\23\91.jpg>)

Building Attributes

| Field | Description |
|------------------|----------------|
| Style: | Office Bldg |
| Model | Commercial |
| Grade | Average +10 |
| Stories: | 1 |
| Occupancy | 1.00 |
| Exterior Wall 1 | Concr/CinderBk |
| Exterior Wall 2 | Below Average |
| Roof Structure | Gable |
| Roof Cover | Asphalt/F Glas |
| Interior Wall 1 | Drywall |
| Interior Wall 2 | |
| Interior Floor 1 | Ceram Clay Til |
| Interior Floor 2 | |
| Heating Fuel | Gas |
| Heating Type | Forced Air |
| AC Type | None |
| Struct Class | |
| Bldg Use | Mun Bldg Com |
| Income Adj | |
| 1st Floor Use: | |
| Heat/AC | None |
| Frame Type | Masonry |
| Baths/Plumbing | Average |
| Ceiling/Walls | Ceiling Only |
| Rooms/Prtns | Average |
| Wall Height | 10.00 |
| % Comn Wall | |

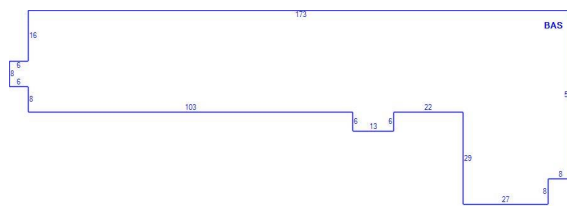
Building 2 : Section 1

Year Built: 1900
Living Area: 4,410
Replacement Cost: \$462,269
Building Percent Good: 66
Replacement Cost
Less Depreciation: \$305,100

Building Attributes : Bldg 2 of 2

| Field | Description |
|--------|-------------|
| Style: | Office Bldg |
| Model | Commercial |
| Grade | Minimum |

Building Layout



(ParcelSketch.ashx?pid=10353&bid=20119)

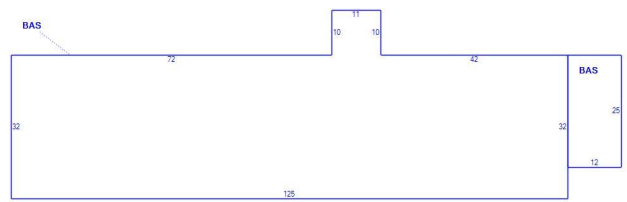
| Building Sub-Areas (sq ft) | | | Legend |
|----------------------------|-------------|------------|-------------|
| Code | Description | Gross Area | Living Area |
| BAS | First Floor | 6,613 | 6,613 |
| | | 6,613 | 6,613 |

Building Photo

 Building Photo
<https://images.vgsi.com/photos2/WestportCTPhotos/A00\01\25\04.jpg>

| | |
|------------------|----------------|
| Stories: | 1 |
| Occupancy | 1.00 |
| Exterior Wall 1 | Concr/CinderBk |
| Exterior Wall 2 | |
| Roof Structure | Gable |
| Roof Cover | Asphalt/F Glas |
| Interior Wall 1 | Drywall |
| Interior Wall 2 | |
| Interior Floor 1 | Ceram Clay Til |
| Interior Floor 2 | |
| Heating Fuel | Electric |
| Heating Type | Electr Basebrd |
| AC Type | None |
| Struct Class | |
| Bldg Use | Mun Bldg Com |
| Income Adj | |
| 1st Floor Use: | 922 |
| Heat/AC | None |
| Frame Type | Fireprf Steel |
| Baths/Plumbing | Average |
| Ceiling/Walls | Ceiling Only |
| Rooms/Prtns | Average |
| Wall Height | 10.00 |
| % Comn Wall | |

Building Layout



(ParcelSketch.ashx?pid=10353&bid=20120)

| Building Sub-Areas (sq ft) | | | Legend |
|----------------------------|-------------|------------|-------------|
| Code | Description | Gross Area | Living Area |
| BAS | First Floor | 4,410 | 4,410 |
| | | 4,410 | 4,410 |

Extra Features

| Extra Features | Legend |
|----------------------------|--------|
| No Data for Extra Features | |

Land

| Land Use | Land Line Valuation |
|---------------------------------|------------------------------------|
| Use Code 922 | Size (Acres) 7.91 |
| Description Mun Bldg Com | Frontage |
| Zone AAA | Depth |
| Neighborhood F | Assessed Value \$3,478,400 |
| Alt Land Appr No | Appraised Value \$4,969,200 |
| Category | |

Outbuildings

| |
|--|
| |
|--|

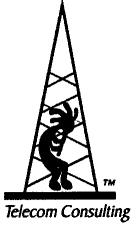
Outbuildings**Legend**

| Code | Description | Sub Code | Sub Description | Size | Value | Bldg # |
|------|--------------|----------|-----------------|---------------|----------|--------|
| SHD1 | Shed | FR | Frame | 725.00 S.F. | \$6,000 | 2 |
| SHD1 | Shed | FR | Frame | 382.00 S.F. | \$3,200 | 2 |
| SHD1 | Shed | FR | Frame | 336.00 S.F. | \$2,800 | 2 |
| PAV1 | Paving Asph. | | | 10000.00 S.F. | \$15,000 | 1 |

Valuation History

| Appraisal | | | |
|----------------|--------------|-------------|-------------|
| Valuation Year | Improvements | Land | Total |
| 2021 | \$866,600 | \$4,969,200 | \$5,835,800 |
| 2020 | \$866,600 | \$4,969,200 | \$5,835,800 |
| 2019 | \$1,034,100 | \$5,449,200 | \$6,483,300 |

| Assessment | | | |
|----------------|--------------|-------------|-------------|
| Valuation Year | Improvements | Land | Total |
| 2021 | \$606,700 | \$3,478,400 | \$4,085,100 |
| 2020 | \$606,700 | \$3,478,400 | \$4,085,100 |
| 2019 | \$723,900 | \$3,814,400 | \$4,538,300 |



PINNACLE TELECOM GROUP

Professional and Technical Services

ANTENNA SITE FCC RF COMPLIANCE ASSESSMENT AND REPORT FOR MUNICIPAL SUBMISSION



PREPARED FOR:

Dish Wireless, LLC

SITE ID:

NJJER01140B

SITE ADDRESS:

180A BAYBERRY LANE
WESTPORT, CT

LATITUDE:

N 41.1716667

LONGITUDE:

W 73.3284667

STRUCTURE TYPE:

MONOPOLE

REPORT DATE:

MARCH 14, 2022

COMPLIANCE CONCLUSION:

Dish Wireless, LLC will be in compliance with the rules and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in the report.

14 RIDGEDALE AVENUE - SUITE 260 • CEDAR KNOLLS, NJ 07927 • 973-451-1630

CONTENTS

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|--------------------------------------|-----------|
| INTRODUCTION AND SUMMARY | 3 |
| ANTENNA AND TRANSMISSION DATA | 5 |
| COMPLIANCE ANALYSIS | 12 |
| COMPLIANCE CONCLUSION | 21 |

CERTIFICATION

APPENDIX A. DOCUMENTS USED TO PREPARE THE ANALYSIS

APPENDIX B. BACKGROUND ON THE FCC MPE LIMIT

APPENDIX C. PROPOSED SIGNAGE

APPENDIX D. SUMMARY OF EXPERT QUALIFICATIONS

INTRODUCTION AND SUMMARY

At the request of Dish Wireless, LLC (“Dish”), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 180A Bayberry Lane in Westport, CT. Dish refers to the antenna site by the code “NJJER01140B”, and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

The FCC requires all wireless antenna operators to perform an assessment of potential human exposure to radiofrequency (RF) fields emanating from all the transmitting antennas at a site whenever antenna operations are added or modified, and to ensure compliance with the Maximum Permissible Exposure (MPE) limit in the FCC’s regulations. In this case, the compliance assessment needs to take into account the RF effects of other existing antenna operations at the site by AT&T, Sprint, T-Mobile, Verizon Wireless, Eversource Energy Service Company, Norwalk Transit District, the State of Connecticut, the Town of Westport, as well as a broadcast operation by Westport, CT Board of Education. Note that FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

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

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

consistently below 100 percent serve as a clear and sufficient demonstration of compliance with the MPE limit. We can (and will) also describe the overall worst-case result via the “plain-English” equivalent “times-below-the-limit” factor.

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

- ❑ At street level, the conservatively calculated maximum RF level from the combination of proposed and existing non-broadcast antenna operations at the site is 9.7775 percent of the FCC general population MPE limit. The result of the existing broadcast operations at this site is 7.5500 percent of the same MPE limit. Summing the 21.9000-percent worst-case result for the broadcast operation with the 9.7775-percent worst-case result for the non-broadcast operations yields an overall result of 31.6775 percent – well below the 100-percent reference for compliance.
- ❑ A supplemental analysis of the RF levels at the same height as the Dish antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that two Caution signs be installed six feet below the antennas. In addition, NOC Information signs are to be installed at the base of the monopole.
- ❑ The results of the calculations, along with the proposed mitigation, combine to satisfy the FCC requirements and associated guidelines on RF compliance at street level around the site and on the subject roof. Moreover, because of the significant conservatism incorporated in the analysis, RF levels actually caused by the antennas will be lower than these calculations indicate.

The remainder of this report provides the following:

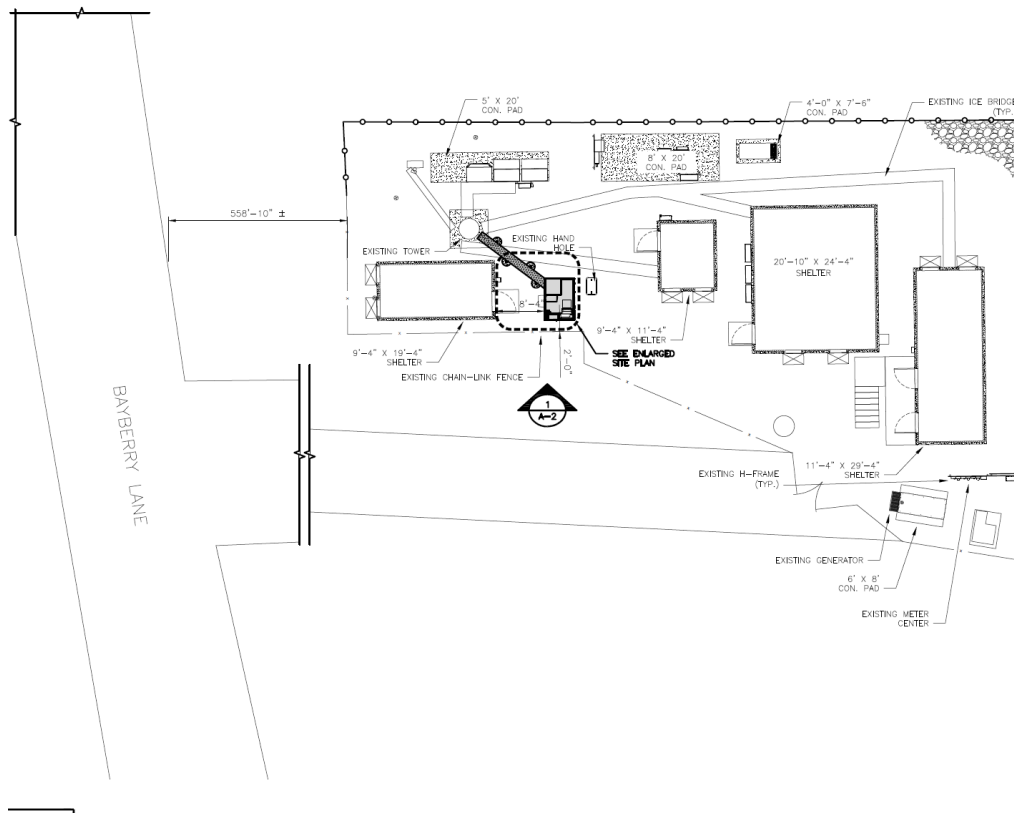
- ❑ relevant technical data on the proposed Dish antenna operations at the site, as well as on the other existing antenna operations;
- ❑ a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- ❑ analysis of the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

In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the FCC MPE limit. Appendix C details the proposed mitigation to satisfy the FCC requirements and associated guidelines on RF compliance. Appendix D provides a summary of the qualifications of the expert certifying FCC compliance for this site.

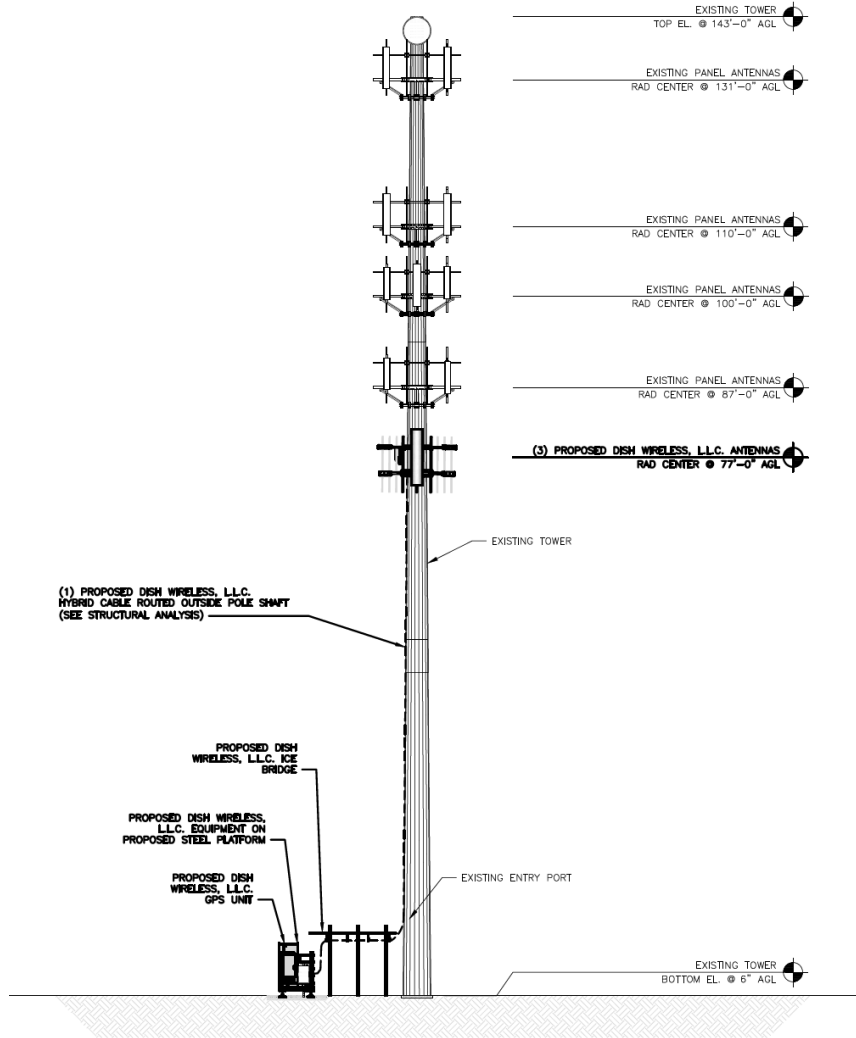
ANTENNA AND TRANSMISSION DATA

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

Plan View:



Elevation View:



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

| Ant. ID | Carrier | Antenna Manufacturer | Antenna Model | Type | Freq (MHz) | Ant. Dim. (ft.) | Total Input Power (watts) | Total ERP (watts) | Z AGL (ft) | Ant. Gain (dBd) | B/W | Azimuth | EDT | MDT |
|----------------|----------------|-----------------------------|----------------------|-------------|-------------------|------------------------|----------------------------------|--------------------------|-------------------|------------------------|------------|----------------|------------|------------|
| 1 | Dish | Commscope | FFVV-65B-R2 | Panel | 600 | 6 | 120 | 2110 | 77 | 12.46 | 64 | 60 | 2 | 0 |
| 1 | Dish | Commscope | FFVV-65B-R2 | Panel | 2000 | 6 | 160 | 7396 | 77 | 16.66 | 67 | 60 | 2 | 0 |
| 1 | Dish | Commscope | FFVV-65B-R2 | Panel | 2100 | 6 | 160 | 7396 | 77 | 16.66 | 67 | 60 | 2 | 0 |
| 2 | Dish | Commscope | FFVV-65B-R2 | Panel | 600 | 6 | 120 | 2110 | 77 | 12.46 | 64 | 180 | 2 | 0 |
| 2 | Dish | Commscope | FFVV-65B-R2 | Panel | 2000 | 6 | 160 | 7396 | 77 | 16.66 | 67 | 180 | 2 | 0 |
| 2 | Dish | Commscope | FFVV-65B-R2 | Panel | 2100 | 6 | 160 | 7396 | 77 | 16.66 | 67 | 180 | 2 | 0 |
| 3 | Dish | Commscope | FFVV-65B-R2 | Panel | 600 | 6 | 120 | 2110 | 77 | 12.46 | 64 | 300 | 2 | 0 |
| 3 | Dish | Commscope | FFVV-65B-R2 | Panel | 2000 | 6 | 160 | 7396 | 77 | 16.66 | 67 | 300 | 2 | 0 |
| 3 | Dish | Commscope | FFVV-65B-R2 | Panel | 2100 | 6 | 160 | 7396 | 77 | 16.66 | 67 | 300 | 2 | 0 |

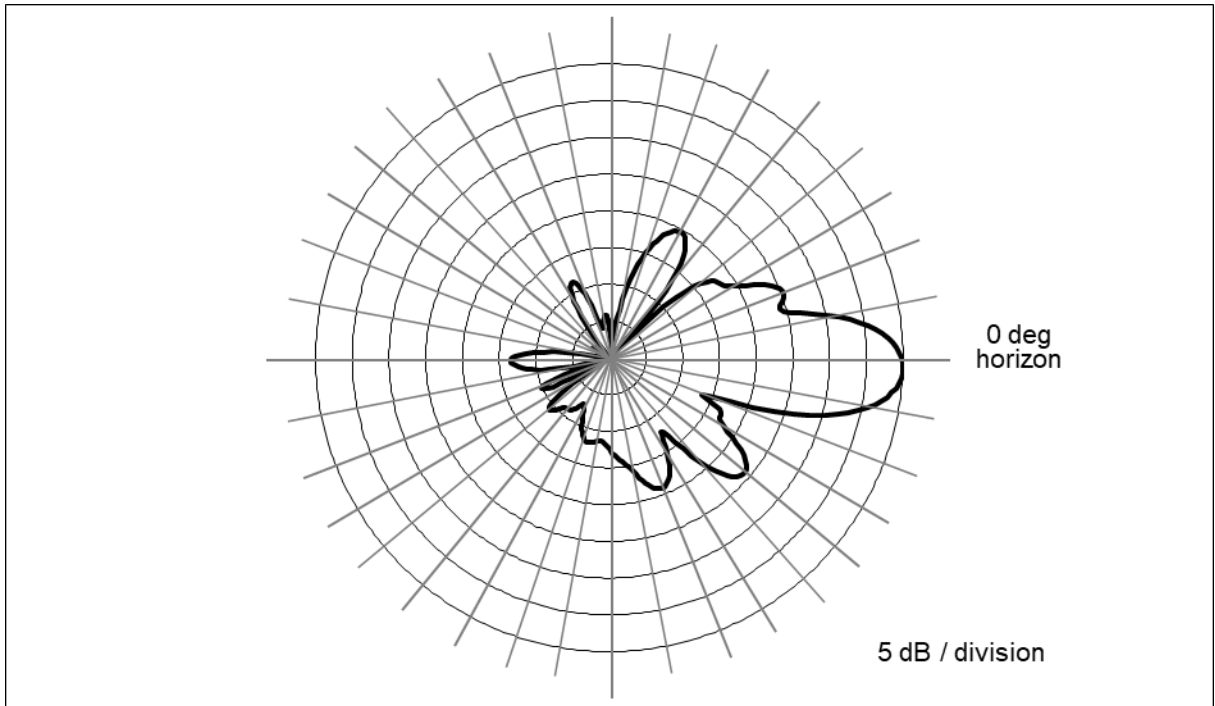
The area below the antennas, at street level, is of interest in terms of potential “uncontrolled” exposure of the general public, so the antenna’s vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the “downward” direction.

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

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

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

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



As noted at the outset, there are existing antenna operations to include in the compliance assessment. For each of the wireless operators, we will conservatively assume operation with maximum channel capacity and at maximum transmitter power per channel to be used by each wireless operator in each of their respective FCC-licensed frequency bands. For each of the other operators, we will rely on the transmission parameters in their respective FCC licenses.

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

| <i>Carrier</i> | <i>Antenna Manufacturer</i> | <i>Antenna Model</i> | <i>Type</i> | <i>Freq (MHz)</i> | <i>Total ERP (watts)</i> | <i>Ant. Gain (dBd)</i> | <i>Azimuth</i> |
|---------------------------------|-----------------------------|----------------------|-------------|-------------------|--------------------------|------------------------|----------------|
| AT&T | Generic | Generic | Panel | 700 | 4945 | 11.26 | N/A |
| AT&T | Generic | Generic | Panel | 850 | 2400 | 11.76 | N/A |
| AT&T | Generic | Generic | Panel | 1900 | 5756 | 15.56 | N/A |
| AT&T | Generic | Generic | Panel | 2100 | 5890 | 15.66 | N/A |
| AT&T | Generic | Generic | Panel | 2300 | 4131 | 16.16 | N/A |
| Sprint | Generic | Generic | Panel | 800 | 2168 | 13.36 | N/A |
| Sprint | Generic | Generic | Panel | 1900 | 6168 | 15.86 | N/A |
| Sprint | Generic | Generic | Panel | 2500 | 4669 | 15.90 | N/A |
| T-Mobile | Generic | Generic | Panel | 600 | 3163 | 12.96 | N/A |
| T-Mobile | Generic | Generic | Panel | 700 | 867 | 13.36 | N/A |
| T-Mobile | Generic | Generic | Panel | 1900 | 4123 | 15.36 | N/A |
| T-Mobile | Generic | Generic | Panel | 1900 | 1452 | 15.60 | N/A |
| T-Mobile | Generic | Generic | Panel | 2100 | 4626 | 15.86 | N/A |
| T-Mobile | Generic | Generic | Panel | 1900 | 1419 | 15.50 | N/A |
| T-Mobile | Generic | Generic | Panel | 2500 | 12804 | 22.35 | N/A |
| Verizon Wireless | Generic | Generic | Panel | 746 | 2400 | 11.76 | N/A |
| Verizon Wireless | Generic | Generic | Panel | 869 | 5166 | 12.36 | N/A |
| Verizon Wireless | Generic | Generic | Panel | 1900 | 5372 | 15.26 | N/A |
| Verizon Wireless | Generic | Generic | Panel | 2100 | 5625 | 15.46 | N/A |
| Eversource Energy Services, Co. | Generic | Generic | Omni | 937 | 240 | 9 | N/A |
| Norwalk Transit District | Generic | Generic | Omni | 472 | 249 | 3 | N/A |
| State of Connecticut | Generic | Generic | Omni | 769 | 150 | 9 | N/A |
| State of Connecticut | Generic | Generic | Omni | 851 | 150 | 9 | N/A |
| Town of Westport | Generic | Generic | Omni | 46 | 60 | 0 | N/A |
| Town of Westport | Generic | Generic | Omni | 855 | 95 | 9 | N/A |
| Town of Westport | Generic | Generic | Omni | 453 | 60 | 3 | N/A |
| Town of Westport | Generic | Generic | Omni | 166 | 63 | 0 | N/A |
| Town of Westport | Generic | Generic | Omni | 460 | 176 | 3 | N/A |
| Town of Westport | Generic | Generic | Omni | 460 | 176 | 3 | N/A |
| Town of Westport | Generic | Generic | Omni | 851 | 95 | 6 | N/A |
| Town of Westport | Generic | Generic | Omni | 477 | 64 | 3 | N/A |
| Town of Westport | Generic | Generic | Dish | 18000 | 4581 | 42.46 | N/A |

| <i>Carrier</i> | <i>Antenna Manufacturer</i> | <i>Antenna Model</i> | <i>Type</i> | <i>Freq (MHz)</i> | <i>Total ERP (watts)</i> | <i>Ant. Gain (dBd)</i> | <i>Azimuth</i> |
|-----------------------------|-----------------------------|----------------------|-------------|-------------------|--------------------------|------------------------|----------------|
| Town of Westport | Generic | Generic | Dish | 11 | 1446 | 36.16 | N/A |
| Westport Board of Education | Generic | Generic | Broadcast | 90.3 | 330 | N/A | N/A |

Compliance Analysis

FCC Office of Engineering and Technology Bulletin 65 (“OET Bulletin 65”) provides guidelines for mathematical models to calculate the RF levels at various points around transmitting antennas. Different models apply to the broadcast and non-broadcast operations, and this compliance assessment will be based on the worst-case results of the analyses of each type of operation. We will address the non-broadcast operations first.

Analysis of Non-Broadcast Operations

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

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

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

$$\text{MPE\%} = (100 * \text{Chans} * \text{TxPower} * 10^{(\text{Gmax}-\text{Vdisc}/10)} * 4) / (\text{MPE} * 4\pi * \text{R}^2)$$

where

| | | |
|---------|---|--|
| MPE% | = | RF level, expressed as a percentage of the MPE limit applicable to continuous exposure of the general public |
| 100 | = | factor to convert the raw result to a percentage |
| Chans | = | maximum number of RF channels per sector |
| TxPower | = | maximum transmitter power per channel, in milliwatts |

- 10^(G_{max}-V_{disc}/10) = numeric equivalent of the relative antenna gain in the downward direction of interest; data on the antenna vertical-plane pattern is taken from manufacturer specifications
- 4 = factor to account for a 100-percent-efficient energy reflection from the ground, and the squared relationship between RF field strength and power density (2² = 4)
- MPE = FCC general population MPE limit
- R = straight-line distance from the RF source to the point of interest, centimeters

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

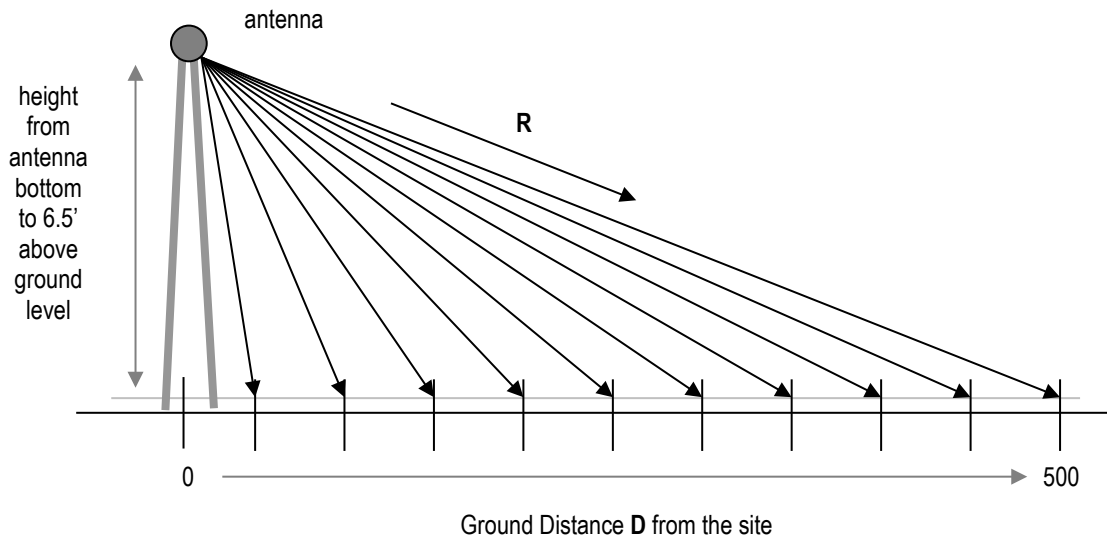


Figure 2. Street-level MPE% Calculation Geometry

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

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

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

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

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

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

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

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

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

| Ground Distance (ft) | Dish 600 MHz MPE% | Dish 2000 MHz MPE% | Dish 2100 MHz MPE% | AT&T MPE% | Sprint MPE% | T-Mobile MPE% | Verizon Wireless MPE% | Subtotal MPE% |
|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------|--------------------|----------------------|------------------------------|----------------------|
| 0 | 0.1069 | 0.0050 | 0.0008 | 0.1419 | 0.0271 | 0.6551 | 0.0329 | 0.9697 |
| 20 | 0.3633 | 0.0304 | 0.0772 | 0.2375 | 0.0117 | 1.1195 | 0.0507 | 1.8903 |
| 40 | 0.1517 | 0.0396 | 0.3122 | 0.4399 | 0.0116 | 2.1335 | 0.1600 | 3.2485 |
| 60 | 0.3357 | 0.5240 | 0.8362 | 0.7319 | 0.0357 | 1.1717 | 0.2305 | 3.8657 |
| 80 | 0.6633 | 0.6027 | 0.7381 | 0.6847 | 0.0337 | 1.0146 | 0.2008 | 3.9379 |
| 100 | 0.2368 | 0.0249 | 0.0638 | 1.2927 | 0.0724 | 1.6973 | 0.2666 | 3.6545 |
| 120 | 0.0763 | 0.0084 | 0.0984 | 1.3864 | 0.0596 | 2.9983 | 0.4415 | 5.0689 |
| 140 | 0.0517 | 0.1802 | 0.3067 | 1.4662 | 0.0743 | 4.7679 | 0.4242 | 7.2712 |
| 160 | 0.0212 | 0.0854 | 0.0585 | 1.8314 | 0.1748 | 5.7515 | 0.6137 | 8.5365 |
| 180 | 0.0415 | 0.2661 | 0.1604 | 1.3225 | 0.1368 | 4.2009 | 0.7064 | 6.8346 |
| 200 | 0.1444 | 0.1306 | 0.2672 | 0.8077 | 0.0801 | 6.4067 | 0.5505 | 8.3872 |
| 220 | 0.2185 | 0.0389 | 0.1663 | 0.5610 | 0.0349 | 7.4078 | 0.3507 | 8.7781 |
| 240 | 0.4763 | 0.0103 | 0.0239 | 0.4681 | 0.0467 | 6.8348 | 0.1593 | 8.0194 |
| 260 | 0.6000 | 0.0077 | 0.0075 | 0.4975 | 0.0672 | 6.6135 | 0.0798 | 7.8732 |
| 280 | 0.7270 | 0.0149 | 0.0045 | 0.4932 | 0.0700 | 6.1078 | 0.0434 | 7.4608 |
| 300 | 0.8525 | 0.0553 | 0.0213 | 0.6615 | 0.0874 | 5.7237 | 0.0776 | 7.4793 |
| 320 | 0.9709 | 0.1232 | 0.0722 | 0.9450 | 0.0872 | 5.4385 | 0.1480 | 7.7850 |
| 340 | 0.8643 | 0.1097 | 0.0643 | 0.8444 | 0.0741 | 4.9789 | 0.2475 | 7.1832 |
| 360 | 0.9634 | 0.1463 | 0.1173 | 1.1855 | 0.0485 | 4.7437 | 0.3776 | 7.5823 |
| 380 | 0.8676 | 0.1317 | 0.1056 | 1.7611 | 0.0230 | 4.4063 | 0.5291 | 7.8244 |
| 400 | 0.9486 | 0.1029 | 0.1123 | 2.4860 | 0.0156 | 4.1394 | 0.4806 | 8.2854 |
| 420 | 0.8626 | 0.0936 | 0.1021 | 2.2653 | 0.0143 | 3.7872 | 0.6447 | 7.7698 |
| 440 | 0.9234 | 0.0308 | 0.0570 | 2.9060 | 0.0278 | 3.6422 | 0.8160 | 8.4032 |
| 460 | 0.8465 | 0.0282 | 0.0522 | 2.6682 | 0.0513 | 3.3449 | 0.7498 | 7.7411 |
| 480 | 0.7788 | 0.0260 | 0.0481 | 3.1393 | 0.0474 | 3.0791 | 0.9239 | 8.0426 |
| 500 | 0.8196 | 0.0173 | 0.0197 | 2.9011 | 0.0649 | 3.1134 | 0.8543 | 7.7903 |

| Ground Distance (ft) | Subtotal MPE% | Eversource Energy Svcs. MPE% | Norwalk Transit District MPE% | State of CT MPE% | Town of Westport MPE% | Subtotal MPE% |
|----------------------|---------------|------------------------------|-------------------------------|------------------|-----------------------|---------------|
| 0 | 0.9697 | 0.0038 | 0.0050 | 0.0042 | 0.0088 | 0.9915 |
| 20 | 1.8903 | 0.0343 | 0.6150 | 0.0379 | 1.3967 | 3.9742 |
| 40 | 3.2485 | 0.0409 | 0.2448 | 0.0453 | 2.4063 | 5.9858 |
| 60 | 3.8657 | 0.0164 | 0.0172 | 0.0182 | 2.1717 | 6.0892 |
| 80 | 3.9379 | 0.0256 | 0.2169 | 0.0285 | 1.6588 | 5.8677 |
| 100 | 3.6545 | 0.0088 | 0.4702 | 0.0098 | 1.1857 | 5.3290 |
| 120 | 5.0689 | 0.0194 | 0.6362 | 0.0217 | 0.8668 | 6.6130 |
| 140 | 7.2712 | 0.0003 | 0.7057 | 0.0004 | 0.6687 | 8.6463 |
| 160 | 8.5365 | 0.0029 | 0.7004 | 0.0033 | 0.5344 | 9.7775 |
| 180 | 6.8346 | 0.0095 | 0.6792 | 0.0071 | 0.4606 | 7.9910 |
| 200 | 8.3872 | 0.0100 | 0.6562 | 0.0113 | 0.4118 | 9.4765 |
| 220 | 8.7781 | 0.0018 | 0.5876 | 0.0020 | 0.3802 | 9.7497 |
| 240 | 8.0194 | 0.0033 | 0.5461 | 0.0038 | 0.3514 | 8.9240 |
| 260 | 7.8732 | 0.0065 | 0.4906 | 0.0073 | 0.3355 | 8.7131 |
| 280 | 7.4608 | 0.0041 | 0.4557 | 0.0046 | 0.3299 | 8.2551 |
| 300 | 7.4793 | 0.0005 | 0.4175 | 0.0022 | 0.3350 | 8.2345 |
| 320 | 7.7850 | 0.0000 | 0.3683 | 0.0000 | 0.3194 | 8.4727 |
| 340 | 7.1832 | 0.0002 | 0.3426 | 0.0002 | 0.3092 | 7.8354 |
| 360 | 7.5823 | 0.0009 | 0.3064 | 0.0006 | 0.2989 | 8.1891 |
| 380 | 7.8244 | 0.0009 | 0.2820 | 0.0009 | 0.2918 | 8.4000 |
| 400 | 8.2854 | 0.0008 | 0.2550 | 0.0009 | 0.2879 | 8.8300 |
| 420 | 7.7698 | 0.0007 | 0.2316 | 0.0008 | 0.2811 | 8.2840 |
| 440 | 8.4032 | 0.0005 | 0.2213 | 0.0005 | 0.2772 | 8.9027 |
| 460 | 7.7411 | 0.0001 | 0.2027 | 0.0002 | 0.2557 | 8.1998 |
| 480 | 8.0426 | 0.0000 | 0.1864 | 0.0001 | 0.2558 | 8.4849 |
| 500 | 7.7903 | 0.0000 | 0.1759 | 0.0000 | 0.2513 | 8.2175 |

As indicated, the maximum calculated overall RF level is 9.7775 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

Analysis of Broadcast Operations

FCC Office of Engineering and Technology Bulletin 65 (“OET Bulletin 65”) provides guidelines for mathematical models to calculate the RF levels at various points around transmitting antennas. Different models apply to the broadcast and non-broadcast operations, and this compliance assessment will be based on the worst-case results of the analyses of each type of operation. We will address the non-broadcast operations first.

For compliance analysis of FM broadcast antenna operations, the FCC has made publicly available a software program called “FM Model”. Inputs to the program include transmission parameters taken from the FCC licenses, and the primary output of the program is a graph of the calculated RF level (in microwatts per square centimeter) versus distance (in meters). We’ll use 150 meters as the maximum calculation distance, as that approximates the 500-foot distance we apply in the analysis of the wireless antennas.

The FM Model program also has a pop-up feature that reports the maximum calculated RF level, which we will use – independent of the particular distance at which that occurs – to analyze compliance. We’ll convert the result to a percentage of the 0.2 watt/cm² MPE limit that applies to all FM broadcast operations.

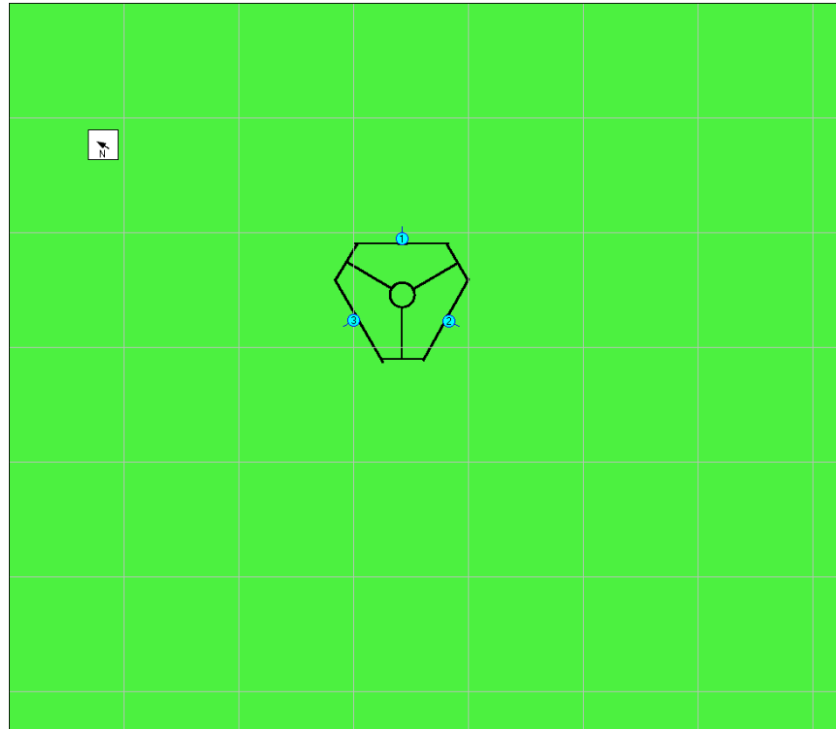
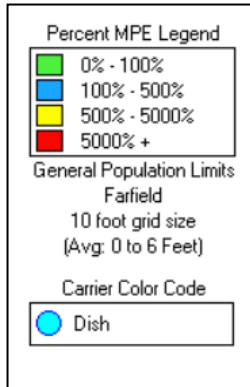
We input the appropriate data to the FCC program, including the maximum ERP (330 watts), and the antenna height (39 meters).

The table that follows provides the results of the analysis of the FM broadcast operation at the site.

| Ground Distance (ft) | MPE% |
|-------------------------------------|----------------|
| 0 | 19.2500 |
| 20 | 21.9000 |
| 40 | 6.1000 |
| 60 | 0.9500 |
| 80 | 0.2000 |
| 100 | 0.4000 |
| 120 | 0.3000 |
| 140 | 0.0500 |
| 160 | 0.1500 |
| 180 | 0.2000 |
| 200 | 0.2500 |
| 220 | 0.2000 |
| 240 | 0.1500 |
| 260 | 0.0500 |
| 280 | 0.0500 |
| 300 | 0.0000 |
| 320 | 0.0000 |
| 340 | 0.0500 |
| 360 | 0.0500 |
| 380 | 0.0500 |
| 400 | 0.1000 |
| 420 | 0.1000 |
| 440 | 0.1000 |
| 460 | 0.1000 |
| 480 | 0.1000 |
| 500 | 0.1500 |

Summing the 21.9000-percent worst-case result for the broadcast operation with the earlier 9.7775-percent worst-case result for the non-broadcast operations yields an overall result of 31.6775 percent – well below the 100-percent reference for compliance.

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

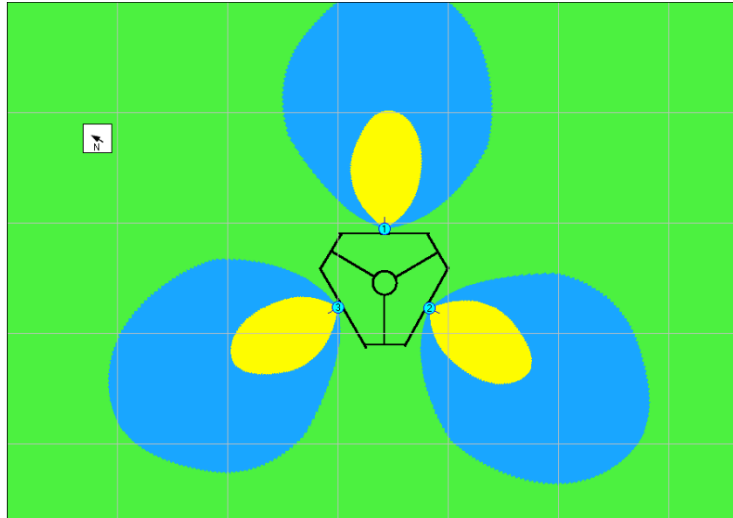
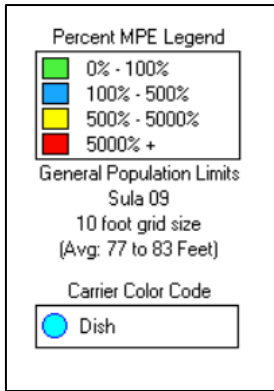


Near-field Analysis

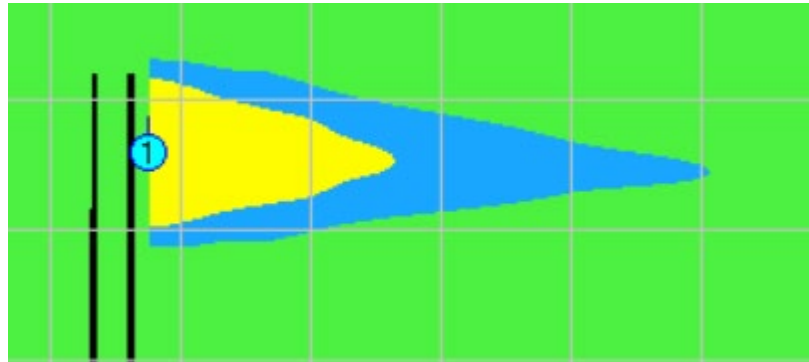
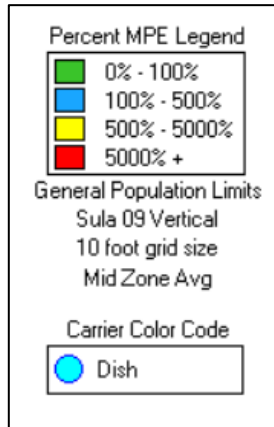
The compliance analysis for the same height as the antennas is performed using the RoofMaster program by Waterford Consultants.

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

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



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



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

COMPLIANCE CONCLUSION

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

The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at street level around the site is 31.6775 percent of the FCC general population MPE limit. At the same height as the antennas, the analysis shows that the calculated RF levels potentially exceed the FCC MPE limit. Per Dish guidelines, and consistent with FCC guidance on compliance, it is recommended that two Caution signs be installed six feet below the antennas. In addition, NOC Information signs be installed at the base of the monopole.

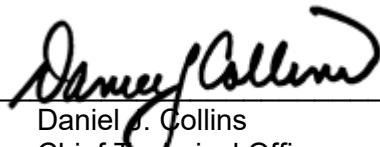
The results of the calculations, along with the described RF mitigation, combine to satisfy the FCC's RF compliance requirements and associated guidelines on compliance.

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

CERTIFICATION

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

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



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

3/14/22

Date

Appendix A. DOCUMENTS USED TO PREPARE THE ANALYSIS

RFDS: RFDS-NJJER01140B-Final-20211202-v.0_20211202215313

CD: NJJER01140B_FinalStampedCDs_20211109132659

Appendix B. Background on the FCC MPE Limit

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

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

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

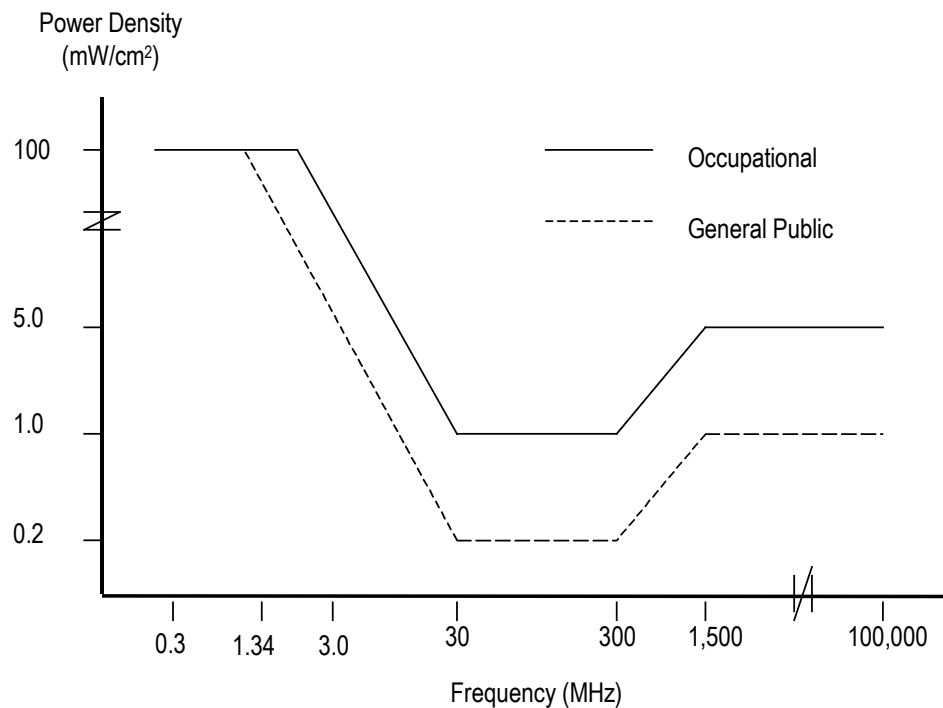
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in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

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

The FCC's RF exposure limits are expressed in two equivalent forms, using alternative units of field strength (expressed in volts per meter, or V/m), and power density (expressed in milliwatts per square centimeter, or mW/cm²). The table on the next page lists the FCC limits for both occupational and general population exposures, using the mW/cm² reference, for the different radio frequency ranges.

