NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
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January 23, 2018

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

RE: Tower Share Application
220 EVERGREEN STREET, BRIDGEPORT, CT 06606
Latitude: 41.1977
Longitude: -73.1907
T-Mobile Site#: CTFF335A-NSD-Replacement

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC ("T-Mobile"). T-Mobile plans to install antennas and related equipment at the tower site located at 220 Evergreen Street in Bridgeport
, Connecticut.

T-Mobile will install three (4) 700MHz antenna, three (4) 1900/2100 MHz antennas, (1) microwave dish and twelve (12) RRUs, at the 140-foot level of the existing 135-foot monopole tower five (5) coax cables will also be installed. T-Mobile's equipment cabinets will be placed within 10x20 lease area. Included are plans by Hudson Design Group, dated November 27, 2017. **Exhibit C**. Also included is a structural analysis prepared by Blue Sky Engineering, dated December 14, 2017, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as **Exhibit D.**

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of T-Mobile's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Joseph P Ganim, Mayor of the City of Bridgeport and Dennis Buckley, Zoning Official, as well as the tower owner (Blue Sky Towers) and property owner (Chapin & Bangs Company).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 135-feet; T-Mobile's proposed antennas will be located at a center line height of 110-feet.

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 13.57% as evidenced by **Exhibit E.**

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Connecticut General Statutes 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, T-Mobile 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 T-Mobile's proposed loading. The structural analysis is included as **Exhibit D**.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this support tower in Bridgeport. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit T-Mobile to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as **Exhibit F**, authorizing T-Mobile 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 T-Mobile equipment at the 110-foot level of the existing 135-foot tower would have an insignificant visual impact on the area around the tower. T-Mobile's ground equipment would be installed within the existing facility compound. T-Mobile's shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by **Exhibit E**, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. T-Mobile 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 T-Mobile with this tower sharing application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting T-Mobile's proposed loading. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing guyed tower. T-Mobile'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 Bridgeport.

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments

cc: Joseph P Ganim, Mayor, as elected official
Dennis Buckley, Zoning official
Blue Sky Towers - as tower owner
Chapin & Bangs Company - property owner

Exhibit A

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

April 18, 2016

Christopher B. Fisher, Esq.
Daniel M. Laub, Esq.
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

RE: **DOCKET NO. 464** – Blue Sky Towers, LLC and New Cingular Wireless PCS, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Bridgeport Tax Assessor Map 53, Block 1527, Lot 2, 220 Evergreen Street, Bridgeport, Connecticut.

Dear Attorneys Fisher and Laub:

By its Decision and Order dated April 14, 2016, the Connecticut Siting Council (Council) granted a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a telecommunications facility located at 220 Evergreen Street, Bridgeport, Connecticut.

Enclosed are the Council's Certificate, Findings of Fact, Opinion, and Decision and Order.

Very truly yours,

Robert Stein

Robert Stein
Chairman

RS/MP/cm

Enclosures (4)

c: Parties and Intervenors (without Certificate enclosure)
State Documents Librarian (without Certificate enclosure)

CSC
CONNECTICUT SITING COUNCIL

STATE OF CONNECTICUT)

ss. New Britain, Connecticut : **April 18, 2016**

COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the Findings of Fact, Opinion, and Decision and Order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council

I certify that a copy of the Findings of Fact, Opinion, and Decision and Order in Docket No. 464 has been forwarded by Certified First Class Return Receipt Requested mail, on April 18, 2016, to all parties and intervenors of record as listed on the attached service list, dated December 3, 2015.

ATTEST:

Carriann Mulcahy
Secretary II
Connecticut Siting Council

LIST OF PARTIES AND INTERVENORS
SERVICE LIST

Status Granted	Document Service	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Applicant	☒ E-mail	Blue Sky Towers, LLC & New Cingular Wireless PCS, LLC	Christopher B. Fisher, Esq. Daniel M. Laub, Esq. Cuddy & Feder LLP 445 Hamilton Avenue, 14th Floor White Plains, NY 10601 cfisher@cuddyfeder.com dlaub@cuddyfeder.com Michele Briggs AT&T 500 Enterprise Drive Rocky Hill, CT 06067-3900 MC3185@att.com Sean Gormley Blue Sky Towers, LLC 352 Park Street, Ste. 106 North Reading, MA 01864 seang@blueskytower.com

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

April 18, 2016

TO: Classified/Legal Supervisor
464160418
The Connecticut Post
410 State Street
Bridgeport, CT 06604

FROM: Carriann Mulcahy, Secretary II

RE: **DOCKET NO. 464** – Blue Sky Towers, LLC and New Cingular Wireless PCS, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Bridgeport Tax Assessor Map 53, Block 1527, Lot 2, 220 Evergreen Street, Bridgeport, Connecticut.

Please publish the attached notice as soon as possible, but not on Saturday, Sunday, or a holiday.

Please send an affidavit of publication and invoice to my attention.

Thank you.

CM

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
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NOTICE

Pursuant to General Statutes § 16-50p (a), the Connecticut Siting Council (Council) announces that, on April 14, 2016, the Council issued Findings of Fact, an Opinion, and a Decision and Order approving an application from Blue Sky Towers, LLC and New Cingular Wireless PCS, LLC for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 220 Evergreen Street, Bridgeport, Connecticut. This application record is available for public inspection in the Council's office, Ten Franklin Square, New Britain, Connecticut.

CONNECTICUT SITING COUNCIL

DOCKET NO. 464 – Blue Sky Towers, LLC and New Cingular Wireless PCS, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Bridgeport Tax Assessor Map 53, Block 1527, Lot 2, 220 Evergreen Street, Bridgeport, Connecticut.	Connecticut Siting Council April 14, 2016

Findings of Fact

Introduction

1. Blue Sky Towers, LLC (Blue Sky) and New Cingular Wireless PCS, LLC (AT&T) collectively referred to as the Applicant (Applicant), in accordance with provisions of Connecticut General Statutes (C.G.S.) § 16-50g, et seq, applied to the Connecticut Siting Council (Council) on December 2, 2015 for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a 135-foot monopole wireless telecommunications facility at 220 Evergreen Street in Bridgeport, Connecticut. (Applicant 1, pp. 1-3)

2. Blue Sky is a Delaware limited liability company with its headquarters at 352 Park Street Suite 106, North Reading, Massachusetts. Blue Sky develops/builds, owns and leases numerous telecommunications towers in the United States. (Applicant 1, p. 4)

3. Blue Sky entered into a long term lease with the subject property owner Chapin & Bangs Company and subsequently, a lease with AT&T. Blue Sky would construct, maintain and own the proposed facility and would be the Certificate Holder. (Applicant 1, p. 4)

4. AT&T is a Delaware limited liability company with an office at 500 Enterprise Drive, Rocky Hill, Connecticut. The company's member corporation is licensed by the Federal Communications Commission (FCC) to construct and operate a personal wireless services system. The company does not conduct any other business in the State of Connecticut other than the provision of wireless services under FCC rules and regulations. (Applicant 1, p. 4)

5. The party in this proceeding is the Applicant. (Transcript 1, February 11, 2016, 3:00 p.m. [Tr. 1], p. 5)

6. The purpose of the proposed facility is to provide a permanent replacement to an existing AT&T site located at 370 North Avenue, Bridgeport known as the HI HO Facility (HI HO Facility). (Applicant 5 – Item No. 1)

7. The HI HO Facility is an approximately 80-foot concrete and steel coal storage silo facility. AT&T's antennas are co-located at the 83-foot level of the structure. Sprint and MetroPCS are also co-located on this facility. (Applicant 4, response 22; Applicant 1, Tab 1 – Council Staff Report, Petition No. 1169; Tr. 1, p. 45)

8. Because of the age of the structure (dating back to circa 1930s) and some coal being left inside the structure, there is excessive structural deterioration of this existing support structure on which AT&T's antennas are located. According to the Structural Condition Assessment Report dated November 12, 2014, the entire HI HO Facility structure was deemed a serious hazard to any technicians, tower hands, or anyone else working on or around this structure. (Applicant 1, p. 1; Applicant 1, Tab 1 – Council Staff Report, Petition No. 1169; Council Administrative Notice Item No. 28 – Structural Condition Assessment Report, Petition No. 1169)

9. In light of the safety issues, AT&T's technicians are unable to visit the HI HO Facility. Thus, AT&T's radiofrequency (RF) engineering was unable to add LTE capacity to the HI HO Facility, and AT&T network operations would not restore service from the site in the event of an outage. Accordingly, AT&T will decommission the HI HO Facility and seeks to install antennas at the proposed site. (Applicant 1, pp. 1-2)

10. On July 6, 2015, the Council received a Petition (Petition) from Blue Sky and AT&T for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed installation of a temporary wireless telecommunications facility at the Chapin and Bangs property on 220 Evergreen Street, Bridgeport. The temporary wireless facility was intended to provide an interim solution for AT&T in order to continue providing wireless service until a permanent facility could be leased, permitted, constructed, and brought into operation. (Applicant 1, Tab 1 – Council Staff Report, Petition No. 1169)

11. The temporary facility is a 120-foot monopole on top of an 8-foot tall ballast base, for a total height of 128 feet above ground level (agl). This temporary facility was approved by the Council on August 6, 2015. (Applicant 1, Tab 1, Council Decision Letter, Petition No. 1169)

12. As of February 3, 2016, the temporary tower has been installed at the site, and AT&T is in the process of securing utility connections such as telephone. As of February 11, 2016, AT&T has a temporary electrical meter in place and is awaiting delivery of the equipment shelter. The temporary site was planned to be in service based on a projected completion of construction by the end of February 2016. (Applicant 4, response 24; Tr. 1, p. 16)

13. The purpose of the proposed permanent monopole facility is to allow AT&T to continue to provide reliable service to a geographic area including portions of Route 8, Route 127, Route 1, Main Street, Capitol Avenue, Lindley Street, Island Brook Avenue, Noble Avenue, Huntington Road, and other local roads in Bridgeport. (Applicant 1, pp. 3 and 10)

14. Pursuant to C.G.S. § 16-50*l* (b), the Applicant initiated public notice of the application that was published in the Connecticut Post on November 17, and November 19, 2015. (Applicant 2)

15. Pursuant to C.G.S. § 16-50*l*(b), notice of the application was provided to all abutting property owners by certified mail on November 18, 2015. Notice was unclaimed by four abutters: Westlund-Krasenics Properties, LLC; Maria C. & Julio Guzman; Estate of Sarina Charris & Victor P. Charris; and River Street Properties, Inc. The Applicant submitted a copy of the notice letter to these four abutters a second time by first class mail on January 5, 2016. (Applicant 1, Tab 12 – Certification of Service; Applicant 4, response 1, Tab 1)

16. On December 2, 2015, the Applicant provided notice to all federal, state and local officials and agencies listed in C.G.S. § 16-50*l* (b). (Applicant 1, p. 5 and Tab 13 – Certification of Service)

Council Procedures

17. Upon receipt of the application, the Council sent a letter to the City of Bridgeport, on December 3, 2015, as notification that the application was received and is being processed, in accordance with C.G.S. §16-50gg. (Record)

18. On December 3, 2015, the Council requested an extension of time to deem the application complete. On December 10, 2015, the Applicant granted the Council a thirty-day extension of time to January 31, 2016 to deem the application complete. (Record)

19. During a regular Council meeting on January 7, 2016, the application was deemed complete pursuant to the Regulations Connecticut of State Agencies (R.C.S.A.) § 16-50*l*-1a and the public hearing schedule was approved by the Council. (Record)

20. Pursuant to C.G.S. §16-50m, the Council published legal notice of the date and time of the public hearing in the Connecticut Post on January 12, 2016. (Record)

21. Pursuant to C.G.S. § 16-50m, on January 8, 2016, the Council sent a letter to the City of Bridgeport to provide notification of the scheduled public hearing and to invite the municipality to participate. (record)

22. In compliance with R.C.S.A. §16-50j-21, the Applicant installed a four-foot by six-foot sign at the entrance to the subject property on January 27, 2016. The sign presented information regarding the project and the Council's public hearing. (Applicant 3; Applicant 1, p. 1)

23. The Council and its staff conducted an inspection of the proposed site on February 11, 2016, beginning at 2:00 p.m. During the field inspection, the Applicant flew a balloon at the proposed site to simulate the height of the proposed tower. The balloon location was shifted about 20 feet horizontally from the proposed tower site to avoid power lines and the existing temporary tower. However, the horizontal shift did not materially affect visibility. (Council's Hearing Notice dated January 8, 2016; Tr. 1, pp. 12-14)

24. Weather conditions during the day of the balloon flight included high winds. The balloon height did not reach the proposed tower height due to the wind conditions. The balloon flight commenced at 7:00 a.m. and was intended to continue until 4:00 p.m. for the convenience of the public. However, the balloon flight was interrupted by all of the balloons popping due to the high winds, except for one. (Council's Hearing Notice dated January 8, 2016; Tr. 1, pp. 12-14)

25. Pursuant to C.G.S. § 16-50m, the Council, after giving due notice thereof, held a public hearing on February 11, 2016, beginning with the evidentiary portion of the hearing at 3:00 p.m. and continuing with the public comment session at 7:00 p.m. at the Bridgeport City Hall, Council Chambers, 45 Lyon Terrace, Bridgeport, Connecticut. (Council's Hearing Notice dated January 8, 2016; Tr. 1, p. 1; Transcript 2 – 7:00 p.m. [Tr. 2], p. 54)

State Agency Comment

26. Pursuant to C.G.S. § 16-50j (g), on January 8, 2016 and February 16, 2016, the following State agencies were solicited by the Council to submit written comments regarding the proposed facility: Department of Energy and Environmental Protection (DEEP); Department of Public Health (DPH); Council on Environmental Quality (CEQ); Public Utilities Regulatory Authority (PURA); Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); Department of Agriculture (DOAg); Department of Transportation (DOT); Connecticut Airport Authority (CAA); Department of Emergency Services and Public Protection (DESPP); and State Historic Preservation Office (SHPO). (Record)

27. The Council received a response from the DOT's Bureau of Engineering and Construction on January 14, 2016 indicating that DOT had no comments. (DOT Comments received January 14, 2016)

28. The following agencies did not respond with comment on the application: DEEP, DPH, CEQ, PURA, OPM, DECD, DOAg, CAA, DESPP, and SHPO. (Record)

Municipal Consultation

29. The Applicant commenced the 90-day pre-application municipal consultation process by letter to Mayor Bill Finch of the City of Bridgeport dated August 28, 2015. The Applicant also provided copies of the technical report to Mayor Finch and the City Planning and Zoning Commission. (Applicant 1, Tab 11; Applicant 1e)

30. By letter dated October 15, 2015, the City of Bridgeport Planning and Economic Development – Zoning Department issued the following comments regarding the proposed facility:

    a) The City notes that the subject parcel is located in the I-L (Industrial) Zone; thus, it appears to be a suitable location for a new wireless communications facility.
    b) The City notes that there is no need to meet and discuss any concerns with the Applicant.
    c) A building permit needs to be filed to ensure that all construction activity is in compliance with the Basic Building Code of the State of Connecticut.

    (Applicant 1, Tab 11 – City of Bridgeport Planning and Economic Development – Zoning Department Comments dated October 15, 2015)

31. If approved, the Applicant would file a Development and Management Plan (D&M Plan) for Council review and approval and then seek the issuance of a Building Permit from the City of Bridgeport prior to commencement of construction. (Applicant 1, p. 20)

32. Blue Sky would be willing to reserve space on the tower for emergency services antennas if requested. However, to date, the City of Bridgeport has not expressed an interest in co-locating emergency services antennas on the proposed tower. (Tr. 1, pp. 14-15)

Public Need for Service

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

34. In issuing cellular licenses, the Federal government has preempted the determination of public need for cellular service by the states, and has established design standards to ensure technical integrity and nationwide compatibility among all systems. Cellco is licensed by the Federal Communications Commission (FCC) to provide personal wireless communication service to Fairfield County, Connecticut. (Council Administrative Notice Item No. 4 – Telecommunications Act of 1996; Applicant 4, response 26)

35. Section 253 of the Telecommunications Act of 1996 prohibits any state or local statute or regulation, or other state or local legal requirement from prohibiting or having the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service. (Council Administrative Notice Item No. 4 – Telecommunications Act of 1996)

36. Section 704 of the Telecommunications Act of 1996 prohibits local and state entities from discriminating among providers of functionally equivalent services and from prohibiting or having the effect of prohibiting the provision of personal wireless services. This section also requires state or local governments to act on applications within a reasonable period of time and to make any denial of an application in writing supported by substantial evidence in a written record. (Council Administrative Notice Item No. 4 – Telecommunications Act of 1996)

37. Section 704 of the Telecommunications Act of 1996 also prohibits any state or local entity from regulating telecommunications towers on the basis of the environmental effects of radio frequency emissions, which include effects on human health and wildlife, to the extent that such towers and equipment comply with FCC's regulations concerning such emissions. (Council Administrative Notice Item No. 4 – Telecommunications Act of 1996)

38. In February 2009, as part of the American Recovery and Reinvestment Act, Congress directed the FCC to develop a National Broadband Plan to ensure every American has "access to broadband capability." Congress also required that this plan include a detailed strategy for achieving affordability and maximizing use of broadband to advance "consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, employee training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes." (Council Administrative Notice Item No. 19 – The National Broadband Plan)

39. Section 706 of the Telecommunications Act of 1996 requires each state commission with regulatory jurisdiction over telecommunications services to encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans, including elementary and secondary schools, by utilizing regulating methods that promote competition in the local telecommunications market and remove barriers to infrastructure investment. (Council Administrative Notice Item No. 4 – Telecommunications Act of 1996)

40. In December 2009, President Barack Obama recognized cell phone towers as critical infrastructure vital to the United States. The Department of Homeland Security, in collaboration with other federal stakeholders, state, local, and tribal governments, and private sector partners, has developed the National Infrastructure Protection Plan (NIPP) to establish a framework for securing our resources and maintaining their resilience from all hazards during an event or emergency. (Council Administrative Notice Item No. 11 –Presidential Proclamation 8460, Critical Infrastructure Protection)

41. In February 2012, Congress adopted the Middle Class Tax Relief and Job Creation Act to advance wireless broadband service for both public safety and commercial users. The Act established the First Responder Network Authority to oversee the construction and operation of a nationwide public safety wireless broadband network. Section 6409 of the Act contributes to the twin goals of commercial and public safety wireless broadband deployment through several measures that promote rapid deployment of the network facilities needed for the provision of broadband wireless services. (Council Administrative Notice Item No. 8 – Middle Class Tax Relief and Job Creation Act of 2012)

42. In June 2012, President Barack Obama issued an Executive Order to accelerate broadband infrastructure deployment declaring that broadband access is a crucial resource essential to the nation's global competitiveness, driving job creation, promoting innovation, expanding markets for American businesses and affording public safety agencies the opportunity for greater levels of effectiveness and interoperability. (Council Admin Notice Item No. 21 – FCC Wireless Infrastructure Report and Order; Council Admin Notice Item No. 12 – Presidential Executive Order 13616, Accelerating Broadband Infrastructure Development)

43. Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, also referred to as the Spectrum Act, a state or local government may not deny and shall approve any request for collocation, removal or replacement of equipment on an existing wireless tower provided that this does not constitute a substantial change in the physical dimensions of the tower. The Federal Communications Commission defines a substantial change in the physical dimensions of a tower as follows:

a) An increase in the existing height of the tower by more than 10% or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet, whichever is greater. Changes in height should be measured from the dimensions of the tower, inclusive of originally approved appurtenances and any modifications that were approved prior to the passage of the Spectrum Act.
b) Adding an appurtenance to the body of the tower that would protrude from the edge of the tower more than twenty feet, or more than the width of the tower structure at the level of the appurtenance, whichever is greater.
c) Installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four, or more than one new equipment shelter.
d) A change that entails any excavation or deployment outside the current site.
e) A change that would defeat the concealment elements of the tower.
f) A change that does not comply with conditions associated with the siting approval of the construction or modification of the tower, provided however that this limitation does not apply to any modification that is non-compliant only in a manner that would exceed the thresholds identified in (a) – (d).

(Council Administrative Notice Item No. 8 – Middle Class Tax Relief and Job Creation Act of 2012; Council Administrative Notice Item No. 21 – FCC Wireless Infrastructure Report and Order)

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

Existing and Proposed Wireless Services

45. The Applicant's proposed facility would replace the lost coverage and capacity provided by the current HI HO Facility and also allow technological upgrades which are currently impossible due to the deteriorated condition of the current site. (Applicant 4, response 27)

46. A substantial hardship would result with the decommissioning of the HI HO Facility by removing coverage and service to residents and commuters in Bridgeport. The added traffic load for the serving sectors of the surrounding AT&T sites covering portions of the subject area would place a substantial capacity strain on the network, resulting in further degradation of network quality. The proposed facility would provide a remedial solution for the subject area. (Applicant 1, Tab 1 – Radio Frequency Analysis Report, pp. 1 and 2)

47. AT&T would initially deploy 700 MHz and 1900 MHz frequency bands at the proposed site. AT&T would deploy 850 MHz and 1900 MHz frequency bands at the proposed site at some point in the future. (Applicant 4, response 28)

48. For AT&T's 850 MHz and 1900 MHz UMTS network, AT&T's design signal strengths for in-building and in-vehicle coverage are -74 dBm and -82 dBm, respectively. For AT&T's 700 MHz LTE network, AT&T's design signal strengths for in-building and in-vehicle coverage are -83 dBm and -93 dBm, respectively. For AT&T's 1900 MHz LTE, AT&T's design signal strengths for in-building and in-vehicle coverage are -86 dBm and -96 dBm, respectively. (Applicant 4, responses 32 and 33; Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 1)

49. Assuming no HI HO Facility active and no temporary facility active, the existing signal strength for 1900 MHz UMTS in the area that AT&T seeks to cover ranges from -100 dBm to -74 dBm. (Applicant 4, response 33)

50. The table below indicates AT&T's approximate existing coverage gaps along State roads at various frequencies assuming that there is no HI HO Facility and no temporary facility.

Street Name	700 MHz LTE Coverage Gap	1900 MHz LTE Coverage Gap	1900 MHz UMTS Coverage Gap
Route 1	N/A	0.53 miles	1.27 miles
Route 8	N/A	0.05 miles	0.05 miles
Route 25	N/A	N/A	0.01 miles
State Road Total	N/A	0.58 miles	1.33 miles

(Applicant 4, response 34)

51. The tables below indicate the distances that AT&T would cover along State roads and secondary roads in the area of its proposed facility at 120-foot and 130-foot heights for various frequencies.

Street Name	700 MHz LTE Coverage at 130 feet	700 MHz LTE Coverage at 120 feet	1900 MHz LTE Coverage at 130 feet	1900 MHz LTE Coverage at 120 feet
Route 1	N/A	N/A	0.53 miles	0.53 miles
Route 8	N/A	N/A	0.05 miles	0.05 miles
Secondary Roads	0.48 miles	0.39 miles	8.61 miles	7.97 miles
Total	0.48 miles	0.39 miles	9.19 miles	8.55 miles

Street Name	1900 MHz UMTS Coverage at 130 feet	1900 MHz UMTS Coverage at 120 feet
Route 1	1.20 miles	1.08 miles
Route 8	0.05 miles	0.05 miles
Secondary Roads	15.27 miles	14.70 miles
Total	16.52 miles	15.83 miles

(Applicant 4, responses 39 and 40)

52. For 1900 MHz UMTS, the decommissioning of the HI HO Facility would result in the loss of population coverage of 4,172 and 6,741 at signal strengths of not less than -74 dBm and -82 dBm, respectively. The proposed facility would provide population coverage of 9,847 and 9,349 at signal strengths of not less than -74 dBm and -82 dBm, respectively. (Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 2)

53. Adjacent facilities to the proposed facility are identified in the following table.

Site Location	Distance and Direction from Proposed Tower	Height of AT&T's Antennas agl	Structure Type
2470 North Avenue	1.8 miles southwest	132 feet	Rooftop
2625 Park Avenue	1.4 miles west	160 feet	Rooftop
3200 Park Avenue	1.5 miles west	121 and 69 feet	Rooftop
1320 Chopsey Hill Road	1.6 north-northwest	165 feet	Lattice Tower
120 Huntington Turnpike	1.2 miles northeast	100 feet	Rooftop
267 Grant Street	1.4 miles southeast	142 feet	Rooftop
955 Main Street	1.3 miles south	140 feet	Rooftop
430 John Street	1.5 miles south-southwest	148 feet	Rooftop

(Applicant 4, response 29; Applicant 1, Tab 1, Radio Frequency Analysis Report, pp. 10 and 11)

54. This table indicates the total areas that AT&T would cover from its proposed facility for prescribed frequencies at various heights.

Antenna Height	Area Coverage* with 700 MHz LTE	Area Coverage* with 1900 MHz LTE	Area Coverage* with 1900 MHz UMTS
130 feet	2.00 square miles	3.54 square miles	3.06 square miles
120 feet	1.80 square miles	2.86 square miles	2.42 square miles

Antenna Height	Area Coverage** with 700 MHz LTE	Area Coverage** with 1900 MHz LTE	Area Coverage** with 1900 MHz UMTS
130 feet	12.12 square miles	9.47 square miles	8.17 square miles
120 feet	10.02 square miles	8.55 square miles	7.25 square miles

*This is based on in-building coverage.
**This is based on in-vehicle coverage.
(Applicant 4, response 36; Tr. 1, p. 22)

55. The minimum antenna centerline height for AT&T to meet its coverage objectives is 130 feet agl. (Applicant 4, response 31)

56. Installing the antennas at 120 feet (or ten feet lower) could result in lost capacity and the ability to have continuous coverage in some areas. (Tr. 1, p. 20)

Site Selection

57. Subsequent to the 2014 structural analysis report identifying structural safety concerns at the HI HO Facility, AT&T decided to relocate its facility to a new site. (Applicant 4, response 21; Council Administrative Notice Item No. 28 – Petition No. 1169, Structural Analysis Report for HI HO Facility)

58. There are no other existing towers or other sufficiently tall structures available within the Bridgeport area to meet AT&T's RF needs. (Applicant 1, p. 12)

59. After determining there were no suitable structures existing within their search area, AT&T searched for properties suitable for tower development. AT&T investigated seven parcels/areas, one of which was selected for site development. The six rejected parcels/areas and reasons for their rejection are as follows:

a) **494 Lindley Street, Bridgeport (on existing billboard)** – AT&T rejected this site because it would not meet its RF needs.
b) **2800 Main Street, Bridgeport (St. Vincent's Medical Center – on 10 story rooftop)** – The property owner showed some initial interest in leasing space for a tower, but has since become unresponsive.
c) **2875 Main Street, Bridgeport (on rooftop)** – AT&T rejected this site because it would not meet its RF needs.
d) **2102 Main Street, Bridgeport (Olivet Congregational Church – inside steeple)** – AT&T rejected this site because it would not meet its RF needs.
e) **865 North Avenue, Bridgeport (The Cathedral Parish – inside steeple)** – AT&T rejected this site because it would not meet its RF needs.
f) **236 Evergreen Street, Bridgeport (Animal Shelter – raw land)** – AT&T rejected this site because of its location in a 100-year flood zone.

(Applicant 1, Tab 2, Properties Investigated by AT&T; Applicant 4, response 8, Tab 3)

60. Blue Sky also searched for properties suitable for tower development. Blue Sky investigated nine parcels/areas, one of which was selected for site development. The eight rejected parcels/areas and reasons for their rejection are as follows:
    a) **145 Front Street, Bridgeport** – The property owner is not interested in leasing space for a tower.
    b) **380 Lindley Street, Bridgeport** – The property owner is not interested in leasing space for a tower.
    c) **494 Lindley Street, Bridgeport** – The property owner is not interested in leasing space for a tower.
    d) **261 River Street, Bridgeport** – The property owner is selling the property and did not want to interrupt the sale with a new lease.
    e) **225 Evergreen Street #227, Bridgeport** – The property owner is not interested in leasing space for a tower due to space constraints.
    f) **125 Front Street, Bridgeport** – The property owner is selling the property and did not want to interrupt the sale with a new lease.
    g) **236 Evergreen Street, Bridgeport (Animal Shelter)** – Blue Sky has contacted the City several times, but has not received a reply.
    h) **320 North Avenue, Bridgeport** – The property owner was not interested in leasing space for a tower due to space constraints.

    (Applicant 1, Tab 2, Properties Investigated by Blue Sky)

61. Repeaters, microcells transmitters, distributed antenna systems and other types of transmitting technologies are not a practicable or feasible means to replacing the wireless telecommunications services that were provided by the HI HO Facility. (Applicant 1, p. 12; Applicant 4, response 25)

Facility Description

62. The proposed site is located on an approximately 1.0-acre parcel at 220 Evergreen Street in Bridgeport. The parcel is owned by Chapin & Bangs Company. The proposed site location is depicted on Figure 1. The existing temporary tower is located on this parcel. (Applicant 1, p. 1; Applicant 1, Tab 1 – Petition No. 1169, Council Staff Report; Applicant 4, response 24)

63. The subject property is zoned Industrial (IL) and is used as part of Chapin & Bangs Company's steel fabrication services. (Applicant 1, p. 3 and Tab 11)

64. The tower site is located in the northern portion of the subject property, at an elevation of approximately 13 feet above mean sea level (amsl). (Applicant 1, Tab 4 – Sheets C-1 and C-2)

65. The proposed tower would be located approximately 40 feet southeast of the temporary tower. (Tr. 1, pp. 13-14)

66. Land use at adjacent properties include developed commercial uses, multi-family residences, and the City of Bridgeport Animal Shelter. (Applicant 1, p. 18)

67. The proposed facility would consist of a 135-foot monopole within an irregular shaped 3,617.5 square foot leased area. The tower would be approximately 42 inches wide at the base tapering to 28 inches wide at the top. The tower would be designed to support three levels of wireless carrier antennas (including AT&T's). The tower would be designed to be expandable in height by up to 20 feet. (Applicant 1, Tab 4 – Sheets A-1 and C-3; Applicant 1, Tab 3 – Facilities and Equipment Specification; Applicant 4, response 13)

68. The monopole would have a grey, galvanized steel finish. (Applicant 4, response 12)

69. The tower and foundation would be designed to accommodate a 20-foot increase in height. (Applicant 4, response 13; Tr. 1, p. 26)

70. AT&T would install nine panel antennas and 27 remote radio heads (RRHs) on a low-profile platform at a centerline height of 130 feet agl. The total height of the facility with AT&T's antennas would not exceed 135 feet agl. (Applicant 1, Tab 4 – Sheet A-1; Applicant 4, response 10)

71. Platform antenna mounts are a safer and more structurally sound appliance to mount antennas on a tower as opposed to T-arms. T-arm antenna mounts are also less desirable than platform mounts because they could affect the mounting of equipment such as RRHs. However, T-arms would not affect coverage. (Applicant 4, response 11; Tr. 1, p. 41)

72. The use of flush-mounted antennas would necessitate a taller tower to accommodate multiple antenna heights in order to maintain RF coverage and effectively provide for future co-location on the structure. The tower would have to be at least 20 feet taller for AT&T to utilize flush-mounted antennas. (Applicant 4, response 11; Tr. 1, p. 21)

73. An irregular shaped approximately 3,617.5 square foot fenced equipment compound would be established at the base of the tower. AT&T would install its equipment within a 11-foot 5-inch by 20-foot equipment shelter located within the compound. AT&T's proposed backup generator would be located within a 4-foot by 7-foot area inside the fenced compound and adjacent to the equipment shelter. (Applicant 1, Tab 4 – Sheet C-3)

74. Two exterior wall-mounted air conditioning units would be attached to AT&T's proposed equipment shelter to cool the radio equipment. (Applicant 4, response 55, Tab 9, p. 1)

75. The proposed equipment compound would be surrounded by an eight-foot high chain-link fence. The fence would have a mesh size of 1 ¼ inches. The Applicant's proposed compound fence would have a gate that would be locked for security purposes. (Applicant 1, Tab 1 – General Facility Description and Tab 4 – Sheet A-3; Tr. 1, p. 24)

76. No other wireless carriers have expressed an interest in co-locating on the proposed tower at this time or relocating from the existing HI HO Facility. (Tr. 1, pp. 14 and 45)

77. Development of the site would not require any cutting. Approximately 20 to 25 cubic yards of fill would be required. (Applicant 4, response 7)

78. No new access from Evergreen Street to the proposed tower compound is proposed because the tower compound would be located very close to the property line with Evergreen Street. (Applicant 1, Sheet C-3)

79. Utilities would be installed underground to the site from an existing pole located to the north and on the same side of Evergreen Street. If approved, the final details of the utility connections would be included in the D&M Plan. (Tr. 1, pp. 50-51)

80. Pursuant to CGS § 16-50p(a)(3)(G), the nearest school is the Maplewood Annex Elementary School approximately 0.43 miles southwest of the proposed facility. The nearest commercial child day care facility is Saint Paul's Child Development Center approximately 0.44 miles northeast of the proposed facility. (Applicant 1, Tab 8 – Visibility Study, p. 4 and Viewshed Map; Applicant 4, response 3)

81. The nearest property boundary from the proposed tower is approximately 38 feet to the southwest (Guzman property). This property contains a three-family residential structure. (Applicant 1, Tab 4 – Sheet C-1; Applicant 4, response 5; Tr. 1, p. 18)

82. There are approximately 75 residential structures within 1,000 feet of the proposed tower site. (Applicant 4, response 4)

83. If approved, the construction details related to removing the temporary tower would be included with the D&M Plan for the proposed permanent facility. (Applicant 4, response 20)

84. Site preparation work would commence following Council approval of a D&M Plan and the issuance of a Building Permit by the City of Bridgeport. The site preparation phase would be expected to be completed in two weeks given that most of the work will have been done already for the temporary tower. Installation of the monopole, antennas and associated equipment would be expected to take an additional two weeks. The duration of the total construction schedule would be expected to be approximately four weeks. Facility integration and system testing for carrier equipment would be expected to require an additional two weeks after construction is completed. (Applicant 1, p. 20)

85. The estimated cost of the proposed facility is:

Tower and Foundation	$65,000
Site Development*	0
Utility Installation	10,000
Subtotal: Blue Sky's Cost	**$75,000**
Antennas and Equipment	$250,000
Subtotal: AT&T's Cost	**$250,000**
Total Estimated Costs	**$325,000**

*Site development costs are minimal because the site was largely developed during the temporary tower installation.
(Applicant 1, pp. 19-20; Tr. 1, p. 15)

Public Safety

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

87. AT&T would be in compliance with the requirements of the 911 Act and would provide Enhanced 911 services. (Applicant 1, p. 11)

88. Wireless carriers have voluntarily begun supporting text-to-911 services nationwide in areas where municipal Public Safety Answering Points (PSAP) support text-to-911 technology. Text-to-911 will extend emergency services to those who are deaf, hard of hearing, have a speech disability, or are in situations where a voice call to 911 may be dangerous or impossible. However, even after a carrier upgrades its network, a user's ability to text to 911 is limited by the ability of the local 911 call center to accept a text message. The FCC does not have the authority to regulate 911 call centers; therefore, it cannot require them to accept text messages. (Council Admin. Notice No. 20 – FCC Text-to-911: Quick Facts & FAQs)

89. AT&T and this facility would be capable of supporting text-to-911 service once the PSAP is capable of receiving text-to-911. AT&T is not aware that this functionality has yet been requested for this area. (Applicant 4, response 49)

90. Pursuant to the Warning, Alert and Response Network Act of 2006, "Wireless Emergency Alerts" (WEA) is a public safety system that allows customers who own certain wireless phone models and other enabled mobile devices to receive geographically-targeted, text-like messages alerting them of imminent threats to safety in their area. WEA complements the existing Emergency Alert System that is implemented by the FCC and FEMA at the federal level through broadcasters and other media service providers, including wireless carriers. (Council Administrative Notice No. 5 – FCC WARN Act)

91. The tower would be constructed in accordance with the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code. (Applicant 1, Tab 3 – Facilities and Equipment Specifications)

92. No notice is required to the Federal Aviation Administration. Tower marking or lighting is not required. (Applicant 1, Tab 3 – Facilities and Equipment Specification; Applicant 1, Tab 4 – TOWAIR Determination Results)

93. AT&T's equipment shelter and backup generator would be locked and alarmed and monitored remotely on a 24/7 basis. (Applicant 4, response 15)

94. The tower set back radius extends beyond the property boundary approximately 97-feet to the southwest onto the Guzman property. A tower design yield point can be employed at approximately the 100-foot level of the tower and conservatively result in a tower setback radius of 35 feet, which would remain within the subject property boundaries. (Applicant 1, Tab 4 – Sheets A-1 and C-1; Applicant 4, response 6; Tr. 1, p. 18)

95. The cumulative worst-case maximum power density from the radio frequency emissions from the operation of AT&T's proposed antennas is 3.98% of the standard for the General Public/Uncontrolled Maximum Permissible Exposure, as adopted by the FCC, at the base of the proposed tower. This calculation was based on methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997) that assumes all antennas in a sector would be pointed at the base of the tower and all channels would be operating simultaneously, which creates the highest possible power density levels. Under normal operation, the antennas would be oriented outward, directing radio frequency emissions away from the tower, thus resulting in significantly lower power density levels in areas around the tower. (Applicant 1, Tab 7 – Power Density Analysis dated August 24, 2015; Council Administrative Notice Item No. 2 – FCC OET Bulletin No. 65)

Emergency Backup Power

96. In response to two significant storm events in 2011, Governor Malloy formed a Two Storm Panel (Panel) that was charged with an objective review and evaluation of Connecticut's approach to the prevention, planning and mitigation of impacts associated with emergencies and natural disasters that can reasonably be anticipated to impact the state. (Final Report of the Two Storm Panel, Council Administrative Notice Item No. 45)

97. In response to the findings and recommendations of the Panel, and in accordance with C.G.S. §16-50*ll*, the Council, in consultation and coordination with the Department of Energy and Environmental Protection, the Department of Emergency Services and Public Protection and the Public Utilities Regulatory Authority (PURA), studied the feasibility of requiring backup power for telecommunications towers and antennas as the reliability of such telecommunications service is considered to be in the public interest and necessary for the public health and safety. The study was completed on January 24, 2013. (Council Administrative Notice Item No. 26 – Council Docket No. 432)

98. The Council reached the following conclusions in the study:
   a) "Sharing a backup source is feasible for CMRS providers, within certain limits. Going forward, the Council will explore this option in applications for new tower facilities;" and
   b) "The Council will continue to urge reassessment and implementation of new technologies to improve network operations overall, including improvements in backup power."

