CONNECTICUT SITING COUNCIL

PETITION OF NEW CINGULAR WIRELESS PCS, LLC ("AT&T") TO THE CONNECTICUT SITING COUNCIL FOR A DECLARATORY RULING THAT NO AMENDED CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS REQUIRED TO COLLOCATE A WIRELESS TELECOMMUNICATIONS FACILITY ON AN EXISTING TOWER LOCATED AT 23 STONYBROOK ROAD, STRATFORD, CONNECTICUT	)	PETITION NO. ____ APRIL 18, 2014

PETITION FOR DECLARATORY RULING TO EXTEND A TOWER AND COLLOCATE AT AN EXISTING WIRELESS TELECOMMUNICATIONS FACILITY 23 STONYBROOK ROAD, STRATFORD, CONNECTICUT

I. Introduction

New Cingular Wireless PCS, LLC ("AT&T"), the "Petitioner", hereby petitions the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a declaratory ruling that no amended Certificate of Environmental Compatibility and Public Need ("Certificate") is required pursuant to Section 16-50k of the Connecticut General Statutes ("C.G.S.") to extend the height of an existing tower facility by 20% and collocate at the site located at 23 Stonybrook Road, Stratford, Connecticut (the "Site"). AT&T's proposed tower extension and

collocation qualifies as an eligible facility under recent federal law adopted by Congress requiring state and local approvals. See 47 U.S.C. § 1455(a); 47 C.F.R. Part 1, App. B, Nationwide Programmatic Agreement for the Collocation of Wireless Antennas, § I.C (Nationwide Collocation Agreement); FCC Guidance DA 12-2047, January 25, 2013.

II. ExistingTower Facility

In Docket 385, the Siting Council issued a Certificate to T-Mobile Northeast LLC for the construction, maintenance and operation of a tower facility on property located at 23 Stonybrook Road in Stratford. The existing tower is located to the rear of the shopping plaza in an open paved parking area previously used for storage of trash bins on the property. The existing tower consists of a 100' tall monopole with exterior flush mounted antennas. T-Mobile has antennas flush mounted at heights of 87' and 97' on the tower. Verizon obtained a tower share approval from the Council to install flush mounted antennas at a height of 77' on the tower. The lease area (i.e. site), as approved in Docket 385, included a 40' by 50' area. Included in Attachment A are copies of the Council's Opinion and Decision & Order for the Facility as approved in Docket 385.

III. AT&T's Proposed Collocation and Tower Expansion

AT&T is licensed by the Federal Communications Commission ("FCC") to provide wireless services in this area of the State of Connecticut. In order to provide its services to a significant population in Stratford, AT&T proposes to install six (6) panel antennas flush mounted to a proposed 20' extension of the existing 100' tall monopole at two (2) centerline heights of approximately 109' and 117' above grade level ("AGL"). AT&T proposes to expand the equipment compound fencing by approximately 13' along the northern side of the existing fenced compound within the 40' by 50' area of the site as previously approved by the Siting Council. AT&T will install

its unmanned equipment shelter on a 12' x 16' concrete pad as well as install a 4' x 8' concrete pad and emergency backup diesel powered generator. AT&T's proposed equipment shelter and generator will be installed completely within the previously approved 40' by 50' lease area in Docket 385.

AT&T's proposed extension and collocated facility is detailed in the drawings included in Attachment B, prepared by Centek Engineering, last revised March 28, 2014. An Aerial photo is included in the drawings in Attachment B. Annexed hereto as Attachment C is a Structural Analysis, dated April 7, 2014, prepared by F. Geoffrey Bost, P.E., concluding that the existing monopole and foundation will require modifications to add additional capacity to support AT&T's proposed 20' extension and the antennas and tower mounted equipment. A modification plan is included at the end of the report.

IV. The Proposed Collocation Will Not Have a Substantial Adverse Environmental Effect

A comparison of the approved facility and the proposed conditions reveals no substantial or significant environmental impacts associated with AT&T's proposed installation of a collocated facility and 20' extension of the tower and a modest expansion of the compound fencing which is completely within the previously approved site area.

A. Minimal Physical Impact on Approved Site

The proposed expansion of the fenced equipment compound will not require grading and no trees are to be removed. Existing access to the site will be utilized. The brown 8' tall wood stockade fence will be extended around the entire expansion area. A modest 14' expansion of the existing fencing is needed because the original compound was not fully built out to its approved area of 40' by 50' which is necessary to accommodate AT&T's 12' x 16'

shelter and proposed generator. All other facility improvements approved in Docket 385, including landscaping, will remain as approved.

B. Compliance with MPE Limits

The operation of AT&T's antennas will not increase the total radio frequency electromagnetic power density at the site to a level at or above applicable standards. A cumulative power density report is included in Attachment D. The total radio frequency power density will be well within standards adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and the MPE limits established by the Federal Communications Commission.

C. Visibility

As demonstrated in the photosimulations included in Attachment E, AT&T's installation of its antennas at centerline heights of 109' and 117' AGL on a proposed 20' extension of the existing 100' monopole will not materially change the overall character of existing views of the tower site or create a visual impact on the surrounding area. Based on the report provided by T-Mobile in Docket 385, no FAA lighting or marking of the extended structure would be required (i.e. the 120' height does not exceed the hazard or obstruction criteria).

D. Other Environmental Factors

AT&T's collocation on the approved site in Docket 385 is consistent with the Council's findings, opinion and decision and order as it relates to other environmental factors. A Noise Study, prepared by Allan Smardin, dated April 11, 2014 is included in Attachment F and confirms compliance with local and state noise regulations.

V. AT&T Service

Annexed hereto in Attachment G are coverage maps for AT&T's 4G LTE network in this area of the State depicting existing and proposed coverage in the 1900MHz spectrum band. As detailed in the coverage maps, AT&T requires a new facility in this area of the State to compete with T-Mobile and Verizon and reliably provide its services to the public. The proposed Facility will provide coverage along portions of Broadbridge Avenue, Route 108 (Nichols Avenue) as well as secondary and tertiary streets and to numerous residences and businesses. While the Council does not have to find a public need for the facility as part of a ruling on this Petition, it is respectfully submitted that the enclosed information fully demonstrates the need for the installation of the proposed facility to provide reliable wireless services to the public and is consistent with state policy to avoid the proliferation of towers.

VI. Notice of Petition Filing

Pursuant to R.C.S.A. Section 16-50j-40(a), notice of AT&T's intent to file this Petition was sent to each person appearing of record as an owner of property that abuts the site, as well as the appropriate municipal officials and government agencies as listed in Section 16-50e of the C.G.S. Certification of such notice, a copy of the notice and the list of property owners and municipal officials and government agencies to whom the notice was sent are included in Attachment H.

VII. Conclusion

As set forth herein, AT&T's proposed extension of the existing tower approved in Docket 385 and collocation at the site involves an eligible facility under federal law and is wholly consistent with legislative findings outlined in Section 16-50g and 16-50aa of the General Statutes of Connecticut that seek to avoid the unnecessary proliferation of towers in the State. It is respectfully submitted

that AT&T's facility does not present any significant adverse environmental effects as listed in Section 16-50p of the General Statutes and is consistent with the Council's findings, opinion and decision and order in Docket 385. For all the foregoing reasons, AT&T petitions the Connecticut Siting Council for a determination that the proposed tower extension and collocated wireless telecommunications facility does not require an Amended Certificate of Environmental Compatibility and Public Need in Docket 385 and that the Council issue an order approving same including the revised Development & Management Plan included in Exhibit B.

Respectfully Submitted,

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ATTACHMENT A

DOCKET NO. 385 – T-Mobile Northeast LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and management of a telecommunications facility located at 23 Stonybrook Road, Stratford, Connecticut.	}	Connecticut Siting Council

February 25, 2010

Findings of Fact

Introduction

1. T-Mobile Northeast LLC (T-Mobile), in accordance with the provisions of Connecticut General Statutes (CGS) §§ 16-50g through 16-50aa, applied to the Connecticut Siting Council (Council) on September 2, 2009 for the construction, maintenance, and management of a 100-foot wireless telecommunications facility located at 23 Stonybrook Road in Stratford, Connecticut. (T-Mobile 1, p. 1)

2. T-Mobile is a Delaware corporation with an office in Bloomfield, Connecticut. T-Mobile is licensed by the Federal Communications Commission (FCC) to construct and operate a personal wireless service system in Connecticut. (T-Mobile 1, p. 2)

3. The purpose of the proposed facility is to provide wireless service for T-Mobile to residential areas in the area of Broadbridge Road, Franklin Avenue, and Route 108 north of Route 1 in Stratford. (T-Mobile 1, pp. 4-5)

4. Pursuant to CGS § 16-50m, the Council, held a public hearing on December 8, 2009, beginning at 3:00 p.m. and continuing at 7:00 p.m. at the Birdseye Municipal Complex, 468 Birdseye Street, Stratford, Connecticut. (Transcript 1 – 12/08/09, 3:00 p.m. [Tr. 1], Tr. 1, p. 2; Transcript 2 – 12/08/09, 7:15 p.m. [Tr. 2], p. 2)

5. The Council and its staff conducted an inspection of the proposed site on December 8, 2009, beginning at 2:00 p.m. The applicant flew a four-foot diameter balloon at the site from 12:00 p.m. to 4:30 p.m. to simulate the height of the proposed tower. The balloon was flown at its intended height of 100 feet above ground level (agl) during the field review. (T-Mobile 6)

6. Notice of the application was sent to all abutting property owners by certified mail. Three notices were unclaimed. Public notice of the application was published in the Connecticut Post on July 26 and July 28, 2009. (T-Mobile 1, Tab F; T-Mobile 2, Q. 1)

7. T-Mobile installed a four-foot by six-foot sign on the property at the intersection of Stonybrook Road and Broadbridge Avenue. The sign presented information regarding the proposed project and Council's public hearing. (T-Mobile 3)

8. Pursuant to CGS § 16-50l(b), T-Mobile provided notice to all federal, state and local officials and agencies listed therein. (T-Mobile 1, Tab E)

State Agency Comment

9. Pursuant to General Statutes § 16-50j(h), on October 28, 2009 and December 9, 2009, the following State agencies were solicited to submit written comments regarding the proposed facility: Department of Environmental Protection (DEP), Department of Public Health (DPH), Council on Environmental Quality (CEQ), Department of Public Utility Control (DPUC), Office of Policy and Management (OPM), Department of Economic and Community Development (DECD), the Department of Transportation (DOT) and the Department of Agriculture (DOAg). (Record)

10. The Council received a written response from the DOT's Bureau of Engineering and Highway Operations on December 1, 2009, stating that the DOT had no comment. (Record)

11. No response was received from the DPH, DOAg, DEP, CEQ, DPUC, OPM, or DECD. (Record)

Municipal Consultation

12. On May 28, 2009, T-Mobile submitted a technical report to James Miron, Mayor of the Town of Stratford. T-Mobile discussed the project with Gary Lorenston, Planning and Zoning Administrator, and Brian Carey, Conservation Administrator, on July 28, 2009. (T-Mobile 1, p. 17; T-Mobile 3, Vergati Q. 9)

13. The Town did not comment on the proposal. (T-Mobile 1, p. 17; T-Mobile 3, Vergati Q. 9)

14. T-Mobile offered the town lease-free space on the tower for municipal service antennas. The town did not respond to this offer. (T-Mobile 1, p. 8; T-Mobile 3, Vergati Q. 10; Tr. 1, pp. 21-22)

15. On December 28, 2009, T-Mobile sent correspondence to the new town administration that described the proposed facility and invited the town to comment. The town did not comment. (T-Mobile late file January 7, 2010; Record)

Public Need for Service

16. 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. 7)

17. 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. T-Mobile is licensed by the FCC to provide wireless service to Fairfield County. (Council Administrative Notice Item No. 7; T-Mobile 1, p. 6)

18. The Telecommunications Act of 1996 prohibits local and state entities from discriminating among providers of functionally equivalent services. (Council Administrative Notice Item No. 7)

19. The Telecommunications Act of 1996, a Federal law passed by the United States Congress, prohibits any state or local entity 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. This Act also blocks the Council from prohibiting or acting

with the effect of prohibiting the provision of personal wireless service. (Council Administrative Notice Item No. 7)

20. In an effort to ensure the benefits of wireless technologies to all Americans, Congress enacted the Wireless Communications and Public Safety Act of 1999 (Enhanced 911 Act) The purpose of this legislation was to promote public safety through the deployment of a seamless, nationwide emergency communications infrastructure that includes wireless communications services. (T-Mobile 1, pp. 5-6)

21. The site would provide Enhanced 911 service to the proposed service area. (T-Mobile 1, p. 6)

T-Mobile - Existing and Proposed Wireless Coverage

22. T-Mobile is licensed by the FCC to provide service in the 1900 MHz frequency range. (T-Mobile 3 Heffernan, Q. 5)

23. T-Mobile designs and operates at the following signal-level thresholds: in-vehicle service is -84 dBm and in-building service is -76 dBm. (T-Mobile 3 Heffernan, Q. 6)

24. T-Mobile currently has degraded coverage along portions of North Avenue, Nichols Avenue, Broadbridge Avenue, Wiklund Avenue, London Terrace and surrounding areas with signal levels ranging from -84 dBm to -110 dBm (refer to Figures 6 & 7). The area is predominately residential. (T-Mobile 2, Q. 10; Tr. 1, pp. 85-86)

25. T-Mobile experiences a drop-call percentage of 1.4% in the proposed service area. Some characteristics of degraded service that are not quantified as part of drop-call statistics include delayed calls, calls that do not connect and poor call quality. (T-Mobile late file 01/07/10; Tr. 1, pp. 87-89)

26. Installing antennas at 97 feet agl would provide reliable service to the proposed service area. The coverage footprint is approximately 3.5 square miles at -84 dBm. Approximately 2.4 square miles of this coverage would be in areas served by adjacent T-Mobile facilities; thus an additional 1.9 square miles of adequate coverage would be provided by the site in the proposed service area (refer to Figure 8). (T-Mobile 2, Q. 10; Tr. 2, pp. 29-30)

27. The proposed site would off-load some call traffic from adjacent T-Mobile facilities, thus enhancing in-building service to areas currently served by these facilities. (Tr. 1, pp. 19-20)

28. Reducing the tower height to 90 feet would cause a slight degradation of coverage along the periphery of the coverage footprint for both in-vehicle and in-building coverage (refer to Figure 9). In-building coverage would be reduced along the east edge of the coverage footprint including the Summer Street-Johnson Avenue area, the Nichols Avenue-North Avenue area, Nichols Avenue-Meadowbrook Road area, and the Legion Avenue area. (T-Mobile 3, Q. 10)

Site Selection

29. T-Mobile established a search ring for the proposed service area in September of 2005. The search was centered in the Broadbridge Avenue and Stonybrook Road area. (T-Mobile 3, Vergati Q. 6)

30. The search for a site that would improve service included the possibility of modifying existing adjacent T-Mobile facilities, identification of potential structures that could be used for telecommunications purposes, and the examination of area properties, including municipal parcels, to identify potential telecommunications sites. (T-Mobile 1, p. 7; Tr. 1, pp. 62-66)

31. Stonybrook Park, a town park, is located south of the proposed site. The town was not interested in leasing space there for a telecommunications facility. (T-Mobile 1, Tab B; Tr. 1, p. 30)

31. The nearest T-Mobile facilities to the proposed site include a rooftop facility at the Sikorsky property, approximately 0.7 miles to the northeast, and a rooftop facility on Barnum Drive, approximately 0.8 miles to the south. Coverage from these sites or other nearby sites does not extend to the proposed service area. (T-Mobile 1, Tab J; Tr. 1, pp. 56-58, 63, 66-67)

32. T-Mobile did not identify any structures in the search area that would be suitable for a telecommunications facility. (T-Mobile 1, Tab J)

33. After determining there were no viable structures within the search area, T-Mobile searched for properties suitable for tower development. T-Mobile investigated six different locations and selected one for tower development. The five rejected locations and reasons for their rejection are as follows:
    a) 2336 Broadbridge Avenue – parcel too small to accommodate a tower (0.37-acre) and rooftop too low for a roof mount (20 feet agl);
    b) Sikorsky Facility, 3191 Broadbridge Avenue – T-Mobile has a rooftop facility at this location;
    c) 1700 Broadbridge Avenue – would not meet coverage objectives;
    d) 55 Singer Court– too close to Sikorsky facility, coverage would be redundant;
    e) Northeast Utilities transmission tower on Line # 1710– would not meet coverage objectives.

    (T-Mobile 1, Tab J)

34. Two other properties mentioned as possible candidates during the hearing, Remington Woods, a condominium development, approximately 0.6 miles northwest of the site, and Clover Field, a town park approximately 0.5 miles southeast of the site, are in areas already served by existing T-Mobile facilities. (Council Administrative Notice Item No. 17; Tr. 2, pp. 32-34, 41-42)

35. The search ring was not centered along Nichols Avenue (approximately 2,000 feet east of the site) since the general area there is zoned residential with small lots. Larger parcels in the area consist of town-owned education facilities. The town was not responsive to leasing any town property for telecommunications facilities. (T-Mobile 1 b, Zoning Map; T-Mobile late file 01/07/10; Tr. 1, p. 30; Tr. 2, p. 24)

Facility Description

36. The proposed facility is located on a 0.73-acre parcel identified as 23 Stonybrook Road, Stratford. The parcel consists of three different tax lots: lots 12, 13 and 16. The tower site would be located in the southwest corner of the parcel, on tax lot 13 (refer to Figures 1 & 2). Bruce Brook is located immediately to the southeast on town property. (T-Mobile 1, Tab B; T-Mobile 2, Q. 2)

37. The tower is approximately 28 feet north of property owned by the Town of Stratford that is identified as a right-of-way for Ruth Street. Stonybrook Park is south of the right-of-way. The tower is 31 feet east of the Miranda property. (T-Mobile 1, Tab B)

38. The parcel is zoned heavy commercial (CC). (T-Mobile 1, p. 9)

39. The parcel contains a two-story commercial building, approximately 15 feet above grade, fronting Stonybrook Road. Paved parking areas and access ways surround the building. The tower site would be located approximately 110 feet south of the existing building, in a paved area used to store dumpsters. (T-Mobile 1, Tab B, Tab M; T-Mobile 2, Q. 3)

40. T-Mobile proposes to construct a 100-foot unipole at the site. A unipole is a monopole that conceals flush-mounted panel antennas within a fiberglass type casing. The tower would be designed in accordance with the Electronic Industries Association Standard ANSI/TIA-222-F. (T-Mobile 1, p. 8, Tab B)

41. The tower is approximately 82 feet east of the Miranda residence and 120 feet southeast of the Torres residence at 65 Stonybrook Road. (T-Mobile 1, Tab B; Tr. 1, p. 102)

42. The tower setback radius would extend onto the Miranda property by 69 feet and onto town property by 72 feet. The tower could be designed with a pre-engineered fault to prevent encroachment onto these adjacent properties in the event of a tower failure. (T-Mobile 1, Tab B; T-Mobile 3, Q. 11; Tr. 1, p. 102)

43. T-Mobile proposes to paint the unipole white. (T-Mobile 1, Tab 10; Tr. 1, p. 28)

44. The unipole would be able to support three levels of interior flush-mounted panel antennas. The flush-mount design can only accommodate three panel antennas at each level. The tower would be constructed in accordance with the Electronic Industries Association standard ANSI/TIA-222-F. (T-Mobile 1, p. 8, Tab B)

45. T-Mobile proposes to install three panel antennas at the 97-foot and 87-foot levels of the tower. The 77-foot level of the tower would be available to another telecommunications carrier. (T-Mobile 1, Tab B)

46. Clearwire, a telecommunications provider operating in Connecticut, is interested in the 77-foot level of the tower. Clearwire is conducting tests to confirm if the site fits into their coverage network. Clearwire typically uses flat-panel antennas and round dish antennas in their network, but their requirements at this site are unknown. T-Mobile would be willing to construct a regular monopole with antennas flush-mounted on the exterior of the tower to provide mounting flexibility for Clearwire. The exterior flush mounts would also allow T-Mobile to make minor modifications to their antennas, such as tilt, to increase site performance, if necessary. (T-Mobile 1, p. 6; Tr. 1, pp. 24-26, 92-94; Tr. 2, pp. 27-28)

47. The top diameter of the unipole would be 26 to 30 inches. The top diameter of a monopole with exterior flush-mounted antennas would be 18 to 21 inches. (Tr. 1, pp. 92-93)

48. Whip antennas, typically used for municipal emergency services, could be accommodated on a unipole or a regular monopole. (Tr. 1, pp. 22-23)

49. T-Mobile proposes to construct a 26-foot by 50-foot equipment compound at the base of the tower, sufficient to accommodate ground equipment for T-Mobile and one other carrier. T-Mobile would install three equipment cabinets on a concrete slab within the compound. (T-Mobile 1, Tab B)

50. An eight-foot high chain link fence would enclose the compound. (T-Mobile 1, p. 8)

51. Four trash bins are located in the area where the compound is proposed. The bins would be re-located exterior to the northeast side of the compound, partially blocked from view from the west by the compound and a wood fence. (T-Mobile 1, Tab B; Tr. 2, p. 38)

52. Access to the compound would be from an existing parking lot on the property. (T-Mobile, 1, Tab B)

53. T-Mobile anticipates a technician would visit the site once every four weeks to service equipment. (T-Mobile 1, p. 13)

54. Overhead utilities would service the compound from existing service on Stonybrook Road. A new pole would be installed east of the compound. T-Mobile could install the utilities underground. (T-Mobile 1, Tab B; Tr. 1, p. 98)

55. The compound is oriented in a north-south direction along the west property line (Miranda property). The compound is approximately 12 feet from the property line. (T-Mobile 1, Tab B)

56. T-Mobile could relocate the compound in an east-west orientation to increase the distance from the tower to the adjacent property line by 50 feet. (Tr. 1, pp. 95-98; Tr. 2, pp. 13, 37-38)

57. If the compound was relocated, the trash bins would be placed behind the commercial building on the site and enclosed by fencing to the west, obscuring direct views from the street and from properties to the west. (Tr. 2, pp. 38-39)

58. There are 263 residential units (single family, two-family) within 1,000 feet of the tower site. (T-Mobile 1, Tab L)

59. Land use within a quarter-mile of the site consists of residential, recreational (town park), and several commercial properties. (T-Mobile 1, Tab B, Tab P)

60. The tower site is located at an elevation of 77 feet above mean sea level (amsl) at 41° 12' 11.8" north latitude and 73° 08' 55" west longitude. Surrounding terrain is generally flat to rolling. Trees in the area range from 55 to 65 feet in height. (T-Mobile 1, Tab M; Tr. 1, p. 34)

61. The estimated construction cost of the facility is:

Tower and foundation	$71,000.
Site development	68,000.
Utility installation	39,000.
Ground equipment, coax	70,000.
Total estimated cost	$248,000.

(T-Mobile 1, p. 18; Tr. 1, p. 74)

Environmental Concerns

62. The proposed facility would have no adverse effect on historic, architectural or archeological resources listed in or eligible for the National Register of Historic Places. (T-Mobile 1, Tab N)

63. The site is not within any designated area indicating the presence of Federally threatened or endangered species or State endangered, threatened or special concern species. (T-Mobile 1, Tab N)

64. No trees would be removed to develop the site. If the site were re-aligned in an east-west direction, a few trees along the bank of Bruce Brook would have to be trimmed for clearance. (T-Mobile 1, Tab B; Tr. 1, p. 96)

65. Development of the compound would not directly affect any wetlands or watercourses. Bruce Brook is located 51 feet from the southeast corner of the compound. The brook is located down a steep embankment along the property line. If the compound were realigned in an east-west direction, the brook would be 36 feet from the southeast corner of the compound. (T-Mobile 1, Tab B; Tr. 1, p. 9; Tr. 2, p. 35)

66. The site is within the town's 100-foot upland review area (wetland buffer zone). (T-Mobile late file 01/07/10, Letter from Dean Gustafson)

67. The site is within a 100-year floodplain. The site is two to three feet above the base flood elevation of 74 feet, so that the proposed development would not adversely affect the flood storage capacity of the flood zone. T-Mobile would file the project with the Department of Environmental Protection Flood Division for a flood zone impact determination. (T-Mobile 1, p. 14; T-Mobile late file 01/07/10, Dean Gustafson; Tr. 2, pp. 25-26)

68. Erosion and sedimentation controls and other best management practices would be established and maintained for the duration of site construction. (T-Mobile 1, p. 16)

69. Aircraft hazard obstruction marking or lighting of the tower is not required or proposed. (T-Mobile 1, pp. 17-18; Tr. 1, pp. 74-75)

70. The cumulative worst-case maximum power density from the radio frequency emissions from the operation of the proposed T-Mobile antennas is calculated to be 14.3% of the standard for Maximum Permissible Exposure, as adopted by the FCC, at the base of the proposed tower. This calculation was based on methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997) that assumes all antennas would be pointed at the base of the tower and all channels would be operating simultaneously, which creates the highest possible power density levels. Under normal operation, the antennas would be oriented outward, directing radio frequency emissions away from the tower, thus resulting in significantly lower power density levels in areas around the tower base. (T-Mobile late file 01/07/10)

71. Operation of the tower would not affect other equipment used by the public, such as garage door openers and televisions. T-Mobile antennas are permitted to operate in very specific frequency bands, as specified by the FCC, whereas other equipment operates in completely different frequency bands. (Tr. 2, pp. 31-32)

Visibility

72. The proposed tower would be visible year-round from approximately 10 acres within a quarter mile of the site (refer to Figure 3). The tower would be seasonally visible from an additional 37 acres within a quarter mile of the site. (T-Mobile 1, Tab M)

73. Visibility of the proposed tower from specific locations within a quarter-mile radius of the site is as follows:

Specific Location and Area Receptors	Visible	Approximate Portion of Tower Visible	Approx. Distance from Tower*
Intersection of London Terrace and Broadbridge Avenue (commercial area)	Yes	50 feet – unobstructed	0.08 mile east
Intersection of North Avenue and Broadbridge Avenue (residential area)	Yes	30 feet – unobstructed	0.25 mile southeast
Broadbridge Avenue immediately north of Stonybrook Road (residential and commercial area) *Refer to Figure 4*	Yes	50 feet – unobstructed	0.1 miles north
Klondike Street at #214 (residential area)	Yes	10 feet - unobstructed	0.13 mile south
Barnum Terrace south of Yukon Street (residential area)	Yes	20 feet- unobstructed	0.2 mile south
Barnum Terrace (residential area)	Yes	30 feet – unobstructed	0.1 mile south
Stonybrook Park (public park)	Yes	15 feet – unobstructed	0.07 mile south
Intersection of Stonybrook Road and Eaton Street (residential area) *Refer to Figure 5*	Yes	60 feet – unobstructed	0.06 mile northwest
Intersection of Marcroft Street and Chevvy Street	Yes	60 feet – unobstructed	0.17 mile northeast
Marcroft Street (commercial and residential area)	Yes	50 feet- unobstructed	0.11 mile northeast
Viele Street south of Marcroft Street	Yes	40 feet - unobstructed	0.11 mile northeast

(T-Mobile 1, Tab M) * 0.1 mile = 528 feet.

74. The tower would be visible year-round from 51 residential properties within a quarter-mile of the site, as follows:

Street	No. of Residences
Stonybrook Road	6
Broadbridge Avenue	8
North Avenue	2
North Terrace	2
Marcroft Street	8
Viele Street	4
Eaton Street	2
Yukon Street	6
Klondike Street	4
Barnum Terrace	9

(T-Mobile 1, Tab M)

75. The residence at 55 Stonybrook Road, immediately west of the site and set back from Stonybrook Road, would have a view of the entire tower and compound. T-Mobile could install fencing with privacy slats and vegetative screening along the property line to screen the compound area. T-Mobile would be willing to paint the tower any color to help it blend in with the surroundings. (T-Mobile 1, Tab M; Tr. 1, pp. 27-28, 30-31)

76. Re-locating the compound and tower in an east-west configuration would slightly decrease the visibility of the site from 55 Stonybrook Road. The tower would be approximately 50 feet farther from this property. (Tr. 2, p. 37-38)

77. The residence at 65 Stonybrook Road, immediately northwest of the site and fronting Stonybrook Road, would have views of the compound and most of the tower. (Tr. 1, p. 31)

78. The residence at 56 Stonybrook Road, across the street from the driveway and parking lot of the site, would have open views of the compound and tower. (Tr. 1, p. 31)

79. The tower would not be visible from any known hiking trails maintained by the DEP or the Connecticut Forest and Parks Association. The tower would be visible from Stonybrook Park immediately south of the site. The four-acre park contains field and playground areas. (T-Mobile 1 c, Plan of Conservation and Development, Tab M; Tr. 1, pp. 32-33)

80. The tower would not be visible from any scenic roads or historic districts. (T-Mobile 1, Tab M)

Figure 1: Location of site at 23 Stonybrook Road, Stratford. (T-Mobile 1, Tab B)

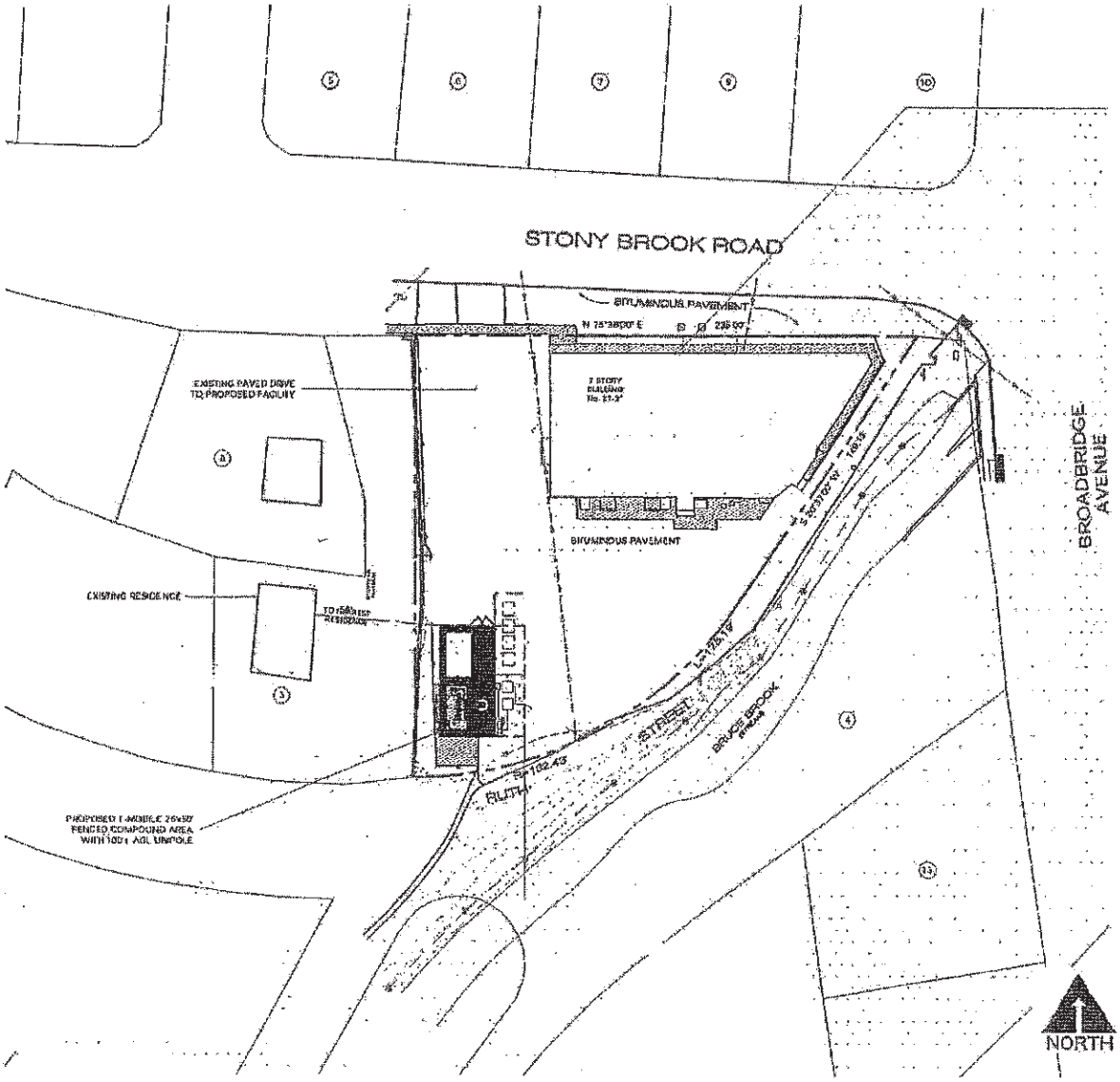


Figure 2: Site plan of proposed location at 23 Stonybrook Road. (T-Mobile 1, Tab B)

