
**Application to the Town of Westwood for Administrative Environmental Impact and
Design Review (EIDR)**

Applicant:
Sprint Spectrum L.P.
1 International Blvd, Mahwah, NJ 07495

Property Location:
690 Canton Street
Westwood, MA 02090

Prepared by:
Ignacio Formoso
Tower Resource Management, Inc.
16 Chestnut Street, Suite 420
Foxborough, MA 02035
Phone: 781-733-1623
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Email: iformoso@trmcom.com

January 17, 2017

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Sprint Spectrum L.P.
1 International Blvd Suite 800
Mahwah, NJ 07495

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Section 6409.....

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Landlord Approval.....

Site Plan.....



January 17,2017

Planning Board Town of Westwood
580 High Street Westwood, MA
02090

RE: Application for a Wireless Communication Overlay District - Evoromental Impact and Design Review for modification to an existing Wireless Communications Facility. Location: 690 Canton Street, Westwood, MA 02090 (the "Property") Applicant: Sprint Spectrum L.P. (the "Applicant")

Dear Honorable Board Members:

The Applicant, Sprint Spectrum, L.P. ("Applicant"), is licensed by the Federal Communications Commission (FCC) to construct and operate a wireless telecommunications network throughout the country, including the Town of Westwood Massachusetts. The Applicant is in the process of upgrading their existing telecommunications system to better serve the New England Market including the State of Massachusetts.

The Applicant currently co-locates on the existing the existing Wireless Communications Facility ("WCF") located at 690 Canton Street, Westwood, MA 02090 and seeks to perform modifications as shown on the plans submitted with this Application (the "Plans"). The Applicant proposes to add (3) new antennas [and associated cables]. Applicant also proposes to mount (3) Remote Radio Heads (RRH) behind the new antennas.

The Property is located in the Industrial zoning district. According to Section 9.4.2 of the Town of Westwood Zoning By-Laws ("By-Law"), the use is allowed provided that the Planning Board agrees the requirements have been met per Section 7.3.

I. **Background**

The Applicant is licensed by the Federal Communications Commission ("FCC") to construct and operate a wireless telecommunications network in various markets throughout the country, including the Town of Westwood. A copy of the Applicant's FCC license is attached hereto. The Applicant is in the process of upgrading some of its equipment to better serve its customers in the Commonwealth of Massachusetts.

II. **RF Coverage Determination**

The existing WCF provides adequate coverage to the targeted sections of the Town of Westwood and the immediate surrounding area. With the Board's approval, the modifications will allow the applicant to provide better voice quality and data speeds for the subscribers in the area.

III. **The Facility**

After installation of the proposed modifications, the WCF will remain unmanned and will only require bi-monthly maintenance visits. The only utilities required to operate this WCF are standard 120-volt electrical power as well as telephone service which currently exist on site. The traffic generated by the WCF will be about one to two vehicle trips per month by maintenance personnel who will inspect the WCF to ensure it remains in good working order. The WCF will remain in compliance with all applicable local, state and federal safety codes. The use is passive in nature and will not emit smoke, fumes, odors, excessive noise, or any hazardous material and will continue as such.

IV. **Legal Argument and Findings of Fact for EIDR Approval**

The Applicant has satisfied the requirements for the granting of the requested Site Plan Approval pursuant to Sections 7.3 and 9.4 of the Town of Westwood Zoning By-Law as follows:

7.3 ENVIRONMENTAL IMPACT AND DESIGN REVIEW (EIDR)

7.3.1 Purpose. The purpose of this Section is to provide individual detailed review of certain uses and structures which have a substantial impact upon the character of the Town and upon traffic, utilities and property values therein, thereby affecting the public health, safety and general welfare thereof. The environmental impact and design review process is intended to promote the specific purposes listed in Section 1.1, Purpose.