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

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



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

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

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

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

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

FCC References on RF Compliance

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

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

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

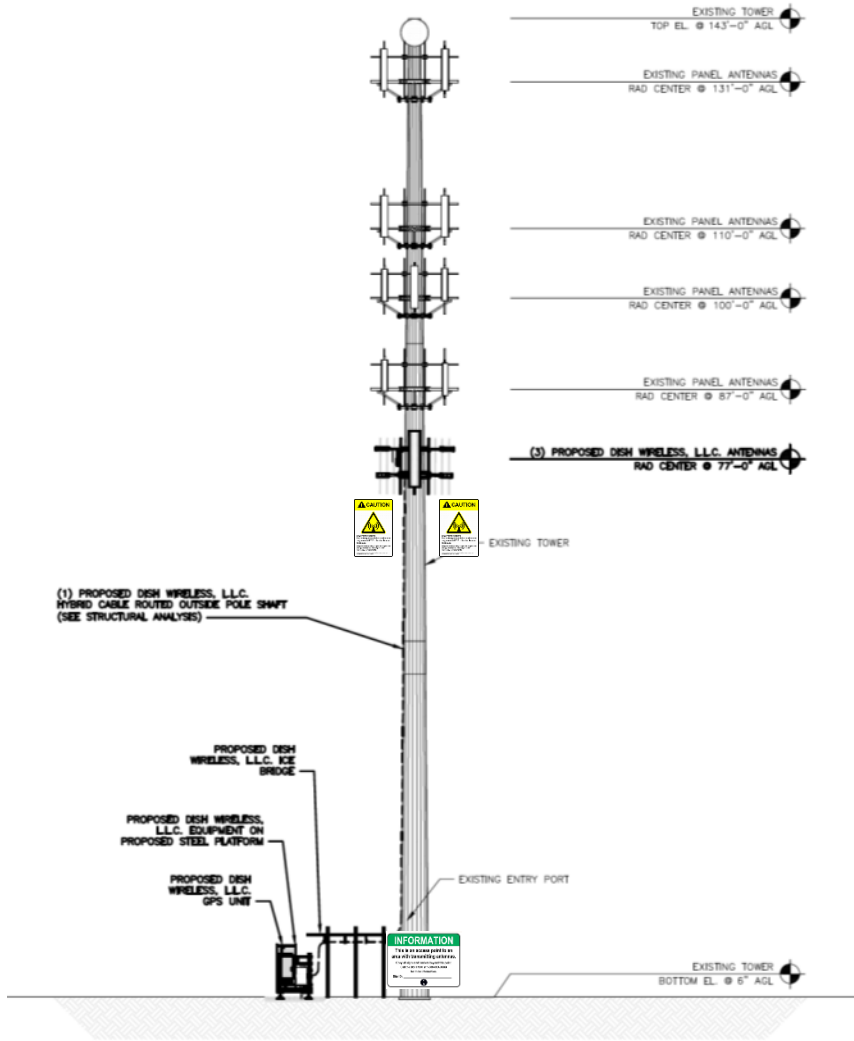
FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

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

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

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

Appendix C. PROPOSED SIGNAGE



| | | | |
|----------------------|--|--------------|--|
| NOC Information Sign | | Caution Sign | |
| Guidelines Sign | | Warning Sign | |
| Notice Sign | | | |

Appendix D. SUMMARY of EXPERT QUALIFICATIONS

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

| | |
|---|---|
| <p>Synopsis:</p> | <ul style="list-style-type: none"> • 40+ years of experience in all aspects of wireless system engineering, related regulation, and RF exposure • Has performed or led RF exposure compliance assessments on more than 20,000 antenna sites since the latest FCC regulations went into effect in 1997 • Has provided testimony as an RF compliance expert more than 1,500 times since 1997 • Have been accepted as an FCC compliance expert in New York, New Jersey, Connecticut, Pennsylvania and more than 40 other states, as well as by the FCC |
| <p>Education:</p> | <ul style="list-style-type: none"> • B.E.E., City College of New York (Sch. Of Eng.), 1971 • M.B.A., 1982, Fairleigh Dickinson University, 1982 • Bronx High School of Science, 1966 |
| <p>Current Responsibilities:</p> | <ul style="list-style-type: none"> • Leads all PTG staff work involving RF safety and FCC compliance, microwave and satellite system engineering, and consulting on wireless technology and regulation |
| <p>Prior Experience:</p> | <ul style="list-style-type: none"> • Edwards & Kelcey, VP – RF Engineering and Chief Information Technology Officer, 1996-99 • Bellcore (a Bell Labs offshoot after AT&T's 1984 divestiture), Executive Director – Regulation and Public Policy, 1983-96 • AT&T (Corp. HQ), Division Manager – RF Engineering, and Director – Radio Spectrum Management, 1977-83 • AT&T Long Lines, Group Supervisor – Microwave Radio System Design, 1972-77 |
| <p>Specific RF Safety / Compliance Experience:</p> | <ul style="list-style-type: none"> • Involved in RF exposure matters since 1972 • Have had lead corporate responsibility for RF safety and compliance at AT&T, Bellcore, Edwards & Kelcey, and PTG • While at AT&T, helped develop the mathematical models for calculating RF exposure levels • Have been relied on for compliance by all major wireless carriers, as well as by the federal government, several state and local governments, equipment manufacturers, system integrators, and other consulting / engineering firms |
| <p>Other Background:</p> | <ul style="list-style-type: none"> • Author, <i>Microwave System Engineering</i> (AT&T, 1974) • Co-author and executive editor, <i>A Guide to New Technologies and Services</i> (Bellcore, 1993) • National Spectrum Management Association (NSMA) – former three-term President and Chairman of the Board of Directors; was founding member, twice-elected Vice President, long-time member of the Board, and was named an NSMA Fellow in 1991 • Have published more than 35 articles in industry magazines |



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Antenna Mount Analysis Report

ATC Site Name : WSPT – Westport Rebuild CT
ATC Site Number : 310968
Engineering Number : 13709691_C8_04
Mount Elevation : 77 ft.
Carrier : Dish Wireless
Carrier Site Name : NJJER01140B
Carrier Site Number : NJJER01140B
Site Location : 180A Bayberry Lane
Westport, CT 06880-2844
41.1717°, - 73.3285°
County : Fairfield
Date : March 23, 2022
Max Usage : 43%
Result : Pass

Prepared By:
Erika Ruiz
Project Engineer

Reviewed By:



COA: PEC.0001564 Expires: 02/01/2023



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Calculations Attached



Introduction

The purpose of this report is to summarize results of the antenna mount analysis performed for Dish Wireless at 77 ft.

Supporting Documents

| | |
|-------------------|---|
| Spec Sheet | Commscope Platform Mounts (Part# MC-PK8-DSH) dated March 17, 2021 |
|-------------------|---|

Analysis

This antenna mount was analyzed using RISA-3D v19.0.4 analysis software

| | |
|--------------------------------------|--|
| Basic Wind Speed: | 118 mph (3-Second Gust) |
| Basic Wind Speed w/ Ice: | 50 mph (3-Second Gust) w/ 1" radial ice concurrent |
| Codes: | ANSI/TIA-222-H/ 2018 Connecticut State Building Code |
| Exposure Category: | B |
| Risk Category: | II |
| Topographic Factor Procedure: | Method 2 |
| Feature: | Flat |
| Crest Height: | 0 ft |
| Crest Length: | 0 ft |
| Spectral Response: | $S_s = 0.227$, $S_1 = 0.056$ |
| Site Class: | D – Stiff Soil |
| Live Loads: | $L_m = 500$ lbs, $L_v = 250$ lbs |

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed. The mount can support the equipment as described in this report. Analysis is based on new Commscope (Part #MC-PK8-DSH) Mount.

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



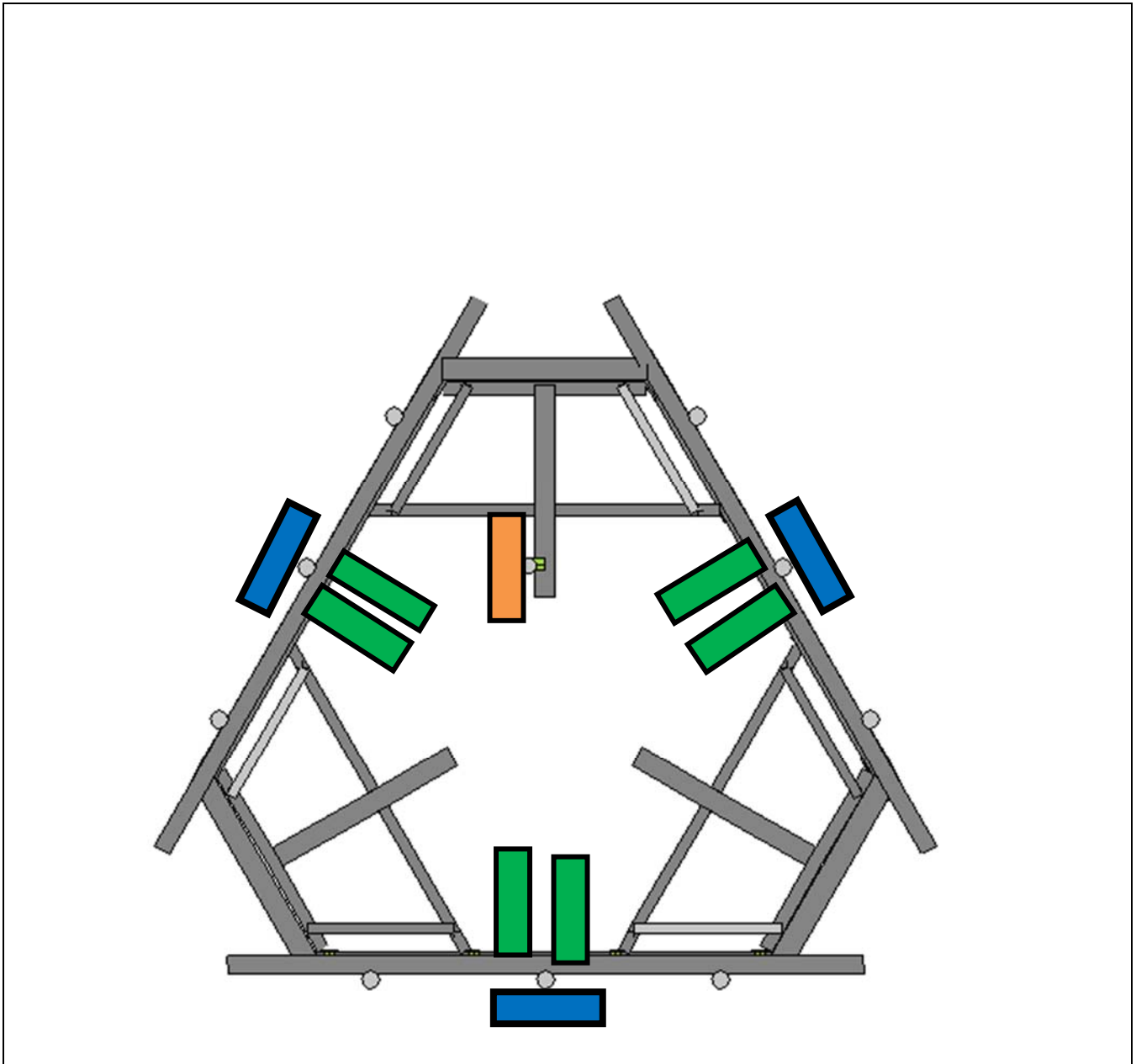
Antenna Loading

| Mount Centerline (ft) | Antenna Centerline (ft) | Qty | Antenna Model |
|-----------------------|-------------------------|-----|----------------------------|
| 77 | 77 | 3 | JMA Wireless MX08FRO665-21 |
| | | 3 | Fujitsu TA08025-B604 |
| | | 3 | Fujitsu TA08025-B605 |
| | | 1 | Raycap RDIDC-9181-PF-48 |

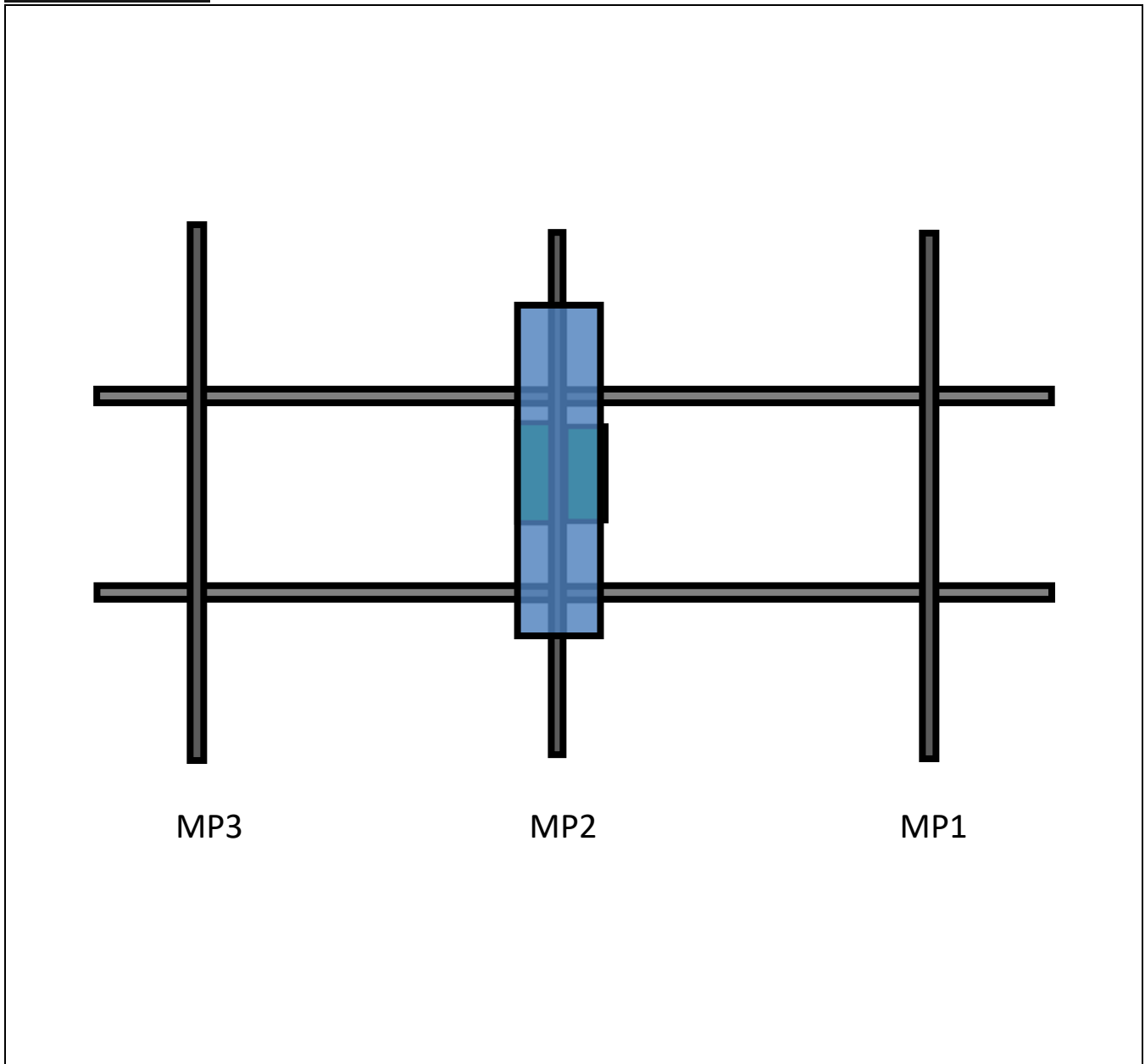
Structure Usages

| Structural Component | Controlling Usage | Pass/Fail |
|----------------------|-------------------|-----------|
| Main Horizontals | 7% | Pass |
| Support Rails | 8% | Pass |
| Support Tubes | 43% | Pass |
| Support Channels | 33% | Pass |
| Support Angles | 4% | Pass |
| Connection Angles | 22% | Pass |
| Mount Pipes | 10% | Pass |
| Connection Plates | 19% | Pass |
| Connection Bolts | 22% | Pass |

Mount Layout



Equipment Layout



| | Antenna Model | Location |
|---|----------------------------|-------------------------|
| 1 | JMA Wireless MX08FRO665-21 | MP2 |
| 2 | Fujitsu TA08025-B604 | MP2 |
| 3 | Fujitsu TA08025-B605 | MP2 |
| 4 | Raycap RDIDC-9181-PF-48 | Support Tube mount pipe |



Standard Conditions

All engineering services performed by B+T Group, Tulsa are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna and mounts
- Information from drawings, design and analysis documents, and field notes in the possession of B+T Group.
- Manufacturers drawings for Commscope # MC-PK8-DSH used for analysis
- The following assumptions have been included in the analysis of the mount:

| Component | Section | Length | Note |
|-------------|--------------|--------|------------------------------------|
| Raycap Pipe | 2" Std. Pipe | 4'-0" | Attached to Support Tube, Per CD's |

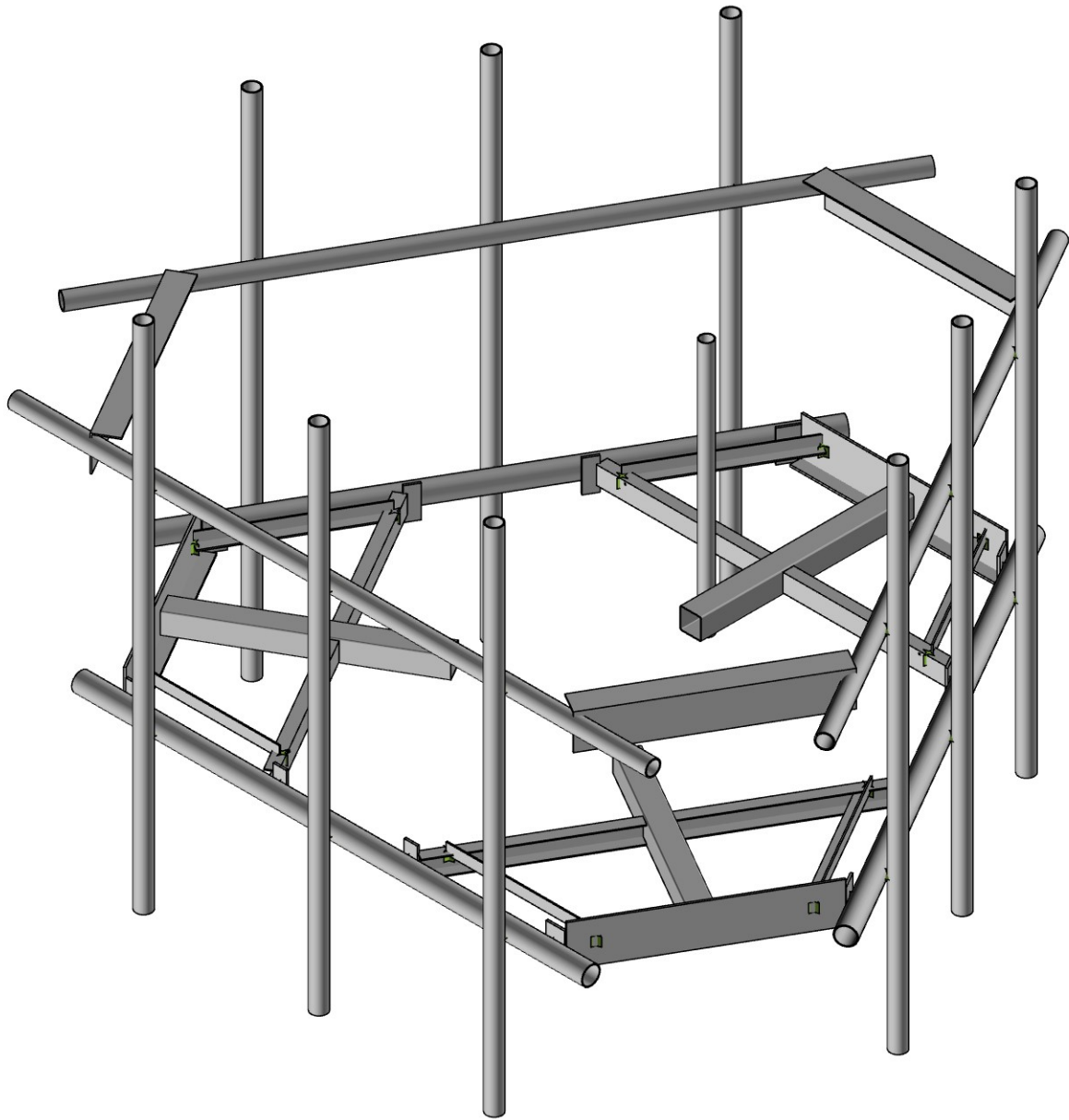
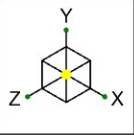
It is the responsibility of the client to ensure that the information provided to B+T Group and used in the performance of our engineering services is correct and complete.

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

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

Unless explicitly agreed by both the client and John B+T Group all services will be performed in accordance with the current revision of ANSI/TIA-222.

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



B+T Group

APK

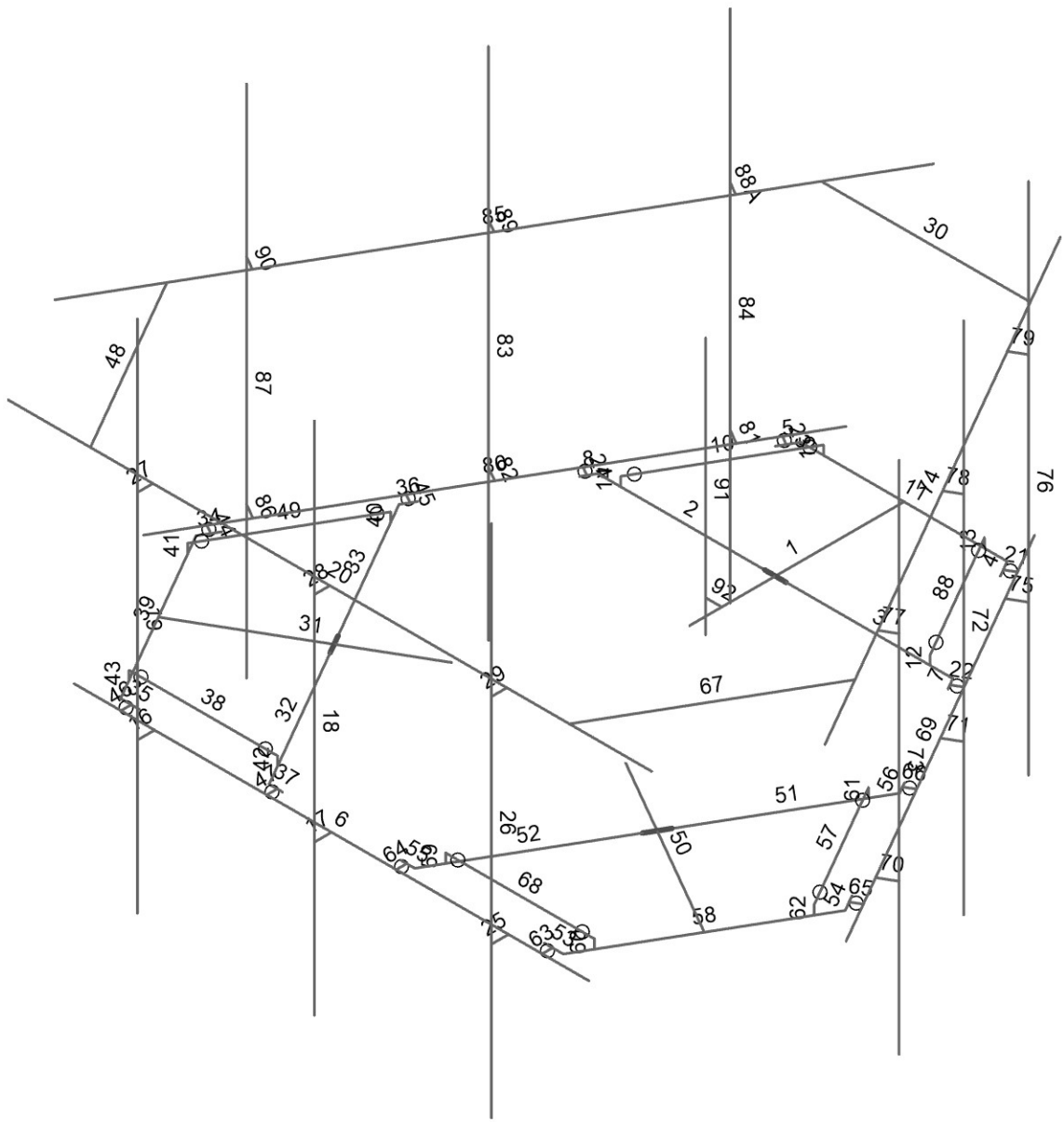
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310968 - WSPT - Westport Rebuild CT

SK-1

Mar 23, 2022

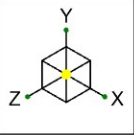
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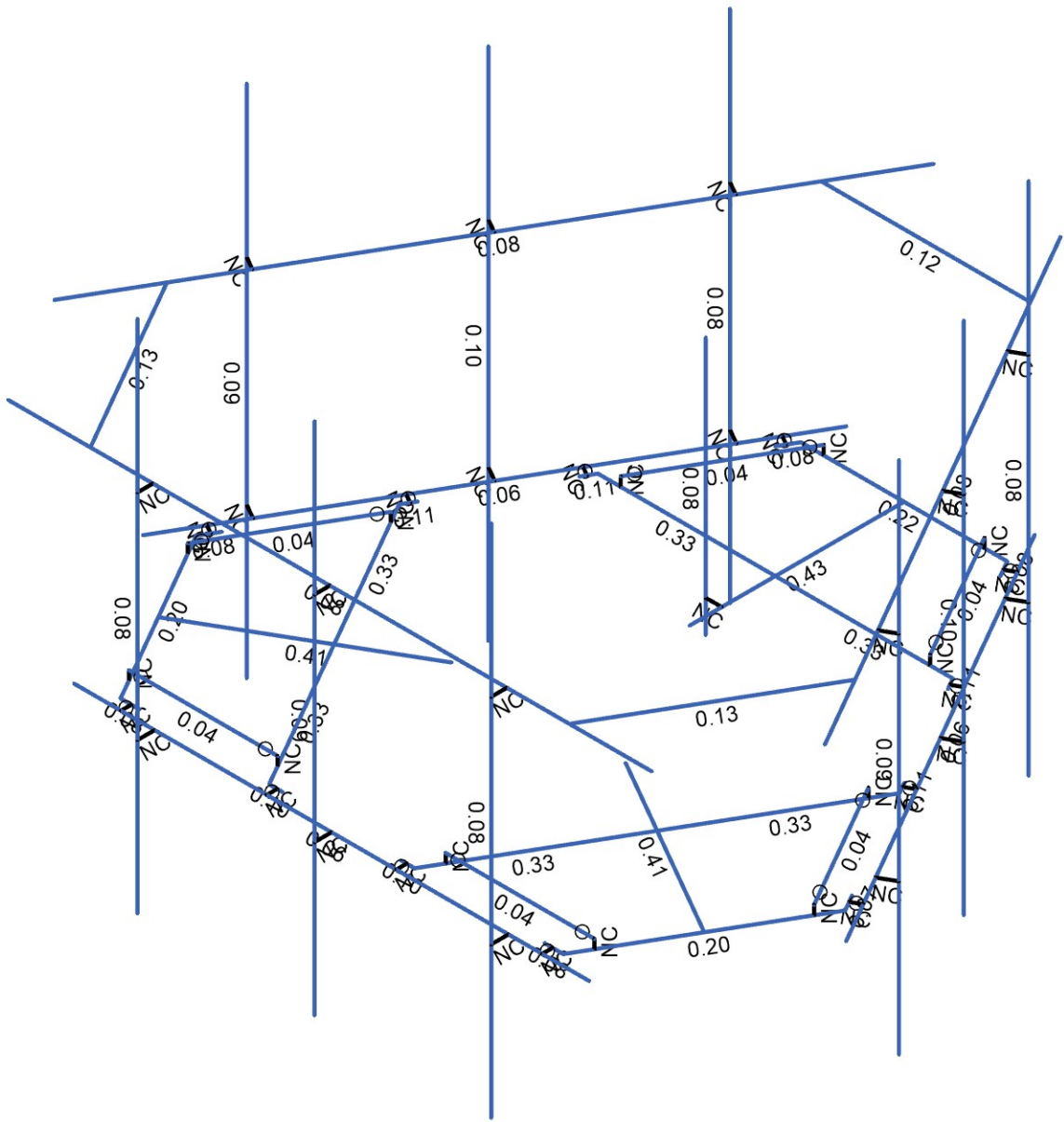
B+T Group
APK
160582.003.01

310968 - WSPT - Westport Rebuild CT

SK-2
Mar 23, 2022
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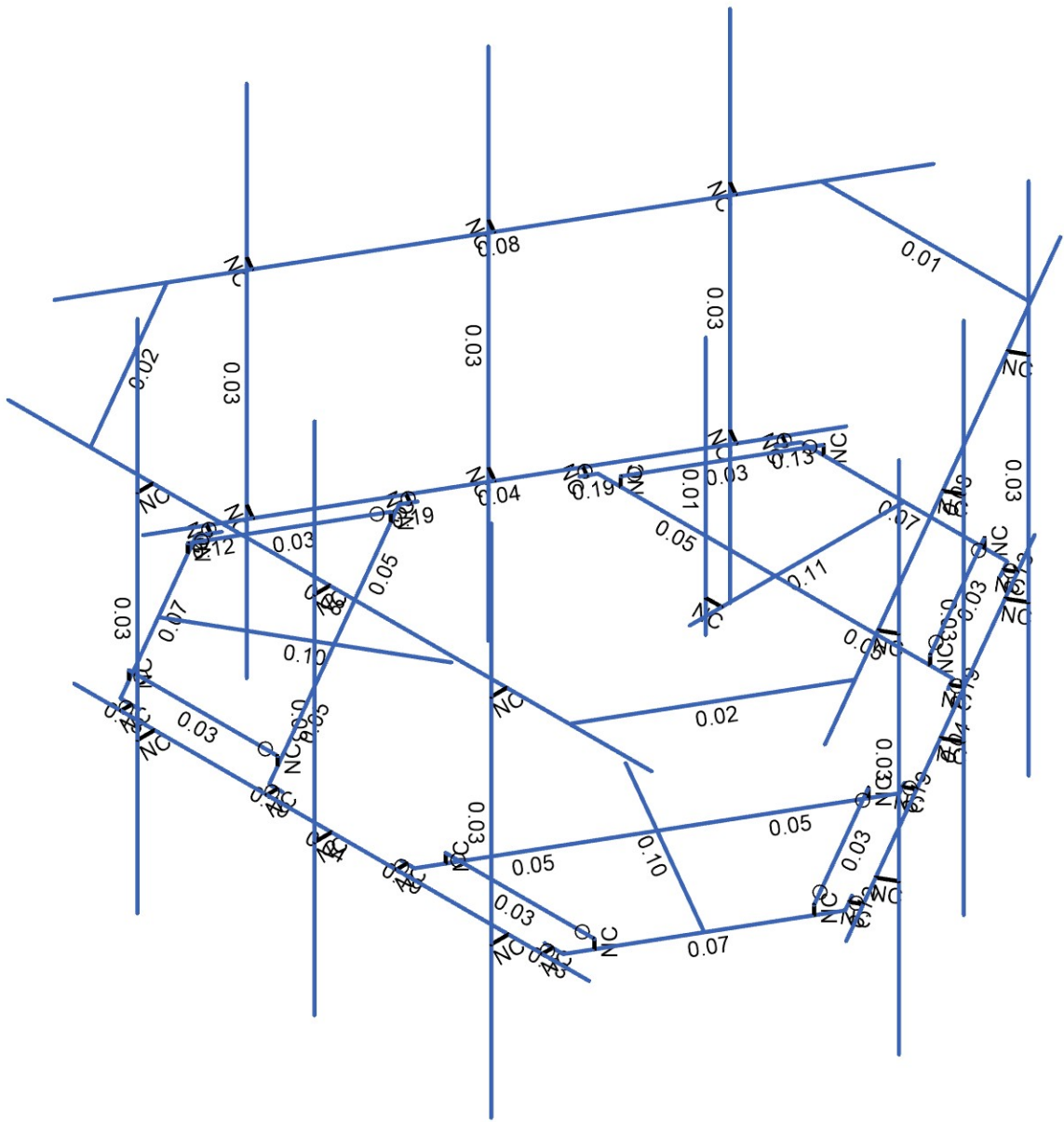
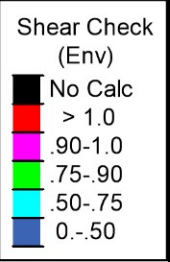
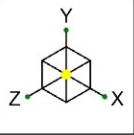


| Code Check (Env) | |
|------------------|---------|
| Black | No Calc |
| Red | > 1.0 |
| Magenta | .90-1.0 |
| Green | .75-.90 |
| Cyan | .50-.75 |
| Blue | 0-.50 |



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

| | | |
|---------------|-------------------------------------|---------------------------------|
| B+T Group | 310968 - WSPT - Westport Rebuild CT | SK-4 |
| APK | | Mar 23, 2022 |
| 160582.003.01 | | 160582_003_01_WSPT - Westpor... |

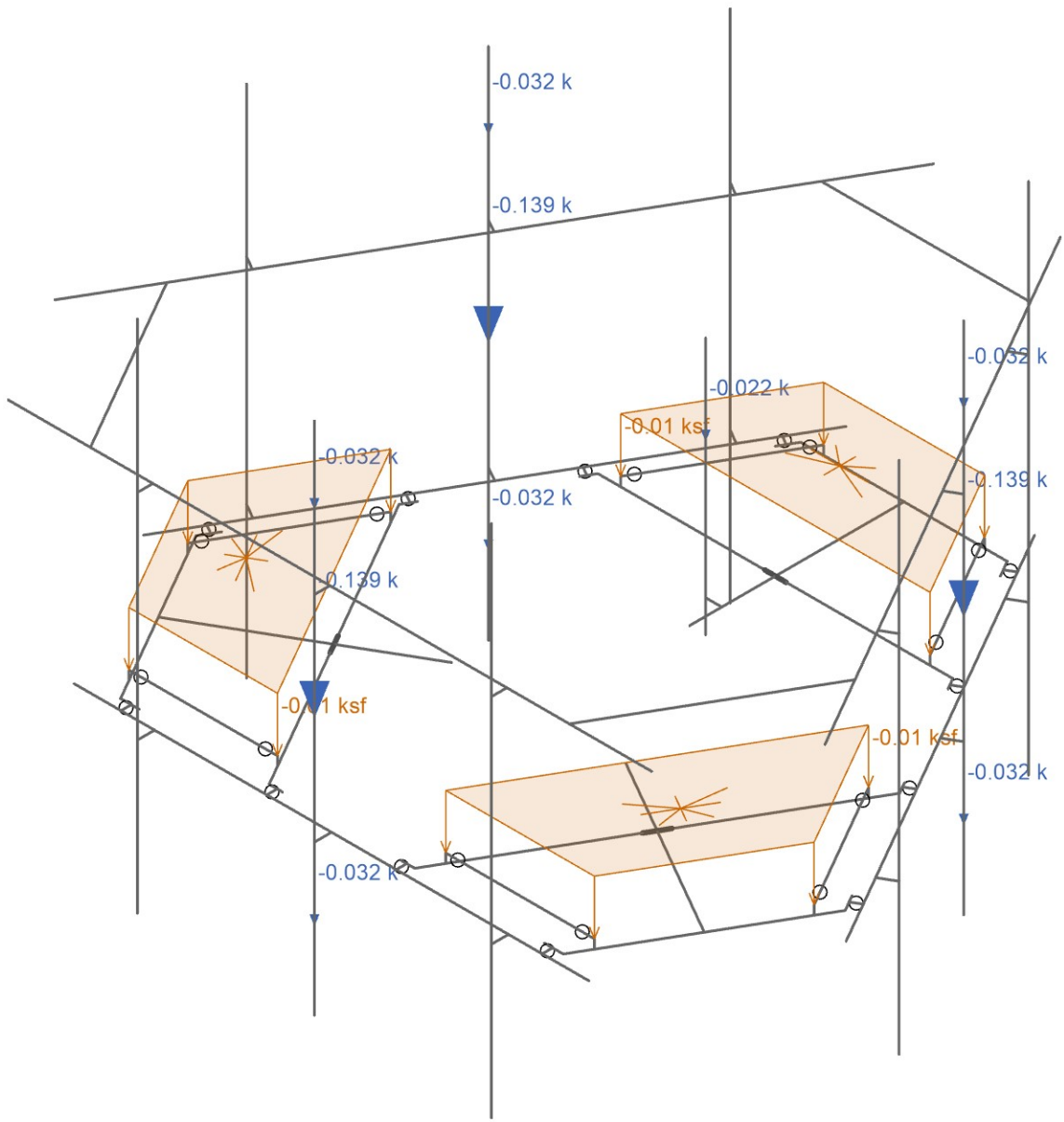
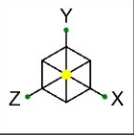


Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

| |
|---------------|
| B+T Group |
| APK |
| 160582.003.01 |

| |
|-------------------------------------|
| 310968 - WSPT - Westport Rebuild CT |
|-------------------------------------|

| |
|---------------------------------|
| SK-5 |
| Mar 23, 2022 |
| 160582_003_01_WSPT - Westpor... |



Loads: BLC 1, Dead
Envelope Only Solution

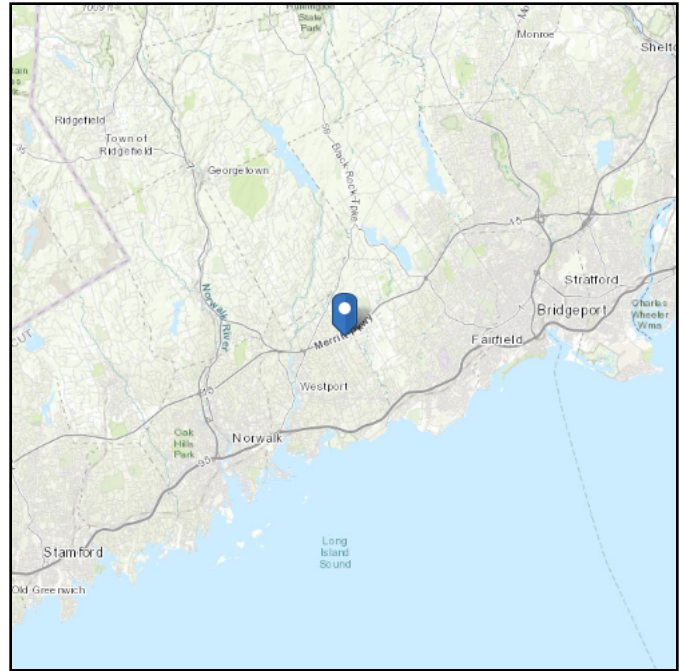
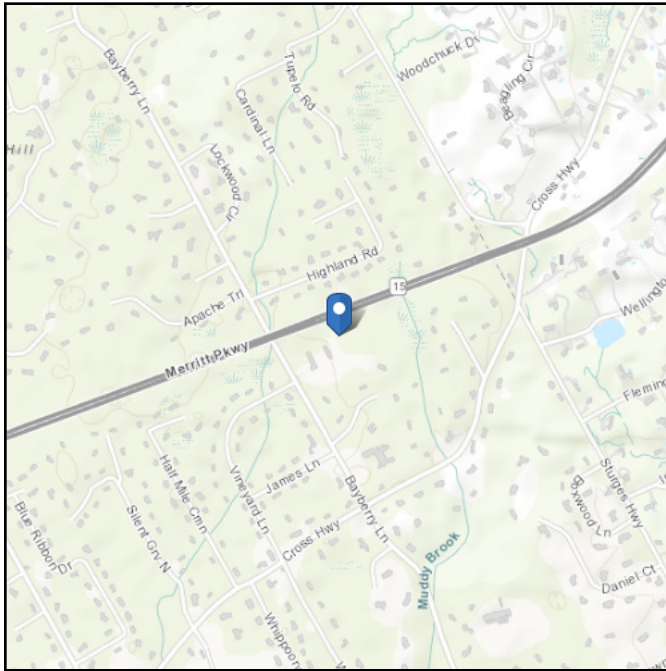
| | | |
|---------------|-------------------------------------|---------------------------------|
| B+T Group | 310968 - WSPT - Westport Rebuild CT | SK-6 |
| APK | | Mar 23, 2022 |
| 160582.003.01 | | 160582_003_01_WSPT - Westpor... |

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 244.71 ft (NAVD 88)
Latitude: 41.1716
Longitude: -73.3286



Wind

Results:

| | |
|--------------|----------|
| Wind Speed | 118 Vmph |
| 10-year MRI | 75 Vmph |
| 25-year MRI | 85 Vmph |
| 50-year MRI | 90 Vmph |
| 100-year MRI | 98 Vmph |

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Sat Mar 19 2022

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

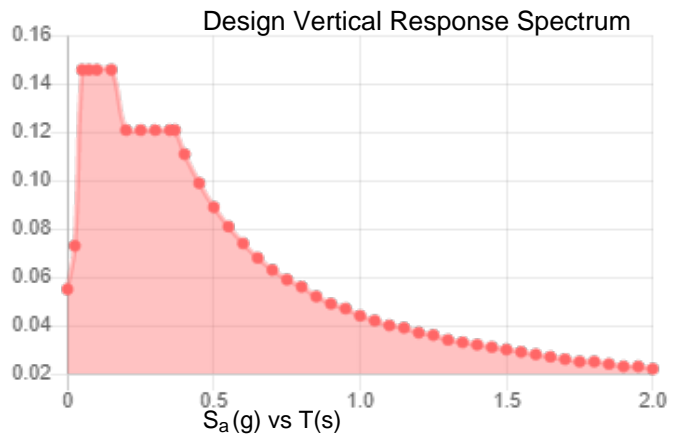
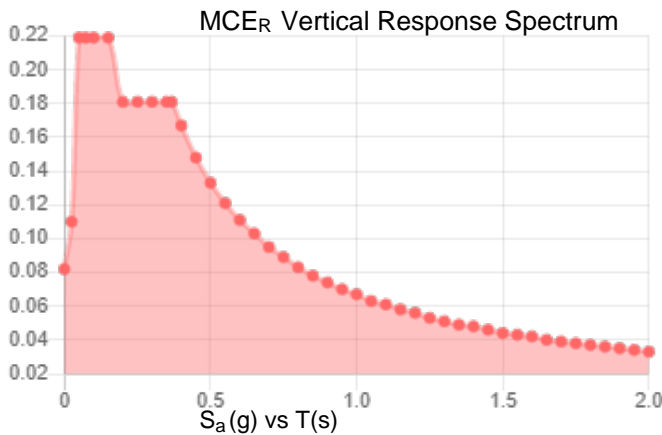
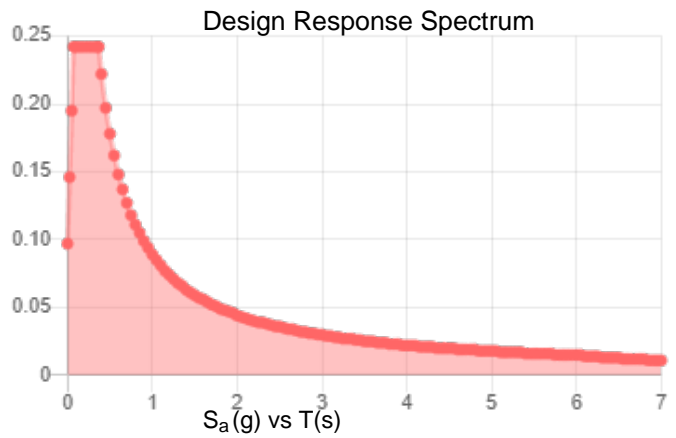
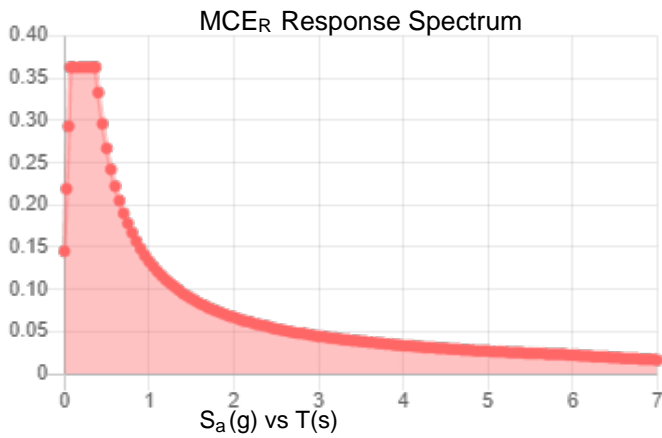
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

| | | | |
|------------|-------|--------------------|-------|
| S_s : | 0.227 | S_{D1} : | 0.089 |
| S_1 : | 0.056 | T_L : | 6 |
| F_a : | 1.6 | PGA : | 0.132 |
| F_v : | 2.4 | PGA _M : | 0.202 |
| S_{MS} : | 0.363 | F_{PGA} : | 1.537 |
| S_{M1} : | 0.133 | I_e : | 1 |
| S_{DS} : | 0.242 | C_v : | 0.753 |