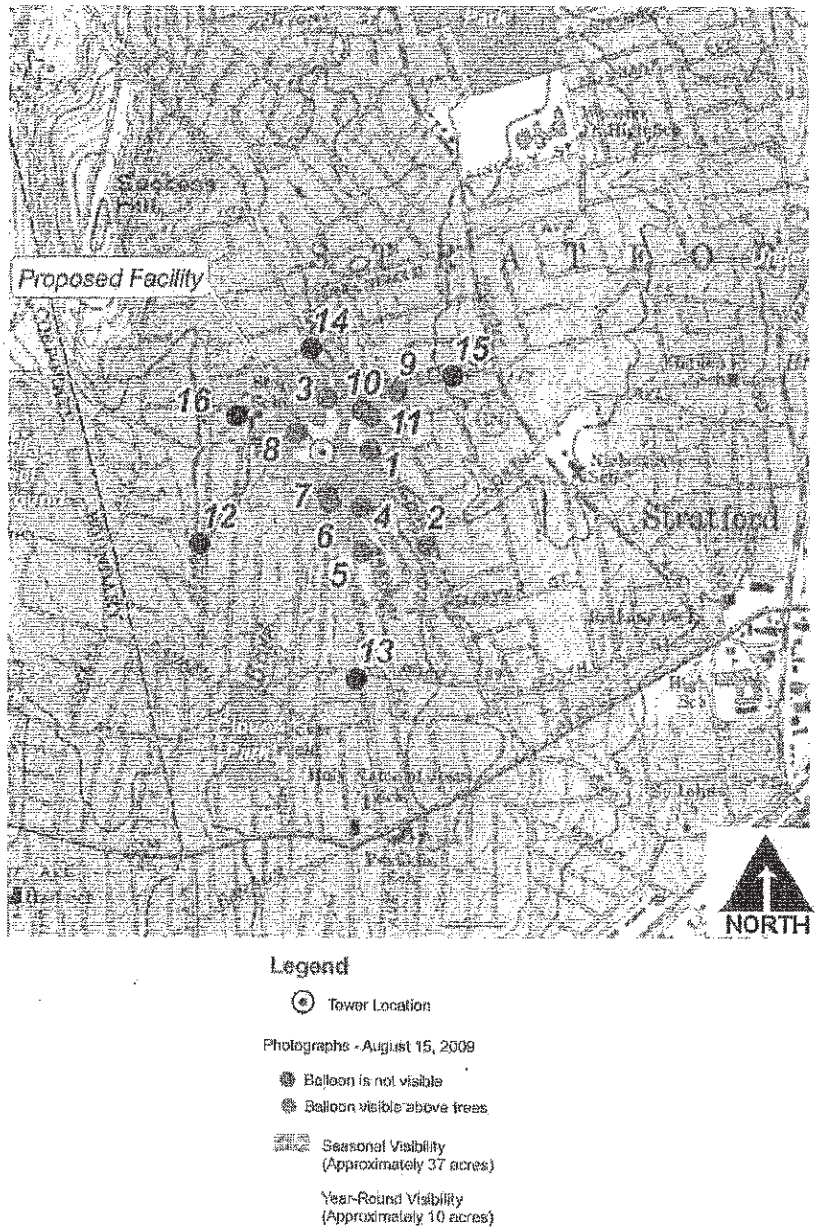


Figure 3: Projected visibility of proposed site. (T-Mobile 1, Tab M)

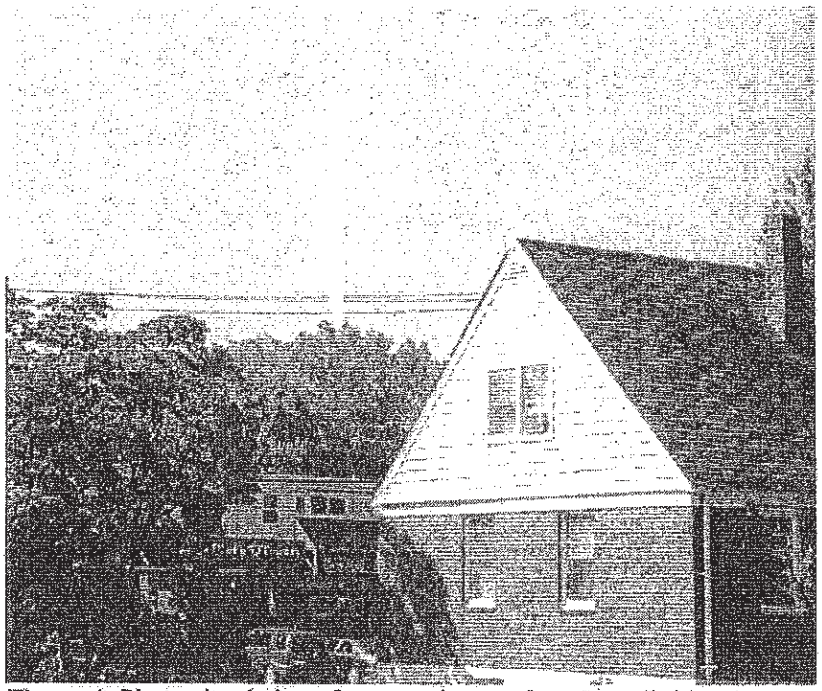


Figure 4: Photo-simulation of proposed tower from Broadbridge Avenue north of Stonybrook Road (location 3 on Figure 3). (T-Mobile 1, Tab M)

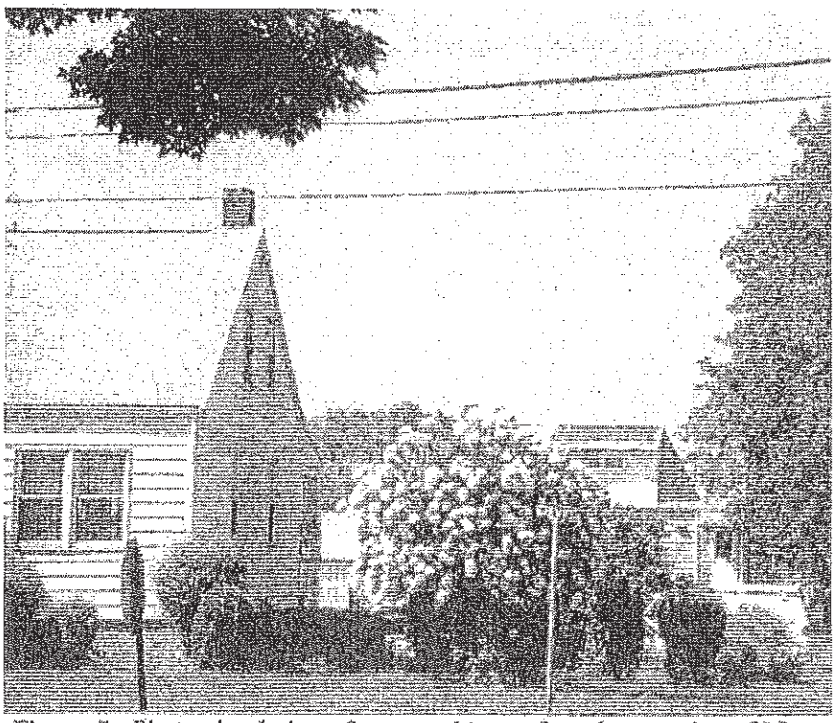


Figure 5: Photo-simulation of proposed tower from intersection of Marcroft Street and Chevvy Street (location 9 on Figure 3). (T-Mobile 1, Tab M)

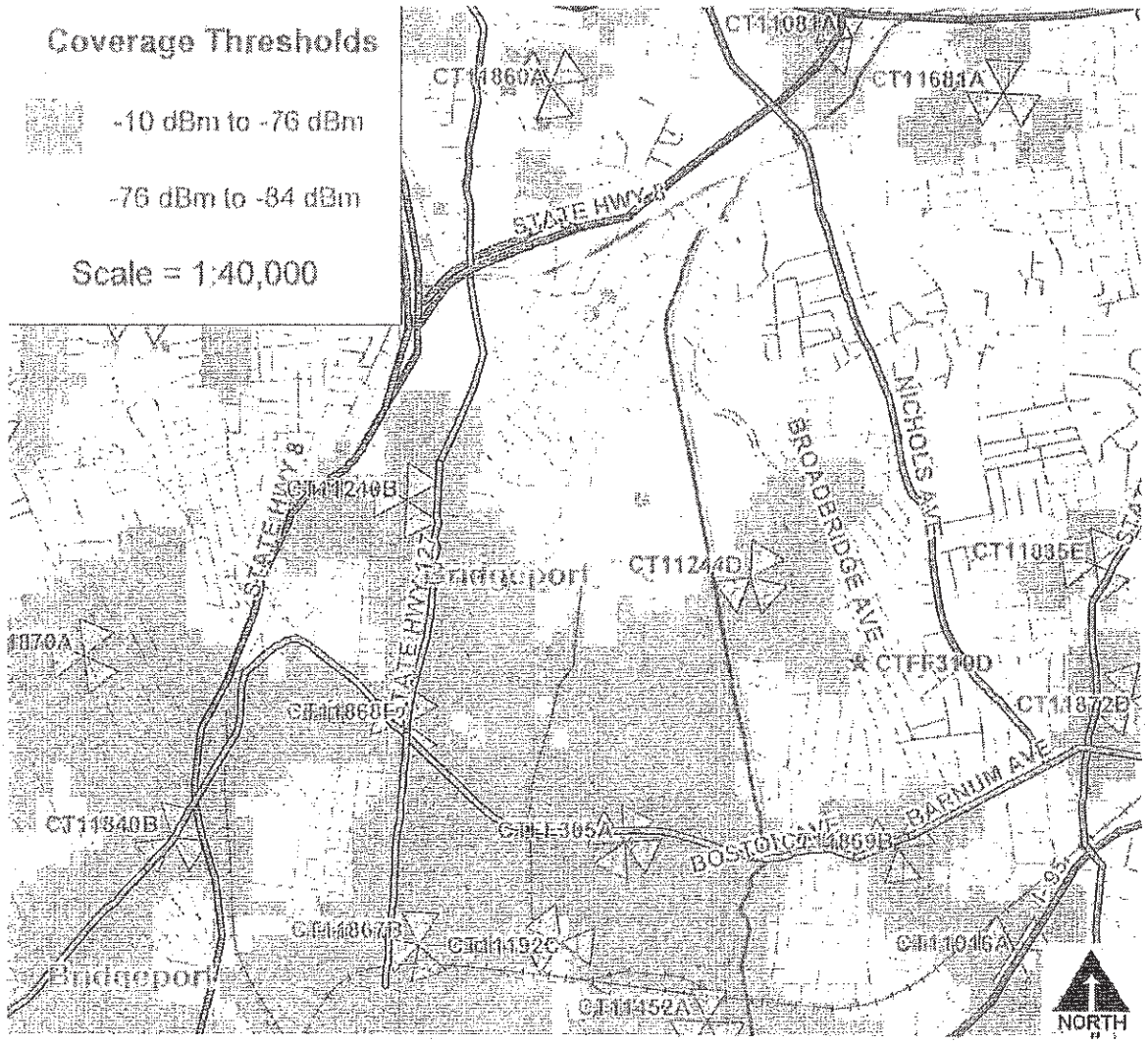
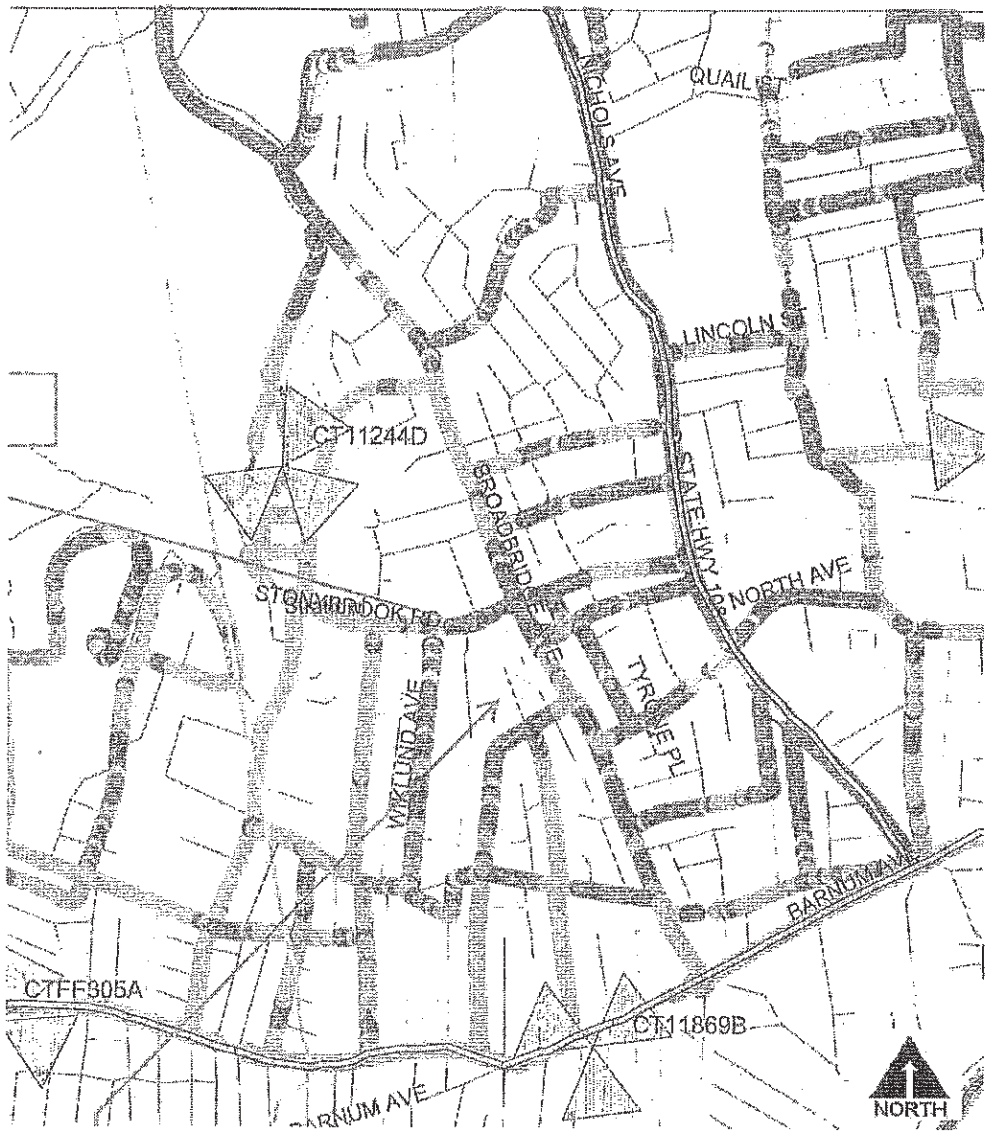


Figure 6: T-Mobile's existing wireless coverage. (T-Mobile 2, Q. 11)



Coverage Thresholds

- -47 dBm to -76 dBm
- -76 dBm to -84 dBm
- -84 dBm to -91 dBm
- -91 dBm to -110 dBm

N

Proposed Facility

Figure 7: T-Mobile drive test data depicting inadequate coverage in areas east to the southwest of the site. (T-Mobile 2, Q. 10)

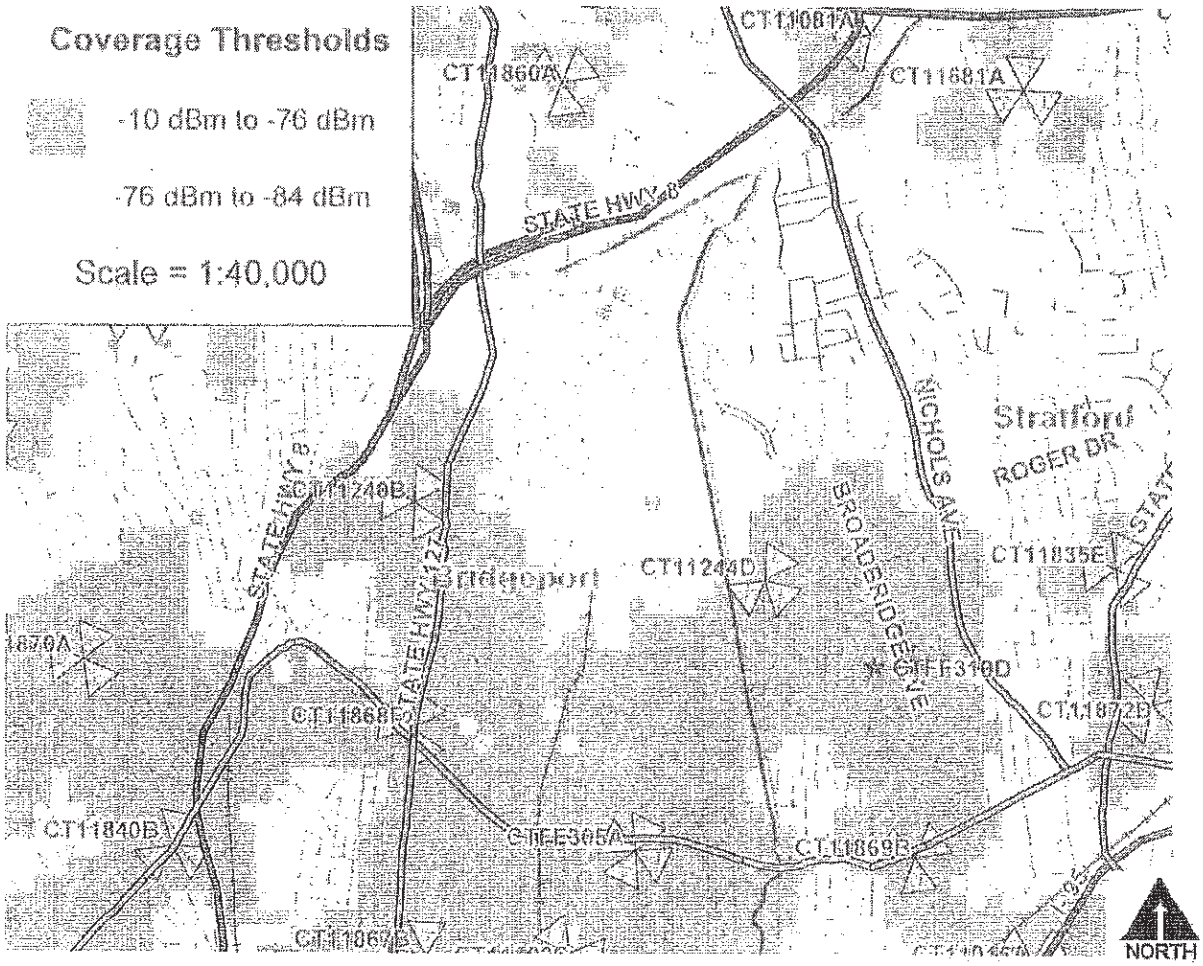


Figure 8: T-Mobile's proposed wireless coverage with antennas mounted at 97 and 87 feet agl. (T-Mobile 2, Q. 11)

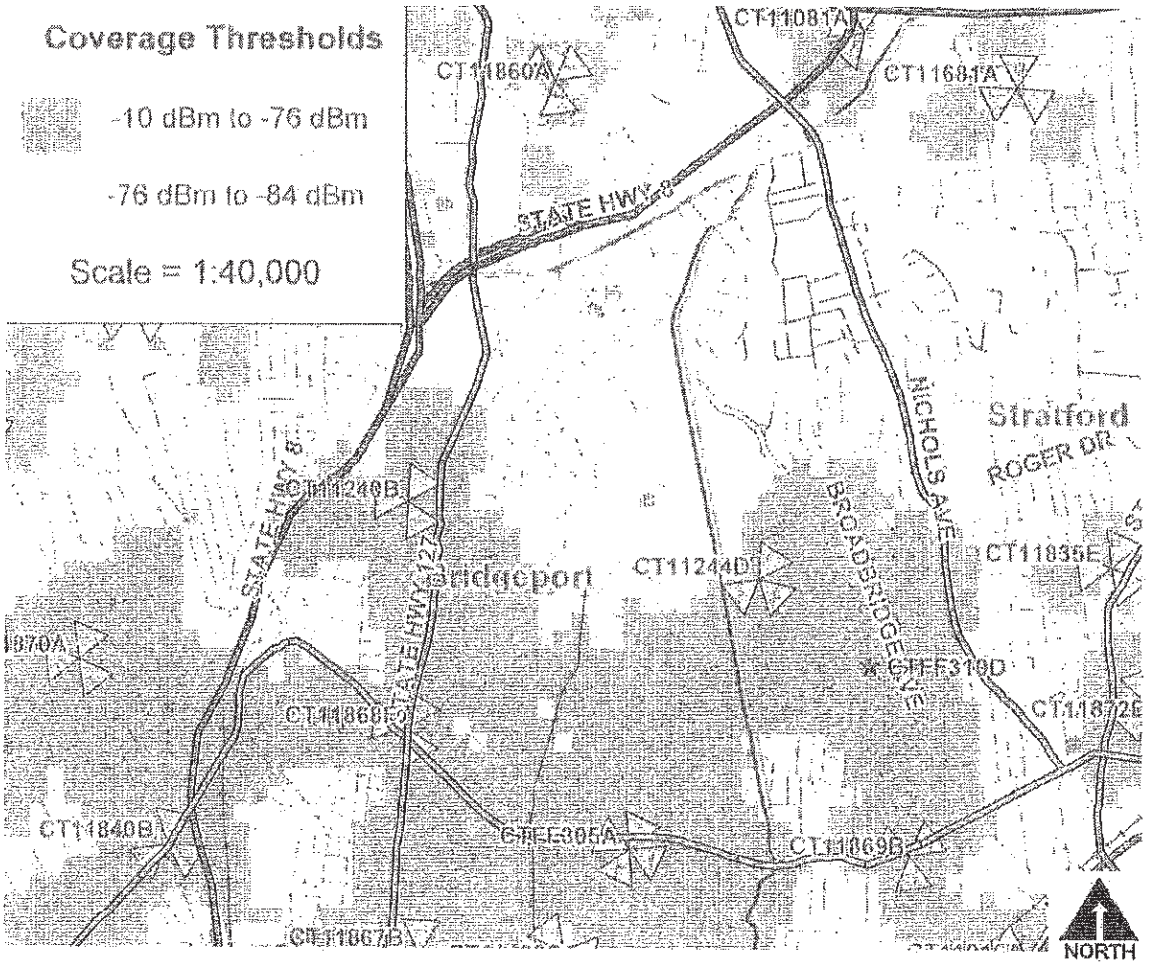


Figure 9: T-Mobile wireless coverage with antennas at 87 and 77 feet agl.
(T-Mobile 1, Q. 11)

DOCKET NO. 385 – T-Mobile Northeast LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and management of a telecommunications facility located at 23 Stonybrook Road, Stratford, Connecticut.	}	Connecticut Siting Council

February 25, 2010

Opinion

On September 2, 2009, T-Mobile Northeast LLC (T-Mobile) applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance and management of a wireless telecommunications facility located at 23 Stonybrook Road in Stratford, Connecticut. The proposed facility would provide wireless service for T-Mobile to residential areas in the area of Broadbridge Avenue, Franklin Avenue, and Route 108 north of Route 1 in Stratford.

T-Mobile currently has no reliable, continuous in-building or in-vehicle coverage in the residentially developed Broadbridge Avenue-Route 108 area. The proposed site would provide 1.9 square miles of new, in-vehicle coverage to the proposed service area, extending well east of Route 108. In-building coverage would be more limited, with only portions of coverage extending east of Route 108. The proposed site would off-load some call traffic from adjacent T-Mobile facilities, thus enhancing in-building service to areas currently served by these facilities. An examination of coverage models indicates a lower tower height would diminish radio frequency signal strength around the periphery of the coverage footprint, substantially reducing in-building coverage in residential areas.

Based on existing coverage gaps in T-Mobile's network, the Council finds a need for a new facility. The site search area is heavily developed and predominately residential. Few commercial locations of sufficient size exist to accommodate a facility. Buildings in the area are of short height, precluding effective rooftop mounts. A town park exists immediately south of the proposed site but the town is not interested in leasing space for a tower. There are no other large parcels of land in the search area that would be suitable for a telecommunications facility and no structures exist that would be able to meet coverage objectives to the area.

T-Mobile proposes to construct a 100-foot monopole with interior flush-mounted antennas (unipole) and an associated compound on a 0.73-acre parcel developed with a small commercial shopping plaza. The plaza is located at the corner of Stonybrook Road and Broadbridge Avenue. The tower site is located to the rear of the plaza, in an open paved parking area used for the storage of trash bins. A residential neighborhood surrounds the site with the exception of a few commercial uses on Broadbridge Avenue and the town park to the south.

The proposed 100-foot unipole would feature interior, flush-mounted antennas and would be painted white. T-Mobile would install three panel antennas at the 97-foot and 87-foot levels of the tower. One additional level of antennas would be available at the 77-foot height. Clearwire, a telecommunications provider operating in Connecticut, has expressed interest at this height. Clearwire typically uses flat panel antennas and small dish antennas in their installations and could be limited by an interior flush-mount design.

The Council will order T-Mobile to install a monopole 100 feet in height with exterior flush-mounted antennas to allow for some antenna mounting flexibility for Clearwire, or another telecommunications provider, that otherwise would be encumbered by the interior antenna design.

The proposed 26-foot by 50-foot equipment compound is oriented in a north-south direction 12 feet from the west property line (Miranda property). The tower would be 82 feet from the Miranda residence and 120 feet from the Torres residence at 65 Stonybrook Road. The Council will order T-Mobile to re-locate the compound and tower in an east-west configuration to increase the tower setback from these residences by approximately 50 feet.

Development of the site would require the trimming of several trees along the south property line. The site is not within any known habitat of federally threatened or endangered species or State endangered, threatened or special concern species. Development of the site would not affect any wetlands or watercourses or any archaeological or historic resources. Proper erosion and sedimentation control measures would be established during construction to protect storm water drainage systems and nearby Bruce Brook.

Although the tower is adjacent to residential areas, the tower is set back from residences to the greatest extent possible. There are 263 residential units (single family, multi-family) within 1,000 feet of the site. Mature wooded vegetation is located throughout the neighborhood, providing visual screening of the tower, especially in leaf-on conditions. Approximately 51 residences within a quarter-mile of the site would have year-round views of portions of the tower. Open views of the tower and compound would be possible from both the Miranda and Torres residences and from 56 Stonybrook Drive, across the street from the plaza entrance. The Council will order T-Mobile to enclose the compound with architecturally-treated fencing and install evergreen plantings along the west property line to provide visual screening for the Miranda and Torres residences. Furthermore, the trash bins would be re-located behind the plaza building, out of view from Stonybrook Road and away from the Miranda property

According to a methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997), the combined radio frequency power density levels of T-Mobile's antennas proposed to be installed on the tower have been calculated to amount to 14.3% of the FCC's Maximum Permissible Exposure, as measured at the base of the tower. This percentage is well below federal and state standards established for the frequencies used by wireless companies. 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. If federal or state 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.

Based on the record in this proceeding, the Council finds that the effects associated with the construction, management, and maintenance of a telecommunications facility at the proposed site, 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 for the construction, maintenance, and management of a 100-foot telecommunications facility 23 Stonybrook Road in Stratford, Connecticut. The Council rejects the proposed unipole design and will order a monopole 100 feet in height and exterior flush mounts for all panel antennas. Additionally, the Council will order that the compound be re-located in an east-west configuration and that the tower is located maximum feasible distance from the west property line.

DOCKET NO. 385 – T-Mobile Northeast LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and management of a telecommunications facility located at 23 Stonybrook Road, Stratford, Connecticut.	}	Connecticut Siting Council
		February 25, 2010

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and management 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 T-Mobile Northeast LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 23 Stonybrook Road, Stratford, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of T-Mobile Northeast LLC and other entities, both public and private, but such tower shall not exceed a height of 100 feet above ground level. Panel antennas shall be installed in an exterior, flush mount configuration and such panel antennas shall not exceed a height of 100 feet above ground level.

2. The tower compound shall be oriented in an east-west configuration along the south property line. The tower shall be located to the maximum feasible distance from the west property line.

3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Stratford for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping;
    b) 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.
    c) details for the installation of architecturally-treated fencing around the compound and the installation of evergreen plantings along the west property boundary, where necessary to provide visual screening to the adjacent residences.

4. The Certificate Holder shall, prior to the commencement of operation, 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.

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

6. 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.

7. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Stratford public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

8. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services 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.

9. At least one wireless telecommunications carrier shall install their equipment and shall become operational not later than 120 days after the tower is erected. 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.

10. Any request for extension of the time period referred to in Condition 8 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Stratford. Any proposed modifications to this Decision and Order shall likewise be so served.

10. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

11. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

12. 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.

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

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
T-Mobile Northeast LLC	Julie D. Kohler, Esq. Monte E. Frank, Esq. Jesse A. Langer, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604

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. 385** – T-Mobile Northeast, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and management of a telecommunications facility located at 23 Stonybrook Road, Stratford, Connecticut, and voted as follows to approve the proposed telecommunications facility:

Council Members	Vote Cast
Daniel F. Caruso, Chairman	Yes
Colin C. Tait, Vice Chairman	Yes
Commissioner Kevin M. DelGobbo Designee: Wayne V. Estey	Yes
Commissioner Amey Marrella Designee: Brian Golembiewski	Yes
Philip T. Ashton	Absent
Daniel P. Lynch, Jr.	Yes
James J. Murphy, Jr.	Yes
Dr. Barbara Currier Bell	Yes
Edward S. Wilensky	Yes

Dated at New Britain, Connecticut, February 25, 2010.

G:\DOCKETS\385\385CERTIFIC.DOC

ATTACHMENT B

WIRELESS COMMUNICATIONS FACILITY

CTSR2381

STRATFORD KASPER CIRCLE

23 STONYBROOK ROAD

STRATFORD, CT 06614

PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK GENERALLY INCLUDES THE INSTALLATION OF A 11'-5"x16'-0" PREFABRICATED WIRELESS EQUIPMENT SHELTER AND A DIESEL FUELED BACKUP POWER GENERATOR ON CONCRETE FOUNDATIONS WITHIN THE WIRELESS COMMUNICATIONS LEASE AREA.
2. A TOTAL OF SIX (6) DIRECTIONAL PANEL ANTENNAS ARE TO BE MOUNTED TO A 20' TALL TOWER EXTENSION ON A 100' TALL MONOPOLE TOWER AT A CENTERLINE ELEVATIONS OF 117' AND 109' ABOVE GRADE.
3. ELECTRIC UTILITY SHALL BE ROUTED UNDERGROUND TO THE AT&T EQUIPMENT SHELTER FROM AN EXISTING UTILITY BACKBOARD LOCATED ADJACENT TO THE FENCED COMPOUND. TELCO UTILITY TO BE ROUTED TO THE AT&T EQUIPMENT SHELTER FROM AN EXISTING TELCO CABINET LOCATED ADJACENT TO THE EXISTING FENCED COMPOUND.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT

TO: 23 STONYBROOK ROAD, STRATFORD, CT 06641

1. HEAD NORTHEAST ON ENTERPRISE DRIVE TOWARD CAPITAL BLVD	0.3 MI
2. TURN LEFT ONTO CAPITOL BLVD	0.3 MI
3. TURN LEFT ONTO WEST ST	0.3 MI
4. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	0.3 MI
5. MERGE ONTO I-91 S	9.3 MI
6. TAKE EXIT 17 FOR CT-15 S/W CROSS PKWY	0.4 MI
7. MERGE ONTO CT-15 S	29.8 MI
8. TAKE EXIT 52 FOR STATE ROUTE 108 S/STATE ROUTE 8 S TOWARD BRIDGEPORT	0.8 MI
9. FOLLOW SIGNS FOR CT-108/STRATFORD	0.2 MI
10. TURN LEFT ONTO CT-108 W/NICHOLS AVE	1.1 MI
11. TURN RIGHT ONTO SECOND HILL LANE	0.6 MI
12. TURN LEFT ONTO BROADBRIDGE AVE	0.9 MI
13. TURN RIGHT ONTO STONYBROOK RD AND THE DESTINATION WILL BE ON THE LEFT	95 FT

USGS TOPO MAP

SCALE: 1" = 1000'

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2381
AT&T SITE NAME:	STRATFORD KASPER CIRCLE
SITE ADDRESS:	23 STONYBROOK ROAD STRATFORD, CT 06614
PROPERTY OWNER:	STONYBROOK MANAGEMENT LLC 251 EAST MAIN ST STRATFORD, CT 06614
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-12'-11.80"N LONGITUDE: 73°-06'-55.05"W GROUND ELEVATION: ±90'AMSL (REFERENCED FROM CSC DATABASE)

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	5
C-1	SITE LOCATION PLAN & AERIAL PHOTO	5
C-1A	ABUTTERS MAP	5
C-2	COMPOUND PLAN: EXISTING AND PROPOSED CONDITIONS	5
C-3	ELEVATION AND ANTENNA MOUNTING DETAILS	5
C-4	SITE DETAILS AND NOTES	5
S-1	FOUNDATION PLAN AND DETAILS	5
S-2	STRUCTURAL SPECIFICATIONS	5
E-1	UTILITY PLAN AND RISER DIAGRAM	5
E-2	GROUNDING SCHEMATIC AND NOTES	5
E-3	GROUNDING PLAN AND NOTES	5
E-4	DETAILS	5
E-5	DETAILS	5
E-6	DETAILS	5
E-7	ELECTRICAL DETAILS	5
E-8	ELECTRICAL SPECIFICATIONS	5

REV.	DATE	DRAWN BY	Chk'D BY	DESCRIPTION
5	01/08/14	MAR	DMD	REVISED CONSTRUCTION
4	03/13/14	MAR	DMD	CONSTRUCTION - REVISED FOR UPDATED RFDS
3	12/06/13	MAR	DMD	CONSTRUCTION
2	11/22/13	MAR	DMD	CONSTRUCTION - CLIENT REVIEW
1	10/30/13	MAR	DMD	CONSTRUCTION - CLIENT REVIEW
0	10/09/13	MAR	DMD	CONSTRUCTION - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

STRATFORD KASPER CRICLE
SITE NUMBER: CTSR2381
23 STONYBROOK ROAD
STRATFORD, CT 06614

DATE: 10/09/13
SCALE: AS NOTED
JOB NO. 13217.000

TITLE SHEET

T-1

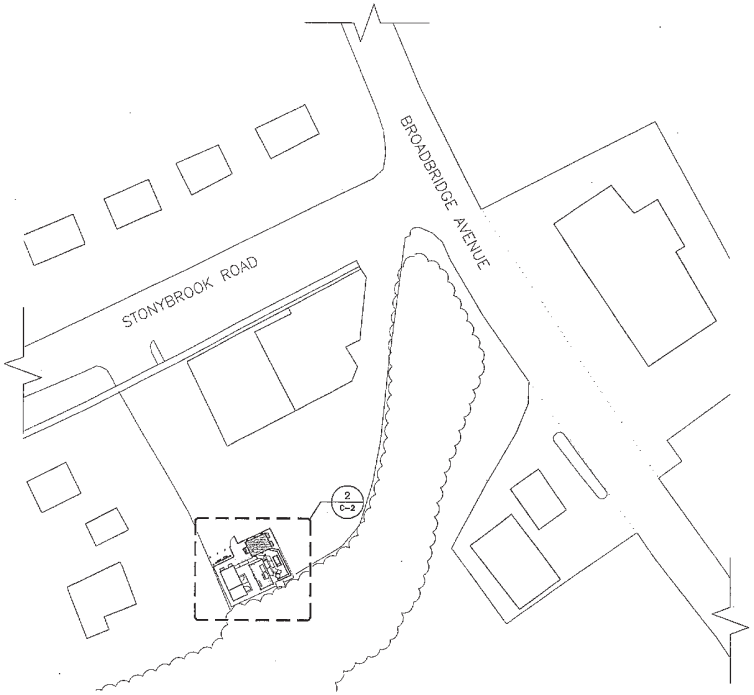
2 C-1 AERIAL PHOTO
SCALE: 1" = 200'

GRAPHIC SCALE
(IN FEET)
1 inch = 200 ft.