   (Council Administrative Notice Item No. 26 – Council Docket No. 432)

99. For backup power, AT&T proposes to install a 50-kilowatt diesel-fueled generator for its own use. AT&T's backup generator would have a 210-gallon diesel fuel tank to provide approximately 48 hours of run time before it requires refueling. If approved, the specific details of the backup generator would be included in the D&M Plan. (Applicant 4, responses 42 and 43; Tr. 1, p. 23)

100. The proposed backup generator would have a double-walled fuel tank with leak detection equipment connected to a remote alarm to protect against fuel leakage. Also, the generator unit vessel itself would protect against oil or coolant leakage. If approved, the final details of the generator fluid containment measures could be included in the D&M Plan. (Tr. 1, p. 23)

101. While AT&T's backup generator would be for its own use, if approved, reserved space for a future shared generator could be considered in the D&M Plan. (Applicant 4, response 42; Tr. 1, p. 31)

102. AT&T would also have a battery backup in order to provide uninterrupted power during the generator start-up delay period. The battery backup system alone could provide up to eight hours of backup power. (Applicant 4, response 44)

103. According to R.C.S.A. §22a-69-1.8, noise created as a result of, or relating to, an emergency, such as an emergency backup generator, is exempt from the State Noise Control Regulations. (R.C.S.A. §22a-69-1.8)

Environmental Considerations

104. The proposed project is not expected to have an adverse impact on contributing resources listed on or eligible for listing on the National Register of Historic Places. (Applicant 1, Tab 10, SHPO Letter dated September 24, 2015)

105. There are no wetlands located within the vicinity of the proposed facility. The nearest wetland is off-site and associated with the Pequonnock River. It is located approximately 0.2 miles to the southeast. Thus, no adverse impacts to wetlands are anticipated. (Applicant 1, pp. 14 and 19; Applicant 4, response 56)

106. The proposed project would comply with the *2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control.* (Applicant 1, p. 19)

107. The tower site is generally located within the 500-year flood zone but outside the 100-year flood zone. (Applicant 4, response 8, Tab 3)

108. The specific heights of equipment versus flood elevations are listed in the table below.

Equipment	Height of bottom of equipment above grade	Height of bottom of equipment above mean sea level	100-year flood elevation amsl	500-year flood elevation amsl	Above 100-year flood elevation	Above 500-year flood elevation	Additional height required to raise above 100-year flood elevation	Additional height required to raise above 500-year flood elevation
Tower Base	~0 feet	~13 feet	12.25 feet	15.31 feet	Yes	No	None	>2.31 feet
Equipment shelter (includes bottom railing)	2 feet	~15 feet (lowest at eastern corners)	12.25 feet	15.31 feet	Yes	No	None	>0.31 feet
Generator	~3.16 feet	16.17 feet	12.25 feet	15.31 feet	Yes	Yes	None	None
Generator Fuel Tank	~ 0 feet	~14 feet (lowest at eastern corners)	12.25 feet	15.31 feet	Yes	No	None	>1.31 feet

(Applicant 1, Tab 4 – Sheets A-1, A-2 and C-2 and C-3; Tr. 1, p. 32 and 34)

109. No trees would be removed as a result of the proposed project. (Tr. 1, p. 17)

110. The proposed facility is not located near an Important Bird Area (IBA), as designated by the National Audubon Society. The nearest IBA to the proposed tower site is Stratford Great Meadows, approximately four miles to the southeast of the proposed tower site. (Applicant 4, response 52; Council Administrative Notice Item No. 63 – Connecticut Important Bird Areas)

111. The proposed facility would comply with the United States Fish and Wildlife Service guidelines for minimizing the potential for telecommunications towers to impact bird species. (Applicant 4, response 53)

112. The Applicant does not anticipate the need for blasting at the proposed site. (Applicant 4, response 18)

113. With mitigation measures (e.g. noise mats) installed along the fence line parallel to the southwestern property line, noise from the air conditioning units and the backup generator* at the proposed facility would not exceed DEEP Noise Control Regulations at the property boundaries.

*While exempt as an emergency generator, the backup generator was included in the analysis. (Applicant 4, response 55, Tab 9; Tr. 1, p. 24-25; R.C.S.A. §22a-69-1.8; Applicant Post-Hearing Brief, p. 2 – Supplemental Noise Information)

114. Alternatively, the backup generator could be relocated and the air conditioning units could be moved away from the southern property line both closer to and in the direction of the City property to the north. This would achieve compliance with DEEP noise standards without the need for noise mats. If approved, this configuration could be considered in the D&M Plan. (Applicant Post-Hearing Brief, p. 2 – Supplemental Noise Information)

115. By letter dated July 13, 2015, DEEP has reviewed the Natural Diversity Database and does not expect that the proposed project would adversely impact State-listed species. (Applicant 1, Tab 9, DEEP Letter dated July 13, 2015)

Visibility

116. The proposed tower would be located in a highly urbanized area where significant vegetation is absent. Thus, only a year-round visibility analysis was performed. The proposed tower would be visible year-round from approximately 89 acres within a 0.5 mile radius of the site (refer to Figure 17). (Applicant 4, responses 57 and 58)

117. Of the 75 residences located with 1,000 feet of the proposed tower, views of the tower are possible from all 75. (Applicant 1, response 60)

118. The proposed tower (similar to the existing temporary tower) would be visible along Evergreen Street and in between local buildings and street trees within an approximately ¼ mile radius of the proposed site. Select areas of visibility would exist beyond this distance, but visibility would be limited to brief glimpses between and/or above intervening structures. (Applicant 1, Tab 8 – Visibility Study, p. 3; Council Administrative Notice Item No. 28 – Petition No. 1169, Visibility Study, p. 3)

119. The proposed tower (similar to the existing temporary tower) would be visible to southbound motorists from a portion of Route 8/25 between Chopsey Hill Road and Lindley Avenue. The opportunity for views from the northbound lanes is brief due to the direction of the travel. (Applicant 1, Tab 8 – Visibility Study, p. 3; Council Administrative Notice Item No. 28 – Petition No. 1169, Visibility Study, p. 3)

120. Visibility of the proposed tower from specific locations within a one-half-mile radius of the site is presented in the table below:

Specific Location	Photo location on Map*	Approx. Portion of Facility Visible	Approx. Distance & Direction to Tower
Evergreen Street at River Street	1	Year-round – 135 feet	175 feet east
Commercial area south of subject property	2	Year-round – 92 feet	395 feet west
North Avenue near NAPA Auto Parts	3	Year-round – 135 feet	560 feet east
Evergreen Street at Lindley Street	4	Year-round – 135 feet	680 feet northeast
North Avenue near Housatonic Street	5	Year-round – 107 feet	1,080 feet northeast
Roosevelt Street near Hill Street	6	Year-round – 97 feet	980 feet southeast
River Street near Meriam Street	7	Year-round – 135 feet	530 feet northwest

*See Figure 17.
(Applicant 1, Tab 8 – Visibility Analysis)

121. There are no known hiking trails located within a two-mile radius of the proposed tower site. (Applicant 4, response 60)

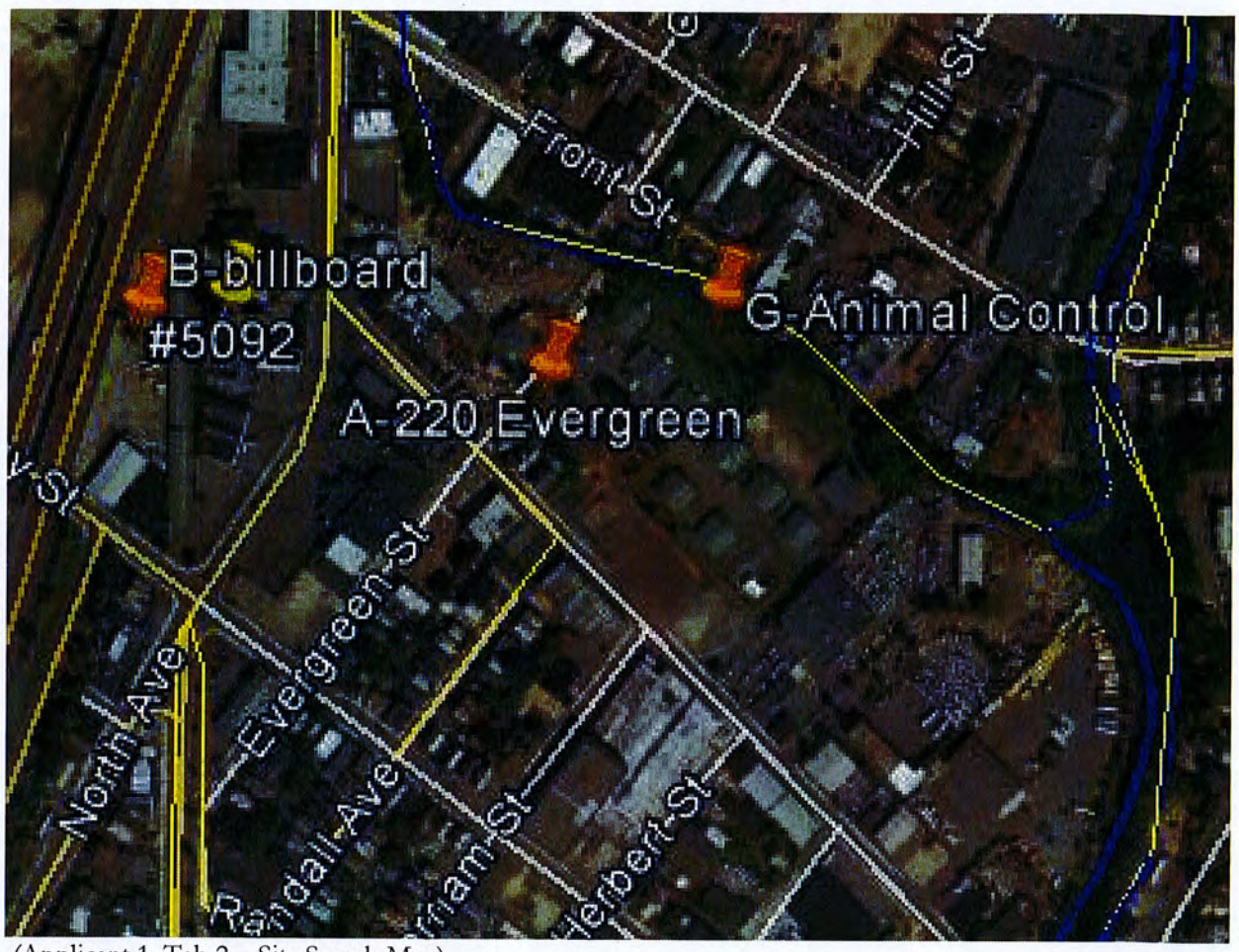
122. The industrial setting of the site does not provide the proper context to warrant a stealth design. (Applicant 4, response 54)

123. No landscaping is proposed around the tower compound. (Applicant 1, Tab 4 – Sheet C-3)

124. The proposed tower would be seen within the context of existing manufacturing, warehousing, and commercial buildings. Thus, the tower would be visually consistent with such views. (Applicant 1, Tab 8 – Visibility Study, p. 3)

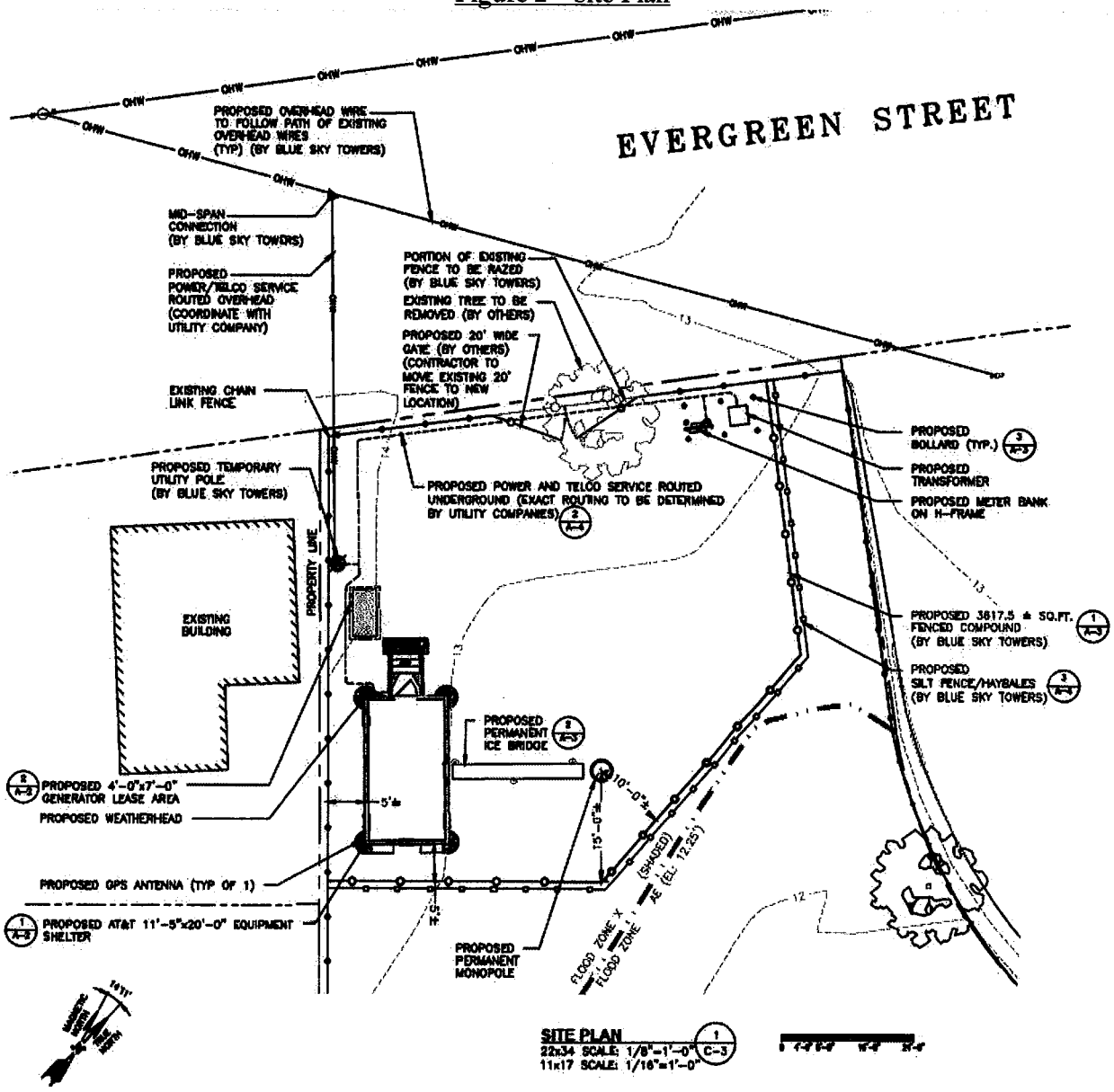
125. The galvanized gray monopole would eventually dull to a softer gray. (Tr. 1, p. 22)

Figure 1 – Aerial Map – Proposed Site at 220 Evergreen Street



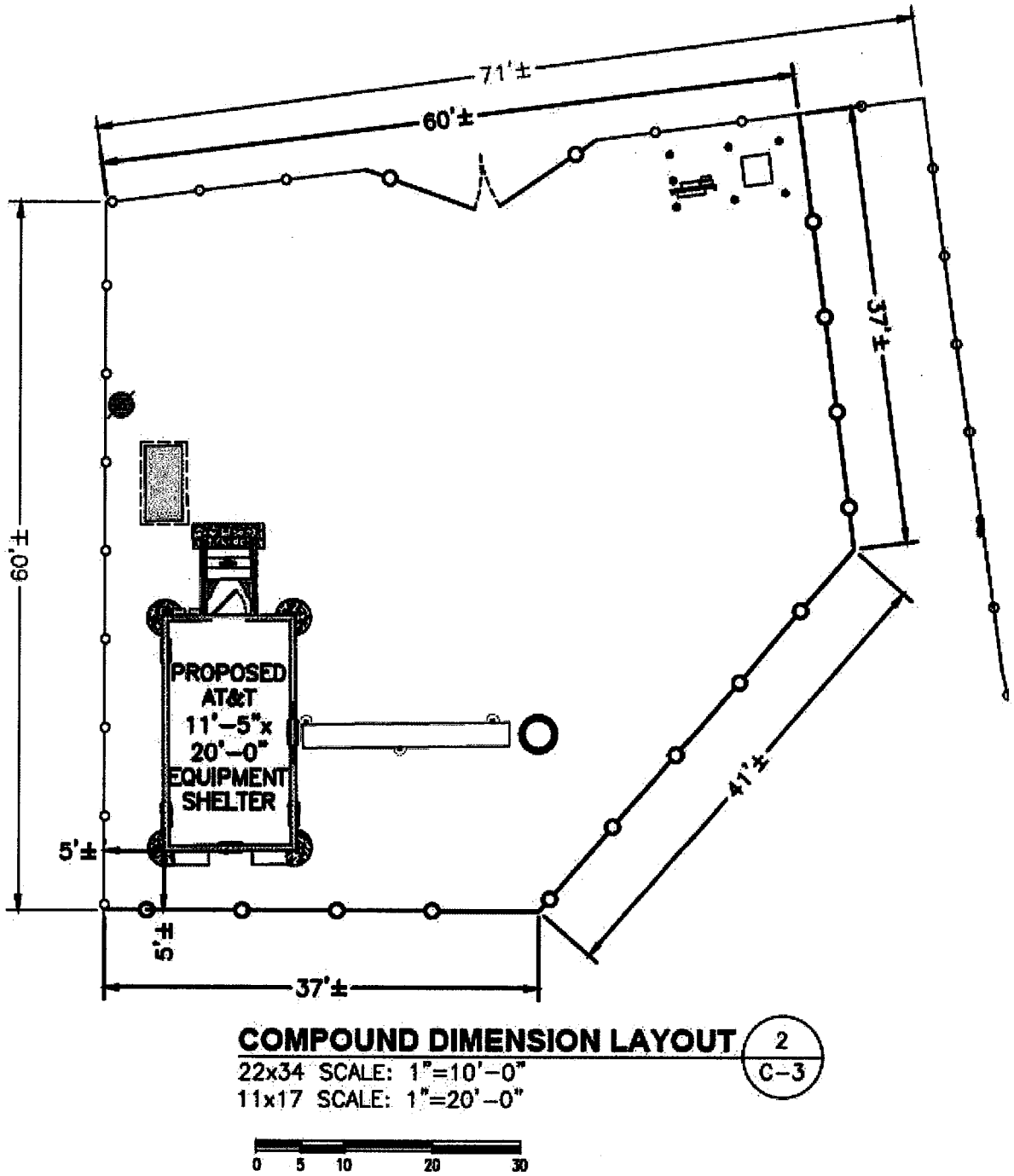
(Applicant 1, Tab 2 – Site Search Map)

Figure 2 – Site Plan



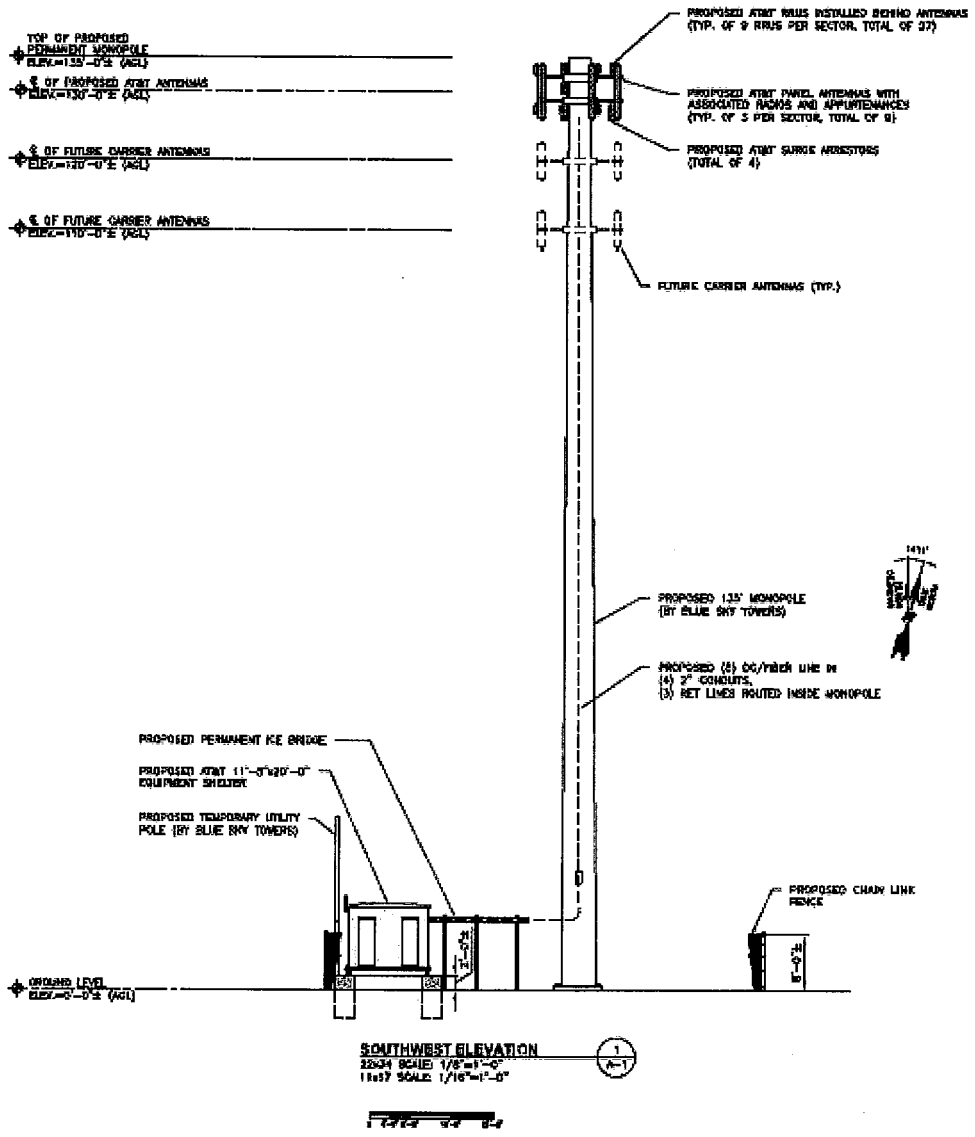
(Applicant 1, Tab 4 – Sheet C-3)

Figure 3 – Compound Plan



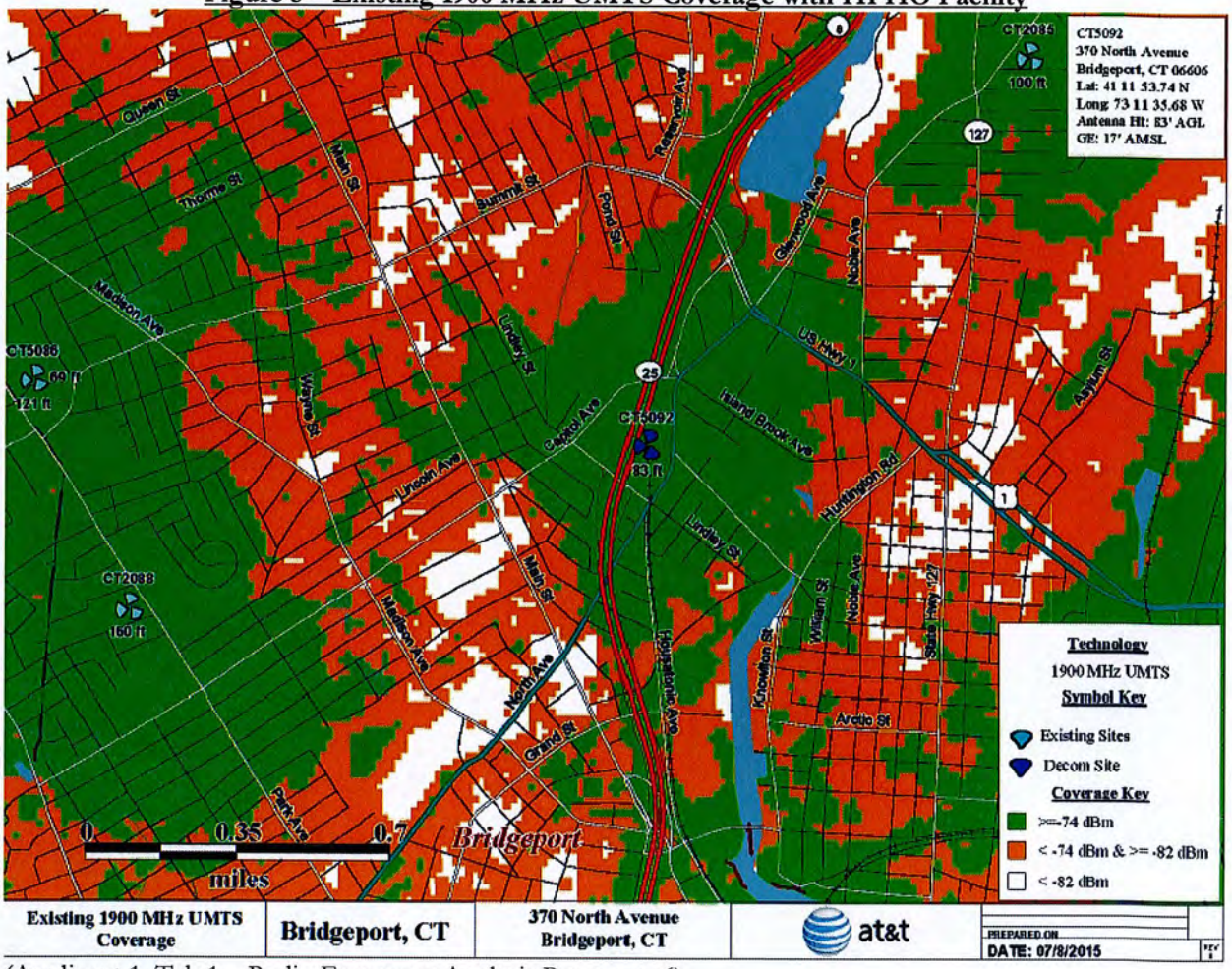
(Applicant 1, Tab 4 – Sheet C-3)

Figure 4 – Tower Profile Drawing



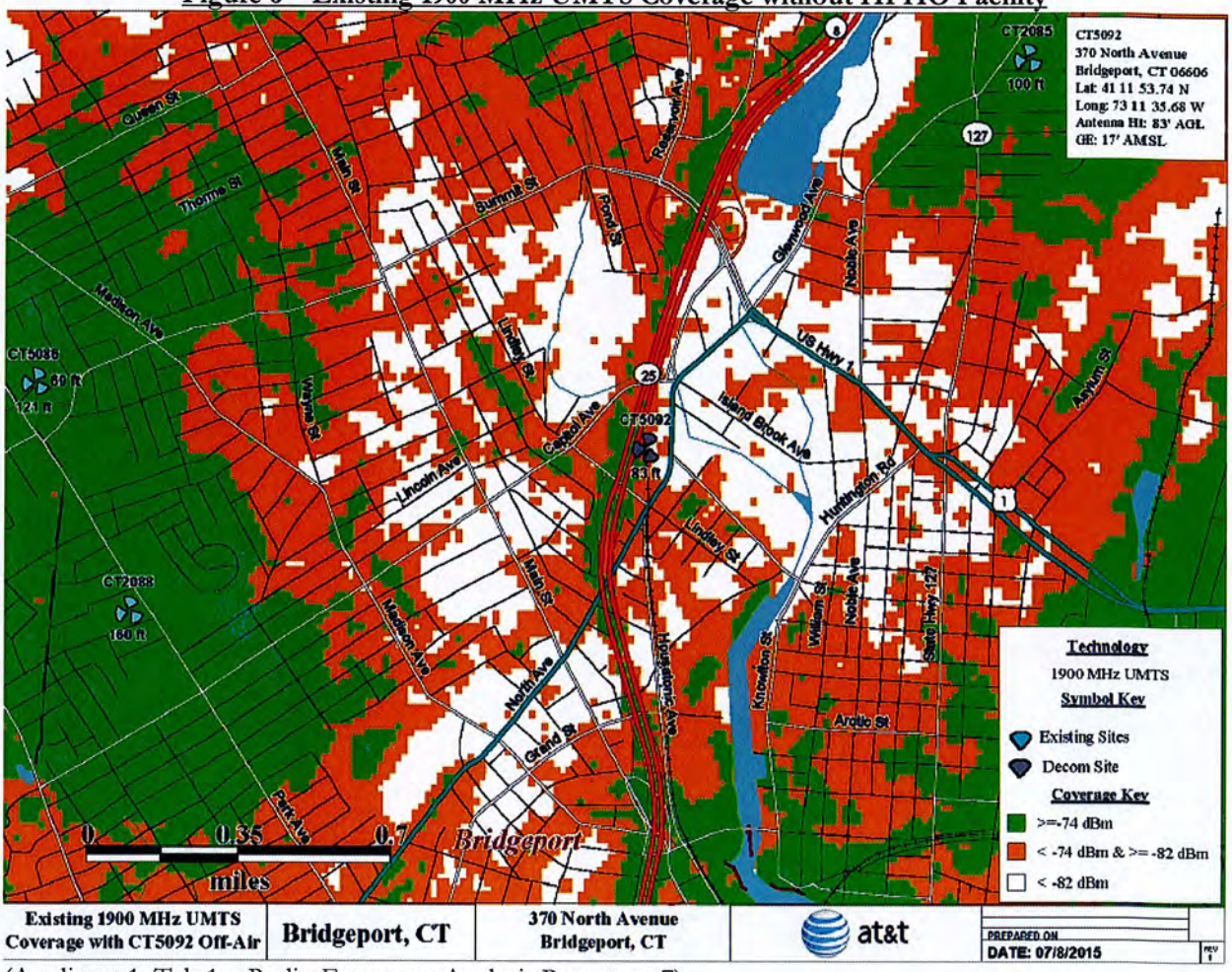
(Applicant 1, Tab 4 – Sheet A-1)

Figure 5 – Existing 1900 MHz UMTS Coverage with HI HO Facility



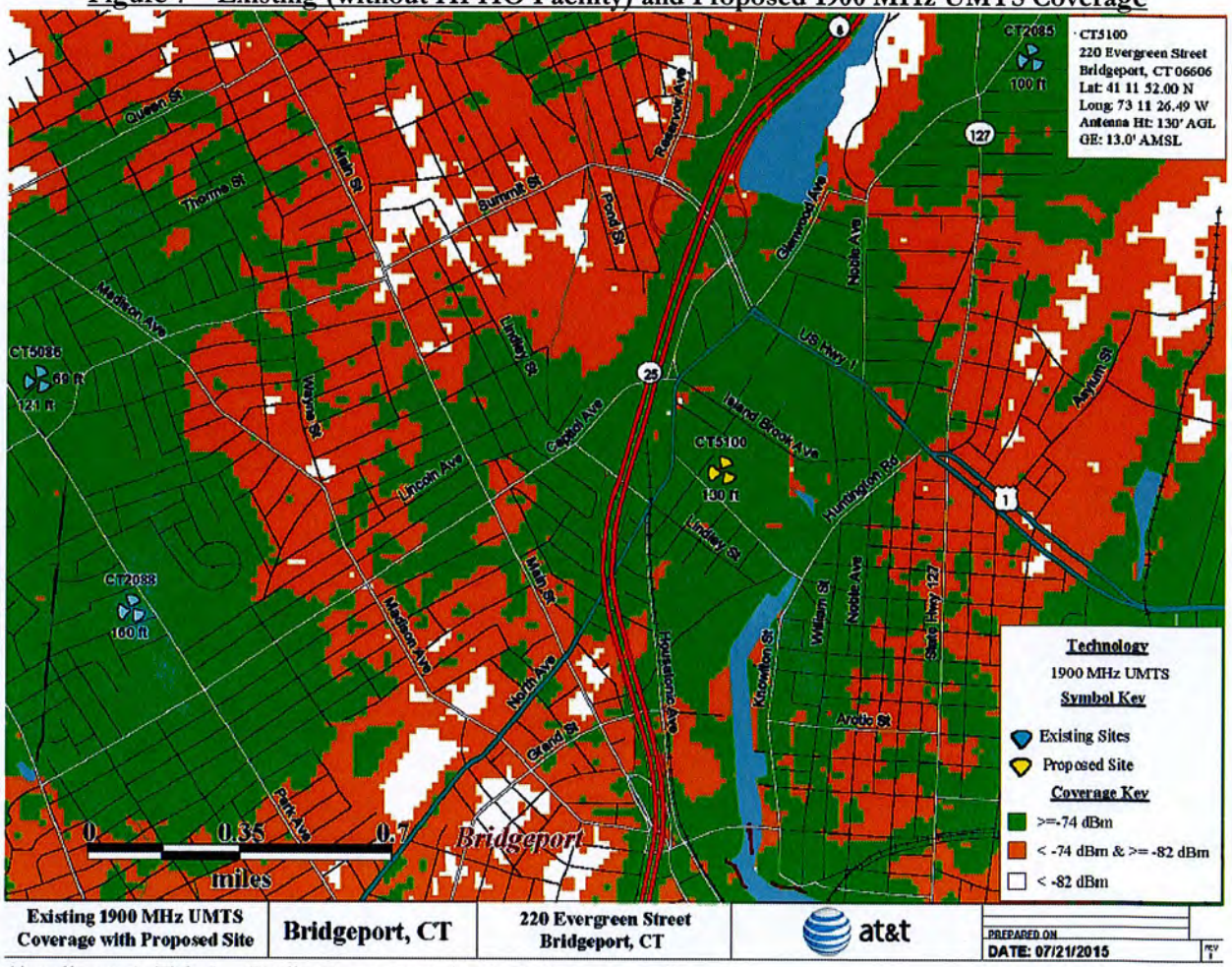
(Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 6)

Figure 6 – Existing 1900 MHz UMTS Coverage without HI HO Facility



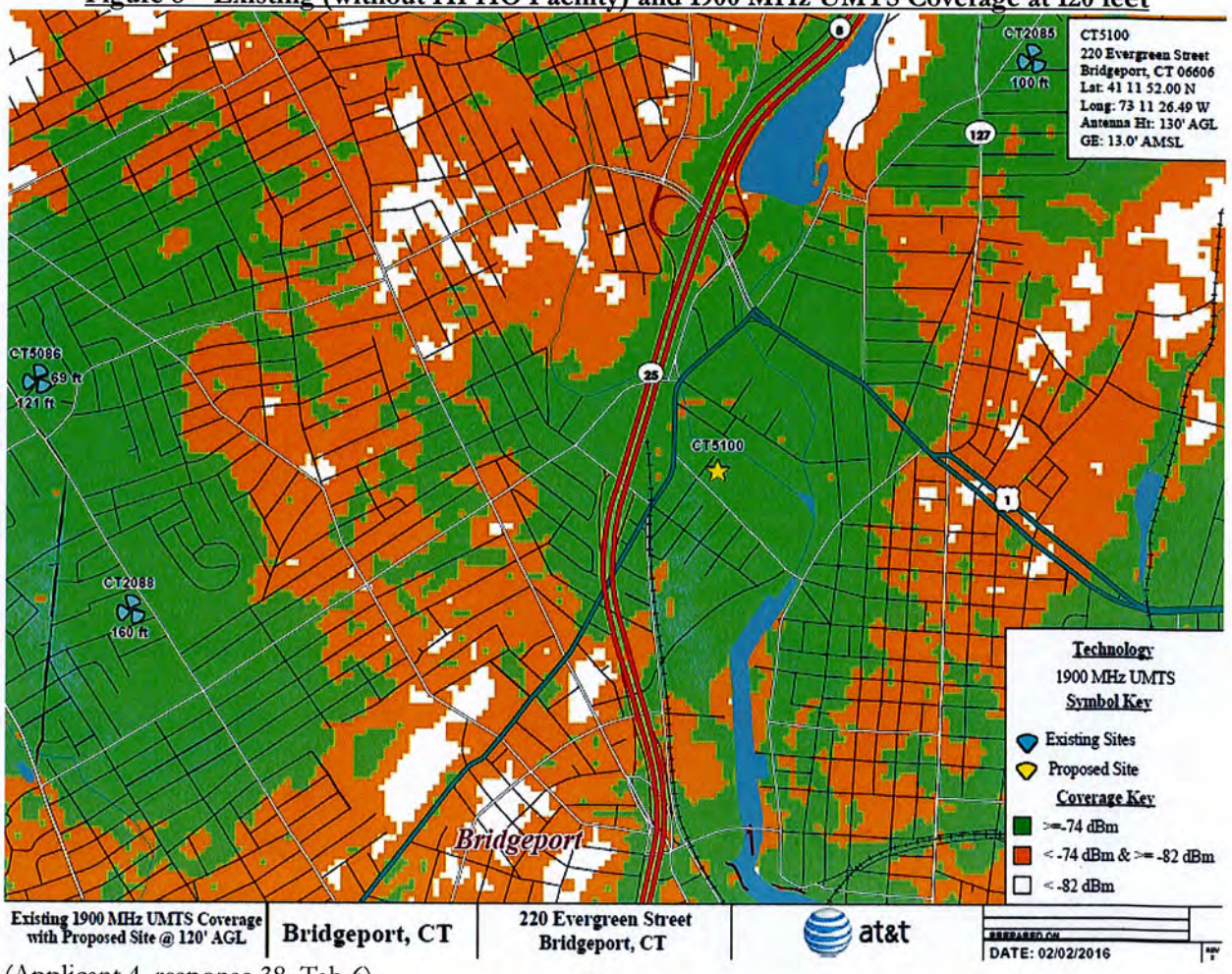
(Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 7)