Seismic Design Category B



Data Accessed: Sat Mar 19 2022

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

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

Date Accessed: Sat Mar 19 2022

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

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

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

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

| | | |
|---------|-----------------------------------|------------|
| PROJECT | 160582.003.01 - WSPT – We: | KSC |
| SUBJECT | Platform Mount Analysis | |
| DATE | 03/23/22 | PAGE OF |



| | | | |
|-----------------------|------------|----------|-------------------------|
| Tower Type | : | Monopole | |
| Ground Elevation | Z_s : | 245 | ft [ASCE7 Hazard Tool] |
| Tower Height | : | 140.00 | ft |
| Mount Elevation | : | 77.00 | ft |
| Antenna Elevation | : | 77.00 | ft |
| Crest Height | : | 0 | ft |
| Risk Category | : | II | [Table 2-1] |
| Exposure Category | : | B | [Sec. 2.6.5.1.2] |
| Topography Category | : | 1.00 | [Sec. 2.6.6.2] |
| Wind Velocity | V : | 118 | mph [ASCE7 Hazard Tool] |
| Ice wind Velocity | V_i : | 50 | mph [ASCE7 Hazard Tool] |
| Service Velocity | V_s : | 30 | mph [ASCE7 Hazard Tool] |
| Base Ice thickness | t_i : | 1.00 | in [ASCE7 Hazard Tool] |
| Seismic Design Cat. | : | B | [ASCE7 Hazard Tool] |
| | S_S : | 0.23 | |
| | S_1 : | 0.06 | |
| | S_{DS} : | 0.24 | |
| | S_{D1} : | 0.09 | |
| Gust Factor | G_h : | 1.00 | [Sec. 16.6] |
| Pressure Coefficient | K_z : | 0.92 | [Sec. 2.6.5.2] |
| Topography Factor | K_{zt} : | 1.00 | [Sec. 2.6.6] |
| Elevation Factor | K_e : | 0.99 | [Sec. 2.6.8] |
| Directionality Factor | K_d : | 0.95 | [Sec. 16.6] |
| Shielding Factor | K_a : | 0.90 | [Sec. 16.6] |
| Design Ice Thickness | t_{iz} : | 1.09 | in [Sec. 2.6.10] |
| Importance Factor | I_e : | 1 | [Table 2-3] |
| Response Coefficient | C_s : | 0.121 | [Sec. 2.7.7.1] |
| Amplification | A_s : | 1.2 | [Sec. 16.7] |
| | q_z : | 30.78 | psf |

| | | | |
|---------|-----------------------------------|------|------------|
| PROJECT | 160582.003.01 - WSPT – We: | | KSC |
| SUBJECT | Platform Mount Analysis | | |
| DATE | 03/23/22 | PAGE | OF |



| Manufacturer | Model | Qty | Aspect Ratio | C _a flat/round | EPA _N (ft ²) | EPA _T (ft ²) | EPA _{N-ice} (ft ²) | EPA _{T-ice} (ft ²) | F _A No Ice (N) | F _A No Ice (T) | F _A Ice (N) | F _A Ice (T) |
|--------------|------------------|-----|--------------|------------------------------|-------------------------------------|-------------------------------------|---|---|---------------------------|---------------------------|------------------------|------------------------|
| JMA WIRELESS | MX08FRO665-21 | 0.5 | 3.60 | 1.25 | 4.01 | 1.61 | 4.53 | 2.06 | 0.12 | 0.05 | 0.03 | 0.01 |
| JMA WIRELESS | MX08FRO665-21 | 0.5 | 3.60 | 1.25 | 4.01 | 1.61 | 4.53 | 2.06 | 0.12 | 0.05 | 0.03 | 0.01 |
| Fujitsu | TA08025-B604 | 1 | 1.99 | 1.20 | 0.86 | 1.64 | 1.25 | 2.13 | 0.03 | 0.05 | 0.01 | 0.01 |
| Fujitsu | TA08025-B605 | 1 | 1.73 | 1.20 | 0.99 | 1.64 | 1.40 | 2.13 | 0.03 | 0.05 | 0.01 | 0.01 |
| RAYCAP | RDIDC-9181-PF-48 | 1 | 1.14 | 1.20 | 1.56 | 0.89 | 2.04 | 1.28 | 0.05 | 0.03 | 0.01 | 0.01 |
| JMA WIRELESS | MX08FRO665-21 | 0.5 | 3.60 | 1.25 | 4.01 | 1.61 | 4.53 | 2.06 | 0.12 | 0.05 | 0.03 | 0.01 |
| JMA WIRELESS | MX08FRO665-21 | 0.5 | 3.60 | 1.25 | 4.01 | 1.61 | 4.53 | 2.06 | 0.12 | 0.05 | 0.03 | 0.01 |
| Fujitsu | TA08025-B604 | 1 | 1.99 | 1.20 | 0.86 | 1.64 | 1.25 | 2.13 | 0.03 | 0.05 | 0.01 | 0.01 |
| Fujitsu | TA08025-B605 | 1 | 1.73 | 1.20 | 0.99 | 1.64 | 1.40 | 2.13 | 0.03 | 0.05 | 0.01 | 0.01 |
| JMA WIRELESS | MX08FRO665-21 | 0.5 | 3.60 | 1.25 | 4.01 | 1.61 | 4.53 | 2.06 | 0.12 | 0.05 | 0.03 | 0.01 |
| JMA WIRELESS | MX08FRO665-21 | 0.5 | 3.60 | 1.25 | 4.01 | 1.61 | 4.53 | 2.06 | 0.12 | 0.05 | 0.03 | 0.01 |
| Fujitsu | TA08025-B604 | 1 | 1.99 | 1.20 | 0.86 | 1.64 | 1.25 | 2.13 | 0.03 | 0.05 | 0.01 | 0.01 |
| Fujitsu | TA08025-B605 | 1 | 1.73 | 1.20 | 0.99 | 1.64 | 1.40 | 2.13 | 0.03 | 0.05 | 0.01 | 0.01 |

Node Boundary Conditions

| | Node Label | X [k/in] | Y [k/in] | Z [k/in] | X Rot [k-ft/rad] | Y Rot [k-ft/rad] | Z Rot [k-ft/rad] |
|----|------------|----------|----------|----------|------------------|------------------|------------------|
| 1 | 1 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 2 | 2 | | | | | | |
| 3 | 3 | | | | | | |
| 4 | 4 | | | | | | |
| 5 | 5 | | | | | | |
| 6 | 16 | | | | | | |
| 7 | 17 | | | | | | |
| 8 | 19 | | | | | | |
| 9 | 20 | | | | | | |
| 10 | 22 | | | | | | |
| 11 | 25 | | | | | | |
| 12 | 26 | | | | | | |
| 13 | 29 | | | | | | |
| 14 | 55 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 15 | 56 | | | | | | |
| 16 | 57 | | | | | | |
| 17 | 58 | | | | | | |
| 18 | 59 | | | | | | |
| 19 | 68 | | | | | | |
| 20 | 69 | | | | | | |
| 21 | 71 | | | | | | |
| 22 | 72 | | | | | | |
| 23 | 74 | | | | | | |
| 24 | 77 | | | | | | |
| 25 | 78 | | | | | | |
| 26 | 81 | | | | | | |
| 27 | 84 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 28 | 85 | | | | | | |
| 29 | 86 | | | | | | |
| 30 | 87 | | | | | | |
| 31 | 88 | | | | | | |
| 32 | 97 | | | | | | |
| 33 | 98 | | | | | | |
| 34 | 100 | | | | | | |
| 35 | 101 | | | | | | |
| 36 | 103 | | | | | | |
| 37 | 106 | | | | | | |
| 38 | 107 | | | | | | |
| 39 | 110 | | | | | | |

Member Primary Data

| | Label | I Node | J Node | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rule |
|----|-------|--------|--------|-------------|---------------|------|--------------|----------------|-------------|
| 1 | 1 | 1 | 2 | | SF-H1 | Beam | Tube | A500 Gr.B Rect | Typical |
| 2 | 2 | 5 | 3 | 180 | SF-H2 | Beam | Channel | A36 Gr.36 | Typical |
| 3 | 3 | 3 | 4 | 180 | SF-H2 | Beam | Channel | A36 Gr.36 | Typical |
| 4 | 4 | 7 | 8 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 5 | 5 | 6 | 9 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 6 | 6 | 14 | 15 | | MF-H1 | Beam | Pipe | A500 Gr.C | Typical |
| 7 | 7 | 16 | 4 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 8 | 8 | 5 | 19 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 9 | 10 | 23 | 22 | | SF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |
| 10 | 11 | 6 | 7 | | SF-H4 | Beam | Single Angle | A36 Gr.36 | Typical |
| 11 | 12 | 28 | 24 | | RIGID | None | None | RIGID | Typical |
| 12 | 13 | 29 | 25 | | RIGID | None | None | RIGID | Typical |

Member Primary Data (Continued)

| | Label | I Node | J Node | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rule |
|----|-------|--------|--------|-------------|---------------|--------|--------------|----------------|-------------|
| 13 | 14 | 27 | 23 | | RIGID | None | None | RIGID | Typical |
| 14 | 15 | 26 | 22 | | RIGID | None | None | RIGID | Typical |
| 15 | 16 | 32 | 30 | | RIGID | None | None | RIGID | Typical |
| 16 | 17 | 33 | 31 | | RIGID | None | None | RIGID | Typical |
| 17 | 18 | 35 | 37 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 18 | 19 | 34 | 36 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 19 | 20 | 38 | 39 | | MF-H2 | Beam | Pipe | A500 Gr.C | Typical |
| 20 | 21 | 11 | 10 | | RIGID | None | None | RIGID | Typical |
| 21 | 22 | 18 | 17 | | RIGID | None | None | RIGID | Typical |
| 22 | 23 | 13 | 12 | | RIGID | None | None | RIGID | Typical |
| 23 | 24 | 21 | 20 | | RIGID | None | None | RIGID | Typical |
| 24 | 25 | 41 | 40 | | RIGID | None | None | RIGID | Typical |
| 25 | 26 | 42 | 43 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 26 | 27 | 45 | 48 | | RIGID | None | None | RIGID | Typical |
| 27 | 28 | 46 | 49 | | RIGID | None | None | RIGID | Typical |
| 28 | 29 | 47 | 50 | | RIGID | None | None | RIGID | Typical |
| 29 | 30 | 52 | 51 | 180 | MF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |
| 30 | 88 | 24 | 25 | 270 | SF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |
| 31 | 31 | 55 | 56 | | SF-H1 | Beam | Tube | A500 Gr.B Rect | Typical |
| 32 | 32 | 59 | 57 | 180 | SF-H2 | Beam | Channel | A36 Gr.36 | Typical |
| 33 | 33 | 57 | 58 | 180 | SF-H2 | Beam | Channel | A36 Gr.36 | Typical |
| 34 | 34 | 61 | 62 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 35 | 35 | 60 | 63 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 36 | 36 | 68 | 58 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 37 | 37 | 59 | 71 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 38 | 38 | 75 | 74 | | SF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |
| 39 | 39 | 60 | 61 | | SF-H4 | Beam | Single Angle | A36 Gr.36 | Typical |
| 40 | 40 | 80 | 76 | | RIGID | None | None | RIGID | Typical |
| 41 | 41 | 81 | 77 | | RIGID | None | None | RIGID | Typical |
| 42 | 42 | 79 | 75 | | RIGID | None | None | RIGID | Typical |
| 43 | 43 | 78 | 74 | | RIGID | None | None | RIGID | Typical |
| 44 | 44 | 65 | 64 | | RIGID | None | None | RIGID | Typical |
| 45 | 45 | 70 | 69 | | RIGID | None | None | RIGID | Typical |
| 46 | 46 | 67 | 66 | | RIGID | None | None | RIGID | Typical |
| 47 | 47 | 73 | 72 | | RIGID | None | None | RIGID | Typical |
| 48 | 48 | 83 | 82 | 180 | MF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |
| 49 | 49 | 76 | 77 | 270 | SF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |
| 50 | 50 | 84 | 85 | | SF-H1 | Beam | Tube | A500 Gr.B Rect | Typical |
| 51 | 51 | 88 | 86 | 180 | SF-H2 | Beam | Channel | A36 Gr.36 | Typical |
| 52 | 52 | 86 | 87 | 180 | SF-H2 | Beam | Channel | A36 Gr.36 | Typical |
| 53 | 53 | 90 | 91 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 54 | 54 | 89 | 92 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 55 | 55 | 97 | 87 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 56 | 56 | 88 | 100 | | MF-CP1 | Beam | RECT | A36 Gr.36 | Typical |
| 57 | 57 | 104 | 103 | | SF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |
| 58 | 58 | 89 | 90 | | SF-H4 | Beam | Single Angle | A36 Gr.36 | Typical |
| 59 | 59 | 109 | 105A | | RIGID | None | None | RIGID | Typical |
| 60 | 60 | 110 | 106 | | RIGID | None | None | RIGID | Typical |
| 61 | 61 | 108 | 104 | | RIGID | None | None | RIGID | Typical |
| 62 | 62 | 107 | 103 | | RIGID | None | None | RIGID | Typical |
| 63 | 63 | 94 | 93 | | RIGID | None | None | RIGID | Typical |
| 64 | 64 | 99 | 98 | | RIGID | None | None | RIGID | Typical |
| 65 | 65 | 96 | 95 | | RIGID | None | None | RIGID | Typical |
| 66 | 66 | 102 | 101 | | RIGID | None | None | RIGID | Typical |
| 67 | 67 | 112 | 111 | 180 | MF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |

Member Primary Data (Continued)

| | Label | I Node | J Node | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rule |
|----|-------|--------|--------|-------------|---------------|--------|--------------|-----------|-------------|
| 68 | 68 | 105A | 106 | 270 | SF-H3 | Beam | Single Angle | A36 Gr.36 | Typical |
| 69 | 69 | 113 | 114 | | MF-H1 | Beam | Pipe | A500 Gr.C | Typical |
| 70 | 70 | 117 | 115 | | RIGID | None | None | RIGID | Typical |
| 71 | 71 | 118 | 116 | | RIGID | None | None | RIGID | Typical |
| 72 | 72 | 120 | 122 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 73 | 73 | 119A | 121 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 74 | 74 | 123 | 124 | | MF-H2 | Beam | Pipe | A500 Gr.C | Typical |
| 75 | 75 | 126 | 125 | | RIGID | None | None | RIGID | Typical |
| 76 | 76 | 127 | 128 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 77 | 77 | 129 | 132 | | RIGID | None | None | RIGID | Typical |
| 78 | 78 | 130 | 133 | | RIGID | None | None | RIGID | Typical |
| 79 | 79 | 131 | 134 | | RIGID | None | None | RIGID | Typical |
| 80 | 80 | 137 | 138 | | MF-H1 | Beam | Pipe | A500 Gr.C | Typical |
| 81 | 81 | 141 | 139 | | RIGID | None | None | RIGID | Typical |
| 82 | 82 | 142 | 140 | | RIGID | None | None | RIGID | Typical |
| 83 | 83 | 144 | 146 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 84 | 84 | 143 | 145 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 85 | 85 | 147 | 148 | | MF-H2 | Beam | Pipe | A500 Gr.C | Typical |
| 86 | 86 | 150 | 149 | | RIGID | None | None | RIGID | Typical |
| 87 | 87 | 151 | 152 | | MF-P1 | Column | Pipe | A500 Gr.C | Typical |
| 88 | 88A | 153 | 156 | | RIGID | None | None | RIGID | Typical |
| 89 | 89 | 154 | 157 | | RIGID | None | None | RIGID | Typical |
| 90 | 90 | 155 | 158 | | RIGID | None | None | RIGID | Typical |
| 91 | 91 | 160 | 161 | | MF-P2 | Column | Pipe | A53 Gr.B | Typical |
| 92 | 92 | 159A | 158A | | RIGID | None | None | RIGID | Typical |

Hot Rolled Steel Design Parameters

| | Label | Shape | Length [ft] | Lcomp top [ft] | Function |
|----|-------|--------|-------------|----------------|----------|
| 1 | 1 | SF-H1 | 3.333 | Lbyy | Lateral |
| 2 | 2 | SF-H2 | 2.758 | Lbyy | Lateral |
| 3 | 3 | SF-H2 | 2.758 | Lbyy | Lateral |
| 4 | 4 | MF-CP1 | 0.292 | Lbyy | Lateral |
| 5 | 5 | MF-CP1 | 0.292 | Lbyy | Lateral |
| 6 | 6 | MF-H1 | 8 | Lbyy | Lateral |
| 7 | 7 | MF-CP1 | 0.208 | Lbyy | Lateral |
| 8 | 8 | MF-CP1 | 0.208 | Lbyy | Lateral |
| 9 | 10 | SF-H3 | 2.309 | Lbyy | Lateral |
| 10 | 11 | SF-H4 | 3.207 | Lbyy | Lateral |
| 11 | 18 | MF-P1 | 8 | Lbyy | Lateral |
| 12 | 19 | MF-P1 | 8 | Lbyy | Lateral |
| 13 | 20 | MF-H2 | 10 | Lbyy | Lateral |
| 14 | 26 | MF-P1 | 8 | Lbyy | Lateral |
| 15 | 30 | MF-H3 | 3.25 | Lbyy | Lateral |
| 16 | 88 | SF-H3 | 2.309 | Lbyy | Lateral |
| 17 | 31 | SF-H1 | 3.333 | Lbyy | Lateral |
| 18 | 32 | SF-H2 | 2.758 | Lbyy | Lateral |
| 19 | 33 | SF-H2 | 2.758 | Lbyy | Lateral |
| 20 | 34 | MF-CP1 | 0.292 | Lbyy | Lateral |
| 21 | 35 | MF-CP1 | 0.292 | Lbyy | Lateral |
| 22 | 36 | MF-CP1 | 0.208 | Lbyy | Lateral |
| 23 | 37 | MF-CP1 | 0.208 | Lbyy | Lateral |
| 24 | 38 | SF-H3 | 2.309 | Lbyy | Lateral |
| 25 | 39 | SF-H4 | 3.207 | Lbyy | Lateral |
| 26 | 48 | MF-H3 | 3.25 | Lbyy | Lateral |
| 27 | 49 | SF-H3 | 2.309 | Lbyy | Lateral |

Hot Rolled Steel Design Parameters (Continued)

| | Label | Shape | Length [ft] | Lcomp top [ft] | Function |
|----|-------|--------|-------------|----------------|----------|
| 28 | 50 | SF-H1 | 3.333 | Lbyy | Lateral |
| 29 | 51 | SF-H2 | 2.758 | Lbyy | Lateral |
| 30 | 52 | SF-H2 | 2.758 | Lbyy | Lateral |
| 31 | 53 | MF-CP1 | 0.292 | Lbyy | Lateral |
| 32 | 54 | MF-CP1 | 0.292 | Lbyy | Lateral |
| 33 | 55 | MF-CP1 | 0.208 | Lbyy | Lateral |
| 34 | 56 | MF-CP1 | 0.208 | Lbyy | Lateral |
| 35 | 57 | SF-H3 | 2.309 | Lbyy | Lateral |
| 36 | 58 | SF-H4 | 3.207 | Lbyy | Lateral |
| 37 | 67 | MF-H3 | 3.25 | Lbyy | Lateral |
| 38 | 68 | SF-H3 | 2.309 | Lbyy | Lateral |
| 39 | 69 | MF-H1 | 8 | Lbyy | Lateral |
| 40 | 72 | MF-P1 | 8 | Lbyy | Lateral |
| 41 | 73 | MF-P1 | 8 | Lbyy | Lateral |
| 42 | 74 | MF-H2 | 10 | Lbyy | Lateral |
| 43 | 76 | MF-P1 | 8 | Lbyy | Lateral |
| 44 | 80 | MF-H1 | 8 | Lbyy | Lateral |
| 45 | 83 | MF-P1 | 8 | Lbyy | Lateral |
| 46 | 84 | MF-P1 | 8 | Lbyy | Lateral |
| 47 | 85 | MF-H2 | 10 | Lbyy | Lateral |
| 48 | 87 | MF-P1 | 8 | Lbyy | Lateral |
| 49 | 91 | MF-P2 | 4 | Lbyy | Lateral |

Hot Rolled Steel Properties

| | Label | E [ksi] | G [ksi] | Nu | Therm. Coeff. [1e ⁶ F ⁻¹] | Density [k/ft ³] | Yield [ksi] | Ry | Fu [ksi] | Rt |
|---|----------------|---------|---------|-----|--|------------------------------|-------------|-----|----------|-----|
| 1 | A992 | 29000 | 11154 | 0.3 | 0.65 | 0.49 | 50 | 1.1 | 65 | 1.1 |
| 2 | A36 Gr.36 | 29000 | 11154 | 0.3 | 0.65 | 0.49 | 36 | 1.5 | 58 | 1.2 |
| 3 | A572 Gr.50 | 29000 | 11154 | 0.3 | 0.65 | 0.49 | 50 | 1.1 | 65 | 1.1 |
| 4 | A500 Gr.B RND | 29000 | 11154 | 0.3 | 0.65 | 0.527 | 42 | 1.4 | 58 | 1.3 |
| 5 | A500 Gr.B Rect | 29000 | 11154 | 0.3 | 0.65 | 0.527 | 46 | 1.4 | 58 | 1.3 |
| 6 | A53 Gr.B | 29000 | 11154 | 0.3 | 0.65 | 0.49 | 35 | 1.6 | 60 | 1.2 |
| 7 | A1085 | 29000 | 11154 | 0.3 | 0.65 | 0.49 | 50 | 1.4 | 65 | 1.3 |
| 8 | A500 Gr.C | 29000 | 11154 | 0.3 | 0.65 | 0.49 | 46 | 1.4 | 62 | 1.3 |

Basic Load Cases

| | BLC Description | Category | Y Gravity | Nodal | Point | Distributed | Area(Member) |
|----|-------------------|----------|-----------|-------|-------|-------------|--------------|
| 1 | Dead | DL | -1 | | 20 | | 3 |
| 2 | 0 Wind - No Ice | WLZ | | | 20 | 49 | |
| 3 | 90 Wind - No Ice | WLX | | | 20 | 49 | |
| 4 | 0 Wind - Ice | WLZ | | | 20 | 49 | |
| 5 | 90 Wind - Ice | WLX | | | 20 | 49 | |
| 6 | 0 Wind - Service | WLZ | | | 20 | 49 | |
| 7 | 90 Wind - Service | WLX | | | 20 | 49 | |
| 8 | Ice | OL1 | | | 20 | 49 | 3 |
| 9 | 0 Seismic | ELZ | | | 20 | 49 | |
| 10 | 90 Seismic | ELX | | | 20 | 49 | |
| 11 | Live Load a | LL | | 3 | | | |
| 12 | Live Load b | LL | | 3 | | | |
| 13 | Live Load c | LL | | 3 | | | |
| 14 | Live Load d | LL | | | | | |
| 15 | Maint LL 1 | LL | | | 1 | | |
| 16 | Maint LL 2 | LL | | | 1 | | |
| 17 | Maint LL 3 | LL | | | 1 | | |

Basic Load Cases (Continued)

| | BLC Description | Category | Y Gravity | Nodal | Point | Distributed | Area(Member) |
|----|----------------------------|----------|-----------|-------|-------|-------------|--------------|
| 18 | Maint LL 4 | LL | | | 1 | | |
| 19 | Maint LL 5 | LL | | | 1 | | |
| 20 | Maint LL 6 | LL | | | 1 | | |
| 21 | Maint LL 7 | LL | | | 1 | | |
| 22 | Maint LL 8 | LL | | | 1 | | |
| 23 | Maint LL 9 | LL | | | 1 | | |
| 24 | Maint LL 10 | LL | | | 1 | | |
| 25 | Maint LL 11 | LL | | | 1 | | |
| 26 | Maint LL 12 | LL | | | 1 | | |
| 27 | Maint LL 13 | LL | | | 1 | | |
| 28 | Maint LL 14 | LL | | | 1 | | |
| 29 | Maint LL 15 | LL | | | 1 | | |
| 30 | BLC 1 Transient Area Loads | None | | | | 9 | |
| 31 | BLC 8 Transient Area Loads | None | | | | 9 | |

Load Combinations

| | Description | Solve | P-Delta | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor |
|----|----------------------------------|-------|---------|-----|--------|-----|--------|-----|--------|-----|--------|
| 1 | 1.4 Dead | Yes | Y | 1 | 1.4 | | | | | | |
| 2 | 1.2 D + 1.0 - 0 W | Yes | Y | 1 | 1.2 | 2 | 1 | | | | |
| 3 | 1.2 D + 1.0 - 30 W | Yes | Y | 1 | 1.2 | 2 | 0.866 | 3 | 0.5 | | |
| 4 | 1.2 D + 1.0 - 60 W | Yes | Y | 1 | 1.2 | 3 | 0.866 | 2 | 0.5 | | |
| 5 | 1.2 D + 1.0 - 90 W | Yes | Y | 1 | 1.2 | 3 | 1 | | | | |
| 6 | 1.2 D + 1.0 - 120 W | Yes | Y | 1 | 1.2 | 3 | 0.866 | 2 | -0.5 | | |
| 7 | 1.2 D + 1.0 - 150 W | Yes | Y | 1 | 1.2 | 2 | -0.866 | 3 | 0.5 | | |
| 8 | 1.2 D + 1.0 - 180 W | Yes | Y | 1 | 1.2 | 2 | -1 | | | | |
| 9 | 1.2 D + 1.0 - 210 W | Yes | Y | 1 | 1.2 | 2 | -0.866 | 3 | -0.5 | | |
| 10 | 1.2 D + 1.0 - 240 W | Yes | Y | 1 | 1.2 | 3 | -0.866 | 2 | -0.5 | | |
| 11 | 1.2 D + 1.0 - 270 W | Yes | Y | 1 | 1.2 | 3 | -1 | | | | |
| 12 | 1.2 D + 1.0 - 300 W | Yes | Y | 1 | 1.2 | 3 | -0.866 | 2 | 0.5 | | |
| 13 | 1.2 D + 1.0 - 330 W | Yes | Y | 1 | 1.2 | 2 | 0.866 | 3 | -0.5 | | |
| 14 | 1.2 D + 1.0 - 0 W/Ice | Yes | Y | 1 | 1.2 | 4 | 1 | | | 8 | 1 |
| 15 | 1.2 D + 1.0 - 30 W/Ice | Yes | Y | 1 | 1.2 | 4 | 0.866 | 5 | 0.5 | 8 | 1 |
| 16 | 1.2 D + 1.0 - 60 W/Ice | Yes | Y | 1 | 1.2 | 5 | 0.866 | 4 | 0.5 | 8 | 1 |
| 17 | 1.2 D + 1.0 - 90 W/Ice | Yes | Y | 1 | 1.2 | 5 | 1 | | | 8 | 1 |
| 18 | 1.2 D + 1.0 - 120 W/Ice | Yes | Y | 1 | 1.2 | 5 | 0.866 | 4 | -0.5 | 8 | 1 |
| 19 | 1.2 D + 1.0 - 150 W/Ice | Yes | Y | 1 | 1.2 | 4 | -0.866 | 5 | 0.5 | 8 | 1 |
| 20 | 1.2 D + 1.0 - 180 W/Ice | Yes | Y | 1 | 1.2 | 4 | -1 | | | 8 | 1 |
| 21 | 1.2 D + 1.0 - 210 W/Ice | Yes | Y | 1 | 1.2 | 4 | -0.866 | 5 | -0.5 | 8 | 1 |
| 22 | 1.2 D + 1.0 - 240 W/Ice | Yes | Y | 1 | 1.2 | 5 | -0.866 | 4 | -0.5 | 8 | 1 |
| 23 | 1.2 D + 1.0 - 270 W/Ice | Yes | Y | 1 | 1.2 | 5 | -1 | | | 8 | 1 |
| 24 | 1.2 D + 1.0 - 300 W/Ice | Yes | Y | 1 | 1.2 | 5 | -0.866 | 4 | 0.5 | 8 | 1 |
| 25 | 1.2 D + 1.0 - 330 W/Ice | Yes | Y | 1 | 1.2 | 4 | 0.866 | 5 | -0.5 | 8 | 1 |
| 26 | 1.2 D + 1.0 E - 0 | Yes | Y | 1 | 1.2 | 9 | 1 | | | | |
| 27 | 1.2 D + 1.0 E - 30 | Yes | Y | 1 | 1.2 | 9 | 0.866 | 10 | 0.5 | | |
| 28 | 1.2 D + 1.0 E - 60 | Yes | Y | 1 | 1.2 | 10 | 0.866 | 9 | 0.5 | | |
| 29 | 1.2 D + 1.0 E - 90 | Yes | Y | 1 | 1.2 | 10 | 1 | | | | |
| 30 | 1.2 D + 1.0 E - 120 | Yes | Y | 1 | 1.2 | 10 | 0.866 | 9 | -0.5 | | |
| 31 | 1.2 D + 1.0 E - 150 | Yes | Y | 1 | 1.2 | 9 | -0.866 | 10 | 0.5 | | |
| 32 | 1.2 D + 1.0 E - 180 | Yes | Y | 1 | 1.2 | 9 | -1 | | | | |
| 33 | 1.2 D + 1.0 E - 210 | Yes | Y | 1 | 1.2 | 9 | -0.866 | 10 | -0.5 | | |
| 34 | 1.2 D + 1.0 E - 240 | Yes | Y | 1 | 1.2 | 10 | -0.866 | 9 | -0.5 | | |
| 35 | 1.2 D + 1.0 E - 270 | Yes | Y | 1 | 1.2 | 10 | -1 | | | | |
| 36 | 1.2 D + 1.0 E - 300 | Yes | Y | 1 | 1.2 | 10 | -0.866 | 9 | 0.5 | | |
| 37 | 1.2 D + 1.0 E - 330 | Yes | Y | 1 | 1.2 | 9 | 0.866 | 10 | -0.5 | | |
| 38 | 1.2 D + 1.5 LL a + Service - 0 W | Yes | Y | 1 | 1.2 | 6 | 1 | | | 11 | 1.5 |



Load Combinations (Continued)

| | Description | Solve | P-Delta | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor |
|----|------------------------------------|-------|---------|-----|--------|-----|--------|-----|--------|-----|--------|
| 39 | 1.2 D + 1.5 LL a + Service - 30 W | Yes | Y | 1 | 1.2 | 6 | 0.866 | 7 | 0.5 | 11 | 1.5 |
| 40 | 1.2 D + 1.5 LL a + Service - 60 W | Yes | Y | 1 | 1.2 | 7 | 0.866 | 6 | 0.5 | 11 | 1.5 |
| 41 | 1.2 D + 1.5 LL a + Service - 90 W | Yes | Y | 1 | 1.2 | 7 | 1 | | | 11 | 1.5 |
| 42 | 1.2 D + 1.5 LL a + Service - 120 W | Yes | Y | 1 | 1.2 | 7 | 0.866 | 6 | -0.5 | 11 | 1.5 |
| 43 | 1.2 D + 1.5 LL a + Service - 150 W | Yes | Y | 1 | 1.2 | 6 | -0.866 | 7 | 0.5 | 11 | 1.5 |
| 44 | 1.2 D + 1.5 LL a + Service - 180 W | Yes | Y | 1 | 1.2 | 6 | -1 | | | 11 | 1.5 |
| 45 | 1.2 D + 1.5 LL a + Service - 210 W | Yes | Y | 1 | 1.2 | 6 | -0.866 | 7 | -0.5 | 11 | 1.5 |
| 46 | 1.2 D + 1.5 LL a + Service - 240 W | Yes | Y | 1 | 1.2 | 7 | -0.866 | 6 | -0.5 | 11 | 1.5 |
| 47 | 1.2 D + 1.5 LL a + Service - 270 W | Yes | Y | 1 | 1.2 | 7 | -1 | | | 11 | 1.5 |
| 48 | 1.2 D + 1.5 LL a + Service - 300 W | Yes | Y | 1 | 1.2 | 7 | -0.866 | 6 | 0.5 | 11 | 1.5 |
| 49 | 1.2 D + 1.5 LL a + Service - 330 W | Yes | Y | 1 | 1.2 | 6 | 0.866 | 7 | -0.5 | 11 | 1.5 |
| 50 | 1.2 D + 1.5 LL b + Service - 0 W | Yes | Y | 1 | 1.2 | 6 | 1 | | | 12 | 1.5 |
| 51 | 1.2 D + 1.5 LL b + Service - 30 W | Yes | Y | 1 | 1.2 | 6 | 0.866 | 7 | 0.5 | 12 | 1.5 |
| 52 | 1.2 D + 1.5 LL b + Service - 60 W | Yes | Y | 1 | 1.2 | 7 | 0.866 | 6 | 0.5 | 12 | 1.5 |
| 53 | 1.2 D + 1.5 LL b + Service - 90 W | Yes | Y | 1 | 1.2 | 7 | 1 | | | 12 | 1.5 |
| 54 | 1.2 D + 1.5 LL b + Service - 120 W | Yes | Y | 1 | 1.2 | 7 | 0.866 | 6 | -0.5 | 12 | 1.5 |
| 55 | 1.2 D + 1.5 LL b + Service - 150 W | Yes | Y | 1 | 1.2 | 6 | -0.866 | 7 | 0.5 | 12 | 1.5 |
| 56 | 1.2 D + 1.5 LL b + Service - 180 W | Yes | Y | 1 | 1.2 | 6 | -1 | | | 12 | 1.5 |
| 57 | 1.2 D + 1.5 LL b + Service - 210 W | Yes | Y | 1 | 1.2 | 6 | -0.866 | 7 | -0.5 | 12 | 1.5 |
| 58 | 1.2 D + 1.5 LL b + Service - 240 W | Yes | Y | 1 | 1.2 | 7 | -0.866 | 6 | -0.5 | 12 | 1.5 |
| 59 | 1.2 D + 1.5 LL b + Service - 270 W | Yes | Y | 1 | 1.2 | 7 | -1 | | | 12 | 1.5 |
| 60 | 1.2 D + 1.5 LL b + Service - 300 W | Yes | Y | 1 | 1.2 | 7 | -0.866 | 6 | 0.5 | 12 | 1.5 |
| 61 | 1.2 D + 1.5 LL b + Service - 330 W | Yes | Y | 1 | 1.2 | 6 | 0.866 | 7 | -0.5 | 12 | 1.5 |
| 62 | 1.2 D + 1.5 LL c + Service - 0 W | Yes | Y | 1 | 1.2 | 6 | 1 | | | 13 | 1.5 |
| 63 | 1.2 D + 1.5 LL c + Service - 30 W | Yes | Y | 1 | 1.2 | 6 | 0.866 | 7 | 0.5 | 13 | 1.5 |
| 64 | 1.2 D + 1.5 LL c + Service - 60 W | Yes | Y | 1 | 1.2 | 7 | 0.866 | 6 | 0.5 | 13 | 1.5 |
| 65 | 1.2 D + 1.5 LL c + Service - 90 W | Yes | Y | 1 | 1.2 | 7 | 1 | | | 13 | 1.5 |
| 66 | 1.2 D + 1.5 LL c + Service - 120 W | Yes | Y | 1 | 1.2 | 7 | 0.866 | 6 | -0.5 | 13 | 1.5 |
| 67 | 1.2 D + 1.5 LL c + Service - 150 W | Yes | Y | 1 | 1.2 | 6 | -0.866 | 7 | 0.5 | 13 | 1.5 |
| 68 | 1.2 D + 1.5 LL c + Service - 180 W | Yes | Y | 1 | 1.2 | 6 | -1 | | | 13 | 1.5 |
| 69 | 1.2 D + 1.5 LL c + Service - 210 W | Yes | Y | 1 | 1.2 | 6 | -0.866 | 7 | -0.5 | 13 | 1.5 |
| 70 | 1.2 D + 1.5 LL c + Service - 240 W | Yes | Y | 1 | 1.2 | 7 | -0.866 | 6 | -0.5 | 13 | 1.5 |
| 71 | 1.2 D + 1.5 LL c + Service - 270 W | Yes | Y | 1 | 1.2 | 7 | -1 | | | 13 | 1.5 |
| 72 | 1.2 D + 1.5 LL c + Service - 300 W | Yes | Y | 1 | 1.2 | 7 | -0.866 | 6 | 0.5 | 13 | 1.5 |
| 73 | 1.2 D + 1.5 LL c + Service - 330 W | Yes | Y | 1 | 1.2 | 6 | 0.866 | 7 | -0.5 | 13 | 1.5 |
| 74 | 1.2 D + 1.5 LL d + Service - 0 W | Yes | Y | 1 | 1.2 | 6 | 1 | | | 14 | 1.5 |
| 75 | 1.2 D + 1.5 LL d + Service - 30 W | Yes | Y | 1 | 1.2 | 6 | 0.866 | 7 | 0.5 | 14 | 1.5 |
| 76 | 1.2 D + 1.5 LL d + Service - 60 W | Yes | Y | 1 | 1.2 | 7 | 0.866 | 6 | 0.5 | 14 | 1.5 |
| 77 | 1.2 D + 1.5 LL d + Service - 90 W | Yes | Y | 1 | 1.2 | 7 | 1 | | | 14 | 1.5 |
| 78 | 1.2 D + 1.5 LL d + Service - 120 W | Yes | Y | 1 | 1.2 | 7 | 0.866 | 6 | -0.5 | 14 | 1.5 |
| 79 | 1.2 D + 1.5 LL d + Service - 150 W | Yes | Y | 1 | 1.2 | 6 | -0.866 | 7 | 0.5 | 14 | 1.5 |
| 80 | 1.2 D + 1.5 LL d + Service - 180 W | Yes | Y | 1 | 1.2 | 6 | -1 | | | 14 | 1.5 |
| 81 | 1.2 D + 1.5 LL d + Service - 210 W | Yes | Y | 1 | 1.2 | 6 | -0.866 | 7 | -0.5 | 14 | 1.5 |
| 82 | 1.2 D + 1.5 LL d + Service - 240 W | Yes | Y | 1 | 1.2 | 7 | -0.866 | 6 | -0.5 | 14 | 1.5 |
| 83 | 1.2 D + 1.5 LL d + Service - 270 W | Yes | Y | 1 | 1.2 | 7 | -1 | | | 14 | 1.5 |
| 84 | 1.2 D + 1.5 LL d + Service - 300 W | Yes | Y | 1 | 1.2 | 7 | -0.866 | 6 | 0.5 | 14 | 1.5 |
| 85 | 1.2 D + 1.5 LL d + Service - 330 W | Yes | Y | 1 | 1.2 | 6 | 0.866 | 7 | -0.5 | 14 | 1.5 |
| 86 | 1.2 D + 1.5 LL Maint (1) | Yes | Y | 1 | 1.2 | | | | | 15 | 1.5 |
| 87 | 1.2 D + 1.5 LL Maint (2) | Yes | Y | 1 | 1.2 | | | | | 16 | 1.5 |
| 88 | 1.2 D + 1.5 LL Maint (3) | Yes | Y | 1 | 1.2 | | | | | 17 | 1.5 |
| 89 | 1.2 D + 1.5 LL Maint (4) | Yes | Y | 1 | 1.2 | | | | | 18 | 1.5 |
| 90 | 1.2 D + 1.5 LL Maint (5) | Yes | Y | 1 | 1.2 | | | | | 19 | 1.5 |
| 91 | 1.2 D + 1.5 LL Maint (6) | Yes | Y | 1 | 1.2 | | | | | 20 | 1.5 |
| 92 | 1.2 D + 1.5 LL Maint (7) | Yes | Y | 1 | 1.2 | | | | | 21 | 1.5 |
| 93 | 1.2 D + 1.5 LL Maint (8) | Yes | Y | 1 | 1.2 | | | | | 22 | 1.5 |

Load Combinations (Continued)

| | Description | Solve | P-Delta | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor |
|-----|---------------------------|-------|---------|-----|--------|-----|--------|-----|--------|-----|--------|
| 94 | 1.2 D + 1.5 LL Maint (9) | Yes | Y | 1 | 1.2 | | | | | 23 | 1.5 |
| 95 | 1.2 D + 1.5 LL Maint (10) | Yes | Y | 1 | 1.2 | | | | | 24 | 1.5 |
| 96 | 1.2 D + 1.5 LL Maint (11) | Yes | Y | 1 | 1.2 | | | | | 25 | 1.5 |
| 97 | 1.2 D + 1.5 LL Maint (12) | Yes | Y | 1 | 1.2 | | | | | 26 | 1.5 |
| 98 | 1.2 D + 1.5 LL Maint (13) | Yes | Y | 1 | 1.2 | | | | | 27 | 1.5 |
| 99 | 1.2 D + 1.5 LL Maint (14) | Yes | Y | 1 | 1.2 | | | | | 28 | 1.5 |
| 100 | 1.2 D + 1.5 LL Maint (15) | Yes | Y | 1 | 1.2 | | | | | 29 | 1.5 |

Envelope Node Reactions

| Node Label | X [k] | LC | Y [k] | LC | Z [k] | LC | MX [k-ft] | LC | MY [k-ft] | LC | MZ [k-ft] | LC | |
|------------|-------------|--------|-------|-------|-------|--------|-----------|--------|-----------|--------|-----------|--------|----|
| 1 | max | 1.09 | 5 | 1.724 | 14 | 0.77 | 2 | 3.261 | 14 | 1.077 | 11 | 0.268 | 11 |
| | min | -1.09 | 11 | 0.257 | 8 | -0.838 | 8 | -0.095 | 8 | -1.077 | 5 | -0.298 | 5 |
| 3 | max | 0.728 | 5 | 1.628 | 18 | 1.081 | 2 | -0.028 | 13 | 1.153 | 3 | -0.15 | 12 |
| | min | -0.787 | 11 | 0.268 | 12 | -1.047 | 8 | -1.747 | 43 | -1.154 | 9 | -2.824 | 66 |
| 5 | max | 0.787 | 5 | 1.619 | 22 | 1.079 | 2 | -0.025 | 3 | 1.152 | 7 | 2.811 | 46 |
| | min | -0.728 | 11 | 0.262 | 4 | -1.044 | 8 | -1.744 | 69 | -1.151 | 13 | 0.137 | 4 |
| 7 | Totals: max | 2.605 | 5 | 4.664 | 58 | 2.929 | 2 | | | | | | |
| 8 | min | -2.605 | 11 | 2.414 | 4 | -2.929 | 8 | | | | | | |

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

| Member | Shape | Code Check | Loc [ft] | LC | Shear | Check | Loc [ft] | Dir | LC | Pnc [k] | phi* | Pnt [k] | phi* | Mn y-y [k-ft] | phi* | Mn z-z [k-ft] | Cb | Eqn |
|--------|-------|------------------|----------|-------|-------|-------|----------|-----|----|---------|---------|---------|--------|---------------|-------|---------------|----|-----|
| 1 | 1 | HSS4X4X2 | 0.429 | 0 | 13 | 0.108 | 0 | y | 40 | 70.173 | 73.278 | 8.24 | 8.24 | 2.11 | H1-1b | | | |
| 2 | 2 | C3.38X2.06X0.188 | 0.329 | 2.592 | 63 | 0.049 | 2.592 | y | 62 | 35.676 | 43.394 | 1.694 | 4.483 | 1.614 | H1-1b | | | |
| 3 | 3 | C3.38X2.06X0.188 | 0.329 | 0 | 49 | 0.053 | 2.241 | y | 45 | 35.676 | 43.394 | 1.694 | 4.483 | 1.613 | H1-1b | | | |
| 4 | 4 | PL3/8X6 HRA | 0.083 | 0 | 13 | 0.126 | 0 | y | 62 | 70.017 | 73.872 | 0.585 | 9.234 | 1.928 | H1-1b | | | |
| 5 | 5 | PL3/8X6 HRA | 0.082 | 0 | 3 | 0.125 | 0 | y | 38 | 70.017 | 73.872 | 0.585 | 9.234 | 1.928 | H1-1b | | | |
| 6 | 6 | PIPE 3.5x0.165 | 0.065 | 4 | 52 | 0.037 | 3 | y | 5 | 45.872 | 71.57 | 6.336 | 6.336 | 1.746 | H1-1b | | | |
| 7 | 7 | PL3/8X6 HRA | 0.11 | 0.208 | 9 | 0.194 | 0.208 | y | 61 | 71.879 | 73.872 | 0.585 | 9.234 | 2 | H1-1b | | | |
| 8 | 8 | PL3/8X6 HRA | 0.11 | 0 | 7 | 0.192 | 0 | y | 51 | 71.879 | 73.872 | 0.585 | 9.234 | 1.987 | H1-1b | | | |
| 9 | 10 | L2x2x4 | 0.043 | 1.203 | 17 | 0.031 | 2.309 | y | 66 | 23.349 | 30.586 | 0.691 | 1.577 | 1.141 | H2-1 | | | |
| 10 | 11 | L7.63x2.5x6 | 0.218 | 1.604 | 8 | 0.071 | 1.604 | y | 48 | 75.414 | 118.523 | 1.798 | 13.281 | 1.147 | H2-1 | | | |
| 11 | 18 | PIPE 2.88x0.203 | 0.089 | 5.667 | 5 | 0.032 | 5.667 | y | 5 | 35.519 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | |
| 12 | 19 | PIPE 2.88x0.203 | 0.082 | 2.333 | 10 | 0.031 | 5.667 | y | 9 | 35.519 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | |
| 13 | 20 | PIPE 2.88x0.203 | 0.08 | 2.188 | 86 | 0.079 | 7.812 | y | 92 | 24.131 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | |
| 14 | 26 | PIPE 2.88x0.203 | 0.082 | 2.333 | 6 | 0.031 | 5.667 | y | 7 | 35.519 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | |
| 15 | 30 | L6.63x4.33x.25 | 0.12 | 0 | 10 | 0.014 | 0 | y | 11 | 51.794 | 86.751 | 2.311 | 6.976 | 1.5 | H2-1 | | | |
| 16 | 88 | L2x2x4 | 0.035 | 1.203 | 23 | 0.031 | 2.309 | y | 46 | 23.349 | 30.586 | 0.691 | 1.577 | 1.141 | H2-1 | | | |
| 17 | 31 | HSS4X4X2 | 0.414 | 0 | 7 | 0.104 | 0 | y | 64 | 70.173 | 73.278 | 8.24 | 8.24 | 2.047 | H1-1b | | | |
| 18 | 32 | C3.38X2.06X0.188 | 0.329 | 2.592 | 67 | 0.049 | 2.592 | y | 66 | 35.676 | 43.394 | 1.694 | 4.483 | 1.614 | H1-1b | | | |
| 19 | 33 | C3.38X2.06X0.188 | 0.329 | 0 | 41 | 0.054 | 2.241 | y | 49 | 35.676 | 43.394 | 1.694 | 4.483 | 1.612 | H1-1b | | | |
| 20 | 34 | PL3/8X6 HRA | 0.075 | 0 | 5 | 0.125 | 0 | y | 66 | 70.017 | 73.872 | 0.585 | 9.234 | 1.901 | H1-1b | | | |
| 21 | 35 | PL3/8X6 HRA | 0.081 | 0 | 7 | 0.126 | 0 | y | 42 | 70.017 | 73.872 | 0.585 | 9.234 | 1.916 | H1-1b | | | |
| 22 | 36 | PL3/8X6 HRA | 0.111 | 0.208 | 13 | 0.194 | 0.208 | y | 53 | 71.879 | 73.872 | 0.585 | 9.234 | 2.055 | H1-1b | | | |
| 23 | 37 | PL3/8X6 HRA | 0.101 | 0 | 11 | 0.193 | 0 | y | 55 | 71.879 | 73.872 | 0.585 | 9.234 | 2.071 | H1-1b | | | |
| 24 | 38 | L2x2x4 | 0.038 | 1.203 | 21 | 0.031 | 2.309 | y | 70 | 23.349 | 30.586 | 0.691 | 1.577 | 1.14 | H2-1 | | | |
| 25 | 39 | L7.63x2.5x6 | 0.2 | 1.604 | 12 | 0.071 | 1.604 | y | 68 | 75.414 | 118.523 | 1.798 | 13.067 | 1.106 | H2-1 | | | |
| 26 | 48 | L6.63x4.33x.25 | 0.134 | 0 | 2 | 0.017 | 3.25 | y | 9 | 51.794 | 86.751 | 2.311 | 6.976 | 1.5 | H2-1 | | | |
| 27 | 49 | L2x2x4 | 0.039 | 1.299 | 15 | 0.031 | 2.309 | z | 38 | 23.349 | 30.586 | 0.691 | 1.577 | 1.153 | H2-1 | | | |
| 28 | 50 | HSS4X4X2 | 0.412 | 0 | 9 | 0.103 | 0 | y | 68 | 70.173 | 73.278 | 8.24 | 8.24 | 2.047 | H1-1b | | | |
| 29 | 51 | C3.38X2.06X0.188 | 0.327 | 2.592 | 71 | 0.049 | 2.592 | y | 70 | 35.676 | 43.394 | 1.694 | 4.483 | 1.612 | H1-1b | | | |
| 30 | 52 | C3.38X2.06X0.188 | 0.328 | 0 | 45 | 0.053 | 2.241 | y | 41 | 35.676 | 43.394 | 1.694 | 4.483 | 1.614 | H1-1b | | | |
| 31 | 53 | PL3/8X6 HRA | 0.08 | 0 | 9 | 0.126 | 0 | y | 70 | 70.017 | 73.872 | 0.585 | 9.234 | 1.918 | H1-1b | | | |
| 32 | 54 | PL3/8X6 HRA | 0.075 | 0 | 11 | 0.125 | 0 | y | 46 | 70.017 | 73.872 | 0.585 | 9.234 | 1.901 | H1-1b | | | |



Company : B+T Group
 Designer : APK
 Job Number : 160582.003.01
 Model Name : 310968 - WSPT - Westport Rebu...