APPROXIMATE NORTH

MISCELLANEOUS SITE INFORMATION		
DISTANCE TO BRUCE BROOK STREAM*	=	50'±
DISTANCE TO NEAREST OFF SITE RESIDENCE*	=	85'±
NUMBER OF RESIDENTIAL STRUCTURES WITHIN 1000' OF TOWER	=	265±
TOTAL NUMBER OF TREES TO BE REMOVED	=	0
DISTANCE TO NEAREST PROPERTY LINE*	=	16'±
DISTANCE TO NEARBY SCHOOLS/DAYCARE CENTERS*		
• ABC CHILD CARE CENTER	=	2,300'±
• HONEY BEAR LEARNING CENTER	=	2,300'±
• NICHOLS SCHOOL	=	2,500'±
• FRANKLIN ELEMENTARY SCHOOL	=	3,700'±
• DAVID WOOSTER MIDDLE SCHOOL	=	3,800'±
• MULTICULTURAL MAGNET SCHOOL	=	3,800'±

* DISTANCES TAKEN FROM CENTER OF TOWER



1 C-1 SITE LOCATION PLAN
SCALE: 1" = 40'

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.

APPROXIMATE NORTH

REV.	DATE	DRAWN BY	CH'CD BY	DESCRIPTION
5	03/26/14	HAR	DMD	REVISED CONSTRUCTION
4	02/03/14	HAR	DMD	CONSTRUCTION – REVISED FOR UPDATED RFDS
3	12/09/13	HAR	DMD	CONSTRUCTION
2	11/22/13	HAR	DMD	CONSTRUCTION – CLIENT REVIEW
1	10/25/13	HAR	DMD	CONSTRUCTION – CLIENT REVIEW
0	10/07/13	HAR	DMD	CONSTRUCTION – CLIENT REVIEW

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STRATFORD KASPER CRICLE
SITE NUMBER: CTSR2381
23 STONYBROOK ROAD
STRATFORD, CT 06614

DATE: 10/08/13
SCALE: AS NOTED
JOB NO. 13217.000

SITE LOCATION PLAN & AERIAL PHOTO

C-1

Sheet No. 2 of 16

1 / C-1A **ABUTTERS MAP**
SCALE: 1" = 40'

APPROXIMATE NORTH

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

SUBJECT PROPERTY:

MAP 30 11 / BLOCK 10 / LOT 13
N/F STONYBROOK MANAGEMENT LLC
23 STONYBROOK RD, STRATFORD, CT 06614
(A.K.A 0 RUTH ST, STRATFORD)
MAILING ADDRESS:
251 EAST MAIN STREET
STRATFORD, CT 06614

STONYBROOK ROAD:

MAP 30 11 / BLOCK 10 / LOT 15
N/F STONYBROOK MANAGEMENT LLC
23 STONYBROOK RD, STRATFORD, CT 06614
MAILING ADDRESS:
251 EAST MAIN STREET
STRATFORD, CT 06614

MAP 30 11 / BLOCK 10 / LOT 14
N/F YOHAIRA DIFRE
55 STONYBROOK RD, STRATFORD, CT 06614

MAP 30 11 / BLOCK 01 / LOT 04
N/F ELIZABETH NELSON & GARY L TAKACKS II
38 STONYBROOK RD, STRATFORD, CT 06615

MAP 30 11 / BLOCK 01 / LOT 05
N/F ROBIN M. LALONDE
46 STONYBROOK RD, STRATFORD, CT 06615

MAP 30 11 / BLOCK 01 / LOT 06
N/F JUNE HINGLE
34 STONYBROOK RD, STRATFORD, CT 06615

MAP 30 11 / BLOCK 10 / LOT 17
N/F DAVID TORRES & RACHEL TORRES
65 STONYBROOK RD, STRATFORD, CT 06615

MAP 30 11 / BLOCK 01 / LOT 07
N/F LEOMAR MARTINEZ
22 STONYBROOK RD, STRATFORD, CT 06615

MAP 30 11 / BLOCK 01 / LOT 08
N/F RGL FAMILY REALTY GROUP, LLC
8 STONYBROOK RD, STRATFORD, CT
MAILING ADDRESS:
190 SECOND HILL LANE
STRATFORD, CT 06614

RUTH STREET:

MAP 30 11 / BLOCK 10 / LOT 12
N/F STONYBROOK MANAGEMENT LLC
0 RUTH ST, STRATFORD, CT
MAILING ADDRESS:
251 EAST MAIN STREET
STRATFORD, CT 06614

MAP 30 11 / BLOCK 10 / LOT 11
N/F TOWN OF STRATFORD
0 RUTH ST, STRATFORD, CT
MAILING ADDRESS:
2725 MAIN ST
STRATFORD, CT 06614

MARCROFT STREET:

MAP 30 11 / BLOCK 02 / LOT 01
N/F RICHARD RAPICE & KIM MARIE RAPICE
294 MARCROFT ST, STRATFORD, CT 06615

BROADBRIDGE AVENUE:

MAP 30 11 / BLOCK 02 / LOT 09
N/F RONALD CASCONE
2380 BROADBRIDGE AVENUE, STRATFORD, CT 06615

MAP 30 11 / BLOCK 10 / LOT 10
N/F 2275 BROADBRIDGE AVENUE ASSOCIATES, LLC
2275 BROADBRIDGE AVENUE, STRATFORD, CT
MAILING ADDRESS:
25 NUTHATCH RD
TRUMBULL, CT 06611

MAP 30 11 / BLOCK 07 / LOT 03
N/F BROADBRIDGE ASSOCIATES, INC.
2332 BROADBRIDGE AVENUE, STRATFORD, CT 06614

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	03/26/14	HMR	DMD	REVISED CONSTRUCTION
4	02/10/14	HMR	DMD	CONSTRUCTION – REVISED FOR UPDATED RFDS
3	12/09/13	HMR	DMD	CONSTRUCTION
2	11/22/13	HMR	DMD	CONSTRUCTION – CLIENT REVIEW
1	10/24/13	HMR	DMD	CONSTRUCTION – CLIENT REVIEW
0	10/09/13	HMR	DMD	CONSTRUCTION – CLIENT REVIEW

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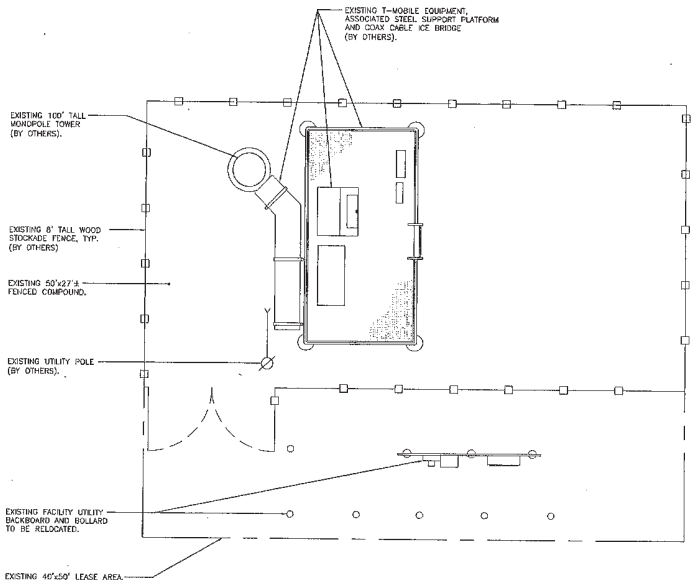
STRATFORD, CT 06614

DATE: 10/08/13
SCALE: AS NOTED
JOB NO. 13217.000

ABUTTERS MAP

C-1A

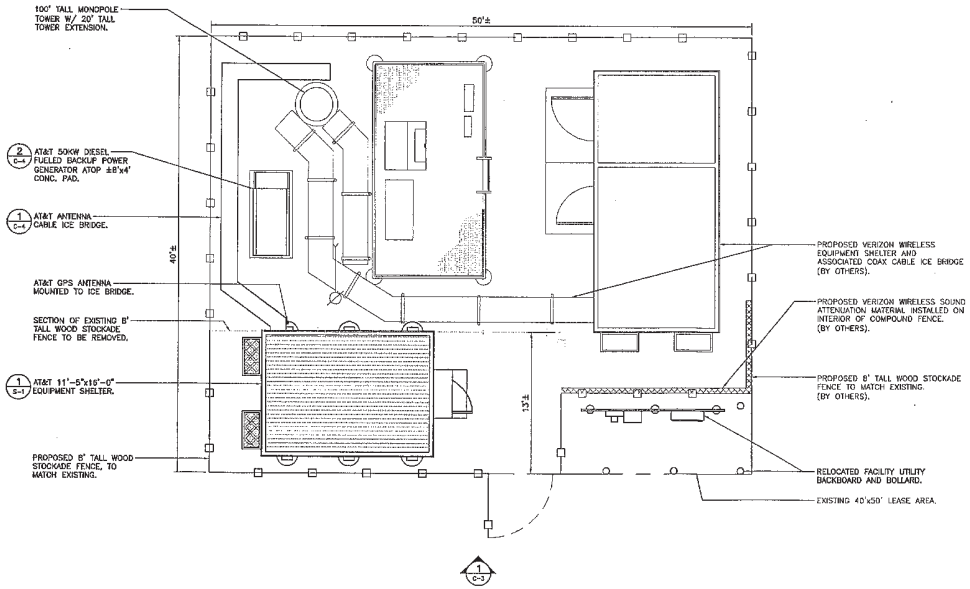
Sheet No. 3 of 16



1 C-2 COMPOUND PLAN - EXISTING CONDITIONS
SCALE: 1" = 5'

APPROXIMATE NORTH

GRAPHIC SCALE
(IN FEET)
1 inch = 5 ft.



2 C-2 COMPOUND PLAN - PROPOSED CONDITIONS
SCALE: 1" = 5'

APPROXIMATE NORTH

GRAPHIC SCALE
(IN FEET)
1 inch = 5 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	03/28/14	MMR	DMD	REVISED CONSTRUCTION
4	03/13/14	MMR	DMD	CONSTRUCTION - REVISED FOR UPDATED RFDS
3	12/09/13	MMR	DMD	CONSTRUCTION
2	11/22/13	MMR	DMD	CONSTRUCTION - CLIENT REVIEW
1	10/25/13	MMR	DMD	CONSTRUCTION - CLIENT REVIEW
0	10/09/13	MMR	DMD	CONSTRUCTION - CLIENT REVIEW

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SITE NUMBER: CT5R2381
23 STONYBROOK ROAD
STRATFORD, CT 06614

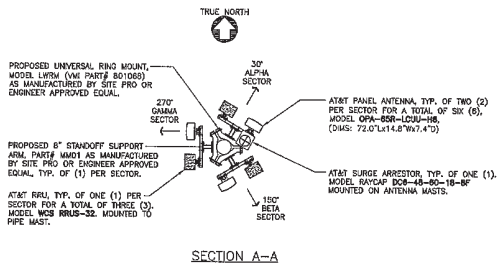
DATE 10/08/13
SCALE: AS NOTED
JOB NO. 13217.000

COMPOUND PLAN: EXISTING AND PROPOSED CONDITIONS

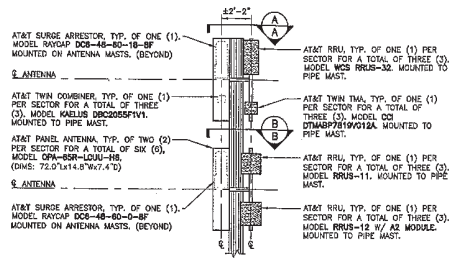
C-2

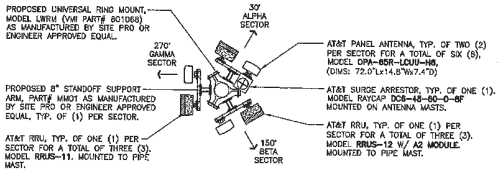
Sheet No. 4 of 10

NOTES:
1. THE AT&T PANEL ANTENNA INSTALLATION TO CONSIST OF (3) SECTORS OF (2) ANTENNAS EACH FOR A TOTAL OF (6) ANTENNAS. ADDITIONALLY, (12) RRUs AND (2) SQUID SURGE ARRESTORS WILL BE INSTALLED. REFER TO FINAL RFDS PROVIDED BY AT&T FOR ALL APPURTENANCES AND ADDITIONAL INFORMATION.



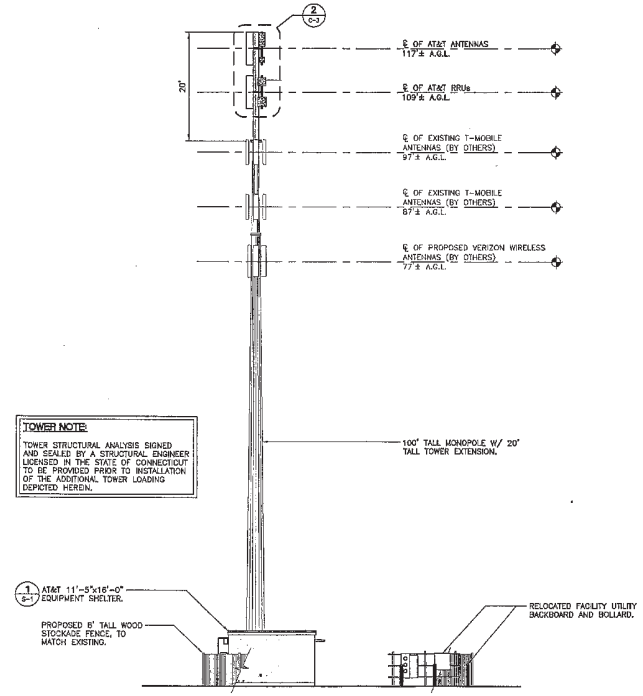
SECTION A-A





SECTION B-B

2 / C-3 ANTENNA MOUNTING CONFIGURATION DETAILS
NOT TO SCALE



TOWER NOTE:
TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.

1 / C-3 NORTH ELEVATION
SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	03/26/14	HMR	DMD	REVISED CONSTRUCTION
4	03/13/14	HMR	DMD	CONSTRUCTION - REVISED FOR UPDATED RFDS
3	12/09/13	HMR	DMD	CONSTRUCTION
2	11/25/13	HMR	DMD	CONSTRUCTION - CLIENT REVIEW
1	10/24/13	HMR	DMD	CONSTRUCTION - CLIENT REVIEW
0	10/09/13	HMR	DMD	CONSTRUCTION - CLIENT REVIEW

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STRATFORD, CT 06614

DATE: 10/09/13
SCALE: AS NOTED
JOB NO. 13217.000

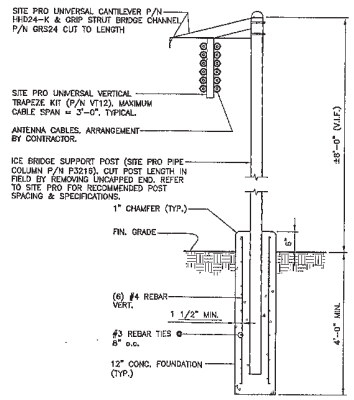
ELEVATION AND ANTENNA MOUNTING DETAILS

C-3

Sheet No. 5 of 16

RF EQUIPMENT TABLE

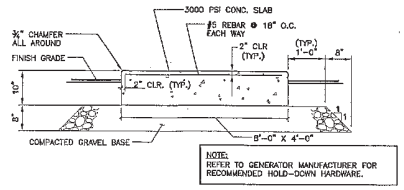
SECTOR	PANEL ANTENNAS					FILTER	FROM REMOTE RADIO UNIT				REMOTE RADIO UNIT		FROM TMA			TMA		FROM SURGE SUPPRESSOR				SURGE SUPPRESSOR	FROM SHELTER			
	AZIMUTH	QTY.	MAKE & MODEL	RAD CENTER (AGL)	DOWNTILT	QTY.	JUMPER QTY.	JUMPER SIZE	COAX LENGTH	RET QTY.	QTY.	MAKE & MODEL	COAX QTY.	COAX SIZE	COAX LENGTH	QTY.	MAKE & MODEL	DC QTY.	DC SIZE	FIBER QTY.	DC & FIBER LENGTH	QUANTITY	7/8" COAX QTY.	DC BUNDLE QTY.	FIBER TRUNK QTY.	FIBER & DC LENGTH
ALPHA	30°	1	CCI OPA-65R-LCUU-H6	117.0'	0°M 0°/0°E	0	4	1/2" Ø	15' ±	1	1	ERICSSON RRUS-32	4	1/2"ø	15'±	1	CCI DTMABP7819VG12A	3	6MM² PAIR	3	15' ±	2	4	3	1	135'±
		1	CCI OPA-65R-LCUU-H6	109.0'	0°M 0°/0°E		6	1/2" Ø	15' ±		1	ERICSSON RRUS-12	–	–	–	–	–									
											1	ERICSSON RRUS-11														
											1	ERICSSON RRUS-A2														
BETA	150°	1	CCI OPA-65R-LCUU-H6	117.0'	0°M 0°/0°E	0	4	1/2" Ø	15' ±	1	1	ERICSSON RRUS-32	4	1/2"ø	15'±	1	CCI DTMABP7819VG12A	3	6MM² PAIR	3	15' ±		4			135'±
		1	CCI OPA-65R-LCUU-H6	109.0'	0°M 0°/0°E		6	1/2" Ø	15' ±		1	ERICSSON RRUS-12	–	–	–	–	–									
											1	ERICSSON RRUS-11														
											1	ERICSSON RRUS-A2														
GAMMA	270°	1	CCI OPA-65R-LCUU-H6	117.0'	0°M 0°/0°E	0	4	1/2" Ø	15' ±	1	1	ERICSSON RRUS-32	4	1/2"ø	15'±	1	CCI DTMABP7819VG12A	3	6MM² PAIR	3	15' ±		4			135'±
		1	CCI OPA-65R-LCUU-H6	109.0'	0°M 0°/0°E		6	1/2" Ø	15' ±		1	ERICSSON RRUS-12	–	–	–	–	–									
											1	ERICSSON RRUS-11														
											1	ERICSSON RRUS-A2														



1 / C-4 ICE BRIDGE DETAIL
NOT TO SCALE

SITE NOTES:

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. ALL RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSED, AT NO ADDITIONAL COST.
4. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TOWER AREAS.
5. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
6. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
7. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
8. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
9. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
10. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST THE PRE MANUFACTURED EQUIPMENT BUILDING SHOP DRAWINGS.
11. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.



NOTE:
REFER TO GENERATOR MANUFACTURER FOR RECOMMENDED HOLD-DOWN HARDWARE.

2 / C-4 GENERATOR PAD DETAIL
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	04/09/14	HWR	DMD	REVISED CONSTRUCTION
4	03/13/14	HWR	DMD	CONSTRUCTION – ISSUED FOR UPDATED RFDS
3	12/06/13	HWR	DMD	CONSTRUCTION
2	11/22/13	HWR	DMD	CONSTRUCTION – CLIENT REVIEW
1	10/25/13	HWR	DMD	CONSTRUCTION – CLIENT REVIEW
0	10/09/13	HWR	DMD	CONSTRUCTION – CLIENT REVIEW

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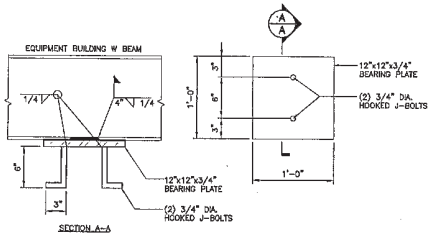
SCALE: AS NOTED
JOB NO. 13217.000

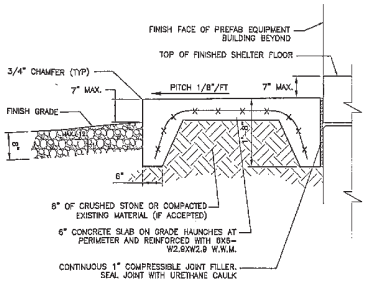
SITE DETAILS AND NOTES

C-4

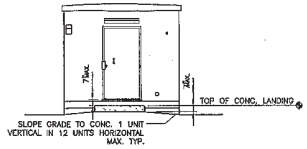
Sheet No. 5 of 16



5 / S-1 BEARING PLATE DETAIL
SCALE: 1 1/2"=1'-0"

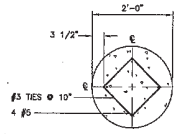


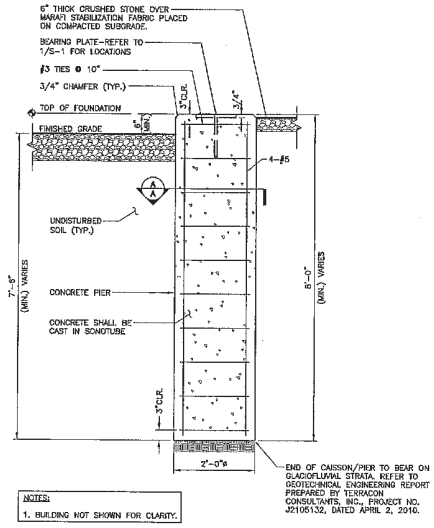
4 / S-1 ENTRY STOOP DETAIL - SECTION
SCALE: 3/16"=1'-0"



3 / S-1 ENTRY STOOP DETAIL - ELEVATION
SCALE: 3/16"=1'-0"

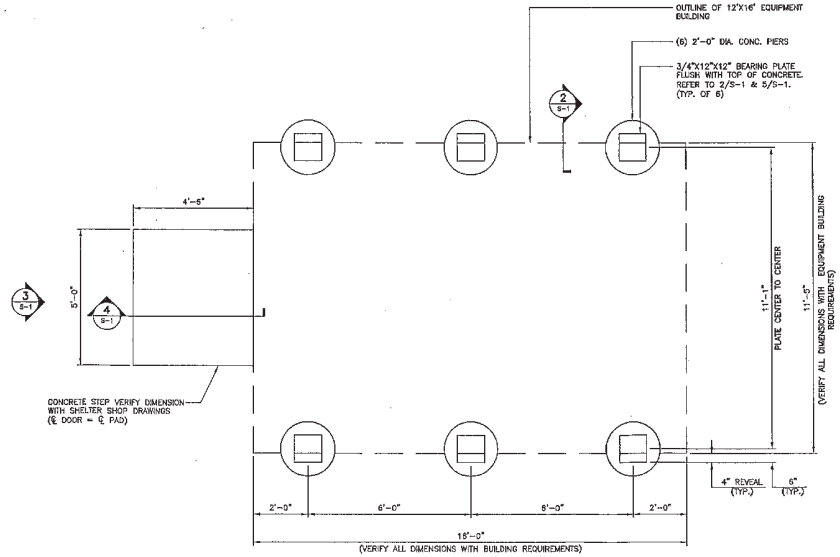
EQUIPMENT SHELTER BY CELLXION. VERIFY ALL SHELTER DIMENSIONS, EQUIPMENT DIMENSIONS, EQUIPMENT LOCATIONS AND UTILITY OPENINGS WITH BUILDING SHOP DRAWINGS PRIOR TO COMMENCEMENT OF WORK.





NOTES:
1. BUILDING NOT SHOWN FOR CLARITY.

2 / S-1 CONCRETE PIER - SECTION
SCALE: 3/4"=1'-0"



1 / S-1 FOUNDATION PLAN
SCALE: 1/2"=1'-0"

TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	01/06/14	MAB	DAD	REVISED CONSTRUCTION
4	02/12/14	MAB	DAD	CONSTRUCTION - REVISED FOR UPDATED TR56
3	12/06/13	MAB	DAD	CONSTRUCTION
2	11/25/13	MAB	DAD	CONSTRUCTION - CLIENT REVIEW
1	10/24/13	MAB	DAD	CONSTRUCTION - CLIENT REVIEW
0	10/09/13	MAB	DAD	CONSTRUCTION - CLIENT REVIEW

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SITE NUMBER: CTSR2381
23 STONYBROOK ROAD
STRATFORD, CT 06614

DATE: 10/08/13
SCALE: AS NOTED
JOB NO. 13217.000

FOUNDATION PLAN AND DETAILS

S-1

Sheet No. 7 of 18

SITE AND FOUNDATION SPECIFICATIONS

DESIGN BASIS

GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT STATE BUILDING CODE AND 2009 AMENDMENTS.

1. DESIGN CRITERIA:

   - WIND LOAD (ANTENNA MOUNTS):
     TIA/EIA-222-F-1996
     BASIC WIND SPEED (V) = 85 MPH (FASTEST MILE)

     2009 CT BUILDING CODE AMENDMENT APPENDIX K
     BASIC WIND SPEED (V) = 110 MPH (3-SECOND GUST)
     EQUIVALENT TO (V) = 90 MPH (FASTEST MILE)
     APPENDIX K WIND SPEED CONTROLS

   - BASIC WIND SPEED (OTHER STRUCTURE):
     115 MPH (3 SECOND GUST) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-02) PER 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENT.

   - SEISMIC LOAD (DOES NOT CONTROL):
     PER ASCE 7-02 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

GENERAL NOTES

1. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
2. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST THE PRE MANUFACTURED EQUIPMENT BUILDING SHOP DRAWINGS.
3. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
4. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. ALL RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSED, AT NO ADDITIONAL COST.
4. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TOWER AREAS.
5. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
6. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
7. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
8. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
9. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
10. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST THE PRE MANUFACTURED EQUIPMENT BUILDING SHOP DRAWINGS.

EARTHWORK NOTES

1. COMPACTED GRAVEL FILL SHALL BE FURNISHED AND PLACED AS A FOUNDATION FOR STRUCTURES, WHERE SHOWN ON THE CONTRACT DRAWINGS OR DIRECTED BY THE ENGINEER.
2. CRUSHED STONE FILL SHALL BE PLACED IN 12" MAX. LIFTS AND CONSOLIDATED USING A HAND OPERATED VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 2 PASSES OF COMPACTOR PER LIFT.
3. COMPACTED GRAVEL FILL TO BE WELL GRADED BANK RUN GRAVEL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1 ½"	100
No. 4	40–70
No. 100	5–20
No. 200	4–8

4. CRUSHED STONE TO BE UNIFORMLY GRADED, CLEAN, HARD PROCESS AGGREGATE MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1"	100
¾"	90–100
½"	0–15
⅜"	0–5

5. SELECT BACKFILL FOR FOUNDATION WALLS SHALL BE FREE OF ORGANIC MATERIAL, TOPSOIL, DEBRIS AND BOULDERS LARGER THAN 6".
6. GRAVEL AND GRANULAR FILL SHALL BE INSTALLED IN 8" MAX. LIFTS. COMPACTED TO 95% MIN. AT MAX. DRY DENSITY.
7. NON WOVEN GEOTEXTILE FOR SEPARATION PURPOSES SHALL BE MIRAFI 140N, OR ENGINEER APPROVED EQUAL.

FOUNDATION CONSTRUCTION NOTES

1. ALL FOOTINGS SHALL BE PLACED ON SUITABLE, COMPACTED SOIL HAVING ADEQUATE BEARING CAPACITY AND FREE OF ORGANIC CONTENT, CLAY, OR OTHER UNSUITABLE MATERIAL. ADDITIONAL EXCAVATION MAY BE REQUIRED BELOW FOOTING ELEVATIONS INDICATED IF UNSUITABLE MATERIAL IS ENCOUNTERED.
2. SUBGRADE PREPARATION: IF UNSUITABLE SOIL IS ENCOUNTERED, REMOVE ALL UNSUITABLE MATERIALS FROM BELOW PROPOSED STRUCTURE FOUNDATIONS AND COMPACT EXPOSED SOIL SURFACES. PLACE AND COMPACT APPROVED GRAVEL FILL. PLACEMENT OF ALL COMPACTED FILL MUST BE UNDER SUPERVISION OF AN APPROVED TESTING LABORATORY. FILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 10" BEFORE COMPACTION. DETERMINE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557-70 AND MAKE ONE (1) FIELD DENSITY TEST IN ACCORDANCE WITH ASTM D2167-66 FOR EACH 50 CUBIC YARDS OF COMPACTED FILL. BUT NOT LESS THAN ONE (1) PER LAYER, TO INSURE COMPACTION TO 95% OF MAX. DRY DENSITY.
3. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE KEPT REASONABLY DRY AND PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.
4. WHERE GROUNDWATER IS ENCOUNTERED, DEWATERING SHALL BE ACCOMPLISHED CONTINUOUSLY AND COMPLETELY DURING FOUNDATION CONSTRUCTION. PROVIDE CRUSHED STONE AS REQUIRED TO STABILIZE FOOTING SUBGRADE.
5. ALL FOOTINGS ARE TO REST ON FIRM SOIL, REGARDLESS OF ELEVATIONS SHOWN ON THE DRAWINGS, BUT IN NO CASE MAY FOOTING ELEVATIONS BE HIGHER THAN INDICATED ON THE FOUNDATION PLAN, UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.
6. FOUNDATION WATERPROOFING AND DAMPPROOFING SHALL COMPLY WITH BUILDING CODE REQUIREMENTS UNLESS A MORE SUBSTANTIAL SYSTEM IS INDICATED OR SPECIFIED.

CONCRETE CONSTRUCTION NOTES

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE FOLLOWING STANDARDS:

   ACI 211 – STANDARD PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL AND HEAVYWEIGHT CONCRETE.

   ACI 301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.

   ACI 302 – GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION

   ACI 304 – RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE.

   ACI 306.1 STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING

   ACI 318 – BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

2. CONCRETE SHALL DEVELOP COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

   SLABS ON GRADE 4,000 PSI
   ALL OTHER CONCRETE 3,000 PSI

   - PORTLAND CEMENT: ASTM C150, TYPE I, (540 LBS/CUBIC YARD)
   - AGGREGATE: ASTM C33, No. 67, TYPICAL
   - WATER: POTABLE WITH MAXIMUM WATER CEMENT RATIO OF .55
   - SLUMP: 3" TO 4"
   - ADMIXTURES: USE AIR ENTRAINING ADGENT CONFORMING TO ASTM C260 WITH 4 TO 6% TOTAL AIR. USE WATER REDUCING AGENT CONFORMING TO ASTM C494, TYPE A, IN ALL CONCRETE. CALCIUM CHLORIDE MAY NOT BE USED TO ACCELERATE THE CONCRETE SETTING TIME.