Figure 7 – Existing (without HI HO Facility) and Proposed 1900 MHz UMTS Coverage



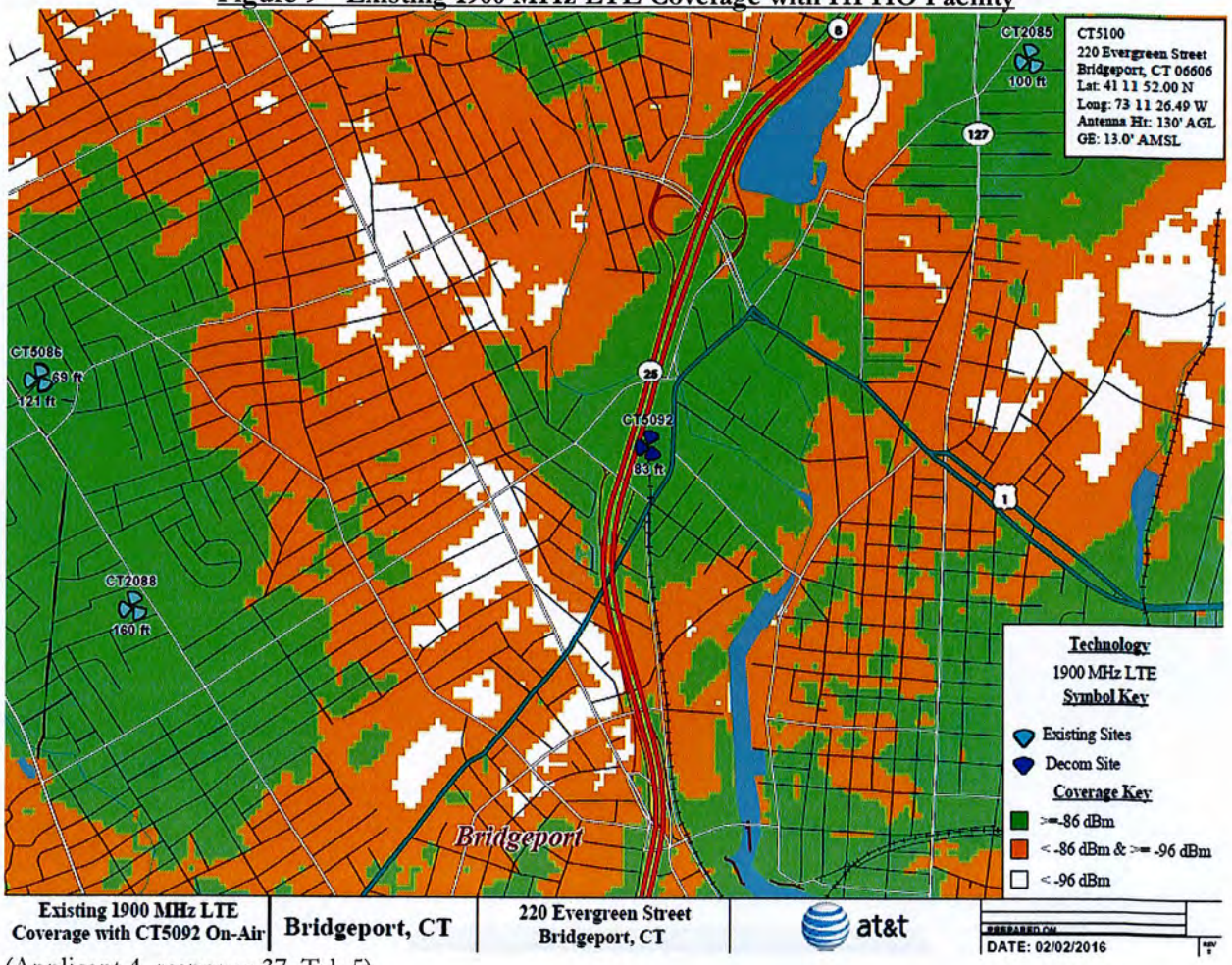
(Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 8)

Figure 8 – Existing (without HI HO Facility) and 1900 MHz UMTS Coverage at 120 feet



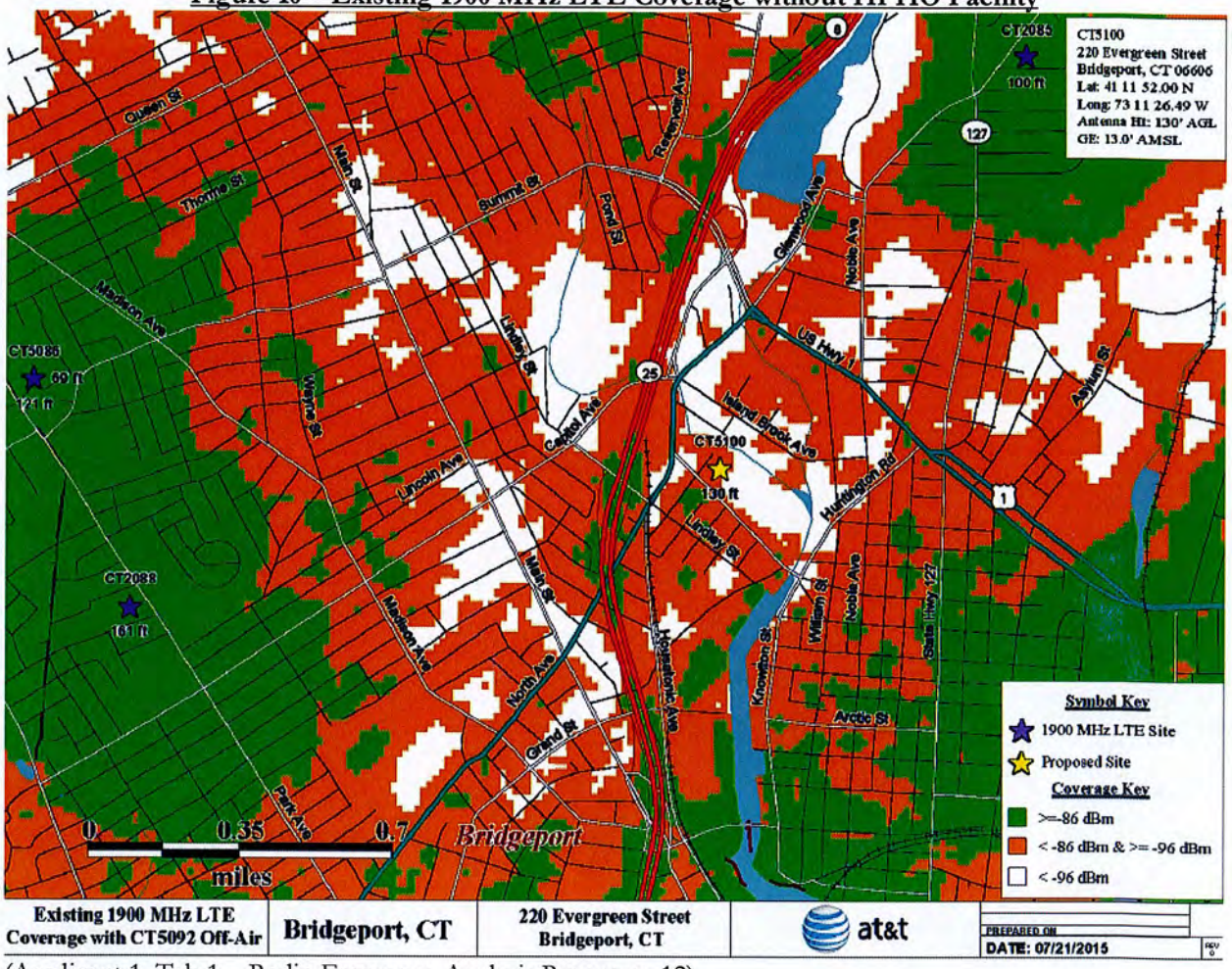
(Applicant 4, response 38, Tab 6)

Figure 9 – Existing 1900 MHz LTE Coverage with HI HO Facility



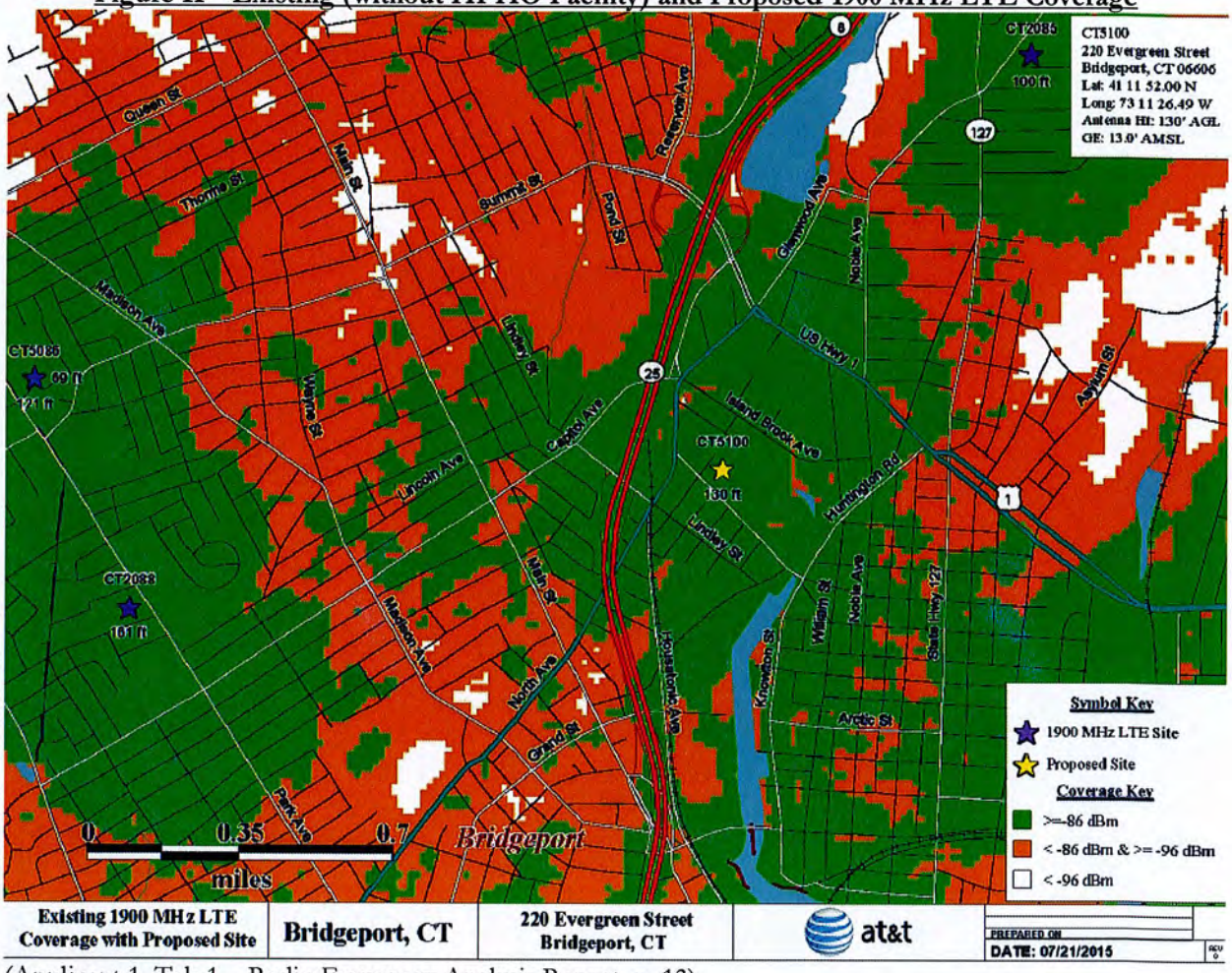
(Applicant 4, response 37, Tab 5)

Figure 10 – Existing 1900 MHz LTE Coverage without HI HO Facility



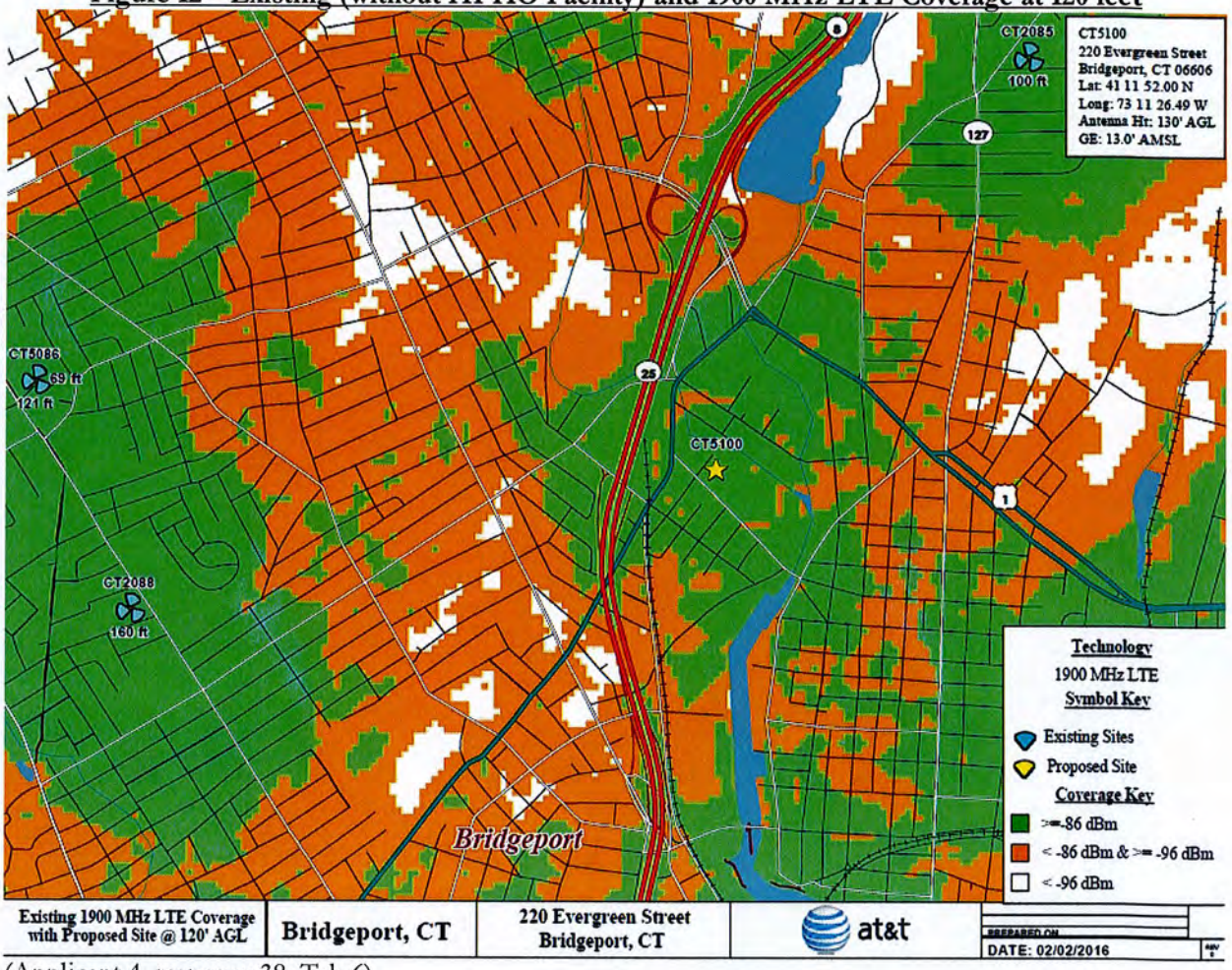
(Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 12)

Figure 11 – Existing (without HI HO Facility) and Proposed 1900 MHz LTE Coverage



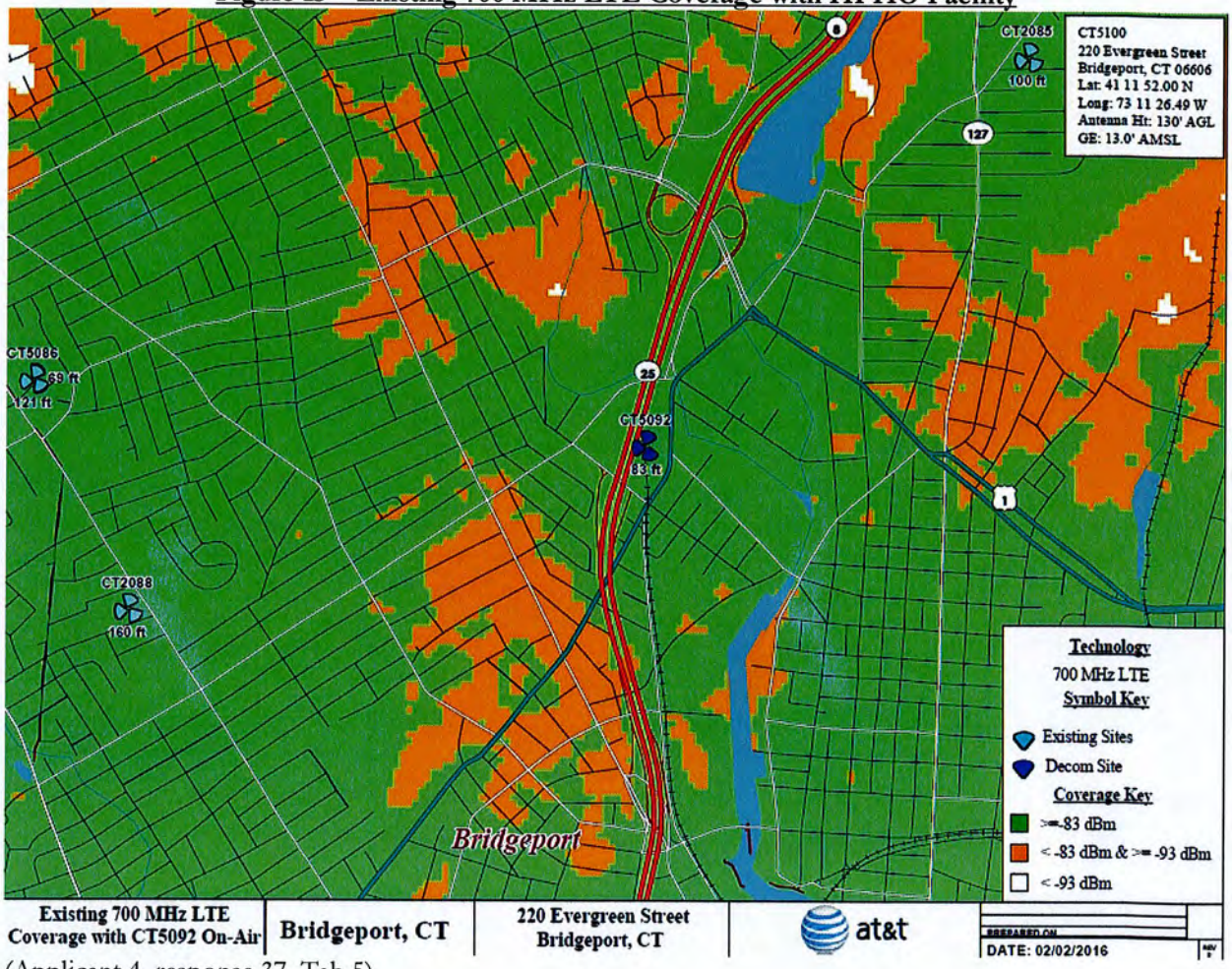
(Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 13)

Figure 12 – Existing (without HI HO Facility) and 1900 MHz LTE Coverage at 120 feet



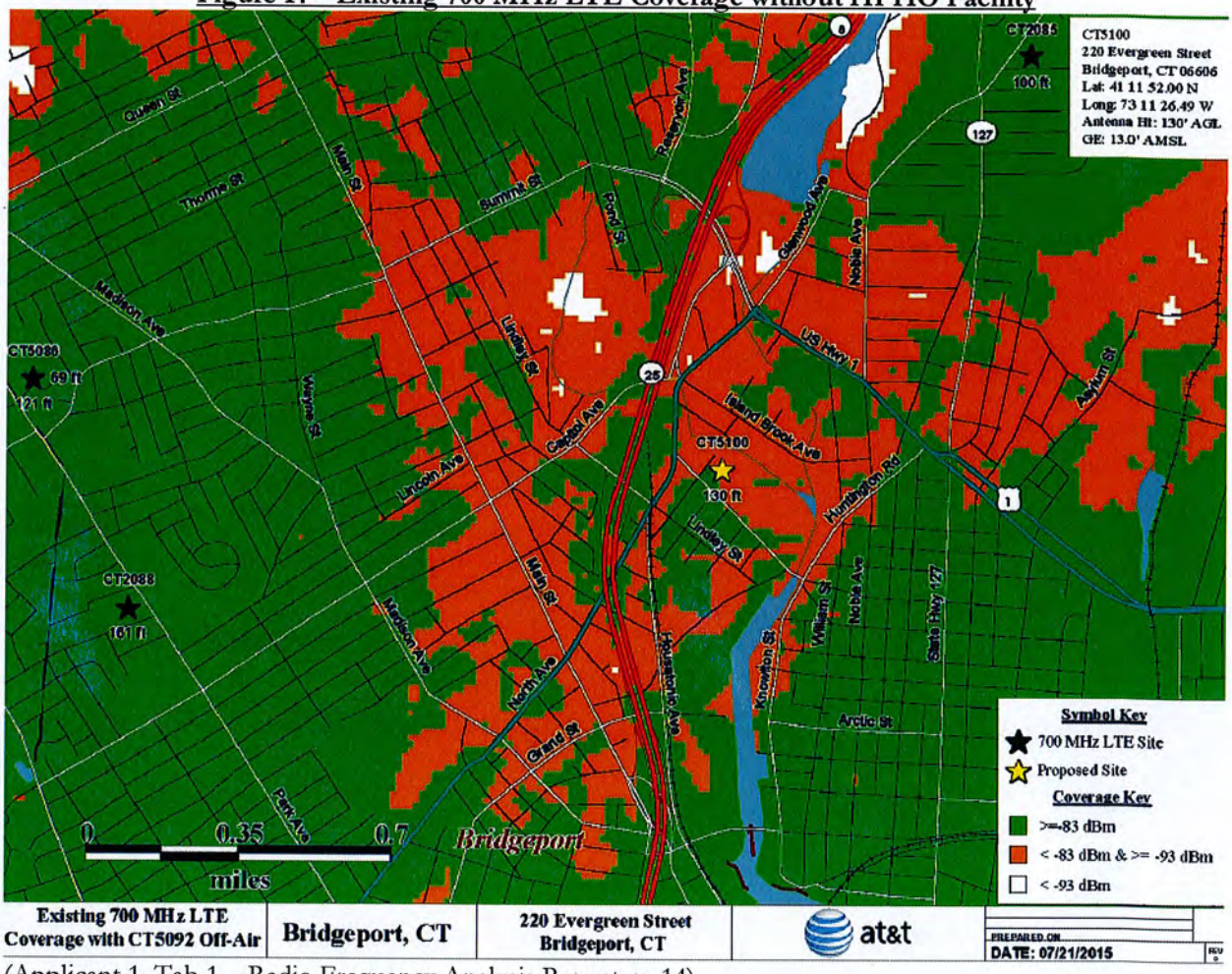
(Applicant 4, response 38, Tab 6)

Figure 13 – Existing 700 MHz LTE Coverage with HI HO Facility



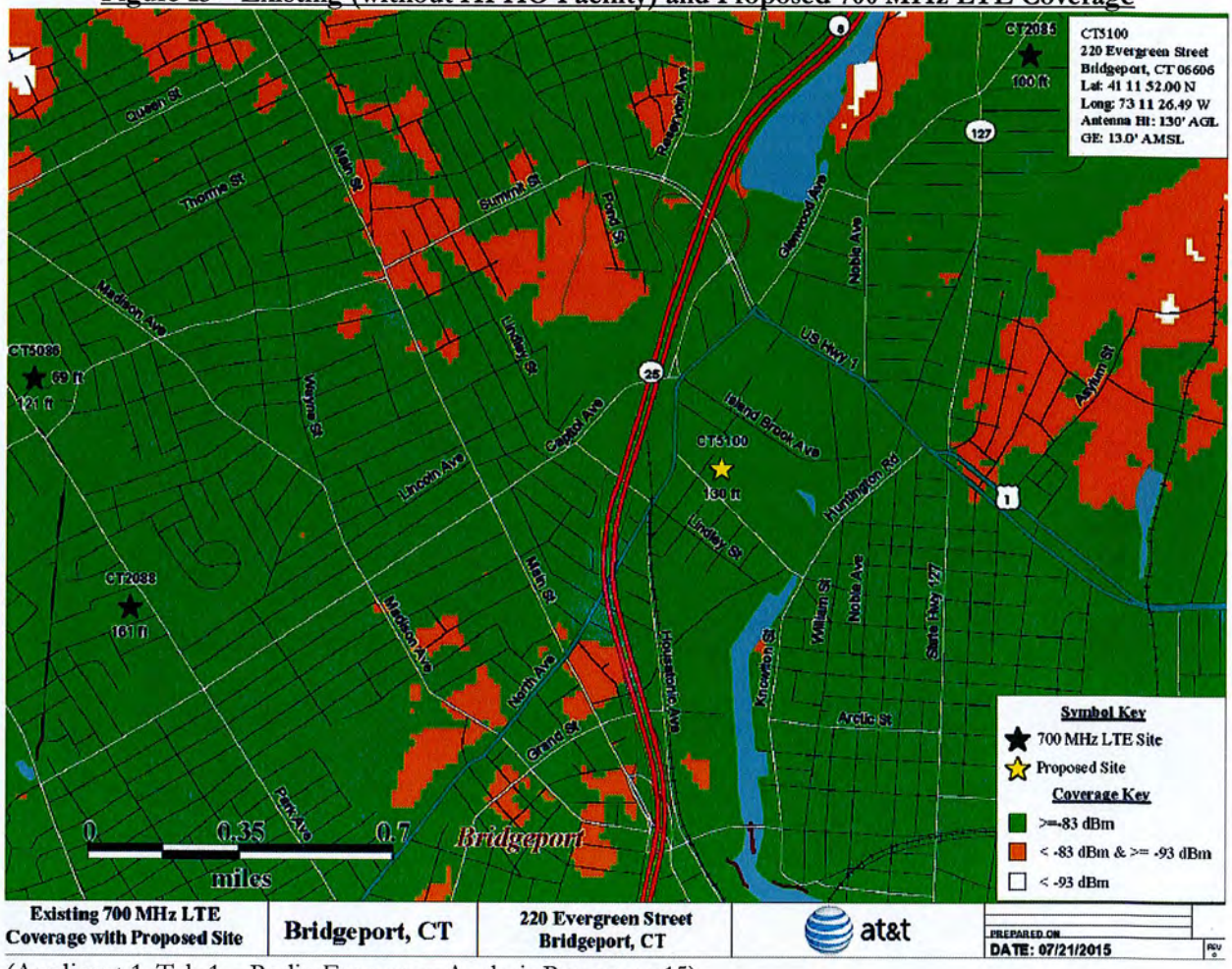
(Applicant 4, response 37, Tab 5)

Figure 14 – Existing 700 MHz LTE Coverage without HI HO Facility



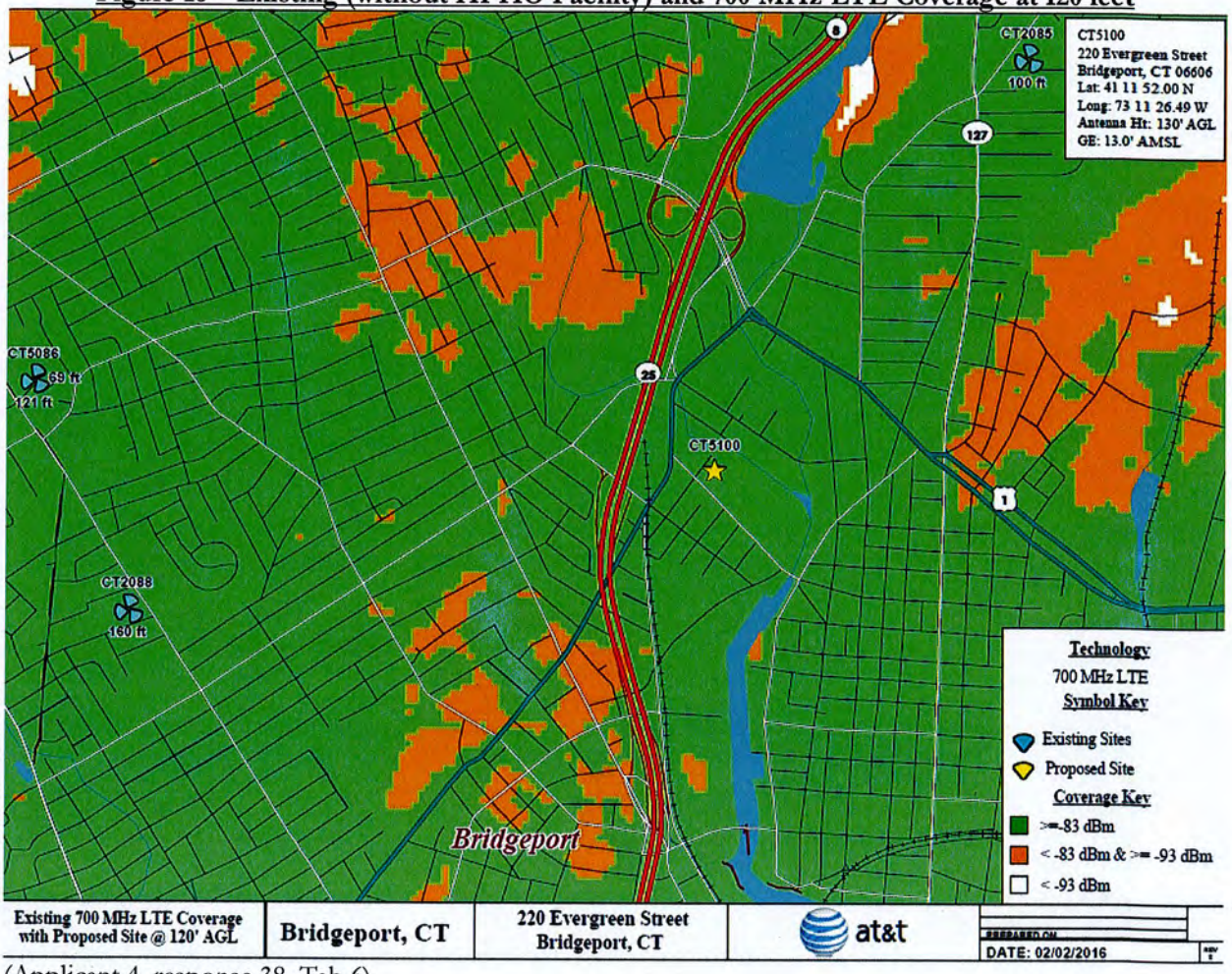
(Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 14)

Figure 15 – Existing (without HI HO Facility) and Proposed 700 MHz LTE Coverage



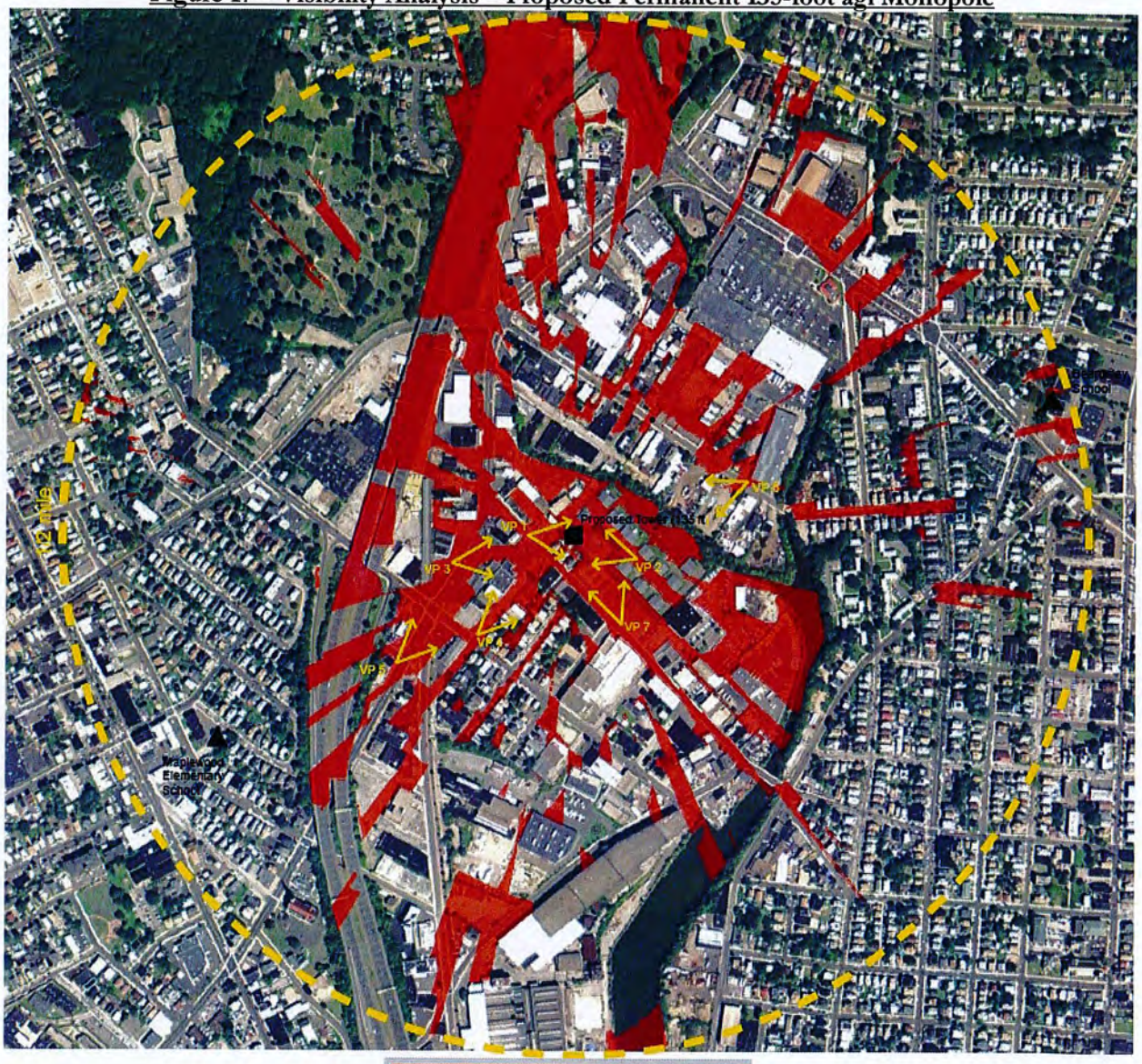
(Applicant 1, Tab 1 – Radio Frequency Analysis Report, p. 15)

Figure 16 – Existing (without HI HO Facility) and 700 MHz LTE Coverage at 120 feet



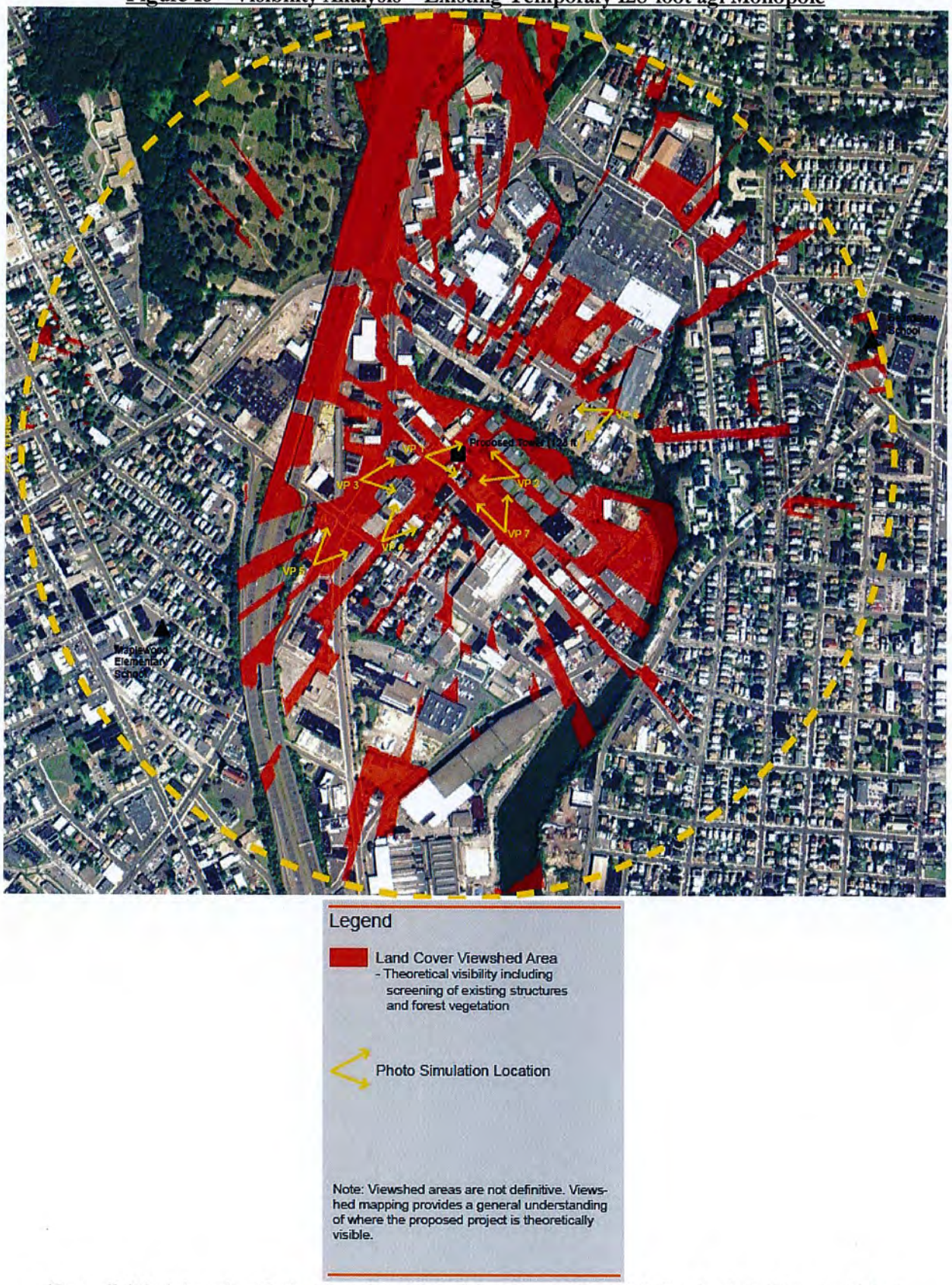
(Applicant 4, response 38, Tab 6)

Figure 17 – Visibility Analysis – Proposed Permanent 135-foot agl Monopole



(Applicant 1, Tab 8 – Viewshed Map)

Figure 18 – Visibility Analysis – Existing Temporary 128-foot agl Monopole



(Council Administrative Notice Item No. 28, Petition No. 1169 – Visibility Analysis Viewshed Map)

DOCKET NO. 464 – Blue Sky Towers, LLC and New Cingular Wireless PCS, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Bridgeport Tax Assessor Map 53, Block 1527, Lot 2, 220 Evergreen Street, Bridgeport, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		April 14, 2016

Opinion

On December 2, 2015, Blue Sky Towers, LLC (Blue Sky) and New Cingular Wireless PCS, LLC (AT&T), (collectively the Applicant), applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a 135-foot monopole wireless telecommunications facility to be located at 220 Evergreen Street, Bridgeport, Connecticut.