3/23/2022
 9:32:22 PM
 Checked By : _____

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

| Member | Shape | Code Check | Loc[ft] | LC | Shear | Check | Loc[ft] | Dir | LC | phi* | Pnc [k] | phi* | Pnt [k] | phi* | Mn y-y [k-ft] | phi* | Mn z-z [k-ft] | Cb | Eqn |
|--------|-------|-----------------|---------|-------|-------|-------|---------|-----|--------|--------|---------|-------|---------|-------|---------------|------|---------------|----|-----|
| 33 | 55 | PL3/8X6_HRA | 0.101 | 0.208 | 5 | 0.192 | 0.208 | y | 57 | 71.879 | 73.872 | 0.585 | 9.234 | 2.064 | H1-1b | | | | |
| 34 | 56 | PL3/8X6_HRA | 0.111 | 0 | 3 | 0.193 | 0 | y | 59 | 71.879 | 73.872 | 0.585 | 9.234 | 2.049 | H1-1b | | | | |
| 35 | 57 | L2x2x4 | 0.039 | 1.299 | 25 | 0.031 | 2.309 | y | 62 | 23.349 | 30.586 | 0.691 | 1.577 | 1.153 | H2-1 | | | | |
| 36 | 58 | L7.63x2.5x6 | 0.2 | 1.604 | 4 | 0.071 | 1.604 | y | 44 | 75.414 | 118.523 | 1.798 | 13.089 | 1.11 | H2-1 | | | | |
| 37 | 67 | L6.63x4.33x.25 | 0.134 | 3.25 | 2 | 0.017 | 0 | y | 7 | 51.794 | 86.751 | 2.311 | 6.976 | 1.5 | H2-1 | | | | |
| 38 | 68 | L2x2x4 | 0.039 | 1.155 | 19 | 0.031 | 2.309 | z | 42 | 23.349 | 30.586 | 0.691 | 1.577 | 1.139 | H2-1 | | | | |
| 39 | 69 | PIPE_3.5x0.165 | 0.064 | 4 | 52 | 0.042 | 3 | | 9 | 45.872 | 71.57 | 6.336 | 6.336 | 1.745 | H1-1b | | | | |
| 40 | 72 | PIPE_2.88x0.203 | 0.095 | 5.667 | 9 | 0.035 | 5.667 | 3 | 35.519 | 70.68 | 5.029 | 5.029 | 2.682 | H1-1b | | | | | |
| 41 | 73 | PIPE_2.88x0.203 | 0.09 | 2.333 | 2 | 0.03 | 5.667 | 13 | 35.519 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | | | |
| 42 | 74 | PIPE_2.88x0.203 | 0.08 | 7.812 | 96 | 0.079 | 2.187 | 90 | 24.131 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | | | |
| 43 | 76 | PIPE_2.88x0.203 | 0.08 | 2.333 | 10 | 0.027 | 5.667 | 11 | 35.519 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | | | |
| 44 | 80 | PIPE_3.5x0.165 | 0.065 | 4 | 56 | 0.042 | 5 | 7 | 45.872 | 71.57 | 6.336 | 6.336 | 1.743 | H1-1b | | | | | |
| 45 | 83 | PIPE_2.88x0.203 | 0.096 | 5.667 | 7 | 0.035 | 5.667 | 7 | 35.519 | 70.68 | 5.029 | 5.029 | 2.704 | H1-1b | | | | | |
| 46 | 84 | PIPE_2.88x0.203 | 0.079 | 2.333 | 6 | 0.027 | 5.667 | 5 | 35.519 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | | | |
| 47 | 85 | PIPE_2.88x0.203 | 0.079 | 7.812 | 94 | 0.079 | 2.187 | 88 | 24.131 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | | | |
| 48 | 87 | PIPE_2.88x0.203 | 0.09 | 2.333 | 2 | 0.03 | 5.667 | 3 | 35.519 | 70.68 | 5.029 | 5.029 | 3 | H1-1b | | | | | |
| 49 | 91 | PIPE_2.0 | 0.079 | 3.5 | 2 | 0.008 | 3.5 | 2 | 26.521 | 32.13 | 1.872 | 1.872 | 1 | H1-1b | | | | | |

| | | | | |
|---------|---|------|---|------|
| PROJECT | 160582.003.01 - WSPT – Westport Re KSC | | | |
| SUBJECT | Platform Mount Analysis | | | |
| DATE | 03/23/22 | PAGE | 1 | OF 1 |



B+T Group
 1717 S. Boulder, Suite 300
 Tulsa, OK 74119
 (918) 587-4630

[REF: AISC 360-05]

Reactions at Bolted Connection

| | | | |
|-------------------------------|---|-------|------|
| Tension | : | 0.77 | k |
| Vertical Shear | : | 1.724 | k |
| Horizontal Shear | : | 1.09 | k |
| Torsion | : | 0.268 | k.ft |
| Moment from Horizontal Forces | : | 1.077 | k.ft |
| Moment from Vertical Forces | : | 3.261 | k.ft |

Bolt Parameters

| | | | |
|----------------------------------|---|-------|-----------------|
| Bolt Grade | : | A325 | |
| Bolt Diameter | : | 0.625 | in |
| Nominal Bolt Area | : | 0.307 | in ² |
| Bolt spacing, Horizontal | : | 6 | in |
| Bolt spacing, Vertical | : | 6 | in |
| Bolt edge distance, plate height | : | 1.5 | in |
| Bolt edge distance, plate width | : | 1.5 | in |
| Total Number of Bolts | : | 4 | bolts |

Summary of Forces

| | | | |
|-------------------------------|---|------|---|
| Shear Resultant Force | : | 2.04 | k |
| Force from Horz. Moment | : | 1.95 | k |
| Force from Vert. Moment | : | 5.91 | k |
| Shear Load / Bolt | : | 0.51 | k |
| Tension Load / Bolt | : | 0.19 | k |
| Resultant from Moments / Bolt | : | 3.11 | k |

Bolt Checks

| | | | | |
|---|---|---------------|--------|-------------------|
| Nominal Tensile Stress, F_{nt} | : | 90.00 | ksi | [AISC Table J3.2] |
| Available Tensile Stress, ΦR_{nt} | : | 20.72 | k/bolt | [Eq. J3-1] |
| Unity Check, Bolt Tension | : | 15.94% | | OKAY |
| Nominal Shear Stress, F_{nv} | : | 48.00 | ksi | [AISC Table J3.2] |
| Available Shear Stress, ΦR_{nv} | : | 11.05 | k/bolt | [Eq. J3-1] |
| Unity Check, Bolt Shear | : | 6.36% | | OKAY |
| Unity Check, Combined | : | 22.29% | | OKAY |
| Available Bearing Strength, ΦR_n | : | 34.66 | k/bolt | |
| Unity Check, Bolt Bearing | : | 1.47% | | OKAY |

| | | | | |
|---------|---|------|---|------|
| PROJECT | 160582.003.01 - WSPT – Westport Re KSC | | | |
| SUBJECT | Platform Mount Analysis | | | |
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B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

[REF: AISC 360-05]

Connecting Member Parameters

| | | | | |
|--------------------------------|---|-------|-----------------|------------------|
| Plate Yield Strength, F_y | : | 36.00 | ksi | [AISC Table 2-5] |
| Plate Tensile Strength, F_u | : | 58.00 | ksi | [AISC Table 2-5] |
| Plate Height | : | 9.00 | in | |
| Plate Width | : | 9.00 | in | |
| Plate Thickness | : | 0.50 | in | |
| Edge Distance | : | 1.06 | in | |
| Gross Tension Area, A_{gt} | : | 4.50 | in ² | |
| Gross Shear Area, A_{gv} | : | 0.75 | in ² | |
| Net Area for tension, A_{nt} | : | 4.16 | in ² | |
| Net Area for shear, A_{nt} | : | 3.00 | in ² | |

Plate Check

| | | | | |
|-----------------------------------|---|---------------|---|-------------|
| Available Tensile Yield | : | 145.80 | k | [Eq. J4-1] |
| Available Tensile Rupture | : | 180.80 | k | [Eq. J4-2] |
| Unity Check, Plate Tension | : | 2.27% | | OKAY |
| Available Shear Yield | : | 16.20 | k | [Eq. J4-3] |
| Available Shear Rupture | : | 104.40 | k | [Eq. J4-4] |
| Unity Check, Plate Shear | : | 12.59% | | OKAY |
| Available Block Shear, ΦR_n | : | 77.40 | k | [Eq. J4-5] |
| Unity Check, Block Shear | : | 2.64% | | OKAY |



AMERICAN TOWER®
CORPORATION

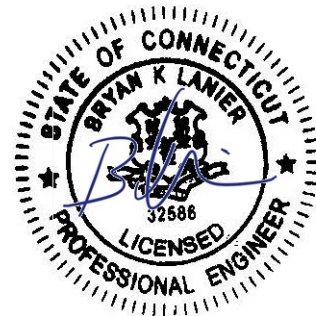
Structural Analysis Report

Structure : 140 ft Monopole
ATC Site Name : WSPT-WESTPORT REBUILD CT,CT
ATC Site Number : 310968
Engineering Number : 13709691_C3_03
Proposed Carrier : DISH WIRELESS L.L.C.
Carrier Site Name : NJJER01140B
Carrier Site Number : NJJER01140B
Site Location : 180A Bayberry Lane
Westport, CT 06880-2844
41.1717, -73.3285
County : Fairfield
Date : September 23, 2021
Max Usage : 60%
Result : Pass

Prepared By:

Steven Nedrud
Structural Engineer I

Reviewed By:



COA : PEC.0001553



Table of Contents

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| Calculations | Attached |

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 140 ft Monopole to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

| | |
|----------------------------|---|
| Tower Drawings | PJF, Penn Summit Job #29204-0171, dated July 1, 2004 |
| Foundation Drawing | PJF, Penn Summit Job #29204-0171, dated June 10, 2004 |
| Geotechnical Report | GeoTechnologies Project #1-02-1190-EA, dated September 23, 2002 |

Analysis

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

| | |
|--------------------------------------|--|
| Basic Wind Speed: | 118 mph (3-second gust) |
| Basic Wind Speed w/ Ice: | 50 mph (3-second gust) w/ 1.00" radial ice concurrent |
| Code: | ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code |
| Exposure Category: | B |
| Risk Category: | II |
| Topographic Factor Procedure: | Method 1 |
| Topographic Category: | 1 |
| Crest Height (H): | 0 ft |
| Crest Length (L): | 0 ft |
| Spectral Response: | $S_s = 0.23, S_i = 0.06$ |
| Site Class: | D - Stiff Soil - Default |

Conclusion

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

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

Existing and Reserved Equipment

| Elev. ¹ (ft) | Qty | Equipment | Mount Type | Lines | Carrier |
|-------------------------|-----|---|------------------------------------|---|-------------------|
| 147.1 | 3 | dbSpectra DS7C09P36U-D | Triangular Platform with Handrails | (3) 1 5/8" Coax | TOWN OF WESTPORT |
| 141.0 | 1 | Generic 12' Dipole | | | |
| 140.0 | 1 | TX RX Systems 432F-83W-01-C-110/110R/48/48R | | | |
| | 1 | RFS SC3-W100AB | | | |
| 138.0 | 1 | Generic 6' Omni | | | |
| | 1 | Generic 12' Omni | | | |
| 130.0 | 3 | Alcatel-Lucent 800 MHz 2X50W RRH w/ Filter | Triangular Platform with Handrails | (4) 1 1/4" Hybriflex Cable | SPRINT NEXTEL |
| | 3 | Alcatel-Lucent 4x40W RRH (91 lb) | | | |
| | 3 | RFS APXVSP18-C-A20 | | | |
| | 3 | Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield | | | |
| | 3 | RFS APXV9TM14-ALU-I20* | | | |
| 121.0 | 1 | Andrew DB586 | Triangular Low Profile Platform | (2) 1 1/4" Coax (1) 1/2" Coax | EVERSOURCE ENERGY |
| 116.0 | 2 | Generic 6' Omni | | (2) 1/2" Coax | OTHER |
| 110.0 | 6 | Commscope JAHH-65B-R3B | Triangular Platform with Handrails | (1) 1 1/4" Hybriflex Cable (6) 1 5/8" Coax (1) 2.02 (51.2mm) Hybrid | VERIZON WIRELESS |
| | 3 | Antel BXA-70080/6CF | | | |
| | 3 | Samsung MT6407-77A | | | |
| | 1 | RFS DB-C1-12C-24AB-0Z | | | |
| | 3 | Samsung B2/B66A RRH-BR049 | | | |
| | 3 | Samsung RT4401-48A | | | |
| | 3 | Samsung Outdoor CBRS 20W RRH –Clip-on Antenna | | | |
| | 3 | Commscope CBC78T-DS-43-2X | | | |
| 100.0 | 12 | Powerwave Allgon LGP21401 | Triangular Low Profile Platform | (1) 0.28" (7.1mm) Fiber (1) 0.39" (10mm) Fiber Trunk (2) 0.74" (18.7mm) 8 AWG 7 (2) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 3" conduit (1) 3/8" (0.38"-9.5mm) RET Control Cable | AT&T MOBILITY |
| | 1 | Raycap DC6-48-60-18-8F ("Squid") | | | |
| | 3 | Ericsson RRUS-11 (50 lbs.) | | | |
| | 3 | Ericsson RRUS 32 B2 | | | |
| | 6 | Powerwave Allgon 7770.00 | | | |
| | 12 | Powerwave Allgon 7020.00 Dual Band RET | | | |
| | 3 | CCI HPA-65R-BUU-H6 | | | |
| 87.0 | 3 | Ericsson Radio 4449 B12,B71 | Triangular Low Profile Platform | (2) 1 1/4" (1.25"-31.8mm) Fiber (1) 1 5/8" (1.63"-41.3mm) Fiber (12) 1 5/8" Coax | T-MOBILE |
| | 3 | Ericsson AIR 21, 1.3M, B4A B2P | | | |
| | 3 | Ericsson AIR32 B66Aa/B2a | | | |
| | 3 | RFS APXVAARR24_43-U-NA20 | | | |
| | 3 | RFS ATMAA1412D-1A20 | | | |



Equipment to be Removed

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

Proposed Equipment

| Elev. ¹ (ft) | Qty | Equipment | Mount Type | Lines | Carrier |
|-------------------------|-----|----------------------------|------------------------------------|---------------------------|----------------------|
| 77.0 | 1 | Raycap RDIDC-9181-PF-48 | Triangular Platform with Handrails | (1) 1.75" (44.5mm) Hybrid | DISH WIRELESS L.L.C. |
| | 3 | Fujitsu TA08025-B605 | | | |
| | 3 | Fujitsu TA08025-B604 | | | |
| | 3 | JMA Wireless MX08FRO665-21 | | | |

¹ Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Standard Conditions

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

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

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

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

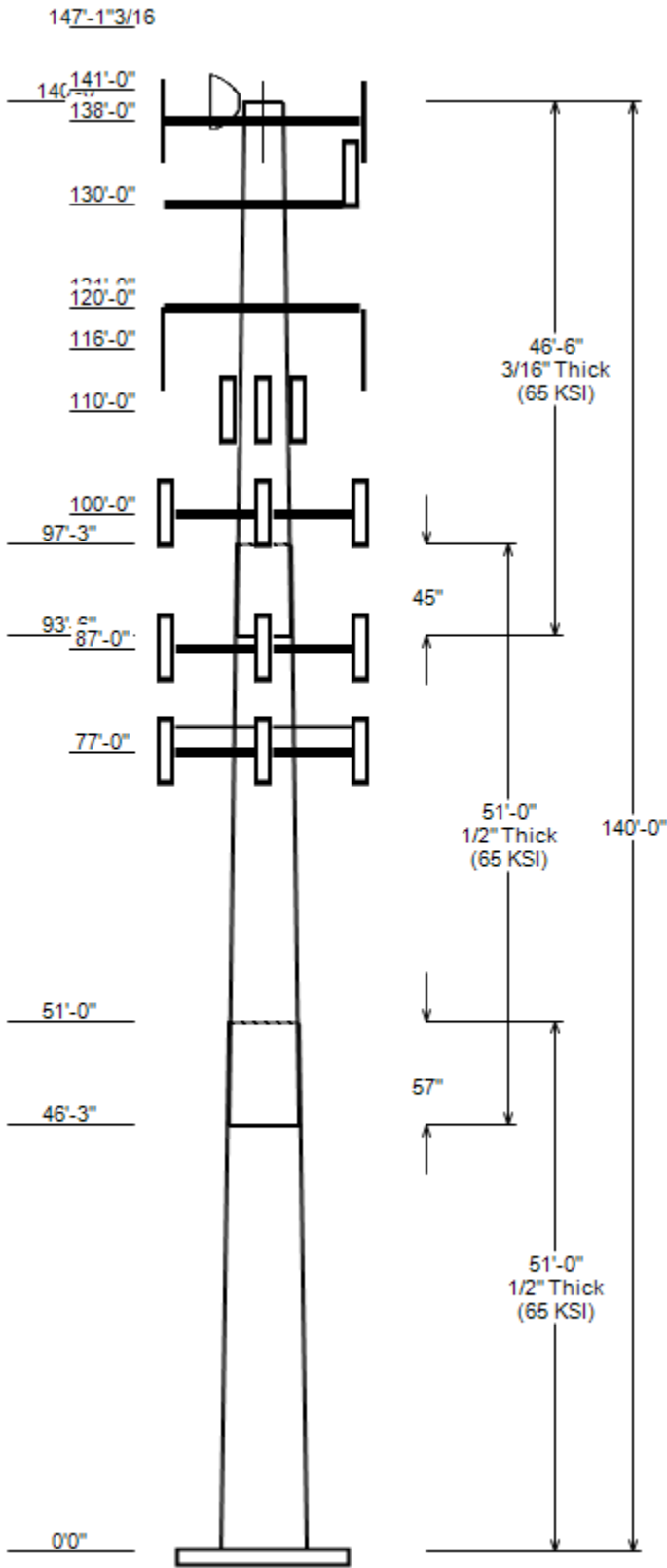
Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

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

JOB INFORMATION

Asset : 310968, WSPT-WESTPORT REBUILD CT
 Client : DISH WIRELESS L.L.C.
 Code : ANSI/TIA-222-H

Height : 140 ft
 Base Width : 47.13
 Shape : 18 Sides



SITE PARAMETERS

Base Elev (ft): 0.00 Structure Class: II
 Taper : 0.20000 (In/ft) Exposure : B
 Topographic Category : 1 Topographic Feature:
 Topo Method : Method 1

SECTION PROPERTIES

| Shaft Section | Length (ft) | Diameter (in) | | Thick (in) | Overlap Length (in) | Steel Grade (ksi) |
|---------------|-------------|------------------|---------------------|------------|---------------------|-------------------|
| | | Across Flats Top | Across Flats Bottom | | | |
| 1 | 51.000 | 36.93 | 47.13 | 0.500 | 0.000 | 65 |
| 2 | 51.000 | 28.68 | 38.88 | 0.500 | 57.000 | 65 |
| 3 | 46.500 | 20.50 | 29.80 | 0.188 | 45.000 | 65 |

DISCRETE APPURTENANCE

| Attach Elev (ft) | Force Elev (ft) | Qty | Description |
|------------------|-----------------|-----|--------------------------------|
| 147.1 | 147.1 | 3 | dbSpectra DS7C09P36U-D |
| 141.0 | 141.0 | 1 | Generic 12' Dipole |
| 140.0 | 140.0 | 1 | TX RX Systems 432F-83W-01-C-11 |
| 140.0 | 140.0 | 1 | RFS SC3-W100AB |
| 138.0 | 138.0 | 1 | Generic 6' Omni |
| 138.0 | 138.0 | 1 | Generic 12' Omni |
| 138.0 | 138.0 | 1 | Generic 6' FM antenna |
| 138.0 | 138.0 | 1 | Flat Platform w/ Handrails |
| 130.0 | 131.0 | 3 | Alcatel-Lucent 800 MHz 2X50W R |
| 130.0 | 131.0 | 3 | Alcatel-Lucent 4x40W RRH (91 I |
| 130.0 | 131.0 | 3 | Alcatel-Lucent TD-RRH8x20-25 w |
| 130.0 | 131.0 | 3 | RFS APXV9TM14-ALU-I20* |
| 130.0 | 131.0 | 3 | RFS APXVSP18-C-A20 |
| 130.0 | 130.0 | 1 | Flat Platform w/ Handrails |
| 121.0 | 123.0 | 1 | Andrew DB586 |
| 120.0 | 120.0 | 1 | Flat Low Profile Platform |
| 116.0 | 116.0 | 2 | Generic 6' Omni |
| 110.0 | 110.0 | 3 | Commscope CBC78T-DS-43-2X |
| 110.0 | 110.0 | 3 | Samsung Outdoor CBRS 20W RRH - |
| 110.0 | 110.0 | 3 | Samsung RT4401-48A |
| 110.0 | 110.0 | 3 | Samsung B5/B13 RRH-BR04C |
| 110.0 | 110.0 | 3 | Samsung B2/B66A RRH-BR049 |
| 110.0 | 110.0 | 1 | RFS DB-C1-12C-24AB-0Z |
| 110.0 | 110.0 | 3 | Samsung MT6407-77A |
| 110.0 | 110.0 | 3 | Antel BXA-70080/6CF__ |
| 110.0 | 110.0 | 6 | Commscope JAHH-65B-R3B |
| 110.0 | 110.0 | 1 | Low Profile Platform w/ Site P |
| 100.0 | 100.0 | 12 | Powerwave Allgon 7020.00 Dual |
| 100.0 | 100.0 | 12 | Powerwave Allgon LGP21401 |
| 100.0 | 100.0 | 1 | Raycap DC6-48-60-18-8F ("Squid |
| 100.0 | 100.0 | 3 | Ericsson RRUS-11 (50 lbs.) |
| 100.0 | 100.0 | 3 | Ericsson RRUS 32 B2 |
| 100.0 | 100.0 | 6 | Powerwave Allgon 7770.00 |
| 100.0 | 100.0 | 3 | CCI HPA-65R-BUU-H6 |
| 100.0 | 100.0 | 1 | Flat Low Profile Platform |
| 87.0 | 87.0 | 3 | RFS ATMAA1412D-1A20 |
| 87.0 | 87.0 | 3 | Ericsson Radio 4449 B12,B71 |
| 87.0 | 87.0 | 3 | Ericsson AIR 21, 1.3M, B4A B2P |
| 87.0 | 87.0 | 3 | Ericsson AIR32 B66Aa/B2a |
| 87.0 | 87.0 | 3 | RFS APXVAARR24_43-U-NA20 |
| 87.0 | 87.0 | 1 | Flat Low Profile Platform |
| 77.0 | 77.0 | 1 | Raycap RDIDC-9181-PF-48 |
| 77.0 | 77.0 | 3 | Fujitsu TA08025-B604 |
| 77.0 | 77.0 | 3 | Fujitsu TA08025-B605 |
| 77.0 | 77.0 | 3 | JMA Wireless MX08FRO665-21 |

JOB INFORMATION

Asset : 310968, WSPT-WESTPORT REBUILD CT
 Client : DISH WIRELESS L.L.C.
 Code : ANSI/TIA-222-H

Height : 140 ft
 Base Width : 47.13
 Shape : 18 Sides

DISCRETE APPURTENANCE

| Attach Elev (ft) | Force Elev (ft) | Qty | Description |
|------------------|-----------------|-----|--------------------------------|
| 77.0 | 77.0 | 1 | Generic Flat Platform with Han |

LINEAR APPURTENANCE

| Elev From (ft) | Elev To (ft) | Description | Exp To Wind |
|----------------|--------------|---------------------------------------|-------------|
| 0.0 | 147.1 | 1 5/8" Coax | No |
| 0.0 | 140.0 | EW90 | No |
| 0.0 | 140.0 | 1/2" Coax | No |
| 0.0 | 130.0 | 1 1/4" Hybriflex Cable | No |
| 0.0 | 121.0 | 1/2" Coax | No |
| 0.0 | 121.0 | 1 1/4" Coax | No |
| 0.0 | 116.0 | 1/2" Coax | No |
| 0.0 | 110.0 | 2.02 (51.2mm) Hybrid | No |
| 0.0 | 110.0 | 1 5/8" Coax | No |
| 0.0 | 110.0 | 1 1/4" Hybriflex Cable | No |
| 0.0 | 100.0 | 3/8" (0.38"- 9.5mm) RET Control Cable | No |
| 0.0 | 100.0 | 3" conduit | No |
| 0.0 | 100.0 | 1 5/8" Coax | No |
| 0.0 | 100.0 | 0.78" (19.7mm) 8 AWG 6 | No |
| 0.0 | 100.0 | 0.74" (18.7mm) 8 AWG 7 | No |
| 0.0 | 100.0 | 0.39" (10mm) Fiber Trunk | No |
| 0.0 | 100.0 | 0.28" (7.1mm) Fiber | No |
| 0.0 | 87.0 | 1 5/8" Coax | No |
| 0.0 | 87.0 | 1 5/8" (1.63"-41.3mm) Fiber | No |
| 0.0 | 87.0 | 1 1/4" (1.25"- 31.8mm) Fiber | No |
| 0.0 | 77.0 | 1.75" (44.5mm) Hybrid | No |

LOAD CASES

| | |
|--------------------------|--------------------------------|
| 1.2D + 1.0W Normal | 118 mph wind with no ice |
| 0.9D + 1.0W Normal | 118 mph wind with no ice |
| 1.2D + 1.0Di + 1.0Wi Nor | 50 mph wind with 1" radial ice |
| 1.2D + 1.0Ev + 1.0Eh Nor | Seismic |
| 0.9D - 1.0Ev + 1.0Eh Nor | Seismic (Reduced DL) |
| 1.0D + 1.0W Service Norm | 60 mph Wind with No Ice |

REACTIONS

| Load Case | Moment (kip-ft) | Shear (Kip) | Axial (Kip) |
|-----------------------------|-----------------|-------------|-------------|
| 1.2D + 1.0W Normal | 2737.59 | 27.26 | 55.82 |
| 0.9D + 1.0W Normal | 2703.74 | 27.24 | 41.85 |
| 1.2D + 1.0Di + 1.0Wi Normal | 722.27 | 7.19 | 71.83 |
| 1.2D + 1.0Ev + 1.0Eh Normal | 152.05 | 1.40 | 56.23 |
| 0.9D - 1.0Ev + 1.0Eh Normal | 149.61 | 1.40 | 38.35 |
| 1.0D + 1.0W Service Normal | 628.49 | 6.30 | 46.55 |

DISH DEFLECTIONS

| Load Case | Attach Elev (ft) | Deflection (in) | Rotation (deg) |
|----------------------------|------------------|-----------------|----------------|
| 1.0D + 1.0W Service Normal | 140.00 | 17.170 | 1.051 |

ASSET: 310968, WSPT-WESTPORT REBUILD CT
CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H
ENG NO: 13709691_C3_03

ANALYSIS PARAMETERS

| | | | |
|-------------------------------|---------------------|----------------|--------------|
| Location: | Fairfield County,CT | Height: | 140 ft |
| Type and Shape: | Taper, 18 Sides | Base Diameter: | 47.13 in |
| Manufacturer: | Undetermined | Top Diameter: | 20.50 in |
| K _d (non-service): | 0.95 | Taper: | 0.2000 in/ft |
| K _e : | 0.99 | Rotation: | 0.000° |

ICE & WIND PARAMETERS

| | | | |
|------------------------|----------|----------------------------|-----------|
| Exposure Category: | B | Design Wind Speed w/o Ice: | 118 mph |
| Risk Category: | II | Design Wind Speed w/Ice: | 50 mph |
| Topo Factor Procedure: | Method 1 | Operational Wind Speed: | 60 mph |
| Topographic Category: | 1 | Design Ice Thickness: | 1.00 in |
| Crest Height: | 0 ft | HMSL: | 250.00 ft |

SEISMIC PARAMETERS

| | | | | | |
|-----------------------|---------------------------------|--|-------|---------------------|-------|
| Analysis Method: | Equivalent Lateral Force Method | | | | |
| Site Class: | D - Stiff Soil | Period Based on Rayleigh Method (sec): | 2.25 | | |
| T _L (sec): | 6 | P: | 1 | C _s : | 0.030 |
| S _s : | 0.227 | S ₁ : | 0.056 | C _s Max: | 0.030 |
| F _a : | 1.600 | F _v : | 2.400 | C _s Min: | 0.030 |
| S _{ds} : | 0.242 | S _{d1} : | 0.090 | | |

LOAD CASES

| | |
|-----------------------------|--------------------------------|
| 1.2D + 1.0W Normal | 118 mph wind with no ice |
| 0.9D + 1.0W Normal | 118 mph wind with no ice |
| 1.2D + 1.0Di + 1.0Wi Normal | 50 mph wind with 1" radial ice |
| 1.2D + 1.0Ev + 1.0Eh Normal | Seismic |
| 0.9D - 1.0Ev + 1.0Eh Normal | Seismic (Reduced DL) |
| 1.0D + 1.0W Service Normal | 60 mph Wind with No Ice |

SHAFT SECTION PROPERTIES

| Sect Info | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Slip Joint len (in) | Bottom | | | | | | | Top | | | | | | |
|-----------|-------------|------------|----------|------------|---------------------|-------------|----------|-----------|-------------------------|-----------------------|-----------|-----------|----------|-----------|-------------------------|-----------------------|-----------|-----------|---------------|
| | | | | | | Weight (lb) | Dia (in) | Elev (ft) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Dia (in) | Elev (in) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Taper (in/ft) |
| 1-18 | 51.00 | 0.5000 | 65 | | 0.00 | 11,437 | 47.13 | 0.000 | 74.00 | 20,328.7 | 14.86 | 94.26 | 36.93 | 51.00 | 57.81 | 9,692.3 | 11.26 | 73.86 | 0.2000 |
| 2-18 | 51.00 | 0.5000 | 65 | Slip | 57.00 | 9,165 | 38.88 | 46.250 | 60.90 | 11,333.7 | 11.95 | 77.76 | 28.68 | 97.25 | 44.71 | 4,485.1 | 8.35 | 57.35 | 0.2000 |
| 3-18 | 46.50 | 0.1875 | 65 | Slip | 45.00 | 2,351 | 29.80 | 93.500 | 17.62 | 1,952.7 | 26.26 | 158.94 | 20.50 | 140.00 | 12.09 | 630.1 | 17.52 | 109.33 | 0.2000 |

Shaft Weight 22,953

DISCRETE APPURTENANCE PROPERTIES

| Attach Elev (ft) | Description | Qty | Ka | Vert Ecc (ft) | No Ice | | | Ice | | |
|------------------|--------------------------------|-----|------|---------------|-------------|-----------|--------------------|-------------|-----------|--------------------|
| | | | | | Weight (lb) | EPAa (sf) | Orientation Factor | Weight (lb) | EPAa (sf) | Orientation Factor |
| 147.10 | dbSpectra DS7C09P36U-D | 3 | 1.00 | 0.000 | 70.00 | 3.550 | 1.00 | 130.81 | 6.896 | 1.00 |
| 141.00 | Generic 12' Dipole | 1 | 1.00 | 0.000 | 40.00 | 4.510 | 1.00 | 128.40 | 9.255 | 1.00 |
| 140.00 | RFS SC3-W100AB | 1 | 1.00 | 0.000 | 40.00 | 10.737 | 1.00 | 223.95 | 12.007 | 1.00 |
| 140.00 | TX RX Systems 432F-83W-01-C-11 | 1 | 0.75 | 0.000 | 18.00 | 1.500 | 1.00 | 49.28 | 2.039 | 1.00 |
| 138.00 | Flat Platform w/ Handrails | 1 | 1.00 | 0.000 | 1750.00 | 33.000 | 1.00 | 2572.92 | 43.802 | 1.00 |
| 138.00 | Generic 6' FM antenna | 1 | 0.75 | 0.000 | 30.00 | 13.450 | 1.00 | 480.49 | 16.495 | 1.00 |
| 138.00 | Generic 12' Omni | 1 | 1.00 | 0.000 | 40.00 | 3.600 | 1.00 | 100.08 | 6.443 | 1.00 |
| 138.00 | Generic 6' Omni | 1 | 1.00 | 0.000 | 25.00 | 1.760 | 1.00 | 55.51 | 2.592 | 1.00 |
| 130.00 | Flat Platform w/ Handrails | 1 | 1.00 | 0.000 | 2000.00 | 42.400 | 1.00 | 2934.09 | 56.184 | 1.00 |
| 130.00 | RFS APXVSP18-C-A20 | 3 | 0.75 | 1.000 | 57.00 | 8.024 | 0.69 | 170.38 | 9.857 | 0.69 |
| 130.00 | RFS APXV9TM14-ALU-I20* | 3 | 0.75 | 1.000 | 55.10 | 6.342 | 0.66 | 145.60 | 7.774 | 0.66 |
| 130.00 | Alcatel-Lucent TD-RRH8x20-25 w | 3 | 0.75 | 1.000 | 70.00 | 4.046 | 0.61 | 132.12 | 4.919 | 0.61 |
| 130.00 | Alcatel-Lucent 4x40W RRH (91 I | 3 | 0.75 | 1.000 | 91.00 | 3.287 | 0.72 | 162.96 | 4.071 | 0.72 |
| 130.00 | Alcatel-Lucent 800 MHz 2X50W R | 3 | 0.75 | 1.000 | 64.00 | 2.058 | 0.50 | 114.64 | 2.687 | 0.50 |
| 121.00 | Andrew DB586 | 1 | 1.00 | 2.000 | 8.30 | 0.740 | 1.00 | 12.08 | 1.077 | 1.00 |
| 120.00 | Flat Low Profile Platform | 1 | 1.00 | 0.000 | 1500.00 | 26.100 | 1.00 | 1922.55 | 38.552 | 1.00 |
| 116.00 | Generic 6' Omni | 2 | 1.00 | 0.000 | 25.00 | 1.760 | 1.00 | 55.00 | 2.579 | 1.00 |
| 110.00 | Samsung B5/B13 RRH-BR04C | 3 | 0.75 | 0.000 | 70.30 | 1.875 | 0.50 | 107.26 | 2.458 | 0.50 |
| 110.00 | RFS DB-C1-12C-24AB-OZ | 1 | 0.75 | 0.000 | 32.00 | 4.056 | 1.00 | 114.12 | 4.938 | 1.00 |
| 110.00 | Samsung MT6407-77A | 3 | 0.75 | 0.000 | 81.60 | 4.709 | 0.61 | 147.46 | 5.690 | 0.61 |
| 110.00 | Antel BXA-70080/6CF__ | 3 | 0.75 | 0.000 | 18.00 | 5.836 | 0.72 | 99.20 | 7.373 | 0.72 |
| 110.00 | Commscope JAHH-65B-R3B | 6 | 0.75 | 0.000 | 60.60 | 9.113 | 0.69 | 191.32 | 10.906 | 0.69 |
| 110.00 | Low Profile Platform w/ Site P | 1 | 1.00 | 0.000 | 1772.40 | 27.200 | 1.00 | 2570.23 | 39.444 | 1.00 |
| 110.00 | Samsung B2/B66A RRH-BR049 | 3 | 0.75 | 0.000 | 84.40 | 1.875 | 0.50 | 125.62 | 2.458 | 0.50 |
| 110.00 | Samsung RT4401-48A | 3 | 0.75 | 0.000 | 18.60 | 0.996 | 0.50 | 36.05 | 1.438 | 0.50 |
| 110.00 | Samsung Outdoor CBRS 20W RRH - | 3 | 0.75 | 0.000 | 4.40 | 0.892 | 0.50 | 16.03 | 1.305 | 0.50 |
| 110.00 | Commscope CBC78T-DS-43-2X | 3 | 0.75 | 0.000 | 20.70 | 0.552 | 0.50 | 34.98 | 0.880 | 0.50 |
| 100.00 | Flat Low Profile Platform | 1 | 1.00 | 0.000 | 1500.00 | 26.100 | 1.00 | 1915.04 | 38.330 | 1.00 |
| 100.00 | Powerwave Allgon 7020.00 Dual | 12 | 0.80 | 0.000 | 2.20 | 0.339 | 0.50 | 8.74 | 0.601 | 0.50 |
| 100.00 | CCI HPA-65R-BUU-H6 | 3 | 0.80 | 0.000 | 51.00 | 9.658 | 0.69 | 191.54 | 11.434 | 0.69 |
| 100.00 | Powerwave Allgon 7770.00 | 6 | 0.80 | 0.000 | 35.00 | 5.508 | 0.65 | 107.82 | 6.870 | 0.65 |
| 100.00 | Ericsson RRUS 32 B2 | 3 | 0.80 | 0.000 | 53.00 | 2.743 | 0.67 | 100.12 | 3.492 | 0.67 |
| 100.00 | Ericsson RRUS-11 (50 lbs.) | 3 | 0.80 | 0.000 | 50.00 | 2.566 | 0.67 | 93.67 | 3.237 | 0.67 |
| 100.00 | Raycap DC6-48-60-18-8F ("Squid | 1 | 0.80 | 0.000 | 31.80 | 1.470 | 1.00 | 71.32 | 1.917 | 1.00 |
| 100.00 | Powerwave Allgon LGP21401 | 12 | 0.80 | 0.000 | 14.10 | 1.104 | 0.50 | 30.08 | 1.561 | 0.50 |
| 87.00 | Flat Low Profile Platform | 1 | 1.00 | 0.000 | 1500.00 | 26.100 | 1.00 | 1909.39 | 38.164 | 1.00 |
| 87.00 | RFS APXVAARR24_43-U-NA20 | 3 | 0.80 | 0.000 | 127.90 | 20.243 | 0.63 | 375.97 | 22.587 | 0.63 |
| 87.00 | Ericsson AIR32 B66Aa/B2a | 3 | 0.80 | 0.000 | 132.20 | 6.510 | 0.71 | 233.05 | 7.894 | 0.71 |
| 87.00 | Ericsson AIR 21, 1.3M, B4A B2P | 3 | 0.80 | 0.000 | 81.50 | 6.092 | 0.70 | 173.38 | 7.460 | 0.70 |
| 87.00 | Ericsson Radio 4449 B12,B71 | 3 | 0.80 | 0.000 | 74.00 | 1.639 | 0.50 | 109.38 | 2.172 | 0.50 |
| 87.00 | RFS ATMAA1412D-1A20 | 3 | 0.80 | 0.000 | 13.00 | 1.000 | 0.50 | 29.76 | 1.422 | 0.50 |
| 77.00 | Generic Flat Platform with Han | 1 | 1.00 | 0.000 | 2500.00 | 42.400 | 1.00 | 3608.74 | 55.489 | 1.00 |
| 77.00 | Raycap RDIDC-9181-PF-48 | 1 | 0.75 | 0.000 | 21.90 | 1.867 | 1.00 | 57.42 | 2.429 | 1.00 |
| 77.00 | Fujitsu TA08025-B605 | 3 | 0.75 | 0.000 | 75.00 | 1.962 | 0.50 | 114.10 | 2.536 | 0.50 |
| 77.00 | Fujitsu TA08025-B604 | 3 | 0.75 | 0.000 | 63.90 | 1.962 | 0.50 | 100.30 | 2.536 | 0.50 |
| 77.00 | JMA Wireless MX08FRO665-21 | 3 | 0.75 | 0.000 | 64.50 | 12.489 | 0.64 | 224.92 | 14.243 | 0.64 |

Totals Num Loadings: 46 127 18,101.90 30,604.19

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

| Elev From (ft) | Elev To (ft) | Qty | Description | Coax Dia (in) | Coax Wt (lb/ft) | Max Coax/ Row | Dist Between Rows(in) | Dist Between Cols(in) | Azimuth (deg) | Dist From Face (in) | Exposed To Wind | Carrier |
|----------------|--------------|-----|-------------|---------------|-----------------|---------------|-----------------------|-----------------------|---------------|---------------------|-----------------|---------|
|----------------|--------------|-----|-------------|---------------|-----------------|---------------|-----------------------|-----------------------|---------------|---------------------|-----------------|---------|

ASSET: 310968, WSPT-WESTPORT REBUILD CT
 CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H
 ENG NO: 13709691_C3_03

| Elev From (ft) | Elev To (ft) | Qty | Description | Coax Dia (in) | Coax Wt (lb/ft) | Flat | Max Coax/Row | Dist Between Rows(in) | Dist Between Cols(in) | Azimuth (deg) | Dist From Face (in) | Exposed To Wind | Carrier |
|----------------|--------------|-----|------------------------|---------------|-----------------|------|--------------|-----------------------|-----------------------|---------------|---------------------|-----------------|---------------|
| 0.00 | 147.10 | 3 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0 | 0 | 0 | 0 | N | TOWN OF WESTP |
| 0.00 | 140.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0 | 0 | 0 | 0 | N | TOWN OF WESTP |
| 0.00 | 140.00 | 1 | EW90 | 1.32 | 0.32 | N | 0 | 0 | 0 | 0 | 0 | N | TOWN OF WESTP |
| 0.00 | 130.00 | 4 | 1 1/4" Hybriflex Cabl | 1.54 | 1 | N | 0 | 0 | 0 | 0 | 0 | N | SPRINT NEXTEL |
| 0.00 | 121.00 | 2 | 1 1/4" Coax | 1.55 | 0.63 | N | 0 | 0 | 0 | 0 | 0 | N | EVERSOURCE EN |
| 0.00 | 121.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0 | 0 | 0 | 0 | N | EVERSOURCE EN |
| 0.00 | 116.00 | 2 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0 | 0 | 0 | 0 | N | OTHER |
| 0.00 | 110.00 | 6 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIREL |
| 0.00 | 110.00 | 1 | 2.02 (51.2mm) Hybrid | 2.02 | 3.04 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIREL |
| 0.00 | 110.00 | 1 | 1 1/4" Hybriflex Cabl | 1.54 | 1 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIREL |
| 0.00 | 100.00 | 12 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 2 | 0.78" (19.7mm) 8 AWG | 0.78 | 0.59 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 2 | 0.74" (18.7mm) 8 AWG | 0.74 | 0.49 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 1 | 0.28" (7.1mm) Fiber | 0.28 | 0.03 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 1 | 0.39" (10mm) Fiber Tr | 0.39 | 0.06 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 1 | 3" conduit | 3.5 | 7.58 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 1 | 3/8" (0.38"- 9.5mm) R | 0.38 | 0.23 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 87.00 | 12 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0 | 0 | 0 | 0 | N | T-MOBILE |
| 0.00 | 87.00 | 2 | 1 1/4" (1.25"- 31.8mm) | 1.25 | 1.05 | N | 0 | 0 | 0 | 0 | 0 | N | T-MOBILE |
| 0.00 | 87.00 | 1 | 1 5/8" (1.63"-41.3mm) | 1.63 | 1.61 | N | 0 | 0 | 0 | 0 | 0 | N | T-MOBILE |
| 0.00 | 77.00 | 1 | 1.75" (44.5mm) Hybrid | 1.75 | 2.72 | N | 0 | 0 | 0 | 0 | 0 | N | DISH WIRELESS |