3. REINFORCING STEEL SHALL BE 60,000 PSI YIELD STRENGTH.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM– A-185.
5. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE LATEST ACI CODE AND LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
6. CONCRETE COVER OVER REINFORCING SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE SHOWN:

   BOTTOM OF FOOTINGS 3 INCHES

   SURFACES NOT EXPOSED TO EARTH OR WEATHER 1-1/2 INCHES

7. NO STEEL WIRE, METAL FORM TIES, OR ANY OTHER METAL SHALL REMAIN WITHIN THE REQUIRED COVER OF ANY CONCRETE SURFACE.
8. ALL REINFORCEMENT SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED. SPLICES SHALL BE WELL STAGGERED. ADDITIONAL BARS AND SPECIAL BENDING DETAILS ARE REQUIRED AT INTERSECTING WALLS AND AT JOINTS. SUCH DETAILS SHALL COMPLY WITH ACI 315 RECOMMENDATIONS UNLESS OTHERWISE SHOWN.
9. NO TACK WELDING OF REINFORCING WILL BE PERMITTED.
10. NO CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 1% CHLORIDE BY WEIGHT OF ADMIXTURE SHALL BE USED IN THE CONCRETE.
11. UNLESS OTHERWISE NOTED, ALL LAP SPLICES SHALL BE 48 BAR DIAMETERS.
12. SLAB ON GRADE FINISHES:

    EXTERIOR SLAB: NON-SLIP BROOM FINISH
    INTERIOR SLAB: STEEL TROWEL FINISH

13. INSPECTION AND TESTING OF CONCRETE WORK SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, PAID BY THE OWNER, AND APPROVED BY THE ENGINEER. THE INSPECTOR SHALL OBSERVE CONDITION OF SOILS AND FORMWORK BEFORE FOOTINGS ARE PLACED, SIZE, SPACING AND LOCATION OF REINFORCEMENT, AND PLACEMENT OF CONCRETE.
14. THE TESTING COMPANY SHALL ALSO OBTAIN A MINIMUM OF THREE (3) COMPRESSIVE STRENGTH TEST SPECIMENS FOR EACH CONCRETE MIX DESIGN. ONE SPECIMEN TESTED AT 7 DAYS, ONE AT 28 DAYS, AND ONE HELD IN RESERVE FOR FUTURE TESTING, IF NEEDED.
15. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	03/26/14	DMD	DMD	REVISED CONSTRUCTION
4	03/13/14	HMR	DMD	CONSTRUCTION – REVISED FOR UPDATED RFDS
3	12/06/13	HMR	DMD	CONSTRUCTION
2	11/26/13	RHS	DMD	CONSTRUCTION – CLIENT REVIEW
1	10/30/13	RHS	DMD	CONSTRUCTION – CLIENT REVIEW
0	10/09/13	RHS	DMD	CONSTRUCTION – CLIENT REVIEW

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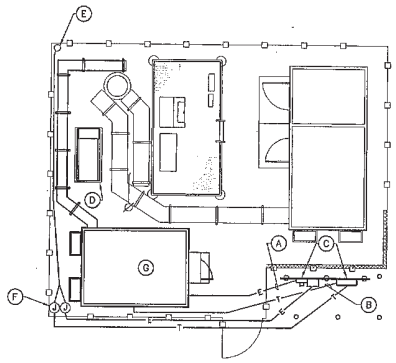
DATE: 10/08/13
SCALE: AS NOTED
JOB NO. 13217.000

STRUCTURAL SPECIFICATIONS

S-2

Sheet No. 8 of 16

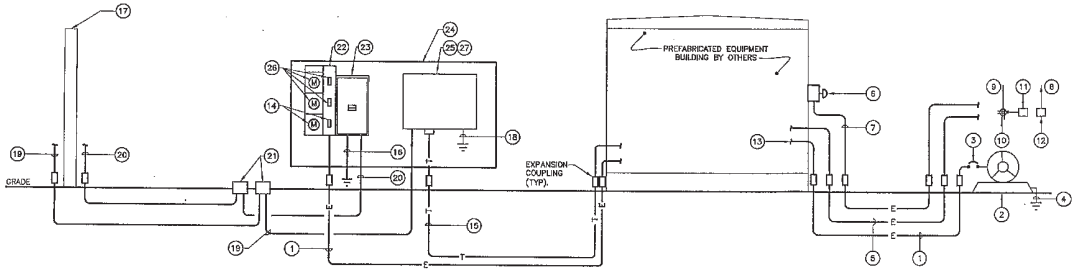
EQUIPMENT SHELTER BY OTHERS. VERIFY ALL SHELTER DIMENSIONS, EQUIPMENT DIMENSIONS, EQUIPMENT LOCATIONS AND UTILITY OPENINGS WITH BUILDING SHOP DRAWINGS PRIOR TO COMMENCEMENT OF WORK.



1 / E-1 COMPOUND UTILITY PLAN
SCALE: 1/8" = 1'-0"

APPROXIMATE NORTH

GRAPHIC SCALE
8 0 4 8 16 32
(IN FEET)
1 inch = 5 ft.



2 / E-1 ELECTRICAL POWER RISER DIAGRAM
NOT TO SCALE

GENERAL NOTES

1. REFER TO CIVIL DRAWINGS FOR ACTUAL LOCATIONS OF STRUCTURES ON SITE.
2. COORDINATION, LAYOUT AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL / TELECOMMUNICATIONS SERVICES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
3. THE EXACT BUILDING FOUNDATION SIZE AND BUILDING WALL PENETRATIONS FOR UTILITIES SHALL BE CONFIRMED WITH THE BUILDING SPECIFICATIONS AND PLANS PRIOR TO LAYOUT.
4. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
5. PROVIDE CADWELD CONNECTION STYLES: THROUGH (CABLE TO CABLE) TYPE "TA"
   (CABLE TO SURFACE) TYPE "LA" OR "VS" (PIPE)
   (CABLE TO ROD) TYPE "OT" OR "NC"
   (CABLE TO CABLE) TYPE "SS"
6. EXTEND UTILITY SERVICES TO UTILITY BACKBOARD IN OWNER'S EQUIPMENT SHELTER. COORDINATE WITH SHELTER SHOP DRAWINGS FOR LOCATION. COORDINATE WITH UTILITY COMPANIES FOR ALL SERVICES TO NEW EQUIPMENT SHELTER. ALL EQUIPMENT MUST BE UTILITY COMPANY APPROVED.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
— — — —	GROUND RING
—T———T—	UNDERGROUND COMMUNICATION CONDUIT
—E———E—	UNDERGROUND ELECTRICAL CONDUIT AS INDICATED
	GROUND BAR
—□—□—□—	PERIMETER CHAIN LINK FENCE
⊗	5/8" DIAMETER x 10'-0" COPPER GROUND ROD **OR** 24"x24" GROUND PLATE ABOVE MATT FOUNDATION.
⊠	5/8" DIAMETER x 10'-0" COPPER GROUND ROD WITH ACCESS.
■	EXOTHERMIC WELD TYPE "TA"
●	MECHANICAL CONNECTION

COMPOUND UTILITY PLAN NOTES

(A) CONDUIT AND CONDUCTORS FOR NEW ELECTRICAL SERVICE TO OWNERS EQUIPMENT SHELTER. UNDER FINISHED GRADE. EXTEND CONDUIT AND CONDUCTORS THROUGH EQUIPMENT SHELTER TO MDP/MTS LOCATED WITHIN EQUIPMENT SHELTER. COORDINATE LOCATION WITH SHELTER MANUFACTURER.

(B) CONDUIT AND CONDUCTORS FROM TELCO SERVICE BOX TO EQUIPMENT SHELTER. FINAL CONDUIT ROUTING TO BE DETERMINED IN FIELD BY CONTRACTOR AT TIME OF CONSTRUCTION. EXTEND CONDUIT THROUGH EQUIPMENT SHELTER TO TELCO BOARD. COORDINATE STUB UP IN HOFFMAN BOX LOCATION WITH SHELTER MANUFACTURER.

(C) NEW COMPOUND FACILITY ELECTRICAL METER BANK AND TELCO HOFFMAN BOX. (TO BE INSTALLED AS REPLACEMENT FOR EXISTING UTILITY BOARD, NOT SHOWN BUT LOCATED WHERE OWNER'S SHELTER IS SHOWN.

(D) NEW EMERGENCY GENERATOR.

(E) EXISTING UTILITY POLE.

(F) NEW UTILITY PULL BOXES. (INSTALL AS REQUIRED BY UTILITY COMPANIES)

(G) OWNER'S NEW EQUIPMENT SHELTER.

ELECTRICAL RISER NOTES

1. (3) # 3/0 AWG, (1) # 6 AWG GND, MIN 2-1/2" CONDUIT.
2. 50KW DIESEL FUELED GENERATOR.
3. 200A, 240V, 2P MAIN CIRCUIT BREAKER AT GENERATOR OUTPUT.
4. GROUND GENERATOR PER NEC AND MANUFACTURER'S SPECIFICATIONS.
5. 1" CONDUIT WITH CONTROL AND ALARM CONDUCTORS FROM GENERATOR TO TRANSFER SWITCH AND ALARM PANEL IN SHELTER. INSTALL CONDUCTORS AS REQUIRED BY MANUFACTURER.
6. REMOTE GENERATOR SHUT OFF SWITCH IN BREAK GLASS ENCLOSURE MOUNTED TO THE EXTERIOR OF THE SHELTER IN LOCATION APPROVED BY LOCAL FIRE MARSHAL. INSTALL ALL REQUIRED SIGNAGE.
7. 3/4" CONDUIT AND CONDUCTORS REQUIRED FOR PROPER OPERATION OF EMERGENCY GENERATOR SHUT OFF SWITCH.
8. DEDICATED 20A, 120V, CIRCUIT IN 3/4" CONDUIT FROM OWNER'S ELECTRIC PANEL TO GENERATOR BLOCK HEATER.
9. DEDICATED 20A, 120V, CIRCUIT IN 3/4" CONDUIT FROM OWNER'S ELECTRIC PANEL TO GENERATOR BATTERY CHARGER AND DUPLEX RECEPTACLE.
10. DUPLEX GFCI RECEPTACLE IN WEATHERPROOF ENCLOSURE MOUNT IN CONVENIENT LOCATION AT GENERATOR.
11. GENERATOR BATTERY CHARGER.
12. GENERATOR BLOCK HEATER.
13. EXTEND GENERATOR POWER OUTPUT CONDUCTORS TO EMERGENCY LUGS IN TRANSFER SWITCH.
14. PROVIDE 120/240VAC, 200 AMP., 1ϕ, 3 WIRE REVENUE METER W/200, 2P CIRCUIT BREAKER IN SPARE METER AND BREAKER LOCATION. (ALL SERVICE EQUIPMENT MUST BE UTILITY CO. APPROVED).
15. (1) 4"C, W/ CAT 5E, 25 PAIR, SOLID CABLE RATED FOR T-1 SERVICE TO EXTEND FROM TELCO SERVICE BOX TO EQUIPMENT SHELTER. FINAL CONDUIT ROUTING TO BE DETERMINED IN FIELD BY CONTRACTOR AT TIME OF CONSTRUCTION. EXTEND TO TELCO BOARD IN SHELTER.
16. SERVICE GROUND PER NEC.
17. EXISTING UTILITY POLE.
18. PROVIDE TELCO BOX GROUNDING PER TELEPHONE COMPANY. PROVIDE MINIMUM # 2 AWG GREEN INSULATED BONDED TO GROUNDING TRIAD. COORDINATE WITH TELEPHONE UTILITY COMPANY.
19. TWO 4" CONDUITS WITH PULL ROPES FOR TELEPHONE COMPANY CONDUCTORS. CONDUCTORS PROVIDED BY TELEPHONE COMPANY FROM UTILITY POLE TO UTILITY BOARD. PROVIDE ALL COUPLINGS, ADAPTERS, SWEEPS, AND ASSOCIATED HARDWARE. MATERIAL SHALL BE PER TELEPHONE COMPANY SPECIFICATIONS.
20. (4) 500 KCMIL, (1) # 3 AWG GROUND, 4" CONDUIT FOR ELECTRIC CONDUCTORS. PROVIDE ALL COUPLINGS, ADAPTERS, SWEEPS, AND ASSOCIATED HARDWARE. MATERIAL SHALL BE PER UTILITY COMPANY SPECIFICATIONS.
21. TELEPHONE AND ELECTRIC PULL BOXES. MUST BE TRAFFIC RATED. QUANTITY AND LOCATION PER UTILITY COMPANY SPECIFICATIONS. EXPECT TWO PER UTILITY.
22. NEMA-3R, 3 GANG METER CENTER MODULE, SINGLE PHASE INCOMING, SINGLE PHASE OUTGOING, 240V, 225A BRANCH UNITS. (SQUARE-D: EZML13225CU OR UTILITY COMPANY APPROVED EQUAL).
23. NEMA-3R 400A, SINGLE PHASE, 120/240V, MAIN CIRCUIT BREAKER MODULE WITH 400A CIRCUIT BREAKER.
24. NEW UTILITY BACKBOARD. REFER TO CIVIL DRAWINGS. REMOVE EXISTING UPON COMPLETION OF NEW AND CUTOVER OF ALL EXISTING SERVICES.
25. 4' X 4' HOFFMAN BOX FOR TELCO. MUST BE TELEPHONE COMPANY APPROVED.
26. EXISTING ELECTRIC SERVICES TO BE RELOCATED FROM EXISTING METER CENTER. PROVIDE ALL CONDUITS, CONDUCTORS, METERS, CIRCUIT BREAKERS, ACCESSORIES AND HARDWARE TO FACILITATE COMPLETE RELOCATION AND RESTORATION TO FULLY ENERGIZED OPERATION.
27. EXISTING TELEPHONE SERVICES AT EXISTING UTILITY BOARD TO BE RELOCATED TO NEW TELCO BOX. PROVIDE ALL CONDUITS CABLES AND ACCESSORIES FOR COMPLETE CUTOVER AND PROPER OPERATION OF ALL RELOCATED SERVICES.

GENERAL NOTES:

1. EXISTING UTILITY FRAME WITH METER CENTER AND TELCO DEMARC SHALL BE REMOVED AND REPLACED WITH NEW. INSTALLATION OF NEW MUST TAKE PLACE PRIOR TO REMOVAL OF EXISTING.
2. PROVIDE TEMPORARY POWER FOR EXISTING USERS DURING ALL OUTAGES.
3. COORDINATE ALL OUTAGES WITH OWNER AND ALL AFFECTED PARTIES.
4. ALL WORK AND EQUIPMENT MUST BE UTILITY COMPANY APPROVED.
5. COORDINATE ALL WORK WITH UTILITY COMPANIES.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	03/26/14	TJB	CKD	REVISED CONSTRUCTION
4	05/07/13	TJB	CKD	REVISED CONSTRUCTION PER UPDATED INFOS
3	12/06/13	TJB	CKD	CONSTRUCTION
2	11/22/13	TJB	CKD	CONSTRUCTION – CLIENT REVIEW
1	10/29/13	TJB	CKD	CONSTRUCTION – CLIENT REVIEW
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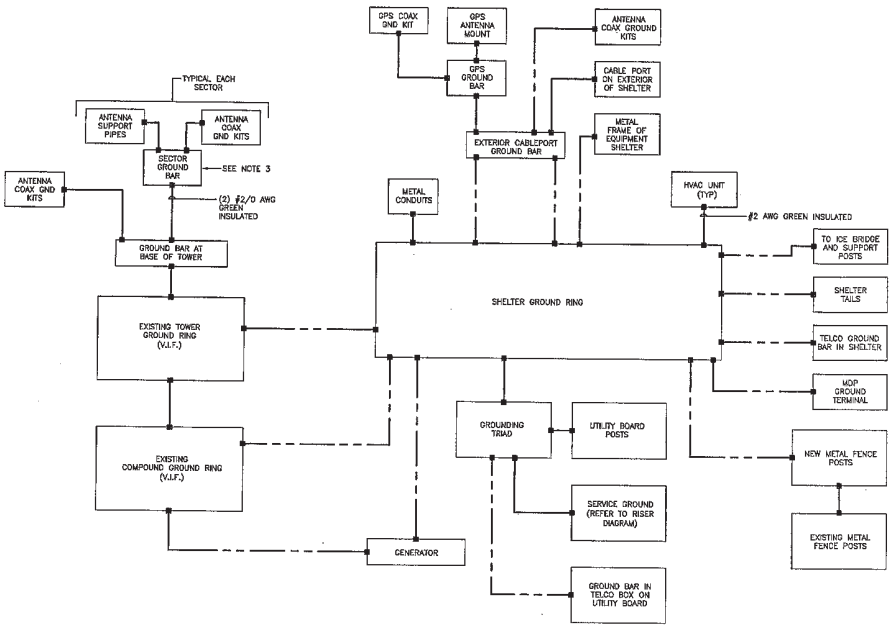
DATE: 10/09/13
SCALE: AS NOTED
JOB NO. 13217.000

UTILITY PLAN AND RISER DIAGRAM

E-1

Sheet No. 9 of 16



1 E-2 SCHEMATIC DIAGRAM-GROUNDING SYSTEM
NOT TO SCALE

NOTES

1. GROUND CONDUCTORS SHOWN SHALL BE #2 AWG BCW UNLESS OTHERWISE NOTED.
2. GROUND CABLE TRAY SECTIONS TOGETHER WITH #6 STRANDED GREEN INSULATED JUMPERS.
3. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH A #2 AWG BCW.
4. ALL EXPOSED METAL OBJECTS IN SHELTER SHALL BE BONDED TO THE HALO GROUND WITHIN THAT ROOM.
5. REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
6. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.

CELLULAR GROUNDING NOTES

OBJECTIVE

PROVIDE A CELLULAR GROUNDING SYSTEM WITH MAXIMUM ALTERNATING CURRENT RESISTANCE OF 5 OHMS BETWEEN ANY POINT ON THE GROUNDING SYSTEM AND REFERENCE GROUND. PROVIDE EXTERIOR GROUNDING SCHEME WITH OWNER'S ENGINEER APPROVAL AS REQUIRED TO ACHIEVE DESIRED MAXIMUM AC RESISTANCE TO GROUND.

TESTING

CONTRACTOR TO PROVIDE AN INDEPENDENT TESTING CONTRACTOR TO DETERMINE THE GROUNDING SYSTEM RESISTANCE BY USE OF THE THREE POINT TEST AND AN AEMC MODEL 4500, OR APPROVED EQUAL. TEST TO BE PERFORMED PRIOR TO CONNECTION OF POWER SUPPLY TO THE CELL SITE AND CONNECTION OF THE GROUNDING SYSTEM TO THE WATER MAIN OR AC SUPPLY AS APPLICABLE.

CONDUCTOR USED FOR CELLULAR GROUNDING SYSTEM

EGR – #2 AWG ANNEALED SOLID TINNED BARE COPPER
IGR – #2 AWG ANNEALED STRANDED (7 STRAND) "THW" GREEN COLORED INSULATION
INTER-BUS EXTENSION (FROM IGR TO EGR) – SEE DETAILS
EXTERNAL BOND CONNECTIONS TO EGR – #2 ANNEALED SOLID TINNED BARE COPPER
INTERIOR BOND CONNECTIONS TO IGR – #6 ANNEALED STRANDED (7 STRAND) "THW" GREEN COLORED INSULATION

MINIMUM BENDING RADIUS

IGR #2 : 1'-0" NOMINAL AND 8" MINIMUM
EGR #2 : 2'-0" NOMINAL AND 8" MINIMUM
CELLULAR GROUNDING CONDUCTOR SHALL BE AS STRAIGHT AS POSSIBLE WITH MINIMUM 8" BENDING RADIUS.

FASTENER FOR CELLULAR GROUNDING CONDUCTOR

USE NON-METALLIC FASTENER AND STANDOFF "CLIC" (AVAIL. FROM NEFCO 203-299-0285) TO SURFACE SUPPORT CONDUCTOR 3" AWAY FROM SURFACES.

SPACING OF FASTENERS: 2'-0" O.C. OUTSIDE BUILDING
3'-0" O.C. INSIDE BUILDING

GROUNDING ELECTRODE

GROUNDING ELECTRODE SHALL BE 5/8" DIA. x 10'-0" L. COPPER CLAD STEEL ROD. ADJUST LOCATION OF GROUNDING ELECTRODE IF SOIL CONDITION IS NOT CONDUCTIVE (GRAVEL, SANDY SOIL, ROCKS). SPACE GROUNDING ELECTRODES 20'-0" APART (SPACING MAY BE REDUCED WHERE REQUIRED TO ACCOMMODATE FIELD CONDITIONS BUT SHALL NOT BE LESS THAN 10'-0"). ELECTRODES SHALL BE DRIVEN ONLY WITH PROPER DRIVER SLEEVE TO PREVENT MUSHROOMING TOP OF ROD. WHEN ROCK BOTTOM IS ENCOUNTERED, THE ELECTRODE SHALL BE DRIVEN AT AN OBLIQUE ANGLE NOT TO EXCEED 45° FROM THE VERTICAL AWAY FROM STRUCTURES. TOP OF GROUNDING ELECTRODE SHALL BE MIN. 3'-6" BELOW FINISH GRADE.

CONNECTIONS ABOVE GRADE (MECHANICAL)

COMPRESSION LUG CONNECTOR – 15 TON COMPRESSION, 2 HOLE, LONG BARREL, ELECTRO TINNED PLATED, HIGH CONDUCTIVITY, COPPER BODY RATED. USE 1/4" ø BOLT, 3/4" SPACING LUGS TO BOND OBJECTS FROM THE IGR. (CONNECTOR SHALL BE BURNDY HYLUG SERIES OR EQUAL.)

EXOTHERMIC WELD LUG CONNECTOR – 2 HOLE, OFFSET, ELECTRO TINNED PLATED, HIGH CONDUCTIVITY, COPPER BODY. USE 1/2"ø BOLT, 1-3/4" SPACING LUGS. CONNECTOR SHALL BE CADWELD CONNECTION STYLE (CABLE TO SURFACE) TYPE LA, LUG SIZE 1/8 x 1. EXOTHERMIC WELD TO LUG AS REQUIRED.

C-TAP COMPRESSION CONNECTOR – HIGH CONDUCTIVITY COPPER FOR MAIN TO BRANCH LINE TAPPING. (CONNECTOR SHALL BE BURNDY HYTAP SERIES OR EQUAL.)

MECHANICAL CONNECTIONS

USE MATCHING MANUFACTURER TOOL AND DIE FOR COMPRESSION CONNECTION.

APPLY ANTI-OXIDANT CONDUCTIVITY ENHANCER COMPOUND ON SURFACES THAT ARE COMPRESSED.

SURFACES INTENDED TO BE CONNECTED WITH MECHANICAL CONNECTORS SHALL BE BARE METAL TO BARE METAL. PRIME AND PAINT OVER BONDED AREA TO PREVENT CORROSION.

WHEN BONDING #2 TO #2

EXTERIOR OF BUILDING – USE EXOTHERMIC WELD CONNECTION
INTERIOR OF BUILDING – USE COMPRESSION CONNECTION ON STRANDED CONDUCTORS ONLY.
– USE EXOTHERMIC WELD CONNECTION ON SOLID CONDUCTOR.

WHEN BONDING #2 TO FENCE POST

USE EXOTHERMIC WELD "CADWELD TYPE VS" CONNECTION TO FENCE POST STEEL SURFACE. TEST WELD FOR POSSIBLE BURN THRU. PATCH WELDED AREA WITH GALVANIZED COATING AS REQUIRED FOR PROPER WELDED PERMANENT BOND. REFER TO MANUFACTURER'S REQUIREMENTS FOR DETAILS

GROUNDING SYSTEM INTERCONNECTION

BOND THE EGR DOWN CONDUCTORS, AND/OR BURIED GROUND RING TO ANY METALLIC OBJECT OR EXISTING GROUNDING SYSTEM WITHIN 6'.

WHEN BONDING #2 TO TOWER GROUND PLATE

TOWER GROUND PLATE SHALL BE 6" x 8" x 1/4" COPPER AND BE MADE AVAILABLE TO TOWER CONTRACTOR TO BE INSTALLED DURING TOWER CONSTRUCTION. USE EXOTHERMIC WELD "CADWELD TYPE HS" TO TOWER GROUND PLATE TEST WELD FOR POSSIBLE BURN THRU. COORDINATE THE SIZE OF THE MOUNTING HOLE WITH TOWER CONTRACTOR.

METALLIC CONDUITS

BOND ALL STEEL CONDUITS TO PANELS AT PONT OF CONTACT WITH APPROVED GROUNDING BUSHING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	02/26/14	LJB	CKO	REVISED CONSTRUCTION
4	03/13/14	LJB	CKO	CONSTRUCTION – REVISED FOR UPDATED RFDS
3	12/09/13	TGB	CKO	CONSTRUCTION
2	11/22/13	TGB	CKO	CONSTRUCTION – CLIENT REVIEW
1	11/21/13	JJB	CKO	CONSTRUCTION – CLIENT REVIEW
0	10/09/13	JJB	CKO	CONSTRUCTION – CLIENT REVIEW

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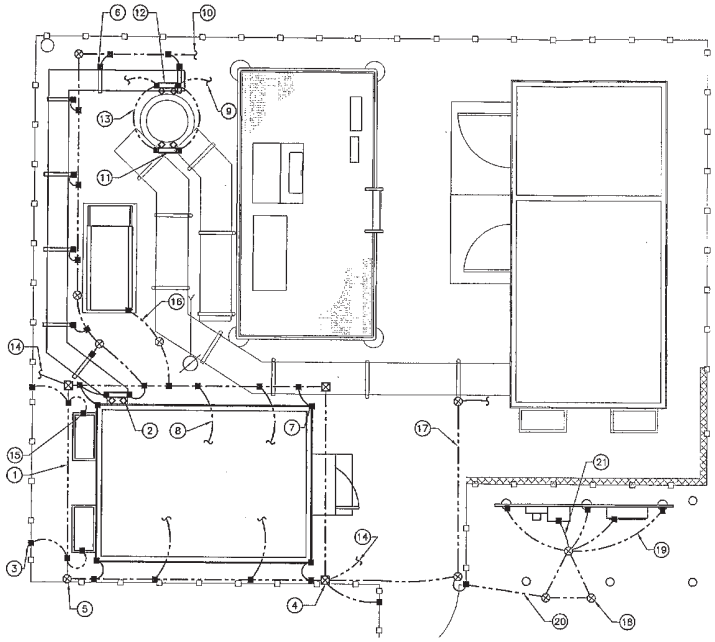
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
STRATFORD KASPER CRICLE
SITE NUMBER: CT3R2381
23 STONYBROOK ROAD
STRATFORD, CT 06614

DATE: 10/08/13
SCALE: AS NOTED
JOB NO. 13217.000

GROUNDING SCHEMATIC AND NOTES

E-2

Sheet No. 10 of 18



1 / E-3 COMPOUND GROUNDING PLAN
SCALE: 1/4" = 1'-0"

APPROXIMATE NORTH

GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

EQUIPMENT SHELTER BY OTHERS, VERIFY ALL SHELTER DIMENSIONS, EQUIPMENT DIMENSIONS, EQUIPMENT LOCATIONS AND UTILITY OPENINGS WITH BUILDING SHOP DRAWINGS PRIOR TO COMMENCEMENT OF WORK.

GROUNDING PLAN NOTES

1. #2 SOLID TINNED BCW GROUND RING (2'-0" FROM OUTSIDE EDGE OF EQUIPMENT SHELTER FOUNDATION) (TYP.).
2. WAVEPORT GROUND BAR PER DETAILS.
3. BOND METAL FENCE POSTS TO GROUNDING RING (TYP.)
4. GROUNDING ROD WITH ACCESS (TYP.) PER DETAILS.
5. GROUNDING ROD (TYP.) PER DETAILS.
6. ICE BRIDGE POST AND COVER. BOND EACH SECTION AND SUPPORT TO GROUND RING PER DETAILS.
7. BOND EQUIPMENT BUILDING TO GROUND RING (TYP. EACH CORNER).
8. EXTEND GROUND RING PIGTAIL THROUGH SHELTER AND BOND TO HALO GROUND DOWNLEAD. (TYP. 6 PLACES)
9. BOND GROUND BAR TO EXISTING TOWER GROUND RING (TYP OF 2). CONTRACTOR TO VERIFY LOCATION IN FIELD.
10. BOND SHELTER GND RING TO EXISTING TOWER GROUND RING WITH #2 AWG BCW.
11. UPPER TOWER MOUNTED GROUND BAR PER DETAILS.
12. LOWER TOWER MOUNTED GROUND BAR PER DETAILS.
13. BOND UPPER TOWER MOUNTED GROUND BAR TO LOWER TOWER MOUNTED GROUND BAR (2 GROUND LEADS) PER DETAILS.
14. BOND SHELTER GROUND RING TO EXISTING COMPOUND GROUND RING. (MINIMUM TWO PLACES.)
15. BOND HVAC UNIT TO GROUND RING (TYPICAL).
16. BOND GENERATOR TO SHELTER GROUND RING PER NEC AND MANUFACTURERS SPECIFICATIONS.
17. EXTEND COMPOUND GROUND RING ALONG NEW FENCE LINE AND BOND TO EXISTING.
18. GROUNDING TRIAD.
19. BOND UTILITY FRAME POSTS TO GROUNDING TRIAD. (TYP)
20. BOND TRIAD TO GROUND RING.
21. SERVICE GROUND (SEE RISER DIAGRAM).
22. BOND GROUND BAR IN TELCO HOFFMAN BOX TO GROUNDING TRIAD.

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5	02/28/14	TJB	CKD	REVISED CONSTRUCTION
4	10/15/14	TJB	CKD	CONSTRUCTION – REVISED FOR UPDATED RFDS
3	12/06/13	TJB	CKD	CONSTRUCTION
2	11/07/13	TJB	CKD	CONSTRUCTION – CLIENT REVIEW
1	10/24/13	TJB	CKD	CONSTRUCTION – CLIENT REVIEW
0	10/08/13	TJB	CKD	CONSTRUCTION – CLIENT REVIEW

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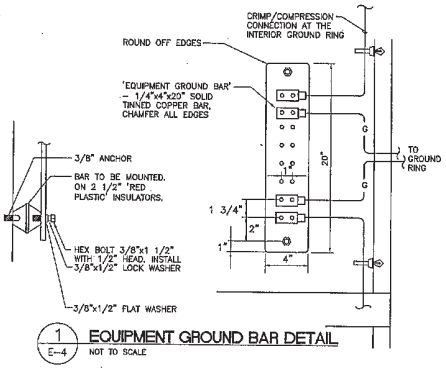
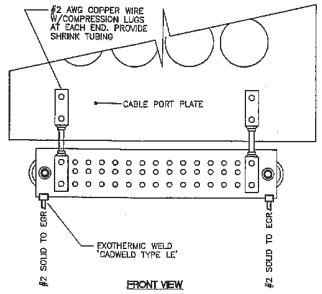
GROUNDING PLAN AND NOTES

E-3

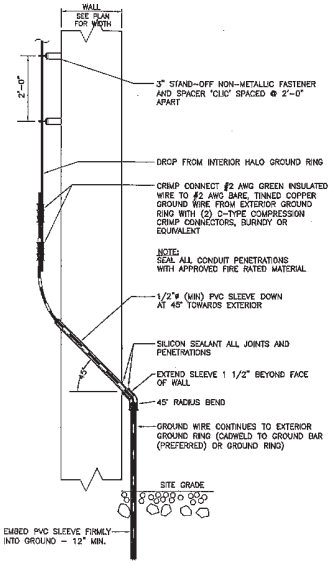
Sheet No. 11 of 18



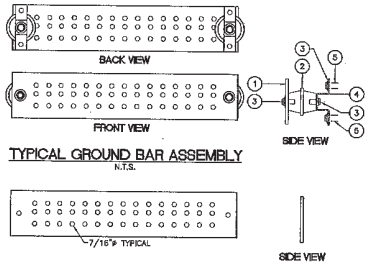
1 E-4 EQUIPMENT GROUND BAR DETAIL
NOT TO SCALE



2 E-4 CABLEPORT GROUND BAR LUG CONNECTION
NOT TO SCALE



3 E-4 CELLULAR GROUNDING CONDUCTOR SECURED ON WALL
N.T.S.

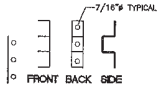


TYPICAL GROUND BAR ASSEMBLY
N.T.S.

TYPICAL GROUND BAR - DIMENSIONS
N.T.S.

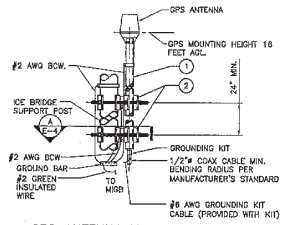
NOTES

1. HIGH CONDUCTIVITY TINNED COPPER BAR 1'-8"Lx4"Wx1/4"D.
2. RED COLORED STANDOFF INSULATOR PLASTIC #1872-1A.
3. STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
4. 1"Wx1/8"T STAINLESS STEEL TYPE 304 BRACKET.
5. STAINLESS STEEL TYPE 304 HARDWARE – 3/8"ø EXPANSION BOLT FOR CONCRETE.



BRACKET FOR GROUND BAR-DIMENSIONS
N.T.S.

4 E-4 MASTER/EQUIPMENT GROUND BAR DETAILS
N.T.S.



GPS ANTENNA MOUNTING BRACKET

A E-4 SECTION
NOT TO SCALE

BILL OF MATERIALS

ITEM	DESCRIPTION	QUANTITY
1	2-1/2"ø SCH. 40 x 8'-0" LG. MAX SS OR GALV. PIPE	1
2	UNIVERSAL CLAMP SET.	2

NOTES

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 2-1/2" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 24 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.

5 E-4 GPS GROUNDING/MOUNTING BRACKET DETAIL
NOT TO SCALE

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2	11/22/13	TJB	CKD	CONSTRUCTION – CLIENT REVIEW
1	10/30/13	TJB	CKD	CONSTRUCTION – CLIENT REVIEW
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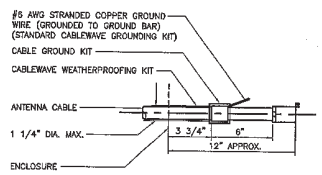
DETAILS

E-4

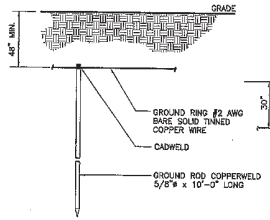
Sheet No. 12 of 16



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

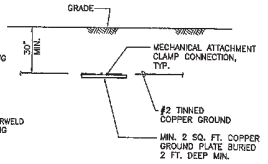
1 / E-5 ANTENNA CABLE GROUNDING DETAIL
NOT TO SCALE



NOTE:

1. USE GROUND PLATE DETAIL IF 10 FT. GROUND ROD DEPTH CANNOT BE ACHIEVED DUE TO LEDGE CONDITION OR IF EXISTING TOWER FOUNDATION IS ENCOUNTERED.