The purpose of the proposed facility is to provide a permanent replacement to an existing AT&T site located at 370 North Avenue, Bridgeport, known as the HI HO Facility (HI HO Facility). The HI HO Facility is an approximately 80-foot concrete and steel coal storage silo facility. AT&T's antennas are co-located at the 83-foot level of the structure. Sprint and MetroPCS are also co-located on this facility. Because of the age of the structure (dating back to circa 1930s) and some coal being left inside the structure, there is excessive structural deterioration of this existing support structure on which AT&T's antennas are located. The entire HI HO Facility structure was deemed a serious hazard after a structural review and inspection. In light of the safety issues, AT&T's technicians are unable to visit the HI HO Facility for upgrades and repairs. Accordingly, AT&T will decommission its equipment from the HI HO Facility.

On July 6, 2015, the Council received a Petition (Petition) from Blue Sky and AT&T for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed installation of a temporary wireless telecommunications facility at the Chapin and Bangs property on 220 Evergreen Street, Bridgeport. The temporary wireless facility was intended to provide an interim solution for AT&T in order to continue providing wireless service until a permanent facility could be leased, permitted, constructed, and brought into operation. The temporary facility is a 120-foot monopole on top of an 8-foot tall ballast base, for a total height of 128 feet above ground level (agl). This temporary facility was approved by the Council on August 6, 2015. The temporary site was expected be constructed by the end of February.

While this temporary facility meets AT&T's near term needs, the Applicant seeks to have a permanent solution to replace the wireless service lost by the decommissioning of the HI HO Facility. The purpose of the proposed permanent monopole facility is to allow AT&T to continue to provide reliable service to a geographic area including portions of Route 8, Route 127, Route 1, Main Street, Capitol Avenue, Lindley Street, Island Brook Avenue, Noble Avenue, Huntington Road, and other local roads in Bridgeport.

Specifically, AT&T proposes to locate at the 130-foot level of the proposed 135-foot permanent monopole facility. AT&T would install nine panel antennas and 27 remote radio heads on a low-profile platform to provide its wireless service. Blue Sky would be the Certificate Holder for the facility. AT&T would be a tenant on the proposed tower.

The loss of the HI HO Facility would result in the loss of population coverage of 4,172 and 6,741 at in-building and in-vehicle signal strengths, respectively, for 1900 MHz UMTS. With AT&T's antennas at 130 feet, the proposed permanent facility would significantly increase the population coverage to 9,847 and 9,349, respectively, for in-building and in-vehicle coverage. However, if AT&T were to install its antennas 10 feet lower at 120 feet, this could result in lost capacity and the ability to have continuous coverage in some areas.

There are no other existing towers or other sufficiently tall structures available within the Bridgeport area for antenna co-location that would meet AT&T's radio frequency (RF) needs. Repeaters, microcells, transmitters, distributed antenna systems, and other types of transmitting technologies are not viable options to replace the service lost from the decommissioning of the HI HO Facility. Besides the proposed site, AT&T evaluated six sites for a wireless facility development. Also besides the proposed site, Blue Sky performed its own search and evaluated eight sites for a new, permanent wireless telecommunications facility. Collectively, the alternative sites were rejected for various reasons such as lack of interest from the property owner, inability of the site to meet AT&T's RF needs, and/or 100-year flood zone issues. Accordingly, the Council finds that the Applicant conducted a thorough search for properties and alternatives suitable for a replacement facility in the Bridgeport area.

The proposed site at the 220 Evergreen Street property consists of 1.0-acre parcel that is zoned industrial and owned by Chapin & Bangs Company. The property is used for steel fabrication services. This is also the current site of the existing temporary tower. Land use at adjacent properties include developed commercial uses, multi-family residences, and the City of Bridgeport Animal Shelter.

An irregular shaped approximately 3,617.5 square foot fenced equipment compound would be established at the base of the tower. AT&T would install its equipment within an 11-foot 5-inch by 20-foot equipment shelter located within the compound. AT&T's proposed 50-kilowatt diesel backup generator would be located within a 4-foot by 7-foot area inside the fenced compound and adjacent to the equipment shelter. This generator would have a run time of about 48 hours based on its fuel tank capacity.

The proposed backup generator is sized for AT&T's use only. No other wireless carriers expressed an interest in co-locating on the proposed permanent monopole facility at this time. Similarly, no other wireless carriers have expressed an interest in re-locating from the HI HO Facility at this time despite the structural safety concerns about that facility noted by the Applicant. Notwithstanding, the Council will require that Blue Sky reserve space within the tower compound for a larger, future shared generator to accommodate future wireless carrier co-locations. The reserved space will be included in the Development and Management Plan (D&M Plan).

The proposed equipment compound would be surrounded by an eight-foot high chain-link fence. The fence would have a mesh size of 1 ¼ inches. No new access from Evergreen Street to the proposed tower compound is proposed because the tower compound would be located very close to the property line with Evergreen Street.

Utilities would be installed underground to the site from an existing pole located to the north and on the same side of Evergreen Street.

The tower and foundation would be designed to accommodate up to a 20-foot increase in height. At the proposed height of 135 feet, the tower set back radius extends beyond the subject property boundary approximately 97-feet to the southwest onto the abutting Guzman property. The Council will order the Applicant to include a yield point in the final design of the tower as part of the Development and Management Plan (D&M Plan) for the project to ensure the tower would not extend off of the site property in the event of a tower failure.

Development of the site will not adversely affect any wetlands. The nearest wetland is off-site and approximately 0.2 miles to the southeast. Also, there are no trees to be removed to construct the facility.

The Connecticut Department of Energy and Environmental Protection (DEEP) has reviewed the Natural Diversity Database and determined that the project will not adversely impact State-listed species.

The project will not have an adverse impact on resources listed on or eligible for the National Register of Historic Places.

Conservatively neglecting the exemption for emergency generators, with mitigation measures (e.g. noise mats) installed along the fence line parallel to the southwestern property line, noise from the air conditioning units and the backup generator at the proposed facility would not exceed DEEP Noise Control Regulations at the property boundaries. Alternatively, the backup generator could be relocated and the air conditioning units could be moved away from the southern property line closer to the City property to the north. This would achieve compliance with DEEP noise standards without the need for noise mats. The Council prefers this option because it avoids the need for noise mats. Such configuration should be included in the D&M Plan.

The tower site is located above the 100-year flood zone but within the 500-year flood zone. The Council is concerned about equipment within the 500-year flood elevation. Modest adjustments to the equipment shelter height could raise the bottom of the shelter to above the 500-year flood zone to further reduce the flood risk to the equipment inside. As for the backup generator, while the generator itself is currently located above the 500-year flood zone, the fuel tank itself would not be located above the 500-year flood zone. At the proposed location, the generator fuel tank would require roughly 1.3 feet of additional height at a minimum, and the equipment shelter would require at least 0.3 feet of additional height. However, these height adjustments will be subject to change due to the relocation of the shelter and generator for noise compliance (without mitigation) which would slightly alter the ground elevations of such equipment from their originally proposed locations. Accordingly, the Council will require that a flood elevation mitigation plan be included in the D&M Plan with plans to raise the equipment shelter, backup generator and fuel tank above the 500-year flood zone if possible. The Applicant should consult with the electric utility regarding protecting the transformer from flood risk and include the final transformer location in the D&M Plan.

There does not appear to be a mechanism to raise the tower above the 500-year flood zone. At the proposed location, it would require roughly a minimum of 2.3-foot (above grade) taller foundation to elevate the tower to above the 500-year flood zone. Such a modification would be problematic because it would raise the total height of the tower to roughly 137.3 feet agl, and notice of the proposed facility was provided based on a maximum height of 135 feet agl. As such, the tower will remain as proposed, outside the 100-year flood zone, but within the 500-year flood zone. Notwithstanding, the Council will require that the tower be designed to withstand inundation and meet all applicable design codes such as the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code.

The proposed tower (similar to the existing temporary tower) would be visible along Evergreen Street and in between local buildings and trees within an approximately ¼ mile radius of the proposed site. Select areas of visibility would exist beyond this distance, but visibility would be limited to brief glimpses between and/or above intervening structures. The proposed tower (similar to the existing temporary tower) would be visible to southbound motorists from a portion of Route 8/25 between Chopsey Hill Road and Lindley Street. The opportunity for views from the northbound lanes is brief due to the direction of the travel.

The Council is concerned with the visibility of the proposed tower facility and must balance the need for the tower versus the environmental effects of the tower. In this case, the Applicant seeks to provide a permanent solution to the loss of the HI HO Facility. In doing so, Blue Sky must enter into a lease agreement with a willing landowner on a parcel that also meets AT&T's RF needs. After an exhaustive search, the Applicant found an industrial site that is also the location of the temporary tower. The proposed tower would have a modest height increase from 128 feet agl to 135 feet agl when compared to the existing temporary facility. Views of the permanent facility would be comparable to that of the temporary facility. Furthermore, the tower would be seen within the context of existing manufacturing, warehousing, and commercial buildings. Thus, the tower would be visually consistent with such views. While the context of an industrial zone does not easily lend itself to alternative or stealth tower designs such as a tree tower, the monopole would be a galvanized grey that would eventually weather to a dull grey. Finally, the Council finds that the proposed

facility replaces the lost HI HO Facility coverage, and that the visual impact of the facility would not outweigh the need for wireless service.

According to a methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997), the radio frequency power density levels of AT&T's antennas would be 3.98 percent of the FCC's General Public/Uncontrolled Maximum Permissible Exposure, as measured at the base of the tower. This percentage is below federal standards established for the frequencies used by wireless companies. If federal standards change, the Council will require that the tower be brought into compliance with such standards. The Council will require that the power densities be recalculated in the event other carriers add antennas to the tower. The Telecommunications Act of 1996 prohibits any state or local agency from regulating telecommunications towers on the basis of the environmental effects of radio frequency emissions to the extent that such towers and equipment comply with FCC's regulations concerning such emissions. Regarding potential harm to wildlife from radio emission; this, like the matter of potential hazard to human health, is a matter of federal jurisdiction. The Council's role is to ensure that the tower meets federal permissible exposure limits.

Based on the record in this proceeding, the Council finds that the effects associated with the construction, maintenance and operation of the proposed 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 policies of the State concerning such effects, and are not sufficient reason to deny this application. Therefore, the Council will issue a Certificate to Blue Sky for the construction, maintenance, and operation of a 135-foot monopole telecommunications facility at 220 Evergreen Street in Bridgeport, Connecticut.

DOCKET NO. 464 – Blue Sky Towers, LLC and New Cingular Wireless PCS, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Bridgeport Tax Assessor Map 53, Block 1527, Lot 2, 220 Evergreen Street, Bridgeport, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		April 14, 2016

Decision and Order

Pursuant to Connecticut General Statutes §16-50p and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Blue Sky Towers, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at the proposed site located at 220 Evergreen Street, Bridgeport, Connecticut.

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

1. The tower shall be constructed as a monopole at a height of 135 feet above ground level to provide the proposed wireless services, sufficient to accommodate the antennas of New Cingular Wireless PCS, LLC (AT&T) and other entities, both public and private. The height of the tower may be extended after the date of this Decision and Order pursuant to regulations of the Federal Communications Commission.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the City of Bridgeport (City) for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) final site plan(s) for development of the facility to include specifications for the tower, tower foundation, antennas, equipment compound including, but not limited to, fence with less than two inch mesh, radio equipment, access road, utility line, transformer, emergency backup generator, space for a future shared generator, flood elevation mitigation plan for equipment, and landscaping that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code and taking into account inundation risk;
    b) the tower designed with a yield point to ensure that the tower setback radius remains within the boundaries of the subject property;
    c) location of emergency generator and equipment shelter with air conditioning units and evidence of compliance with noise regulations;
    d) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; and
    e) hours of construction.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

7. Any request for extension of the time period referred to in Condition 6 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the City of Bridgeport.

8. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.

9. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

10. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

11. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

12. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

13. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.

14. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.

15. This Certificate may be surrendered by the Certificate Holder upon written notification and approval by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated December 3, 2015, and notice of issuance published in the Connecticut Post.

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.

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

CERTIFICATION

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in **DOCKET NO. 464** – Blue Sky Towers, LLC and New Cingular Wireless PCS, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 220 Evergreen Street, Bridgeport, Connecticut, and voted as follows to approve the proposed facility:

Council Members	**Vote Cast**
Robert Stein, Chairman	Yes
James J. Murphy, Jr., Vice Chairman	Yes
Chairman Arthur House Designee: Larry Levesque	Yes
Commissioner Robert Klee Designee: Robert Hannon	Yes
Philip T. Ashton	Yes
Daniel P. Lynch, Jr.	Yes
Dr. Michael W. Klemens	Yes

Dated at New Britain, Connecticut, April 14, 2016.

Exhibit B

220 EVERGREEN ST

Location	220 EVERGREEN ST	**Mblu**	53/ 1527/ 2/ /
Acct#	R--0048990	**Owner**	CHAPIN & BANGS COMPANY
Assessment	$160,420	**Appraisal**	$229,160
PID	13578	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$29,050	$200,110	$229,160
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$20,340	$140,080	$160,420

Owner of Record

Owner	CHAPIN & BANGS COMPANY	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	PO BOX 1117 BRIDGEPORT, CT 06601	**Book & Page**	2291/ 54
		Sale Date	05/12/1987
		Instrument	

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CHAPIN & BANGS COMPANY	$0		2291/ 54		05/12/1987

Building Information

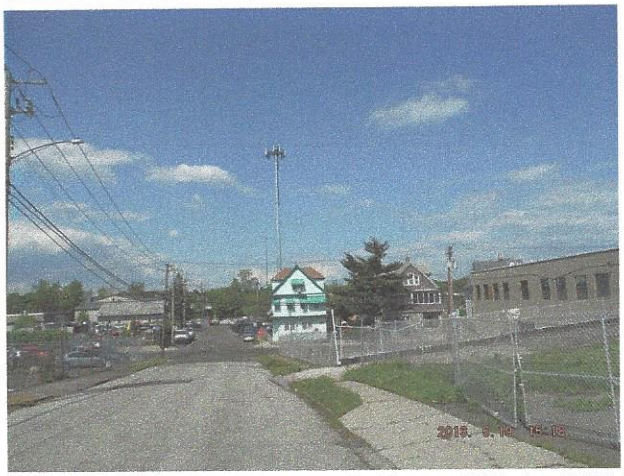
Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**

Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy:	
Exterior Wall 1:	
Exterior Wall 2:	
Roof Structure:	
Roof Cover:	
Interior Wall 1:	
Interior Wall 2:	
Interior Flr 1:	
Interior Flr 2	
Heat Fuel:	
Heat Type:	
AC Type:	
Total Bedrooms	
Total Full Baths	
Total Half Baths	
Total Xtra Fixtrs:	
Total Rooms	
Bath Style:	
Kitchen Style:	
Fireplaces	
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Garages	
.	

Building Photo



(http://images.vgsi.com/photos2/BridgeportCTPhotos//\00\10\2(

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	399
Description	Vac Ind Lnd
Zone	ILI
Neighborhood	IND

Land Line Valuation

Size (Acres)	1.00
Frontage	0
Depth	0
Assessed Value	$140,080

Alt Land Appr Category No

Appraised Value $200,110

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN2	Fence, WD	4	4 ft	150 LF	$2,250	1
TWR	Tower			134 LF	$26,800	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$29,050	$200,110	$229,160
2015	$2,250	$200,110	$202,360
2014	$2,250	$200,110	$202,360

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$20,340	$140,080	$160,420
2015	$1,580	$140,080	$141,660
2014	$1,580	$140,080	$141,660

City of Bridgeport

CTFF335A-NSD-Parcel Map

Legend

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

141.9 0 70.97 141.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Connecticut Metropolitan Council of Governments

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

METROCOG
Connecticut Metropolitan Council of Governments

Exhibit C

SITE NAME: CTFF335A

220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SITE NUMBER: CTFF335A/CT5020

RF DESIGN GUIDELINE: 4Sec-6797DB2

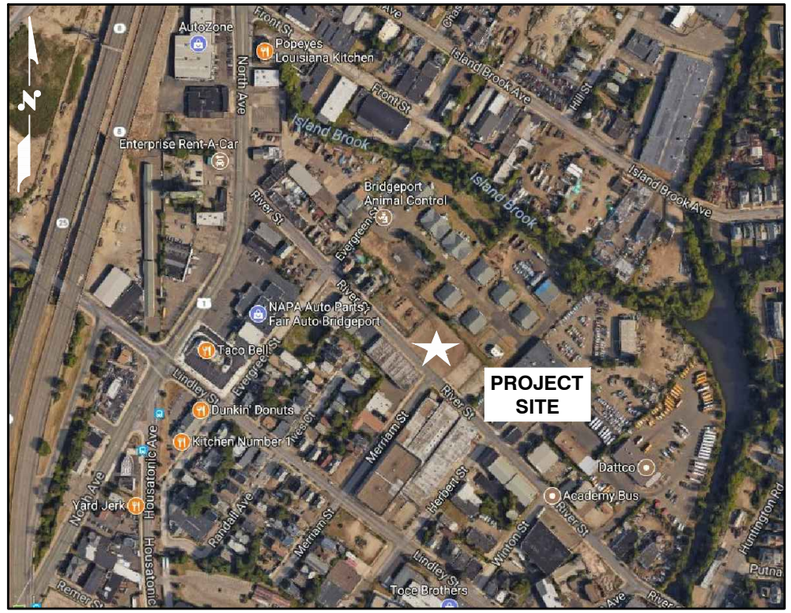
T-MOBILE TECHNICIAN SITE SAFETY NOTES	
LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/RRH/DIPLEXERS	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/RRH/DIPLEXERS	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/RRH/DIPLEXERS	ACCESS NOT PERMITTED
SECTOR D: ANTENNA/RRH/DIPLEXERS	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.



PROJECT SUMMARY

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT INSTALLATION
ZONING JURISDICTION:	BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	220 EVERGREEN STREET BRIDGEPORT, CT 06606
LATITUDE:	41° 11' 52.11" N
LONGITUDE:	73° 11' 27.02" W
JURISDICTION:	CITY OF BRIDGEPORT, CT
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

72 HOURS

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

UNDERGROUND SERVICE ALERT

DRAWING INDEX

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25[illegible]
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/27/17	ISSUED FOR REVIEW	VP

SITE NUMBER:
CTFF335A/CT5020

SITE NAME:
CTFF335A

SITE ADDRESS:
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

   CONTRACTOR – BLUE SKY TOWERS
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

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

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

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

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: IBC 2012 WITH 2016 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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

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

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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

ABBREVIATIONS

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

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 22057
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/27/17	ISSUED FOR REVIEW	VP

SITE NUMBER:
CTFF335A/CT5020

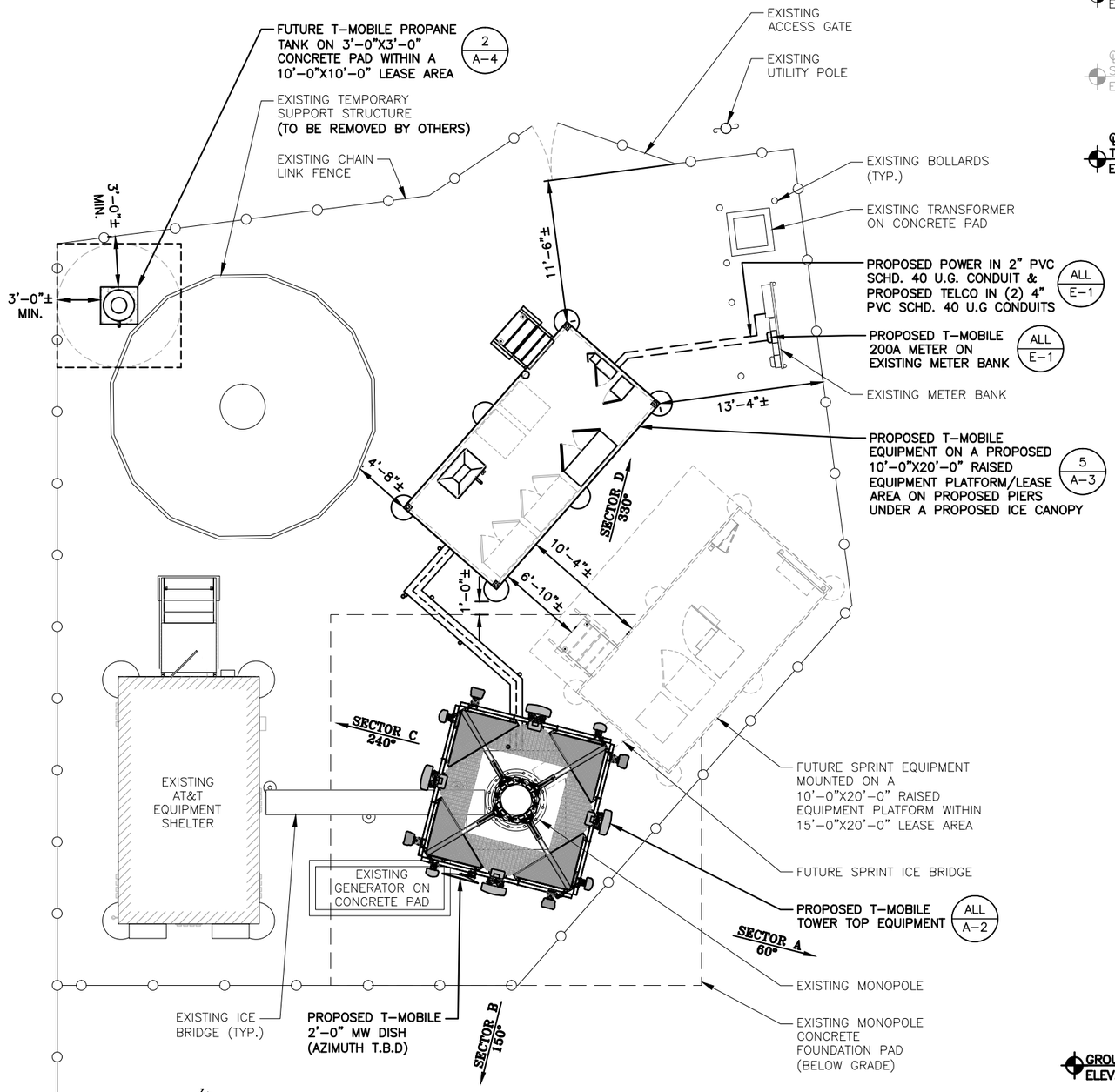
SITE NAME:
CTFF335A

SITE ADDRESS:
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

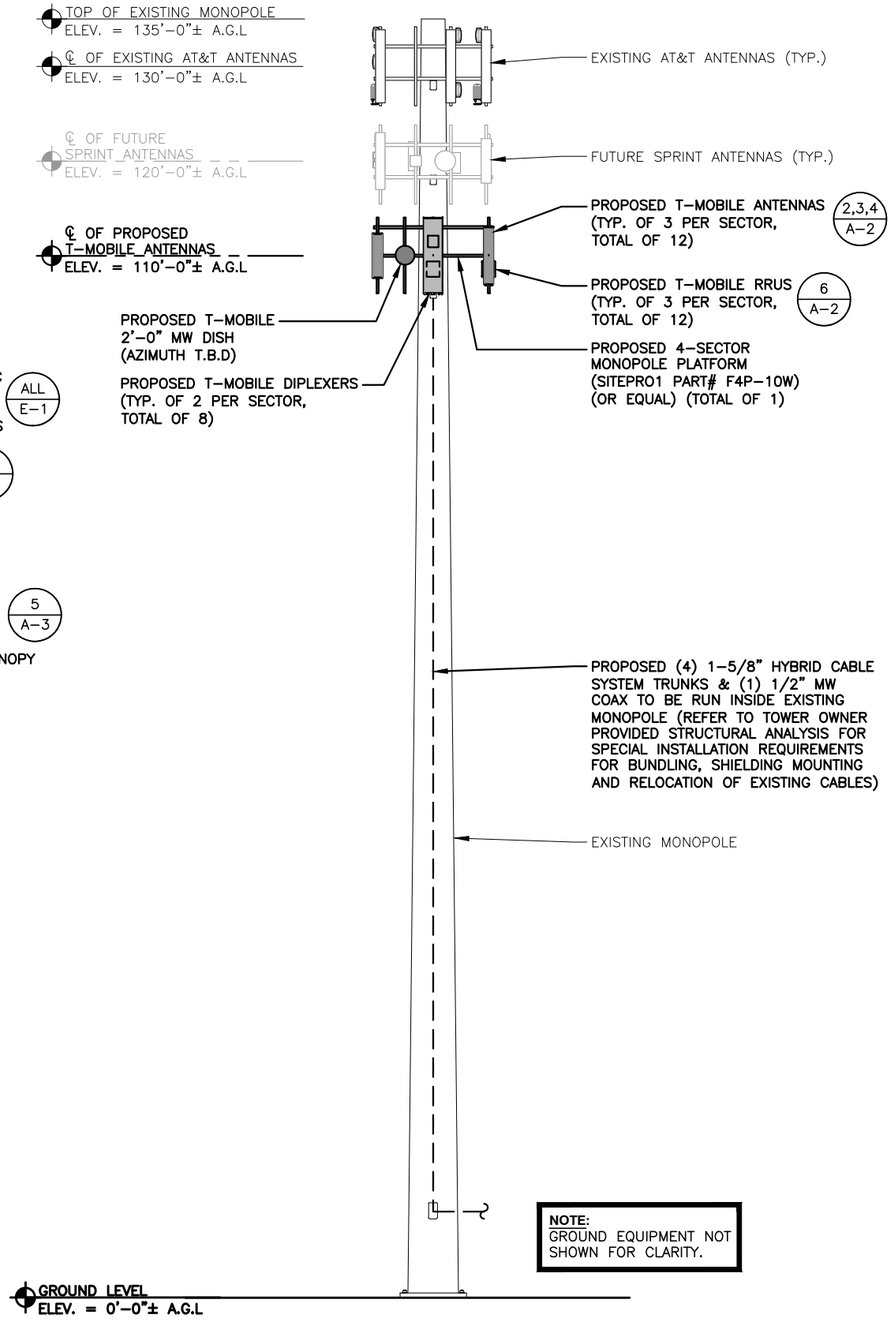
SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.



COMPOUND PLAN 1 A-1
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"
0 2'-8" 5'-4" 10'-8" 16'-0"



NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

ELEVATION 2 A-1
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"
0 4'-0" 8'-0" 16'-0" 24'-0"

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 29554
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/27/17	ISSUED FOR REVIEW	VP

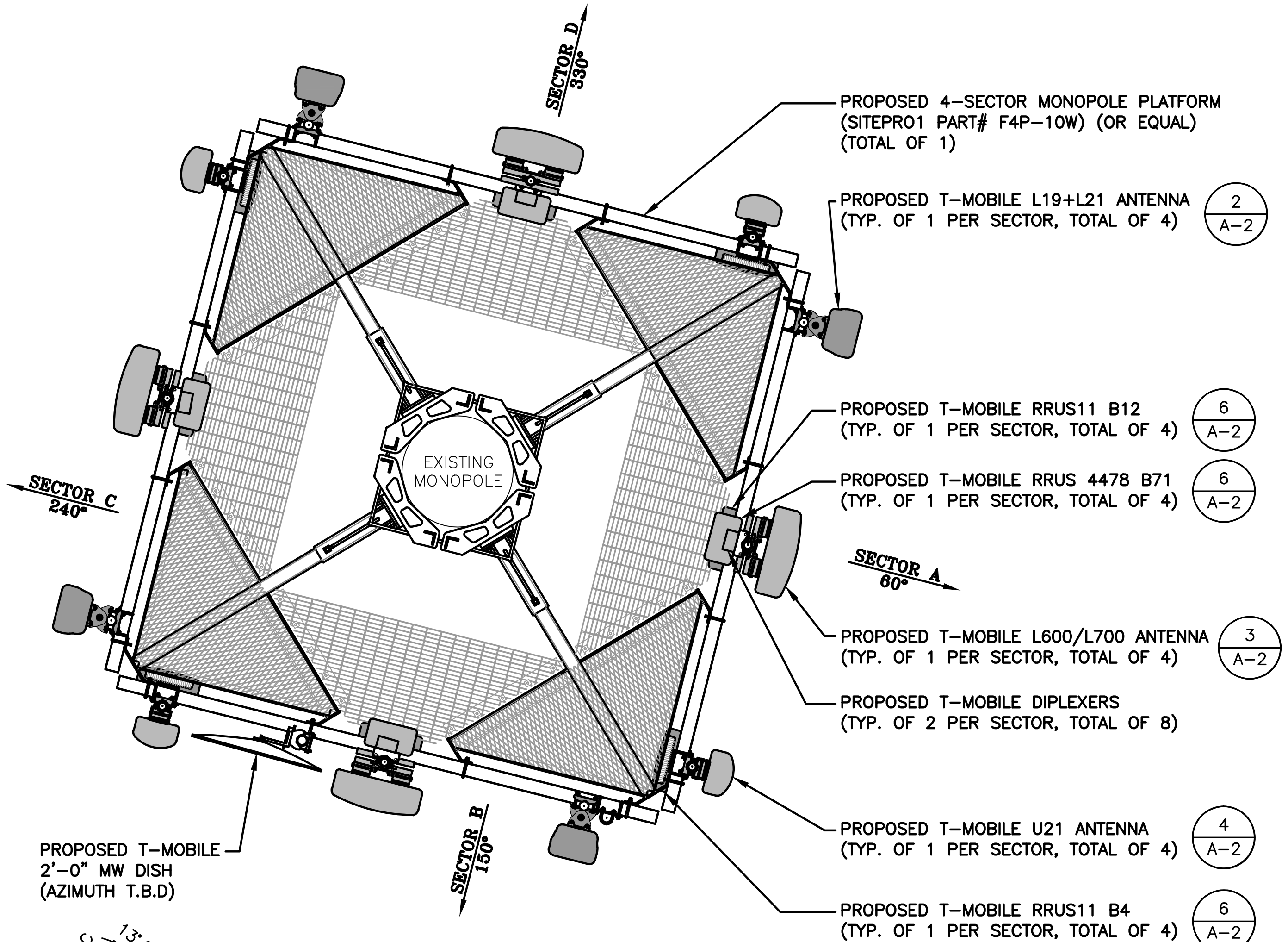
SITE NUMBER:
CTFF335A/CT5020

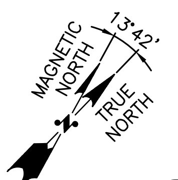
SITE NAME:
CTFF335A

SITE ADDRESS:
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
COMPOUND PLAN & ELEVATION

SHEET NUMBER
A-1





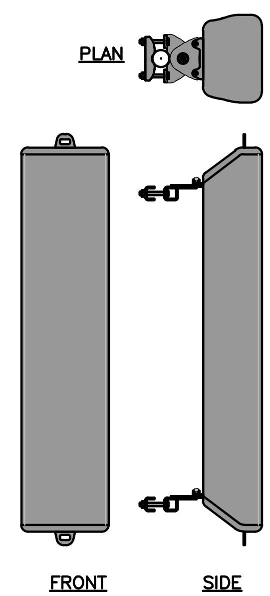
PROPOSED ANTENNA PLAN (1 / A-2)

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

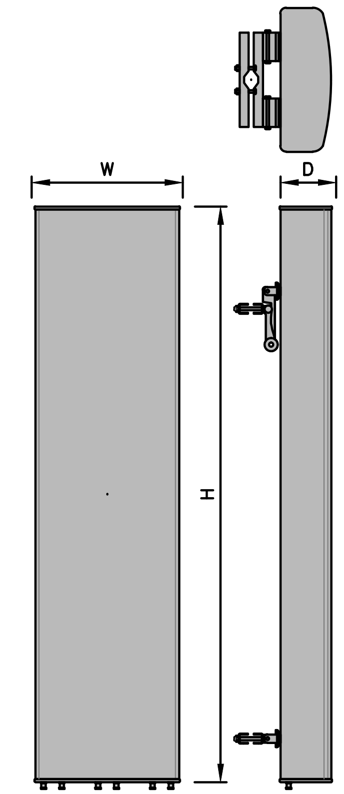
STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

L19+L21 ANTENNA DIMENSIONS	
MODEL #	AIR 32 B66Aa/B2a
MANUF.	ERICSSON
WIDTH	12.9"
DEPTH	8.7"
HEIGHT	56.6"
WEIGHT	132.2 LBS



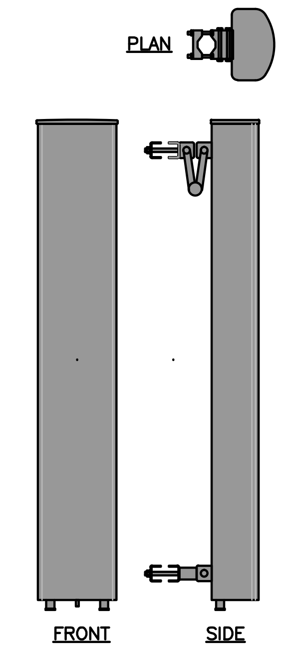
L19+L21 ANTENNA DETAIL (2 / A-2)
SCALE: N.T.S

L600/L700 ANTENNA DIMENSIONS	
MODEL #	APXVAA24_43-U-A20 (QUAD)
MANUF.	RFS
HEIGHT	95.9"
WIDTH	24"
DEPTH	8.7"
WEIGHT	113.2 LBS