SEGMENT PROPERTIES

(Max Len: 5.ft)

| Seg Top Elev (ft) | Description | Thick (in) | Flat Dia (in) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | F'y (ksi) | S (in ³) | Z (in ³) | Weight (lb) |
|-------------------|-----------------|------------|---------------|-------------------------|-----------------------|-----------|-----------|-----------|----------------------|----------------------|-------------|
| 0.00 | | 0.5000 | 47.130 | 73.999 | 20,328.70 | 14.86 | 94.26 | 82.6 | 849.6 | 0.0 | 0.0 |
| 5.00 | | 0.5000 | 46.130 | 72.412 | 19,048.50 | 14.50 | 92.26 | 82.6 | 813.3 | 0.0 | 1,245.5 |
| 10.00 | | 0.5000 | 45.130 | 70.825 | 17,823.20 | 14.15 | 90.26 | 82.6 | 777.9 | 0.0 | 1,218.5 |
| 15.00 | | 0.5000 | 44.129 | 69.237 | 16,651.50 | 13.80 | 88.26 | 82.6 | 743.2 | 0.0 | 1,191.5 |
| 20.00 | | 0.5000 | 43.129 | 67.650 | 15,532.40 | 13.45 | 86.26 | 82.6 | 709.3 | 0.0 | 1,164.5 |
| 25.00 | | 0.5000 | 42.129 | 66.063 | 14,464.60 | 13.09 | 84.26 | 82.6 | 676.2 | 0.0 | 1,137.5 |
| 30.00 | | 0.5000 | 41.129 | 64.476 | 13,446.80 | 12.74 | 82.26 | 82.6 | 644.0 | 0.0 | 1,110.5 |
| 35.00 | | 0.5000 | 40.129 | 62.889 | 12,478.00 | 12.39 | 80.26 | 82.6 | 612.5 | 0.0 | 1,083.5 |
| 40.00 | | 0.5000 | 39.129 | 61.301 | 11,556.90 | 12.04 | 78.26 | 82.6 | 581.7 | 0.0 | 1,056.5 |
| 45.00 | | 0.5000 | 38.128 | 59.714 | 10,682.20 | 11.68 | 76.26 | 82.6 | 551.8 | 0.0 | 1,029.5 |
| 46.25 | Bot - Section 2 | 0.5000 | 37.878 | 59.317 | 10,470.70 | 11.59 | 75.76 | 82.6 | 544.5 | 0.0 | 253.1 |
| 50.00 | | 0.5000 | 37.128 | 58.127 | 9,852.80 | 11.33 | 74.26 | 82.6 | 522.7 | 0.0 | 1,518.9 |
| 51.00 | Top - Section 1 | 0.5000 | 37.928 | 59.396 | 10,512.60 | 11.61 | 75.86 | 82.6 | 545.9 | 0.0 | 399.9 |
| 55.00 | | 0.5000 | 37.128 | 58.127 | 9,852.70 | 11.33 | 74.26 | 82.6 | 522.7 | 0.0 | 799.8 |
| 60.00 | | 0.5000 | 36.128 | 56.539 | 9,067.40 | 10.98 | 72.26 | 82.6 | 494.3 | 0.0 | 975.5 |
| 65.00 | | 0.5000 | 35.128 | 54.952 | 8,325.00 | 10.62 | 70.26 | 82.6 | 466.8 | 0.0 | 948.5 |
| 70.00 | | 0.5000 | 34.127 | 53.365 | 7,624.30 | 10.27 | 68.25 | 82.6 | 440.0 | 0.0 | 921.4 |
| 75.00 | | 0.5000 | 33.127 | 51.778 | 6,964.00 | 9.92 | 66.25 | 82.6 | 414.1 | 0.0 | 894.4 |
| 77.00 | | 0.5000 | 32.727 | 51.143 | 6,711.00 | 9.78 | 65.45 | 82.6 | 403.9 | 0.0 | 350.2 |
| 80.00 | | 0.5000 | 32.127 | 50.190 | 6,343.00 | 9.57 | 64.25 | 82.6 | 388.9 | 0.0 | 517.2 |
| 85.00 | | 0.5000 | 31.127 | 48.603 | 5,760.00 | 9.21 | 62.25 | 82.6 | 364.5 | 0.0 | 840.4 |
| 87.00 | | 0.5000 | 30.727 | 47.968 | 5,537.30 | 9.07 | 61.45 | 82.6 | 354.9 | 0.0 | 328.6 |
| 90.00 | | 0.5000 | 30.127 | 47.016 | 5,214.00 | 8.86 | 60.25 | 82.6 | 340.9 | 0.0 | 484.8 |
| 93.50 | Bot - Section 3 | 0.5000 | 29.427 | 45.905 | 4,853.00 | 8.61 | 58.85 | 82.6 | 324.8 | 0.0 | 553.3 |
| 95.00 | | 0.5000 | 29.127 | 45.429 | 4,703.50 | 8.51 | 58.25 | 82.6 | 318.1 | 0.0 | 322.6 |
| 97.25 | Top - Section 2 | 0.1875 | 29.052 | 17.177 | 1,808.10 | 25.56 | 154.94 | 71.3 | 122.6 | 0.0 | 477.6 |
| 100.00 | | 0.1875 | 28.501 | 16.850 | 1,706.70 | 25.04 | 152.01 | 71.9 | 117.9 | 0.0 | 159.2 |
| 105.00 | | 0.1875 | 27.501 | 16.255 | 1,532.10 | 24.10 | 146.67 | 73.1 | 109.7 | 0.0 | 281.6 |
| 110.00 | | 0.1875 | 26.501 | 15.659 | 1,369.90 | 23.16 | 141.34 | 74.2 | 101.8 | 0.0 | 271.5 |
| 115.00 | | 0.1875 | 25.501 | 15.064 | 1,219.50 | 22.22 | 136.00 | 75.3 | 94.2 | 0.0 | 261.4 |
| 116.00 | | 0.1875 | 25.301 | 14.945 | 1,190.90 | 22.03 | 134.94 | 75.5 | 92.7 | 0.0 | 51.1 |
| 120.00 | | 0.1875 | 24.501 | 14.469 | 1,080.60 | 21.28 | 130.67 | 76.4 | 86.9 | 0.0 | 200.2 |
| 121.00 | | 0.1875 | 24.301 | 14.350 | 1,054.20 | 21.09 | 129.60 | 76.6 | 85.4 | 0.0 | 49.0 |
| 125.00 | | 0.1875 | 23.501 | 13.874 | 952.70 | 20.34 | 125.34 | 77.5 | 79.8 | 0.0 | 192.1 |
| 130.00 | | 0.1875 | 22.500 | 13.278 | 835.20 | 19.40 | 120.00 | 78.6 | 73.1 | 0.0 | 231.0 |
| 135.00 | | 0.1875 | 21.500 | 12.683 | 727.90 | 18.46 | 114.67 | 79.7 | 66.7 | 0.0 | 220.9 |
| 138.00 | | 0.1875 | 20.900 | 12.326 | 668.10 | 17.89 | 111.47 | 80.4 | 63.0 | 0.0 | 127.7 |
| 140.00 | | 0.1875 | 20.500 | 12.088 | 630.10 | 17.52 | 109.33 | 80.8 | 60.5 | 0.0 | 83.1 |

Totals: 22,952.5

| | | |
|-------------------------------|--------------------------|---------------|
| Load Case: 1.2D + 1.0W Normal | 118 mph wind with no ice | 23 Iterations |
| Gust Response Factor: 1.10 | | |
| Dead load Factor: 1.20 | | |
| Wind Load Factor: 1.00 | | |

CALCULATED FORCES

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (ft-kips) | Phi Mn (ft-kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -55.82 | -27.26 | 0.00 | -2,737.6 | 0.00 | 2,737.59 | 5,497.77 | 1,298.68 | 5,470.20 | 5,259.85 | 0 | 0 | 0.531 |
| 5.00 | -53.91 | -27.07 | 0.00 | -2,601.3 | 0.00 | 2,601.27 | 5,379.84 | 1,270.83 | 5,238.09 | 5,035.45 | 0.1 | -0.19 | 0.527 |
| 10.00 | -52.04 | -26.87 | 0.00 | -2,465.9 | 0.00 | 2,465.92 | 5,261.92 | 1,242.97 | 5,011.02 | 4,815.96 | 0.4 | -0.38 | 0.522 |
| 15.00 | -50.20 | -26.68 | 0.00 | -2,331.6 | 0.00 | 2,331.55 | 5,144.00 | 1,215.12 | 4,788.97 | 4,601.35 | 0.89 | -0.57 | 0.517 |
| 20.00 | -48.40 | -26.48 | 0.00 | -2,198.2 | 0.00 | 2,198.17 | 5,026.07 | 1,187.26 | 4,571.96 | 4,391.63 | 1.59 | -0.76 | 0.511 |
| 25.00 | -46.63 | -26.27 | 0.00 | -2,065.8 | 0.00 | 2,065.79 | 4,908.15 | 1,159.41 | 4,359.97 | 4,186.81 | 2.49 | -0.96 | 0.503 |
| 30.00 | -44.89 | -26.07 | 0.00 | -1,934.4 | 0.00 | 1,934.42 | 4,790.23 | 1,131.55 | 4,153.02 | 3,986.88 | 3.6 | -1.15 | 0.495 |
| 35.00 | -43.18 | -25.85 | 0.00 | -1,804.1 | 0.00 | 1,804.09 | 4,672.31 | 1,103.69 | 3,951.10 | 3,791.84 | 4.91 | -1.35 | 0.486 |
| 40.00 | -41.51 | -25.61 | 0.00 | -1,674.9 | 0.00 | 1,674.86 | 4,554.38 | 1,075.84 | 3,754.22 | 3,601.69 | 6.44 | -1.55 | 0.475 |
| 45.00 | -39.91 | -25.44 | 0.00 | -1,546.8 | 0.00 | 1,546.81 | 4,436.46 | 1,047.98 | 3,562.36 | 3,416.43 | 8.16 | -1.75 | 0.462 |
| 46.25 | -39.48 | -25.32 | 0.00 | -1,515.0 | 0.00 | 1,515.01 | 4,406.98 | 1,041.02 | 3,515.18 | 3,370.88 | 8.63 | -1.8 | 0.459 |
| 50.00 | -37.38 | -25.15 | 0.00 | -1,420.1 | 0.00 | 1,420.06 | 4,318.54 | 1,020.13 | 3,375.54 | 3,236.07 | 10.1 | -1.95 | 0.448 |
| 51.00 | -36.80 | -25.02 | 0.00 | -1,394.9 | 0.00 | 1,394.91 | 4,412.85 | 1,042.41 | 3,524.56 | 3,379.93 | 10.51 | -1.99 | 0.422 |
| 55.00 | -35.52 | -24.76 | 0.00 | -1,294.8 | 0.00 | 1,294.84 | 4,318.52 | 1,020.12 | 3,375.50 | 3,236.03 | 12.25 | -2.15 | 0.409 |
| 60.00 | -33.97 | -24.46 | 0.00 | -1,171.0 | 0.00 | 1,171.03 | 4,200.59 | 992.27 | 3,193.71 | 3,060.56 | 14.59 | -2.32 | 0.391 |
| 65.00 | -32.45 | -24.14 | 0.00 | -1,048.8 | 0.00 | 1,048.75 | 4,082.67 | 964.41 | 3,016.95 | 2,889.98 | 17.12 | -2.5 | 0.371 |
| 70.00 | -30.97 | -23.82 | 0.00 | -928.0 | 0.00 | 928.04 | 3,964.75 | 936.55 | 2,845.22 | 2,724.29 | 19.83 | -2.67 | 0.349 |
| 75.00 | -29.55 | -23.57 | 0.00 | -808.9 | 0.00 | 808.93 | 3,846.82 | 908.70 | 2,678.53 | 2,563.49 | 22.71 | -2.83 | 0.324 |
| 77.00 | -25.34 | -20.98 | 0.00 | -761.8 | 0.00 | 761.79 | 3,799.65 | 897.56 | 2,613.26 | 2,500.54 | 23.91 | -2.89 | 0.312 |
| 80.00 | -24.50 | -20.72 | 0.00 | -698.8 | 0.00 | 698.85 | 3,728.90 | 880.84 | 2,516.86 | 2,407.59 | 25.75 | -2.99 | 0.297 |
| 85.00 | -23.17 | -20.46 | 0.00 | -595.2 | 0.00 | 595.24 | 3,610.98 | 852.99 | 2,360.23 | 2,256.57 | 28.96 | -3.13 | 0.271 |
| 87.00 | -19.46 | -17.26 | 0.00 | -554.3 | 0.00 | 554.33 | 3,563.81 | 841.84 | 2,298.99 | 2,197.54 | 30.28 | -3.19 | 0.258 |
| 90.00 | -18.73 | -17.03 | 0.00 | -502.6 | 0.00 | 502.56 | 3,493.05 | 825.13 | 2,208.63 | 2,110.45 | 32.31 | -3.27 | 0.244 |
| 93.50 | -17.90 | -16.84 | 0.00 | -442.9 | 0.00 | 442.94 | 3,410.51 | 805.63 | 2,105.50 | 2,011.07 | 34.74 | -3.36 | 0.226 |
| 95.00 | -17.44 | -16.71 | 0.00 | -417.7 | 0.00 | 417.68 | 3,375.13 | 797.28 | 2,062.06 | 1,969.22 | 35.8 | -3.4 | 0.218 |
| 97.25 | -16.76 | -16.52 | 0.00 | -380.1 | 0.00 | 380.09 | 1,102.89 | 301.46 | 785.89 | 655.89 | 37.42 | -3.45 | 0.598 |
| 100.00 | -13.72 | -13.35 | 0.00 | -334.7 | 0.00 | 334.66 | 1,091.10 | 295.71 | 756.22 | 636.43 | 39.42 | -3.51 | 0.540 |
| 105.00 | -13.24 | -13.07 | 0.00 | -267.9 | 0.00 | 267.89 | 1,068.74 | 285.27 | 703.75 | 601.22 | 43.24 | -3.77 | 0.460 |
| 110.00 | -9.34 | -9.47 | 0.00 | -202.6 | 0.00 | 202.55 | 1,045.19 | 274.82 | 653.15 | 566.30 | 47.3 | -3.98 | 0.368 |
| 115.00 | -8.97 | -9.28 | 0.00 | -155.2 | 0.00 | 155.20 | 1,020.46 | 264.37 | 604.45 | 531.74 | 51.58 | -4.17 | 0.302 |
| 116.00 | -8.85 | -9.00 | 0.00 | -145.9 | 0.00 | 145.92 | 1,015.38 | 262.29 | 594.94 | 524.87 | 52.45 | -4.2 | 0.288 |
| 120.00 | -6.85 | -7.71 | 0.00 | -109.9 | 0.00 | 109.90 | 994.55 | 253.93 | 557.63 | 497.61 | 56.03 | -4.33 | 0.229 |
| 121.00 | -6.77 | -7.54 | 0.00 | -102.1 | 0.00 | 102.14 | 989.22 | 251.84 | 548.50 | 490.84 | 56.94 | -4.36 | 0.216 |
| 125.00 | -6.52 | -7.28 | 0.00 | -72.0 | 0.00 | 71.98 | 967.45 | 243.48 | 512.70 | 463.98 | 60.62 | -4.45 | 0.163 |
| 130.00 | -2.85 | -3.66 | 0.00 | -34.2 | 0.00 | 34.20 | 939.16 | 233.04 | 469.66 | 430.94 | 65.33 | -4.53 | 0.083 |
| 135.00 | -2.59 | -3.43 | 0.00 | -15.9 | 0.00 | 15.90 | 909.69 | 222.59 | 428.50 | 398.55 | 70.09 | -4.57 | 0.043 |
| 138.00 | -0.38 | -1.18 | 0.00 | -5.6 | 0.00 | 5.62 | 891.44 | 216.32 | 404.72 | 379.46 | 72.97 | -4.58 | 0.015 |
| 140.00 | 0.00 | -1.14 | 0.00 | -3.3 | 0.00 | 3.26 | 879.04 | 212.15 | 389.23 | 366.89 | 74.89 | -4.59 | 0.009 |

| | | |
|-------------------------------|--------------------------|---------------|
| Load Case: 0.9D + 1.0W Normal | 118 mph wind with no ice | 23 Iterations |
| Gust Response Factor: 1.10 | | |
| Dead load Factor: 0.90 | | |
| Wind Load Factor: 1.00 | | |

CALCULATED FORCES

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (ft-kips) | Phi Mn (ft-kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -41.85 | -27.24 | 0.00 | -2,703.7 | 0.00 | 2,703.74 | 5,497.77 | 1,298.68 | 5,470.20 | 5,259.85 | 0 | 0 | 0.522 |
| 5.00 | -40.40 | -27.00 | 0.00 | -2,567.5 | 0.00 | 2,567.54 | 5,379.84 | 1,270.83 | 5,238.09 | 5,035.45 | 0.1 | -0.18 | 0.518 |
| 10.00 | -38.98 | -26.76 | 0.00 | -2,432.5 | 0.00 | 2,432.54 | 5,261.92 | 1,242.97 | 5,011.02 | 4,815.96 | 0.39 | -0.37 | 0.513 |
| 15.00 | -37.58 | -26.52 | 0.00 | -2,298.7 | 0.00 | 2,298.73 | 5,144.00 | 1,215.12 | 4,788.97 | 4,601.35 | 0.88 | -0.56 | 0.507 |
| 20.00 | -36.21 | -26.29 | 0.00 | -2,166.1 | 0.00 | 2,166.11 | 5,026.07 | 1,187.26 | 4,571.96 | 4,391.63 | 1.57 | -0.75 | 0.501 |
| 25.00 | -34.86 | -26.05 | 0.00 | -2,034.7 | 0.00 | 2,034.68 | 4,908.15 | 1,159.41 | 4,359.97 | 4,186.81 | 2.46 | -0.94 | 0.494 |
| 30.00 | -33.54 | -25.81 | 0.00 | -1,904.4 | 0.00 | 1,904.44 | 4,790.23 | 1,131.55 | 4,153.02 | 3,986.88 | 3.55 | -1.14 | 0.485 |
| 35.00 | -32.24 | -25.56 | 0.00 | -1,775.4 | 0.00 | 1,775.41 | 4,672.31 | 1,103.69 | 3,951.10 | 3,791.84 | 4.85 | -1.33 | 0.476 |
| 40.00 | -30.97 | -25.29 | 0.00 | -1,647.6 | 0.00 | 1,647.62 | 4,554.38 | 1,075.84 | 3,754.22 | 3,601.69 | 6.35 | -1.53 | 0.465 |
| 45.00 | -29.75 | -25.11 | 0.00 | -1,521.2 | 0.00 | 1,521.16 | 4,436.46 | 1,047.98 | 3,562.36 | 3,416.43 | 8.05 | -1.72 | 0.453 |
| 46.25 | -29.43 | -24.98 | 0.00 | -1,489.8 | 0.00 | 1,489.77 | 4,406.98 | 1,041.02 | 3,515.18 | 3,370.88 | 8.51 | -1.77 | 0.449 |
| 50.00 | -27.85 | -24.81 | 0.00 | -1,396.1 | 0.00 | 1,396.10 | 4,318.54 | 1,020.13 | 3,375.54 | 3,236.07 | 9.96 | -1.92 | 0.438 |
| 51.00 | -27.40 | -24.66 | 0.00 | -1,371.3 | 0.00 | 1,371.30 | 4,412.85 | 1,042.41 | 3,524.56 | 3,379.93 | 10.36 | -1.96 | 0.412 |
| 55.00 | -26.43 | -24.39 | 0.00 | -1,272.6 | 0.00 | 1,272.65 | 4,318.52 | 1,020.12 | 3,375.50 | 3,236.03 | 12.07 | -2.11 | 0.400 |
| 60.00 | -25.25 | -24.07 | 0.00 | -1,150.7 | 0.00 | 1,150.70 | 4,200.59 | 992.27 | 3,193.71 | 3,060.56 | 14.38 | -2.29 | 0.383 |
| 65.00 | -24.10 | -23.75 | 0.00 | -1,030.3 | 0.00 | 1,030.34 | 4,082.67 | 964.41 | 3,016.95 | 2,889.98 | 16.87 | -2.46 | 0.363 |
| 70.00 | -22.98 | -23.42 | 0.00 | -911.6 | 0.00 | 911.60 | 3,964.75 | 936.55 | 2,845.22 | 2,724.29 | 19.53 | -2.63 | 0.341 |
| 75.00 | -21.90 | -23.17 | 0.00 | -794.5 | 0.00 | 794.50 | 3,846.82 | 908.70 | 2,678.53 | 2,563.49 | 22.37 | -2.78 | 0.316 |
| 77.00 | -18.77 | -20.63 | 0.00 | -748.2 | 0.00 | 748.16 | 3,799.65 | 897.56 | 2,613.26 | 2,500.54 | 23.55 | -2.85 | 0.305 |
| 80.00 | -18.14 | -20.36 | 0.00 | -686.3 | 0.00 | 686.28 | 3,728.90 | 880.84 | 2,516.86 | 2,407.59 | 25.37 | -2.94 | 0.290 |
| 85.00 | -17.13 | -20.11 | 0.00 | -584.5 | 0.00 | 584.46 | 3,610.98 | 852.99 | 2,360.23 | 2,256.57 | 28.52 | -3.08 | 0.264 |
| 87.00 | -14.38 | -16.96 | 0.00 | -544.2 | 0.00 | 544.25 | 3,563.81 | 841.84 | 2,298.99 | 2,197.54 | 29.83 | -3.14 | 0.252 |
| 90.00 | -13.83 | -16.74 | 0.00 | -493.4 | 0.00 | 493.37 | 3,493.05 | 825.13 | 2,208.63 | 2,110.45 | 31.82 | -3.22 | 0.238 |
| 93.50 | -13.21 | -16.55 | 0.00 | -434.8 | 0.00 | 434.80 | 3,410.51 | 805.63 | 2,105.50 | 2,011.07 | 34.21 | -3.31 | 0.220 |
| 95.00 | -12.86 | -16.42 | 0.00 | -410.0 | 0.00 | 409.97 | 3,375.13 | 797.28 | 2,062.06 | 1,969.22 | 35.26 | -3.34 | 0.212 |
| 97.25 | -12.35 | -16.24 | 0.00 | -373.0 | 0.00 | 373.03 | 1,102.89 | 301.46 | 785.89 | 655.89 | 36.85 | -3.4 | 0.583 |
| 100.00 | -10.10 | -13.11 | 0.00 | -328.4 | 0.00 | 328.37 | 1,091.10 | 295.71 | 756.22 | 636.43 | 38.82 | -3.46 | 0.527 |
| 105.00 | -9.74 | -12.82 | 0.00 | -262.8 | 0.00 | 262.81 | 1,068.74 | 285.27 | 703.75 | 601.22 | 42.58 | -3.7 | 0.448 |
| 110.00 | -6.86 | -9.29 | 0.00 | -198.7 | 0.00 | 198.72 | 1,045.19 | 274.82 | 653.15 | 566.30 | 46.57 | -3.92 | 0.359 |
| 115.00 | -6.58 | -9.10 | 0.00 | -152.3 | 0.00 | 152.29 | 1,020.46 | 264.37 | 604.45 | 531.74 | 50.77 | -4.1 | 0.294 |
| 116.00 | -6.49 | -8.82 | 0.00 | -143.2 | 0.00 | 143.20 | 1,015.38 | 262.29 | 594.94 | 524.87 | 51.64 | -4.13 | 0.280 |
| 120.00 | -5.01 | -7.56 | 0.00 | -107.9 | 0.00 | 107.92 | 994.55 | 253.93 | 557.63 | 497.61 | 55.15 | -4.25 | 0.223 |
| 121.00 | -4.96 | -7.39 | 0.00 | -100.3 | 0.00 | 100.30 | 989.22 | 251.84 | 548.50 | 490.84 | 56.04 | -4.28 | 0.210 |
| 125.00 | -4.77 | -7.13 | 0.00 | -70.7 | 0.00 | 70.73 | 967.45 | 243.48 | 512.70 | 463.98 | 59.67 | -4.37 | 0.158 |
| 130.00 | -2.08 | -3.60 | 0.00 | -33.7 | 0.00 | 33.68 | 939.16 | 233.04 | 469.66 | 430.94 | 64.3 | -4.45 | 0.081 |
| 135.00 | -1.88 | -3.37 | 0.00 | -15.7 | 0.00 | 15.70 | 909.69 | 222.59 | 428.50 | 398.55 | 68.98 | -4.5 | 0.042 |
| 138.00 | -0.27 | -1.17 | 0.00 | -5.6 | 0.00 | 5.60 | 891.44 | 216.32 | 404.72 | 379.46 | 71.81 | -4.51 | 0.015 |
| 140.00 | 0.00 | -1.14 | 0.00 | -3.3 | 0.00 | 3.26 | 879.04 | 212.15 | 389.23 | 366.89 | 73.7 | -4.51 | 0.009 |

| | | | |
|--|--------------------------------|------|----------------------------|
| Load Case: 1.2D + 1.0Di + 1.0Wi Normal | 50 mph wind with 1" radial ice | | 22 Iterations |
| Gust Response Factor: 1.10 | Ice Dead Load Factor | 1.00 | |
| Dead load Factor: 1.20 | | | Ice Importance Factor 1.00 |
| Wind Load Factor: 1.00 | | | |

CALCULATED FORCES

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (ft-kips) | Phi Mn (ft-kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -71.83 | -7.19 | 0.00 | -722.3 | 0.00 | 722.27 | 5,497.77 | 1,298.68 | 5,470.20 | 5,259.85 | 0 | 0 | 0.150 |
| 5.00 | -69.78 | -7.14 | 0.00 | -686.3 | 0.00 | 686.30 | 5,379.84 | 1,270.83 | 5,238.09 | 5,035.45 | 0.03 | -0.05 | 0.149 |
| 10.00 | -67.75 | -7.09 | 0.00 | -650.6 | 0.00 | 650.60 | 5,261.92 | 1,242.97 | 5,011.02 | 4,815.96 | 0.1 | -0.1 | 0.148 |
| 15.00 | -65.73 | -7.03 | 0.00 | -615.2 | 0.00 | 615.17 | 5,144.00 | 1,215.12 | 4,788.97 | 4,601.35 | 0.24 | -0.15 | 0.147 |
| 20.00 | -63.75 | -6.98 | 0.00 | -580.0 | 0.00 | 580.01 | 5,026.07 | 1,187.26 | 4,571.96 | 4,391.63 | 0.42 | -0.2 | 0.145 |
| 25.00 | -61.79 | -6.92 | 0.00 | -545.1 | 0.00 | 545.13 | 4,908.15 | 1,159.41 | 4,359.97 | 4,186.81 | 0.66 | -0.25 | 0.143 |
| 30.00 | -59.87 | -6.86 | 0.00 | -510.5 | 0.00 | 510.52 | 4,790.23 | 1,131.55 | 4,153.02 | 3,986.88 | 0.95 | -0.3 | 0.141 |
| 35.00 | -57.99 | -6.80 | 0.00 | -476.2 | 0.00 | 476.20 | 4,672.31 | 1,103.69 | 3,951.10 | 3,791.84 | 1.3 | -0.36 | 0.138 |
| 40.00 | -56.14 | -6.74 | 0.00 | -442.2 | 0.00 | 442.19 | 4,554.38 | 1,075.84 | 3,754.22 | 3,601.69 | 1.7 | -0.41 | 0.135 |
| 45.00 | -54.32 | -6.69 | 0.00 | -408.5 | 0.00 | 408.51 | 4,436.46 | 1,047.98 | 3,562.36 | 3,416.43 | 2.15 | -0.46 | 0.132 |
| 46.25 | -53.87 | -6.65 | 0.00 | -400.2 | 0.00 | 400.15 | 4,406.98 | 1,041.02 | 3,515.18 | 3,370.88 | 2.28 | -0.47 | 0.131 |
| 50.00 | -51.62 | -6.61 | 0.00 | -375.2 | 0.00 | 375.19 | 4,318.54 | 1,020.13 | 3,375.54 | 3,236.07 | 2.67 | -0.51 | 0.128 |
| 51.00 | -51.02 | -6.57 | 0.00 | -368.6 | 0.00 | 368.59 | 4,412.85 | 1,042.41 | 3,524.56 | 3,379.93 | 2.77 | -0.52 | 0.121 |
| 55.00 | -49.60 | -6.49 | 0.00 | -342.3 | 0.00 | 342.32 | 4,318.52 | 1,020.12 | 3,375.50 | 3,236.03 | 3.23 | -0.57 | 0.117 |
| 60.00 | -47.85 | -6.41 | 0.00 | -309.8 | 0.00 | 309.84 | 4,200.59 | 992.27 | 3,193.71 | 3,060.56 | 3.85 | -0.61 | 0.113 |
| 65.00 | -46.15 | -6.31 | 0.00 | -277.8 | 0.00 | 277.81 | 4,082.67 | 964.41 | 3,016.95 | 2,889.98 | 4.52 | -0.66 | 0.107 |
| 70.00 | -44.48 | -6.22 | 0.00 | -246.2 | 0.00 | 246.24 | 3,964.75 | 936.55 | 2,845.22 | 2,724.29 | 5.23 | -0.7 | 0.102 |
| 75.00 | -42.85 | -6.15 | 0.00 | -215.2 | 0.00 | 215.15 | 3,846.82 | 908.70 | 2,678.53 | 2,563.49 | 5.99 | -0.75 | 0.095 |
| 77.00 | -37.03 | -5.52 | 0.00 | -202.9 | 0.00 | 202.86 | 3,799.65 | 897.56 | 2,613.26 | 2,500.54 | 6.31 | -0.76 | 0.091 |
| 80.00 | -36.09 | -5.44 | 0.00 | -186.3 | 0.00 | 186.29 | 3,728.90 | 880.84 | 2,516.86 | 2,407.59 | 6.8 | -0.79 | 0.087 |
| 85.00 | -34.55 | -5.36 | 0.00 | -159.1 | 0.00 | 159.08 | 3,610.98 | 852.99 | 2,360.23 | 2,256.57 | 7.65 | -0.83 | 0.080 |
| 87.00 | -29.15 | -4.60 | 0.00 | -148.4 | 0.00 | 148.35 | 3,563.81 | 841.84 | 2,298.99 | 2,197.54 | 8 | -0.84 | 0.076 |
| 90.00 | -28.30 | -4.53 | 0.00 | -134.6 | 0.00 | 134.57 | 3,493.05 | 825.13 | 2,208.63 | 2,110.45 | 8.54 | -0.87 | 0.072 |
| 93.50 | -27.33 | -4.47 | 0.00 | -118.7 | 0.00 | 118.73 | 3,410.51 | 805.63 | 2,105.50 | 2,011.07 | 9.18 | -0.89 | 0.067 |
| 95.00 | -26.81 | -4.43 | 0.00 | -112.0 | 0.00 | 112.03 | 3,375.13 | 797.28 | 2,062.06 | 1,969.22 | 9.46 | -0.9 | 0.065 |
| 97.25 | -26.04 | -4.37 | 0.00 | -102.1 | 0.00 | 102.07 | 1,102.89 | 301.46 | 785.89 | 655.89 | 9.89 | -0.91 | 0.179 |
| 100.00 | -21.31 | -3.57 | 0.00 | -90.0 | 0.00 | 90.05 | 1,091.10 | 295.71 | 756.22 | 636.43 | 10.42 | -0.93 | 0.161 |
| 105.00 | -20.66 | -3.48 | 0.00 | -72.2 | 0.00 | 72.22 | 1,068.74 | 285.27 | 703.75 | 601.22 | 11.43 | -1 | 0.140 |
| 110.00 | -14.45 | -2.57 | 0.00 | -54.8 | 0.00 | 54.82 | 1,045.19 | 274.82 | 653.15 | 566.30 | 12.51 | -1.06 | 0.111 |
| 115.00 | -13.90 | -2.51 | 0.00 | -42.0 | 0.00 | 41.99 | 1,020.46 | 264.37 | 604.45 | 531.74 | 13.64 | -1.11 | 0.093 |
| 116.00 | -13.68 | -2.42 | 0.00 | -39.5 | 0.00 | 39.49 | 1,015.38 | 262.29 | 594.94 | 524.87 | 13.88 | -1.12 | 0.089 |
| 120.00 | -11.13 | -2.06 | 0.00 | -29.8 | 0.00 | 29.79 | 994.55 | 253.93 | 557.63 | 497.61 | 14.83 | -1.15 | 0.071 |
| 121.00 | -11.02 | -2.01 | 0.00 | -27.7 | 0.00 | 27.71 | 989.22 | 251.84 | 548.50 | 490.84 | 15.07 | -1.16 | 0.068 |
| 125.00 | -10.61 | -1.93 | 0.00 | -19.7 | 0.00 | 19.67 | 967.45 | 243.48 | 512.70 | 463.98 | 16.05 | -1.18 | 0.053 |
| 130.00 | -4.89 | -1.02 | 0.00 | -9.7 | 0.00 | 9.74 | 939.16 | 233.04 | 469.66 | 430.94 | 17.3 | -1.21 | 0.028 |
| 135.00 | -4.44 | -0.94 | 0.00 | -4.7 | 0.00 | 4.66 | 909.69 | 222.59 | 428.50 | 398.55 | 18.57 | -1.22 | 0.017 |
| 138.00 | -0.91 | -0.35 | 0.00 | -1.8 | 0.00 | 1.85 | 891.44 | 216.32 | 404.72 | 379.46 | 19.34 | -1.22 | 0.006 |
| 140.00 | 0.00 | -0.33 | 0.00 | -1.1 | 0.00 | 1.14 | 879.04 | 212.15 | 389.23 | 366.89 | 19.85 | -1.22 | 0.003 |

| | | |
|---------------------------------------|-------------------------|---------------|
| Load Case: 1.0D + 1.0W Service Normal | 60 mph Wind with No Ice | 22 Iterations |
| Gust Response Factor: 1.10 | | |
| Dead load Factor: 1.00 | | |
| Wind Load Factor: 1.00 | | |

CALCULATED FORCES

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (ft-kips) | Phi Mn (ft-kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -46.55 | -6.30 | 0.00 | -628.5 | 0.00 | 628.49 | 5,497.77 | 1,298.68 | 5,470.20 | 5,259.85 | 0 | 0 | 0.128 |
| 5.00 | -45.03 | -6.25 | 0.00 | -597.0 | 0.00 | 596.98 | 5,379.84 | 1,270.83 | 5,238.09 | 5,035.45 | 0.02 | -0.04 | 0.127 |
| 10.00 | -43.54 | -6.20 | 0.00 | -565.7 | 0.00 | 565.72 | 5,261.92 | 1,242.97 | 5,011.02 | 4,815.96 | 0.09 | -0.09 | 0.126 |
| 15.00 | -42.08 | -6.15 | 0.00 | -534.7 | 0.00 | 534.73 | 5,144.00 | 1,215.12 | 4,788.97 | 4,601.35 | 0.21 | -0.13 | 0.124 |
| 20.00 | -40.64 | -6.10 | 0.00 | -504.0 | 0.00 | 503.99 | 5,026.07 | 1,187.26 | 4,571.96 | 4,391.63 | 0.37 | -0.17 | 0.123 |
| 25.00 | -39.23 | -6.04 | 0.00 | -473.5 | 0.00 | 473.52 | 4,908.15 | 1,159.41 | 4,359.97 | 4,186.81 | 0.57 | -0.22 | 0.121 |
| 30.00 | -37.84 | -5.99 | 0.00 | -443.3 | 0.00 | 443.30 | 4,790.23 | 1,131.55 | 4,153.02 | 3,986.88 | 0.83 | -0.26 | 0.119 |
| 35.00 | -36.49 | -5.94 | 0.00 | -413.3 | 0.00 | 413.34 | 4,672.31 | 1,103.69 | 3,951.10 | 3,791.84 | 1.13 | -0.31 | 0.117 |
| 40.00 | -35.16 | -5.88 | 0.00 | -383.7 | 0.00 | 383.67 | 4,554.38 | 1,075.84 | 3,754.22 | 3,601.69 | 1.48 | -0.36 | 0.114 |
| 45.00 | -33.86 | -5.84 | 0.00 | -354.3 | 0.00 | 354.28 | 4,436.46 | 1,047.98 | 3,562.36 | 3,416.43 | 1.87 | -0.4 | 0.111 |
| 46.25 | -33.53 | -5.81 | 0.00 | -347.0 | 0.00 | 346.99 | 4,406.98 | 1,041.02 | 3,515.18 | 3,370.88 | 1.98 | -0.41 | 0.111 |
| 50.00 | -31.81 | -5.77 | 0.00 | -325.2 | 0.00 | 325.21 | 4,318.54 | 1,020.13 | 3,375.54 | 3,236.07 | 2.32 | -0.45 | 0.108 |
| 51.00 | -31.36 | -5.74 | 0.00 | -319.4 | 0.00 | 319.44 | 4,412.85 | 1,042.41 | 3,524.56 | 3,379.93 | 2.41 | -0.46 | 0.102 |
| 55.00 | -30.34 | -5.67 | 0.00 | -296.5 | 0.00 | 296.50 | 4,318.52 | 1,020.12 | 3,375.50 | 3,236.03 | 2.81 | -0.49 | 0.099 |
| 60.00 | -29.09 | -5.60 | 0.00 | -268.1 | 0.00 | 268.13 | 4,200.59 | 992.27 | 3,193.71 | 3,060.56 | 3.35 | -0.53 | 0.095 |
| 65.00 | -27.87 | -5.53 | 0.00 | -240.1 | 0.00 | 240.12 | 4,082.67 | 964.41 | 3,016.95 | 2,889.98 | 3.93 | -0.57 | 0.090 |
| 70.00 | -26.68 | -5.45 | 0.00 | -212.5 | 0.00 | 212.48 | 3,964.75 | 936.55 | 2,845.22 | 2,724.29 | 4.55 | -0.61 | 0.085 |
| 75.00 | -25.51 | -5.40 | 0.00 | -185.2 | 0.00 | 185.21 | 3,846.82 | 908.70 | 2,678.53 | 2,563.49 | 5.21 | -0.65 | 0.079 |
| 77.00 | -21.93 | -4.80 | 0.00 | -174.4 | 0.00 | 174.42 | 3,799.65 | 897.56 | 2,613.26 | 2,500.54 | 5.48 | -0.66 | 0.076 |
| 80.00 | -21.26 | -4.74 | 0.00 | -160.0 | 0.00 | 160.00 | 3,728.90 | 880.84 | 2,516.86 | 2,407.59 | 5.91 | -0.68 | 0.072 |
| 85.00 | -20.16 | -4.68 | 0.00 | -136.3 | 0.00 | 136.28 | 3,610.98 | 852.99 | 2,360.23 | 2,256.57 | 6.64 | -0.72 | 0.066 |
| 87.00 | -16.95 | -3.95 | 0.00 | -126.9 | 0.00 | 126.92 | 3,563.81 | 841.84 | 2,298.99 | 2,197.54 | 6.94 | -0.73 | 0.063 |
| 90.00 | -16.35 | -3.90 | 0.00 | -115.1 | 0.00 | 115.06 | 3,493.05 | 825.13 | 2,208.63 | 2,110.45 | 7.41 | -0.75 | 0.059 |
| 93.50 | -15.67 | -3.86 | 0.00 | -101.4 | 0.00 | 101.41 | 3,410.51 | 805.63 | 2,105.50 | 2,011.07 | 7.97 | -0.77 | 0.055 |
| 95.00 | -15.29 | -3.83 | 0.00 | -95.6 | 0.00 | 95.63 | 3,375.13 | 797.28 | 2,062.06 | 1,969.22 | 8.21 | -0.78 | 0.053 |
| 97.25 | -14.73 | -3.78 | 0.00 | -87.0 | 0.00 | 87.02 | 1,102.89 | 301.46 | 785.89 | 655.89 | 8.58 | -0.79 | 0.146 |
| 100.00 | -12.07 | -3.06 | 0.00 | -76.6 | 0.00 | 76.61 | 1,091.10 | 295.71 | 756.22 | 636.43 | 9.04 | -0.81 | 0.132 |
| 105.00 | -11.70 | -2.99 | 0.00 | -61.3 | 0.00 | 61.33 | 1,068.74 | 285.27 | 703.75 | 601.22 | 9.91 | -0.86 | 0.113 |
| 110.00 | -8.29 | -2.17 | 0.00 | -46.4 | 0.00 | 46.38 | 1,045.19 | 274.82 | 653.15 | 566.30 | 10.85 | -0.91 | 0.090 |
| 115.00 | -7.99 | -2.12 | 0.00 | -35.5 | 0.00 | 35.54 | 1,020.46 | 264.37 | 604.45 | 531.74 | 11.83 | -0.96 | 0.075 |
| 116.00 | -7.88 | -2.06 | 0.00 | -33.4 | 0.00 | 33.42 | 1,015.38 | 262.29 | 594.94 | 524.87 | 12.03 | -0.96 | 0.071 |
| 120.00 | -6.15 | -1.77 | 0.00 | -25.2 | 0.00 | 25.18 | 994.55 | 253.93 | 557.63 | 497.61 | 12.85 | -0.99 | 0.057 |
| 121.00 | -6.08 | -1.73 | 0.00 | -23.4 | 0.00 | 23.40 | 989.22 | 251.84 | 548.50 | 490.84 | 13.05 | -1 | 0.054 |
| 125.00 | -5.86 | -1.67 | 0.00 | -16.5 | 0.00 | 16.50 | 967.45 | 243.48 | 512.70 | 463.98 | 13.9 | -1.02 | 0.042 |
| 130.00 | -2.60 | -0.84 | 0.00 | -7.8 | 0.00 | 7.85 | 939.16 | 233.04 | 469.66 | 430.94 | 14.98 | -1.04 | 0.021 |
| 135.00 | -2.36 | -0.79 | 0.00 | -3.7 | 0.00 | 3.66 | 909.69 | 222.59 | 428.50 | 398.55 | 16.07 | -1.05 | 0.012 |
| 138.00 | -0.39 | -0.27 | 0.00 | -1.3 | 0.00 | 1.30 | 891.44 | 216.32 | 404.72 | 379.46 | 16.73 | -1.05 | 0.004 |
| 140.00 | 0.00 | -0.26 | 0.00 | -0.8 | 0.00 | 0.75 | 879.04 | 212.15 | 389.23 | 366.89 | 17.17 | -1.05 | 0.002 |

EQUIVALENT LATERAL FORCES METHOD ANALYSIS
(Based on ASCE7-16 Chapters 11, 12 and 15)

| | |
|--|----------|
| Spectral Response Acceleration for Short Period (S_S): | 0.227 |
| Spectral Response Acceleration at 1.0 Second Period (S_1): | 0.056 |
| Long-Period Transition Period (T_L – Seconds): | 6 |
| Importance Factor (I_a): | 1.000 |
| Site Coefficient F_a : | 1.600 |
| Site Coefficient F_v : | 2.400 |
| Response Modification Coefficient (R): | 1.500 |
| Design Spectral Response Acceleration at Short Period (S_{ds}): | 0.242 |
| Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}): | 0.090 |
| Seismic Response Coefficient (C_s): | 0.030 |
| Upper Limit C_s : | 0.030 |
| Lower Limit C_s : | 0.030 |
| Period based on Rayleigh Method (sec): | 2.250 |
| Redundancy Factor (ρ): | 1.000 |
| Seismic Force Distribution Exponent (k): | 1.880 |
| Total Unfactored Dead Load: | 46.550 k |
| Seismic Base Shear (E): | 1.400 k |