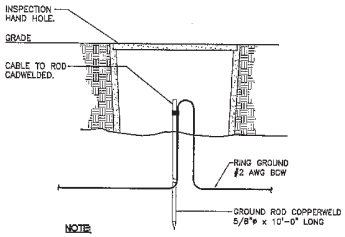
2 / E-5 GROUND ROD DETAIL
NOT TO SCALE



NOTE:

1. GROUND PLATE DETAIL TO BE USED ONLY IF 10 FT. GROUND ROD DEPTH CANNOT BE ACHIEVED DUE TO LEDGE CONDITION OR IF EXISTING TOWER FOUNDATION IS ENCOUNTERED.

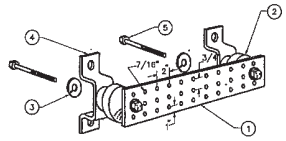
2A / E-5 GROUND PLATE DETAIL
NOT TO SCALE



NOTE:

1. INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 12" DIA x 18" DEEP.

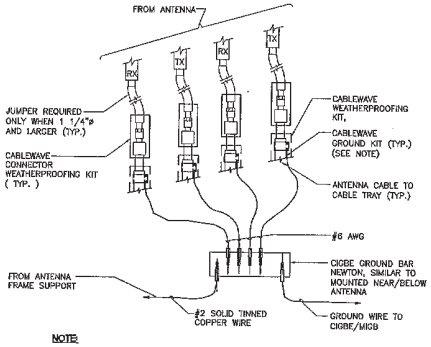
3 / E-5 GROUND ROD WITH ACCESS DETAIL
NOT TO SCALE



NOTES

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

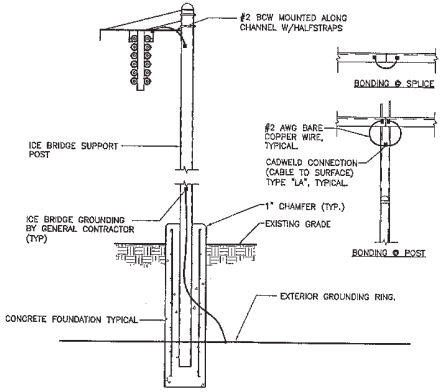
4 / E-5 GROUND BAR DETAIL
NOT TO SCALE



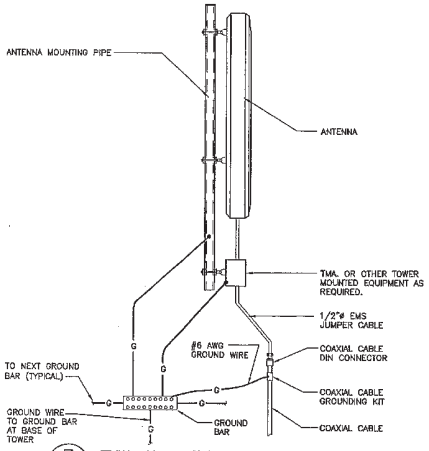
NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

5 / E-5 CONNECTION OF GROUND WIRES TO GROUND BAR
NOT TO SCALE



6 / E-5 ICE BRIDGE BONDING DETAIL
NOT TO SCALE



7 / E-5 TYPICAL ANTENNA GROUNDING DETAIL
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	02/20/14	KJB	CKD	REVISED CONSTRUCTION
4	06/13/14	KJB	CKD	CONSTRUCTION - REVISED FOR UPWIND PIPES
3	12/06/13	KJB	CKD	CONSTRUCTION
2	11/22/13	KJB	CKD	CONSTRUCTION - CLIENT REVIEW
1	10/25/13	KJB	CKD	CONSTRUCTION - CLIENT REVIEW
0	10/02/13	KJB	CKD	CONSTRUCTION - CLIENT REVIEW

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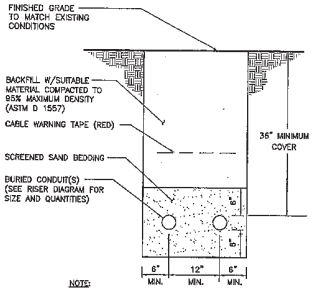
DETAILS

E-5

Sheet No. 13 of 16

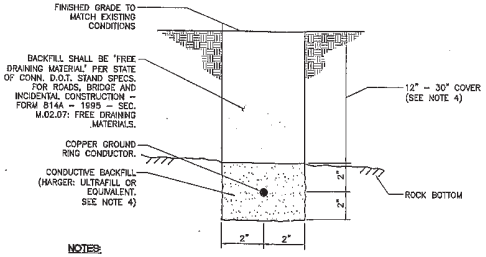


NOTE:

1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.
3. WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN UTILITY SOURCE AND SERVICE EQUIPMENT, COORDINATE WITH UTILITY COMPANY FOR BURIAL DEPTH REQUIREMENTS.
4. COORDINATE WITH ELECTRICAL ENGINEER WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN SERVICE EQUIPMENT AND EQUIPMENT SHELTER.

1 / E-6 TYPICAL ELECTRICAL TRENCH DETAIL

NOT TO SCALE

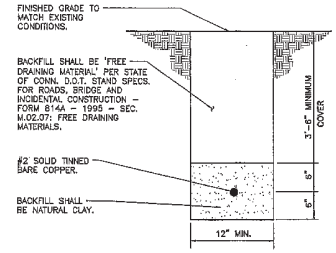


NOTES:

1. ENGINEER SHALL INSPECT PLACEMENT OF EGR CONDUCTOR PRIOR TO BACKFILLING.
2. MAINTAIN MIN. 2'-0" LINEAR CLEARANCE BETWEEN BACKFILL AND THE FOLLOWING: FOUNDATION, UNDERGROUND PIPING/CONDUIT, UNDERGROUND SERVICES. IN THE CLEARANCE AREAS, USE EARTH BACKFILL INSTEAD.
3. EXERCISE HANDLING AND USE PRECAUTION OF BACKFILL MATERIAL PER MFR'S REQUIREMENTS.
4. FOR LOCATIONS WHERE ROCK BOTTOM DEPTH IS LESS THAN 12" CONDUCTIVE CONCRETE SHALL BE USED INSTEAD OF CONDUCTIVE BACKFILL.

2 / E-6 EGR TRENCH/BACKFILL DETAIL (SHALLOW TOPSOIL)

NOT TO SCALE

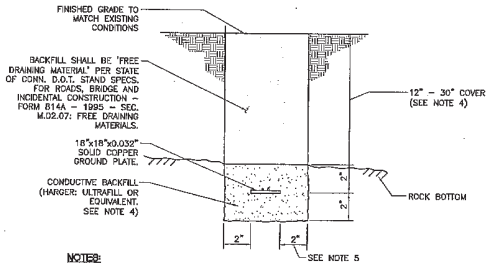


NOTES:

1. ENGINEER SHALL INSPECT PLACEMENT OF EGR CONDUCTOR PRIOR TO BACKFILLING.
2. MAINTAIN MIN. 2'-0" LINEAR CLEARANCE BETWEEN NATURAL CLAY BACKFILL AND THE FOLLOWING: FOUNDATION, UNDERGROUND PIPING/CONDUIT, UNDERGROUND SERVICES. IN THE CLEARANCE AREAS, USE EARTH BACKFILL INSTEAD.
3. EXERCISE HANDLING AND USE PRECAUTION OF BACKFILL MATERIAL PER MFR'S REQUIREMENTS.

3 / E-6 EGR TRENCH/BACKFILL DETAIL

NOT TO SCALE

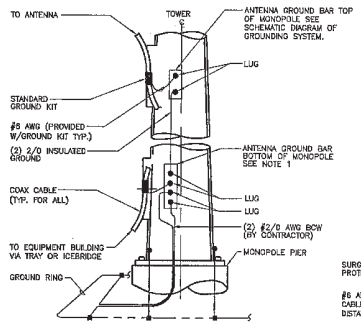


NOTES:

1. ENGINEER SHALL INSPECT PLACEMENT OF EGR CONDUCTOR PRIOR TO BACKFILLING.
2. MAINTAIN MIN. 2'-0" LINEAR CLEARANCE BETWEEN BACKFILL AND THE FOLLOWING: FOUNDATION, UNDERGROUND PIPING/CONDUIT, UNDERGROUND SERVICES. IN THE CLEARANCE AREAS, USE EARTH BACKFILL INSTEAD.
3. EXERCISE HANDLING AND USE PRECAUTION OF BACKFILL MATERIAL PER MFR'S REQUIREMENTS.
4. FOR LOCATIONS WHERE ROCK BOTTOM DEPTH IS LESS THAN 12" CONDUCTIVE CONCRETE SHALL BE USED INSTEAD OF CONDUCTIVE BACKFILL.
5. PROVIDE MIN 2" CLEARANCE ON ALL SIDES OF GROUND PLATE.

4 / E-6 GROUND PLATE TRENCH/BACKFILL DETAIL (SHALLOW TOPSOIL)

NOT TO SCALE



NOTES:

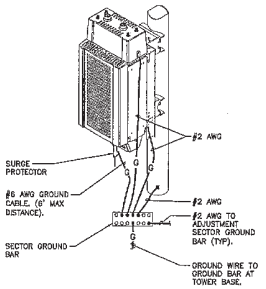
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

5 / E-6 ANTENNA CABLE GROUNDING

NOT TO SCALE

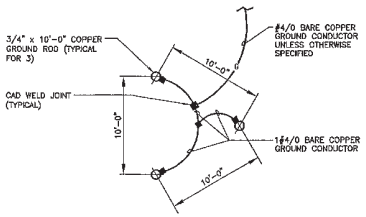
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



6 / E-6 RRH POLE MOUNT GROUNDING

NOT TO SCALE



7 / E-6 GROUND TRIAD DETAIL

NOT TO SCALE

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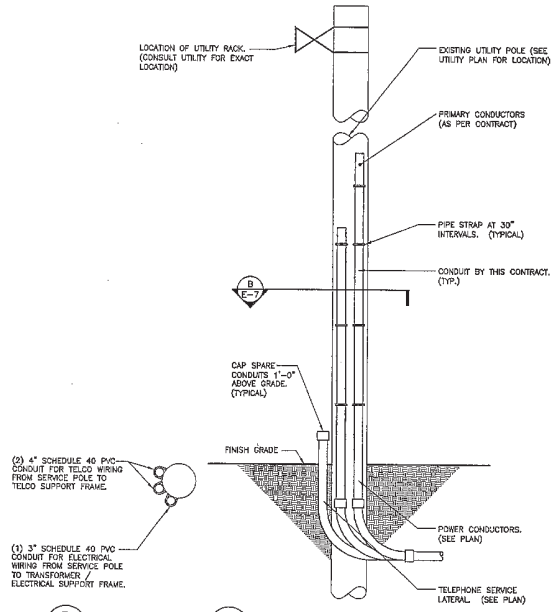
DETAILS

E-6

Sheet No. 14 of 16



B E-7 **DETAIL**
NOT TO SCALE

1 E-7 **INCOMING SERVICE POLE RISER**
NOT TO SCALE

SERVICE RISER NOTES:

1. THE LOCATION SHOWN FOR THE CONNECTION TO UTILITIES, AND INCOMING POWER AND TELEPHONE SERVICES IS FOR CONCEPT ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH LOCAL TELEPHONE COMPANY, THE OWNER AND LOCAL ELECTRIC UTILITY COMPANY.
2. CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY FOR A TIMELY INSTALLATION OF THE INCOMING POWER AND TELEPHONE SERVICE. CONTRACTOR WILL OBTAIN AN ELECTRIC SERVICE ORDER (ESO) FOR THE SITE FROM LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY PRIOR TO CONSTRUCTION.
3. THE INCOMING ELECTRIC SERVICE WILL BE INSPECTED BY THE AUTHORITY HAVING JURISDICTION AND A CERTIFICATE OF SUCH INSPECTION SHALL BE FURNISHED TO THE OWNER AND A COPY FORWARDED TO LOCAL UTILITY COMPANY.
4. FOR INCOMING UNDERGROUND TELEPHONE SERVICE, THE CONTRACTOR SHALL INSTALL CONDUIT AND PULL WIRES BETWEEN THE RISER POLE AND THE TELCO SERVICE CABINET. THE CONTRACTOR SHALL PROVIDE PRE CAST PULL-BOXES INCLUSIVE OF THE PRE CAST COVERS OF THE TYPE AND AS REQUIRED BY LOCAL TELEPHONE COMPANY THE MAXIMUM DISTANCE BETWEEN PULL-BOXES CAN NOT EXCEED 750' (CONTRACTOR TO CONFIRM WITH LOCAL UTILITY). AT THE PROPOSED RISER POLE EXTEND THE TELEPHONE CONDUIT UP THE POLE APPROXIMATELY 8' AND SEAL.
5. THE CONTRACTOR SHALL COORDINATE THE METER REQUIREMENTS WITH LOCAL UTILITY COMPANY.
6. THE INCOMING ELECTRICAL SERVICE SHALL BE INSTALLED IN CONFORMANCE WITH LOCAL UTILITY COMPANY STANDARDS (LATEST EDITION).
7. THIS SITE MAY CONTAIN CRITICAL UNDERGROUND ELECTRIC AND TELEPHONE SERVICES IN THE VICINITY OF THE NEW UNDERGROUND SERVICE AND THE EQUIPMENT SUPPORTS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DISRUPTION OF THESE EXISTING FACILITIES. THE CONTRACTOR SHALL ALSO CONTACT LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY AND ALL THE APPROPRIATE AGENCIES PRIOR TO EXCAVATION AT THIS SITE.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	02/26/14	TJB	CKD	REVISED CONSTRUCTION
4	03/13/14	TJB	CKD	CONSTRUCTION REVIEW
3	12/26/13	TJB	CKD	CONSTRUCTION REVISED FOR UPDATED RFDS
2	11/22/13	TJB	CKD	CONSTRUCTION
1	10/30/13	TJB	CKD	CONSTRUCTION - CLIENT REVIEW
0	10/09/13	TJB	CKD	CONSTRUCTION - CLIENT REVIEW

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AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

STRATFORD KASPER CRICLE
SITE NUMBER: CT9R2381
23 STONYBROOK ROAD
STRATFORD, CT 06614

DATE: 10/08/13
SCALE: AS NOTED
JOB NO. 13217.000

ELECTRICAL DETAILS

E-7

Sheet No. 15 of 16

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. INSTALL NEW UTILITY BACKBOARD WITH NEW MULTIMETER CENTER AND TELCO BOX, AND RELOCATE ALL USERS FROM EXISTING BACKBOARD TO NEW. UPON COMPLETION OF NEW, REMOVE OLD.
2. INSTALL 200A, 240/120V, 1P, 3 WIRE ELECTRIC SERVICE WITH REVENUE METER AND 200A MAIN CIRCUIT BREAKER FOR OWNER AND ASSOCIATED DISTRIBUTION EQUIPMENT. (AS REQUIRED BY UTILITY CO.)
3. NEW SITE TELEPHONE SERVICE AS SPECIFIED BY TELEPHONE COMPANY.
4. GENERATOR/TRANSFER SWITCH.
5. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS, RECEPTACLES, EQUIPMENT, LIGHTING FIXTURES, ETC. AS INDICATED OR NOTED ON PLANS.
6. POWER AND TEMPERATURE CONTROL WIRING FOR HVAC EQUIPMENT.
   a. FURNISH AND INSTALL ALL POWER WIRING FOR ALL HEATING, VENTILATING, AIR CONDITIONING, MOTORS AND DEVICES, AND FIRE PROTECTION EQUIPMENT INDICATED ON THE PLANS OR CALLED FOR IN THIS SPECIFICATION, EITHER ELECTRICAL OR MECHANICAL INCLUDING ALL CONTROL WIRING. ALL MAGNETIC STARTERS SHALL BE FURNISHED UNDER DIVISION 15 AND HAVE INSTALLED THEREIN A PROPER OVERLOAD HEATER FOR EACH MOTOR.
   b. ALL WIRING, BOTH POWER AND CONTROL, FOR SUCH ITEMS AS UNIT HEATERS, EXHAUST FANS, ETC., NOT SPECIFICALLY CALLED FOR IN THE TEMPERATURE CONTROL SPECIFICATIONS, SHALL BE WIRED UNDER DIVISION 16.
   c. ALL CONTROLS WHICH ARE TO BE WIRED BY THIS CONTRACTOR SHALL BE DELIVERED TO HIM BY THE CONTRACTOR/VENDOR FURNISHING THEM.
7. CELLULAR SITE ALARMS, ASSOCIATED WIRING AND DEVICES.
8. CELLULAR GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, INTERIOR GROUNDING RING, GROUND BARS, ETC.
9. FURNISH AND INSTALL 3/4" PLYWOOD BACKBOARD OF SIZE INDICATED ON DRAWINGS FOR MOUNTING OF POWER/SERVICE EQUIPMENT AND TELEPHONE/ALARM EQUIPMENT. BACKBOARDS SHALL BE PAINTED WITH TWO (2) COATS OF SEMI-GLOSS GRAY FIRE RETARDANT PAINT.
10. FIELD MEASURE EXISTING ELECTRICAL SERVICES TO CONFIRM AVAILABLE EXISTING POWER.
11. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.

B. LOCAL UTILITY COMPANIES SHALL PROVIDING THE FOLLOWING:

1. TELEPHONE CABLES.
2. SHUTDOWN OF SERVICE (COORDINATE WITH OWNER).

C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHANGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.

D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

E. CONTRACTOR SHALL COORDINATE WITH TELEPHONE UTILITY COMPANY FOR LOCATION OF TELEPHONE SERVICE AND TO DETERMINE ANY REQUIRED EQUIPMENT TO BE INSTALLED BY CONTRACTOR.

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH LOCAL TELEPHONE COMPANY AS MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED CELLULAR SITE.

F. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

G. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

H. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

I. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

J. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE(1) WEEK PRIOR TO FINAL PUNCH LIST.

K. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

L. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

M. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

N. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

O. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

P. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". ALL CONDUIT RUNS LOCATED WITHIN THE OWNER'S EQUIPMENT ROOM, SHALL ORIGINATE FROM THE WIREWAY AND RUN VERTICALLY TO ITS DESTINATION. NO BENDS WILL BE ACCEPTED. CONDUITS SHALL BE PROPERLY FASTENED TO THE WALLS AND CEILINGS AS REQUIRED BY THE N.E.C.

CONDUIT MATERIAL SHALL BE AS FOLLOWS:

(1) ELECTRIC METALLIC TUBING (EMT) – BRANCH CIRCUITS INSIDE WIRELESS ROOM
(2) GALVANIZED RIGID CONDUIT (GRC) – FEEDERS AND CIRCUITS EXPOSED TO EXTERIOR & UNDERGROUND.
(3) LIQUID TIGHT FLEXIBLE METAL CONDUIT – FOR SHORT LENGTH (MAX. 3'-0") WIRING TO VIBRATING EQUIPMENT (HVAC UNITS, MOTORS, ETC.) IN WET LOCATIONS.
(4) FLEXIBLE METAL CONDUIT – FOR SHORT LENGTH (MAX. 3'-0") WIRING TO VIBRATING EQUIPMENT IN DRY LOCATIONS.
(5) PVC CONDUIT – WHERE SHOWN ON GROUNDING DETAILS.

SECTION 16114

1.01. CABLE TRAY

CABLE TRAY SHALL BE SOLID SIDE BAR, 18" WIDE (NEWTON INSTRUMENT COMPANY, INC.). TRAY SHALL BE INSTALLED AS SHOWN ON CONTRACT DOCUMENTS.

CROSSWISE RUNS SHALL BE COORDINATED WITH THE SPECIFIC EQUIPMENT THE TRAY SHALL SERVE.

ALL PROTRUDING CABLE TRAY SUPPORT RODS SHALL BE FILED SMOOTH WITH NO SHARP EDGES. ALL SUPPORT RODS SHALL BE CAD-PLATED FOR RUST RESISTANCE AND A MINIMUM 1/2" DIAMETER.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

120/240V/1PH

LINE	COLOR
A	BLACK
B	RED
N	CONTINUOUS WHITE
G	CONTINUOUS GREEN

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16450

1.01. GROUNDING

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BAR #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE NO. 12 AWG COPPER.
3. REFER TO PANEL SCHEDULE "BRANCH CIRCUIT" DATA FOR EQUIPMENT GROUND CONDUCTOR SIZE FOR EACH BRANCH CIRCUIT.
4. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. INTERIOR GROUND RING
3. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED.)
4. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNERS WIRELESS PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY NEC, MFG. SPECIFICATIONS AND OWNERS SPECIFICATIONS.

SECTION 16140

1.01. WIRING DEVICES

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

15 MINUTE TIMER SWITCH – INTERMATIC #FF15M (INTERIOR LIGHTS)

DUPLEX RECEPTACLE – P&S #2091-S (GFCI) SPECIFICATION GRADE

SINGLE POLE SWITCH – P&S #5021-1 (20A-120V HARD USE) SPECIFICATION GRADE

DUPLEX RECEPTACLE – P&S #5342-1 (20A-120V HARD USE) SPECIFICATION GRADE

B. PLATES – ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEM OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

D. PROVIDE NAMEPLATE FOR PORTABLE ENGINE/GENERATOR CONNECTION SHOWING VOLTAGE KVA/KW RATING, # PHASE AND # OF WIRES. PLATE TO BE PLASTIC ENGRAVED, RED WITH WHITE LETTERS.

E. ALL RECEPTACLES, SWITCHES, DISCONNECT SWITCHES, ETC. SHALL BE LABELED WITH THE CORRECT BRANCH CIRCUIT NUMBER SERVED BY MEANS OF PERMANENT PRESSED TYPE BLACK 1/4" TRANSFER LETTERING. (FOR EXAMPLE: "MDP-5", ETC.).

F. PROVIDE A NAMEPLATE AT THE SERVICE EQUIPMENT INDICATING THE TYPE AND LOCATION OF THE ON SITE GENERATOR.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH NEC RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, BE REPEATED IN THE PRESENCE OF OWNERS REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DEFECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

A. FUSES SHALL BE NOARENDWAILE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16620

(SUPPLIED BY OWNER, INSTALLED BY CONTRACTOR)

1.01. GENERATOR SET

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	03/20/14	TJE	DJO	REVISED CONSTRUCTION
4	01/06/14	TJE	DJO	CONSTRUCTION - REVISED PER UPDATED TIPS
3	12/06/13	KJB	DJO	CONSTRUCTION
2	11/22/13	TJB	DJO	CONSTRUCTION - CLIENT REVIEW
1	10/24/13	TJB	DJO	CONSTRUCTION - CLIENT REVIEW
0	10/08/13	TJB	DJO	CONSTRUCTION - CLIENT REVIEW

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AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

STRATFORD KASPER CRICLE
SITE NUMBER: CT9R2381
23 STONYBROOK ROAD
STRATFORD, CT 06614

DATE: 10/08/13
SCALE: AS NOTED
JOB NO. 13217.00D

ELECTRICAL SPECIFICATIONS

E-8

Sheet No. 18 of 19

ATTACHMENT C

ENGINEERED TOWER SOLUTIONS, PLLC.

Structural Analysis Report_Rev2
Site Name: Stratford
Site Number: CT-1013
ETS#: 140249
Date: 4/7/11

Todd Bowman
Tarpon Towers
Tower Acquisitions Manager
1001 3rd Avenue West, Suite 420
Bradenton, FL 34205

Subject: Structural Analysis of 99-ft Monopole Tower with 20-ft extensions

Site Name: Stratford

Site Number: CT-1013

Site Location: 23 Stony Brook Road, Stratford (Fairfield County), Connecticut
N 41° 12′ 12″ W 73° 8′ 55″

Dear Mr. Bowman,

Engineered Tower Solutions, PLLC has completed a structural analysis of an existing 99-ft Monopole tower with proposed 20-ft extension. Design criteria per each analysis are noted on the following page. The analysis assumes the tower has been inspected on regular intervals, consistent with recommendations per TIA-222-G, Annex J and any structural deficiencies noted have been or will be remediated as necessary to ensure all tower members, connections and hardware of capable of developing resistances consistent with new material. All connections were assumed to have strength equivalent to or exceeding the original member's compressive or tensile resistance.

The purpose of this analysis is to determine the structure's ability to support existing and proposed wireless equipment for T-Mobile, Verizon, and AT&T and be compliant with the aforementioned codes with respect to strength and serviceability requirements. Existing, proposed equipment is noted on the following pages. Results of the analysis indicate the tower will be able to support new equipment loadings, in addition to the currently installed equipment. Specific section design loads, capacities and stress ratios are provided on the following pages. Detailed calculation of the applied forces and member capacities are provided in the following pages.

The tower analysis was completed considering TIA-222-F design standards and local requirements based upon a basic wind speed of 85 MPH, This structural analysis assumes *reinforcements of tower from 48 to 70-ft, 82 to 90-ft, and flange bolt reinforcements at 82-ft have occurred* and all equipment existing and proposed is installed per loading chart on following pages.

We trust this report satisfies your needs.
Please contact us with any questions or concerns regarding this report.

Best Regards,

STATE OF CONNECTICUT
FREDERIC BOST
PEN.0029529
PROFESSIONAL ENGINEER

F. Geoffrey Bost, PE
Engineered Tower Solutions, PLLC

Code Design Criteria
TIA/EIA-222-F
Windspeed = 85 mph, Basic Wind Speed

Existing Equipment – Existing and To Remain on Tower

Height (ft)	Appurtenance	Mount	Coax (in)	Carrier
77	(6) BXA 1701063-12CF (6) BCA 70063-6CF (3) RRH 2x40-700U (3) RRH 2x40-AWS	(3) T-Arms	(12) 1/2 (6) 5/8 hybrid (2) 1-5/8 hybrid	Verizon
87	(3) AIR 21 B2A B4P (3) ATMA1412D-1A20	Flush Mount	(6) 1 -5/8 (1) 1 5/8 hybrid	T-Mobile
97	(3) AIR 21 B2A B4P (3) ATMA1412D-1A20	Flush Mount	(6) 1- 5/8	T-Mobile

Proposed AT&T Equipment Configuration

Height (ft)	Appurtenance	Mount	Coax (in)
109	(3) OPA-65R-LCUU-H6 (3) RRUs-11 (3) RRUS-12 (3) RRUS-A2 (1) DC6-48-60-0-8F	(3) T-Arms	(6) 7/8 (3) 1/2
117	(3) OPA-65R-LCUU-H6 (3) RRUs-32 (3) DTMABP7819VG12A (3) DBC2055f1V1-1 (1) DC6-48-60-0-8F	Flush Mount	(6) 7/8 (3) 5/8 (1) 3/8

- The proposed coax to be installed on inside monopole shaft

Referenced Documents

Document	Remarks
Tower and Foundation	Valmont drawings dated June 11, 2010
Structural Analysis	FTP Structural Analysis dated November 26th, 2013
Proposed Antenna	Structural Analysis Authorization dated March 13th, 2014
Geotechnical Investigation	Terracon Dated April 2nd, 2010

Maximum Member Usage

Member	Percentage
Shaft	102.4
Anchor Bolts	59
Baseplate	70
Foundation	89

- *Percentage equal to or less than 100% denote member stress levels are satisfactory for loading.*
- *Percentage between 100 and 105% indicate slight exceedance of code strength limits. However, the overstress is within reasonable tolerances within the industry, thus no member strengthening is required.*
- *Percentage greater than 100% indicates member strengthening is required.*

TSTower - v 5.5.4 Tower Analysis Program
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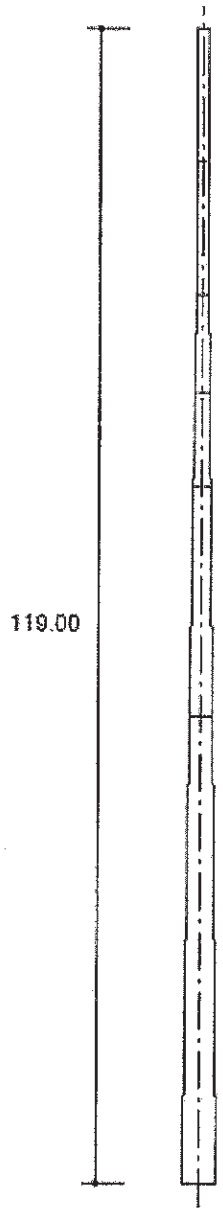
File: C:\Users\mdeboer\Documents\TSTower Input\Stonybrook-Reinforced.out
Contract:
Project: Analysis for a 20' extension
Date and Time: 3/31/2014 2:58:52 PM

Revision: 1
Site: Stratford (CT1013)
Engineer: MD

DESIGN SPECIFICATION

Design Standard: TIA/EIA-222-F-1996
Basic Wind Speed = 85.0 (mph)
Service Wind speed = 50.0 (mph)
Ice thickness = 0.50 (in)

Sct.	Length (ft)	Overlap (ft)	Top Dia. (in)	Bot Dia. (in)	Thick. (in)
1	48.33	0.00	27.94	42.00	0.3125
2	24.00	0.00	20.74	27.94	0.4200
3	9.67	0.00	17.84	20.74	0.2188
4	10.00	0.00	14.84	17.84	0.5000
5	13.50	0.00	12.74	14.84	0.1875
6	13.50	0.00	12.75	12.74	0.3750



MAXIMUM BASE REACTIONS

Download (Kips)	23.7
Shear (Kips)	16.7
Moment (Kipsft)	1383.8

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Revision: 1
Site: Stratford (CT1013)
Engineer: MD

Section B: STRUCTURE GEOMETRY

Total Height (ft)	Bottom Diameter (in)	Top Diameter (in)
119.00	42.00	12.75

Sect. No	Length (ft)	Overlap (ft)	Bot Dia. (in)	Top Dia. (in)	Thick. (in)	Sides	Joint Type	Yield Stress (ksi)	Mass (lbs)	Calculated Taper (in/ft)
1	48.33	0.00	42.00	27.94	0.3125	18-sided	Flange	65.0	5653.7	0.29092
2	24.00	0.00	27.94	20.74	0.4200	18-sided	Flange	65.0	2604.3	0.30000
3	9.67	0.00	20.74	17.84	0.2188	18-sided	Flange	65.0	435.8	0.29990
4	10.00	0.00	17.84	14.84	0.5000	18-sided	Flange	65.0	855.5	0.30000
5	13.50	0.00	14.84	12.74	0.1875	18-sided	Flange	65.0	371.9	0.15556
6	13.50	0.00	12.74	12.75	0.3750	18-sided	Flange	50.0	676.4	-0.00074

Total Mass: 10597.6

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Contract:
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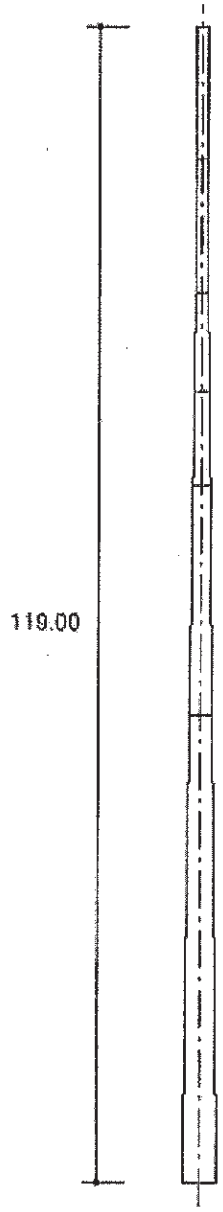
Revision: 1
Site: Stratford (CT1013)
Engineer: MD

DESIGN SPECIFICATION

Design Standard: TIA/EIA-222-F-1996
Basic Wind Speed = 85.0 (mph)
Service Wind speed = 50.0 (mph)
Ice thickness = 0.50 (in)

Sct.	Length (ft)	Overlap (ft)	Top Dia. (in)	Bot Dia. (in)	Thick. (in)
1	48.33	0.00	27.94	42.00	0.3125
2	24.00	0.00	20.74	27.94	0.4200
3	9.67	0.00	17.84	20.74	0.2188
4	10.00	0.00	14.84	17.84	0.5000
5	13.50	0.00	12.74	14.84	0.1875
6	13.50	0.00	12.75	12.74	0.3750



MAXIMUM BASE REACTIONS

Download (Kips)	23.7
Shear (Kips)	16.7
Moment (Kipsft)	1383.8

Section A: PROJECT DATA

Project Title:	Analysis for a 20' extension
Customer Name:	Florida Tower Partners
Site:	Stratford (CT1013)
Contract No.:	
Revision:	1
Engineer:	MD
Date:	Mar 31 2014
Time:	02:58:23 PM
Project Notes:	This is an analysis of an existing monopole with a 20' proposed extension for ATT

Design Standard: TIA/EIA-222-F-1996

GENERAL DESIGN CONDITIONS

Start Wind direction:	0.00 (Deg)
End Wind direction:	330.00 (Deg)
Increment wind direction:	30.00 (Deg)
Elevation above ground:	0.00(ft)
Gust Response Factor Gh:	1.69
Material Density:	490.1(lbs/ft^3)
Young's Modulus:	29000.0(ksi)
Poisson Ratio:	0.3
Weight Multiplier:	1.00
Allowable Stress Incr. Factor:	1.333
Increase allowable stress:	Yes