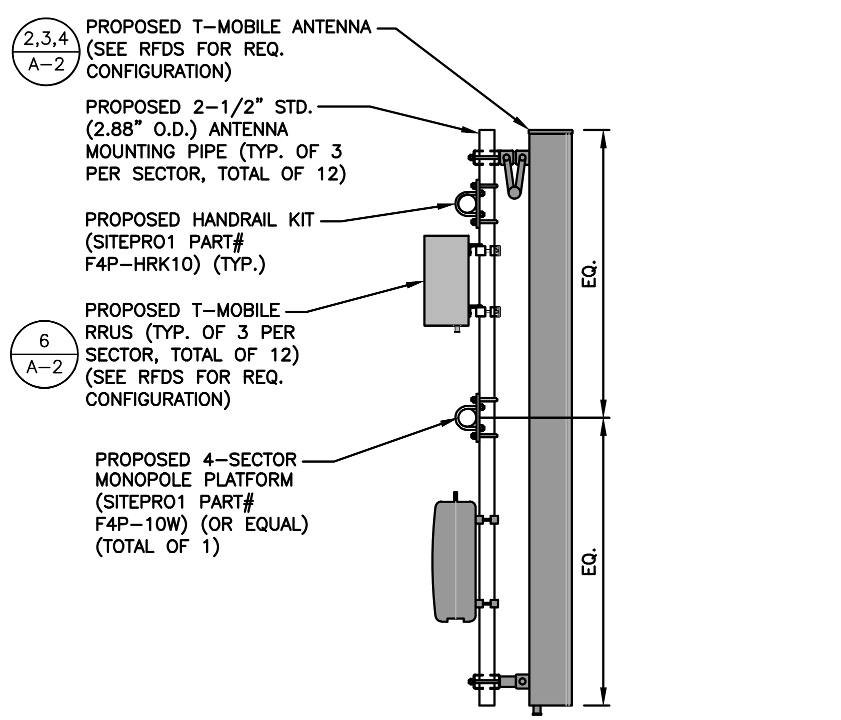


L600+L700 ANTENNA DETAIL (3 / A-2)
SCALE: N.T.S

U21 ANTENNA DIMENSIONS	
MODEL #	DBXNH-6565B-A2M
MANUF.	COMMSCOPE
WIDTH	11.9"
DEPTH	7.1"
HEIGHT	72.7"
WEIGHT	46.3 LBS



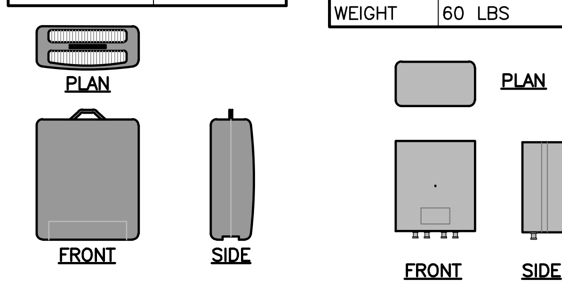
U21 ANTENNA DETAIL (4 / A-2)
SCALE: N.T.S



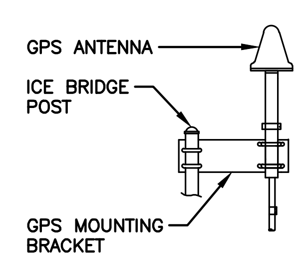
PROPOSED ANTENNA & RRUS MOUNTING DETAIL (5 / A-2)
SCALE: N.T.S

RRUS11 DIMENSIONS	
MODEL #	RRUS11 B12
MODEL #	RRUS11 B4
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS

RRUS 4478 B71 DIMENSIONS	
MODEL #	RRUS 4478 B71
MANUF.	ERICSSON
HEIGHT	15"
WIDTH	13.2"
DEPTH	7.4"
WEIGHT	60 LBS



PROPOSED RRUS DETAIL (6 / A-2)
SCALE: N.T.S



GPS DIMENSIONS	
MODEL #	CCAH32ST03
MANUF.	NAIS
HEIGHT	3.9"
WIDTH	3.5"

GPS ANTENNA MOUNTING DETAIL (7 / A-2)
SCALE: N.T.S

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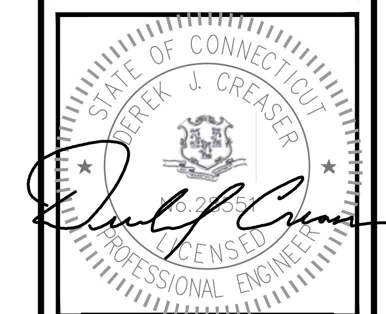

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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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SITE NUMBER:
CTFF335A/CT5020

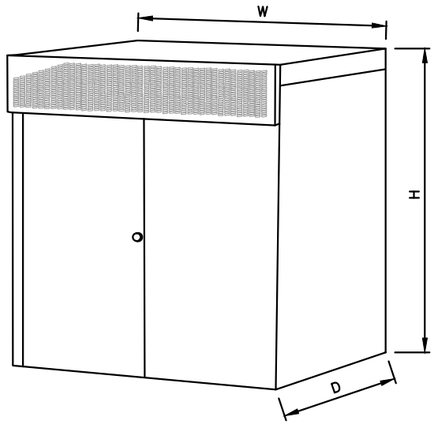
SITE NAME:
CTFF335A

SITE ADDRESS:
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
TOWER EQUIPMENT DETAILS

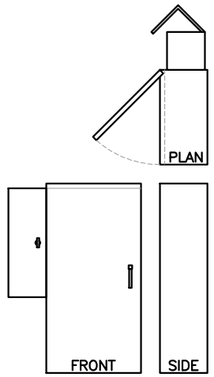
SHEET NUMBER
A-2

CABINET DIMENSIONS	
MODEL #	RBS 6102
MANUF.	ERICSSON
WIDTH	51.2"
DEPTH	27.6"
HEIGHT	57.1"
WEIGHT (W/O BACKUP BATTERIES)	728 LBS
CABINET CAN BE MOUNTED DIRECTLY TO SITE GROUND (INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	



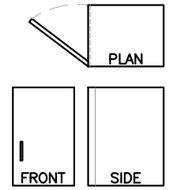
PROPOSED 6102 EQUIPMENT CABINET (1 / A-3)
SCALE: N.T.S

PPC DIMENSIONS	
MODEL #	CS2S2-W736
MANUF.	EMERSON
WIDTH	30"
DEPTH	10"
HEIGHT	66"
WEIGHT	150 LBS
NOTE: INSTALL CABINET ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	

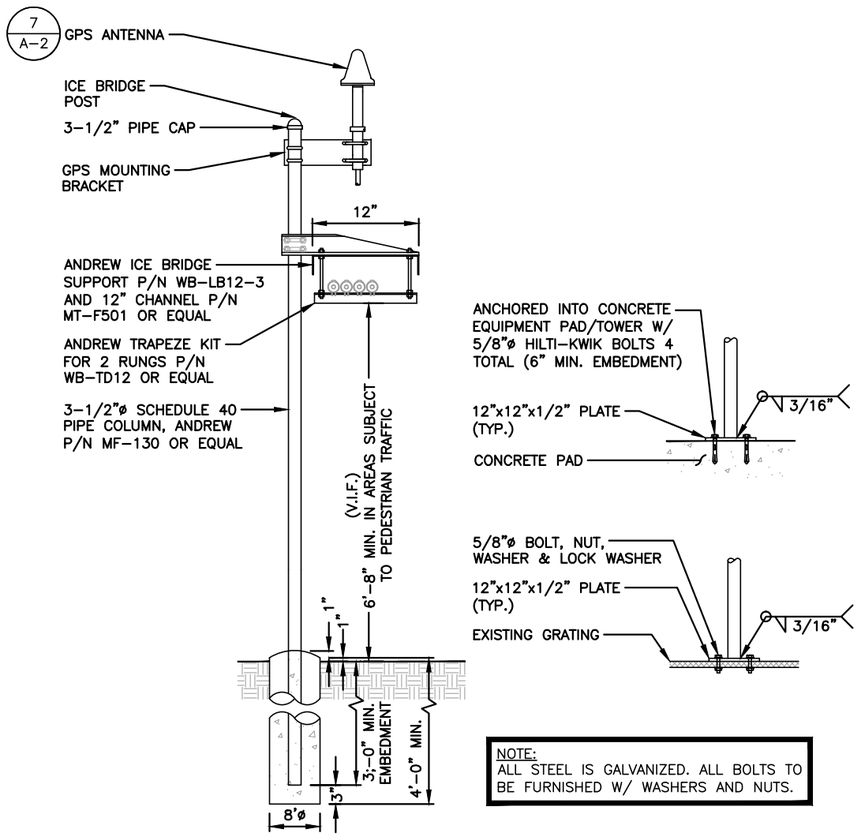


POWER PROTECTION CABINET (PPC) (2 / A-3)
SCALE: N.T.S

RAC DIMENSIONS	
MODEL #	RAC24
MANUF.	PURCELL
WIDTH	15"
DEPTH	18.5"
HEIGHT	24"
WEIGHT	35 LBS
NOTE: 1. INSTALL CABINET ANCHORS AND FLOOR MOUNT KIT ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	

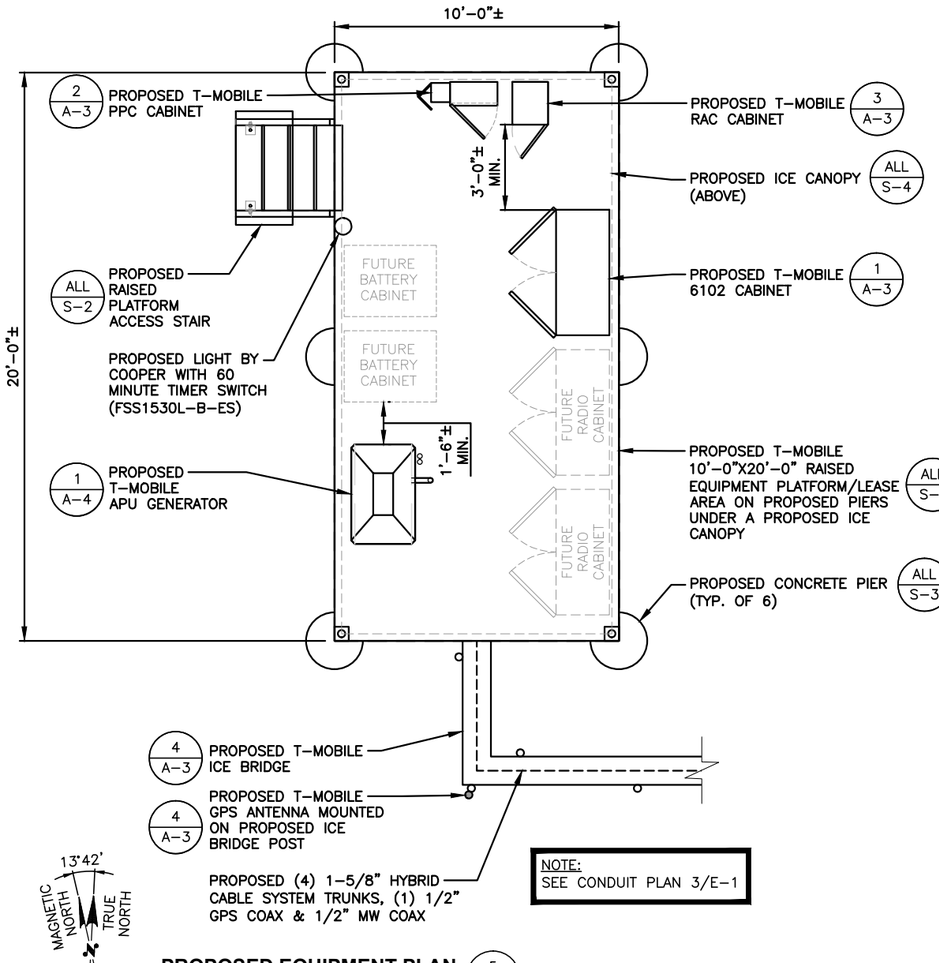


REMOTE ACCESS CABINET (RAC) (3 / A-3)
SCALE: N.T.S



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

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



NOTE:
SEE CONDUIT PLAN 3/E-1

PROPOSED EQUIPMENT PLAN (5 / A-3)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

0 1'-4" 2'-8" 5'-4" 8'-0"

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 22051
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/27/17	ISSUED FOR REVIEW	VP

SITE NUMBER:
CTFF335A/CT5020

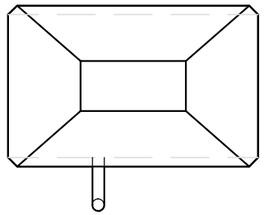
SITE NAME:
CTFF335A

SITE ADDRESS:
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
GROUND EQUIPMENT DETAILS

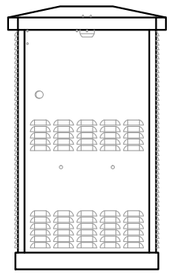
SHEET NUMBER
A-3

PLAN

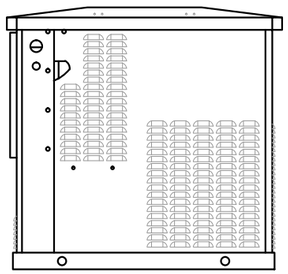


APU DIMENSIONS	
MODEL #	APU POWERGEN 7500
MANUF.	DELTA
HEIGHT	40"
WIDTH	42"
DEPTH	24"

NOTE:
CLEARANCE REQUIREMENTS–APU:
5'–0" EXHAUST SIDE, 18" OTHERS



FRONT



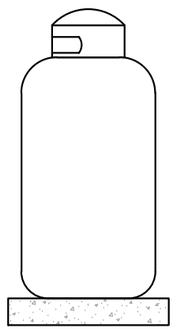
SIDE

APU GENERATOR DETAIL (1 / A–4)
SCALE: N.T.S

LP TANK DIMENSIONS	
HEIGHT	54"
DIAMETER	30"ø
WEIGHT	260 LBS.

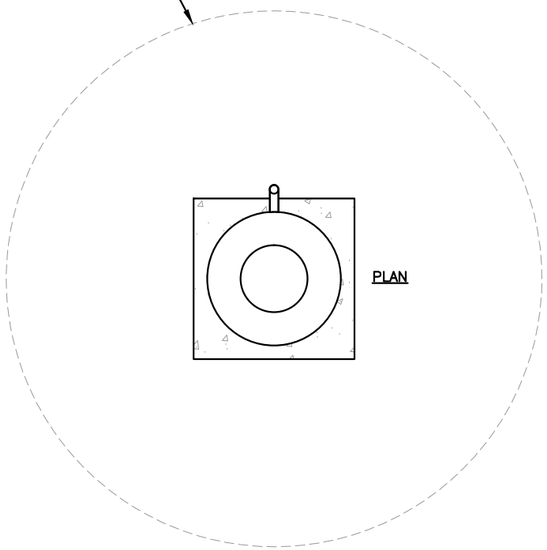
NOTE:
CLEARANCE REQUIREMENTS–LP TANK: 5'–0" SPARK RADIUS WHERE AN INTEGRAL MANUAL SHUT–OFF VALVE IS INSTALLED

80 HOURS RUNTIME–
AVERAGE 5Kw LOAD



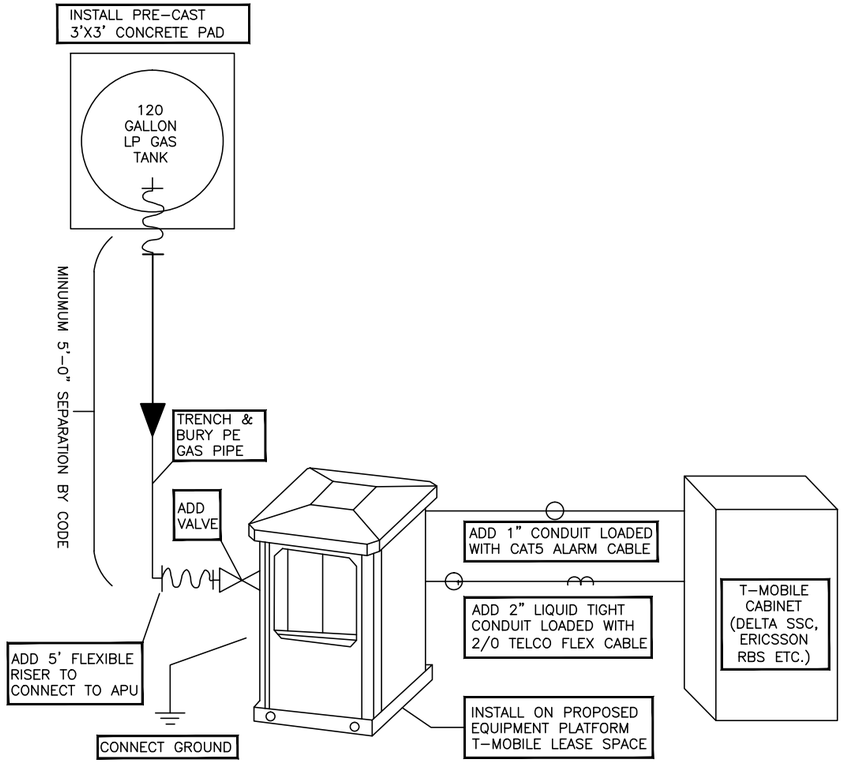
FRONT

5'–0" SPARK RADIUS



PLAN

LP PROPANE TANK DETAIL (2 / A–4)
SCALE: N.T.S



APU & LP TANK ONE-LINE DIAGRAM (3 / A–4)
SCALE: N.T.S

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25[illegible]
LICENSED PROFESSIONAL ENGINEER

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BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
AUXILIARY POWER DETAILS

SHEET NUMBER
A-4

STRUCTURAL NOTES

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE (IBC 2003), ASCE 7-05, EIA/TIA-222-F STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". 9TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-20 AND OR HY-150 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTION CHECKLIST

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

NOTES

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES

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

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17)

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

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

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

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

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STATE OF CONNECTICUT
DEREK J. CREASER
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SUBMITTALS

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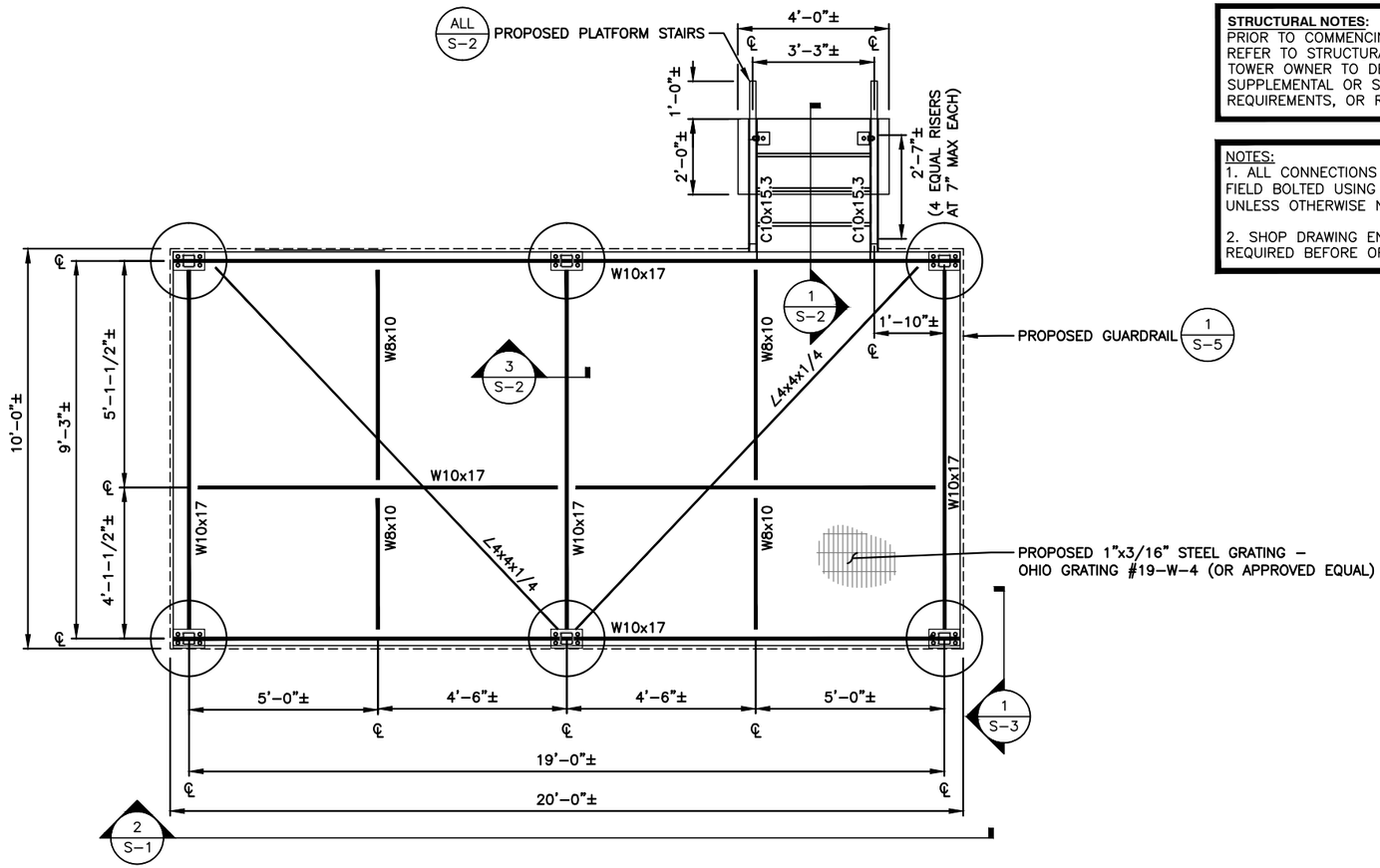
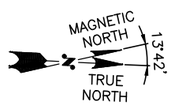
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
SPECIAL INSPECTIONS NOTES

SHEET NUMBER
SN-1

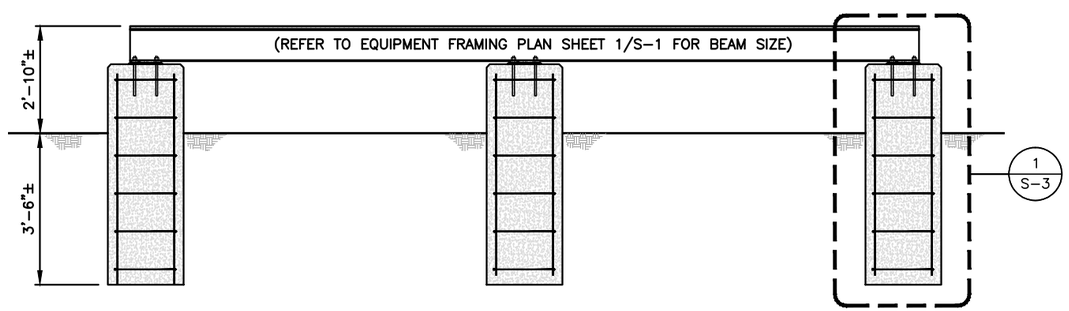




STEEL PLATFORM FRAMING PLAN 1 S-1

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"



EQUIPMENT FRAME ELEVATION 2 S-1

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

NOTES:
1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.

2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.

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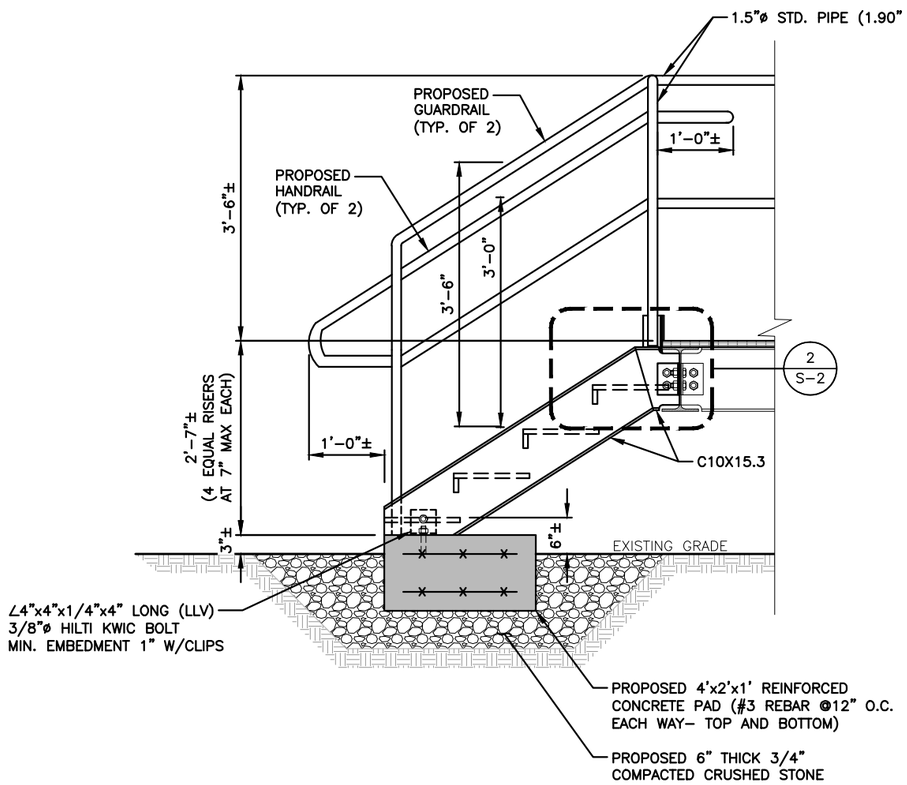
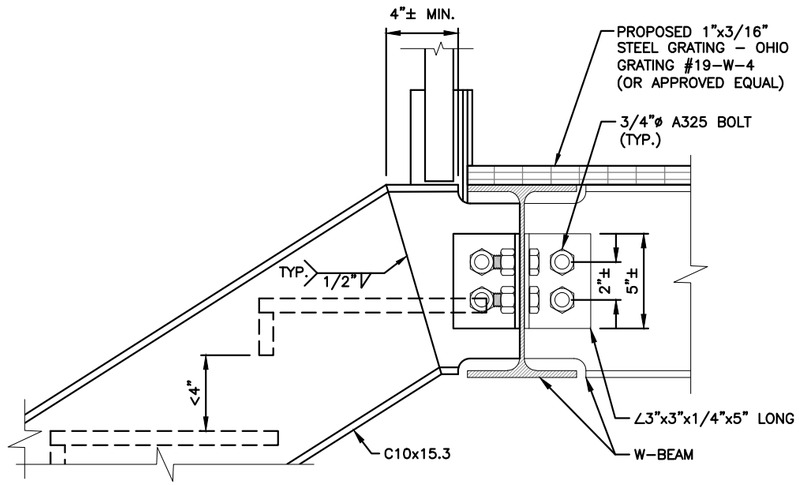
SHEET TITLE
EQUIPMENT PLATFORM STRUCTURAL DETAILS

SHEET NUMBER
S-1



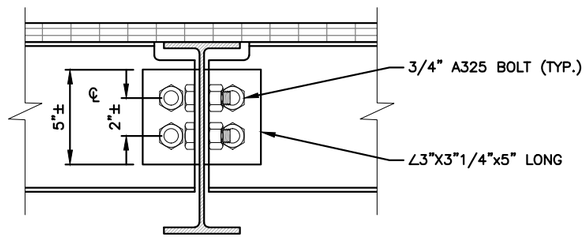
PLATFORM STAIR DETAIL (1 / S-2)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"



STAIR CONNECTION DETAIL (2 / S-2)
22x34 SCALE: 3"=1'-0"
11x17 SCALE: 1-1/2"=1'-0"

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



W8x10 TO W10x17 BEAM CONNECTION (3 / S-2)
22x34 SCALE: 3"=1'-0"
11x17 SCALE: 1-1/2"=1'-0"

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

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NOTES:
1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.

2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.

FOUNDATION NOTES & CONCRETE SPECIFICATIONS:

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

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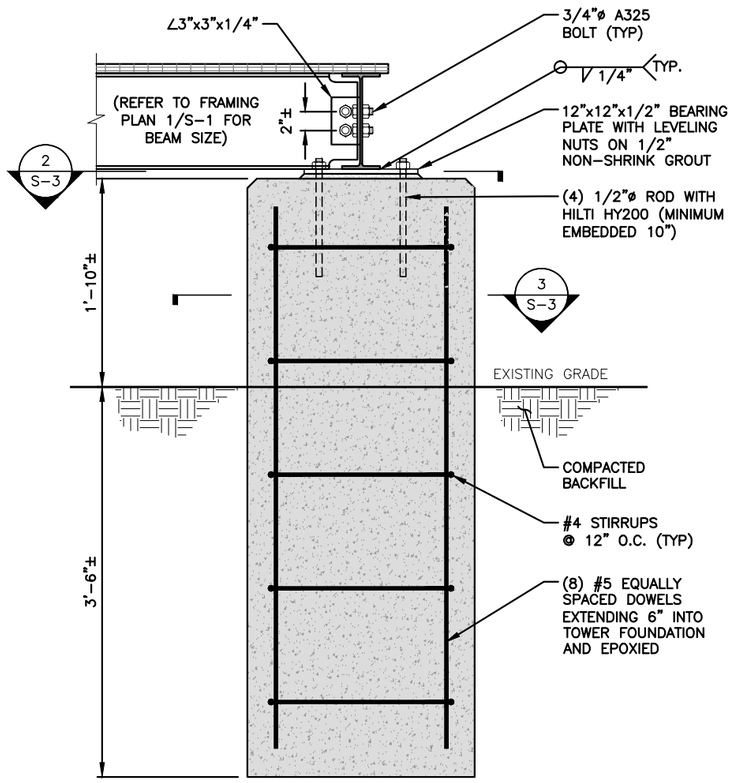
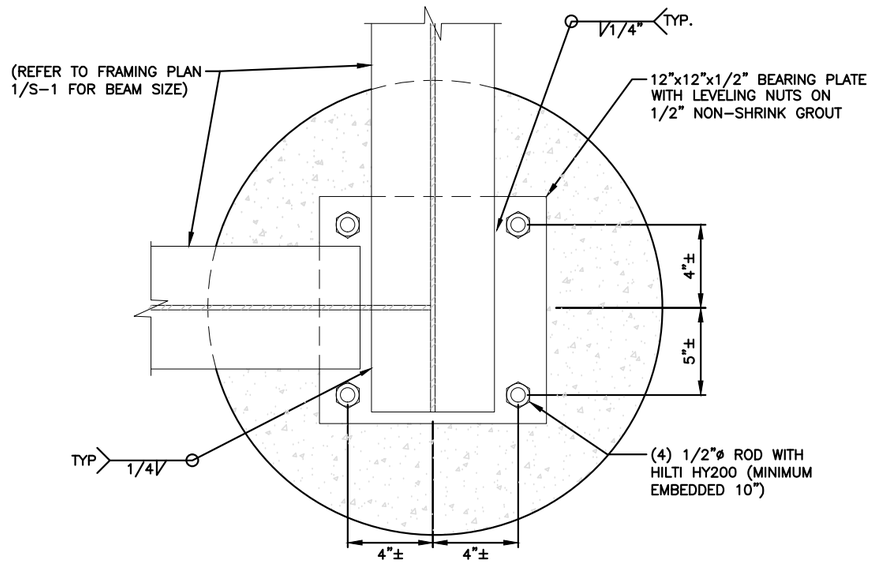
SHEET NUMBER
S-2



REINFORCED PIER SECTION DETAIL (TYP.) 1 S-3

22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"

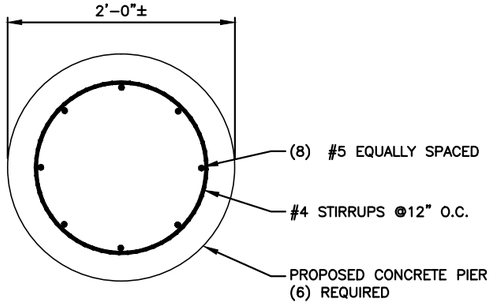
0 0'-4" 0'-8" 1'-4" 2'-0"



FRAME CONNECTION SECTION AT PIERS 2 S-3

22x34 SCALE: 3"=1'-0"
11x17 SCALE: 1-1/2"=1'-0"

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



SECTION A-A
CONCRETE PIER SECTION 3 S-3

22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"

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

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

NOTES:
1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.

2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.