1.2D + 1.0Ev + 1.0Eh Normal Seismic

| Segment | Height Above Base (ft) | Weight (lb) | W_z (lb-ft) | C_{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|---------|------------------------|-------------|---------------|----------|-----------------------|---------------------|
| 37 | 139 | 89 | 937 | 0.005 | 7 | 111 |
| 36 | 136.5 | 136 | 1,389 | 0.008 | 11 | 170 |
| 35 | 132.5 | 236 | 2,267 | 0.012 | 17 | 294 |
| 34 | 127.5 | 266 | 2,379 | 0.013 | 18 | 332 |
| 33 | 123 | 220 | 1,840 | 0.010 | 14 | 274 |
| 32 | 120.5 | 57 | 462 | 0.002 | 4 | 72 |
| 31 | 118 | 234 | 1,809 | 0.010 | 14 | 292 |
| 30 | 115.5 | 60 | 444 | 0.002 | 3 | 75 |
| 29 | 112.5 | 305 | 2,156 | 0.012 | 16 | 380 |
| 28 | 107.5 | 359 | 2,337 | 0.013 | 18 | 449 |
| 27 | 102.5 | 370 | 2,198 | 0.012 | 17 | 461 |
| 26 | 98.625 | 262 | 1,451 | 0.008 | 11 | 328 |
| 25 | 96.125 | 562 | 2,962 | 0.016 | 22 | 702 |
| 24 | 94.25 | 379 | 1,924 | 0.010 | 15 | 473 |
| 23 | 91.75 | 685 | 3,306 | 0.018 | 25 | 855 |
| 22 | 88.5 | 597 | 2,696 | 0.015 | 20 | 746 |
| 21 | 86 | 431 | 1,842 | 0.010 | 14 | 538 |
| 20 | 82.5 | 1,096 | 4,334 | 0.024 | 33 | 1,368 |
| 19 | 78.5 | 670 | 2,416 | 0.013 | 18 | 837 |
| 18 | 76 | 458 | 1,552 | 0.008 | 12 | 571 |
| 17 | 72.5 | 1,163 | 3,611 | 0.020 | 27 | 1,452 |
| 16 | 67.5 | 1,190 | 3,231 | 0.018 | 25 | 1,486 |
| 15 | 62.5 | 1,217 | 2,860 | 0.016 | 22 | 1,520 |
| 14 | 57.5 | 1,244 | 2,500 | 0.014 | 19 | 1,553 |
| 13 | 53 | 1,015 | 1,750 | 0.010 | 13 | 1,267 |
| 12 | 50.5 | 454 | 714 | 0.004 | 5 | 566 |
| 11 | 48.125 | 1,721 | 2,475 | 0.014 | 19 | 2,148 |
| 10 | 45.625 | 320 | 417 | 0.002 | 3 | 400 |
| 9 | 42.5 | 1,298 | 1,479 | 0.008 | 11 | 1,621 |
| 8 | 37.5 | 1,325 | 1,194 | 0.006 | 9 | 1,655 |
| 7 | 32.5 | 1,352 | 931 | 0.005 | 7 | 1,688 |
| 6 | 27.5 | 1,379 | 694 | 0.004 | 5 | 1,722 |
| 5 | 22.5 | 1,406 | 485 | 0.003 | 4 | 1,756 |
| 4 | 17.5 | 1,433 | 309 | 0.002 | 2 | 1,789 |

| Segment | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|---|------------------------|-------------|------------------------|-----------------|-----------------------|---------------------|
| 3 | 12.5 | 1,460 | 167 | 0.001 | 1 | 1,823 |
| 2 | 7.5 | 1,487 | 65 | 0.000 | 0 | 1,857 |
| 1 | 2.5 | 1,514 | 8 | 0.000 | 0 | 1,891 |
| dbSpectra DS7C09P36U-D | 140 | 210 | 2,242 | 0.012 | 17 | 262 |
| Generic 12' Dipole | 140 | 40 | 427 | 0.002 | 3 | 50 |
| TX RX Systems 432F-83W-01-C-110/110R/48/48R | 140 | 18 | 192 | 0.001 | 1 | 22 |
| RFS SC3-W100AB | 140 | 40 | 427 | 0.002 | 3 | 50 |
| Generic 6' Omni | 138 | 25 | 260 | 0.001 | 2 | 31 |
| Generic 6' Omni | 116 | 50 | 375 | 0.002 | 3 | 62 |
| Generic 12' Omni | 138 | 40 | 416 | 0.002 | 3 | 50 |
| Generic 6' FM antenna | 138 | 30 | 312 | 0.002 | 2 | 37 |
| Flat Platform w/ Handrails | 138 | 1,750 | 18,182 | 0.099 | 138 | 2,185 |
| Flat Platform w/ Handrails | 130 | 2,000 | 18,576 | 0.101 | 141 | 2,497 |
| Alcatel-Lucent 800 MHz 2X50W RRH w/ Filter | 130 | 192 | 1,783 | 0.010 | 14 | 240 |
| Alcatel-Lucent 4x40W RRH (91 lb) | 130 | 273 | 2,536 | 0.014 | 19 | 341 |
| Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield | 130 | 210 | 1,951 | 0.011 | 15 | 262 |
| RFS APXV9TM14-ALU-I20* | 130 | 165 | 1,535 | 0.008 | 12 | 206 |
| RFS APXVSPP18-C-A20 | 130 | 171 | 1,588 | 0.009 | 12 | 213 |
| Andrew DB586 | 121 | 8 | 67 | 0.000 | 1 | 10 |
| Flat Low Profile Platform | 120 | 1,500 | 11,989 | 0.065 | 91 | 1,873 |
| Flat Low Profile Platform | 100 | 1,500 | 8,514 | 0.046 | 65 | 1,873 |
| Flat Low Profile Platform | 87 | 1,500 | 6,556 | 0.036 | 50 | 1,873 |
| Commscope CBC78T-DS-43-2X | 110 | 62 | 422 | 0.002 | 3 | 78 |
| Samsung Outdoor CBRS 20W RRH -Clip-on Antenna | 110 | 13 | 90 | 0.000 | 1 | 16 |
| Samsung RT4401-48A | 110 | 56 | 379 | 0.002 | 3 | 70 |
| Samsung B2/B66A RRH-BR049 | 110 | 253 | 1,719 | 0.009 | 13 | 316 |
| Samsung B5/B13 RRH-BR04C | 110 | 211 | 1,432 | 0.008 | 11 | 263 |
| RFS DB-C1-12C-24AB-0Z | 110 | 32 | 217 | 0.001 | 2 | 40 |
| Samsung MT6407-77A | 110 | 245 | 1,662 | 0.009 | 13 | 306 |
| Antel BXA-70080/6CF__ | 110 | 54 | 367 | 0.002 | 3 | 67 |
| Commscope JAHH-65B-R3B | 110 | 364 | 2,468 | 0.013 | 19 | 454 |
| Low Profile Platform w/ Site Pro HRK12 | 110 | 1,772 | 12,031 | 0.065 | 91 | 2,213 |
| Powerwave Allgon 7020.00 Dual Band RET | 100 | 26 | 150 | 0.001 | 1 | 33 |
| Powerwave Allgon LGP21401 | 100 | 169 | 960 | 0.005 | 7 | 211 |
| Raycap DC6-48-60-18-8F ("Squid") | 100 | 32 | 181 | 0.001 | 1 | 40 |
| Ericsson RRUS-11 (50 lbs.) | 100 | 150 | 851 | 0.005 | 6 | 187 |
| Ericsson RRUS 32 B2 | 100 | 159 | 903 | 0.005 | 7 | 198 |
| Powerwave Allgon 7770.00 | 100 | 210 | 1,192 | 0.006 | 9 | 262 |
| CCI HPA-65R-BUU-H6 | 100 | 153 | 868 | 0.005 | 7 | 191 |
| RFS ATMAA1412D-1A20 | 87 | 39 | 170 | 0.001 | 1 | 49 |
| Ericsson Radio 4449 B12,B71 | 87 | 222 | 970 | 0.005 | 7 | 277 |
| Ericsson AIR 21, 1.3M, B4A B2P | 87 | 244 | 1,069 | 0.006 | 8 | 305 |
| Ericsson AIR32 B66Aa/B2a | 87 | 397 | 1,733 | 0.009 | 13 | 495 |
| RFS APXVAARR24_43-U-NA20 | 87 | 384 | 1,677 | 0.009 | 13 | 479 |
| Raycap RDIDC-9181-PF-48 | 77 | 22 | 76 | 0.000 | 1 | 27 |
| Fujitsu TA08025-B605 | 77 | 225 | 782 | 0.004 | 6 | 281 |
| Fujitsu TA08025-B604 | 77 | 192 | 666 | 0.004 | 5 | 239 |
| JMA Wireless MX08FRO665-21 | 77 | 194 | 672 | 0.004 | 5 | 242 |
| Generic Flat Platform with Handrails | 77 | 2,500 | 8,688 | 0.047 | 66 | 3,121 |
| | | 46,554 | 183,911 | 1.000 | 1,397 | 58,119 |

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

| Segment | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|---------|------------------------|-------------|------------------------|-----------------|-----------------------|---------------------|
| 37 | 139 | 89 | 937 | 0.005 | 7 | 76 |
| 36 | 136.5 | 136 | 1,389 | 0.008 | 11 | 116 |
| 35 | 132.5 | 236 | 2,267 | 0.012 | 17 | 201 |
| 34 | 127.5 | 266 | 2,379 | 0.013 | 18 | 226 |
| 33 | 123 | 220 | 1,840 | 0.010 | 14 | 187 |
| 32 | 120.5 | 57 | 462 | 0.002 | 4 | 49 |

| Segment | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|---|------------------------|-------------|------------------------|-----------------|-----------------------|---------------------|
| 31 | 118 | 234 | 1,809 | 0.010 | 14 | 199 |
| 30 | 115.5 | 60 | 444 | 0.002 | 3 | 51 |
| 29 | 112.5 | 305 | 2,156 | 0.012 | 16 | 259 |
| 28 | 107.5 | 359 | 2,337 | 0.013 | 18 | 306 |
| 27 | 102.5 | 370 | 2,198 | 0.012 | 17 | 315 |
| 26 | 98.625 | 262 | 1,451 | 0.008 | 11 | 223 |
| 25 | 96.125 | 562 | 2,962 | 0.016 | 22 | 479 |
| 24 | 94.25 | 379 | 1,924 | 0.010 | 15 | 323 |
| 23 | 91.75 | 685 | 3,306 | 0.018 | 25 | 583 |
| 22 | 88.5 | 597 | 2,696 | 0.015 | 20 | 509 |
| 21 | 86 | 431 | 1,842 | 0.010 | 14 | 367 |
| 20 | 82.5 | 1,096 | 4,334 | 0.024 | 33 | 933 |
| 19 | 78.5 | 670 | 2,416 | 0.013 | 18 | 571 |
| 18 | 76 | 458 | 1,552 | 0.008 | 12 | 390 |
| 17 | 72.5 | 1,163 | 3,611 | 0.020 | 27 | 991 |
| 16 | 67.5 | 1,190 | 3,231 | 0.018 | 25 | 1,014 |
| 15 | 62.5 | 1,217 | 2,860 | 0.016 | 22 | 1,037 |
| 14 | 57.5 | 1,244 | 2,500 | 0.014 | 19 | 1,060 |
| 13 | 53 | 1,015 | 1,750 | 0.010 | 13 | 864 |
| 12 | 50.5 | 454 | 714 | 0.004 | 5 | 386 |
| 11 | 48.125 | 1,721 | 2,475 | 0.014 | 19 | 1,465 |
| 10 | 45.625 | 320 | 417 | 0.002 | 3 | 273 |
| 9 | 42.5 | 1,298 | 1,479 | 0.008 | 11 | 1,106 |
| 8 | 37.5 | 1,325 | 1,194 | 0.006 | 9 | 1,129 |
| 7 | 32.5 | 1,352 | 931 | 0.005 | 7 | 1,152 |
| 6 | 27.5 | 1,379 | 694 | 0.004 | 5 | 1,175 |
| 5 | 22.5 | 1,406 | 485 | 0.003 | 4 | 1,198 |
| 4 | 17.5 | 1,433 | 309 | 0.002 | 2 | 1,221 |
| 3 | 12.5 | 1,460 | 167 | 0.001 | 1 | 1,244 |
| 2 | 7.5 | 1,487 | 65 | 0.000 | 0 | 1,267 |
| 1 | 2.5 | 1,514 | 8 | 0.000 | 0 | 1,290 |
| dbSpectra DS7C09P36U-D | 140 | 210 | 2,242 | 0.012 | 17 | 179 |
| Generic 12' Dipole | 140 | 40 | 427 | 0.002 | 3 | 34 |
| TX RX Systems 432F-83W-01-C-110/110R/48/48R | 140 | 18 | 192 | 0.001 | 1 | 15 |
| RFS SC3-W100AB | 140 | 40 | 427 | 0.002 | 3 | 34 |
| Generic 6' Omni | 138 | 25 | 260 | 0.001 | 2 | 21 |
| Generic 6' Omni | 116 | 50 | 375 | 0.002 | 3 | 43 |
| Generic 12' Omni | 138 | 40 | 416 | 0.002 | 3 | 34 |
| Generic 6' FM antenna | 138 | 30 | 312 | 0.002 | 2 | 26 |
| Flat Platform w/ Handrails | 138 | 1,750 | 18,182 | 0.099 | 138 | 1,490 |
| Flat Platform w/ Handrails | 130 | 2,000 | 18,576 | 0.101 | 141 | 1,703 |
| Alcatel-Lucent 800 MHz 2X50W RRH w/ Filter | 130 | 192 | 1,783 | 0.010 | 14 | 164 |
| Alcatel-Lucent 4x40W RRH (91 lb) | 130 | 273 | 2,536 | 0.014 | 19 | 232 |
| Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield | 130 | 210 | 1,951 | 0.011 | 15 | 179 |
| RFS APXV9TM14-ALU-I20* | 130 | 165 | 1,535 | 0.008 | 12 | 141 |
| RFS APXVSPP18-C-A20 | 130 | 171 | 1,588 | 0.009 | 12 | 146 |
| Andrew DB586 | 121 | 8 | 67 | 0.000 | 1 | 7 |
| Flat Low Profile Platform | 120 | 1,500 | 11,989 | 0.065 | 91 | 1,277 |
| Flat Low Profile Platform | 100 | 1,500 | 8,514 | 0.046 | 65 | 1,277 |
| Flat Low Profile Platform | 87 | 1,500 | 6,556 | 0.036 | 50 | 1,277 |
| Commscope CBC78T-DS-43-2X | 110 | 62 | 422 | 0.002 | 3 | 53 |
| Samsung Outdoor CBRS 20W RRH –Clip-on Antenna | 110 | 13 | 90 | 0.000 | 1 | 11 |
| Samsung RT4401-48A | 110 | 56 | 379 | 0.002 | 3 | 48 |
| Samsung B2/B66A RRH-BR049 | 110 | 253 | 1,719 | 0.009 | 13 | 216 |
| Samsung B5/B13 RRH-BR04C | 110 | 211 | 1,432 | 0.008 | 11 | 180 |
| RFS DB-C1-12C-24AB-0Z | 110 | 32 | 217 | 0.001 | 2 | 27 |
| Samsung MT6407-77A | 110 | 245 | 1,662 | 0.009 | 13 | 208 |
| Antel BXA-70080/6CF__ | 110 | 54 | 367 | 0.002 | 3 | 46 |
| Commscope JAHH-65B-R3B | 110 | 364 | 2,468 | 0.013 | 19 | 310 |
| Low Profile Platform w/ Site Pro HRK12 | 110 | 1,772 | 12,031 | 0.065 | 91 | 1,509 |
| Powerwave Allgon 7020.00 Dual Band RET | 100 | 26 | 150 | 0.001 | 1 | 22 |
| Powerwave Allgon LGP21401 | 100 | 169 | 960 | 0.005 | 7 | 144 |
| Raycap DC6-48-60-18-8F ("Squid") | 100 | 32 | 181 | 0.001 | 1 | 27 |
| Ericsson RRUS-11 (50 lbs.) | 100 | 150 | 851 | 0.005 | 6 | 128 |
| Ericsson RRUS 32 B2 | 100 | 159 | 903 | 0.005 | 7 | 135 |
| Powerwave Allgon 7770.00 | 100 | 210 | 1,192 | 0.006 | 9 | 179 |
| CCI HPA-65R-BUU-H6 | 100 | 153 | 868 | 0.005 | 7 | 130 |
| RFS ATMAA1412D-1A20 | 87 | 39 | 170 | 0.001 | 1 | 33 |

| Segment | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|--------------------------------------|------------------------|-------------|------------------------|-----------------|-----------------------|---------------------|
| Ericsson Radio 4449 B12,B71 | 87 | 222 | 970 | 0.005 | 7 | 189 |
| Ericsson AIR 21, 1.3M, B4A B2P | 87 | 244 | 1,069 | 0.006 | 8 | 208 |
| Ericsson AIR32 B66Aa/B2a | 87 | 397 | 1,733 | 0.009 | 13 | 338 |
| RFS APXVAARR24_43-U-NA20 | 87 | 384 | 1,677 | 0.009 | 13 | 327 |
| Raycap RDIDC-9181-PF-48 | 77 | 22 | 76 | 0.000 | 1 | 19 |
| Fujitsu TA08025-B605 | 77 | 225 | 782 | 0.004 | 6 | 192 |
| Fujitsu TA08025-B604 | 77 | 192 | 666 | 0.004 | 5 | 163 |
| JMA Wireless MX08FRO665-21 | 77 | 194 | 672 | 0.004 | 5 | 165 |
| Generic Flat Platform with Handrails | 77 | 2,500 | 8,688 | 0.047 | 66 | 2,129 |
| | | 46,554 | 183,911 | 1.000 | 1,397 | 39,644 |

1.2D + 1.0Ev + 1.0Eh Normal Seismic

CALCULATED FORCES

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (fr-kips) | Mu Mx (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (kips) | Phi Mn (kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|---------------|---------------|--------------------|----------------|-------|
| 0.00 | -56.23 | -1.40 | 0.00 | -152.05 | 0.00 | 152.05 | 5,497.77 | 1,298.68 | 5,470 | 5,259.85 | 0.00 | 0.00 | 0.04 |
| 5.00 | -54.37 | -1.41 | 0.00 | -145.04 | 0.00 | 145.04 | 5,379.84 | 1,270.83 | 5,238 | 5,035.45 | 0.01 | -0.01 | 0.04 |
| 10.00 | -52.55 | -1.42 | 0.00 | -137.99 | 0.00 | 137.99 | 5,261.92 | 1,242.97 | 5,011 | 4,815.96 | 0.02 | -0.02 | 0.04 |
| 15.00 | -50.76 | -1.42 | 0.00 | -130.90 | 0.00 | 130.90 | 5,144.00 | 1,215.12 | 4,789 | 4,601.35 | 0.05 | -0.03 | 0.04 |
| 20.00 | -49.00 | -1.43 | 0.00 | -123.77 | 0.00 | 123.77 | 5,026.07 | 1,187.26 | 4,572 | 4,391.63 | 0.09 | -0.04 | 0.04 |
| 25.00 | -47.28 | -1.43 | 0.00 | -116.63 | 0.00 | 116.63 | 4,908.15 | 1,159.41 | 4,360 | 4,186.81 | 0.14 | -0.05 | 0.04 |
| 30.00 | -45.59 | -1.43 | 0.00 | -109.47 | 0.00 | 109.47 | 4,790.23 | 1,131.55 | 4,153 | 3,986.88 | 0.20 | -0.06 | 0.04 |
| 35.00 | -43.94 | -1.43 | 0.00 | -102.31 | 0.00 | 102.31 | 4,672.31 | 1,103.69 | 3,951 | 3,791.84 | 0.28 | -0.08 | 0.04 |
| 40.00 | -42.32 | -1.42 | 0.00 | -95.16 | 0.00 | 95.16 | 4,554.38 | 1,075.84 | 3,754 | 3,601.69 | 0.36 | -0.09 | 0.04 |
| 45.00 | -41.92 | -1.43 | 0.00 | -88.04 | 0.00 | 88.04 | 4,436.46 | 1,047.98 | 3,562 | 3,416.43 | 0.46 | -0.10 | 0.04 |
| 46.25 | -39.77 | -1.41 | 0.00 | -86.26 | 0.00 | 86.26 | 4,406.98 | 1,041.02 | 3,515 | 3,370.88 | 0.48 | -0.10 | 0.04 |
| 50.00 | -39.20 | -1.40 | 0.00 | -80.99 | 0.00 | 80.99 | 4,318.54 | 1,020.13 | 3,376 | 3,236.07 | 0.57 | -0.11 | 0.03 |
| 51.00 | -37.93 | -1.39 | 0.00 | -79.58 | 0.00 | 79.58 | 4,412.85 | 1,042.41 | 3,525 | 3,379.93 | 0.59 | -0.11 | 0.03 |
| 55.00 | -36.38 | -1.38 | 0.00 | -74.01 | 0.00 | 74.01 | 4,318.52 | 1,020.12 | 3,376 | 3,236.03 | 0.69 | -0.12 | 0.03 |
| 60.00 | -34.86 | -1.36 | 0.00 | -67.13 | 0.00 | 67.13 | 4,200.59 | 992.27 | 3,194 | 3,060.56 | 0.82 | -0.13 | 0.03 |
| 65.00 | -33.37 | -1.33 | 0.00 | -60.35 | 0.00 | 60.35 | 4,082.67 | 964.41 | 3,017 | 2,889.98 | 0.96 | -0.14 | 0.03 |
| 70.00 | -31.92 | -1.31 | 0.00 | -53.67 | 0.00 | 53.67 | 3,964.75 | 936.55 | 2,845 | 2,724.29 | 1.12 | -0.15 | 0.03 |
| 75.00 | -31.35 | -1.30 | 0.00 | -47.13 | 0.00 | 47.13 | 3,846.82 | 908.70 | 2,679 | 2,563.49 | 1.28 | -0.16 | 0.03 |
| 77.00 | -26.60 | -1.19 | 0.00 | -44.53 | 0.00 | 44.53 | 3,799.65 | 897.56 | 2,613 | 2,500.54 | 1.35 | -0.16 | 0.03 |
| 80.00 | -25.23 | -1.15 | 0.00 | -40.97 | 0.00 | 40.97 | 3,728.90 | 880.84 | 2,517 | 2,407.59 | 1.45 | -0.17 | 0.02 |
| 85.00 | -24.70 | -1.14 | 0.00 | -35.20 | 0.00 | 35.20 | 3,610.98 | 852.99 | 2,360 | 2,256.57 | 1.64 | -0.18 | 0.02 |
| 87.00 | -20.47 | -1.02 | 0.00 | -32.92 | 0.00 | 32.92 | 3,563.81 | 841.84 | 2,299 | 2,197.54 | 1.71 | -0.18 | 0.02 |
| 90.00 | -19.62 | -0.99 | 0.00 | -29.88 | 0.00 | 29.88 | 3,493.05 | 825.13 | 2,209 | 2,110.45 | 1.83 | -0.19 | 0.02 |
| 93.50 | -19.15 | -0.97 | 0.00 | -26.41 | 0.00 | 26.41 | 3,410.51 | 805.63 | 2,106 | 2,011.07 | 1.97 | -0.19 | 0.02 |
| 95.00 | -18.44 | -0.95 | 0.00 | -24.95 | 0.00 | 24.95 | 3,375.13 | 797.28 | 2,062 | 1,969.22 | 2.03 | -0.19 | 0.02 |
| 97.25 | -18.12 | -0.94 | 0.00 | -22.81 | 0.00 | 22.81 | 1,102.89 | 301.46 | 786 | 655.89 | 2.12 | -0.20 | 0.05 |
| 100.00 | -14.66 | -0.81 | 0.00 | -20.23 | 0.00 | 20.23 | 1,091.10 | 295.71 | 756 | 636.43 | 2.23 | -0.20 | 0.05 |
| 105.00 | -14.21 | -0.79 | 0.00 | -16.18 | 0.00 | 16.18 | 1,068.74 | 285.27 | 704 | 601.22 | 2.45 | -0.22 | 0.04 |
| 110.00 | -10.01 | -0.61 | 0.00 | -12.21 | 0.00 | 12.21 | 1,045.19 | 274.82 | 653 | 566.30 | 2.69 | -0.23 | 0.03 |
| 115.00 | -9.93 | -0.60 | 0.00 | -9.18 | 0.00 | 9.18 | 1,020.46 | 264.37 | 604 | 531.74 | 2.93 | -0.24 | 0.03 |
| 116.00 | -9.58 | -0.59 | 0.00 | -8.58 | 0.00 | 8.58 | 1,015.38 | 262.29 | 595 | 524.87 | 2.98 | -0.24 | 0.03 |
| 120.00 | -7.64 | -0.48 | 0.00 | -6.24 | 0.00 | 6.24 | 994.55 | 253.93 | 558 | 497.61 | 3.19 | -0.25 | 0.02 |
| 121.00 | -7.35 | -0.47 | 0.00 | -5.75 | 0.00 | 5.75 | 989.22 | 251.84 | 548 | 490.84 | 3.24 | -0.25 | 0.02 |
| 125.00 | -7.02 | -0.45 | 0.00 | -3.88 | 0.00 | 3.88 | 967.45 | 243.48 | 513 | 463.98 | 3.46 | -0.26 | 0.02 |
| 130.00 | -2.97 | -0.20 | 0.00 | -1.63 | 0.00 | 1.63 | 939.16 | 233.04 | 470 | 430.94 | 3.73 | -0.26 | 0.01 |
| 135.00 | -2.80 | -0.19 | 0.00 | -0.62 | 0.00 | 0.62 | 909.69 | 222.59 | 428 | 398.55 | 4.00 | -0.26 | 0.01 |
| 138.00 | -0.38 | -0.03 | 0.00 | -0.05 | 0.00 | 0.05 | 891.44 | 216.32 | 405 | 379.46 | 4.17 | -0.26 | 0.00 |
| 140.00 | 0.00 | -0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 879.04 | 212.15 | 389 | 366.89 | 4.28 | -0.26 | 0.00 |

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

CALCULATED FORCES

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (fr-kips) | Mu Mx (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (kips) | Phi Mn (kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|---------------|---------------|--------------------|----------------|-------|
| 0.00 | -38.35 | -1.40 | 0.00 | -149.61 | 0.00 | 149.61 | 5,497.77 | 1,298.68 | 5,470 | 5,259.85 | 0.00 | 0.00 | 0.04 |

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (fr-kips) | Mu Mx (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (kips) | Phi Mn (kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|---------------|---------------|--------------------|----------------|-------|
| 5.00 | -37.09 | -1.41 | 0.00 | -142.61 | 0.00 | 142.61 | 5,379.84 | 1,270.83 | 5,238 | 5,035.45 | 0.01 | -0.01 | 0.04 |
| 10.00 | -35.84 | -1.41 | 0.00 | -135.59 | 0.00 | 135.59 | 5,261.92 | 1,242.97 | 5,011 | 4,815.96 | 0.02 | -0.02 | 0.04 |
| 15.00 | -34.62 | -1.41 | 0.00 | -128.53 | 0.00 | 128.53 | 5,144.00 | 1,215.12 | 4,789 | 4,601.35 | 0.05 | -0.03 | 0.04 |
| 20.00 | -33.42 | -1.42 | 0.00 | -121.46 | 0.00 | 121.46 | 5,026.07 | 1,187.26 | 4,572 | 4,391.63 | 0.09 | -0.04 | 0.03 |
| 25.00 | -32.25 | -1.42 | 0.00 | -114.39 | 0.00 | 114.39 | 4,908.15 | 1,159.41 | 4,360 | 4,186.81 | 0.14 | -0.05 | 0.03 |
| 30.00 | -31.10 | -1.41 | 0.00 | -107.31 | 0.00 | 107.31 | 4,790.23 | 1,131.55 | 4,153 | 3,986.88 | 0.20 | -0.06 | 0.03 |
| 35.00 | -29.97 | -1.41 | 0.00 | -100.24 | 0.00 | 100.24 | 4,672.31 | 1,103.69 | 3,951 | 3,791.84 | 0.27 | -0.07 | 0.03 |
| 40.00 | -28.86 | -1.40 | 0.00 | -93.20 | 0.00 | 93.20 | 4,554.38 | 1,075.84 | 3,754 | 3,601.69 | 0.35 | -0.09 | 0.03 |
| 45.00 | -28.59 | -1.40 | 0.00 | -86.19 | 0.00 | 86.19 | 4,436.46 | 1,047.98 | 3,562 | 3,416.43 | 0.45 | -0.10 | 0.03 |
| 46.25 | -27.13 | -1.38 | 0.00 | -84.44 | 0.00 | 84.44 | 4,406.98 | 1,041.02 | 3,515 | 3,370.88 | 0.48 | -0.10 | 0.03 |
| 50.00 | -26.74 | -1.38 | 0.00 | -79.25 | 0.00 | 79.25 | 4,318.54 | 1,020.13 | 3,376 | 3,236.07 | 0.56 | -0.11 | 0.03 |
| 51.00 | -25.87 | -1.37 | 0.00 | -77.88 | 0.00 | 77.88 | 4,412.85 | 1,042.41 | 3,525 | 3,379.93 | 0.58 | -0.11 | 0.03 |
| 55.00 | -24.81 | -1.35 | 0.00 | -72.41 | 0.00 | 72.41 | 4,318.52 | 1,020.12 | 3,376 | 3,236.03 | 0.68 | -0.12 | 0.03 |
| 60.00 | -23.78 | -1.33 | 0.00 | -65.66 | 0.00 | 65.66 | 4,200.59 | 992.27 | 3,194 | 3,060.56 | 0.81 | -0.13 | 0.03 |
| 65.00 | -22.76 | -1.31 | 0.00 | -59.01 | 0.00 | 59.01 | 4,082.67 | 964.41 | 3,017 | 2,889.98 | 0.95 | -0.14 | 0.03 |
| 70.00 | -21.77 | -1.28 | 0.00 | -52.48 | 0.00 | 52.48 | 3,964.75 | 936.55 | 2,845 | 2,724.29 | 1.10 | -0.15 | 0.03 |
| 75.00 | -21.38 | -1.27 | 0.00 | -46.08 | 0.00 | 46.08 | 3,846.82 | 908.70 | 2,679 | 2,563.49 | 1.26 | -0.16 | 0.02 |
| 77.00 | -18.15 | -1.16 | 0.00 | -43.54 | 0.00 | 43.54 | 3,799.65 | 897.56 | 2,613 | 2,500.54 | 1.32 | -0.16 | 0.02 |
| 80.00 | -17.21 | -1.13 | 0.00 | -40.05 | 0.00 | 40.05 | 3,728.90 | 880.84 | 2,517 | 2,407.59 | 1.43 | -0.17 | 0.02 |
| 85.00 | -16.85 | -1.11 | 0.00 | -34.42 | 0.00 | 34.42 | 3,610.98 | 852.99 | 2,360 | 2,256.57 | 1.60 | -0.17 | 0.02 |
| 87.00 | -13.96 | -0.99 | 0.00 | -32.19 | 0.00 | 32.19 | 3,563.81 | 841.84 | 2,299 | 2,197.54 | 1.68 | -0.18 | 0.02 |
| 90.00 | -13.38 | -0.97 | 0.00 | -29.21 | 0.00 | 29.21 | 3,493.05 | 825.13 | 2,209 | 2,110.45 | 1.79 | -0.18 | 0.02 |
| 93.50 | -13.06 | -0.95 | 0.00 | -25.82 | 0.00 | 25.82 | 3,410.51 | 805.63 | 2,106 | 2,011.07 | 1.93 | -0.19 | 0.02 |
| 95.00 | -12.58 | -0.93 | 0.00 | -24.39 | 0.00 | 24.39 | 3,375.13 | 797.28 | 2,062 | 1,969.22 | 1.99 | -0.19 | 0.02 |
| 97.25 | -12.36 | -0.92 | 0.00 | -22.30 | 0.00 | 22.30 | 1,102.89 | 301.46 | 786 | 655.89 | 2.08 | -0.19 | 0.05 |
| 100.00 | -10.00 | -0.79 | 0.00 | -19.77 | 0.00 | 19.77 | 1,091.10 | 295.71 | 756 | 636.43 | 2.19 | -0.20 | 0.04 |
| 105.00 | -9.69 | -0.78 | 0.00 | -15.81 | 0.00 | 15.81 | 1,068.74 | 285.27 | 704 | 601.22 | 2.40 | -0.21 | 0.04 |
| 110.00 | -6.83 | -0.59 | 0.00 | -11.93 | 0.00 | 11.93 | 1,045.19 | 274.82 | 653 | 566.30 | 2.63 | -0.22 | 0.03 |
| 115.00 | -6.78 | -0.59 | 0.00 | -8.97 | 0.00 | 8.97 | 1,020.46 | 264.37 | 604 | 531.74 | 2.87 | -0.24 | 0.02 |
| 116.00 | -6.53 | -0.57 | 0.00 | -8.38 | 0.00 | 8.38 | 1,015.38 | 262.29 | 595 | 524.87 | 2.92 | -0.24 | 0.02 |
| 120.00 | -5.21 | -0.47 | 0.00 | -6.09 | 0.00 | 6.09 | 994.55 | 253.93 | 558 | 497.61 | 3.13 | -0.24 | 0.02 |
| 121.00 | -5.01 | -0.46 | 0.00 | -5.62 | 0.00 | 5.62 | 989.22 | 251.84 | 548 | 490.84 | 3.18 | -0.25 | 0.02 |
| 125.00 | -4.79 | -0.44 | 0.00 | -3.79 | 0.00 | 3.79 | 967.45 | 243.48 | 513 | 463.98 | 3.39 | -0.25 | 0.01 |
| 130.00 | -2.02 | -0.20 | 0.00 | -1.60 | 0.00 | 1.60 | 939.16 | 233.04 | 470 | 430.94 | 3.65 | -0.26 | 0.01 |
| 135.00 | -1.91 | -0.19 | 0.00 | -0.61 | 0.00 | 0.61 | 909.69 | 222.59 | 428 | 398.55 | 3.92 | -0.26 | 0.00 |
| 138.00 | -0.26 | -0.03 | 0.00 | -0.05 | 0.00 | 0.05 | 891.44 | 216.32 | 405 | 379.46 | 4.08 | -0.26 | 0.00 |
| 140.00 | 0.00 | -0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 879.04 | 212.15 | 389 | 366.89 | 4.19 | -0.26 | 0.00 |

ANALYSIS SUMMARY

| Load Case | Reactions | | | | | | Max Usage | |
|-----------------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|---------------------------|--------------|----------------------|
| | Shear FX (kips) | Shear FZ (kips) | Axial FY (kips) | Moment MX (ft-kips) | Moment MY (ft-kips) | Moment MZ (ft-kips) | Elev (ft) | Interaction Ratio |
| 1.2D + 1.0W Normal | 27.26 | 0.00 | 55.82 | 0.00 | 0.00 | 2737.59 | 97.25 | 0.6 |
| 0.9D + 1.0W Normal | 27.24 | 0.00 | 41.85 | 0.00 | 0.00 | 2703.74 | 97.25 | 0.58 |
| 1.2D + 1.0Di + 1.0Wi Normal | 7.19 | 0.00 | 71.83 | 0.00 | 0.00 | 722.27 | 97.25 | 0.18 |
| 1.2D + 1.0Ev + 1.0Eh Normal | 1.43 | 0.00 | 56.23 | 0.00 | 0.00 | 152.05 | 97.25 | 0.05 |
| 0.9D - 1.0Ev + 1.0Eh Normal | 1.42 | 0.00 | 38.35 | 0.00 | 0.00 | 149.61 | 97.25 | 0.05 |
| 1.0D + 1.0W Service Normal | 6.30 | 0.00 | 46.55 | 0.00 | 0.00 | 628.49 | 97.25 | 0.15 |



DISH WIRELESS, L.L.C. SITE ID:

NJJER01140B

DISH WIRELESS, L.L.C. SITE ADDRESS:

**180A BAYBERRY LANE
WESTPORT, CT 06880**

| 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: | |
| <ul style="list-style-type: none"> • INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) • INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT • 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: | |
| <ul style="list-style-type: none"> • 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) | |

| SITE INFORMATION | | PROJECT DIRECTORY | |
|----------------------|--|-----------------------|---|
| PROPERTY OWNER: | TOWN OF WESTPORT CT | APPLICANT: | DISH WIRELESS, L.L.C. |
| ADDRESS: | 180A BAYBERRY LANE WESTPORT, CT 06880 | | 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 |
| TOWER TYPE: | MONOPOLE | TOWER OWNER: | AMERICAN TOWER |
| TOWER CO SITE ID: | 310968 | | 10 PRESIDENTIAL WAY WOBURN, MA 01801 |
| TOWER APP NUMBER: | 13709691_D2 | ENGINEER: | ATC TOWER SERVICES, LLC |
| COUNTY: | FAIRFIELD | | 3500 REGENCY PARKWAY SUITE 100 CARY, NC 27518 |
| LATITUDE (NAD 83): | 41° 10' 18.000" N 41.17166667 | SITE ACQUISITION: | WILLIAM SNIDER WILLIAM.SNIDER@DISH.COM |
| LONGITUDE (NAD 83): | 73° 19' 42.480" W -73.32846667 | CONSTRUCTION MANAGER: | VICTOR CORREA VICTOR.CORREA@DISH.COM |
| ZONING JURISDICTION: | FAIRFIELD | RF ENGINEER: | MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM |
| ZONING DISTRICT: | COMMERCIAL | | |
| PARCEL NUMBER: | TBD | | |
| OCCUPANCY GROUP: | U | | |
| CONSTRUCTION TYPE: | II-B | | |
| POWER COMPANY: | NORTHEAST UTILITIES | | |
| TELEPHONE COMPANY: | FRONTIER COMMUNICATIONS | | |



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



| | | |
|-------------|-------------|--------------|
| DRAWN BY: | CHECKED BY: | APPROVED BY: |
| SB | SRF | SRF |
| RFDS REV #: | ---- | |

CONSTRUCTION DOCUMENTS

| SUBMITTALS | | |
|------------|------------|-------------------------|
| REV | DATE | DESCRIPTION |
| 0 | 11/05/2021 | ISSUED FOR CONSTRUCTION |
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| | | |
| | | |



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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

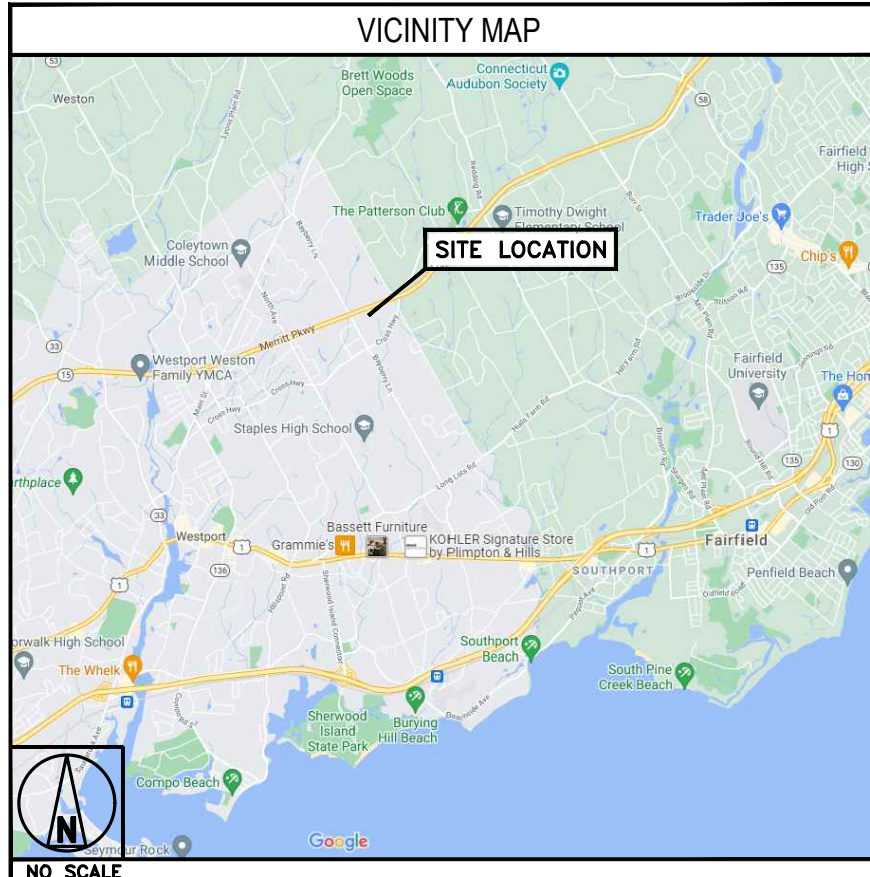
THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE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

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

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

DIRECTIONS

FROM J ADP BLVD, HEAD NORTHEAST TOWARD ADP BLVD, TURN LEFT, TURN LEFT TOWARD ADP BLVD, TURN LEFT TOWARD ADP BLVD, TURN LEFT ONTO ADP BLVD, TURN RIGHT TOWARD CHOCTAW WAY, SLIGHT RIGHT ONTO CHOCTAW WAY, USE THE LEFT LANE TO TURN RIGHT ONTO LIVINGSTON AVE, USE THE RIGHT LANE TO TAKE THE RAMP ONTO I-280 E, MERGE ONTO I-280 E, TAKE EXIT 12 TOWARD ORATON PKWY, KEEP LEFT, FOLLOW SIGNS FOR GARDEN STATE PARKWAY AND MERGE ONTO GARDEN STATE PKWY, KEEP RIGHT TO STAY ON GARDEN STATE PKWY, CONTINUE ONTO I-444 N/GARDEN STATE PKWY, ENTERING NEW YORK, CONTINUE ONTO GARDEN STATE PARKWAY CONNECTOR, TAKE EXIT 14-1 TO MERGE ONTO I-287 E/A-87 S, KEEP LEFT AT THE FORK TO CONTINUE ON I-287 E, FOLLOW SIGNS FOR WHITE PLAINS/RYE, TAKE EXIT 9 S-N TOWARD HUTCHINSON PKWY/MERRITT PKWY, MERGE ONTO WESTCHESTER AVE, USE THE RIGHT LANE TO TAKE THE RAMP TO WESTCHESTER AVE/NORTH HUTCHINSON PKWY/MERRITT PKWY, MERGE ONTO HUTCHINSON RIVER PKWY N, KEEP RIGHT AT THE FORK TO STAY ON HUTCHINSON RIVER PKWY N, ENTERING CONNECTICUT, CONTINUE ONTO CT-15 N, TAKE EXIT 42 TOWARD WESTON RD, TURN LEFT ONTO WESTON RD, SLIGHT LEFT TO STAY ON WESTON RD, TURN LEFT ONTO CROSS HWY, TURN LEFT ONTO BAYBERRY LN, TURN RIGHT, DESTINATION WILL BE ON THE LEFT

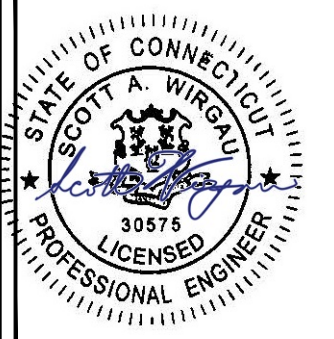


CONNECTICUT CODE COMPLIANCE

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



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A&E PROJECT NUMBER
310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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

NOTES

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

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY: CHECKED BY: APPROVED BY:

SB SRF SRF

RFDS REV #: - - - -

CONSTRUCTION DOCUMENTS

| SUBMITTALS | | |
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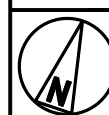
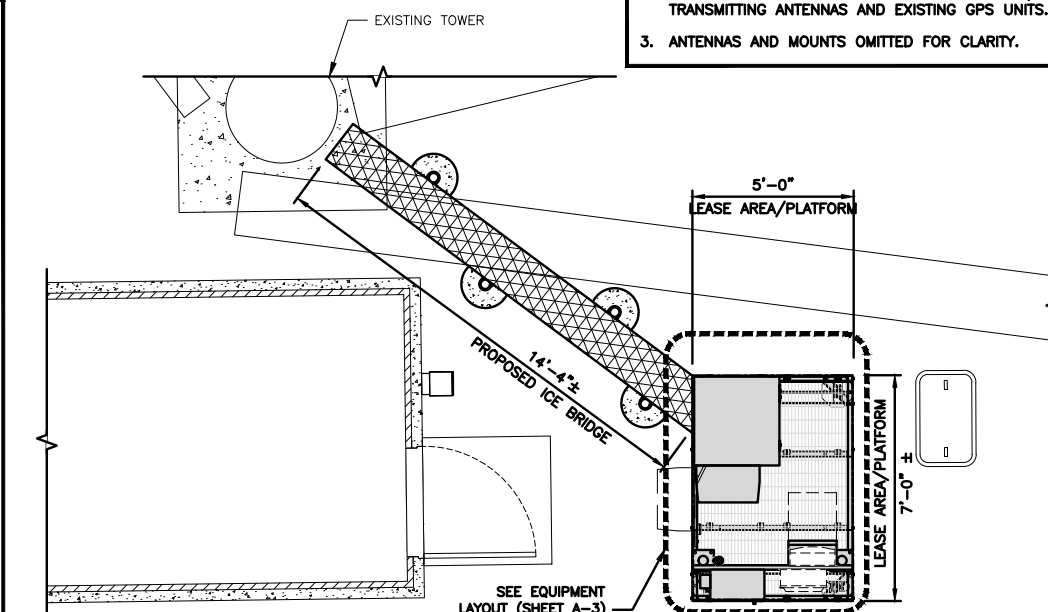
A&E PROJECT NUMBER
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180A BAYBERRY LANE
WESTPORT, CT 06880