WIND ONLY CONDITIONS:

Basic Wind Speed:	85.00(mph)

WIND AND ICE CONDITIONS:

Basic Wind Speed:	85.00(mph)
Ice Thickness:	0.50(in)
Ice density:	56.19(lbs/ft^3)
Wind pressure reduction for iced conditions:	0.75

WIND ONLY SERVICEABILITY CONDITIONS:

Operational Wind Speed:	50.00(mph)

Analysis performed using: TowerSoft Finite Element Analysis Program

Section B: STRUCTURE GEOMETRY

Total Height (ft)	Bottom Diameter (in)	Top Diameter (in)
119.00	42.00	12.75

Sect. No	Length (ft)	Overlap (ft)	Bot Dia. (in)	Top Dia. (in)	Thick. (in)	Sides	Joint Type	Yield Stress (ksi)	Mass (lbs)	Calculated Taper (in/ft)
1	48.33	0.00	42.00	27.94	0.3125	18-sided	Flange	65.0	5653.7	0.29092
2	24.00	0.00	27.94	20.74	0.4200	18-sided	Flange	65.0	2604.3	0.30000
3	9.67	0.00	20.74	17.84	0.2188	18-sided	Flange	65.0	435.8	0.29990
4	10.00	0.00	17.84	14.84	0.5000	18-sided	Flange	65.0	855.5	0.30000
5	13.50	0.00	14.84	12.74	0.1875	18-sided	Flange	65.0	371.9	0.15556
6	13.50	0.00	12.74	12.75	0.3750	18-sided	Flange	50.0	676.4	-0.00074
Total Mass:									10597.6	

Section D: TRANSMISSION LINE DATA

Transmission Lines Position

No.	Bot El (ft)	Top El (ft)	Desc.	Radius (ft)	Az.	Orient.	No.	Shielded	Shielded Lines	Antenna
1	4.00	117.00	LDF5P-50A	0.00	0.00	0.00	12	Yes	12	
2	4.00	117.00	LDF2-50	0.00	0.00	0.00	1	Yes	1	
3	4.00	117.00	LDF4P-50A	0.00	0.00	0.00	3	Yes	3	
4	4.00	117.00	LDF5P-50A	0.00	0.00	0.00	3	Yes	3	
5	4.00	97.00	LDF7P-50A	0.00	0.00	0.00	6	Yes	6	
6	4.00	87.00	LDF7P-50A	0.00	0.00	0.00	7	Yes	7	
7	4.00	77.00	LDF7P-50A	0.00	0.00	0.00	2	Yes	2	
8	4.00	77.00	LDF5P-50A	0.00	0.00	0.00	6	Yes	6	
9	4.00	77.00	LDF4P-50A	0.00	0.00	0.00	12	Yes	12	

Transmission Lines Details

No.	Desc.	Width (in)	Depth (in)	Unit Mass (lb/ft)
1	LDF5P-50A	1.10	1.10	0.33
2	LDF2-50	0.43	0.43	0.08
3	LDF4P-50A	0.63	0.63	0.15
4	LDF5P-50A	1.10	1.10	0.33
5	LDF7P-50A	2.01	2.01	0.92
6	LDF7P-50A	2.01	2.01	0.92
7	LDF7P-50A	2.01	2.01	0.92
8	LDF5P-50A	1.10	1.10	0.33
9	LDF4P-50A	0.63	0.63	0.15

Utilization of the cross-section for TX Lines: 30.31%

Section F: POINT LOAD DATA

Structure Azimuth from North:0.00

POINT LOADS

No.	Description	Elev. (ft)	Radius (ft)	Azim. (Deg)	Orient. (Deg)	Vertical Offset (ft)	Tx Line	Comments
1	(3) OPA-65R-LCUUH6	117.00	0.00	0.0	0.0	0.00		ATT (0.82)
2	(3) RRUS-32	117.00	0.00	0.0	0.0	0.00		ATT (0.70)
3	(3) DTMABP7819VG12A	117.00	0.00	0.0	0.0	0.00		ATT (0.80)
4	(3) DBC2055F1V1-1	117.00	0.00	0.0	0.0	0.00		ATT (0.80)
5	(1) DC6-48-60-0-8F	117.00	0.00	0.0	0.0	0.00		ATT (0.75)
6	Flush Type Mount	117.00	0.00	0.0	0.0	0.00		ATT
7	(3) OPA-65R-LCUUH6	109.00	0.00	0.0	0.0	0.00		ATT (0.82)
8	(3) RRUS-11	109.00	0.00	0.0	0.0	0.00		ATT (0.70)
9	(3) RRUS-12	109.00	0.00	0.0	0.0	0.00		ATT (0.70)
10	(3) RRUS-A2	109.00	0.00	0.0	0.0	0.00		ATT (0.70)
11	(1) DC6-48-60-18-8F	109.00	0.00	0.0	0.0	0.00		ATT (0.75)
12	Antenna Mount	109.00	0.00	0.0	0.0	0.00		ATT
13	(3) AIR 21 B2A B4P	97.00	0.00	0.0	0.0	0.00		T-Mobile (0.80)
14	Flush Mounts	97.00	0.00	0.0	0.0	0.00		T-Mobile
15	(3) ATMAA1412D-1A20	97.00	0.00	0.0	0.0	0.00		T-Mobile (0.70)
16	(3) AIR 21 B2A B4P	87.00	0.00	0.0	0.0	0.00		T-Mobile (0.80)
17	Flush Mounts	87.00	0.00	0.0	0.0	0.00		T-Mobile
18	Reinforce 82 - 92	87.00	0.00	0.0	0.0	0.00		Reinforcement
19	(3) ATMA1412D-1A20	87.00	0.00	0.0	0.0	0.00		T-Mobile (0.70)
20	(6) BXA 70063-6CF	77.00	0.00	0.0	0.0	0.00		Verizon (0.70)
21	(6) BXA 171063-12CF	77.00	0.00	0.0	0.0	0.00		Verizon (0.70)
22	Antenna Mount	77.00	0.00	0.0	0.0	0.00		Verizon
23	(3) RRH_2x40-700U	77.00	0.00	0.0	0.0	0.00		Verizon (0.70)
24	(3) RRH_2x40-AWS	77.00	0.00	0.0	0.0	0.00		Verizon (0.70)
25	Reinforce 48 - 72	60.00	0.00	0.0	0.0	0.00		Reinforcement

POINT LOADS WIND AREAS AND WEIGHTS

No.	Description	Frontal Bare Area (ft^2)	Lateral Bare Area (ft^2)	Frontal Iced Area (ft^2)	Lateral Iced Area (ft^2)	Weight Bare (Kips)	Weight Iced (Kips)
1	(3) OPA-65R-LCUUH6	25.83	25.83	27.96	27.96	0.22	0.45
2	(3) RRUS-32	8.12	8.12	9.02	9.02	0.24	0.45
3	(3) DTMABP7819VG12A	3.81	3.81	4.43	4.43	0.06	0.10
4	(3) DBC2055F1V1-1	0.92	0.92	1.24	1.24	0.02	0.04
5	(1) DC6-48-60-0-8F	4.22	4.22	4.59	4.59	0.04	0.07
6	Flush Type Mount	5.00	5.00	8.00	8.00	0.30	0.50
7	(3) OPA-65R-LCUUH6	25.83	25.83	27.96	27.96	0.22	0.45
8	(3) RRUS-11	6.83	6.83	7.56	7.56	0.15	0.30
9	(3) RRUS-12	7.69	7.69	8.50	8.50	0.15	0.30
10	(3) RRUS-A2	5.04	5.04	5.71	5.71	0.07	0.14
11	(1) DC6-48-60-18-8F	4.22	4.22	4.59	4.59	0.04	0.07
12	Antenna Mount	21.00	21.00	27.00	27.00	1.00	1.50
13	(3) AIR 21 B2A B4P	15.80	15.80	17.41	17.41	0.28	0.50
14	Flush Mounts	5.00	5.00	8.00	8.00	0.10	0.20
15	(3) ATMAA1412D-1A20	2.45	2.45	2.92	2.92	0.04	0.07
16	(3) AIR 21 B2A B4P	15.80	15.80	17.41	17.41	0.28	0.50
17	Flush Mounts	5.00	5.00	8.00	8.00	0.10	0.20
18	Reinforce 82 - 92	2.75	2.75	4.00	4.00	0.20	0.30
19	(3) ATMA1412D-1A20	2.45	2.45	2.92	2.92	0.04	0.07
20	(6) BXA 70063-6CF	32.47	32.47	35.87	35.87	0.11	0.20
21	(6) BXA 171063-12CF	18.06	18.06	21.31	21.31	0.08	0.15
22	Antenna Mount	21.00	21.00	27.00	27.00	1.00	1.50
23	(3) RRH_2x40-700U	5.29	5.29	6.03	6.03	0.14	0.25
24	(3) RRH_2x40-AWS	5.29	5.29	6.03	6.03	0.14	0.25

25	Reinforce 48 - 72	9.00	9.00	12.00	12.00	0.45	0.60

Section K: POLE OUTPUT LOAD DATA

Load Combination: Max Envelope
Wind Direction: Maximum

Elev. (ft)	Axial Ld. (kips)	Shear Ld. (kips)	Torque (kipsft)	Bend Mom. (kipsft)
119.00	0.22	0.29	0.00	0.00
116.75	0.22	0.29	0.00	0.65
116.75	1.57	2.38	0.00	0.66
114.50	1.57	2.38	0.00	6.01
114.50	1.71	2.46	0.00	6.03
112.25	1.71	2.46	0.00	11.57
112.25	1.85	2.55	0.00	11.59
110.00	1.85	2.55	0.00	17.24
110.00	3.33	4.46	0.01	17.26
107.75	3.33	4.46	0.00	27.30
107.75	4.55	6.01	0.01	27.32
105.50	4.55	6.01	0.00	40.65
105.50	4.67	6.08	0.01	40.66
103.25	4.67	6.08	0.01	54.36
103.25	4.77	6.15	0.01	54.37
101.00	4.77	6.15	0.01	68.22
101.00	4.88	6.22	0.01	68.24
98.75	4.88	6.22	0.01	82.04
98.75	5.14	6.52	0.01	82.05
96.50	5.14	6.52	0.01	96.73
96.50	5.80	7.38	0.01	96.75
94.25	5.80	7.38	0.01	113.15
94.25	5.93	7.45	0.01	113.17
92.00	5.93	7.45	0.01	129.96
92.00	6.09	7.52	0.01	129.98
90.33	6.09	7.52	0.01	142.50
90.33	6.27	7.58	0.01	142.52
88.67	6.27	7.58	0.01	154.90
88.67	6.45	7.65	0.01	154.92
87.00	6.45	7.65	0.01	167.66
87.00	7.62	8.85	0.02	167.69
85.33	7.62	8.85	0.01	182.42
85.33	7.82	8.92	0.02	182.45
83.67	7.82	8.92	0.02	197.30
83.67	8.03	8.99	0.02	197.33
82.00	8.03	8.99	0.02	212.30
82.00	8.20	9.06	0.02	212.33
80.39	8.20	9.06	0.02	226.82
80.39	8.33	9.11	0.02	226.85
78.78	8.33	9.11	0.02	241.43
78.78	8.47	9.17	0.02	241.45
77.16	8.47	9.17	0.02	256.13
77.16	10.54	12.26	0.02	256.16
75.55	10.54	12.26	0.02	275.78
75.55	10.92	12.66	0.03	275.81
73.94	10.92	12.66	0.02	296.08
73.94	11.09	12.72	0.03	296.11
72.33	11.09	12.72	0.03	316.48
72.33	11.45	12.84	0.03	316.53
68.33	11.45	12.84	0.03	367.71
68.33	12.02	13.02	0.03	367.78
64.33	12.02	13.02	0.03	419.70
64.33	12.62	13.21	0.03	419.76
60.33	12.62	13.21	0.03	472.44
60.33	13.78	13.73	0.04	472.50
56.33	13.78	13.73	0.03	527.26
56.33	14.47	13.96	0.04	527.32

52.33	14.47	13.96	0.03	582.98
52.33	15.15	14.16	0.04	583.04
48.33	15.15	14.16	0.04	639.50
48.33	16.09	14.45	0.04	639.57
40.27	16.09	14.45	0.04	755.31
40.27	17.33	14.82	0.04	755.39
32.22	17.33	14.82	0.04	874.67
32.22	18.65	15.20	0.04	874.73
24.16	18.65	15.20	0.04	996.63
24.16	20.04	15.60	0.04	996.67
16.11	20.04	15.60	0.04	1122.35
16.11	21.50	16.02	0.04	1122.37
8.05	21.50	16.02	0.04	1250.99
8.05	22.99	16.46	0.04	1251.00
0.00	22.99	16.46	0.04	1383.83
Base	23.69	16.75	0.04	1383.83

Section L: STRENGTH ASSESSMENT DATA

Load Combination Max Envelope
Wind Direction Maximum

Elev. (ft)	Bending Stress (ksi)	Axial Stress (ksi)	Shear Stress (ksi)	Total Stress (ksi)	Allowable Stress (ksi)	Assess.
119.00	0.00	0.01	0.02	0.04	40.00	0.001
116.75	0.18	0.01	0.02	0.19	40.00	0.005
116.75	0.16	0.11	0.15	0.37	40.00	0.009
114.50	1.47	0.11	0.15	1.60	40.00	0.040
114.50	1.64	0.06	0.17	1.73	40.00	0.043
112.25	3.16	0.06	0.17	3.23	40.00	0.081
112.25	3.16	0.07	0.17	3.24	40.00	0.081
110.00	4.70	0.07	0.17	4.78	40.00	0.119
110.00	4.71	0.12	0.30	4.86	40.00	0.121
107.75	7.45	0.12	0.30	7.59	40.00	0.190
107.75	7.45	0.16	0.41	7.65	40.00	0.191
105.50	11.09	0.16	0.41	11.28	40.00	0.282
105.50	21.23	0.34	0.81	21.61	52.00	0.416
103.25	26.85	0.33	0.79	27.21	52.00	0.523
103.25	26.85	0.34	0.80	27.23	52.00	0.524
101.00	31.93	0.33	0.78	32.29	52.00	0.621
101.00	31.93	0.34	0.79	32.30	52.00	0.621
98.75	36.43	0.33	0.77	36.79	52.00	0.707
98.75	36.44	0.35	0.81	36.82	52.00	0.708
96.50	40.81	0.34	0.78	41.18	52.00	0.792
96.50	40.82	0.39	0.89	41.24	52.00	0.793
94.25	45.42	0.38	0.87	45.82	52.00	0.881
94.25	45.43	0.39	0.88	45.84	52.00	0.882
92.00	49.69	0.38	0.85	50.09	52.00	0.963
92.00	19.86	0.15	0.33	20.02	52.00	0.385
90.33	20.31	0.15	0.32	20.46	52.00	0.394
90.33	20.31	0.15	0.32	20.47	52.00	0.394
88.67	20.64	0.15	0.31	20.80	52.00	0.400
88.67	20.64	0.16	0.31	20.81	52.00	0.400
87.00	20.93	0.15	0.30	21.09	52.00	0.406
87.00	20.94	0.18	0.35	21.12	52.00	0.406
85.33	21.38	0.17	0.34	21.57	52.00	0.415
85.33	21.39	0.18	0.34	21.58	52.00	0.415
83.67	21.76	0.17	0.33	21.94	52.00	0.422
83.67	21.76	0.18	0.34	21.95	52.00	0.422
82.00	22.06	0.18	0.33	22.25	52.00	0.428
82.00	48.08	0.41	0.74	48.51	52.00	0.933
80.39	48.64	0.40	0.72	49.06	52.00	0.943
80.39	48.65	0.41	0.72	49.07	52.00	0.944
78.78	49.10	0.40	0.71	49.52	52.00	0.952
78.78	49.11	0.41	0.71	49.53	52.00	0.953
77.16	49.47	0.40	0.69	49.88	52.00	0.959
77.16	49.48	0.49	0.93	49.99	52.00	0.961
75.55	50.65	0.48	0.90	51.16	52.00	0.984
75.55	50.66	0.50	0.93	51.18	52.00	0.984
73.94	51.78	0.49	0.91	52.29	52.00	1.006
73.94	51.78	0.50	0.91	52.30	52.00	1.006
72.33	52.75	0.48	0.89	53.26	52.00	1.024
72.33	28.30	0.27	0.47	28.58	52.00	0.550
68.33	29.28	0.25	0.45	29.55	52.00	0.568
68.33	29.29	0.27	0.45	29.57	52.00	0.569
64.33	29.96	0.26	0.43	30.22	52.00	0.581
64.33	29.96	0.27	0.44	30.25	52.00	0.582
60.33	30.40	0.26	0.41	30.66	52.00	0.590
60.33	30.40	0.29	0.43	30.70	52.00	0.590
56.33	30.73	0.28	0.41	31.02	52.00	0.597

56.33	30.74	0.30	0.42	31.04	52.00	0.597
52.33	30.93	0.28	0.40	31.22	52.00	0.600
52.33	30.94	0.30	0.40	31.24	52.00	0.601
48.33	31.02	0.29	0.39	31.31	52.00	0.602
48.33	41.21	0.41	0.53	41.63	52.00	0.801
40.27	41.32	0.38	0.49	41.71	52.00	0.802
40.27	41.32	0.42	0.50	41.75	52.00	0.803
32.22	41.13	0.39	0.46	41.53	52.00	0.799
32.22	41.13	0.43	0.47	41.57	52.00	0.799
24.16	40.72	0.40	0.44	41.12	52.00	0.791
24.16	40.72	0.43	0.45	41.16	52.00	0.792
16.11	40.21	0.41	0.42	40.62	52.00	0.781
16.11	40.21	0.44	0.44	40.65	52.00	0.782
8.05	39.62	0.41	0.41	40.04	52.00	0.770
8.05	39.62	0.45	0.42	40.07	52.00	0.771
0.00	39.02	0.42	0.40	39.45	52.00	0.759

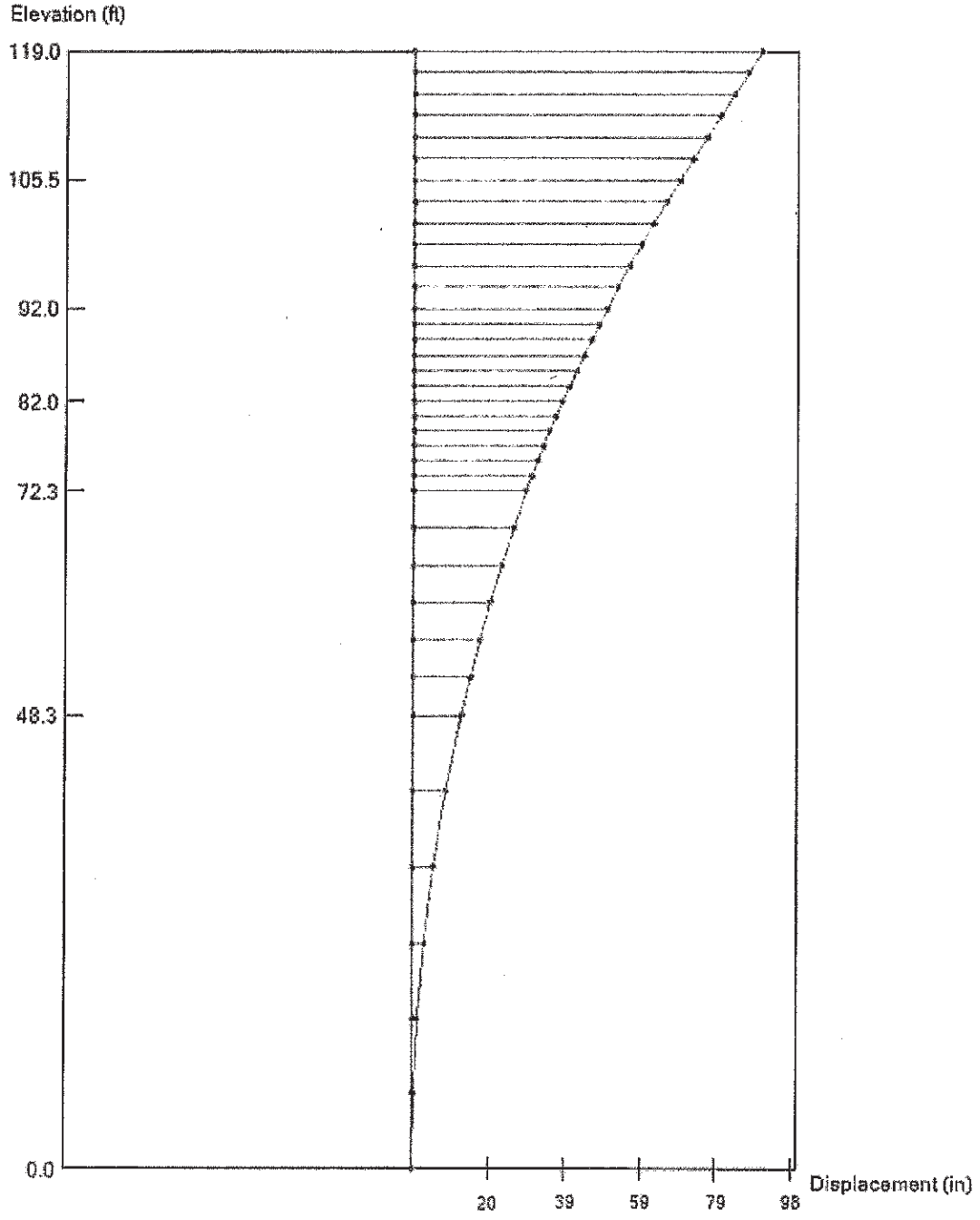
Section M: SECTION PROPERTIES DATA

Elev. (ft)	Diam. (in)	Width (in)	Thick. (in)	W/t	Area (in^2)	S (in^3)
119.0	12.8	1.5	0.375	4.0	14.7	44.05
116.8	12.7	1.5	0.375	4.0	14.7	44.03
116.8	12.7	1.5	0.375	4.0	14.7	44.03
114.5	12.7	1.5	0.375	4.0	14.7	44.02
114.5	12.7	1.5	0.375	4.0	14.7	44.02
112.3	12.7	1.5	0.375	4.0	14.7	44.01
112.3	12.7	1.5	0.375	4.0	14.7	44.01
110.0	12.7	1.5	0.375	4.0	14.7	44.00
110.0	12.7	1.5	0.375	4.0	14.7	44.00
107.8	12.7	1.5	0.375	4.0	14.7	43.99
107.8	12.7	1.5	0.375	4.0	14.7	43.99
105.5	12.7	1.5	0.375	4.0	14.7	43.97
105.5	12.7	1.9	0.188	10.0	7.5	22.99
103.3	13.1	1.9	0.188	10.3	7.7	24.30
103.3	13.1	1.9	0.188	10.3	7.7	24.30
101.0	13.4	2.0	0.188	10.6	7.9	25.64
101.0	13.4	2.0	0.188	10.6	7.9	25.64
98.8	13.8	2.1	0.188	11.0	8.1	27.02
98.8	13.8	2.1	0.188	11.0	8.1	27.02
96.5	14.1	2.1	0.188	11.3	8.3	28.44
96.5	14.1	2.1	0.188	11.3	8.3	28.44
94.3	14.5	2.2	0.188	11.6	8.5	29.90
94.3	14.5	2.2	0.188	11.6	8.5	29.90
92.0	14.8	2.2	0.188	12.0	8.7	31.39
92.0	14.8	1.6	0.500	3.2	22.8	78.54
90.3	15.3	1.7	0.500	3.4	23.6	84.20
90.3	15.3	1.7	0.500	3.4	23.6	84.20
88.7	15.8	1.8	0.500	3.6	24.3	90.06
88.7	15.8	1.8	0.500	3.6	24.3	90.06
87.0	16.3	1.9	0.500	3.8	25.1	96.11
87.0	16.3	1.9	0.500	3.8	25.1	96.11
85.3	16.8	2.0	0.500	3.9	25.9	102.36
85.3	16.8	2.0	0.500	3.9	25.9	102.36
83.7	17.3	2.1	0.500	4.1	26.7	108.82
83.7	17.3	2.1	0.500	4.1	26.7	108.82
82.0	17.8	2.1	0.500	4.3	27.5	115.46
82.0	17.8	2.7	0.219	12.4	12.2	52.99
80.4	18.3	2.8	0.219	12.8	12.6	55.95
80.4	18.3	2.8	0.219	12.8	12.6	55.95
78.8	18.8	2.9	0.219	13.2	12.9	59.00
78.8	18.8	2.9	0.219	13.2	12.9	59.00
77.2	19.3	3.0	0.219	13.5	13.2	62.13
77.2	19.3	3.0	0.219	13.5	13.2	62.13
75.6	19.8	3.0	0.219	13.9	13.6	65.33
75.6	19.8	3.0	0.219	13.9	13.6	65.33
73.9	20.3	3.1	0.219	14.3	13.9	68.62
73.9	20.3	3.1	0.219	14.3	13.9	68.62
72.3	20.7	3.2	0.219	14.7	14.3	71.99
72.3	20.7	2.8	0.420	6.7	27.1	134.20
68.3	21.9	3.0	0.420	7.2	28.7	150.68
68.3	21.9	3.0	0.420	7.2	28.7	150.68
64.3	23.1	3.2	0.420	7.7	30.3	168.12
64.3	23.1	3.2	0.420	7.7	30.3	168.12
60.3	24.3	3.5	0.420	8.2	31.9	186.51
60.3	24.3	3.5	0.420	8.2	31.9	186.51
56.3	25.5	3.7	0.420	8.7	33.5	205.86
56.3	25.5	3.7	0.420	8.7	33.5	205.86
52.3	26.7	3.9	0.420	9.2	35.1	226.16
52.3	26.7	3.9	0.420	9.2	35.1	226.16

48.3	27.9	4.1	0.420	9.7	36.7	247.42
48.3	27.9	4.3	0.313	13.8	27.4	186.24
40.3	30.3	4.7	0.313	15.1	29.7	219.36
40.3	30.3	4.7	0.313	15.1	29.7	219.36
32.2	32.6	5.1	0.313	16.4	32.1	255.19
32.2	32.6	5.1	0.313	16.4	32.1	255.19
24.2	35.0	5.5	0.313	17.7	34.4	293.73
24.2	35.0	5.5	0.313	17.7	34.4	293.73
16.1	37.3	6.0	0.313	19.1	36.7	334.97
16.1	37.3	6.0	0.313	19.1	36.7	334.97
8.1	39.7	6.4	0.313	20.4	39.0	378.93
8.1	39.7	6.4	0.313	20.4	39.0	378.93
0.0	42.0	6.8	0.313	21.7	41.3	425.60

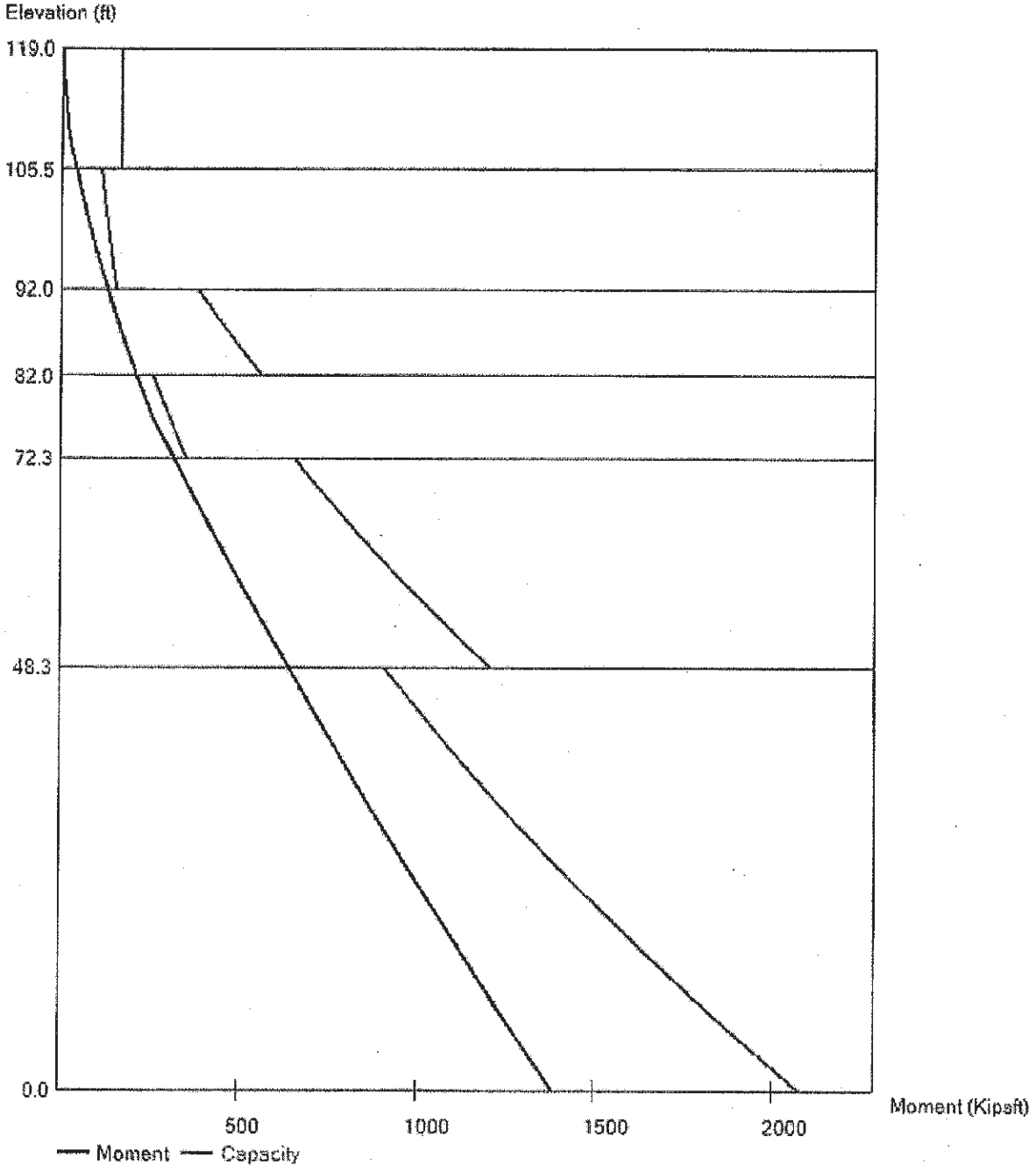
Note: w/t values marked with * (asterisk) indicate width to thickness exceeding maximum allowable values by standards.