T-MOBILE NORTHEAST LLC
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STATE OF CONNECTICUT
DEREK J. CREASER
No. 28251
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/27/17	ISSUED FOR REVIEW	VP

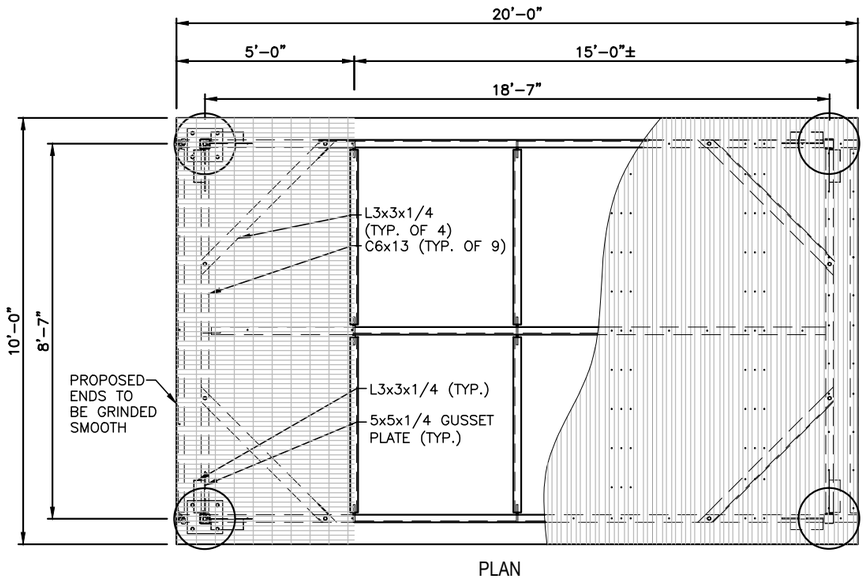
SITE NUMBER:
CTFF335A/CT5020

SITE NAME:
CTFF335A

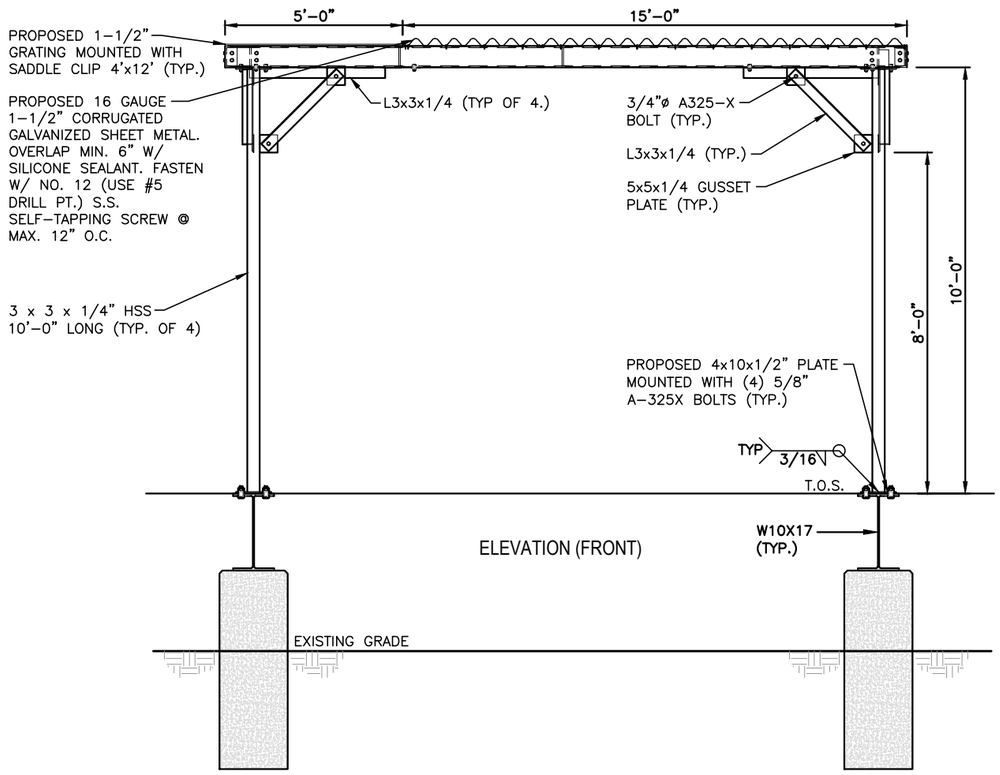
SITE ADDRESS:
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
EQUIPMENT PLATFORM STRUCTURAL DETAILS

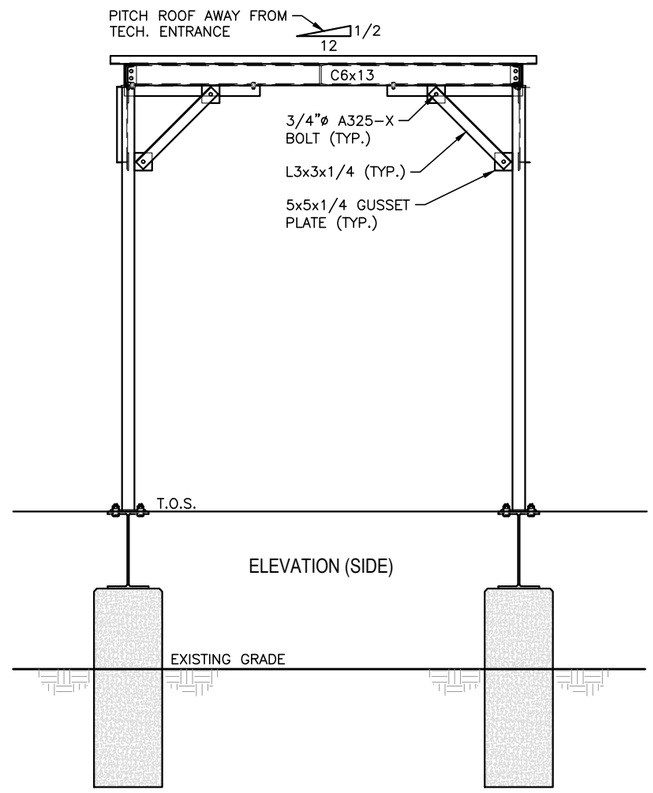
SHEET NUMBER
S-3



PLAN



ELEVATION (FRONT)



ELEVATION (SIDE)

ICE CANOPY DETAIL (1 / S-4)
22x34 SCALE: N.T.S

STRUCTURAL NOTES:
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APPROVED BY: DJC

SUBMITTALS

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CTFF335A/CT5020

SITE NAME:
CTFF335A

SITE ADDRESS:
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
ICE CANOPY
STRUCTURAL DETAILS

SHEET NUMBER
S-4

STRUCTURAL NOTES:
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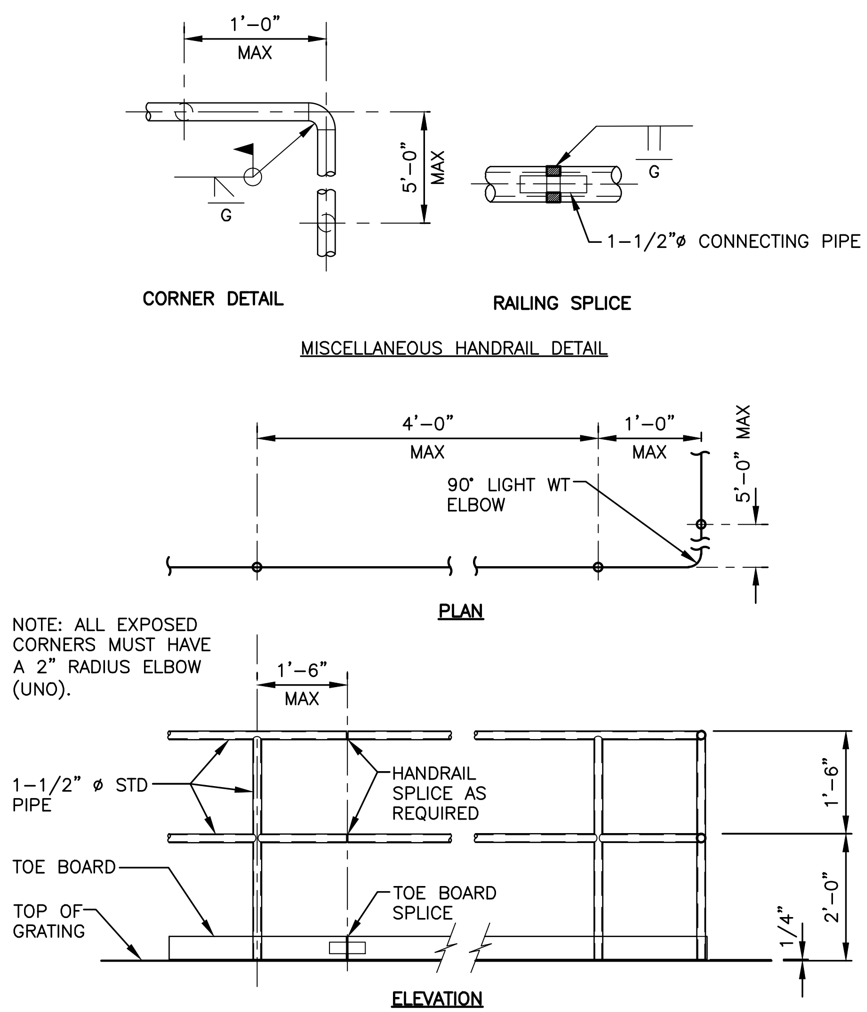
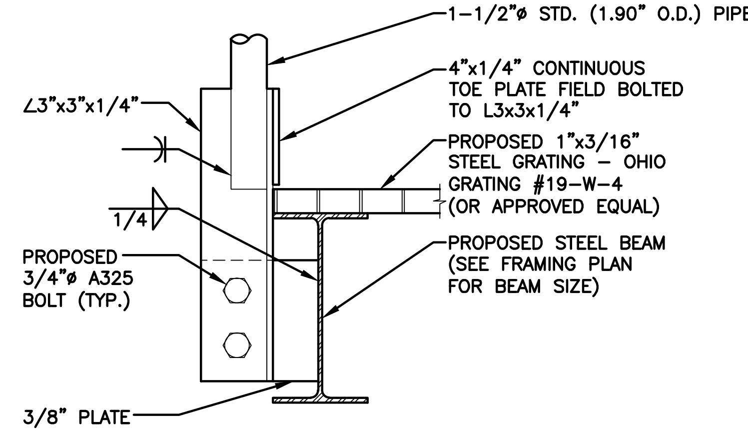


GUARDRAIL DETAIL 1 / S–5
SCALE: N.T.S



SECTION C-C 2 / S–5
SCALE: N.T.S

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BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
EQUIPMENT PLATFORM STRUCTURAL DETAILS

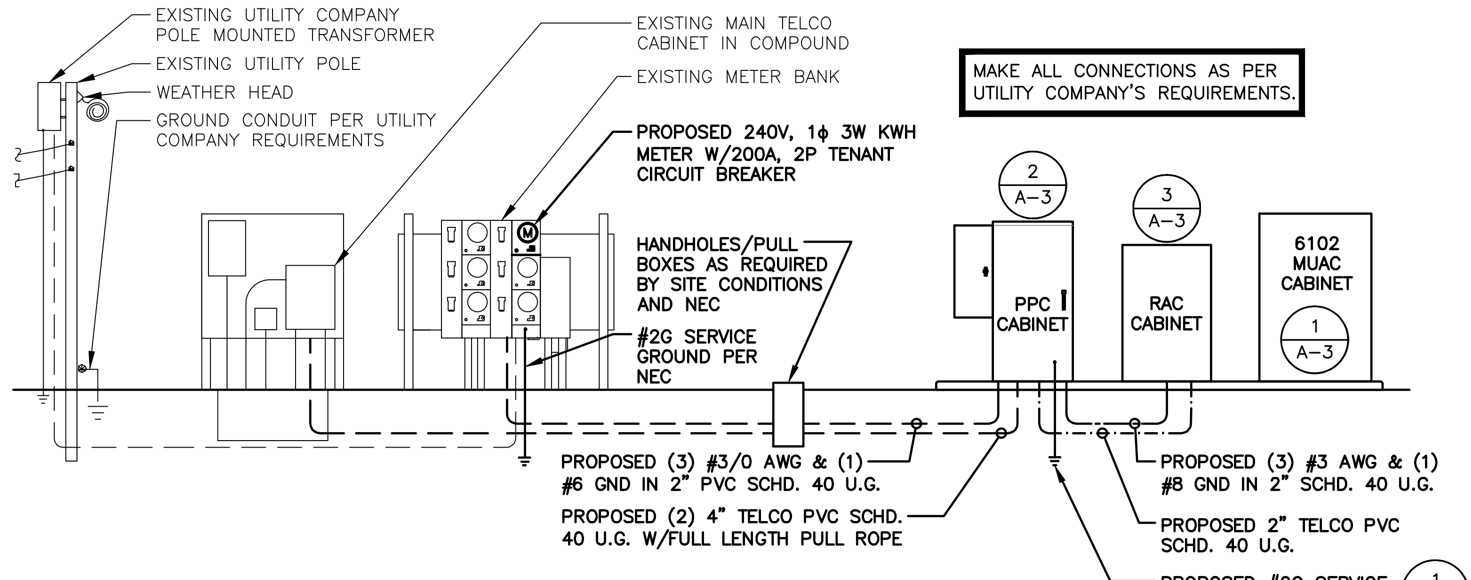
SHEET NUMBER
S-5

ELECTRICAL NOTES

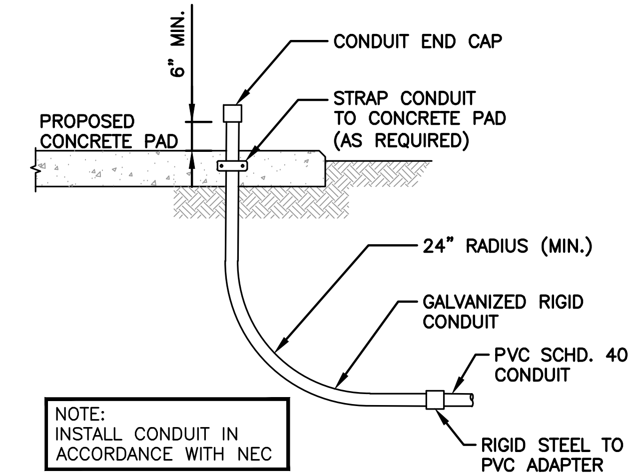
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A–3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
——	EXPOSED WIRING
——	#6G AWG INSULATED STRANDED
——	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⊛	GROUND ROD WITH TEST WELL
○—●	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊗	OMNI–DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

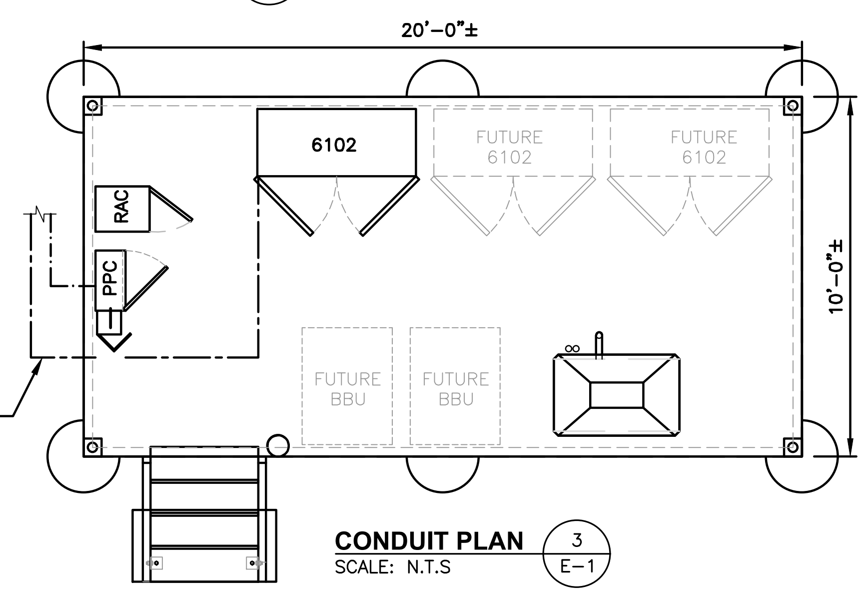


POWER RISER DIAGRAM (1/E–1)
SCALE: N.T.S

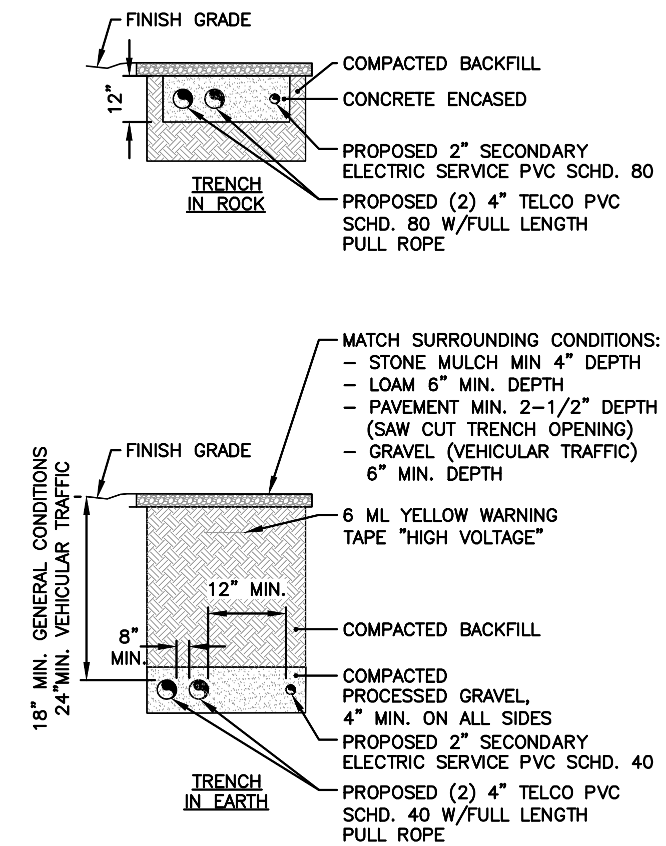


CONDUIT SWEEP DETAIL (2/E–1)
SCALE: N.T.S

CONDUIT LEGEND	
——— (solid)	2"ø GRC INETRCONNECT KIT, –48V DC, BELOW EQUIPMENT PLATFORM, (1) CONDUIT PPC TO RAC, ANCHOR AT 3' INTERVALS, GROUNDING BOND AT EACH END
—·—·—	2"ø PVC SCHD. 40 CONDUIT, AC–POWER, BELOW EQUIPMENT PLATFORM, (1) CONDUIT PPC TO 6102
—··—··—	2"ø PVC SCHD. 40 CONDUIT, TELCO, BELOW EQUIPMENT PLATFORM, (1) CONDUIT PPC TO RAC

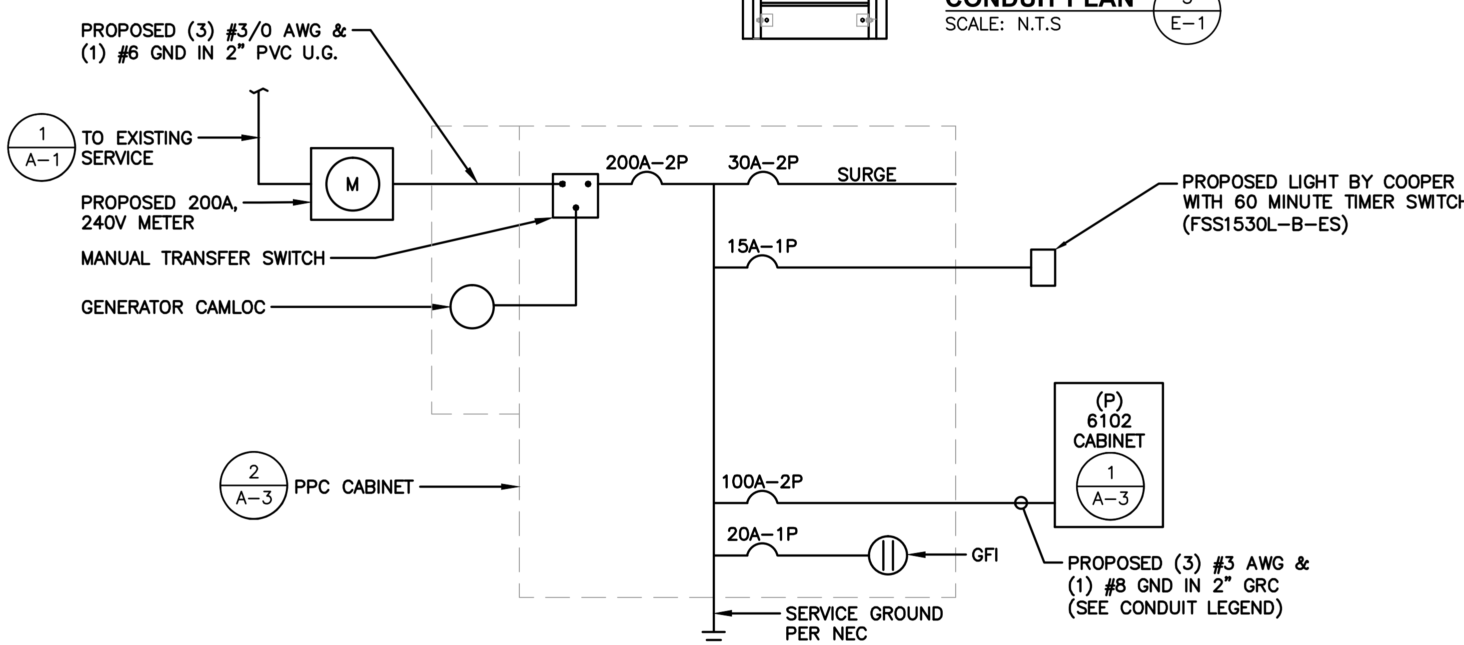


CONDUIT PLAN (3/E–1)
SCALE: N.T.S



SPECIAL WORK NOTE:
EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. WHERE DIRECTED OR REQUIRED, HAND–EXCAVATE PROPOSED UTILITY TRENCHING

BURIED CONDUIT DETAIL (5/E–1)
SCALE: N.T.S



EQUIPMENT ONE LINE DIAGRAM (4/E–1)
SCALE: N.T.S

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SITE ADDRESS:
220 EVERGREEN STREET
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
ELECTRICAL DETAILS & NOTES

SHEET NUMBER
E-1

ELECTRICAL NOTES

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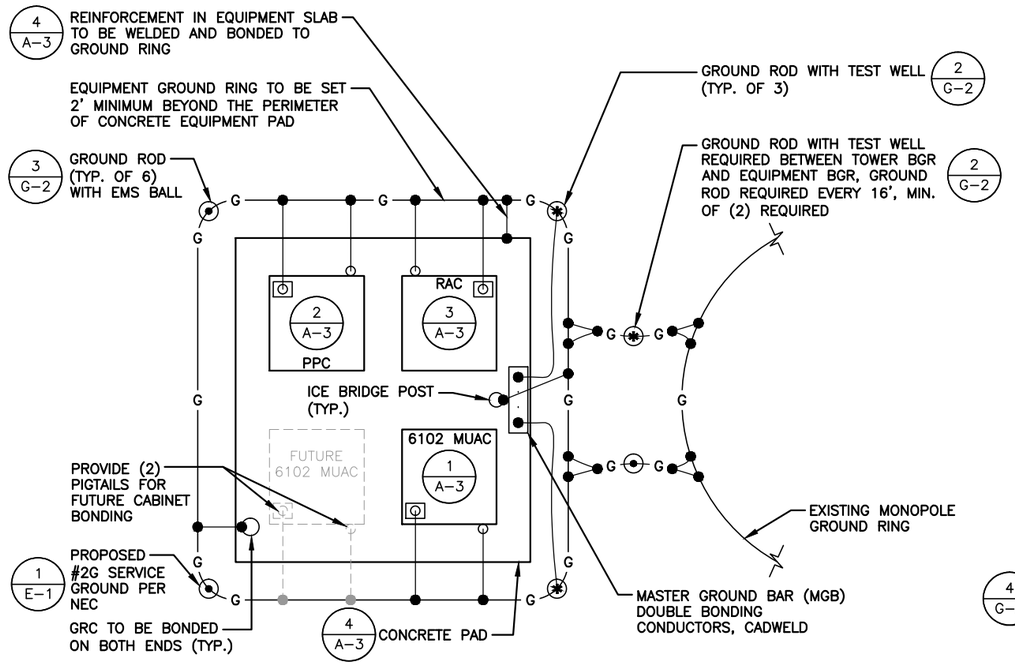
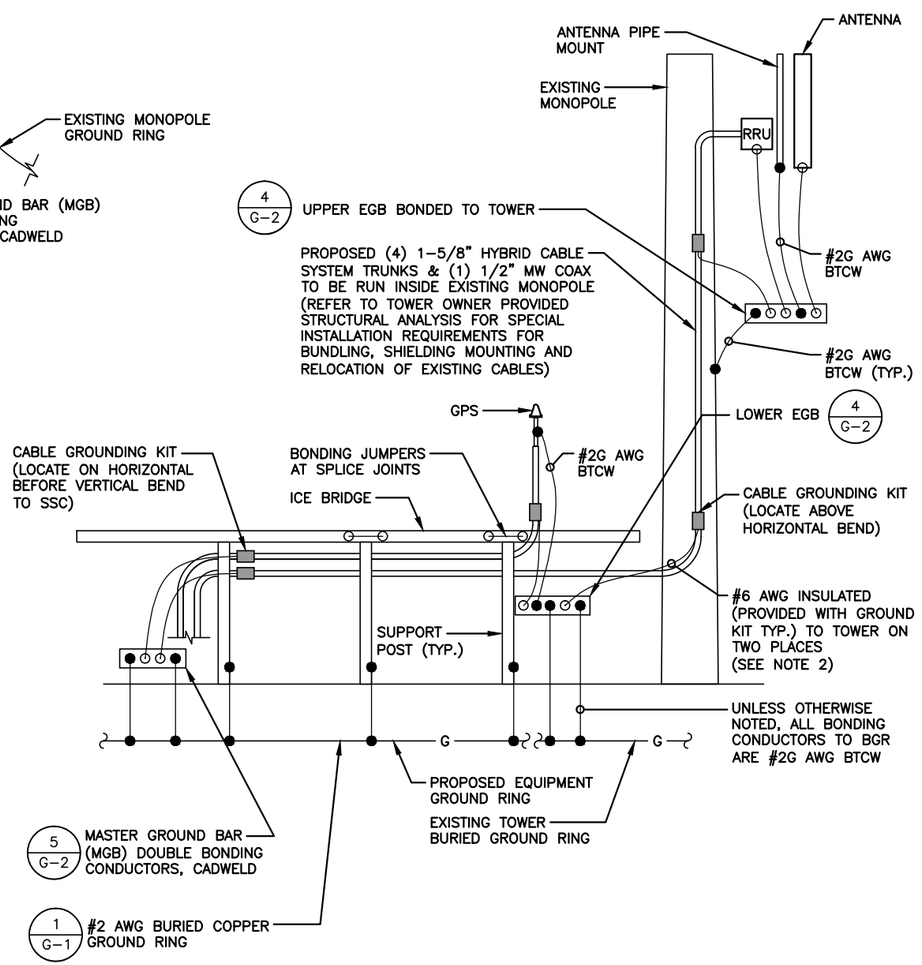
LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
	● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#6G AWG INSULATED STRANDED
———	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
✱	GROUND ROD WITH TEST WELL
—o—●	● EXOTHERMIC (CAD WELD) OR
	○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL



EQUIPMENT PLAN GROUNDING RING SCHEMATIC 1/G-1
SCALE: N.T.S

NOTE:
1. BASE BID TO INCLUDE INSTALLATION OF A BURIED GROUND RING AND (6) GROUND RODS OR SINGLE XIT HORIZONTAL CHEMICAL ROD AS DETERMINED BY FIELD CONDITIONS. ADDITIONAL RODS AS REQUIRED TO ACHIEVE 5 OHMS RESISTANCE.
2. MAXIMUM VERTICAL/HORIZONTAL DISTANCE BETWEEN CABLE GROUNDING KITS SHALL NOT EXCEED 100 FEET. INSTALL ADDITIONAL KITS AS REQUIRED BY FIELD CONDITIONS.
3. ALL CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S GUIDELINES.
4. ALL ABOVE-GRADE DOWNLEADS TO BGR SHALL BE INSTALLED IN 1" NON-METALLIC CONDUIT SECURED EVERY 2' WITH NON-METALLIC CLIPS.



GROUNDING RISER DIAGRAM 2/G-1
SCALE: N.T.S

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STATE OF CONNECTICUT · DEREK J. CREASER · No. 22051 · LICENSED PROFESSIONAL ENGINEER

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BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

SHEET TITLE
GROUNDING SCHEMATIC & RISER DIAGRAM

SHEET NUMBER
G-1

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LEGEND

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V	VOLT
KWH	KILOWATT – HOUR
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⏚	GROUND
MGB	MASTER GROUND BAR ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#6G AWG INSULATED STRANDED
———	COAXIAL CABLE/HYBRID CABLE
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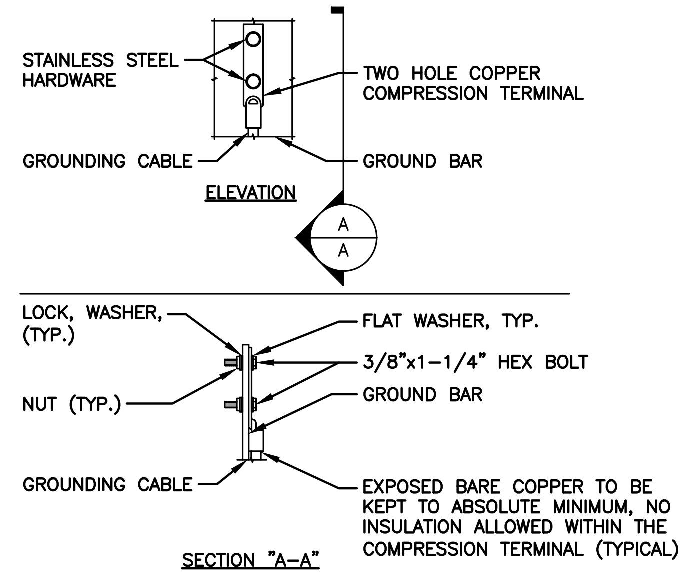
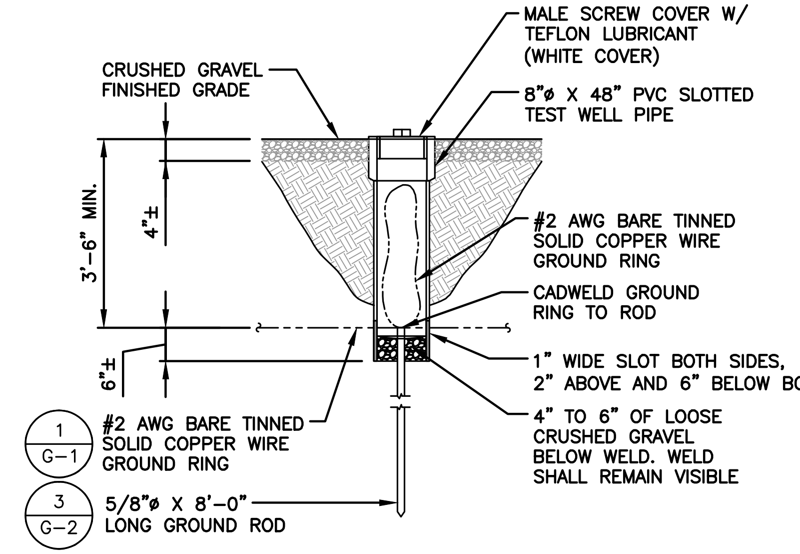
⊛	GROUND ROD WITH TEST WELL
—○—●	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL



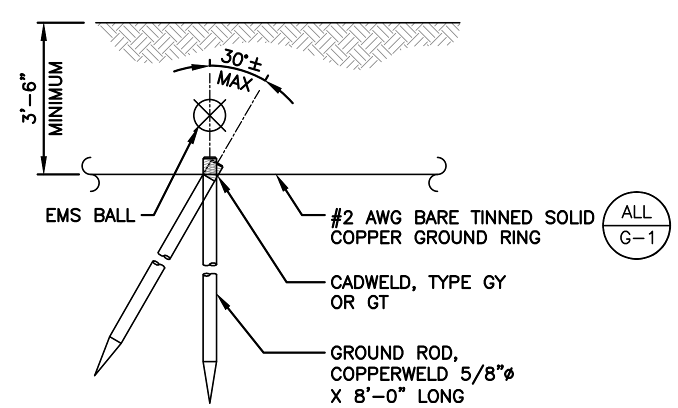
NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL (1 / G-2)
SCALE: N.T.S



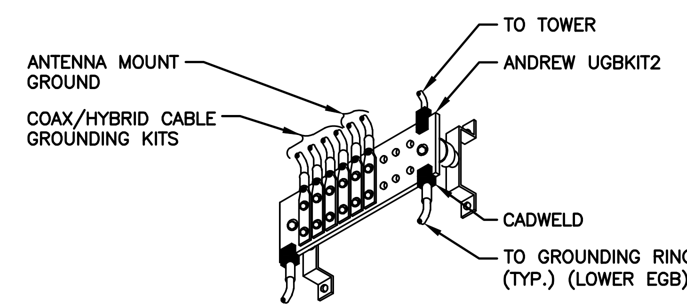
NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. ONE TEST WELL SHALL BE PROVIDED BETWEEN THE TOWER GROUND LOOP AND TWO ON THE EQUIPMENT GROUND LOOP

GROUND ROD TEST WELL DETAIL (2 / G-2)
SCALE: N.T.S

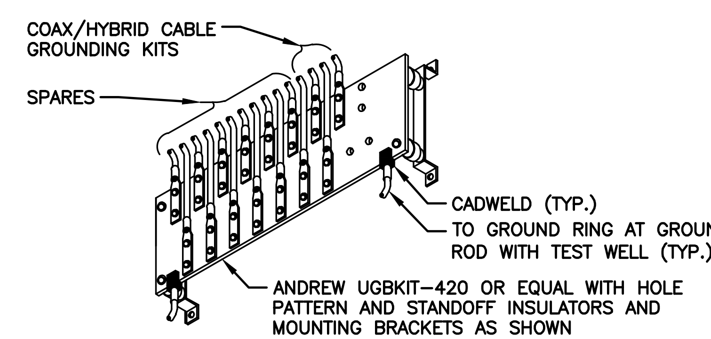


NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 30 DEGREES FROM THE VERTICAL.

GROUND ROD DETAIL (3 / G-2)
SCALE: N.T.S



EQUIPMENT GROUND BAR (EGB) (4 / G-2)
SCALE: N.T.S



MASTER GROUND BAR (MGB) (5 / G-2)
SCALE: N.T.S

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FAIRFIELD COUNTY

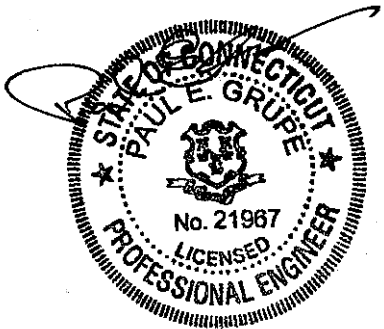
SHEET TITLE
GROUNDING DETAILS & NOTES

SHEET NUMBER
G-2

Exhibit D

Structural Analysis Report

Structure	**:** 135 foot Monopole Tower
BST Site Name	**:** Evergreen Street Bridgeport
BST Site Number	**:** CT-5020
Proposed Carrier	**:** T-Mobile
Carrier Site Name	**:** CTFF335A
Carrier Site Number	**:** CTFF335A
Site Location	**:** 220 Evergreen Street Bridgeport, CT (Fairfield County) 41.1977, -73.1907
Date	**:** January 23, 2018
Max Member Stress Level	**:** 49%
Result	**: PASS**



01/23/2018

Prepared by:
Bennett & Pless, Inc.
B&P Job No.: 18003.001

bennett&pless
Experience Structural Expertise

Table of Contents

Introduction

We have completed our structural analysis of the proposed equipment installation on the foregoing tower to determine its ability to support the new loads proposed by T-Mobile. The objective of the analysis was to determine if the tower meets the current structural codes and standards with the proposed equipment installation.

Existing Structural Information

The following documents for the existing structure were made available for our structural analysis.

Tower Information	Rohn Drawing No.: 217435-01-DIR2 dated March 17, 2016.
Foundation Information	Rohn Drawing No.: 217435-01-F1 dated March 17, 2016.
Geotechnical Information	Geotechnical Information was not available at this time .
Existing Equipment Information	Bennett & Pless Structural Analysis dated April 19, 2017. BlueSky T-Mobile Collocation Application dated January 18, 2018.
Tower Reinforcement Information	Tower has not been previously reinforced.

Final Proposed Equipment Loading for T-Mobile

The following proposed loading was obtained from the BlueSky Collocation Application:

Antenna/Equipment					Coax	
Mount	RAD	Qty.	Antenna	Type	Qty.	Size/Type
110.0	-	1	Valmont/Site Pro 1 F4P-10W	Mount	4	1 5/8" Fiber Hybrid
	110.0	4	Ericsson AIR 32 KRD901146-1-B66A-B2A	Panel		
		4	RFS APXVAA24-43-U-A20	Panel		
		4	Andrew DBXNH-6565B-A2M	Panel		
		4	Ericsson RRUS11 B12	RRH		
		4	Ericsson Radio 4478 B71	RRH		
		4	Ericsson RRUS11 B4	RRH		
		8	Diplexer	Diplexer		
		1	Commscope SHP2-13	Dish	1	1/2" Coax

Note: All equipment shown is proposed.

Design Criteria

The tower was analyzed using tnxTower (Version 7.0.8.5) tower analysis software using the following design criteria.

State/County	Connecticut / Fairfield County
State Building Code	2016 Connecticut State Bldg Code (IBC 2012)
TIA/EIA Standard Code	TIA-222-G
Basic Wind Speed	115 MPH (3 Second Gust)
Basic Wind Speed w/ Ice	50 MPH/ 0.75" Ice
Steel Grade	65 ksi pole, 50 ksi base plate, anchor bolts A615 Grade 75
Exposure Category	C
Topographic Category (height)	1 (0.0 ft)
Structure Class	II

Analysis Results

Based on the foregoing information, our structural analysis determined that **the existing tower is structurally capable of supporting the proposed equipment loads without modification.**

The existing foundation has also been evaluated. Based on the foregoing information, our structural analysis determined that **the existing foundation is structurally capable of supporting the proposed equipment loads without modification.**

Component	Analysis Reactions	Original Reactions	% Capacity	Results
Vertical (Kips)	57	156.5	**36**	**Pass**
Horizontal (Kips)	54	79.6	**68**	**Pass**
OTM (Kip-ft)	5285	8066.7	**66**	**Pass**

Assumptions

The below assumptions are true, complete and accurate.

1. The existing tower has been maintained to manufacturer's specifications and is in good condition.
2. Foundations are considered to have been properly designed for the original design loads.
3. All member connections are considered to have been designed to meet the load carrying capacity of the connected member.
4. Antenna mount loads have been estimated based on generally accepted industry standards.
5. The mounts for the proposed antennas have been analyzed and designed by others.
6. See additional assumptions contained in the report attached.
7. Tower is within acceptable engineering tolerance at 105%.
8. Foundations are within acceptable engineering tolerance at 110%.

Conclusions

The existing tower described above **does have sufficient capacity** to support the proposed loading based on the governing Building Code. The existing tower foundation also has sufficient capacity.

We appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance, please call us anytime at 678-990-8700.

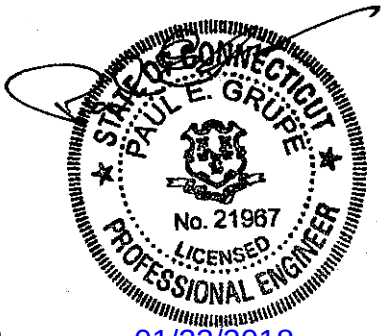
Sincerely,

Analysis by:

Chunhui Song, E.I.T.
Design Engineer

Reviewed by:

Paul Grupe, P.E.
Vice President, Atlanta Office



01/23/2018

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but not necessarily limited, to:

- Information supplied by the client regarding the structure itself, the antenna and transmission line loading on the structure and it components, or relevant information.

- Information from drawings in possession of Bennett & Pless Inc., or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Bennett & Pless Inc. and used in the performance of our engineering services is correct and complete. In the absence of information contrary, we consider that all structures were constructed in accordance with the drawings and specifications and are in a un-corroded condition and have not deteriorated; and we, therefore consider that their capacity has not significantly changed from the original design condition.

All services will be performed to the codes and standards specified by the client, and we do not imply to meet any other code and standard requirements unless explicitly agreed to in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes and standards, the client shall specify the exact requirements. In the absence of information to the contrary, all work will be performed in accordance with the revision of ANSI/TIA/EIA-222 requested.

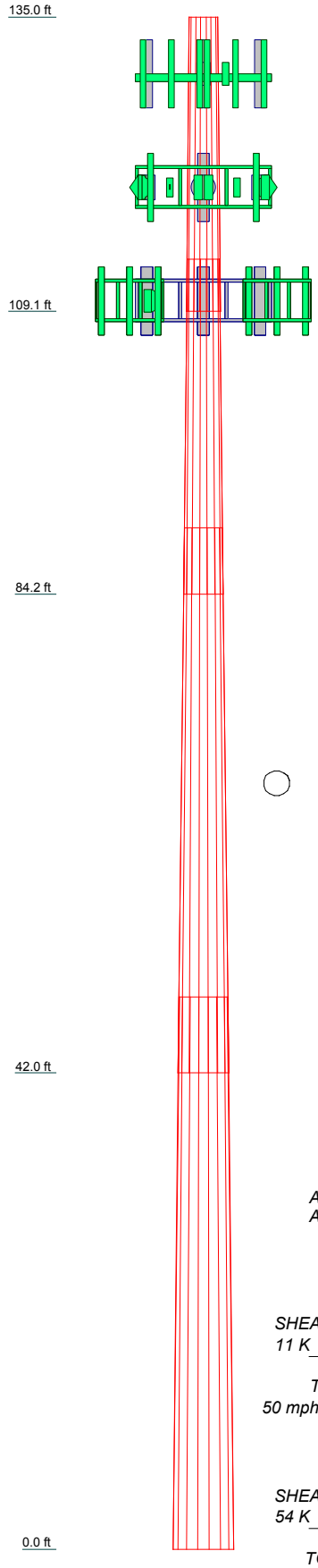
All services are performed, results obtained and recommendations made in accordance with the generally accepted engineering principles and practices. Bennett & Pless Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Disclaimer of Warranties

Bennett & Pless Inc. makes no warranties, expressed or implied, in connection with this report, and disclaims any liability arising from the ability of the existing structure to support the design loads for which it was originally designed. Bennett & Pless Inc. will not be responsible whatsoever for or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of Bennett & Pless Inc. pursuant to this report will be limited to the total fee received for preparation of this report.