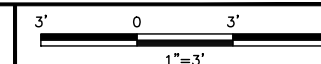
SHEET TITLE
OVERALL AND ENLARGED
SITE PLAN

SHEET NUMBER

A-1



ENLARGED SITE PLAN



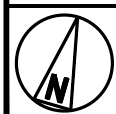
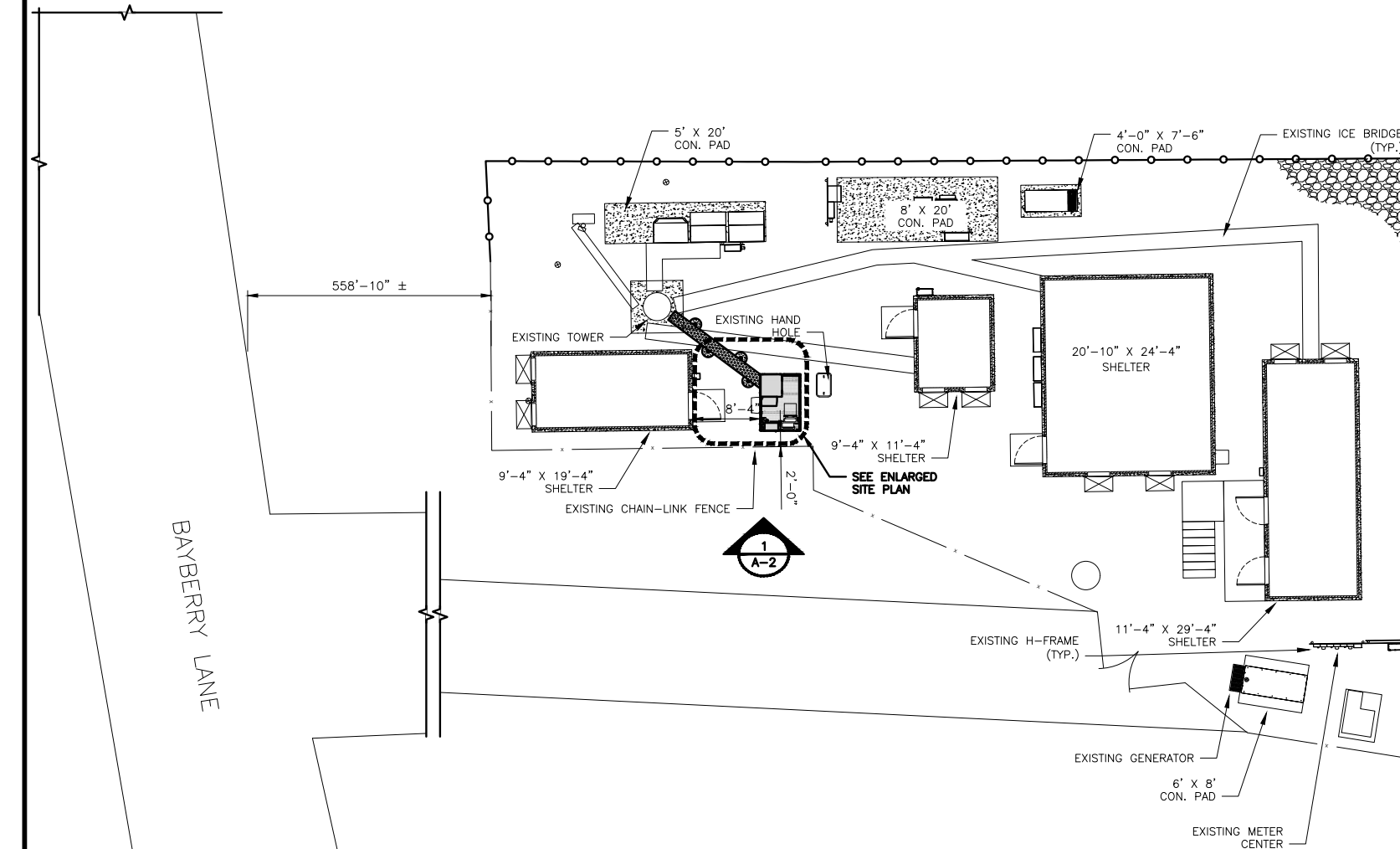
2



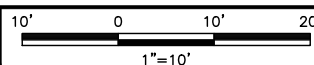
AERIAL VIEW

NO SCALE

3



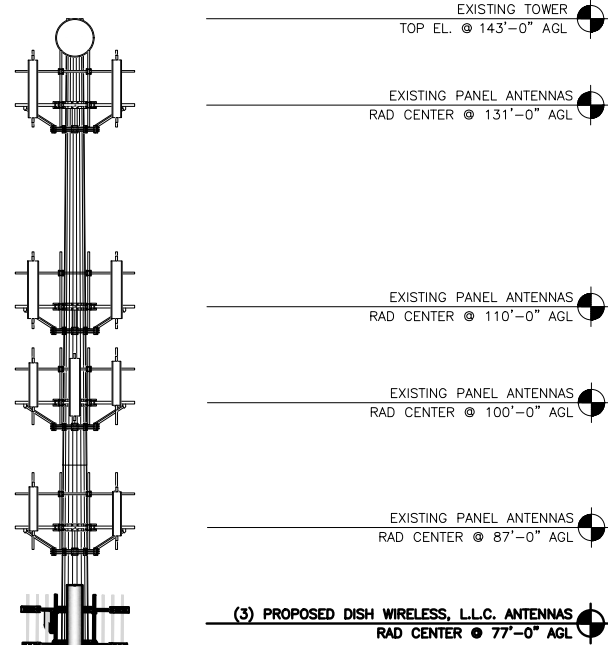
OVERALL SITE PLAN



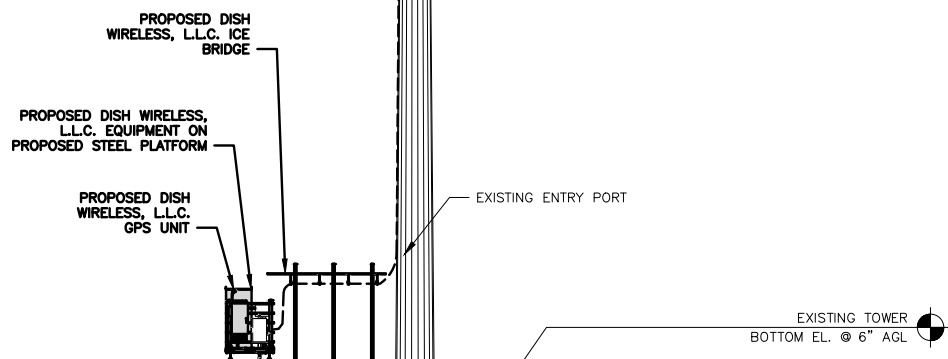
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NOTES

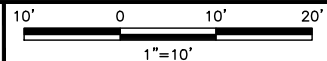
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



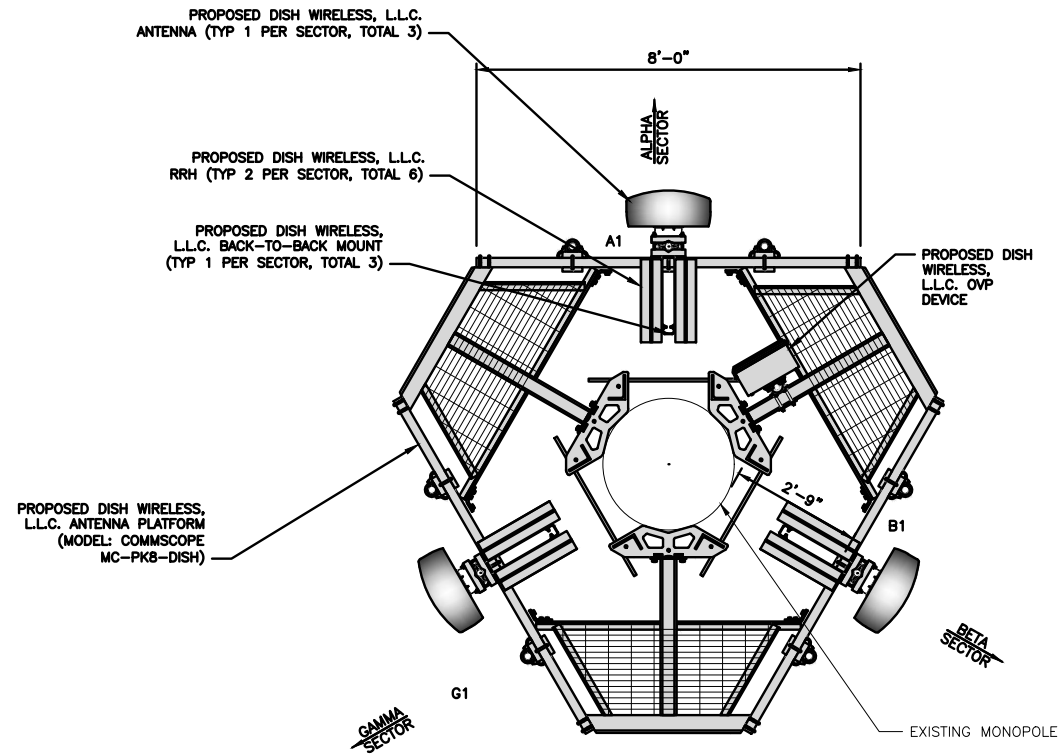
(1) PROPOSED DISH WIRELESS, L.L.C. HYBRID CABLE ROUTED OUTSIDE POLE SHAFT (SEE STRUCTURAL ANALYSIS)



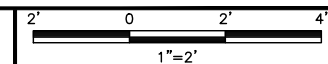
PROPOSED NORTH ELEVATION



1



ANTENNA LAYOUT



2

| SECTOR | POSITION | ANTENNA | | | | | | TRANSMISSION CABLE |
|--------|----------|----------------------|-----------------------------|------------|---------------|---------|------------|--|
| | | EXISTING OR PROPOSED | MANUFACTURER - MODEL NUMBER | TECHNOLOGY | SIZE (HxW) | AZIMUTH | RAD CENTER | FEED LINE TYPE AND LENGTH |
| ALPHA | A1 | PROPOSED | JMA - MX08FR0665-21 | 5G | 72.0" x 20.0" | 0° | 77'-0" | (1) HIGH-CAPACITY HYBRID CABLE (100' LONG) |
| BETA | B1 | PROPOSED | JMA - MX08FR0665-21 | 5G | 72.0" x 20.0" | 120° | 77'-0" | |
| GAMMA | G1 | PROPOSED | JMA - MX08FR0665-21 | 5G | 72.0" x 20.0" | 240° | 77'-0" | (1) RAYCAP RDIC-9181-PF-48 |

| SECTOR | POSITION | RRH | | NOTES |
|--------|----------|-----------------------------|------------|---|
| | | MANUFACTURER - MODEL NUMBER | TECHNOLOGY | |
| ALPHA | A1 | TA08025-B604 | 5G | 1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES. 3. AZIMUTHS ARE TENTATIVE, NEED TO BE CONFIRMED BEFORE CONSTRUCTION STARTS. |
| | A1 | TA08025-B605 | 5G | |
| BETA | B1 | TA08025-B604 | 5G | |
| | B1 | TA08025-B605 | 5G | |
| GAMMA | G1 | TA08025-B604 | 5G | |
| | G1 | TA08025-B605 | 5G | |

ANTENNA SCHEDULE

NO SCALE

3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY: SB CHECKED BY: SRF APPROVED BY: SRF

RFDS REV #: -----

CONSTRUCTION DOCUMENTS

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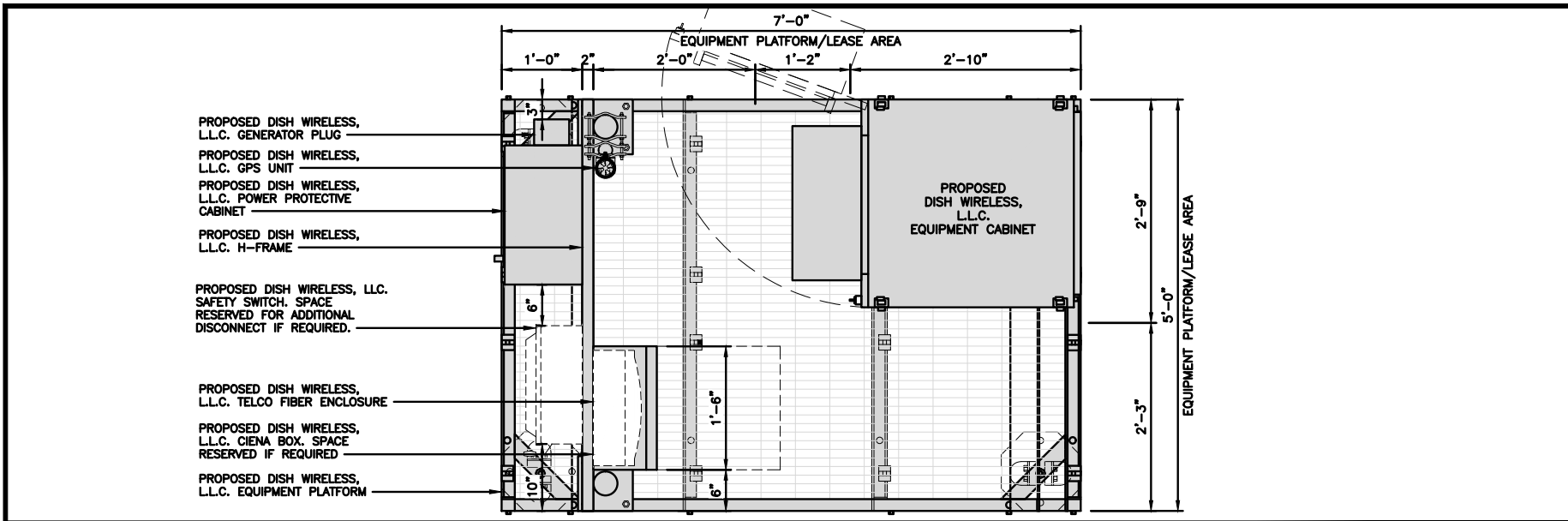
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A&E PROJECT NUMBER
310968-13709691_D2

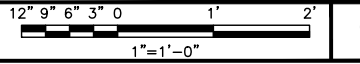
DISH WIRELESS, L.L.C. PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



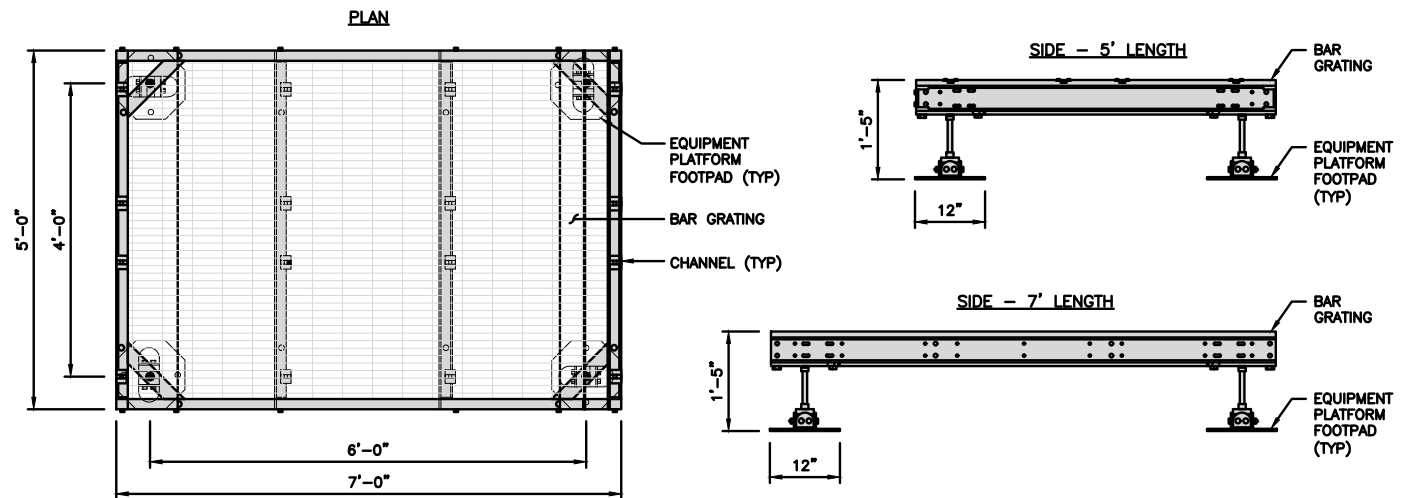
PLATFORM EQUIPMENT PLAN



1

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

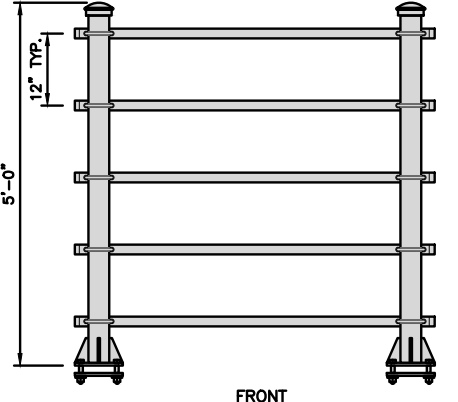
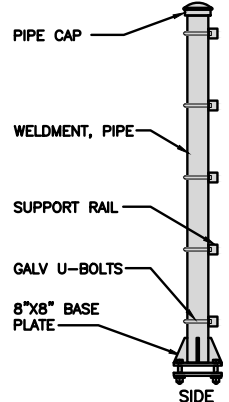
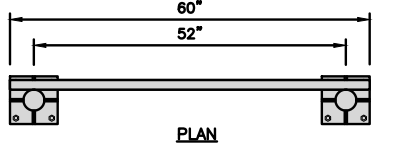
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"
PLATFORM TO BE WITHIN 1" OF LEVEL



PLATFORM DETAIL

NO SCALE 2

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



H-FRAME DETAIL

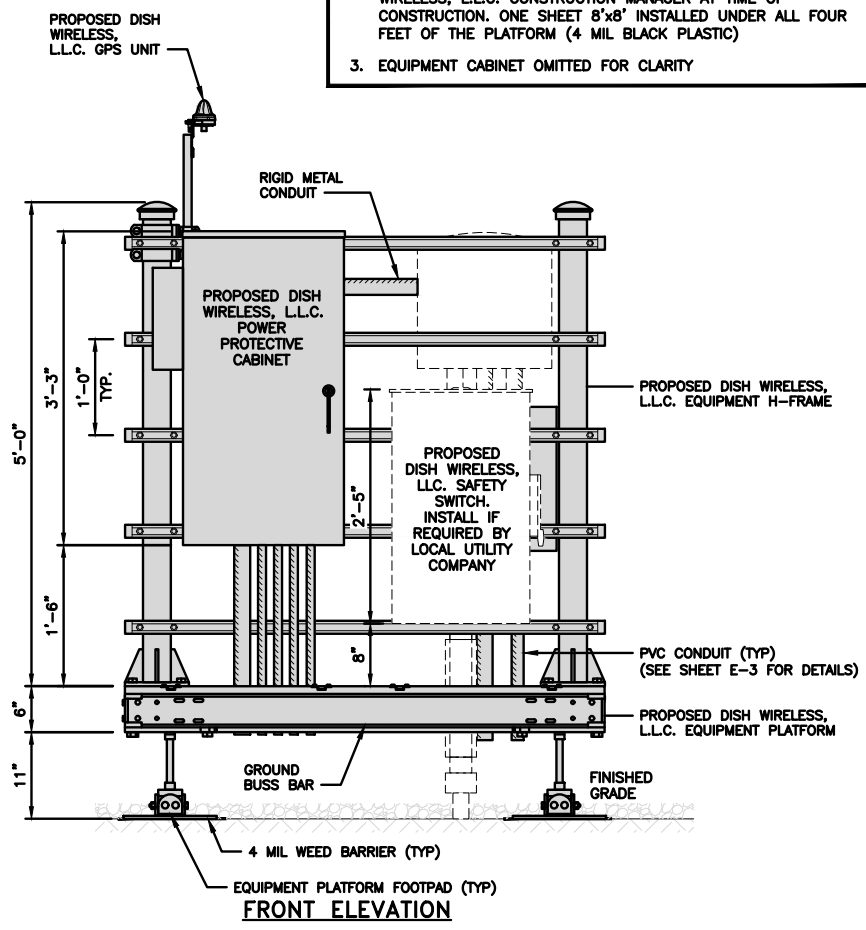
NO SCALE 3

NOT USED

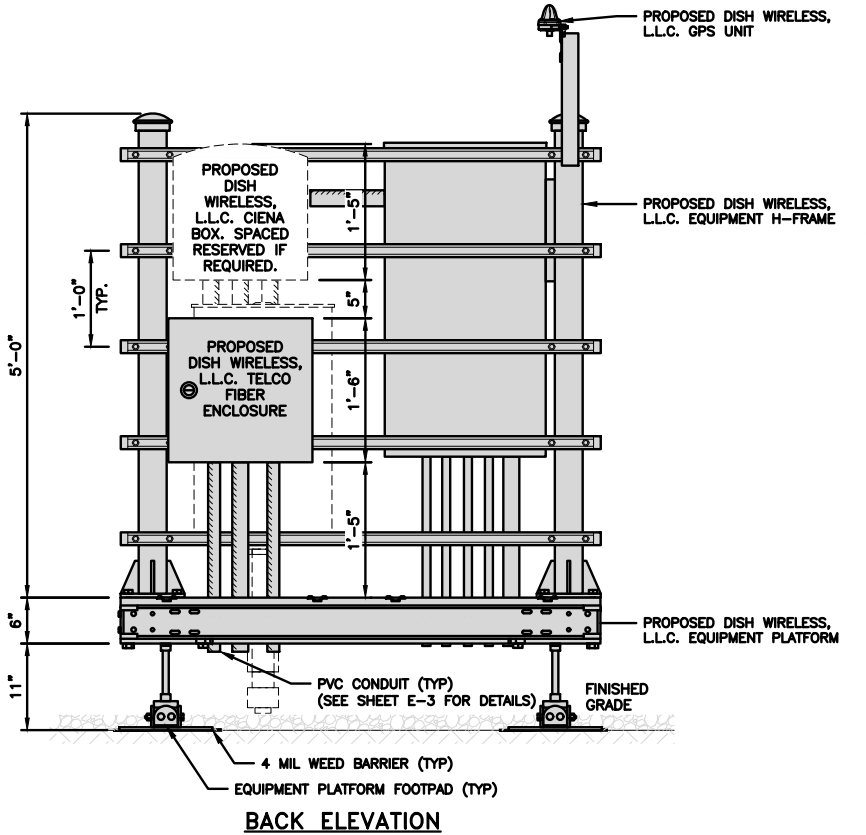
NO SCALE 4

NOTES

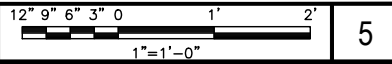
- CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
- WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH WIRELESS, L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
- EQUIPMENT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



FRONT ELEVATION



BACK ELEVATION



H-FRAME EQUIPMENT ELEVATION

5



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



| | | |
|-------------|-------------|--------------|
| DRAWN BY: | CHECKED BY: | APPROVED BY: |
| SB | SRF | SRF |
| RFDS REV #: | ---- | |

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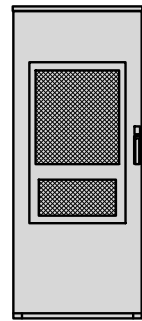
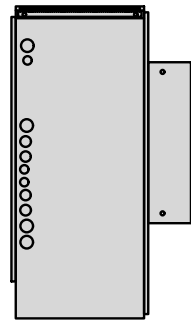
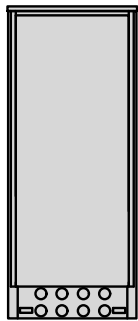
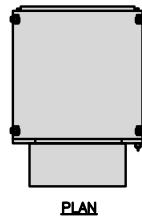
A&E PROJECT NUMBER
310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

| ENERSYS HEX 200005996 | |
|--------------------------|-----------------|
| DIMENSIONS (HxWxD) | 73"x30"x32" |
| POWER SYSTEM | -48V ALPHA/600A |
| HEATER | 800W |
| TOTAL WEIGHT (EMPTY) | 376 lbs |



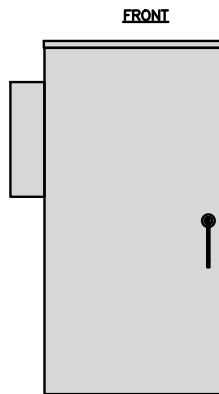
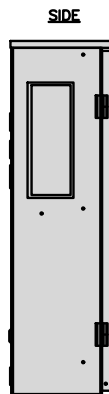
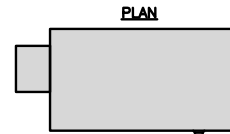
CABINET DETAIL

NO SCALE

1

RAYCAP RDIAC-6512-P-240-MTS
POWER & TELCO PROTECTION CABINET

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



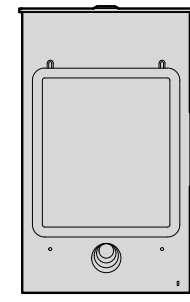
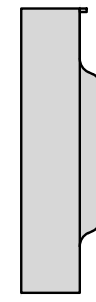
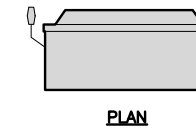
POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

2

SQUARE D SAFETY SWITCH
D324NRB

| | |
|-----------------------|---------------------|
| ENCLOSURE DIM (HxWxD) | 29.25"x17.25"x8.25" |
| TOTAL WEIGHT (EMPTY) | 45.33 LBS |
| MAX VOLTAGE/AMPS/WATT | 240V/200A/48000W |
| ENCLOSURE RATING | OUTDOOR NEMA 3R |



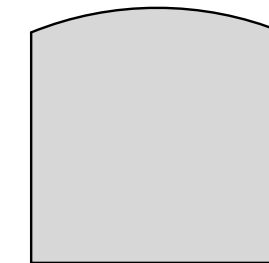
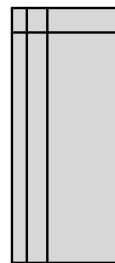
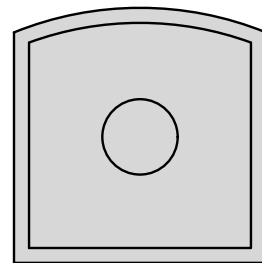
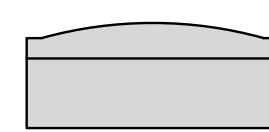
SAFETY SWITCH

NO SCALE

3

CIENA 3931
SERVICE DELIVERY SWITCH

| | |
|--------------------|-----------------------------------|
| DIMENSIONS (HxWxD) | 17.0"x16.8"x7.0" 431x427x178mm |
| WEIGHT | 28.6 LBS/13.0 KG |
| POWER INPUT | 60W MAX |



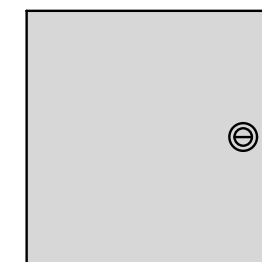
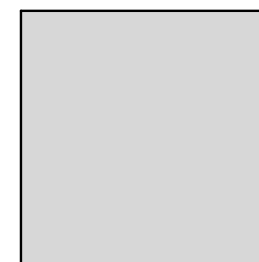
CIENA DETAIL

NO SCALE

5

CHARLES
FIBER TELCO ENCLOSURE
CUBE-MP1818WB-A

| | |
|-----------------------|-------------------|
| ENCLOSURE DIM (HxWxD) | 18.0"x18.0"x9.25" |
| NEMA RATING | 4X |
| THERMAL | SEALED |
| MOUNTING BACKBOARD | WOOD |



FIBER TELCO ENCLOSURE DETAIL

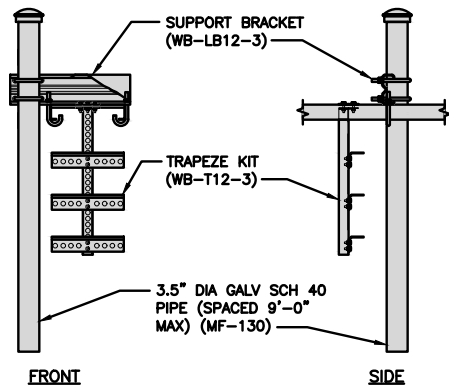
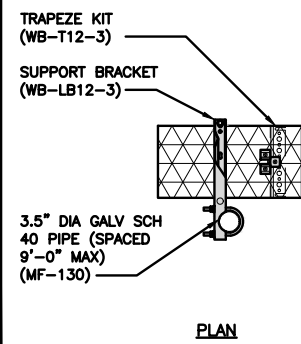
NO SCALE

6

COMMSCOPE WB-K110-B
WAVEGUIDE BRIDGE KIT

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

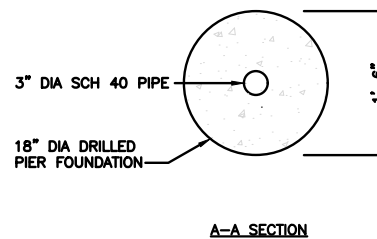
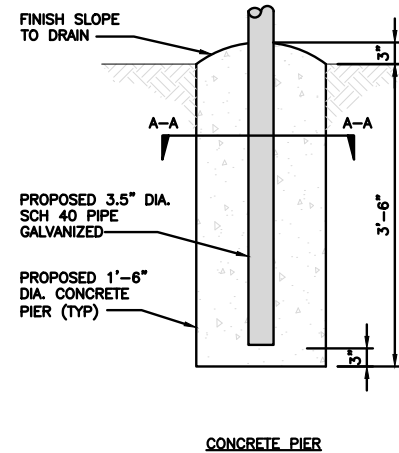
| | |
|--------------------|--|
| INCLUDED PRODUCTS: | WB-T12-3 TRAPEZE KIT, 3 RUNGS |
| | WB-LB12-3 SUPPORT BRACKET |
| | MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4" |



ICE BRIDGE DETAIL

NO SCALE

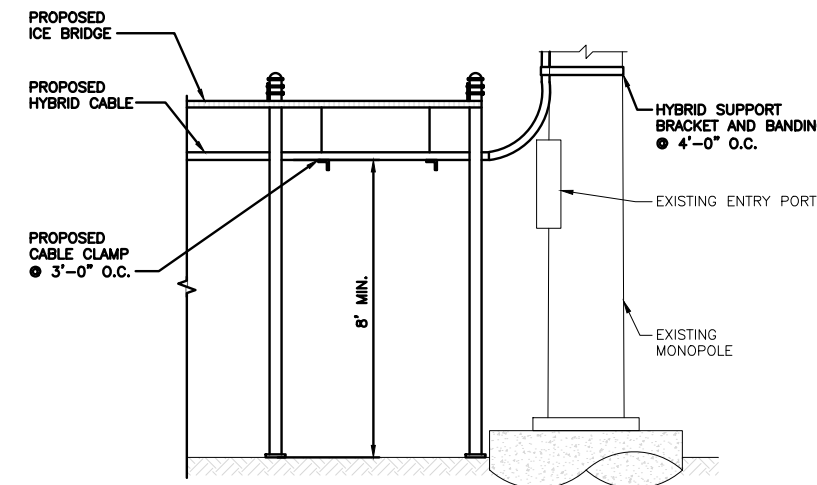
7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



HYBRID CABLE RUN

NO SCALE

9

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

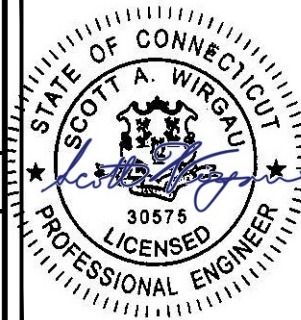
AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY: SB CHECKED BY: SRF APPROVED BY: SRF

RFDS REV #: ----

CONSTRUCTION
DOCUMENTS

| SUBMITTALS | | |
|------------|------------|-------------------------|
| REV | DATE | DESCRIPTION |
| 0 | 11/05/2021 | ISSUED FOR CONSTRUCTION |
| | | |
| | | |
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IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

A&E PROJECT NUMBER
310968-13709691_D2

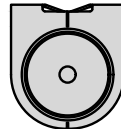
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
EQUIPMENT DETAILS

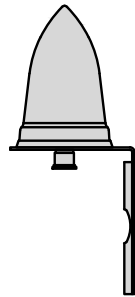
SHEET NUMBER

A-4

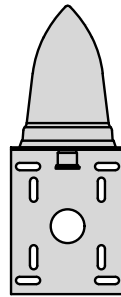
| PCTEL GPSGL-TMG-SPI-40NCB | |
|------------------------------|------------------------|
| DIMENSIONS (DIAxH) MM/INCH | 81x184mm 3.2"x7.25" |
| WEIGHT W/ACCESSORIES | 075 lbs |
| CONNECTOR | N-FEMALE |
| FREQUENCY RANGE | 1590 ± 30MHz |



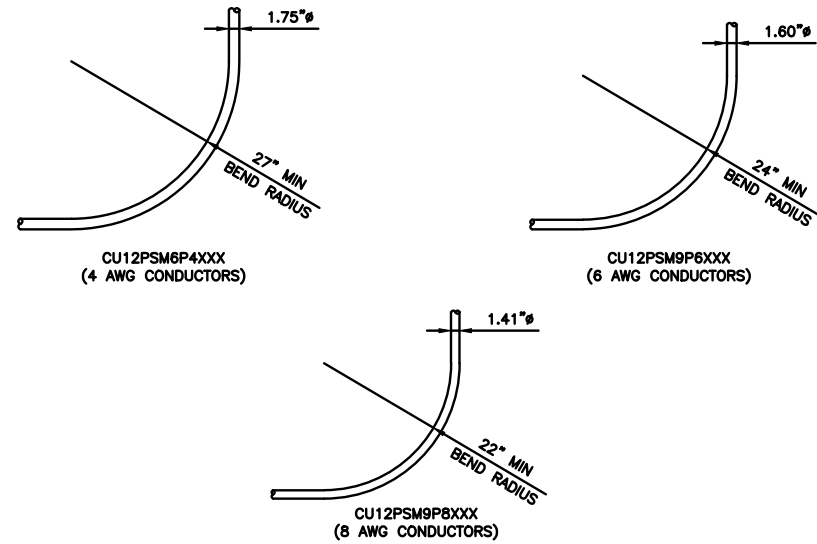
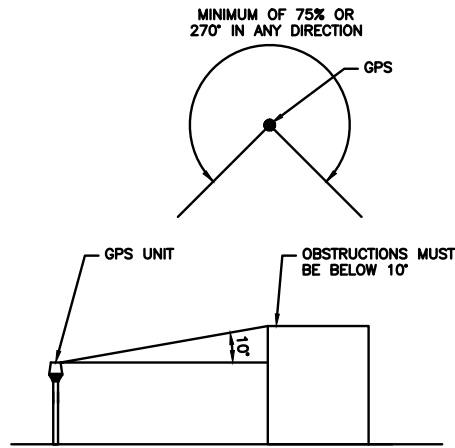
TOP



BACK



SIDE



GPS 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

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

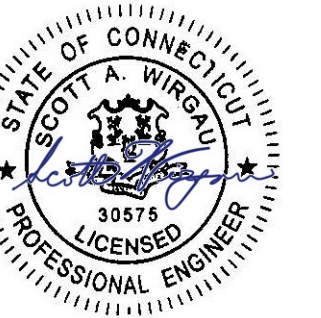
AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY: SB
CHECKED BY: SRF
APPROVED BY: SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

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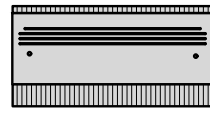
A&E PROJECT NUMBER
310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

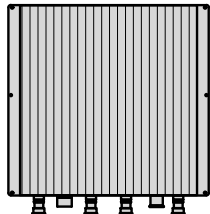
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

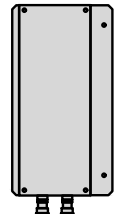
| FUJITSU DUAL BAND TA08025-B604 | |
|-----------------------------------|---------------------|
| DIMENSIONS (HxWxD) | 14.9"x15.7"x7.8" |
| WEIGHT | 63.9 lbs |
| CONNECTOR TYPE | 4.3-10 RF CONNECTOR |
| POWER SUPPLY | DC -58~-36V |



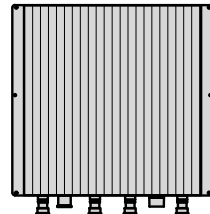
PLAN



BACK



SIDE



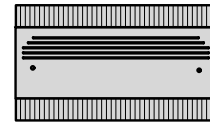
FRONT

RRH DETAIL

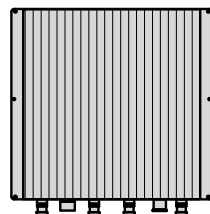
NO SCALE

1

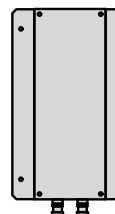
| FUJITSU TRIPLE BAND TA08025-B605 | |
|-------------------------------------|---------------------|
| DIMENSIONS (HxWxD) | 14.9"x15.7"x9" |
| WEIGHT | 74.95 lbs |
| CONNECTOR TYPE | 4.3-10 RF CONNECTOR |
| POWER SUPPLY | DC -58~-36V |



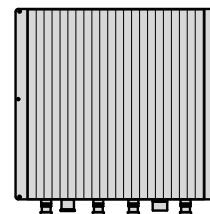
PLAN



BACK



SIDE



FRONT

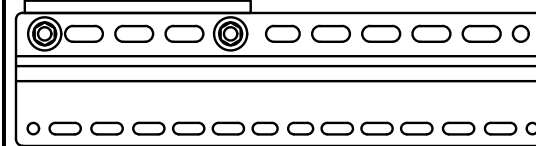
RRH DETAIL

NO SCALE

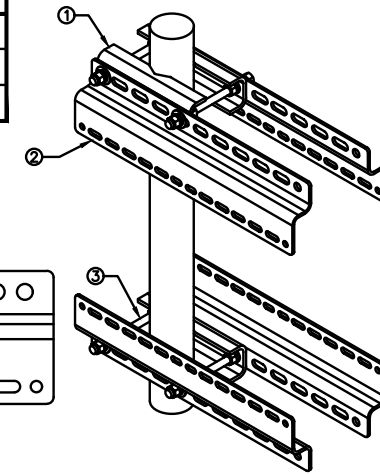
2

| SABRE DOUBLE Z-BRACKET G10123155 | |
|-------------------------------------|-----------------|
| DIMENSIONS (HxWxD) (1 BRACKET) | 5"x20"x1-13/16" |
| WEIGHT (FULL ASSEMBLY) | 35.79 lbs |
| PACKAGE QUANTITY | 4 |

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



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



RRH MOUNT DETAIL

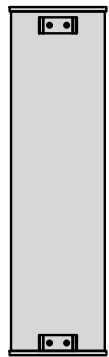
NO SCALE

3

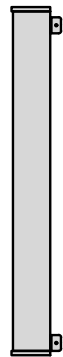
| JMA WIRELESS MX08FRO665-21 ANTENNA | |
|---------------------------------------|-------------------|
| DIMENSIONS (HxWxD) | 72.0"x20.0"x8.0" |
| TOTAL WEIGHT | 64.5 LB |
| RF PORTS, CONNECTOR TYPE | 8 x 4.3-10 FEMALE |



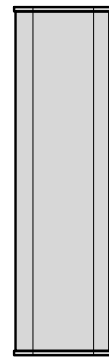
PLAN



BACK



SIDE



FRONT

ANTENNA DETAIL

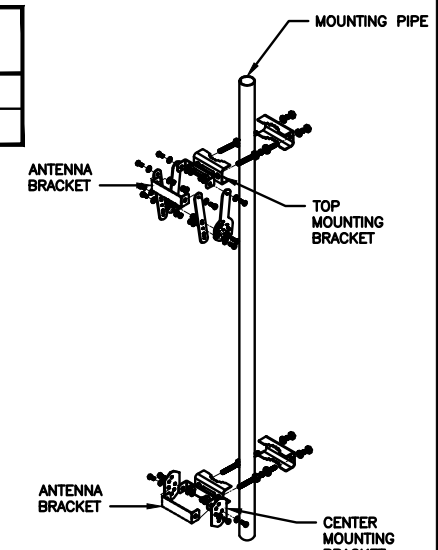
NO SCALE

4

| 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

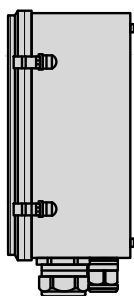
NO SCALE

6

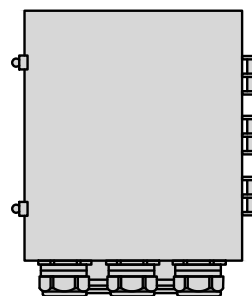
| RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP) | |
|--|---------------------|
| DIMENSIONS (HxWxD) | 18.98"x14.39"x8.15" |
| WEIGHT | 21.82 LBS |



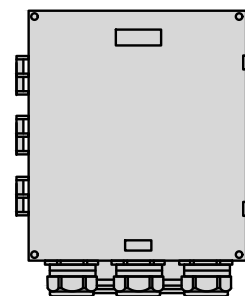
PLAN



SIDE



BACK



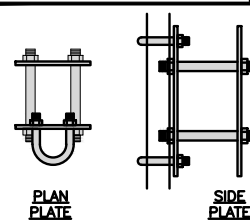
FRONT

SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

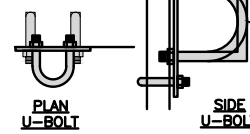
7

| COMMSCOPE XP-2040 CROSSOVER PLATE | |
|--------------------------------------|------------|
| DIMENSIONS (HxW) | 10"x12" |
| WEIGHT | 11.023 LBS |



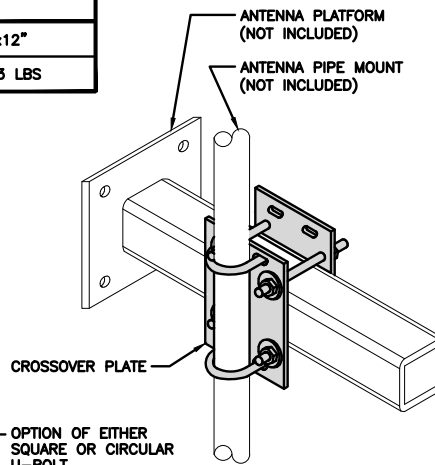
PLAN PLATE

SIDE PLATE



PLAN U-BOLT

SIDE U-BOLT



CROSSOVER PLATE

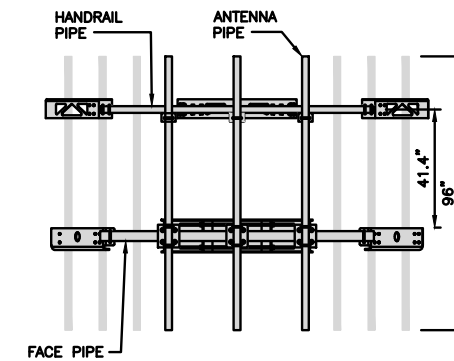
OPTION OF EITHER
SQUARE OR CIRCULAR
U-BOLT

RRH/OVP MOUNT DETAIL

NO SCALE

8

| COMMSCOPE MC-PK8-DSH | |
|-------------------------|-------------|
| FACE WIDTH | 96" |
| WEIGHT | 1373.08 lbs |
| NOTE: 15" TO 38" O.D. | |

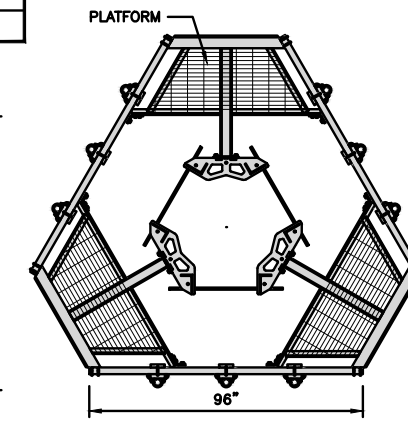


HANDRAIL PIPE

ANTENNA PIPE

FACE PIPE

PLATFORM



ANTENNA PLATFORM DETAIL

NO SCALE

9



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

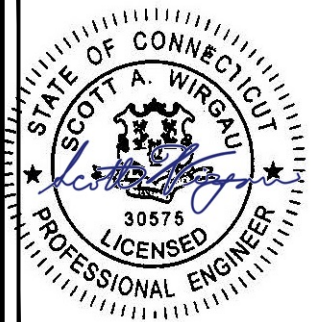


DRAWN BY: SB CHECKED BY: SRF APPROVED BY: SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

| SUBMITTALS | | |
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TO ALTER THIS DOCUMENT.