Horizontal Displacement Diagram
Max. Envelope (All Loading Cases)



Bending Moment Diagram

Max. Envelope (All Loading Cases)



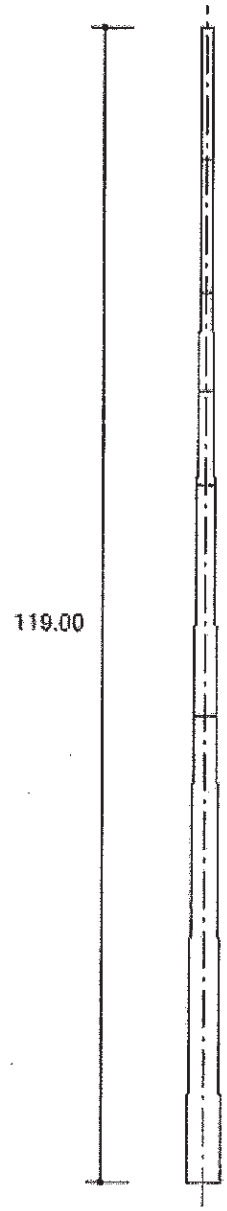
File: C:\Users\mdeboer\Documents\TSTower Input\Stonybrook-Reinforced.out
Contract:
Project: Analysis for a 20' extension
Date and Time: 3/31/2014 2:58:52 PM

Revision: 1
Site: Stratford (CT1013)
Engineer: MD

DESIGN SPECIFICATION

Design Standard: TIA/EIA-222-F-1996
Basic Wind Speed = 85.0 (mph)
Service Wind speed = 50.0 (mph)
Ice thickness = 0.50 (in)

Sct.	Length (ft)	Overlap (ft)	Top Dia. (in)	Bot Dia. (in)	Thick. (in)
1	48.33	0.00	27.94	42.00	0.3125
2	24.00	0.00	20.74	27.94	0.4200
3	9.67	0.00	17.84	20.74	0.2188
4	10.00	0.00	14.84	17.84	0.5000
5	13.50	0.00	12.74	14.84	0.1875
6	13.50	0.00	12.75	12.74	0.3750



MAXIMUM BASE REACTIONS

Download (Kips)	23.7
Shear (Kips)	16.7
Moment (Kipsft)	1383.8

Section B: STRUCTURE GEOMETRY

Total Height (ft)	Bottom Diameter (in)	Top Diameter (in)
119.00	42.00	12.75

Sect. No	Length (ft)	Overlap (ft)	Bot Dia. (in)	Top Dia. (in)	Thick. (in)	Sides	Joint Type	Yield Stress (ksi)	Mass (lbs)	Calculated Taper (in/ft)
1	48.33	0.00	42.00	27.94	0.3125	18-sided	Flange	65.0	5653.7	0.29092
2	24.00	0.00	27.94	20.74	0.4200	18-sided	Flange	65.0	2604.3	0.30000
3	9.67	0.00	20.74	17.84	0.2188	18-sided	Flange	65.0	435.8	0.29990
4	10.00	0.00	17.84	14.84	0.5000	18-sided	Flange	65.0	855.5	0.30000
5	13.50	0.00	14.84	12.74	0.1875	18-sided	Flange	65.0	371.9	0.15556
6	13.50	0.00	12.74	12.75	0.3750	18-sided	Flange	50.0	676.4	-0.00074

Total Mass: 10597.6

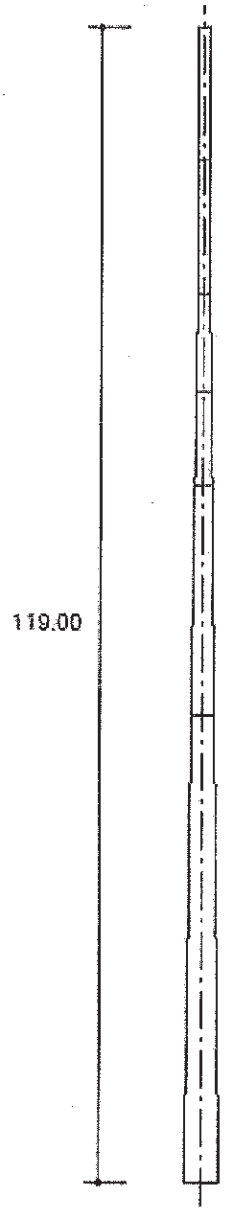
File: C:\Users\mdeboer\Documents\TSTower Input\Stonybrook-Reinforced.out
Contract:
Project: Analysis for a 20' extension
Date and Time: 3/31/2014 2:58:52 PM

Revision: 1
Site: Stratford (CT1013)
Engineer: MD

DESIGN SPECIFICATION

Design Standard: TIA/EIA-222-F-1996
Basic Wind Speed = 85.0 (mph)
Service Wind speed = 50.0 (mph)
Ice thickness = 0.50 (in)

Sct.	Length (ft)	Overlap (ft)	Top Dia. (in)	Bot Dia. (in)	Thick. (in)
1	48.33	0.00	27.94	42.00	0.3125
2	24.00	0.00	20.74	27.94	0.4200
3	9.67	0.00	17.84	20.74	0.2188
4	10.00	0.00	14.84	17.84	0.5000
5	13.50	0.00	12.74	14.84	0.1875
6	13.50	0.00	12.75	12.74	0.3750



MAXIMUM BASE REACTIONS

Download (Kips)	23.7
Shear (Kips)	16.7
Moment (Kipsft)	1383.8

Section A: PROJECT DATA

Project Title:	Analysis for a 20' extension
Customer Name:	Florida Tower Partners
Site:	Stratford (CT1013)
Contract No.:	
Revision:	1
Engineer:	MD
Date:	Mar 31 2014
Time:	02:58:23 PM
Project Notes:	This is an analysis of an existing monopole with a 20' proposed extension for ATT

Design Standard: TIA/EIA-222-F-1996

GENERAL DESIGN CONDITIONS

Start Wind direction:	0.00 (Deg)
End Wind direction:	330.00 (Deg)
Increment wind direction:	30.00 (Deg)
Elevation above ground:	0.00(ft)
Gust Response Factor Gh:	1.69
Material Density:	490.1(lbs/ft^3)
Young's Modulus:	29000.0(ksi)
Poisson Ratio:	0.3
Weight Multiplier:	1.00
Allowable Stress Incr. Factor:	1.333
Increase allowable stress:	Yes

WIND ONLY CONDITIONS:

Basic Wind Speed:	85.00(mph)

WIND AND ICE CONDITIONS:

Basic Wind Speed:	85.00(mph)
Ice Thickness:	0.50(in)
Ice density:	56.19(lbs/ft^3)
Wind pressure reduction for iced conditions:	0.75

WIND ONLY SERVICEABILITY CONDITIONS:

Operational Wind Speed:	50.00(mph)

Analysis performed using: TowerSoft Finite Element Analysis Program

File: C:\Users\mdeboer\Documents\TSTower Input\Stonybrook-Reinforced.out
Contract:
Project: Analysis for a 20' extension
Date and Time: 3/31/2014 2:58:52 PM

Revision: 1
Site: Stratford (CT1013)
Engineer: MD

Section B: STRUCTURE GEOMETRY

Total Height (ft)	Bottom Diameter (in)	Top Diameter (in)
119.00	42.00	12.75

Sect. No	Length (ft)	Overlap (ft)	Bot Dia. (in)	Top Dia. (in)	Thick. (in)	Sides	Joint Type	Yield Stress (ksi)	Mass (lbs)	Calculated Taper (in/ft)
1	48.33	0.00	42.00	27.94	0.3125	18-sided	Flange	65.0	5653.7	0.29092
2	24.00	0.00	27.94	20.74	0.4200	18-sided	Flange	65.0	2604.3	0.30000
3	9.67	0.00	20.74	17.84	0.2188	18-sided	Flange	65.0	435.8	0.29990
4	10.00	0.00	17.84	14.84	0.5000	18-sided	Flange	65.0	855.5	0.30000
5	13.50	0.00	14.84	12.74	0.1875	18-sided	Flange	65.0	371.9	0.15556
6	13.50	0.00	12.74	12.75	0.3750	18-sided	Flange	50.0	676.4	-0.00074

Total Mass: 10597.6

Section D: TRANSMISSION LINE DATA

Transmission Lines Position

No.	Bot El (ft)	Top El (ft)	Desc.	Radius (ft)	Az.	Orient.	No.	Shielded	Shielded Lines	Antenna
1	4.00	117.00	LDF5P-50A	0.00	0.00	0.00	12	Yes	12	
2	4.00	117.00	LDF2-50	0.00	0.00	0.00	1	Yes	1	
3	4.00	117.00	LDF4P-50A	0.00	0.00	0.00	3	Yes	3	
4	4.00	117.00	LDF5P-50A	0.00	0.00	0.00	3	Yes	3	
5	4.00	97.00	LDF7P-50A	0.00	0.00	0.00	6	Yes	6	
6	4.00	87.00	LDF7P-50A	0.00	0.00	0.00	7	Yes	7	
7	4.00	77.00	LDF7P-50A	0.00	0.00	0.00	2	Yes	2	
8	4.00	77.00	LDF5P-50A	0.00	0.00	0.00	6	Yes	6	
9	4.00	77.00	LDF4P-50A	0.00	0.00	0.00	12	Yes	12	

Transmission Lines Details

No.	Desc.	Width (in)	Depth (in)	Unit Mass (lb/ft)
1	LDF5P-50A	1.10	1.10	0.33
2	LDF2-50	0.43	0.43	0.08
3	LDF4P-50A	0.63	0.63	0.15
4	LDF5P-50A	1.10	1.10	0.33
5	LDF7P-50A	2.01	2.01	0.92
6	LDF7P-50A	2.01	2.01	0.92
7	LDF7P-50A	2.01	2.01	0.92
8	LDF5P-50A	1.10	1.10	0.33
9	LDF4P-50A	0.63	0.63	0.15

Utilization of the cross-section for TX Lines: 30.31%

Section F: POINT LOAD DATA

Structure Azimuth from North:0.00

POINT LOADS

No.	Description	Elev. (ft)	Radius (ft)	Azim. (Deg)	Orient. (Deg)	Vertical Offset (ft)	Tx Line	Comments
1	(3) OPA-65R-LCUUH6	117.00	0.00	0.0	0.0	0.00		ATT (0.82)
2	(3) RRUS-32	117.00	0.00	0.0	0.0	0.00		ATT (0.70)
3	(3) DTMABP7819VG12A	117.00	0.00	0.0	0.0	0.00		ATT (0.80)
4	(3) DBC2055F1V1-1	117.00	0.00	0.0	0.0	0.00		ATT (0.80)
5	(1) DC6-48-60-0-8F	117.00	0.00	0.0	0.0	0.00		ATT (0.75)
6	Flush Type Mount	117.00	0.00	0.0	0.0	0.00		ATT
7	(3) OPA-65R-LCUUH6	109.00	0.00	0.0	0.0	0.00		ATT (0.82)
8	(3) RRUS-11	109.00	0.00	0.0	0.0	0.00		ATT (0.70)
9	(3) RRUS-12	109.00	0.00	0.0	0.0	0.00		ATT (0.70)
10	(3) RRUS-A2	109.00	0.00	0.0	0.0	0.00		ATT (0.70)
11	(1) DC6-48-60-18-8F	109.00	0.00	0.0	0.0	0.00		ATT (0.75)
12	Antenna Mount	109.00	0.00	0.0	0.0	0.00		ATT
13	(3) AIR 21 B2A B4P	97.00	0.00	0.0	0.0	0.00		T-Mobile (0.80)
14	Flush Mounts	97.00	0.00	0.0	0.0	0.00		T-Mobile
15	(3) ATMAA1412D-1A20	97.00	0.00	0.0	0.0	0.00		T-Mobile (0.70)
16	(3) AIR 21 B2A B4P	87.00	0.00	0.0	0.0	0.00		T-Mobile (0.80)
17	Flush Mounts	87.00	0.00	0.0	0.0	0.00		T-Mobile
18	Reinforce 82 - 92	87.00	0.00	0.0	0.0	0.00		Reinforcement
19	(3) ATMA1412D-1A20	87.00	0.00	0.0	0.0	0.00		T-Mobile (0.70)
20	(6) BXA 70063-6CF	77.00	0.00	0.0	0.0	0.00		Verizon (0.70)
21	(6) BXA 171063-12CF	77.00	0.00	0.0	0.0	0.00		Verizon (0.70)
22	Antenna Mount	77.00	0.00	0.0	0.0	0.00		Verizon
23	(3) RRH_2x40-700U	77.00	0.00	0.0	0.0	0.00		Verizon (0.70)
24	(3) RRH_2x40-AWS	77.00	0.00	0.0	0.0	0.00		Verizon (0.70)
25	Reinforce 48 - 72	60.00	0.00	0.0	0.0	0.00		Reinforcement

POINT LOADS WIND AREAS AND WEIGHTS

No.	Description	Frontal Bare Area (ft^2)	Lateral Bare Area (ft^2)	Frontal Iced Area (ft^2)	Lateral Iced Area (ft^2)	Weight Bare (Kips)	Weight Iced (Kips)
1	(3) OPA-65R-LCUUH6	25.83	25.83	27.96	27.96	0.22	0.45
2	(3) RRUS-32	8.12	8.12	9.02	9.02	0.24	0.45
3	(3) DTMABP7819VG12A	3.81	3.81	4.43	4.43	0.06	0.10
4	(3) DBC2055F1V1-1	0.92	0.92	1.24	1.24	0.02	0.04
5	(1) DC6-48-60-0-8F	4.22	4.22	4.59	4.59	0.04	0.07
6	Flush Type Mount	5.00	5.00	8.00	8.00	0.30	0.50
7	(3) OPA-65R-LCUUH6	25.83	25.83	27.96	27.96	0.22	0.45
8	(3) RRUS-11	6.83	6.83	7.56	7.56	0.15	0.30
9	(3) RRUS-12	7.69	7.69	8.50	8.50	0.15	0.30
10	(3) RRUS-A2	5.04	5.04	5.71	5.71	0.07	0.14
11	(1) DC6-48-60-18-8F	4.22	4.22	4.59	4.59	0.04	0.07
12	Antenna Mount	21.00	21.00	27.00	27.00	1.00	1.50
13	(3) AIR 21 B2A B4P	15.80	15.80	17.41	17.41	0.28	0.50
14	Flush Mounts	5.00	5.00	8.00	8.00	0.10	0.20
15	(3) ATMAA1412D-1A20	2.45	2.45	2.92	2.92	0.04	0.07
16	(3) AIR 21 B2A B4P	15.80	15.80	17.41	17.41	0.28	0.50
17	Flush Mounts	5.00	5.00	8.00	8.00	0.10	0.20
18	Reinforce 82 - 92	2.75	2.75	4.00	4.00	0.20	0.30
19	(3) ATMA1412D-1A20	2.45	2.45	2.92	2.92	0.04	0.07
20	(6) BXA 70063-6CF	32.47	32.47	35.87	35.87	0.11	0.20
21	(6) BXA 171063-12CF	18.06	18.06	21.31	21.31	0.08	0.15
22	Antenna Mount	21.00	21.00	27.00	27.00	1.00	1.50
23	(3) RRH_2x40-700U	5.29	5.29	6.03	6.03	0.14	0.25
24	(3) RRH_2x40-AWS	5.29	5.29	6.03	6.03	0.14	0.25

25	Reinforce 48 - 72	9.00	9.00	12.00	12.00	0.45	0.60

Section K: POLE OUTPUT LOAD DATA

Load Combination Max Envelope
Wind Direction Maximum

Elev. (ft)	Axial Ld. (kips)	Shear Ld. (kips)	Torque (kipsft)	Bend Mom. (kipsft)
119.00	0.22	0.29	0.00	0.00
116.75	0.22	0.29	0.00	0.65
116.75	1.57	2.38	0.00	0.66
114.50	1.57	2.38	0.00	6.01
114.50	1.71	2.46	0.00	6.03
112.25	1.71	2.46	0.00	11.57
112.25	1.85	2.55	0.00	11.59
110.00	1.85	2.55	0.00	17.24
110.00	3.33	4.46	0.01	17.26
107.75	3.33	4.46	0.00	27.30
107.75	4.55	6.01	0.01	27.32
105.50	4.55	6.01	0.00	40.65
105.50	4.67	6.08	0.01	40.66
103.25	4.67	6.08	0.01	54.36
103.25	4.77	6.15	0.01	54.37
101.00	4.77	6.15	0.01	68.22
101.00	4.88	6.22	0.01	68.24
98.75	4.88	6.22	0.01	82.04
98.75	5.14	6.52	0.01	82.05
96.50	5.14	6.52	0.01	96.73
96.50	5.80	7.38	0.01	96.75
94.25	5.80	7.38	0.01	113.15
94.25	5.93	7.45	0.01	113.17
92.00	5.93	7.45	0.01	129.96
92.00	6.09	7.52	0.01	129.98
90.33	6.09	7.52	0.01	142.50
90.33	6.27	7.58	0.01	142.52
88.67	6.27	7.58	0.01	154.90
88.67	6.45	7.65	0.01	154.92
87.00	6.45	7.65	0.01	167.66
87.00	7.62	8.85	0.02	167.69
85.33	7.62	8.85	0.01	182.42
85.33	7.82	8.92	0.02	182.45
83.67	7.82	8.92	0.02	197.30
83.67	8.03	8.99	0.02	197.33
82.00	8.03	8.99	0.02	212.30
82.00	8.20	9.06	0.02	212.33
80.39	8.20	9.06	0.02	226.82
80.39	8.33	9.11	0.02	226.85
78.78	8.33	9.11	0.02	241.43
78.78	8.47	9.17	0.02	241.45
77.16	8.47	9.17	0.02	256.13
77.16	10.54	12.26	0.02	256.16
75.55	10.54	12.26	0.02	275.78
75.55	10.92	12.66	0.03	275.81
73.94	10.92	12.66	0.02	296.08
73.94	11.09	12.72	0.03	296.11
72.33	11.09	12.72	0.03	316.48
72.33	11.45	12.84	0.03	316.53
68.33	11.45	12.84	0.03	367.71
68.33	12.02	13.02	0.03	367.78
64.33	12.02	13.02	0.03	419.70
64.33	12.62	13.21	0.03	419.76
60.33	12.62	13.21	0.03	472.44
60.33	13.78	13.73	0.04	472.50
56.33	13.78	13.73	0.03	527.26
56.33	14.47	13.96	0.04	527.32

52.33	14.47	13.96	0.03	582.98
52.33	15.15	14.16	0.04	583.04
48.33	15.15	14.16	0.04	639.50
48.33	16.09	14.45	0.04	639.57
40.27	16.09	14.45	0.04	755.31
40.27	17.33	14.82	0.04	755.39
32.22	17.33	14.82	0.04	874.67
32.22	18.65	15.20	0.04	874.73
24.16	18.65	15.20	0.04	996.63
24.16	20.04	15.60	0.04	996.67
16.11	20.04	15.60	0.04	1122.35
16.11	21.50	16.02	0.04	1122.37
8.05	21.50	16.02	0.04	1250.99
8.05	22.99	16.46	0.04	1251.00
0.00	22.99	16.46	0.04	1383.83
Base	23.69	16.75	0.04	1383.83

Section L: STRENGTH ASSESSMENT DATA

Load Combination Max Envelope
Wind Direction Maximum

Elev. (ft)	Bending Stress (ksi)	Axial Stress (ksi)	Shear Stress (ksi)	Total Stress (ksi)	Allowable Stress (ksi)	Assess.
119.00	0.00	0.01	0.02	0.04	40.00	0.001
116.75	0.18	0.01	0.02	0.19	40.00	0.005
116.75	0.16	0.11	0.15	0.37	40.00	0.009
114.50	1.47	0.11	0.15	1.60	40.00	0.040
114.50	1.64	0.06	0.17	1.73	40.00	0.043
112.25	3.16	0.06	0.17	3.23	40.00	0.081
112.25	3.16	0.07	0.17	3.24	40.00	0.081
110.00	4.70	0.07	0.17	4.78	40.00	0.119
110.00	4.71	0.12	0.30	4.86	40.00	0.121
107.75	7.45	0.12	0.30	7.59	40.00	0.190
107.75	7.45	0.16	0.41	7.65	40.00	0.191
105.50	11.09	0.16	0.41	11.28	40.00	0.282
105.50	21.23	0.34	0.81	21.61	52.00	0.416
103.25	26.85	0.33	0.79	27.21	52.00	0.523
103.25	26.85	0.34	0.80	27.23	52.00	0.524
101.00	31.93	0.33	0.78	32.29	52.00	0.621
101.00	31.93	0.34	0.79	32.30	52.00	0.621
98.75	36.43	0.33	0.77	36.79	52.00	0.707
98.75	36.44	0.35	0.81	36.82	52.00	0.708
96.50	40.81	0.34	0.78	41.18	52.00	0.792
96.50	40.82	0.39	0.89	41.24	52.00	0.793
94.25	45.42	0.38	0.87	45.82	52.00	0.881
94.25	45.43	0.39	0.88	45.84	52.00	0.882
92.00	49.69	0.38	0.85	50.09	52.00	0.963
92.00	19.86	0.15	0.33	20.02	52.00	0.385
90.33	20.31	0.15	0.32	20.46	52.00	0.394
90.33	20.31	0.15	0.32	20.47	52.00	0.394
88.67	20.64	0.15	0.31	20.80	52.00	0.400
88.67	20.64	0.16	0.31	20.81	52.00	0.400
87.00	20.93	0.15	0.30	21.09	52.00	0.406
87.00	20.94	0.18	0.35	21.12	52.00	0.406
85.33	21.38	0.17	0.34	21.57	52.00	0.415
85.33	21.39	0.18	0.34	21.58	52.00	0.415
83.67	21.76	0.17	0.33	21.94	52.00	0.422
83.67	21.76	0.18	0.34	21.95	52.00	0.422
82.00	22.06	0.18	0.33	22.25	52.00	0.428
82.00	48.08	0.41	0.74	48.51	52.00	0.933
80.39	48.64	0.40	0.72	49.06	52.00	0.943
80.39	48.65	0.41	0.72	49.07	52.00	0.944
78.78	49.10	0.40	0.71	49.52	52.00	0.952
78.78	49.11	0.41	0.71	49.53	52.00	0.953
77.16	49.47	0.40	0.69	49.88	52.00	0.959
77.16	49.48	0.49	0.93	49.99	52.00	0.961
75.55	50.65	0.48	0.90	51.16	52.00	0.984
75.55	50.66	0.50	0.93	51.18	52.00	0.984
73.94	51.78	0.49	0.91	52.29	52.00	1.006
73.94	51.78	0.50	0.91	52.30	52.00	1.006
72.33	52.75	0.48	0.89	53.26	52.00	1.024
72.33	28.30	0.27	0.47	28.58	52.00	0.550
68.33	29.28	0.25	0.45	29.55	52.00	0.568
68.33	29.29	0.27	0.45	29.57	52.00	0.569
64.33	29.96	0.26	0.43	30.22	52.00	0.581
64.33	29.96	0.27	0.44	30.25	52.00	0.582
60.33	30.40	0.26	0.41	30.66	52.00	0.590
60.33	30.40	0.29	0.43	30.70	52.00	0.590
56.33	30.73	0.28	0.41	31.02	52.00	0.597

56.33	30.74	0.30	0.42	31.04	52.00	0.597
52.33	30.93	0.28	0.40	31.22	52.00	0.600
52.33	30.94	0.30	0.40	31.24	52.00	0.601
48.33	31.02	0.29	0.39	31.31	52.00	0.602
48.33	41.21	0.41	0.53	41.63	52.00	0.801
40.27	41.32	0.38	0.49	41.71	52.00	0.802
40.27	41.32	0.42	0.50	41.75	52.00	0.803
32.22	41.13	0.39	0.46	41.53	52.00	0.799
32.22	41.13	0.43	0.47	41.57	52.00	0.799
24.16	40.72	0.40	0.44	41.12	52.00	0.791
24.16	40.72	0.43	0.45	41.16	52.00	0.792
16.11	40.21	0.41	0.42	40.62	52.00	0.781
16.11	40.21	0.44	0.44	40.65	52.00	0.782
8.05	39.62	0.41	0.41	40.04	52.00	0.770
8.05	39.62	0.45	0.42	40.07	52.00	0.771
0.00	39.02	0.42	0.40	39.45	52.00	0.759

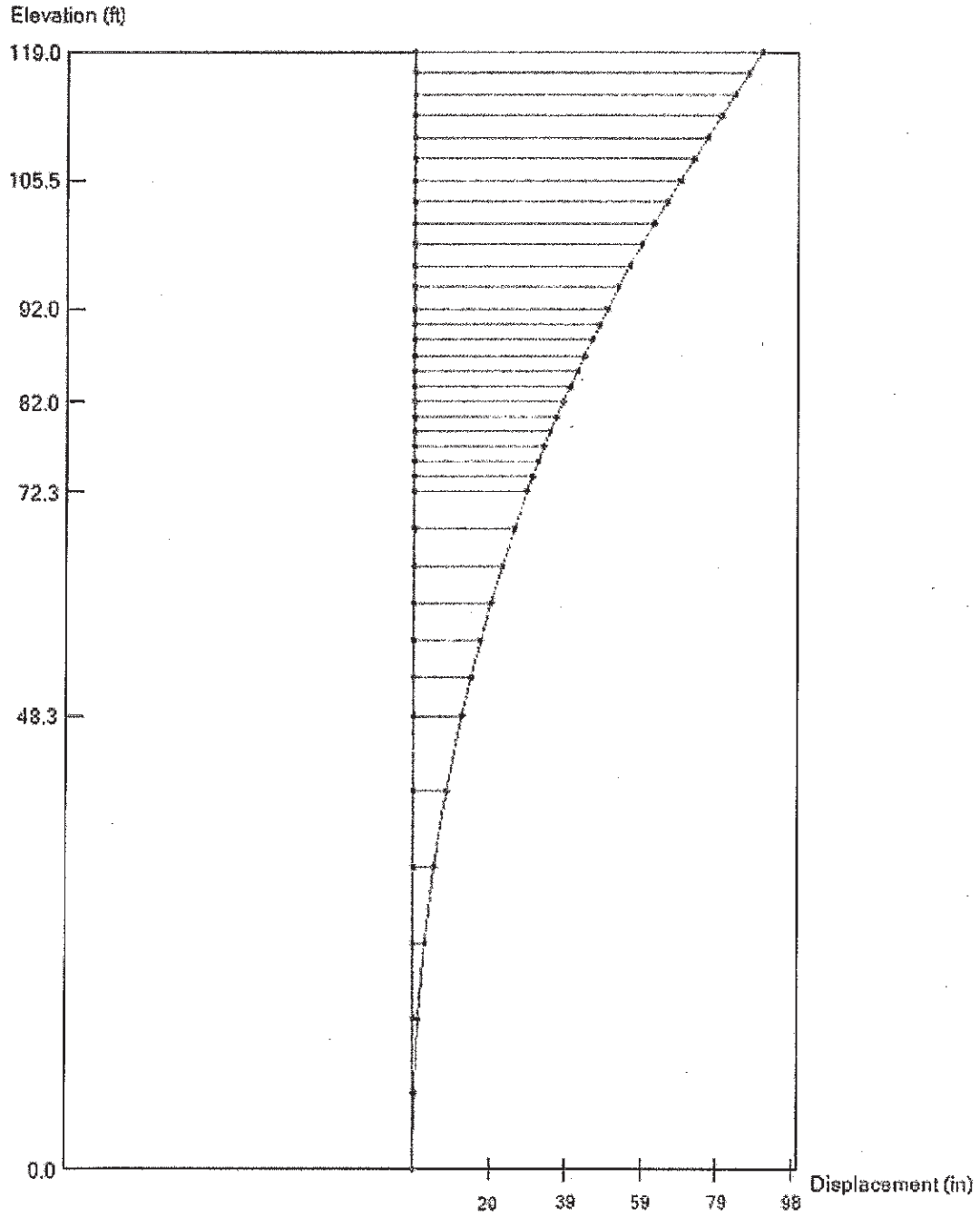
Section M: SECTION PROPERTIES DATA

Elev. (ft)	Diam. (in)	Width (in)	Thick. (in)	W/t	Area (in^2)	S (in^3)
119.0	12.8	1.5	0.375	4.0	14.7	44.05
116.8	12.7	1.5	0.375	4.0	14.7	44.03
116.8	12.7	1.5	0.375	4.0	14.7	44.03
114.5	12.7	1.5	0.375	4.0	14.7	44.02
114.5	12.7	1.5	0.375	4.0	14.7	44.02
112.3	12.7	1.5	0.375	4.0	14.7	44.01
112.3	12.7	1.5	0.375	4.0	14.7	44.01
110.0	12.7	1.5	0.375	4.0	14.7	44.00
110.0	12.7	1.5	0.375	4.0	14.7	44.00
107.8	12.7	1.5	0.375	4.0	14.7	43.99
107.8	12.7	1.5	0.375	4.0	14.7	43.99
105.5	12.7	1.5	0.375	4.0	14.7	43.97
105.5	12.7	1.9	0.188	10.0	7.5	22.99
103.3	13.1	1.9	0.188	10.3	7.7	24.30
103.3	13.1	1.9	0.188	10.3	7.7	24.30
101.0	13.4	2.0	0.188	10.6	7.9	25.64
101.0	13.4	2.0	0.188	10.6	7.9	25.64
98.8	13.8	2.1	0.188	11.0	8.1	27.02
98.8	13.8	2.1	0.188	11.0	8.1	27.02
96.5	14.1	2.1	0.188	11.3	8.3	28.44
96.5	14.1	2.1	0.188	11.3	8.3	28.44
94.3	14.5	2.2	0.188	11.6	8.5	29.90
94.3	14.5	2.2	0.188	11.6	8.5	29.90
92.0	14.8	2.2	0.188	12.0	8.7	31.39
92.0	14.8	1.6	0.500	3.2	22.8	78.54
90.3	15.3	1.7	0.500	3.4	23.6	84.20
90.3	15.3	1.7	0.500	3.4	23.6	84.20
88.7	15.8	1.8	0.500	3.6	24.3	90.06
88.7	15.8	1.8	0.500	3.6	24.3	90.06
87.0	16.3	1.9	0.500	3.8	25.1	96.11
87.0	16.3	1.9	0.500	3.8	25.1	96.11
85.3	16.8	2.0	0.500	3.9	25.9	102.36
85.3	16.8	2.0	0.500	3.9	25.9	102.36
83.7	17.3	2.1	0.500	4.1	26.7	108.82
83.7	17.3	2.1	0.500	4.1	26.7	108.82
82.0	17.8	2.1	0.500	4.3	27.5	115.46
82.0	17.8	2.7	0.219	12.4	12.2	52.99
80.4	18.3	2.8	0.219	12.8	12.6	55.95
80.4	18.3	2.8	0.219	12.8	12.6	55.95
78.8	18.8	2.9	0.219	13.2	12.9	59.00
78.8	18.8	2.9	0.219	13.2	12.9	59.00
77.2	19.3	3.0	0.219	13.5	13.2	62.13
77.2	19.3	3.0	0.219	13.5	13.2	62.13
75.6	19.8	3.0	0.219	13.9	13.6	65.33
75.6	19.8	3.0	0.219	13.9	13.6	65.33
73.9	20.3	3.1	0.219	14.3	13.9	68.62
73.9	20.3	3.1	0.219	14.3	13.9	68.62
72.3	20.7	3.2	0.219	14.7	14.3	71.99
72.3	20.7	2.8	0.420	6.7	27.1	134.20
68.3	21.9	3.0	0.420	7.2	28.7	150.68
68.3	21.9	3.0	0.420	7.2	28.7	150.68
64.3	23.1	3.2	0.420	7.7	30.3	168.12
64.3	23.1	3.2	0.420	7.7	30.3	168.12
60.3	24.3	3.5	0.420	8.2	31.9	186.51
60.3	24.3	3.5	0.420	8.2	31.9	186.51
56.3	25.5	3.7	0.420	8.7	33.5	205.86
56.3	25.5	3.7	0.420	8.7	33.5	205.86
52.3	26.7	3.9	0.420	9.2	35.1	226.16
52.3	26.7	3.9	0.420	9.2	35.1	226.16

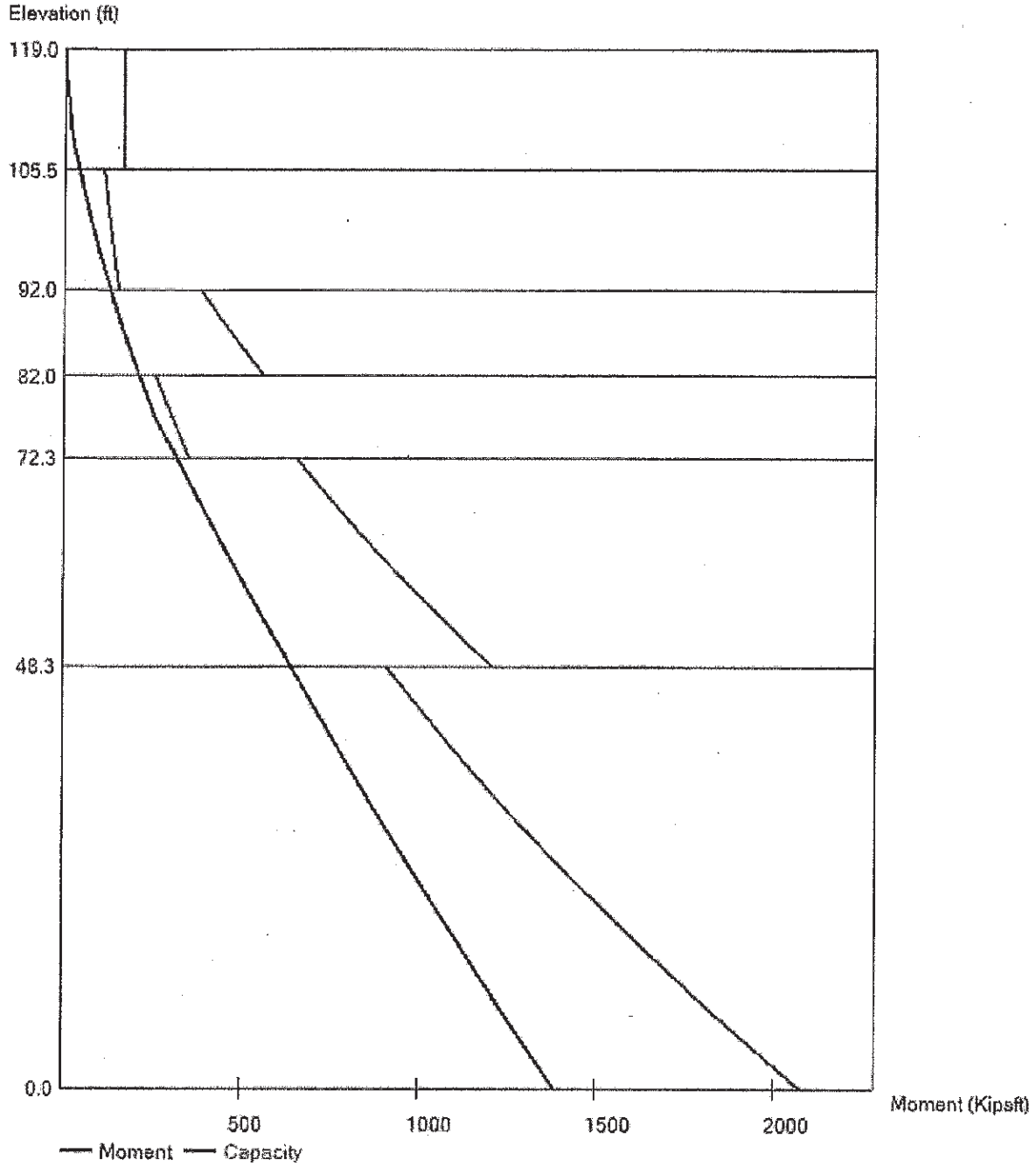
48.3	27.9	4.1	0.420	9.7	36.7	247.42
48.3	27.9	4.3	0.313	13.8	27.4	186.24
40.3	30.3	4.7	0.313	15.1	29.7	219.36
40.3	30.3	4.7	0.313	15.1	29.7	219.36
32.2	32.6	5.1	0.313	16.4	32.1	255.19
32.2	32.6	5.1	0.313	16.4	32.1	255.19
24.2	35.0	5.5	0.313	17.7	34.4	293.73
24.2	35.0	5.5	0.313	17.7	34.4	293.73
16.1	37.3	6.0	0.313	19.1	36.7	334.97
16.1	37.3	6.0	0.313	19.1	36.7	334.97
8.1	39.7	6.4	0.313	20.4	39.0	378.93
8.1	39.7	6.4	0.313	20.4	39.0	378.93
0.0	42.0	6.8	0.313	21.7	41.3	425.60

Note: w/t values marked with * (asterisk) indicate width to thickness exceeding maximum allowable values by standards.