Attachment 1:
Calculations

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	25.920	18	0.2500	4.580	29.5200	36.6900		2.3
2	29.500	18	0.3125	5.833	34.9231	42.8600		3.8
3	48.000	18	0.5000	6.667	40.6656	53.8100	A572-65	12.1
4	48.660	18	0.6250		50.9844	64.0000		18.7
								36.9



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(3) HPA-65R-BUU-H8 w/ Mount Pipe (ATT)	130	ODU (15 lbs, 1.5 CaAa) (Sprint)	120
(3) HPA-65R-BUU-H8 w/ Mount Pipe (ATT)	130	GPS-TMG-HR-26NCM (Sprint)	120
(3) HPA-65R-BUU-H8 w/ Mount Pipe (ATT)	130	Sector Frame Mount (Sprint)	120
Ericsson RBS 6601 (ATT)	130	VHLP2-18 (Sprint)	120
Ericsson RBS 6601 (ATT)	130	VHLP2-18 (Sprint)	120
LP 301-1 (ATT)	130	VHLP2-18 (Sprint)	120
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	120	MT-485025 (Sprint)	120
APXVTM14-C-120 w/ Mount Pipe (Sprint)	120	RFS APXVFWW24X-C-NA20 (T-Mobile)	110
(2) 1900MHZ 2*40W (Sprint)	120	RFS APXVFWW24X-C-NA20 (T-Mobile)	110
800 MHz RRH (Sprint)	120	RFS APXVFWW24X-C-NA20 (T-Mobile)	110
TD-RRH8x20-25 (Sprint)	120	RFS APXVFWW24X-C-NA20 (T-Mobile)	110
FWHR 2500 MHz (Sprint)	120	Andrew DBXNH-6565B-A2M (T-Mobile)	110
IBC1900HG-2A (Sprint)	120	Andrew DBXNH-6565B-A2M (T-Mobile)	110
IBC1900-BB-1 (Sprint)	120	Andrew DBXNH-6565B-A2M (T-Mobile)	110
NEMA 4X Enclosure (Sprint)	120	Andrew DBXNH-6565B-A2M (T-Mobile)	110
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	120	RRUS 11 B12 (T-Mobile)	110
APXVTM14-C-120 w/ Mount Pipe (Sprint)	120	RRUS 11 B12 (T-Mobile)	110
(2) 1900MHZ 2*40W (Sprint)	120	RRUS 11 B12 (T-Mobile)	110
800 MHz RRH (Sprint)	120	RRUS 11 B12 (T-Mobile)	110
TD-RRH8x20-25 (Sprint)	120	RRUS 4478 B14 (T-Mobile)	110
FWHR 2500 MHz (Sprint)	120	RRUS 4478 B14 (T-Mobile)	110
IBC1900HG-2A (Sprint)	120	RRUS 4478 B14 (T-Mobile)	110
IBC1900-BB-1 (Sprint)	120	RRUS 4478 B14 (T-Mobile)	110
NEMA 4X Enclosure (Sprint)	120	RRUS 11 (T-Mobile)	110
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	120	RRUS 11 (T-Mobile)	110
APXVTM14-C-120 w/ Mount Pipe (Sprint)	120	RRUS 11 (T-Mobile)	110
(2) 1900MHZ 2*40W (Sprint)	120	RRUS 11 (T-Mobile)	110
800 MHz RRH (Sprint)	120	F4P-10W (T-Mobile)	110
TD-RRH8x20-25 (Sprint)	120	(2) Diplexer (T-Mobile)	110
FWHR 2500 MHz (Sprint)	120	(2) Diplexer (T-Mobile)	110
IBC1900HG-2A (Sprint)	120	(2) Diplexer (T-Mobile)	110
IBC1900-BB-1 (Sprint)	120	(2) Diplexer (T-Mobile)	110
NEMA 4X Enclosure (Sprint)	120	Ericsson AIR32 B66AaB2a (T-Mobile)	110
ODU (15 lbs, 1.5 CaAa) (Sprint)	120	Ericsson AIR32 B66AaB2a (T-Mobile)	110
ODU (15 lbs, 1.5 CaAa) (Sprint)	120	Ericsson AIR32 B66AaB2a (T-Mobile)	110
ODU (15 lbs, 1.5 CaAa) (Sprint)	120	Ericsson AIR32 B66AaB2a (T-Mobile)	110
		SHP2-13-3WH/B (T-Mobile)	110

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 115 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.000 ft
7. Weld together tower sections have flange connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER-70S-6 electrodes.
11. TOWER RATING: 48.6%

ALL REACTIONS ARE FACTORED

AXIAL 86 K

SHEAR 11 K

TORQUE 2

50 mph WIND - 0.7500 in ICE

AXIAL 57 K

SHEAR 54 K

MOMENT 5285 kip-ft

TORQUE 16 kip-ft

REACTIONS - 115 mph WIND

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Experience Structural Expertise

Bennett & Pless
750 Park of Commerce Dr Ste 200
Boca Raton, Florida
Phone: 605-540-4623
FAX: 678-990-8701

Job:	***CT-5020 Bridgeport - Evergreen St.***		
Project:	***Monopole Structural Analysis***		
Client: Blue Sky Towers	Drawn by: Chunhui Song		App'd:
Code: TIA-222-G	Date: 01/18/18		Scale: NTS
Path:			Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 115 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r	√	All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
√	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)	√	Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	135.000-109.080	25.920	4.580	18	29.5200	36.6900	0.2500	1.0000	A572-65 (65 ksi)
L2	109.080-84.160	29.500	5.833	18	34.9231	42.8600	0.3125	1.2500	A572-65 (65 ksi)
L3	84.160-41.993	48.000	6.667	18	40.6656	53.8100	0.5000	2.0000	A572-65 (65 ksi)
L4	41.993-0.000	48.660		18	50.9844	64.0000	0.6250	2.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	29.9754	23.2257	2513.9263	10.3909	14.9962	167.6380	5031.1606	11.6151	4.7555	19.022
	37.2560	28.9151	4850.8683	12.9362	18.6385	260.2604	9708.1196	14.4603	6.0174	24.07
L2	36.7131	34.3294	5195.4239	12.2868	17.7409	292.8497	10397.6841	17.1679	5.5965	17.909
	43.5212	42.2018	9651.9827	15.1044	21.7729	443.3030	19316.6657	21.1049	6.9934	22.379
L3	42.9149	63.7427	12991.9963	14.2588	20.6581	628.9055	26001.0878	31.8774	6.2771	12.554
	54.6401	84.6030	30376.6883	18.9250	27.3355	1111.2550	60793.3470	42.3095	8.5906	17.181
L4	53.5816	99.9004	32008.5027	17.8776	25.9001	1235.8466	64059.1229	49.9597	7.8732	12.597
	64.9873	125.7202	63793.7757	22.4981	32.5120	1962.1609	127671.4929	62.8720	10.1640	16.262

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 135.000-109.080				1	1	1			
L2 109.080-84.160				1	1	1			
L3 84.160-41.993				1	1	1			
L4 41.993-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
2" Flex Conduit (AT&T) ***	C	No	Inside Pole	130.000 - 4.000	4	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
1 1/4" Hybriflex (Sprint)	C	No	Inside Pole	120.000 - 4.000	4	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
5/16" Coax	C	No	Inside Pole	120.000 - 4.000	6	No Ice	0.000	0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
(Sprint)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
1" Conduit	C	No	Inside Pole	120.000 - 4.000	2	No Ice	0.000	0.001
(Sprint)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
Gray Telephone Line	C	No	Inside Pole	120.000 - 4.000	1	No Ice	0.000	0.000
(Sprint)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
FIber OTPO (0.44in	C	No	Inside Pole	120.000 - 4.000	1	No Ice	0.000	0.000
0.08lb/ft)						1/2" Ice	0.000	0.000
(Sprint)						1" Ice	0.000	0.000
12 AWG	C	No	Inside Pole	120.000 - 4.000	1	No Ice	0.000	0.000
(Sprint)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
1/2" Coax	C	No	Inside Pole	120.000 - 4.000	1	No Ice	0.000	0.000
(Sprint)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
Gray Telephone Line	C	No	Inside Pole	120.000 - 4.000	4	No Ice	0.000	0.000
(Sprint)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
***								
1 5/8 Hybrid Flex (1.98"	C	No	Inside Pole	110.000 - 4.000	4	No Ice	0.000	0.001
1.3lbs)						1/2" Ice	0.000	0.001
(T-Mobile)						1" Ice	0.000	0.001
1/2" Coax	C	No	Inside Pole	110.000 - 4.000	1	No Ice	0.000	0.000
(T-Mobile)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	135.000-109.080	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.068
L2	109.080-84.160	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.270
L3	84.160-41.993	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.456
L4	41.993-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.411

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	135.000-109.080	A	1.709	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.068
L2	109.080-84.160	A	1.670	0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.270
L3	84.160-41.993	A	1.599	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.456
L4	41.993-0.000	A	1.435	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.411

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	135.000-109.080	0.0000	0.0000	0.0000	0.0000
L2	109.080-84.160	0.0000	0.0000	0.0000	0.0000
L3	84.160-41.993	0.0000	0.0000	0.0000	0.0000
L4	41.993-0.000	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(3) HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	2.000 0.000	0.0000	130.000	No Ice 1/2" Ice	13.213 13.899	9.582 11.052	0.100 0.196
(ATT)			0.000			1" Ice	14.587	12.496	0.303
(3) HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	2.000 0.000	0.0000	130.000	No Ice 1/2" Ice	13.213 13.899	9.582 11.052	0.100 0.196
(ATT)			0.000			1" Ice	14.587	12.496	0.303
(3) HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	2.000 0.000	0.0000	130.000	No Ice 1/2" Ice	13.213 13.899	9.582 11.052	0.100 0.196
(ATT)			0.000			1" Ice	14.587	12.496	0.303
Ericsson RBS 6601	A	From Leg	1.000	0.0000	130.000	No Ice	2.714	0.957	0.044
(ATT)			0.000 0.000			1/2" Ice 1" Ice	2.925 3.144	1.111 1.273	0.061 0.081
Ericsson RBS 6601	B	From Leg	1.000	0.0000	130.000	No Ice	2.714	0.957	0.044
(ATT)			0.000 0.000			1/2" Ice 1" Ice	2.925 3.144	1.111 1.273	0.061 0.081
LP 301-1	C	None		0.0000	130.000	No Ice	30.100	30.100	1.589
(ATT)						1/2" Ice	40.800	40.800	2.029

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	51.500	51.500	2.470
***									
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	A	From Leg	4.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVTM14-C-120 w/ Mount Pipe (Sprint)	A	From Leg	4.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	6.580 7.031 7.473	4.959 5.754 6.472	0.077 0.132 0.193
(2) 1900MHZ 2*40W (Sprint)	A	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.533 1.712 1.899	0.070 0.097 0.128
800 MHz RRH (Sprint)	A	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	2.134 2.320 2.512	1.773 1.946 2.127	0.053 0.074 0.098
TD-RRH8x20-25 (Sprint)	A	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
FWHR 2500 MHz (Sprint)	A	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	1.043 1.172 1.309	0.509 0.602 0.702	0.025 0.034 0.046
IBC1900HG-2A (Sprint)	A	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	1.090 1.224 1.365	0.531 0.635 0.745	0.022 0.030 0.041
IBC1900-BB-1 (Sprint)	A	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	1.230 1.379 1.536	0.512 0.603 0.702	0.040 0.052 0.067
NEMA 4X Enclosure (Sprint)	A	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	0.583 0.681 0.787	0.417 0.504 0.598	0.001 0.007 0.014
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	B	From Leg	4.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVTM14-C-120 w/ Mount Pipe (Sprint)	B	From Leg	4.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	6.580 7.031 7.473	4.959 5.754 6.472	0.077 0.132 0.193
(2) 1900MHZ 2*40W (Sprint)	B	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.533 1.712 1.899	0.070 0.097 0.128
800 MHz RRH (Sprint)	B	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	2.134 2.320 2.512	1.773 1.946 2.127	0.053 0.074 0.098
TD-RRH8x20-25 (Sprint)	B	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
FWHR 2500 MHz (Sprint)	B	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	1.043 1.172 1.309	0.509 0.602 0.702	0.025 0.034 0.046
IBC1900HG-2A (Sprint)	B	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	1.090 1.224 1.365	0.531 0.635 0.745	0.022 0.030 0.041
IBC1900-BB-1 (Sprint)	B	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	1.230 1.379 1.536	0.512 0.603 0.702	0.040 0.052 0.067
NEMA 4X Enclosure (Sprint)	B	From Leg	2.000 0.000 0.000	0.0000	120.000	No Ice 1/2" Ice 1" Ice	0.583 0.681 0.787	0.417 0.504 0.598	0.001 0.007 0.014
APXVSPP18-C-A20 w/	C	From Leg	4.000	0.0000	120.000	No Ice	8.262	6.946	0.083

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.000			1/2" Ice	8.822	8.127	0.151
(Sprint)			0.000			1" Ice	9.346	9.021	0.227
APXVTM14-C-120 w/	C	From Leg	4.000	0.0000	120.000	No Ice	6.580	4.959	0.077
Mount Pipe			0.000			1/2" Ice	7.031	5.754	0.132
(Sprint)			0.000			1" Ice	7.473	6.472	0.193
(2) 1900MHZ 2*40W	C	From Leg	2.000	0.0000	120.000	No Ice	4.045	1.533	0.070
(Sprint)			0.000			1/2" Ice	4.298	1.712	0.097
			0.000			1" Ice	4.557	1.899	0.128
800 MHz RRH	C	From Leg	2.000	0.0000	120.000	No Ice	2.134	1.773	0.053
(Sprint)			0.000			1/2" Ice	2.320	1.946	0.074
			0.000			1" Ice	2.512	2.127	0.098
TD-RRH8x20-25	C	From Leg	2.000	0.0000	120.000	No Ice	4.045	1.535	0.070
(Sprint)			0.000			1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
FWHR 2500 MHz	C	From Leg	2.000	0.0000	120.000	No Ice	1.043	0.509	0.025
(Sprint)			0.000			1/2" Ice	1.172	0.602	0.034
			0.000			1" Ice	1.309	0.702	0.046
IBC1900HG-2A	C	From Leg	2.000	0.0000	120.000	No Ice	1.090	0.531	0.022
(Sprint)			0.000			1/2" Ice	1.224	0.635	0.030
			0.000			1" Ice	1.365	0.745	0.041
IBC1900-BB-1	C	From Leg	2.000	0.0000	120.000	No Ice	1.230	0.512	0.040
(Sprint)			0.000			1/2" Ice	1.379	0.603	0.052
			0.000			1" Ice	1.536	0.702	0.067
NEMA 4X Enclosure	C	From Leg	2.000	0.0000	120.000	No Ice	0.583	0.417	0.001
(Sprint)			0.000			1/2" Ice	0.681	0.504	0.007
			0.000			1" Ice	0.787	0.598	0.014
ODU (15 lbs, 1.5 CaAa)	A	From Leg	2.000	0.0000	120.000	No Ice	1.500	1.500	0.015
(Sprint)			0.000			1/2" Ice	2.000	2.000	0.020
			0.000			1" Ice	2.500	2.500	0.024
ODU (15 lbs, 1.5 CaAa)	B	From Leg	2.000	0.0000	120.000	No Ice	1.500	1.500	0.015
(Sprint)			0.000			1/2" Ice	2.000	2.000	0.020
			0.000			1" Ice	2.500	2.500	0.024
ODU (15 lbs, 1.5 CaAa)	C	From Leg	2.000	0.0000	120.000	No Ice	1.500	1.500	0.015
(Sprint)			0.000			1/2" Ice	2.000	2.000	0.020
			0.000			1" Ice	2.500	2.500	0.024
ODU (15 lbs, 1.5 CaAa)	C	From Leg	2.000	0.0000	120.000	No Ice	1.500	1.500	0.015
(Sprint)			0.000			1/2" Ice	2.000	2.000	0.020
			0.000			1" Ice	2.500	2.500	0.024
GPS-TMG-HR-26NCM	C	From Leg	2.000	0.0000	120.000	No Ice	0.072	0.072	0.001
(Sprint)			0.000			1/2" Ice	0.117	0.117	0.002
			0.000			1" Ice	0.170	0.170	0.004
Sector Frame Mount	C	None		0.0000	120.000	No Ice	15.000	15.000	0.500
(Sprint)						1/2" Ice	20.600	20.600	0.650
						1" Ice	26.200	26.200	0.800
***									
Ericsson AIR32 B66AaB2a	A	From Leg	4.000	0.0000	110.000	No Ice	6.510	4.712	0.132
(T-Mobile)			0.000			1/2" Ice	6.887	5.068	0.178
			0.000			1" Ice	7.271	5.431	0.229
Ericsson AIR32 B66AaB2a	B	From Leg	4.000	0.0000	110.000	No Ice	6.510	4.712	0.132
(T-Mobile)			0.000			1/2" Ice	6.887	5.068	0.178
			0.000			1" Ice	7.271	5.431	0.229
Ericsson AIR32 B66AaB2a	C	From Leg	4.000	0.0000	110.000	No Ice	6.510	4.712	0.132
(T-Mobile)			0.000			1/2" Ice	6.887	5.068	0.178
			0.000			1" Ice	7.271	5.431	0.229
Ericsson AIR32 B66AaB2a	C	From Leg	4.000	90.0000	110.000	No Ice	6.510	4.712	0.132
(T-Mobile)			0.000			1/2" Ice	6.887	5.068	0.178
			0.000			1" Ice	7.271	5.431	0.229

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RFS	A	From Leg	4.000	0.0000	110.000	No Ice	11.311	8.278	0.073
APXVFWW24X-C-NA20			0.000			1/2" Ice	11.927	8.872	0.141
(T-Mobile)			0.000			1" Ice	12.550	9.474	0.217
RFS	B	From Leg	4.000	0.0000	110.000	No Ice	11.311	8.278	0.073
APXVFWW24X-C-NA20			0.000			1/2" Ice	11.927	8.872	0.141
(T-Mobile)			0.000			1" Ice	12.550	9.474	0.217
RFS	C	From Leg	4.000	0.0000	110.000	No Ice	11.311	8.278	0.073
APXVFWW24X-C-NA20			0.000			1/2" Ice	11.927	8.872	0.141
(T-Mobile)			0.000			1" Ice	12.550	9.474	0.217
RFS	C	From Leg	4.000	90.0000	110.000	No Ice	11.311	8.278	0.073
APXVFWW24X-C-NA20			0.000			1/2" Ice	11.927	8.872	0.141
(T-Mobile)			0.000			1" Ice	12.550	9.474	0.217
Andrew	A	From Leg	4.000	0.0000	110.000	No Ice	12.613	9.619	0.074
DBXNH-6565B-A2M			0.000			1/2" Ice	13.162	10.171	0.160
(T-Mobile)			0.000			1" Ice	13.718	10.709	0.253
Andrew	B	From Leg	4.000	0.0000	110.000	No Ice	12.613	9.619	0.074
DBXNH-6565B-A2M			0.000			1/2" Ice	13.162	10.171	0.160
(T-Mobile)			0.000			1" Ice	13.718	10.709	0.253
Andrew	C	From Leg	4.000	0.0000	110.000	No Ice	12.613	9.619	0.074
DBXNH-6565B-A2M			0.000			1/2" Ice	13.162	10.171	0.160
(T-Mobile)			0.000			1" Ice	13.718	10.709	0.253
Andrew	C	From Leg	4.000	90.0000	110.000	No Ice	12.613	9.619	0.074
DBXNH-6565B-A2M			0.000			1/2" Ice	13.162	10.171	0.160
(T-Mobile)			0.000			1" Ice	13.718	10.709	0.253
RRUS 11 B12	A	From Leg	3.000	0.0000	110.000	No Ice	2.833	1.182	0.051
(T-Mobile)			0.000			1/2" Ice	3.043	1.330	0.072
			0.000			1" Ice	3.259	1.485	0.095
RRUS 11 B12	B	From Leg	3.000	0.0000	110.000	No Ice	2.833	1.182	0.051
(T-Mobile)			0.000			1/2" Ice	3.043	1.330	0.072
			0.000			1" Ice	3.259	1.485	0.095
RRUS 11 B12	C	From Leg	3.000	0.0000	110.000	No Ice	2.833	1.182	0.051
(T-Mobile)			0.000			1/2" Ice	3.043	1.330	0.072
			0.000			1" Ice	3.259	1.485	0.095
RRUS 11 B12	C	From Leg	3.000	90.0000	110.000	No Ice	2.833	1.182	0.051
(T-Mobile)			0.000			1/2" Ice	3.043	1.330	0.072
			0.000			1" Ice	3.259	1.485	0.095
RRUS 4478 B14	A	From Leg	3.000	0.0000	110.000	No Ice	2.358	1.454	0.059
(T-Mobile)			0.000			1/2" Ice	2.567	1.629	0.077
			0.000			1" Ice	2.784	1.813	0.097
RRUS 4478 B14	B	From Leg	3.000	0.0000	110.000	No Ice	2.358	1.454	0.059
(T-Mobile)			0.000			1/2" Ice	2.567	1.629	0.077
			0.000			1" Ice	2.784	1.813	0.097
RRUS 4478 B14	C	From Leg	3.000	0.0000	110.000	No Ice	2.358	1.454	0.059
(T-Mobile)			0.000			1/2" Ice	2.567	1.629	0.077
			0.000			1" Ice	2.784	1.813	0.097
RRUS 4478 B14	C	From Leg	3.000	90.0000	110.000	No Ice	2.358	1.454	0.059
(T-Mobile)			0.000			1/2" Ice	2.567	1.629	0.077
			0.000			1" Ice	2.784	1.813	0.097
RRUS 11	A	From Leg	3.000	0.0000	110.000	No Ice	2.784	1.187	0.051
(T-Mobile)			0.000			1/2" Ice	2.992	1.334	0.071
			0.000			1" Ice	3.207	1.490	0.095
RRUS 11	B	From Leg	3.000	0.0000	110.000	No Ice	2.784	1.187	0.051
(T-Mobile)			0.000			1/2" Ice	2.992	1.334	0.071
			0.000			1" Ice	3.207	1.490	0.095
RRUS 11	C	From Leg	3.000	0.0000	110.000	No Ice	2.784	1.187	0.051
(T-Mobile)			0.000			1/2" Ice	2.992	1.334	0.071
			0.000			1" Ice	3.207	1.490	0.095

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 11	C	From Leg	3.000	90.0000	110.000	No Ice	2.784	1.187	0.051
(T-Mobile)			0.000			1/2" Ice	2.992	1.334	0.071
			0.000			1" Ice	3.207	1.490	0.095
F4P-10W	C	None		0.0000	110.000	No Ice	40.740	45.260	2.396
(T-Mobile)						1/2" Ice	52.240	56.430	3.087
						1" Ice	63.740	67.600	3.778
(2) Diplexer	A	From Leg	3.000	0.0000	110.000	No Ice	0.388	0.175	0.007
(T-Mobile)			0.000			1/2" Ice	0.469	0.234	0.010
			0.000			1" Ice	0.557	0.303	0.014
(2) Diplexer	B	From Leg	3.000	0.0000	110.000	No Ice	0.388	0.175	0.007
(T-Mobile)			0.000			1/2" Ice	0.469	0.234	0.010
			0.000			1" Ice	0.557	0.303	0.014
(2) Diplexer	C	From Leg	3.000	0.0000	110.000	No Ice	0.388	0.175	0.007
(T-Mobile)			0.000			1/2" Ice	0.469	0.234	0.010
			0.000			1" Ice	0.557	0.303	0.014
(2) Diplexer	C	From Leg	3.000	0.0000	110.000	No Ice	0.388	0.175	0.007
(T-Mobile)			0.000			1/2" Ice	0.469	0.234	0.010
			0.000			1" Ice	0.557	0.303	0.014

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-18	A	Paraboloid	From	4.000	0.0000		120.000	2.175	No Ice	3.720	0.030
(Sprint)		w/Radome	Leg	0.000					1/2" Ice	4.010	0.050
				0.000					1" Ice	4.300	0.070
VHLP2-18	B	Paraboloid	From	4.000	0.0000		120.000	2.175	No Ice	3.720	0.030
(Sprint)		w/Radome	Leg	0.000					1/2" Ice	4.010	0.050
				0.000					1" Ice	4.300	0.070
VHLP2-18	C	Paraboloid	From	4.000	0.0000		120.000	2.175	No Ice	3.720	0.030
(Sprint)		w/Radome	Leg	0.000					1/2" Ice	4.010	0.050
				0.000					1" Ice	4.300	0.070
MT-485025	C	Grid	From	4.000	0.0000		120.000	1.167	No Ice	1.069	0.006
(Sprint)			Leg	0.000					1/2" Ice	1.227	0.012
				0.000					1" Ice	1.385	0.019
SHP2-13-3WH/B	C	Paraboloid	From	3.000	0.0000		110.000	2.000	No Ice	6.250	0.024
(T-Mobile)		w/Shroud (HP)	Leg	0.000					1/2" Ice	6.500	0.030
				0.000					1" Ice	6.800	0.036

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	121.572	1.319	0.042	72.610	A	0.000	72.610	72.610	100.00	0.000	0.000
135.000-109.0					B	0.000	72.610		100.00	0.000	0.000
80					C	0.000	72.610		100.00	0.000	0.000
L2	96.268	1.256	0.040	83.310	A	0.000	83.310	83.310	100.00	0.000	0.000
109.080-84.16					B	0.000	83.310		100.00	0.000	0.000
0					C	0.000	83.310		100.00	0.000	0.000
L3	62.606	1.147	0.037	171.399	A	0.000	171.399	171.399	100.00	0.000	0.000
84.160-41.993					B	0.000	171.399		100.00	0.000	0.000
					C	0.000	171.399		100.00	0.000	0.000
L4	21.129	0.912	0.029	207.463	A	0.000	207.463	207.463	100.00	0.000	0.000
41.993-0.000					B	0.000	207.463		100.00	0.000	0.000
					C	0.000	207.463		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	121.572	1.319	0.008	1.7089	79.992	A	0.000	79.992	79.992	100.00	0.000	0.000
135.000-109.080						B	0.000	79.992		100.00	0.000	0.000
						C	0.000	79.992		100.00	0.000	0.000
L2	96.268	1.256	0.008	1.6695	90.408	A	0.000	90.408	90.408	100.00	0.000	0.000
109.080-84.160						B	0.000	90.408		100.00	0.000	0.000
						C	0.000	90.408		100.00	0.000	0.000
L3	62.606	1.147	0.007	1.5992	183.132	A	0.000	183.132	183.132	100.00	0.000	0.000
84.160-41.993						B	0.000	183.132		100.00	0.000	0.000
						C	0.000	183.132		100.00	0.000	0.000
L4 41.993-0.000	21.129	0.912	0.006	1.4346	218.655	A	0.000	218.655	218.655	100.00	0.000	0.000
						B	0.000	218.655		100.00	0.000	0.000
						C	0.000	218.655		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	121.572	1.319	0.010	72.610	A	0.000	72.610	72.610	100.00	0.000	0.000
135.000-109.0					B	0.000	72.610		100.00	0.000	0.000
80					C	0.000	72.610		100.00	0.000	0.000
L2	96.268	1.256	0.010	83.310	A	0.000	83.310	83.310	100.00	0.000	0.000
109.080-84.16					B	0.000	83.310		100.00	0.000	0.000
0					C	0.000	83.310		100.00	0.000	0.000
L3	62.606	1.147	0.009	171.399	A	0.000	171.399	171.399	100.00	0.000	0.000
84.160-41.993					B	0.000	171.399		100.00	0.000	0.000
					C	0.000	171.399		100.00	0.000	0.000
L4	21.129	0.912	0.007	207.463	A	0.000	207.463	207.463	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
41.993-0.000					B	0.000	207.463		100.00	0.000	0.000
					C	0.000	207.463		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.068	2.299	A	1	0.65	0.042	1	1	72.610	2.202	0.085	C
135.000-109.0			B	1	0.65		1	1	72.610			
80			C	1	0.65		1	1	72.610			
L2	0.270	3.841	A	1	0.65	0.040	1	1	83.310	2.405	0.097	C
109.080-84.16			B	1	0.65		1	1	83.310			
0			C	1	0.65		1	1	83.310			
L3	0.456	12.115	A	1	0.65	0.037	1	1	171.399	4.504	0.107	C
84.160-41.993			B	1	0.65		1	1	171.399			
			C	1	0.65		1	1	171.399			
L4	0.411	18.679	A	1	0.65	0.029	1	1	207.463	4.376	0.104	C
41.993-0.000			B	1	0.65		1	1	207.463			
			C	1	0.65		1	1	207.463			
Sum Weight:	1.205	36.935						OTM	873.692 kip-ft	13.487		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.068	2.299	A	1	0.65	0.042	1	1	72.610	2.202	0.085	C
135.000-109.0			B	1	0.65		1	1	72.610			
80			C	1	0.65		1	1	72.610			
L2	0.270	3.841	A	1	0.65	0.040	1	1	83.310	2.405	0.097	C
109.080-84.16			B	1	0.65		1	1	83.310			
0			C	1	0.65		1	1	83.310			
L3	0.456	12.115	A	1	0.65	0.037	1	1	171.399	4.504	0.107	C
84.160-41.993			B	1	0.65		1	1	171.399			
			C	1	0.65		1	1	171.399			
L4	0.411	18.679	A	1	0.65	0.029	1	1	207.463	4.376	0.104	C
41.993-0.000			B	1	0.65		1	1	207.463			
			C	1	0.65		1	1	207.463			
Sum Weight:	1.205	36.935						OTM	873.692 kip-ft	13.487		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.068	2.299	A	1	0.65	0.042	1	1	72.610	2.202	0.085	C
135.000-109.0			B	1	0.65		1	1	72.610			
80			C	1	0.65		1	1	72.610			
L2	0.270	3.841	A	1	0.65	0.040	1	1	83.310	2.405	0.097	C
109.080-84.16			B	1	0.65		1	1	83.310			
0			C	1	0.65		1	1	83.310			
L3	0.456	12.115	A	1	0.65	0.037	1	1	171.399	4.504	0.107	C
84.160-41.993			B	1	0.65		1	1	171.399			
			C	1	0.65		1	1	171.399			
L4	0.411	18.679	A	1	0.65	0.029	1	1	207.463	4.376	0.104	C
41.993-0.000			B	1	0.65		1	1	207.463			
			C	1	0.65		1	1	207.463			
Sum Weight:	1.205	36.935						OTM	873.692 kip-ft	13.487		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.068	4.203	A	1	1.2	0.008	1	1	79.992	0.847	0.033	C
135.000-109.0			B	1	1.2		1	1	79.992			
80			C	1	1.2		1	1	79.992			
L2	0.270	5.956	A	1	1.2	0.008	1	1	90.408	0.911	0.037	C
109.080-84.16			B	1	1.2		1	1	90.408			
0			C	1	1.2		1	1	90.408			
L3	0.456	16.246	A	1	1.2	0.007	1	1	183.132	1.679	0.040	C
84.160-41.993			B	1	1.2		1	1	183.132			
			C	1	1.2		1	1	183.132			
L4	0.411	23.127	A	1	1.2	0.006	1	1	218.655	1.610	0.038	C
41.993-0.000			B	1	1.2		1	1	218.655			
			C	1	1.2		1	1	218.655			
Sum Weight:	1.205	49.532						OTM	329.770 kip-ft	5.047		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.068	4.203	A	1	1.2	0.008	1	1	79.992	0.847	0.033	C
135.000-109.0			B	1	1.2		1	1	79.992			
80			C	1	1.2		1	1	79.992			
L2	0.270	5.956	A	1	1.2	0.008	1	1	90.408	0.911	0.037	C
109.080-84.16			B	1	1.2		1	1	90.408			
0			C	1	1.2		1	1	90.408			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L3	0.456	16.246	A	1	1.2	0.007	1	1	183.132	1.679	0.040	C
84.160-41.993			B	1	1.2		1	1	183.132			
			C	1	1.2		1	1	183.132			
L4	0.411	23.127	A	1	1.2	0.006	1	1	218.655	1.610	0.038	C
41.993-0.000			B	1	1.2		1	1	218.655			
			C	1	1.2		1	1	218.655			
Sum Weight:	1.205	49.532						OTM	329.770 kip-ft	5.047		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.068	4.203	A	1	1.2	0.008	1	1	79.992	0.847	0.033	C
135.000-109.0			B	1	1.2		1	1	79.992			
80			C	1	1.2		1	1	79.992			
L2	0.270	5.956	A	1	1.2	0.008	1	1	90.408	0.911	0.037	C
109.080-84.16			B	1	1.2		1	1	90.408			
0			C	1	1.2		1	1	90.408			
L3	0.456	16.246	A	1	1.2	0.007	1	1	183.132	1.679	0.040	C
84.160-41.993			B	1	1.2		1	1	183.132			
			C	1	1.2		1	1	183.132			
L4	0.411	23.127	A	1	1.2	0.006	1	1	218.655	1.610	0.038	C
41.993-0.000			B	1	1.2		1	1	218.655			
			C	1	1.2		1	1	218.655			
Sum Weight:	1.205	49.532						OTM	329.770 kip-ft	5.047		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.068	2.299	A	1	0.65	0.010	1	1	72.610	0.536	0.021	C
135.000-109.0			B	1	0.65		1	1	72.610			
80			C	1	0.65		1	1	72.610			
L2	0.270	3.841	A	1	0.65	0.010	1	1	83.310	0.586	0.024	C
109.080-84.16			B	1	0.65		1	1	83.310			
0			C	1	0.65		1	1	83.310			
L3	0.456	12.115	A	1	0.65	0.009	1	1	171.399	1.097	0.026	C
84.160-41.993			B	1	0.65		1	1	171.399			
			C	1	0.65		1	1	171.399			
L4	0.411	18.679	A	1	0.65	0.007	1	1	207.463	1.066	0.025	C
41.993-0.000			B	1	0.65		1	1	207.463			
			C	1	0.65		1	1	207.463			
Sum Weight:	1.205	36.935						OTM	212.795	3.285		