A&E PROJECT NUMBER
310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-6

NOTES

1. THE EASEMENT RIGHTS FOR THIS SITE DO NOT INCLUDE A SPECIFIED AREA FOR THE LOCATION OF UTILITIES. CONSTRUCTION CONTRACTOR MUST FIELD VERIFY THE APPROPRIATENESS OF ALL PROPOSED UTILITY ROUTES
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

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

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



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LITTLETON, CO 80120



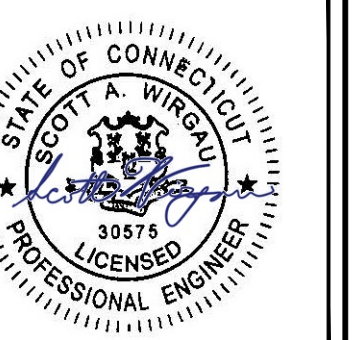
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

| | | |
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| DRAWN BY: | CHECKED BY: | APPROVED BY: |
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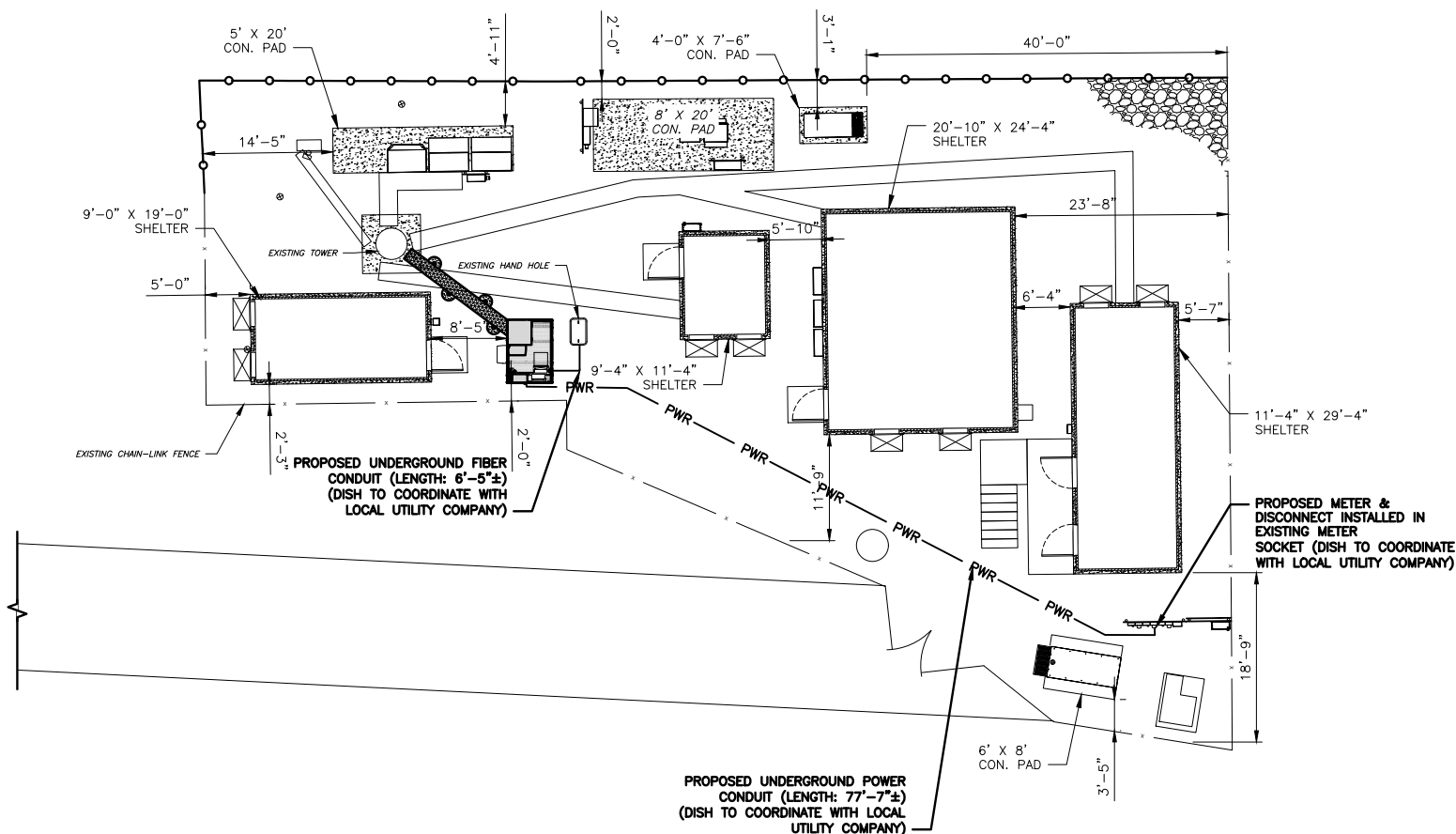
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A&E PROJECT NUMBER
310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
ELECTRICAL/FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER
E-1



ELECTRICAL NOTES

NO SCALE

2

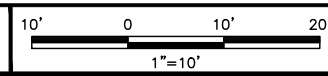


AERIAL VIEW

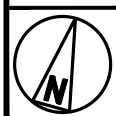
NO SCALE

3

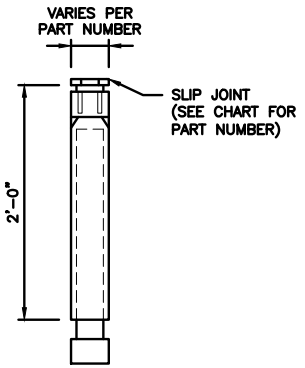
UTILITY ROUTE PLAN



1



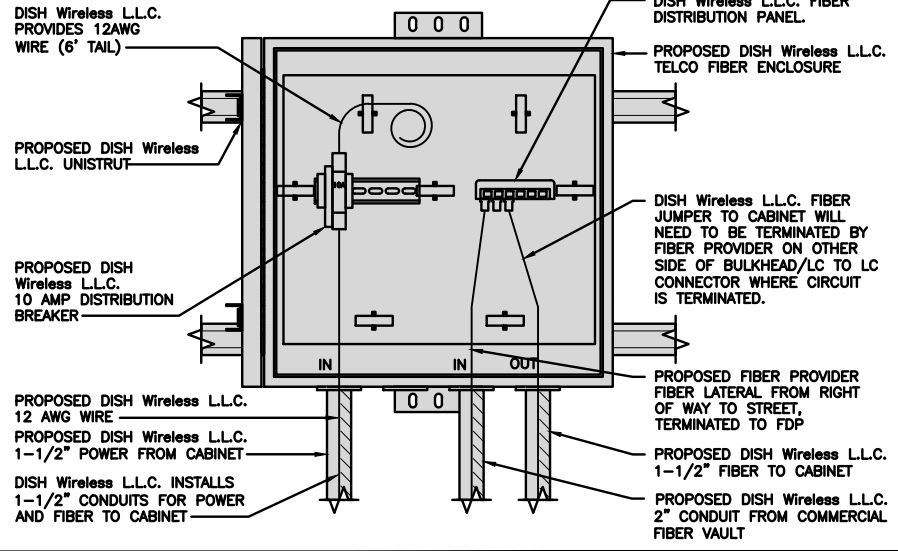
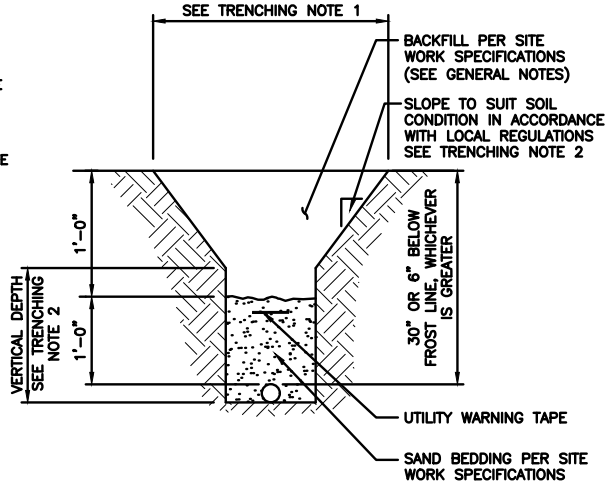
| CARLON EXPANSION FITTINGS | | | | |
|---------------------------|---------------------------------|--------|--------------|---------------|
| COUPLING END PART# | MALE TERMINAL ADAPTER END PART# | SIZE | STD CTN QTY. | TRAVEL LENGTH |
| E945D | E945DX | 1/2" | 20 | 4" |
| E945E | E945EX | 3/4" | 15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



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

TRENCHING NOTES

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



EXPANSION JOINT DETAIL

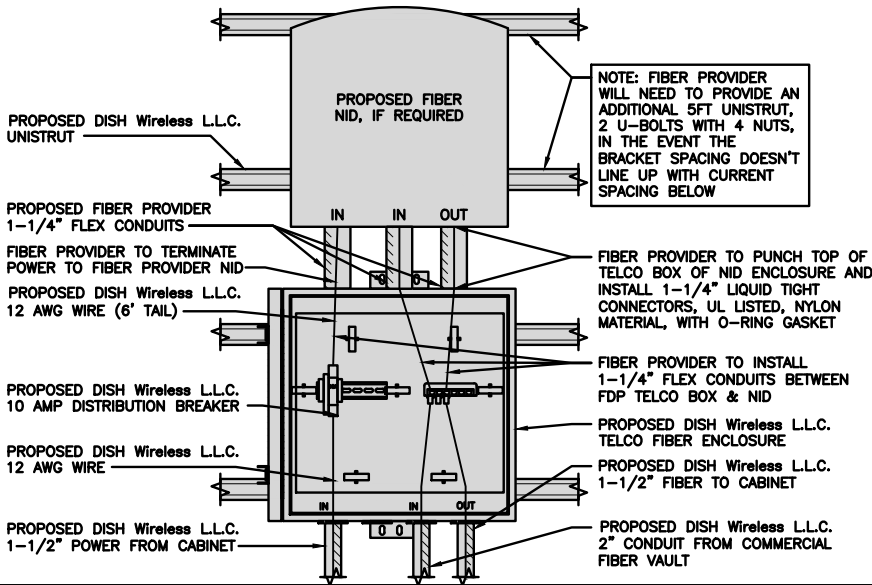
NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL

NO SCALE 2

DARK TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9



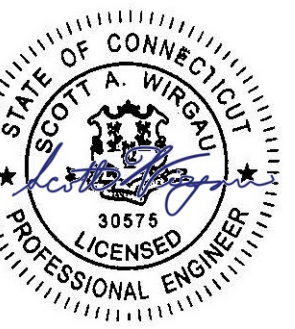
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER
E-2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



DRAWN BY: CHECKED BY: APPROVED BY:

SB SRF SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

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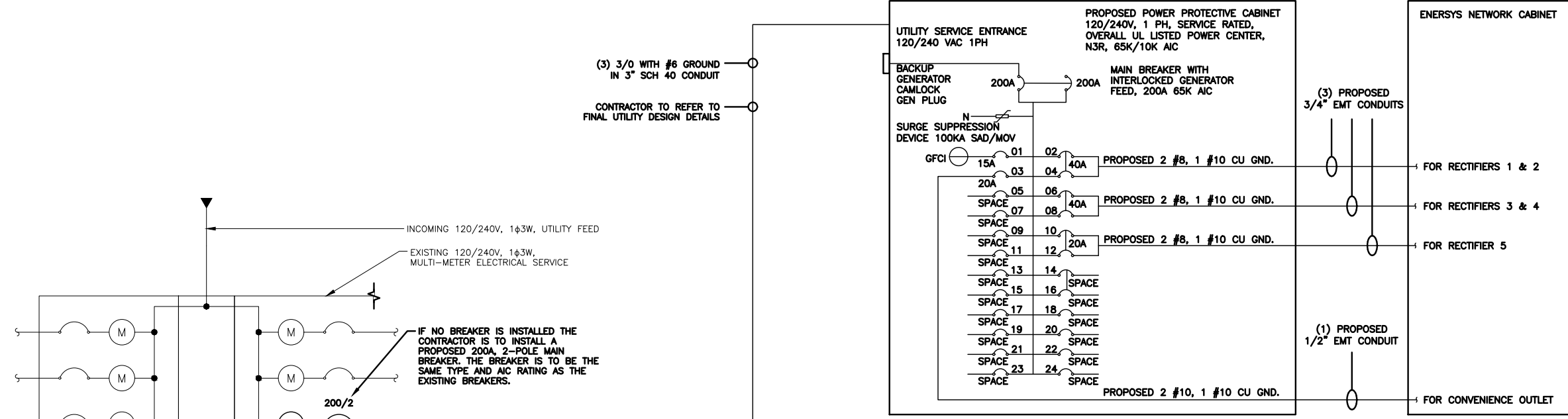
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DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

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

SHEET NUMBER
E-3



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:
(2) 40A, 2P BREAKER - SQUARE D P/N:Q0240
(1) 20A, 2P BREAKER - SQUARE D P/N:Q0220
(1) 20A, 1P BREAKER - SQUARE D P/N:Q0120
(1) 15A, 1P BREAKER - SQUARE D P/N:Q0115

NOTE:
(3) ADDITIONAL OCCUPIED SOCKETS NOT SHOWN FOR CLARITY.
DISH Wireless TO USE ONLY EXISTING EMPTY SOCKET.

PPC ONE-LINE DIAGRAM

NO SCALE 1

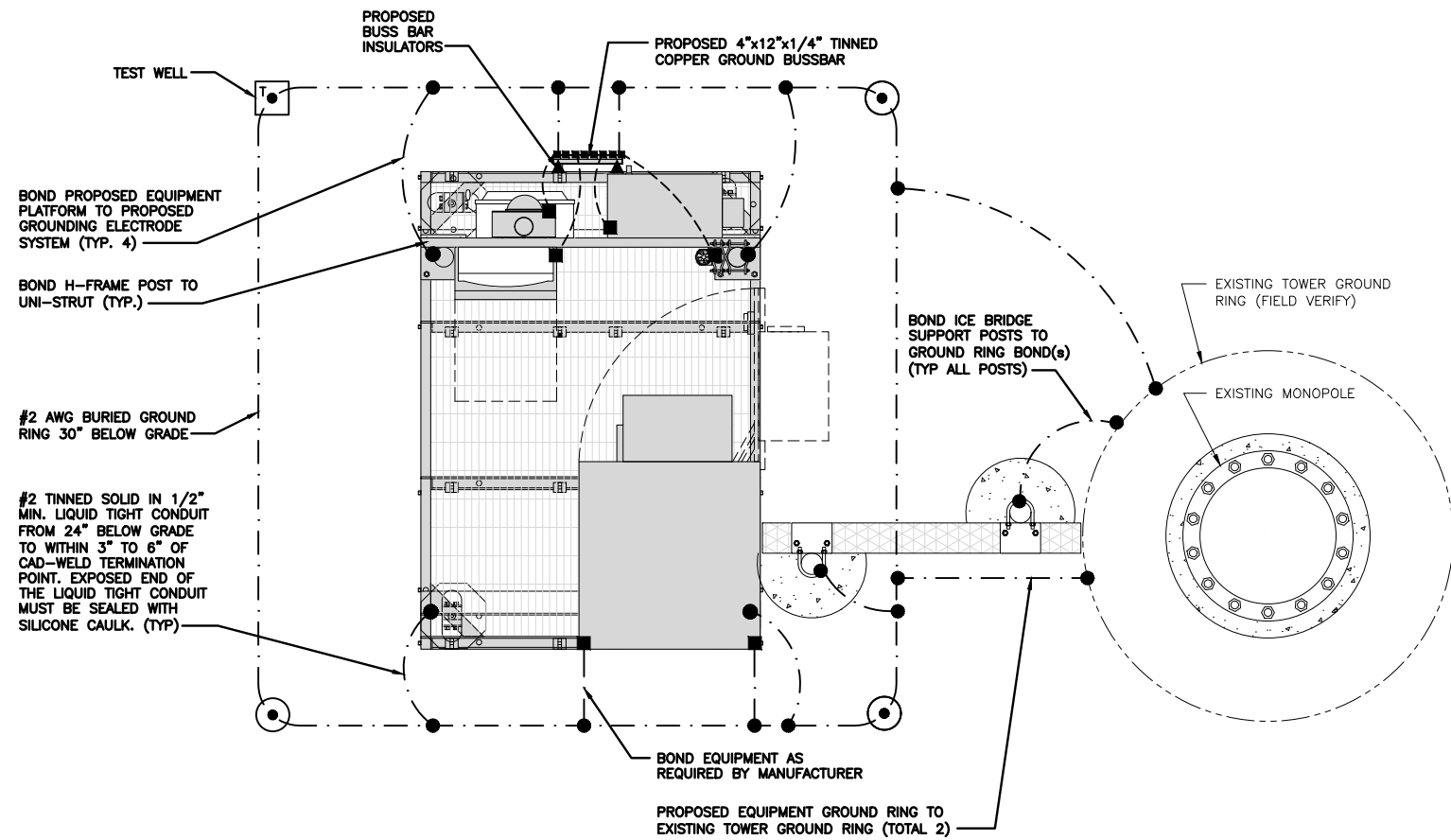
| PROPOSED ENERSYS PANEL SCHEDULE | | | | | | | | | | | |
|----------------------------------|-------------------|-----|------|-------|-------|-------|------|-------------------|------|---------------------------------------|--|
| LOAD SERVED | VOLT AMPS (WATTS) | | TRIP | CKT # | PHASE | CKT # | TRIP | VOLT AMPS (WATTS) | | LOAD SERVED | |
| | L1 | L2 | | | | | | L1 | L2 | | |
| PPC GFCI OUTLET | 180 | 180 | 15A | 1 | A | 2 | 40A | 3840 | 3840 | ENERSYS ALPHA CORDEX RECTIFIERS 1 & 2 | |
| ENERSYS GFCI OUTLET | 180 | 180 | 20A | 3 | B | 4 | 40A | 3840 | 3840 | ENERSYS ALPHA CORDEX RECTIFIERS 1 & 2 | |
| -SPACE- | | | | 5 | A | 6 | 40A | 3840 | 3840 | ENERSYS ALPHA CORDEX RECTIFIER 3 & 4 | |
| -SPACE- | | | | 7 | B | 8 | 40A | 3840 | 3840 | ENERSYS ALPHA CORDEX RECTIFIER 3 & 4 | |
| -SPACE- | | | | 9 | A | 10 | 20A | 1920 | 1920 | ENERSYS ALPHA CORDEX RECTIFIER 5 | |
| -SPACE- | | | | 11 | B | 12 | 20A | 1920 | 1920 | ENERSYS ALPHA CORDEX RECTIFIER 5 | |
| -SPACE- | | | | 13 | A | 14 | | | | -SPACE- | |
| -SPACE- | | | | 15 | B | 16 | | | | -SPACE- | |
| -SPACE- | | | | 17 | A | 18 | | | | -SPACE- | |
| -SPACE- | | | | 19 | B | 20 | | | | -SPACE- | |
| -SPACE- | | | | 21 | A | 22 | | | | -SPACE- | |
| -SPACE- | | | | 23 | B | 24 | | | | -SPACE- | |
| VOLTAGE AMPS | 180 | 180 | | | | | | 9500 | 9500 | | |
| 200A MCB, 1φ, 24 SPACE, 120/240V | | | | L1 | L2 | | | 9680 | 9680 | VOLTAGE AMPS | |
| MB RATING: 65,000 AIC | | | | 81 | 81 | | | 81 | 81 | AMPS | |
| | | | | 81 | 81 | | | 81 | 81 | MAX AMPS | |
| | | | | 102 | 102 | | | 102 | 102 | MAX 125% | |

PANEL SCHEDULE

NO SCALE 2

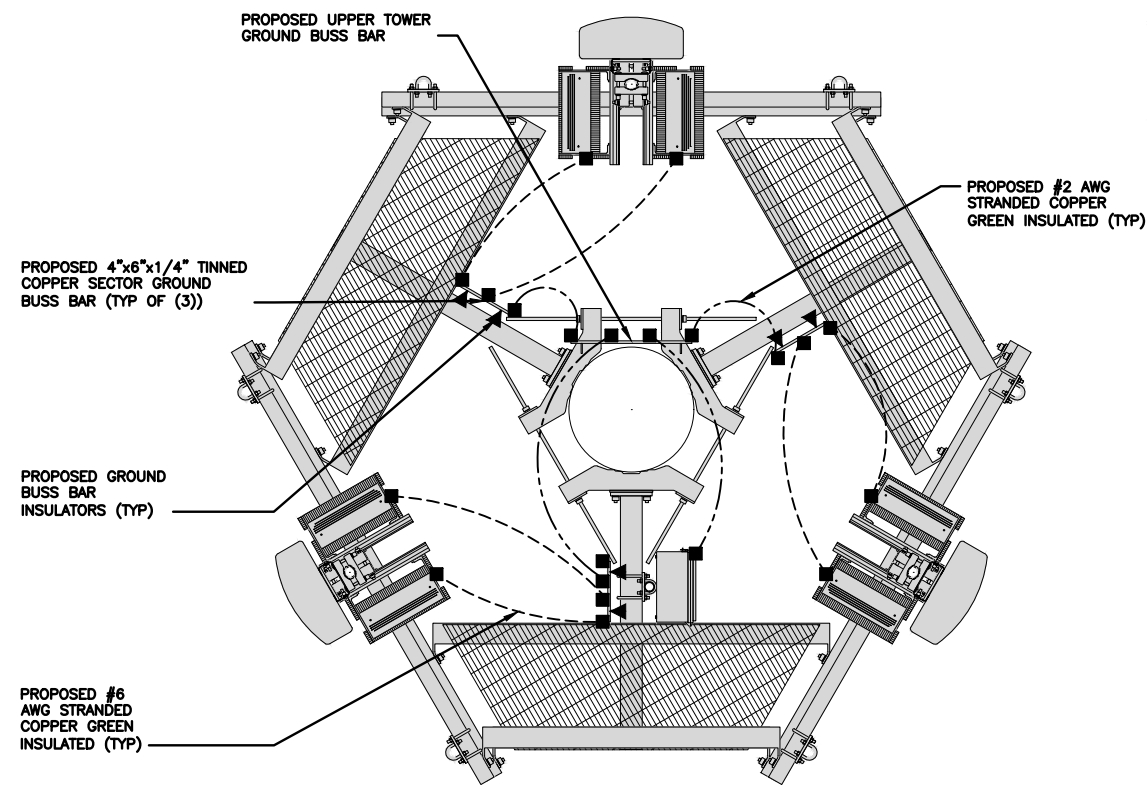
NOT USED

NO SCALE 3



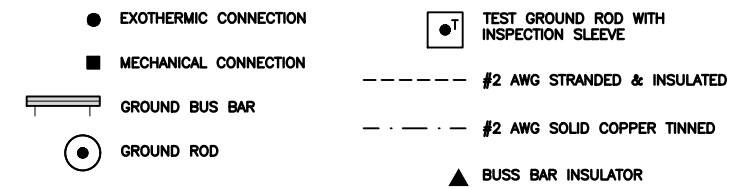
TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

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

GROUNDING KEY NOTES

- (A) **EXTERIOR GROUND RING:** #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 8 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 5/8" 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, L.L.C. GROUNDING NOTES.**

GROUNDING KEY NOTES

NO SCALE 3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

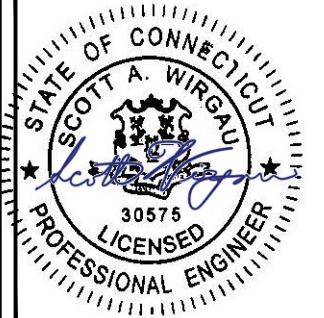


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A&E PROJECT NUMBER
310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJERO1140B
180A BAYBERRY LANE
WESTPORT, CT 06880

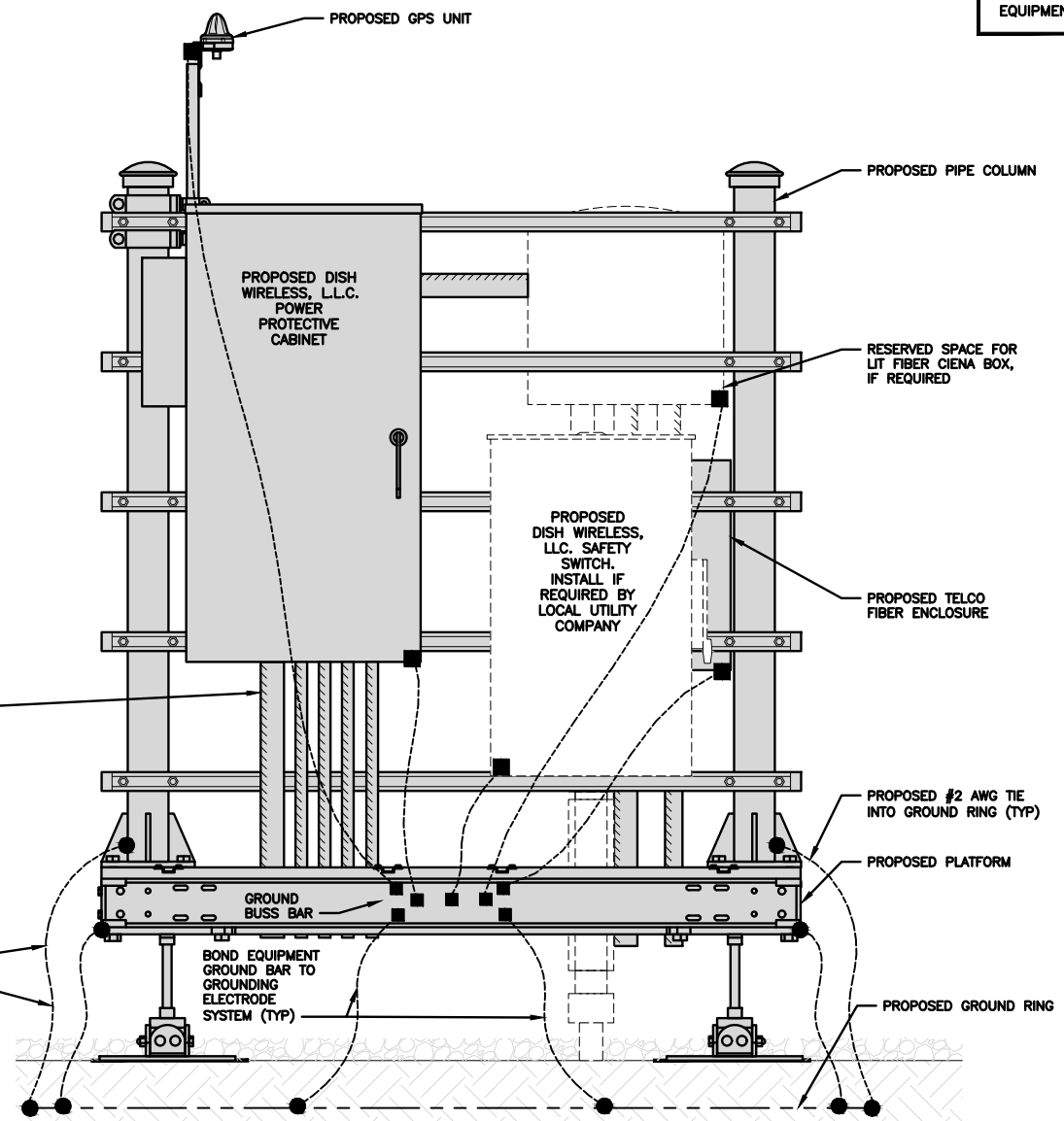
SHEET TITLE
GROUNDING PLANS
AND NOTES

SHEET NUMBER

G-1

NOTES

EQUIPMENT CABINET OMITTED FOR CLARITY

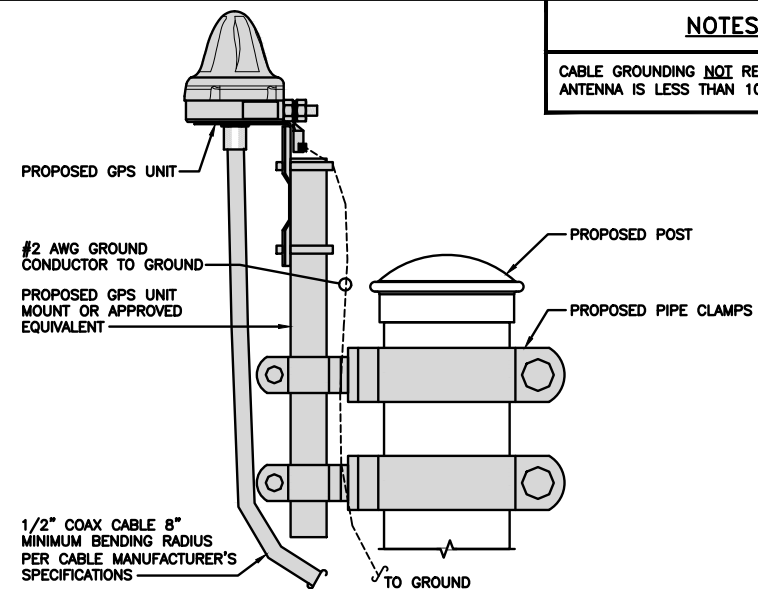


H-FRAME GROUNDING DETAIL

NO SCALE 1

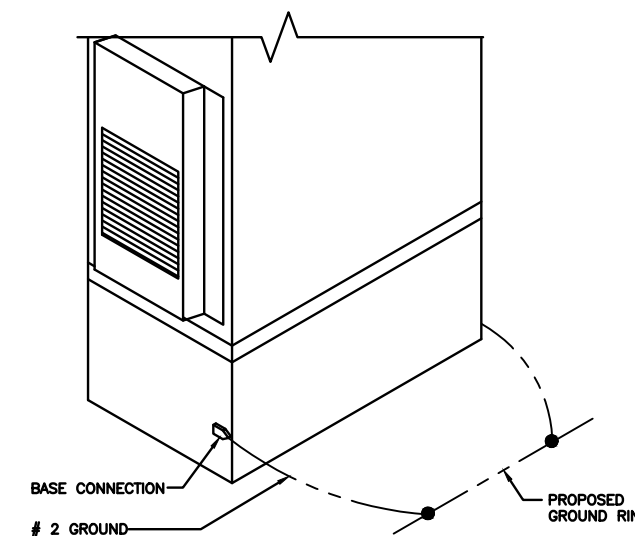
NOTES

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



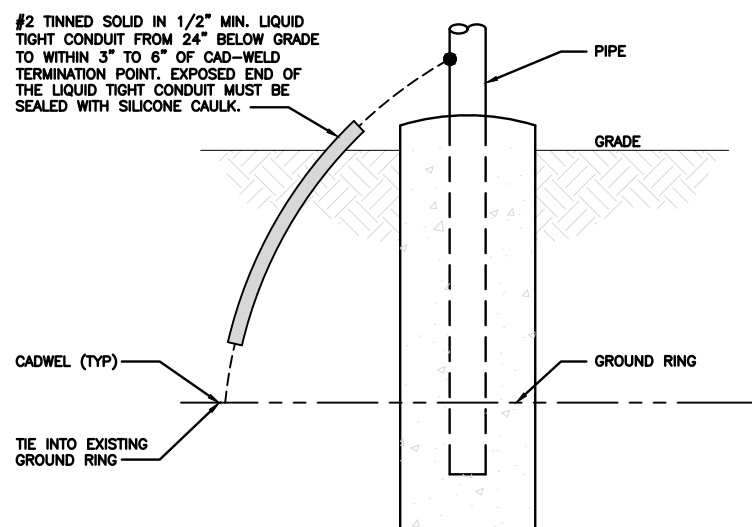
TYPICAL GPS UNIT GROUNDING

NO SCALE 2



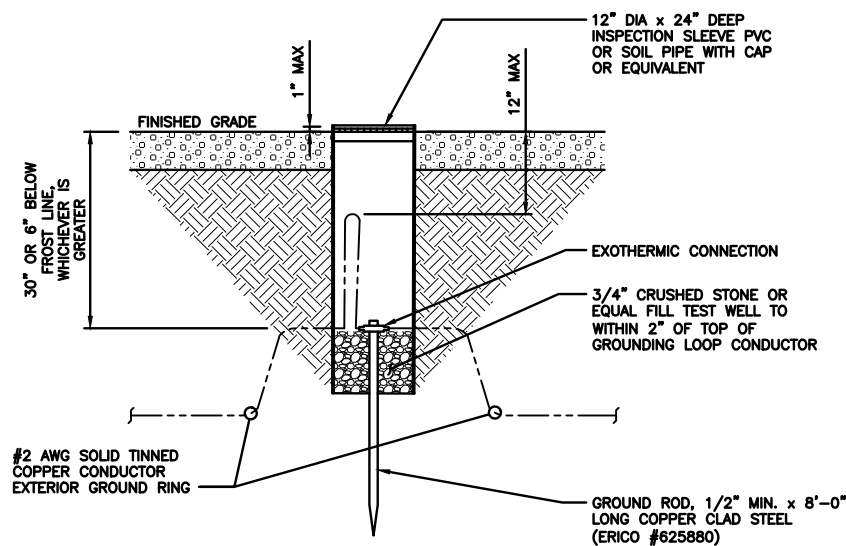
OUTDOOR CABINET GROUNDING

NO SCALE 3



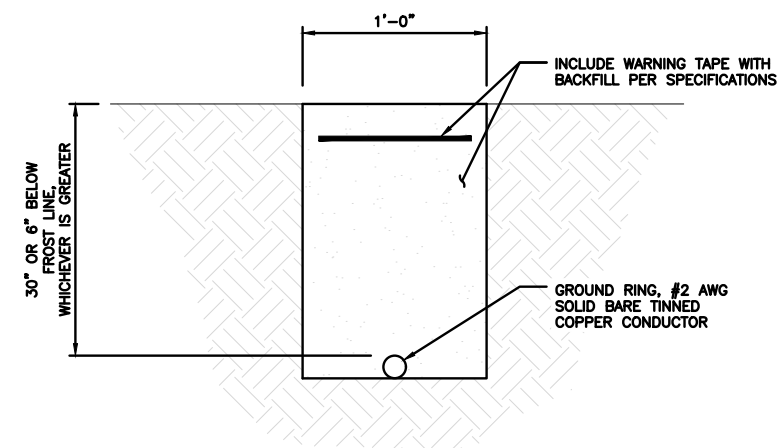
TRANSITIONING GROUND DETAIL

NO SCALE 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE 5



TYPICAL GROUND RING TRENCH

NO SCALE 6

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY: SB CHECKED BY: SRF APPROVED BY: SRF

RFDS REV #: ---

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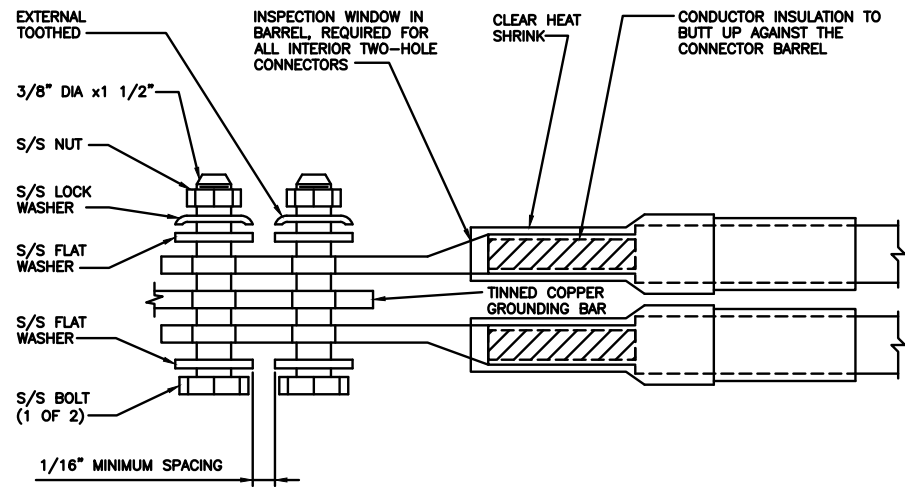
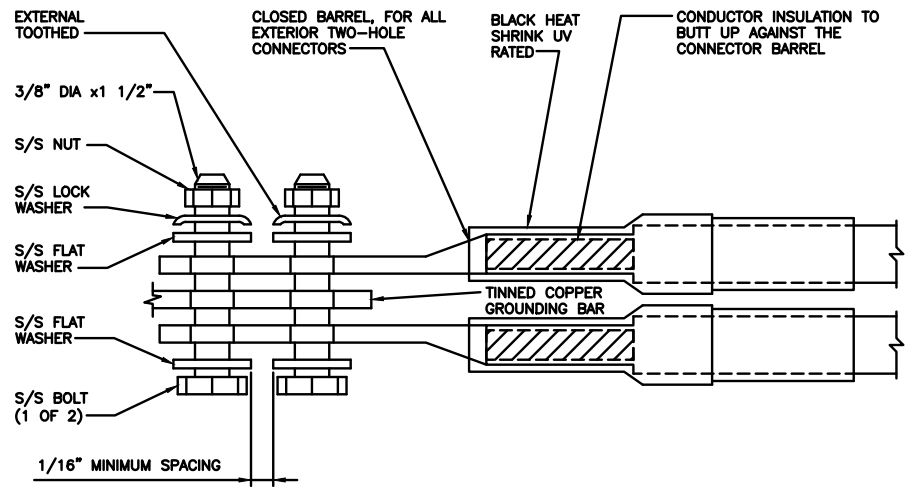
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PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

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

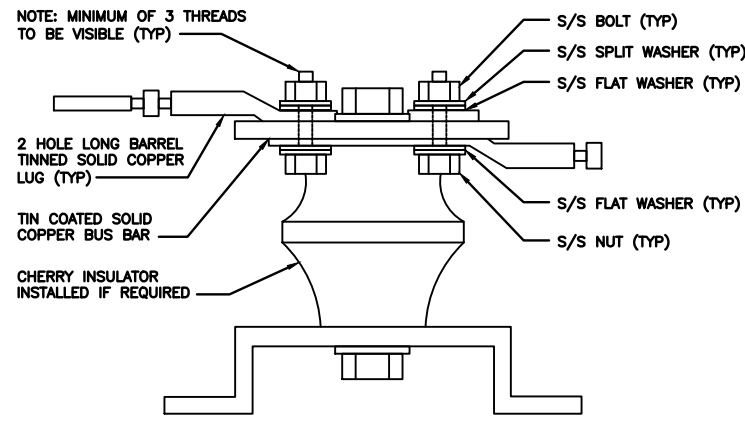
NO SCALE 1

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



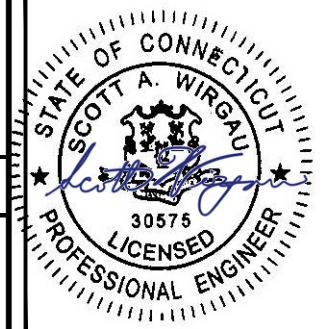
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WESTPORT, CT 06880

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

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

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

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

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

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

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

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

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

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

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

FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

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

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY

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

RET MOTORS AT ANTENNAS

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

MICROWAVE RADIO LINKS

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

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

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

RF CABLE COLOR CODES

NO SCALE

1

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



AWS
(N66+N70+H-BLOCK)



CBRS TECH
(3 GHz)



NEGATIVE SLANT PORT
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY: CHECKED BY: APPROVED BY:

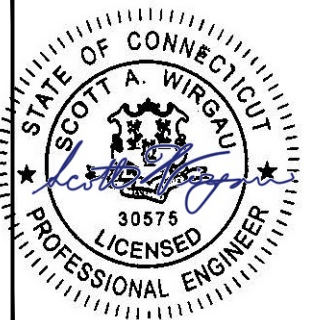
SB SRF SRF

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**CONSTRUCTION
DOCUMENTS**

SUBMITTALS

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A&E PROJECT NUMBER
310968-13709691_D2

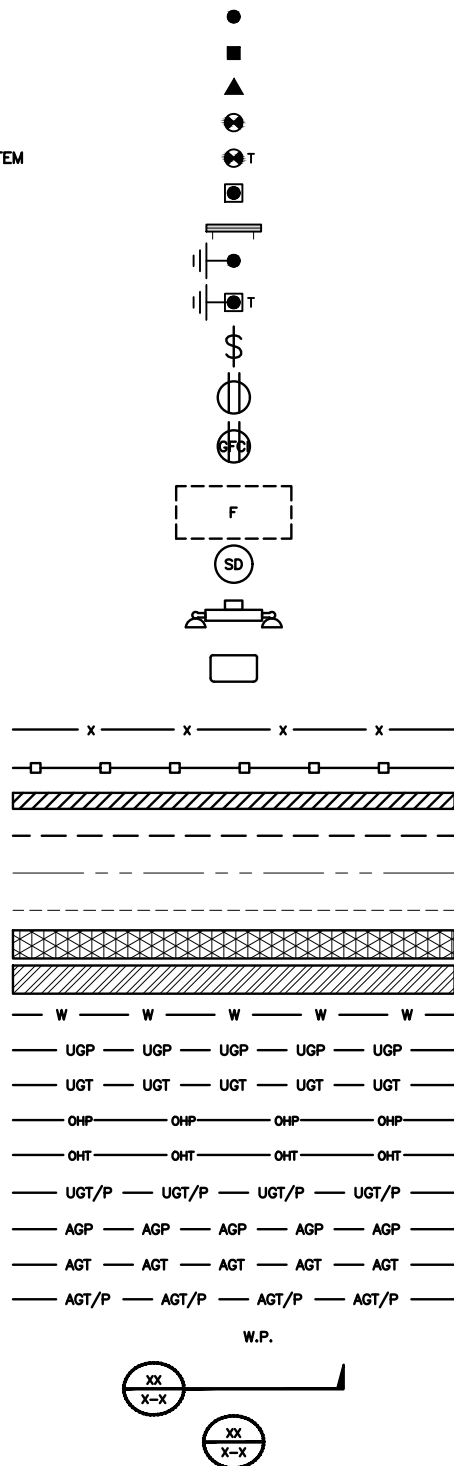
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER

RF-1

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



SECTION REFERENCE
 DETAIL REFERENCE

LEGEND

AB ANCHOR BOLT
 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 UNINTERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
 VIF VERIFIED IN FIELD
 W WIDE
 W/ WITH
 WD WOOD
 WP WEATHERPROOF
 WT WEIGHT

ABBREVIATIONS



5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120

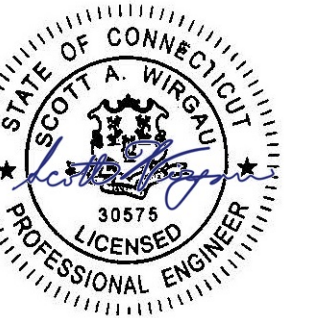


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| SB | SRF | SRF |

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A&E PROJECT NUMBER
 310968-13709691_D2

DISH WIRELESS, L.L.C.
 PROJECT INFORMATION
 NJJER01140B
 180A BAYBERRY LANE
 WESTPORT, CT 06880

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

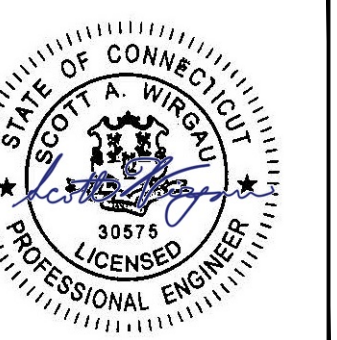


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| SB | SRF | SRF |

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310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

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

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



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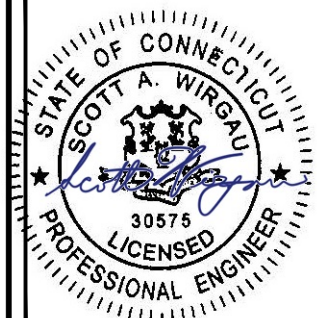


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A&E PROJECT NUMBER
310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJERO1140B
180A BAYBERRY LANE
WESTPORT, CT 06880

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.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
 - A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
 - B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
 - C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
 - D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
 - E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
 - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
 - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
 - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
 - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
 - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
 - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
 - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
 - H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.
 - I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND DISH WIRELESS L.L.C. PROJECT MANAGER IN WRITING



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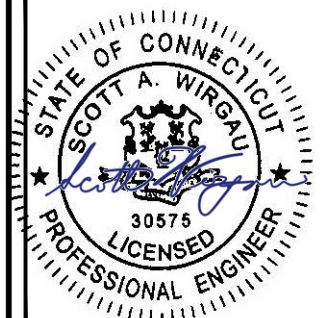


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A&E PROJECT NUMBER
310968-13709691_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJERO1140B
180A BAYBERRY LANE
WESTPORT, CT 06880

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

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Mary Young - Westport Director of Planning and Zoning

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How does USPS Tracking® work?: Add tracki... Receive automatic notifications: How can I ...
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<https://usps-track.us> ⋮

USPS Tracking - Track Package

USPS General Inquiry about your Package Status. Call Above Tollfree number for your Present Status Quo of Your USPS Post or Shipment Details. E- ...

<https://www.aftership.com> > couriers > usps ⋮

USPS Tracking - AfterShip

Enter **tracking** number to **track USPS** shipments and get delivery status online. Contact **USPS** and get REST API docs.

<https://www.trackingmore.com> > usps-tracking ⋮

USPS Tracking - TrackingMore.com

USPS Tracking · 1. Dial 1-800-222-1811, 1-800-275-8777 or 1-800-ASK-USPS. · 2. When you hear an automated voice asking you to say the required option, say "Agent" ...

★★★★★ Rating: 4.8 · 122 reviews

<https://parcelsapp.com> > carriers > usps ⋮

USPS Tracking Package and Mail

Whenever you post a package, the post office workers assign a number to that order, that number is called **USPS Tracking** Number. It is also known as label or ...

USPS Marketing Mail®: 3-10 business days (... MAIL CLASS: DELIVERY STANDARD
First-Class Mail®: 1-3 business days (not guar... Priority Mail Express®: 1-2 calendar days ...

- USPS Tracking ▼
- How to track USPS package? ▼

<https://trackapkg.com> > usps-tracking-number ⋮


USPS Tracking | Track a PKG

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May 9, 2022

Director Mary Young
Westport Dept. of Planning and Zoning
110 Myrtle Avenue, Room 203,
Westport, CT 06880

Re: Tower Share Application – Dish Site 13709691
Dish Wireless Telecommunications Facility @ 180A Bayberry Lane, Westport, CT 06880

Dear Ms. Young:

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing one hundred forty three (143) foot tall monopole tower at 180A Bayberry Lane, Westport, CT 06880 (Latitude: 41.17166667, Longitude: -73.32846667) and within the existing fenced compound. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by the Town of Westport.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at seventy seven (77) feet as more particularly detailed and described on the enclosed Construction Drawings. There are no proposed changes to the tower height or compound dimensions.

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

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

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over a circular blue stamp or seal.

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

Enclosures

Jack Andrews, Zoning Manager 10130 Donleigh Drive, Columbia, MD 21046 (443) 677-0144
Centerline Communications • 750 W Center Street, Suite 301, W Bridgewater, MA 02379



May 9, 2022

The Honorable Jennifer Tooker
Town of Westport
110 Myrtle Avenue, Room 203,
Westport, CT 06880

Re: Tower Share Application – Dish Site 13709691
Dish Wireless Telecommunications Facility @ 180A Bayberry Lane, Westport, CT 06880

Dear First Selectwoman Tooker:

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing one hundred forty three (143) foot tall monopole tower at 180A Bayberry Lane, Westport, CT 06880 (Latitude: 41.17166667, Longitude: -73.32846667) and within the existing fenced compound. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by the Town of Westport.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at seventy seven (77) feet as more particularly detailed and described on the enclosed Construction Drawings. There are no proposed changes to the tower height or compound dimensions.

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

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

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over a faint, circular blue stamp or watermark.

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

Enclosures

Jack Andrews, Zoning Manager 10130 Donleigh Drive, Columbia, MD 21046 (443) 677-0144
Centerline Communications • 750 W Center Street, Suite 301, W Bridgewater, MA 02379



May 9, 2022

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

Re: Tower Share Application – Dish Site 13709691
Dish Wireless Telecommunications Facility @ 180A Bayberry Lane, Westport, CT 06880

Dear Mr. Paynter,

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing one hundred forty three (143) foot tall monopole tower at 180A Bayberry Lane, Westport, CT 06880 (Latitude: 41.17166667, Longitude: -73.32846667) and within the existing fenced compound. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by the Town of Westport.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at seventy seven (77) feet as more particularly detailed and described on the enclosed Construction Drawings. There are no proposed changes to the tower height or compound dimensions.

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

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

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over the typed name and title.

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

Enclosures