Horizontal Displacement Diagram
Max. Envelope (All Loading Cases)



Bending Moment Diagram
Max. Envelope (All Loading Cases)



TowerSoft Tower - v 5.5.4 Monopole Analysis Program
Licensed to: Global Tower Partners, Boca Raton
(c) 1997-2013 TowerSoft, Mississauga, Ontario.

Project: Analysis for a 20' extension
Site: Stratford (CT1013)
Contract:
Engineer: MD

BASE PLATE DETAILS

Maximum Base Reactions

Axial Load(Kips) = 18.09
Shear Load(Kips) = 16.75
Bending Moment(Kipsft) = 1383.83
Torque(Kipsft) = 0.04

Anchor Rod Data

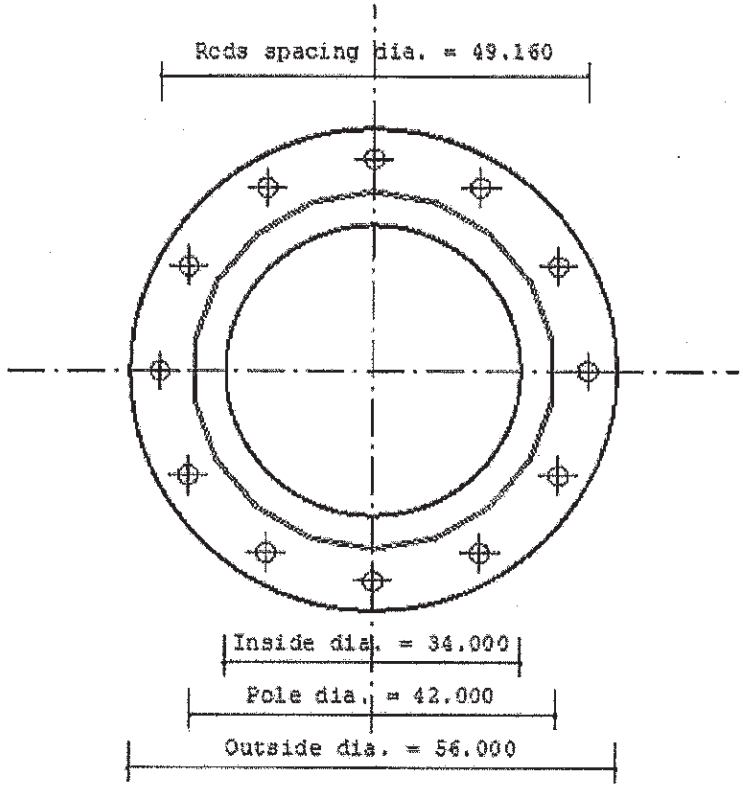
No of rods = 12
Grade = A615 Gr.75
Size = 2 1/4 in
Lar * (in) = 2.000
Shear Load(Kips) = 1.40
Axial Load(Kips) = 114.11
Shear Cap.(Kips) = 90.12
Axial Cap.(Kips) = 194.85
Assessment Ratio = 0.60
Allow. Stress Increase = 1.33

Plate Data

Thickness(in) = 2.000
Grade = A572 gr.50
Max. Stress(ksi) = 38.2
Allow. Stress(ksi) = 50.0
Assessment Ratio = 0.8
Allow. Stress Increase = 1.33

Plate Bottom above Concrete

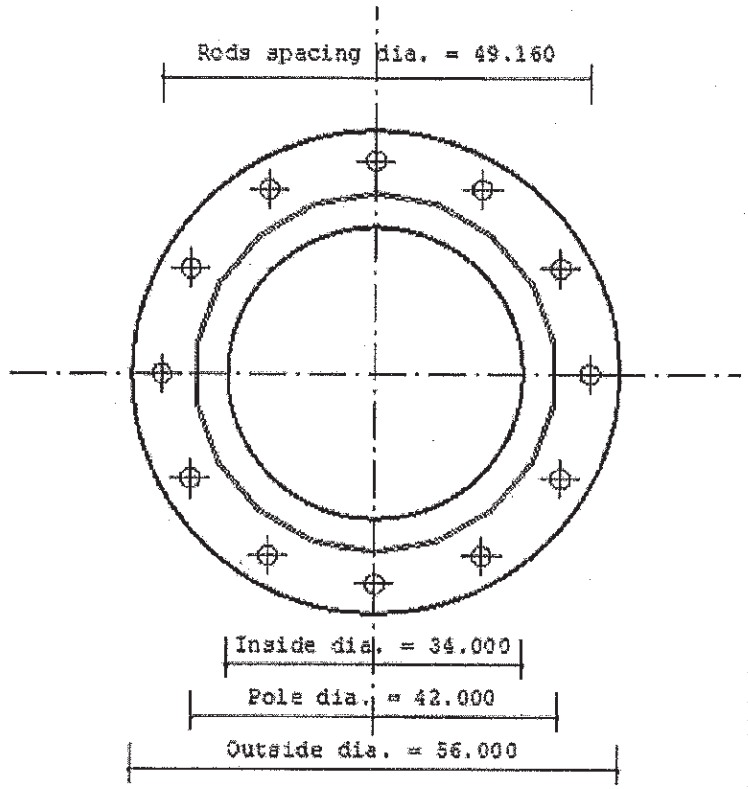
* Lar = Length from top of concrete to bottom of anchor rod leveling nut.



TowerSoft Tower - v 5.5.4 Monopole Analysis Program
Licensed to: Global Tower Partners, Boca Raton
(c) 1997-2013 TowerSoft, Mississauga, Ontario.

Project: Analysis for a 20' extension
Site: Stratford (CT1013)
Contract:
Engineer: MD

BASE PLATE DETAILS



Maximum Base Reactions

Axial Load(Kips)	= 18.09
Shear Load(Kips)	= 16.75
Bending Moment(Kipsft)	= 1383.83
Torque(Kipsft)	= 0.04

Anchor Rod Data

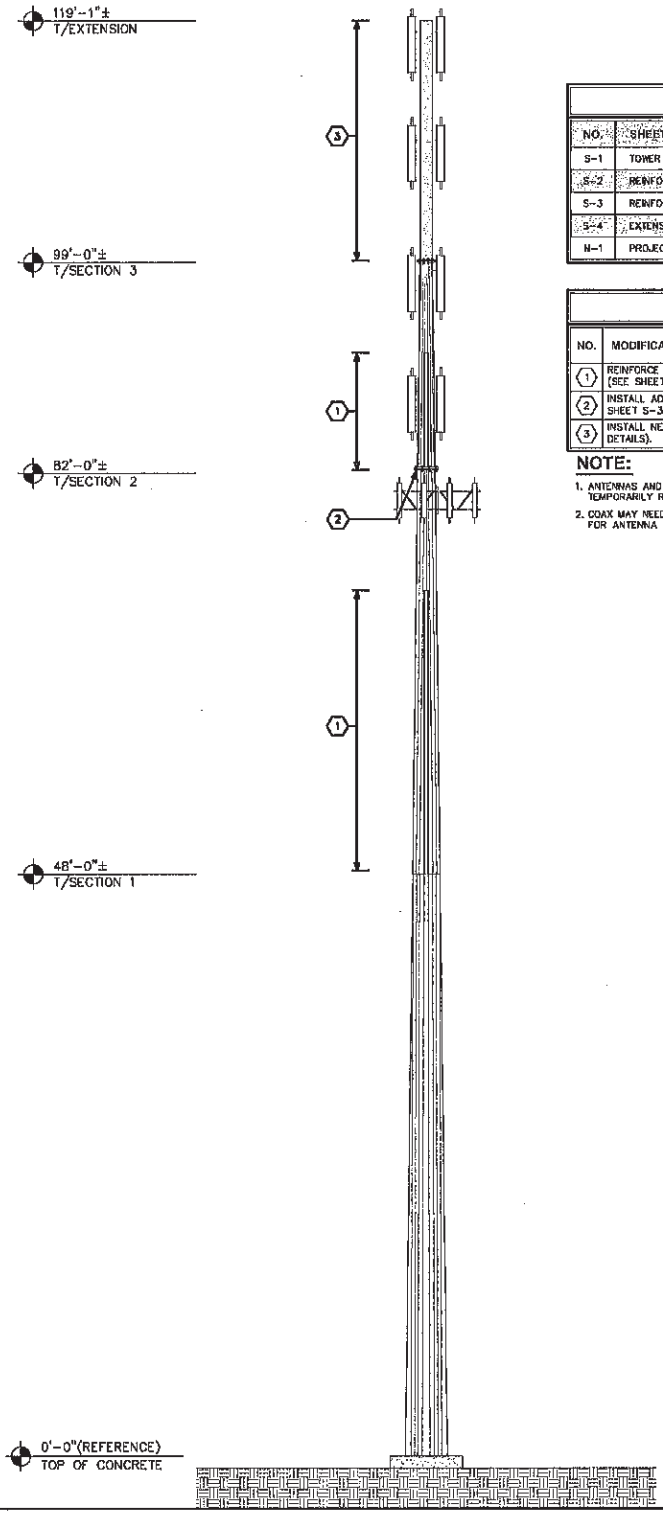
No of rods	= 12
Grade	= A615 Gr.75
Size	= 2 1/4 in
Lar * (in)	= 2.000
Shear Load(Kips)	= 1.40
Axial Load(Kips)	= 114.11
Shear Cap.(Kips)	= 90.12
Axial Cap.(Kips)	= 194.85
Assessment Ratio	= 0.60
Allow. Stress Increase	= 1.33

Plate Data

Thickness(in)	= 2.000
Grade	= A572 gr.50
Max. Stress(ksi)	= 38.2
Allow. Stress(ksi)	= 50.0
Assessment Ratio	= 0.8
Allow. Stress Increase	= 1.33

Plate Bottom above Concrete

* Lar = Length from top of concrete
to bottom of anchor rod leveling nut.



INDEX OF SHEETS

NO.	SHEET TITLE	REV.	DATE
S-1	TOWER ELEVATION AND MOD. SUMMARY	0	04-04-14
S-2	REINFORCEMENT DETAILS	0	04-04-14
S-3	REINFORCEMENT DETAILS II	0	04-04-14
S-4	EXTENSION DETAILS	0	04-04-14
N-1	PROJECT NOTES	0	04-04-14

MODIFICATION SCHEDULE

NO.	MODIFICATION DESCRIPTION	ELEVATION (FT.)
1	REINFORCE TOWER WITH SWITCHBLADE CHANNEL REINFORCEMENT. (SEE SHEET S-2 ,S-3 FOR DETAILS)	48'-72' & 82'-92'
2	INSTALL ADDITIONAL FLANGE BOLTS AT FLANGE PLATE (SEE SHEET S-3 FOR DETAILS).	82'
3	INSTALL NEW TOWER EXTENSION (SEE SHEET S-4 FOR DETAILS).	99'-119'

NOTE:

1. ANTENNAS AND OTHER APPURTENANCES MAY NEED TO BE TEMPORARILY REMOVED OR MOVED DURING MODIFICATION.
2. COAX MAY NEED TO BE RELOCATED THROUGH HAND HOLE FOR ANTENNA MOUNTS AT 97-FT.

TOWER ELEVATION

SCALE: 1" = 10'-0"

0 10 20
SCALE IN FEET

PLANS PREPARED BY:

ETS
ENGINEERED TOWER SOLUTIONS, PLLC
2624 LEIGHTON RIDGE DRIVE
WAKE FOREST, NC 27587
OFFICE: (919) 782-2710
www.engineeredtowersolutions.com

PLANS PREPARED FOR:

TARPON TOWERS
1001 3RD AVENUE WEST, SUITE 420
BRADENTON, FL 34205
OFFICE: (941) 757-5010 EXT 108

SITE NAME:
STRATFORD

SITE NUMBER:
CT-1013

SITE ADDRESS:
23 STONY BROOK ROAD
STRATFORD, CT

SEAL:

STATE OF CONNECTICUT
FREDERIC BOSI
PROFESSIONAL ENGINEER
LICENSED
GENERAL
No. 28,027

APRIL 7, 2014

REV.	DATE	ISSUED FOR:
0	4/7/14	MOD. DRAWINGS

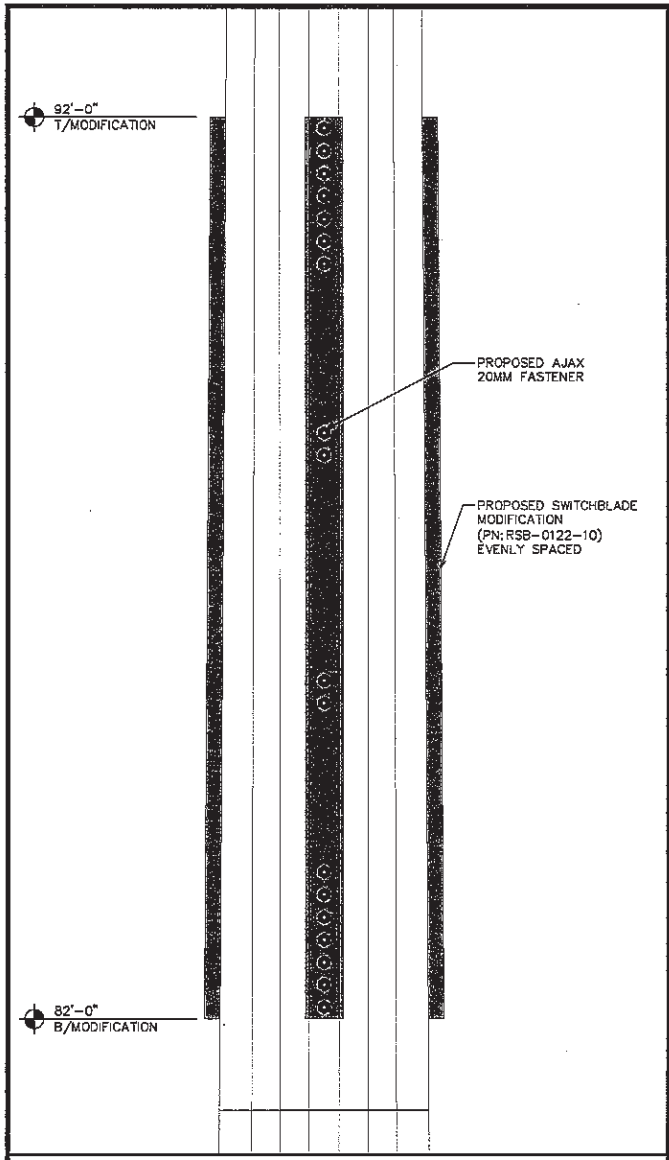
DRAWN BY: JED | CHECKED BY: FGB

SHEET TITLE:
TOWER ELEVATION AND MODIFICATION SCHEDULE

SHEET NUMBER: **S-1**

REVISION: 0

ETS # 140249.01



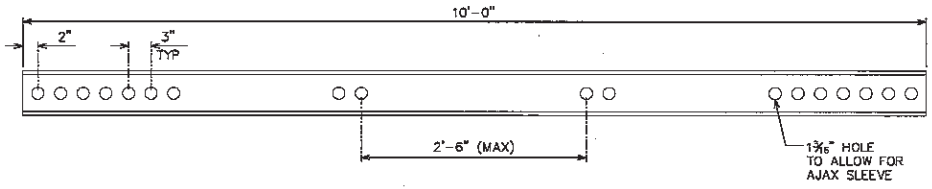
PARTIAL ELEVATION

SCALE: 3/4" = 1'-0"

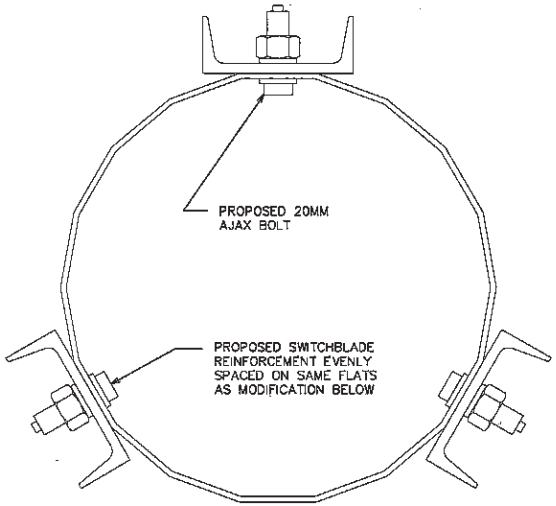
PARTS SCHEDULE

SECTION	ELEVATION (FT.)		PROPOSED MEMBER		BOLT	
	BOTTOM	TOP	SIZE	QUANTITY	SIZE	QUANTITY
2	82	92	SWITCHBLADE RSB-0122-10	3	AJAX 20MM	54

1. FOR ORDERING CONTACT DAN WELCH AT STRUCTURAL COMPONENTS (866)386-7622.
2. CONTRACTOR TO FIELD VERIFY THERE ARE NO OBSTRUCTIONS PRIOR TO INSTALLATION OF MODIFICATION.



SWITCHBLADE DETAIL



PLAN VIEW

SCALE: 1" = 1'-0"

0 1 2
SCALE IN FEET

PLANS PREPARED BY:

ETS
ENGINEERED TOWER SOLUTIONS, PLLC
2624 LEIGHTON RIDGE DRIVE
WAKE FOREST, NC 27587
OFFICE: (919) 782-2710
www.engineeredtowersolutions.com

PLANS PREPARED FOR:

TARPON TOWERS
1001 3RD AVENUE WEST, SUITE 420
BRADENTON, FL 34205
OFFICE: (941) 757-5010 EXT 108

SITE NAME:

STRATFORD

SITE NUMBER:

CT-1013

SITE ADDRESS:
23 STONY BROOK ROAD
STRATFORD, CT

SEAL:

STATE OF CONNECTICUT
FREDERIC BOST
PEN. 0[illegible]29
LICENSED
PROFESSIONAL ENGINEER

APRIL 7, 2014

REV	DATE	ISSUED FOR:
0	4/7/14	MOD. DRAWINGS

DRAWN BY: JED | CHECKED BY: FGB

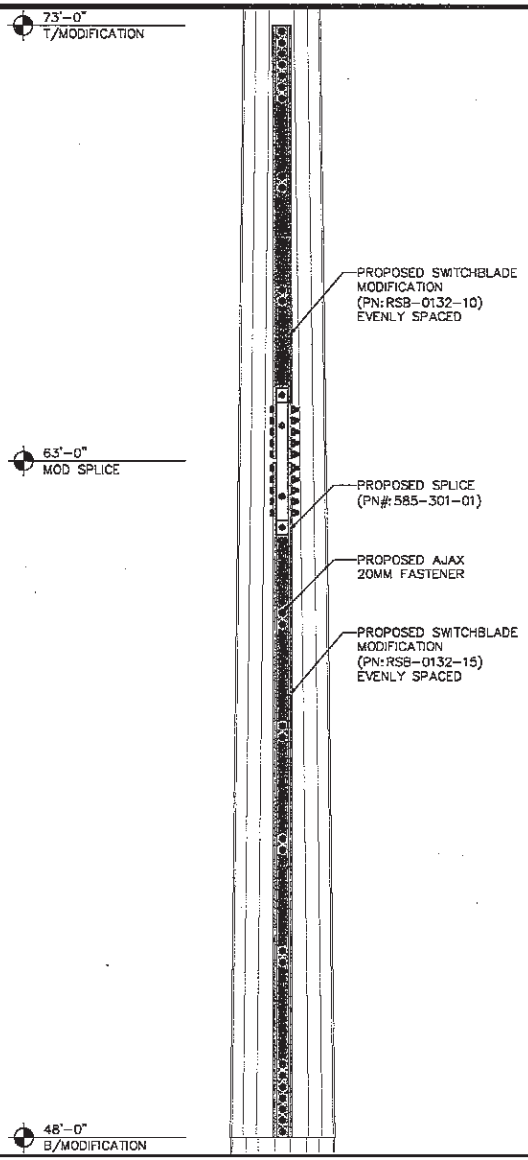
SHEET TITLE:

REINFORCEMENT DETAILS

SHEET NUMBER: **S-2**

REVISION: 0

ETS #: 140249.01



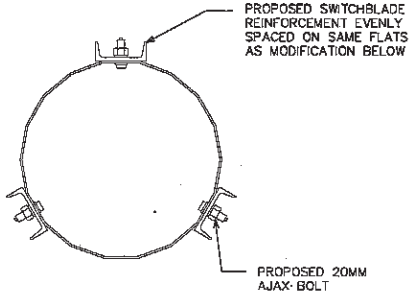
PARTIAL ELEVATION

SCALE: 3/8" = 1'-0"

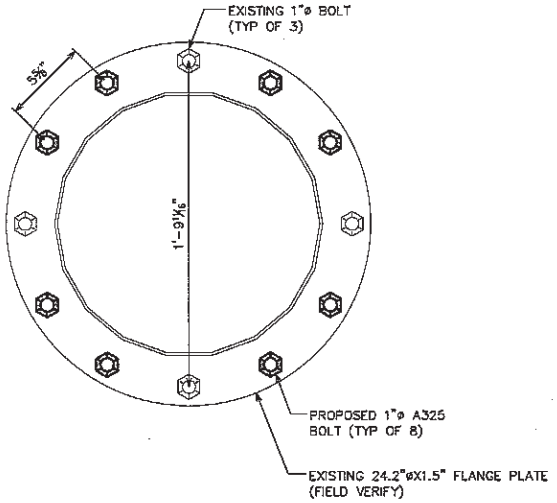
PARTS SCHEDULE

SECTION	ELEVATION (FT.)		PROPOSED MEMBER		BOLT	
	BOTTOM	TOP	SIZE	QUANTITY	SIZE	QUANTITY
2	48	63	SWITCHBLADE RSB-0132-15	3	AJAX 20MM AJAX 135MM	48 3
2	63	73	SWITCHBLADE RSB-0132-10	3	AJAX 20MM AJAX 135MM	36 3
2	63	63	585-301-01	3	7/8"øX7½"	30

1. FOR ORDERING CONTACT DAN WELCH AT STRUCTURAL COMPONENTS (866)385-7622.
2. CONTRACTOR TO FIELD VERIFY THERE ARE NO OBSTRUCTIONS PRIOR TO INSTALLATION OF MODIFICATION.



SWITCHBLADE DETAIL



FLANGE BOLT REINFORCEMENT

SCALE: 1 1/2" = 1'-0"

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SEAL:

STATE OF CONNECTICUT · FREDERIC BOST · PE-19 029228 · LICENSED PROFESSIONAL ENGINEER

APRIL 7, 2014

REV	DATE	ISSUED FOR:
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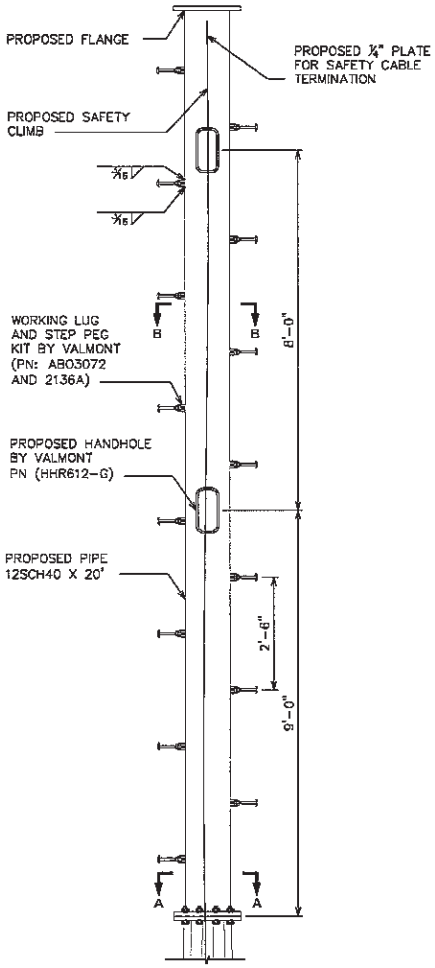
SHEET TITLE:

REINFORCEMENT DETAILS II

SHEET NUMBER: **S-3**

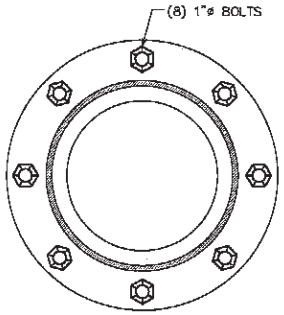
REVISION: 0

ETS #: 140249.01

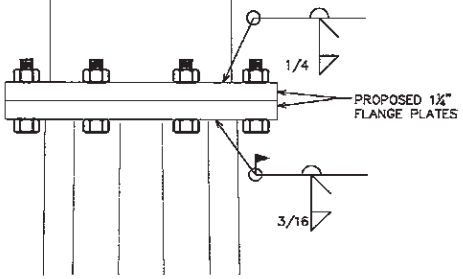


PARTIAL ELEVATION

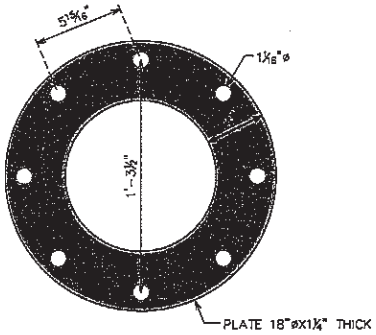
SCALE: 3/8" = 1'-0"



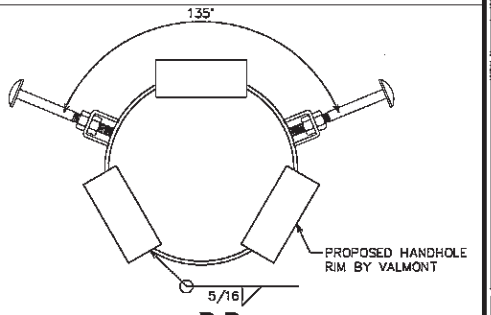
A-A



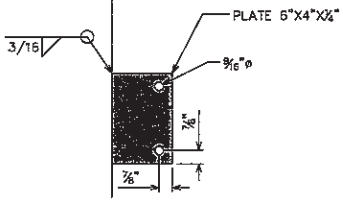
PROPOSED FLANGE AT 99'



PROPOSED FLANGE PLATE



B-B



SAFETY CABLE TERM PLATE

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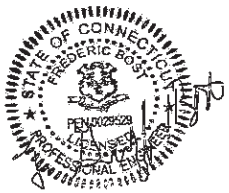

APRIL 7, 2014

REV	DATE	ISSUED FOR:
0	4/7/14	MOD. DRAWINGS

DRAWN BY: JED | CHECKED BY: FGB

SHEET TITLE:
REINFORCEMENT DETAILS

SHEET NUMBER: **S-4**

REVISION: 0

ETS #: 140249.01

GENERAL NOTES:

1. ALL REFERENCES TO THE OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED FLORIDA TOWER PARTNERS OR ITS DESIGNATED REPRESENTATIVE.
2. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF CONNECTICUT.
3. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2007 EDITION.
4. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
5. ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND IT'S COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
7. ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATIONS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE PROCEDURES.
8. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
10. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.
11. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
12. IF APPLICABLE, ALL CONCRETE WORK SHALL COMPLY TO LOCAL CODES AND THE ACI 318-05, "BUILDING REQUIREMENTS FOR STRUCTURAL CONCRETE".
13. 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.

WELDING NOTES:

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M: 2008 "STRUCTURAL WELDING CODE-STEEL".
2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
3. CONTRACTOR SHALL RETAIN AN AWS CERTIFIED WELD INSPECTOR TO PERFORM VISUAL INSPECTIONS ON FIELD WELDS. A LETTER AND REPORT SHALL BE ISSUED TO THE CONTRACTOR. CONTRACTOR SHALL SUBMIT LETTER AND REPORT TO TOWER ENGINEERING PROFESSIONALS.
4. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. GRIND THE SURFACE OF THE ROD TO BE INSTALLED FOR A DISTANCE OF 2" MINIMUM ALL AROUND THE AREA TO BE WELDED. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING.
5. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0°F. WHEN THE TEMPERATURE IS BETWEEN 0°F AND 32°F, PREHEAT AND MAINTAIN THE STEEL IN THE VICINITY OF THE WELD AREA AT 70°F DURING THE WELDING PROCESS.
6. DO NOT WELD ON WET OR FROST-COVERED SURFACES & PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.
7. FOR ALL WELDING, USE E70XX ELECTRODES.
8. AFTER FINAL INSPECTION, THE AREA OF THE WELDS, THE INSTALLATION AND ALL SURFACES DAMAGED BY WELDING OR GRINDING SHALL RECEIVE A COLD-GALVANIZED COATING. THIS COATING SHALL BE APPLIED BY BRUSH. THE GALVANIZING COMPOUND SHALL CONTAIN A MINIMUM OF 95%% ± PURE ZINC. THE FINISHED COATING SHALL BE A MINIMUM THICKNESS OF 3 MILS.

STRUCTURAL STEEL NOTES:

1. THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN, 13TH EDITION.
2. UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
   STRUCTURAL STEEL:
   - ANGLE: ASTM A36
   - PIPE/TUBE: ASTM A500-50
   - PLATE: ASTM A36 (SELF SUPPORTING AND GUYED TOWERS)
   - PLATE: ASTM A572-65 (MONOPOLE)

   A. ALL BOLTS, ASTM A325 TYPE I GALVANIZED HIGH STRENGTH BOLTS.
   B. ALL U-BOLTS, ASTM A193 GRADE B7
   C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
   D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.
3. ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN, 13TH EDITION.
4. HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER.
5. HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM, A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE.
6. REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTED MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTED; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL.
7. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS.
8. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.
9. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
10. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.

BOLT TIGHTENING PROCEDURE:

1. TIGHTEN CONNECTION BOLTS BY AISC – "TURN OF THE NUT" METHOD, USING THE CHART BELOW.

BOLT LENGTHS UP TO AND INCLUDING FOUR DIA.

½"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
⅝"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
¾"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
⅞"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT

BOLT LENGTHS OVER FOUR DIA. BUT NOT EXCEEDING EIGHT DIA.

½"	BOLTS 2.25 TO 4.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
⅝"	BOLTS 2.75 TO 5.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
¾"	BOLTS 3.25 TO 6.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
⅞"	BOLTS 3.75 TO 7.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT

2. CONNECTION BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS, LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:
3. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

8.2.1 TURN-OF-THE-NUT TIGHTENING

BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT IN A MANNER THAT WILL MINIMIZE RELAXATION OF PREVIOUSLY PRETENSIONED BOLTS.

4. ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

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APRIL 7, 2014

REV	DATE	ISSUED FOR:
0	4/7/14	MOD. DRAWINGS

DRAWN BY: JED | CHECKED BY: FGB

SHEET TITLE:

PROJECT NOTES

SHEET NUMBER: **N-1**

REVISION: 0

ETS #: 140249.01

ATTACHMENT D

Michael Lawton
SAI Communications
260 Cedar Hill St.
Marlborough, MA 01752
Mike.Lawton@sai-comm.com

April 10, 2014

Connecticut Siting Council

Subject: AT&T Wireless, CT2381 – Stratford Kasper Circle

Dear Connecticut Siting Council:

At the request of AT&T Wireless, SAI Communications has performed a cumulative assessment of the RF Power Density at the proposed site located at 23 Stonybrook Road, Stratford, CT.
Calculations were done in compliance with FCC OET Bulletin 65. This report provides an FCC compliance assessment based on a "worst-case" analysis that all transmitters are simultaneously operating at full power and pointing directly at the ground.

FCC OET Bulletin 65 formula:

$$S = \frac{2.56 * 1.64 * ERP}{4 * \pi * R^2}$$

Transmission Mode	Antenna Centerline AGL (ft)	Frequency (MHz)	Number of Channels	Effective Radiated Power per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	% MPE (Uncontrolled/ General Public)
AT&T UMTS	117	850	2	500.00	0.0263	0.5667	4.64%
AT&T UMTS	117	1900	2	500.00	0.0263	1	2.63%
AT&T LTE 700 BC/DE	117	700	2	500.00	0.0263	0.4667	5.63%
AT&T LTE 850	117	850	1	500.00	0.0131	0.5667	2.32%
AT&T LTE 1900	117	1900	2	500.00	0.0263	1	2.63%
AT&T LTE WCS	117	2300	1	500.00	0.0131	1	1.31%
T-Mobile GSM/UMTS	87	1950	2	12.08	0.0011	1	0.11%
T-Mobile UMTS	87	2100	2	12.08	0.0011	1	0.11%
T-Mobile LTE	97	2100	2	24.16	0.0018	1	0.18%
Verizon PCS	77	1710				1	3.28%
Verizon cellular	77	869				0.579333333	7.01%
Verizon LTE	77	746				0.497333333	1.87%
Total							31.73%

Conclusion: AT&T's proposed antenna installation is calculated to be within 31.73% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).

Sincerely,

Michael Lawton
SAI Communications