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
									kip-ft			

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.068	2.299	A	1	0.65	0.010	1	1	72.610	0.536	0.021	C
135.000-109.0			B	1	0.65		1	1	72.610			
80			C	1	0.65		1	1	72.610			
L2	0.270	3.841	A	1	0.65	0.010	1	1	83.310	0.586	0.024	C
109.080-84.16			B	1	0.65		1	1	83.310			
0			C	1	0.65		1	1	83.310			
L3	0.456	12.115	A	1	0.65	0.009	1	1	171.399	1.097	0.026	C
84.160-41.993			B	1	0.65		1	1	171.399			
			C	1	0.65		1	1	171.399			
L4	0.411	18.679	A	1	0.65	0.007	1	1	207.463	1.066	0.025	C
41.993-0.000			B	1	0.65		1	1	207.463			
			C	1	0.65		1	1	207.463			
Sum Weight:	1.205	36.935						OTM	212.795 kip-ft	3.285		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.068	2.299	A	1	0.65	0.010	1	1	72.610	0.536	0.021	C
135.000-109.0			B	1	0.65		1	1	72.610			
80			C	1	0.65		1	1	72.610			
L2	0.270	3.841	A	1	0.65	0.010	1	1	83.310	0.586	0.024	C
109.080-84.16			B	1	0.65		1	1	83.310			
0			C	1	0.65		1	1	83.310			
L3	0.456	12.115	A	1	0.65	0.009	1	1	171.399	1.097	0.026	C
84.160-41.993			B	1	0.65		1	1	171.399			
			C	1	0.65		1	1	171.399			
L4	0.411	18.679	A	1	0.65	0.007	1	1	207.463	1.066	0.025	C
41.993-0.000			B	1	0.65		1	1	207.463			
			C	1	0.65		1	1	207.463			
Sum Weight:	1.205	36.935						OTM	212.795 kip-ft	3.285		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	36.935					
Bracing Weight	0.000					
Total Member Self-Weight	36.935			1.212	2.099	
Total Weight	47.141			1.212	2.099	
Wind 0 deg - No Ice		-0.080	-33.474	-3251.051	11.595	-8.806
Wind 30 deg - No Ice		16.484	-28.891	-2804.244	-1594.895	-5.285
Wind 60 deg - No Ice		28.664	-16.549	-1603.426	-2777.214	0.000
Wind 90 deg - No Ice		33.263	0.171	20.903	-3225.994	5.285
Wind 120 deg - No Ice		28.949	16.806	1635.567	-2809.695	8.806
Wind 150 deg - No Ice		16.767	29.063	2825.942	-1627.564	10.285
Wind 180 deg - No Ice		0.147	33.398	3244.595	-14.703	8.960
Wind 210 deg - No Ice		-16.470	28.817	2798.289	1597.950	5.267
Wind 240 deg - No Ice		-28.658	16.546	1605.751	2781.243	0.000
Wind 270 deg - No Ice		-33.191	-0.146	-15.280	3222.364	-5.267
Wind 300 deg - No Ice		-28.850	-16.826	-1635.031	2802.550	-8.960
Wind 330 deg - No Ice		-16.786	-29.052	-2822.483	1633.556	-10.285
Member Ice	12.598					
Total Weight Ice	75.366			4.014	6.952	
Wind 0 deg - Ice		0.005	-10.545	-982.045	6.387	-2.029
Wind 30 deg - Ice		5.234	-9.110	-847.366	-481.690	-1.202
Wind 60 deg - Ice		9.072	-5.238	-485.028	-840.093	0.000
Wind 90 deg - Ice		10.507	0.022	6.527	-974.686	1.202
Wind 120 deg - Ice		9.135	5.268	496.554	-847.283	2.029
Wind 150 deg - Ice		5.274	9.138	858.510	-486.258	2.377
Wind 180 deg - Ice		0.026	10.522	987.276	3.966	2.082
Wind 210 deg - Ice		-5.219	9.093	853.497	493.914	1.234
Wind 240 deg - Ice		-9.066	5.234	492.659	853.311	0.000
Wind 270 deg - Ice		-10.485	-0.027	0.993	986.107	-1.234
Wind 300 deg - Ice		-9.099	-5.283	-490.203	856.989	-2.082
Wind 330 deg - Ice		-5.277	-9.137	-850.367	500.363	-2.377
Total Weight	47.141			1.212	2.099	
Wind 0 deg - Service		-0.020	-8.153	-790.902	4.412	-2.145
Wind 30 deg - Service		4.015	-7.037	-682.079	-386.861	-1.287
Wind 60 deg - Service		6.981	-4.031	-389.610	-674.825	0.000
Wind 90 deg - Service		8.101	0.042	6.008	-784.129	1.287
Wind 120 deg - Service		7.051	4.093	399.272	-682.736	2.145
Wind 150 deg - Service		4.084	7.079	689.197	-394.818	2.505
Wind 180 deg - Service		0.036	8.134	791.163	-1.993	2.182
Wind 210 deg - Service		-4.011	7.019	682.462	390.781	1.283
Wind 240 deg - Service		-6.980	4.030	392.010	678.981	0.000
Wind 270 deg - Service		-8.084	-0.035	-2.805	786.420	-1.283
Wind 300 deg - Service		-7.027	-4.098	-397.308	684.171	-2.182
Wind 330 deg - Service		-4.088	-7.076	-686.521	399.453	-2.505

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice

Comb. No.	Description
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	135 - 109.08	Pole	Max Tension	47	0.000	-0.000	0.000
			Max. Compression	26	-19.578	4.665	-2.693
			Max. Mx	8	-6.977	-253.005	-1.231
			Max. My	2	-6.964	1.029	254.246
			Max. Vy	8	23.379	-169.851	-1.490
			Max. Vx	2	-23.536	1.669	171.465
			Max. Torque	12			-14.648
L2	109.08 - 84.16	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-37.053	7.530	-4.347
			Max. Mx	20	-16.036	1076.706	4.186
			Max. My	2	-16.005	6.012	1083.441
			Max. Vy	8	38.701	-1073.946	-8.384
			Max. Vx	2	-39.044	6.012	1083.441
			Max. Torque	12			-16.443
L3	84.16 - 41.9933	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.395	7.553	-4.361
			Max. Mx	8	-30.409	-2816.585	-19.990
			Max. My	2	-30.395	11.639	2840.264
			Max. Vy	8	45.629	-2816.585	-19.990
			Max. Vx	2	-45.972	11.639	2840.264
			Max. Torque	12			-16.432
L4	41.9933 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-86.461	7.510	-4.336
			Max. Mx	8	-56.546	-5229.360	-33.411
			Max. My	2	-56.545	17.963	5269.632
			Max. Vy	8	53.245	-5229.360	-33.411
			Max. Vx	2	-53.583	17.963	5269.632
			Max. Torque	12			-16.416

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	86.461	-0.001	0.000
	Max. H_x	21	42.427	53.106	0.233
	Max. H_z	3	42.427	0.128	53.558
	Max. M_x	2	5269.632	0.128	53.558
	Max. M_z	8	5229.360	-53.220	-0.273
	Max. Torsion	24	16.411	26.858	46.483
	Min. Vert	9	42.427	-53.220	-0.273
	Min. H_x	9	42.427	-53.220	-0.273
	Min. H_z	15	42.427	-0.235	-53.437
	Min. M_x	14	-5258.212	-0.235	-53.437
	Min. M_z	20	-5221.829	53.106	0.233
	Min. Torsion	12	-16.411	-26.827	-46.501

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	47.141	-0.000	0.000	1.212	2.099	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	56.570	-0.128	-53.558	-5269.632	17.961	-14.050
0.9 Dead+1.6 Wind 0 deg - No Ice	42.427	-0.128	-53.558	-5252.425	17.255	-14.049
1.2 Dead+1.6 Wind 30 deg - No Ice	56.570	26.374	-46.226	-4545.483	-2585.758	-8.435
0.9 Dead+1.6 Wind 30 deg - No	42.427	26.374	-46.226	-4530.696	-2577.782	-8.435

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Ice						
1.2 Dead+1.6 Wind 60 deg - No Ice	56.570	45.863	-26.479	-2599.247	-4502.027	-0.000
0.9 Dead+1.6 Wind 60 deg - No Ice	42.427	45.863	-26.479	-2590.953	-4487.662	-0.000
1.2 Dead+1.6 Wind 90 deg - No Ice	56.570	53.220	0.273	33.410	-5229.360	8.435
0.9 Dead+1.6 Wind 90 deg - No Ice	42.427	53.220	0.273	32.923	-5212.572	8.435
1.2 Dead+1.6 Wind 120 deg - No Ice	56.570	46.318	26.890	2650.371	-4554.654	14.050
0.9 Dead+1.6 Wind 120 deg - No Ice	42.427	46.318	26.890	2641.156	-4540.106	14.049
1.2 Dead+1.6 Wind 150 deg - No Ice	56.570	26.827	46.501	4579.661	-2638.725	16.411
0.9 Dead+1.6 Wind 150 deg - No Ice	42.427	26.827	46.501	4564.011	-2630.563	16.410
1.2 Dead+1.6 Wind 180 deg - No Ice	56.570	0.235	53.437	5258.212	-24.689	14.292
0.9 Dead+1.6 Wind 180 deg - No Ice	42.427	0.235	53.437	5240.300	-25.245	14.292
1.2 Dead+1.6 Wind 210 deg - No Ice	56.570	-26.351	46.108	4534.888	2589.048	8.401
0.9 Dead+1.6 Wind 210 deg - No Ice	42.427	-26.351	46.108	4519.388	2579.771	8.401
1.2 Dead+1.6 Wind 240 deg - No Ice	56.570	-45.853	26.473	2602.065	4506.909	-0.000
0.9 Dead+1.6 Wind 240 deg - No Ice	42.427	-45.853	26.473	2593.014	4491.232	-0.000
1.2 Dead+1.6 Wind 270 deg - No Ice	56.570	-53.106	-0.233	-25.263	5221.829	-8.401
0.9 Dead+1.6 Wind 270 deg - No Ice	42.427	-53.106	-0.233	-25.547	5203.774	-8.401
1.2 Dead+1.6 Wind 300 deg - No Ice	56.570	-46.161	-26.922	-2650.488	4541.401	-14.292
0.9 Dead+1.6 Wind 300 deg - No Ice	42.427	-46.161	-26.922	-2642.013	4525.611	-14.292
1.2 Dead+1.6 Wind 330 deg - No Ice	56.570	-26.858	-46.483	-4575.037	2646.742	-16.411
0.9 Dead+1.6 Wind 330 deg - No Ice	42.427	-26.858	-46.483	-4560.140	2637.269	-16.410
1.2 Dead+1.0 Ice+1.0 Temp	86.461	0.001	-0.000	4.336	7.510	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	86.461	0.005	-10.545	-1007.043	7.163	-2.031
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	86.461	5.234	-9.110	-868.882	-493.506	-1.203
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	86.461	9.072	-5.238	-497.189	-861.157	-0.000
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	86.461	10.507	0.022	7.052	-999.227	1.203
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	86.461	9.135	5.268	509.724	-868.543	2.031
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	86.461	5.274	9.138	881.024	-498.199	2.380
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	86.461	0.026	10.522	1013.109	4.676	2.084
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	86.461	-5.219	9.093	875.878	507.268	1.236
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	86.461	-9.065	5.234	505.725	875.942	-0.000
1.2 Dead+1.0 Wind 270	86.461	-10.485	-0.027	1.368	1012.166	-1.236

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	86.461	-9.099	-5.283	-502.505	879.716	-2.084
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	86.461	-5.277	-9.137	-871.965	513.889	-2.380
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	47.141	-0.019	-8.152	-799.597	4.481	-2.145
Dead+Wind 30 deg - Service	47.141	4.014	-7.036	-689.575	-391.097	-1.288
Dead+Wind 60 deg - Service	47.141	6.979	-4.030	-393.784	-682.055	-0.000
Dead+Wind 90 deg - Service	47.141	8.101	0.042	6.087	-792.737	1.288
Dead+Wind 120 deg - Service	47.141	7.050	4.093	403.679	-690.230	2.145
Dead+Wind 150 deg - Service	47.141	4.083	7.078	696.794	-399.145	2.506
Dead+Wind 180 deg - Service	47.141	0.036	8.134	799.881	-1.998	2.183
Dead+Wind 210 deg - Service	47.141	-4.011	7.018	689.983	395.099	1.283
Dead+Wind 240 deg - Service	47.141	-6.978	4.029	396.232	686.295	-0.000
Dead+Wind 270 deg - Service	47.141	-8.083	-0.035	-2.826	795.093	-1.283
Dead+Wind 300 deg - Service	47.141	-7.026	-4.098	-401.671	691.718	-2.183
Dead+Wind 330 deg - Service	47.141	-4.088	-7.075	-694.067	403.869	-2.506

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-47.141	0.000	0.000	47.141	-0.000	0.000%
2	-0.128	-56.570	-53.558	0.128	56.570	53.558	0.000%
3	-0.128	-42.427	-53.558	0.128	42.427	53.558	0.000%
4	26.374	-56.570	-46.226	-26.374	56.570	46.226	0.000%
5	26.374	-42.427	-46.226	-26.374	42.427	46.226	0.000%
6	45.863	-56.570	-26.479	-45.863	56.570	26.479	0.000%
7	45.863	-42.427	-26.479	-45.863	42.427	26.479	0.000%
8	53.220	-56.570	0.273	-53.220	56.570	-0.273	0.000%
9	53.220	-42.427	0.273	-53.220	42.427	-0.273	0.000%
10	46.318	-56.570	26.890	-46.318	56.570	-26.890	0.000%
11	46.318	-42.427	26.890	-46.318	42.427	-26.890	0.000%
12	26.827	-56.570	46.501	-26.827	56.570	-46.501	0.000%
13	26.827	-42.427	46.501	-26.827	42.427	-46.501	0.000%
14	0.235	-56.570	53.437	-0.235	56.570	-53.437	0.000%
15	0.235	-42.427	53.437	-0.235	42.427	-53.437	0.000%
16	-26.351	-56.570	46.108	26.351	56.570	-46.108	0.000%
17	-26.351	-42.427	46.108	26.351	42.427	-46.108	0.000%
18	-45.853	-56.570	26.473	45.853	56.570	-26.473	0.000%
19	-45.853	-42.427	26.473	45.853	42.427	-26.473	0.000%
20	-53.106	-56.570	-0.233	53.106	56.570	0.233	0.000%
21	-53.106	-42.427	-0.233	53.106	42.427	0.233	0.000%
22	-46.161	-56.570	-26.922	46.161	56.570	26.922	0.000%
23	-46.161	-42.427	-26.922	46.161	42.427	26.922	0.000%
24	-26.858	-56.570	-46.483	26.858	56.570	46.483	0.000%
25	-26.858	-42.427	-46.483	26.858	42.427	46.483	0.000%
26	0.000	-86.461	0.000	-0.001	86.461	0.000	0.001%
27	0.005	-86.461	-10.545	-0.005	86.461	10.545	0.000%
28	5.234	-86.461	-9.110	-5.234	86.461	9.110	0.000%
29	9.072	-86.461	-5.238	-9.072	86.461	5.238	0.000%
30	10.507	-86.461	0.022	-10.507	86.461	-0.022	0.000%
31	9.135	-86.461	5.268	-9.135	86.461	-5.268	0.000%
32	5.274	-86.461	9.138	-5.274	86.461	-9.138	0.000%
33	0.026	-86.461	10.522	-0.026	86.461	-10.522	0.000%
34	-5.219	-86.461	9.093	5.219	86.461	-9.093	0.000%
35	-9.066	-86.461	5.234	9.065	86.461	-5.234	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
36	-10.485	-86.461	-0.027	10.485	86.461	0.027	0.000%
37	-9.099	-86.461	-5.283	9.099	86.461	5.283	0.000%
38	-5.277	-86.461	-9.137	5.277	86.461	9.137	0.000%
39	-0.020	-47.141	-8.153	0.019	47.141	8.152	0.001%
40	4.015	-47.141	-7.037	-4.014	47.141	7.036	0.001%
41	6.981	-47.141	-4.031	-6.979	47.141	4.030	0.005%
42	8.101	-47.141	0.042	-8.101	47.141	-0.042	0.001%
43	7.051	-47.141	4.093	-7.050	47.141	-4.093	0.001%
44	4.084	-47.141	7.079	-4.083	47.141	-7.078	0.001%
45	0.036	-47.141	8.134	-0.036	47.141	-8.134	0.001%
46	-4.011	-47.141	7.019	4.011	47.141	-7.018	0.001%
47	-6.980	-47.141	4.030	6.978	47.141	-4.029	0.005%
48	-8.084	-47.141	-0.035	8.083	47.141	0.035	0.001%
49	-7.027	-47.141	-4.098	7.026	47.141	4.098	0.001%
50	-4.088	-47.141	-7.076	4.088	47.141	7.075	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	12	0.00000001	0.00005491
3	Yes	12	0.00000001	0.00004244
4	Yes	12	0.00000001	0.00009668
5	Yes	12	0.00000001	0.00007381
6	Yes	12	0.00000001	0.00010829
7	Yes	12	0.00000001	0.00008280
8	Yes	11	0.00000001	0.00013714
9	Yes	11	0.00000001	0.00010762
10	Yes	12	0.00000001	0.00014799
11	Yes	12	0.00000001	0.00011366
12	Yes	12	0.00000001	0.00009888
13	Yes	12	0.00000001	0.00007573
14	Yes	12	0.00000001	0.00005359
15	Yes	12	0.00000001	0.00004145
16	Yes	12	0.00000001	0.00012949
17	Yes	12	0.00000001	0.00009919
18	Yes	12	0.00000001	0.00010927
19	Yes	12	0.00000001	0.00008337
20	Yes	11	0.00000001	0.00012466
21	Yes	11	0.00000001	0.00009788
22	Yes	12	0.00000001	0.00009854
23	Yes	12	0.00000001	0.00007535
24	Yes	13	0.00000001	0.00003468
25	Yes	12	0.00000001	0.00011979
26	Yes	6	0.00000001	0.00001653
27	Yes	11	0.00000001	0.00008130
28	Yes	11	0.00000001	0.00008453
29	Yes	11	0.00000001	0.00008401
30	Yes	11	0.00000001	0.00007961
31	Yes	11	0.00000001	0.00008753
32	Yes	11	0.00000001	0.00008730
33	Yes	11	0.00000001	0.00008267
34	Yes	11	0.00000001	0.00008854
35	Yes	11	0.00000001	0.00008780
36	Yes	11	0.00000001	0.00008212

37	Yes	11	0.00000001	0.00008775
38	Yes	11	0.00000001	0.00008907
39	Yes	9	0.00000001	0.00009396
40	Yes	9	0.00000001	0.00005665
41	Yes	8	0.00000001	0.00014612
42	Yes	9	0.00000001	0.00006911
43	Yes	9	0.00000001	0.00010148
44	Yes	9	0.00000001	0.00009141
45	Yes	9	0.00000001	0.00009504
46	Yes	9	0.00000001	0.00007495
47	Yes	8	0.00000001	0.00014792
48	Yes	9	0.00000001	0.00006917
49	Yes	9	0.00000001	0.00008145
50	Yes	9	0.00000001	0.00011419

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	135 - 109.08	7.070	44	0.4455	0.0053
L2	113.66 - 84.16	5.102	44	0.4253	0.0054
L3	89.9933 - 41.9933	3.168	44	0.3373	0.0028
L4	48.66 - 0	0.911	44	0.1708	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.000	(3) HPA-65R-BUU-H8 w/ Mount Pipe	44	6.601	0.4439	0.0055	107177
120.000	VHLP2-18	44	5.674	0.4364	0.0056	35726
110.000	SHP2-13-3WH/B	44	4.780	0.4158	0.0051	22418

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	135 - 109.08	46.521	12	2.9325	0.0351
L2	113.66 - 84.16	33.577	12	2.8000	0.0352
L3	89.9933 - 41.9933	20.848	12	2.2209	0.0183
L4	48.66 - 0	5.996	24	1.1242	0.0060

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.000	(3) HPA-65R-BUU-H8 w/ Mount Pipe	12	43.436	2.9224	0.0361	16496
120.000	VHLP2-18	12	37.338	2.8729	0.0367	5498
110.000	SHP2-13-3WH/B	12	31.460	2.7370	0.0334	3444

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	135 - 109.08 (1)	TP36.69x29.52x0.25	25.920	135.000	129.7	27.9098	-6.961	374.580	0.019
L2	109.08 - 84.16 (2)	TP42.86x34.9231x0.3125	29.500	135.000	111.4	40.6451	-15.995	740.419	0.022
L3	84.16 - 41.9933 (3)	TP53.81x40.6656x0.5	48.000	135.000	88.6	81.7057	-30.389	2350.470	0.013
L4	41.9933 - 0 (4)	TP64x50.9844x0.625	48.660	135.000	72.0	125.7200	-56.545	4988.760	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	135 - 109.08 (1)	TP36.69x29.52x0.25	254.528	1347.958	0.189	0.000	1347.958	0.000
L2	109.08 - 84.16 (2)	TP42.86x34.9231x0.3125	1087.733	2346.867	0.463	0.000	2346.867	0.000
L3	84.16 - 41.9933 (3)	TP53.81x40.6656x0.5	2849.883	6368.033	0.448	0.000	6368.033	0.000
L4	41.9933 - 0 (4)	TP64x50.9844x0.625	5285.475	12107.500	0.437	0.000	12107.500	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	135 - 109.08 (1)	TP36.69x29.52x0.25	21.659	931.149	0.023	0.052	2699.208	0.000
L2	109.08 - 84.16 (2)	TP42.86x34.9231x0.3125	39.174	1392.240	0.028	16.434	4699.467	0.003
L3	84.16 - 41.9933 (3)	TP53.81x40.6656x0.5	46.100	3013.040	0.015	16.418	12751.667	0.001
L4	41.9933 - 0 (4)	TP64x50.9844x0.625	53.710	4654.520	0.012	16.410	24244.584	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	135 - 109.08 (1)	0.019	0.189	0.000	0.023	0.000	0.208 ✔	1.000	4.8.2 ✔
L2	109.08 - 84.16 (2)	0.022	0.463	0.000	0.028	0.003	0.486 ✔	1.000	4.8.2 ✔
L3	84.16 - 41.9933 (3)	0.013	0.448	0.000	0.015	0.001	0.461 ✔	1.000	4.8.2 ✔
L4	41.9933 - 0 (4)	0.011	0.437	0.000	0.012	0.001	0.448 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	135 - 109.08	Pole	TP36.69x29.52x0.25	1	-6.961	374.580	20.8	Pass
L2	109.08 - 84.16	Pole	TP42.86x34.9231x0.3125	2	-15.995	740.419	48.6	Pass
L3	84.16 - 41.9933	Pole	TP53.81x40.6656x0.5	3	-30.389	2350.470	46.1	Pass
L4	41.9933 - 0	Pole	TP64x50.9844x0.625	4	-56.545	4988.760	44.8	Pass
							Summary	
						Pole (L2)	48.6	Pass
						RATING =	**48.6**	**Pass**

Attachment 2:
Collocation Application

Collocation Application

Installation Type: Anchor ☐ Collocation ☑ Add to Existing ☐

BlueSky Towers, LLC Info

Contact:	James Burgess	Site Number:	CT-5020
Email	jamesb@blueskytower.com	Site Name:	Evergreen Street Bridgeport
Office:	508-530-3580	Submittal Date	10/10/2017
Fax:	508-530-3564	Revision Date(s)	

PLEASE SUBMIT THIS APPLICATION VIA E-MAIL. Send only final LE's, CD's structurals, etc with Application

Applicant Information

Applicant Name:	T-Mobile	Primary Contact/Agent Name:	Matt Bandle
Applicant Site Name:	CTFF335A	Contact/Agent Company Name:	Northeast Site Solutions
Applicant Site Number:	CTFF335A	Contact/Agent Number:	860-692-7127
Proposed ON AIR Date:	1/15/2018	Contact/Agent Fax:	
Applicant Legal Entity:	T-Mobile Northeast LLC	Contact Email:	matt@northeastsitesolutions.com
Notice Address for Site License:	4 Sylvan Way, Parsippany, NJ 07054		

Applicant Contact Information

Leasing Contact Name:	Matt Bandle	Email:	matt@northeastsitesolutions.com	Number:	860-692-7127
RF Contact Name:	Mohamed Seddik	Email:	mailto:Mohamed.Seddik@T-Mobile.com	Number:	860-714-7146
Construction Contact Name:	Keith Balsewicz	Email:	keith@northeastsitesolutions.com	Number:	860-733-2880
Emergency Contact Name:	Network Operations Center	Email:	NA	Number:	1-888-218-6664
Account Payable Contact Name:	Jeffrey Platania	Email:	jeffrey.platania@T-Mobile.com	Number:	973-397-4971

Tower Information

Latitude:	41.1978656 N	Structure Type:	Monopole
Longitude:	-73.1909419 W	Structure Height:	135'
AMSL:	20 FT		
Site Address:	220 Evergreen Street, Bridgeport, CT 06606		

EQUIPMENT SPECIFICATIONS

Summary of Work to be Completed including any equipment swap or removal: Install 12 panel antenna, (4) 6x12 HCS hybrid cables, 12 RRUs with a 10'x20' lease area, plus 10'x10' for propane tank for 300' sq. ft.

Applicant Must fill in all bolded sections	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4
Equipment Type	Panel	Panel	Panel	Panel
Installation Status	Proposed	Proposed	Proposed	Proposed
Desired RAD Center (Ft AGL)	110'	110'	110'	110'
Tower Mount Mounting Height	110'	110'	110'	110'
Mount Type(Attach Specs)	Low Profile Platform	Low Profile Platform	Low Profile Platform	Low Profile Platform
Mount Model #	RMV12-3XX	RMV12-3XX	RMV12-3XX	RMV12-3XX
Antenna Manufacturer	Ericsson/RFS/Andrew	Ericsson/RFS/Andrew	Ericsson/RFS/Andrew	Ericsson/RFS/Andrew
Antenna Model# (Attach Specs)	(1) Ericsson - AIR32 KRD901146-1_B66A_B2A (Octa)/ (1) RFS - APXVAA24_43-U-A20 (Quad) / (1) Andrew - DBXNH-6565B-A2M (Quad)	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octa)/RFS - APXVAA24_43-U-A20 (Quad) / Andrew DBXNH-6565B-A2M (Quad)	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octa)/RFS - APXVAA24_43-U-A20 (Quad) / Andrew - DBXNH-6565B-A2M (Quad)	1_B66A_B2A(Octa)/RFS-APXVAA24_43-U-A20 (Quad)/Andrew-DBXNH-6565B-A2M (Quad)
Antenna Dimensions (WxHxD)(Ft Or Inches)	AIR32 KRD901146-1 (56.6" x 12.9" x 8.7") /APXVAA24_43-U-A20 (96.6" x 11.9" x 7.1") /DBXNH-6565B-A2M (72.7" x 11.9" x 7.1")	AIR32 KRD901146-1(56.6" x 12.9" x 8.7")/APXVAA24_43-U-A20 (96.6" x 11.9" x 7.1")/DBXNH-6565B-A2M (72.7" x 11.9" x 7.1")	AIR32 KRD901146-1(56.6" x 12.9" x 8.7")/APXVAA24_43-U-A20 (96.6" x 11.9" x 7.1") DBXNH-6565B-A2M (72.7" x 11.9" x 7.1")	AIR32 KRD901146-1(56.6" x 12.9" x 8.7")/APXVAA24_43-U-A20 (96.6" x 11.9" x 7.1")/ DBXNH-6565B-A2M (72.7" x 11.9" x 7.1")
Antenna Weight (Per Item, In Lbs.)	AIR32 KRD901146-1 (105 lbs) / APXVAA24_43-U-A20 (43.7 lbs) / DBXNH-6565B-A2M (46.3 lbs)	AIR32 KRD901146-1 (105 lbs) / APXVAA24_43-U-A20 (43.7 lbs) / DBXNH-6565B-A2M (46.3 lbs)	AIR32 KRD901146-1 (105 lbs) / APXVAA24_43-U-A20 (43.7 lbs) / DBXNH-6565B-A2M (46.3 lbs)	AIR32 KRD901146-1 (105 lbs) / APXVAA24_43-U-A20 (43.7 lbs) / DBXNH-6565B-A2M (46.3 lbs)
Antenna Quantity	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1
Dish Manufacturer	Commscope SHP2-13	n/a	n/a	n/a
Dish Model# (attach Specs)	SHP2-13	n/a	n/a	n/a
Dish Diam/Weight/Mount hgt or location	2'/ 24 lbs/ 110'	n/a	n/a	n/a
Azimuths	60, 150, 240, 330	60, 150, 240, 330	60, 150, 240, 330	60, 150, 240, 330
Total# Of Lines For Equipment In Column	1 6x12 hybrid and 1/2" microwave coax	1 6x12 hybrid	1 6x12 hybrid	1 6x12 hybrid
Line Type	Fiber Hybrid Coax	Fiber Hybrid	Fiber Hybrid	Fiber Hybrid
Diameter Of Coax Cables (In)	1 5/8" and (1) 1/2" MW Coax	1 5/8"	1 5/8"	1 5/8"
Transmitter/Receiver Type/RRU/Junction Boxes	RRU	RRU	RRU	RRU
Qty Of Transmitters/Receivers/RRU's/Junction Boxes	3	3	3	3
Manufacturer	Ericsson	Ericsson	Ericsson	Ericsson
Type & Model	(1) RRUS11 B12 (1) Radio 4478 B71 (1) RRUS11 B4 (2) Diplexer 600/700 - MI-554nn (AtAntenna)	(1) RRUS11 B12 (1) Radio 4478 B71 (1) RRUS11 B4 (2) Diplexer 600/700 - MI-554nn (AtAntenna)	(1) RRUS11 B12 (1) Radio 4478 B71 (1) RRUS11 B4 (2) Diplexer 600/700 - MI-554nn (AtAntenna)	(1) RRUS11 B12 (1) Radio 4478 B71 (1) RRUS11 B4 (2) Diplexer 600/700 - MI-554nn (AtAntenna)
Removing Equipment (If Applicable)				
Transmit Frequency (Mhz)				
Receive Frequency (Mhz)				
Antenna Gain (Db)				
Type of Technology				
TX Power Output				
ERP (Watts)				
Electric Service Required (Amps/Volts)				

Will RRUs be located behind antennas: Yes

GROUND SPACE REQUIREMENTS

Exisiting Lease Area:	DIMS: L(ft)		W(ft)		OR		Square footage	
New/Add'l Lease Area being requested:	DIMS: L(ft)	10	W(ft)	20	OR	200	Square footage	
New/Add'l Rooftop Lease Area being requested (if space is needed on both ground and rooftop:	DIMS: L(ft)		W(ft)		OR		Square footage	
Shelter:	DIMS: L(ft)		W(ft)		H(ft)			
Concrete Pad for Shelter:	DIMS: L(ft)		W(ft)					
Cabinets:	DIMS: L(ft)		W(ft)		H(ft)			
Concrete Pad for Cabinets:	DIMS: L(ft)		W(ft)					
Cabinet/Shelter Manufacturer/Model:								

POWER REQUIREMENTS

Power Provided by: Electrical Service Provider: Electrical Service Telephone Number:

Average Monthly Power Consumption: KWH units

Is a multi-tenant meter rack present: Yes How many, if any, empty meter banks are present:

Telco/Interconnect Requirements: POTS ☐ T1 ☑ MICROWAVE ☑ FIBER OPTICS ☑

Fiber Provider: if there is a delay in AAV we will utilize a temp dish for backhaul

BACK-UP POWER INFORMATION

Generator Required: Yes Generation Location: Outside Lease Area

Generator Ground Space Requirement: DIMS: L(ft) 10 W(ft) 10 H(ft) **Fuel Type:** Gas

BST Generator: No Generator Owner: T-Mobile Shared Generator Peak Usage: KW

Generator Capacity: KW Generator Make: Delta Generator Model: Power Gen 7500

Fuel Tank Location: Outside Lease Area Fuel Tank Size: DIMS: L(ft) W(ft) Fuel Tank Size: Gallons

Pad for Fuel Tank (if required) DIMS: L(ft) 3 W(ft) 3

Comments: propane tank can be pad needs a 5' spark zone.

Before submitting application, this section MUST be addressed:

Attach manufacturer's equipment specifications for antennas, RRU's, mounts, and all struct loading info for analysis. Cabinets & shelters if available

Final Configuration after work is completed: Install 12 panel antenna, (2) 6x12 HCS hybrid cables, 12 RRUs with a 10'x20' lease area, plus 10'x10' for propane tank for 300' sq. ft.

www.blueskytower.com

Existing Equipment:

Comments:

Exhibit E

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTFF335A

CTFF335_200 Evergreen Street_Bridgeport
220 Evergreen Street
Bridgeport, CT 06606

December 12, 2017

EBI Project Number: 6217005560

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	13.57 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

December 12, 2017

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CTFF335A –220 Evergreen Street_Bridgeport**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **220 Evergreen Street, Bridgeport, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **220 Evergreen Street, Bridgeport, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel

4) 1 LTE channel (600 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts

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

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Ericsson AIR32 B4A/B2P** & **Commscope DBXNH-6565B-A2M** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **RFS APXVAA24-43-U-A20** for 600 MHz & 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope DBXNH-6565B-A2M** has a maximum gain of **17.0 dBd** at its main lobe at 2100 MHz. The **RFS APXVAA24-43-U-A20** has a maximum gain of **13.15 dBd** at its main lobe at 600 MHz and a maximum gain of **13.55 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is **110 feet** above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C	Sector:	D
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR32 B4A/B2P	Make / Model:	Ericsson AIR32 B4A/B2P	Make / Model:	Ericsson AIR32 B4A/B2P	Make / Model:	Ericsson AIR32 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	110	Height (AGL):	110	Height (AGL):	110	Height (AGL):	110
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS)/ 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	**3.10**	Antenna B1 MPE%	**3.10**	Antenna C1 MPE%	**3.10**	Antenna D1 MPE%	**3.10**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope DBXNH-6565B-A2M	Make / Model:	Commscope DBXNH-6565B-A2M	Make / Model:	Commscope DBXNH-6565B-A2M	Make / Model:	Commscope DBXNH-6565B-A2M
Gain:	dBd	Gain:	dBd	Gain:	dBd	Gain:	dBd
Height (AGL):	110	Height (AGL):	110	Height (AGL):	110	Height (AGL):	110
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100	Frequency Bands	2100	Frequency Bands	2100
Channel Count	2	Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	3,007.12	ERP (W):	3,007.12	ERP (W):	3,007.12	ERP (W):	3,007.12
Antenna A2 MPE%	**1.00**	Antenna B2 MPE%	**1.00**	Antenna C2 MPE%	**1.00**	Antenna D2 MPE%	**1.00**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAA24-43-U-A20	Make / Model:	RFS APXVAA24-43-U-A20	Make / Model:	RFS APXVAA24-43-U-A20	Make / Model:	RFS APXVAA24-43-U-A20
Gain:	13.15 dBd / 13.55 dBd	Gain:	13.15 dBd / 13.55 dBd	Gain:	13.15 dBd / 13.55 dBd	Gain:	13.15 dBd / 13.55 dBd
Height (AGL):	110	Height (AGL):	110	Height (AGL):	110	Height (AGL):	110
Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz
Channel Count	1	Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	1,299.01	ERP (W):	1,299.01	ERP (W):	1,299.01	ERP (W):	1,299.01
Antenna A3 MPE%	**1.00**	Antenna B3 MPE%	**1.00**	Antenna C3 MPE%	**1.00**	Antenna D3 MPE%	**1.00**

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**5.10 %**
Sprint	4.49 %
AT&T	3.98 %
Site Total MPE %:	**13.57 %**

T-Mobile Sector A Total:	5.10 %
T-Mobile Sector B Total:	5.10 %
T-Mobile Sector C Total:	5.10 %
Site Total:	13.57 %

T-Mobile Maximum Power Per Sector

T-Mobile _Max Power per sector (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	110	15.52	AWS - 2100 MHz	1000	1.55%
T-Mobile PCS - 1900 MHz LTE	2	2,334.27	110	15.52	PCS - 1900 MHz	1000	1.55%
T-Mobile AWS - 2100 MHz UMTS	2	1,503.56	110	10.00	AWS - 2100 MHz	1000	1.00%
T-Mobile 600 MHz LTE	1	619.61	110	2.06	600 MHz	400	0.52%
T-Mobile 700 MHz LTE	1	679.39	110	2.26	700 MHz	468	0.48%
						Total:	**5.10%**

Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	5.10 %
Sector B:	5.10 %
Sector C:	5.10 %
Sector D:	5.10 %
T-Mobile Per Sector Maximum:	5.10 %
Site Total:	13.57 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **13.57%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit F

Blue Sky Towers LLC

Letter of Authorization

This letter of authorization dated 17th day of January 2018, provides written authorization for T-Mobile, its attorneys, other agents or representatives, to apply for any necessary zoning petitions, permits or any other approvals, including, but not limited to the filing of a building permit application (after required zoning approval has been completed, if necessary) which are necessary for the placement of a wireless communications facility with a portion of Lot 53-1527-2, commonly known as (street address) 220 Evergreen Street, State of CT, County of Fairfield, City/Township of Bridgeport.

This Letter of Authorization shall not constitute an agreement to enter into a binding agreement and neither party shall be bound with regard to the leasing or purchase of the above mentioned property until a final agreement has become fully executed between the parties.

By: _____

Print Name: James M. Burgess

Title: Leasing Manager

Date: 1/17/18

352 Park Street, Suite 106, N. Reading, MA 01864
Phone 508-530-3580; Fax 508-530-3564
www.blueskytower.com

Exhibit G

BLOOMFIELD
40 JEROME AVE
BLOOMFIELD
CT
06002-9998
0804760102
01/23/2018 (800)275-8777 4:08 PM

Product Description	Sale Qty	Final Price
PM 2-Day	1	$7.25
(Domestic)		
(BRIDGEPORT, CT 06604)		
(Weight:1 Lb 4.10 Oz)		
(Expected Delivery Date)		
(Thursday 01/25/2018)		
(USPS Tracking #)		
(9505 5121 6053 8023 1369 84)		
Insurance	1	$0.00
(Up to $50.00 included)		
PM 2-Day	1	$7.25
(Domestic)		
(NORFOLK, MA 02056)		
(Weight:1 Lb 4.00 Oz)		
(Expected Delivery Date)		
(Thursday 01/25/2018)		
(USPS Tracking #)		
(9505 5121 6053 8023 1369 91)		
Insurance	1	$0.00
(Up to $50.00 included)		
PM 2-Day	1	$7.25
(Domestic)		
(BRIDGEPORT, CT 06604)		
(Weight:1 Lb 4.00 Oz)		
(Expected Delivery Date)		
(Thursday 01/25/2018)		
(USPS Tracking #)		
(9505 5121 6053 8023 1370 04)		
Insurance	1	$0.00
(Up to $50.00 included)		
PM 2-Day	1	$7.25
(Domestic)		
(BRIDGEPORT, CT 06604)		
(Weight:1 Lb 4.30 Oz)		
(Expected Delivery Date)		
(Thursday 01/25/2018)		
(USPS Tracking #)		
(9505 5121 6053 8023 1370 11)		
Insurance	1	$0.00
(Up to $50.00 included)		
Total		$29.00
Credit Card Remitd		$29.00
(Card Name:VISA)		
(Account #:XXXXXXXXXXXX7500)		
(Approval #:04699G)		
(Transaction #:301)		