The proposed modified wireless facility will not have a substantial impact upon the character of the Town. To the extent that character relates to visual impact, its appearance will be virtually identical to the existing wireless facility. The Wireless Communications Overlay District includes the Parcel 09-065. As the existing facility is an allowed use, the modification of the facility is consistent with the intent and purpose of the Town of Westwood Zoning bylaws.

7.3.7 Environmental Impact and Design Standards. The following standards shall be utilized by the Planning Board to review and evaluate all applications pursuant to this Section. These standards are intended to provide a frame of reference for the Applicant in the development of their project and building plans as well as criteria for review by the Planning Board. These standards shall not be regarded as inflexible requirements. They are not intended to discourage creativity, invention and innovation. The specification of one or more particular architectural styles is not included in these standards. The standards of review outlined in this Section shall also apply to all accessory buildings, structures, freestanding signs and other site features, however related to the principal buildings or structures.

7.3.7.1 Preservation of Landscape. The landscape shall be preserved in its natural state, insofar as practicable. Tree and soil removal shall be minimized, and any grade changes shall be consistent with the general appearance of neighboring developed areas. Due regard shall be given to the attractive utilization of the natural features of the area, including trees, woods, streams and ponds. All open areas which cannot be preserved in their natural state shall be replanted as far as practicable with as many trees and plantings as previously existed.

The proposed antennas on the rooftop will not affect the existing landscaping or involve the removal of soil or result in any change of the grade of the property. The replacement antennas and remote radio heads will be designed to match the existing antennas and therefore will continue to blend with the appearance of the water tank.

7.3.7.2 Relation of Buildings to Environment. The proposed development shall be related harmoniously to the terrain and to the use, scale and architecture of existing buildings in the vicinity that have functional or visual relationship to the proposed building. The Planning Board may require a modification in massing so as to reduce the effect of shadows on abutting property, public open space or streets.

The proposed antennas will not affect the scale or architecture of the rooftop. The replacement antennas and remote radio heads will be installed at the same height of the existing antennas and designed to match the current installation in a manner that minimizes its visibility from neighboring residences and streets and in accordance with the Town of Westwood, Zoning By-Law encouragement of co-location within the WCOD. The proposed antennas and remote radio heads will not extend above the current installation.

7.3.7.3 Open Space. All open space shall be so designed as to add to the visual amenities of the vicinity by maximizing its visibility for persons passing the site or overlooking it from nearby properties.

The proposed antennas and remote radio heads will be mounted on the rooftop at the same height as the existing antennas and following the installation, the total number of antennas will be at the current level of 6 antennas. The proposed installation of antennas will not affect open space or alter the appearance of the existing rooftop for persons passing by the site or overlooking it from nearby properties.

7.3.7.4 Circulation, Traffic Impact and Alternative Means of Transportation. With respect to vehicular and pedestrian circulation and traffic, including entrances, ramps, walkways, drives and parking, special attention shall be given to location, number and function of access points to the public streets (especially in relation to existing traffic flow, traffic controls and mass transit facilities), width of interior drives and access points, general interior circulation, separation of pedestrian and vehicular traffic, access to community facilities, the arrangement, safety and convenience of both vehicle and bicycle parking areas and the effect thereof upon the use and enjoyment of proposed buildings and structures and the neighboring properties, and the traffic impact of the proposed development on nearby public and private streets. Each proposed facility is encouraged to incorporate alternative means of transportation, including bicycle and shuttle bus, and shall make adequate provision for the convenience of vehicular and pedestrian movement within the site in which the facility is to be located, and in relation to nearby streets, property and improvements.

The proposed antennas and remote radio heads and additional cabling will generate no traffic or other negative impacts on surrounding properties or the Town of Westwood.

7.3.7.5 Stormwater Drainage and Erosion Control. Special attention shall be given to proper site surface drainage (i) so that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system and (ii) so as to minimize any adverse impact upon nearby “downstream” properties. Stormwater shall be removed from all roofs, canopies and paved areas in a manner complying with the stormwater management standards adopted and as amended from time to time by the Massachusetts Department of Environmental Protection. Surface water in all paved areas shall be collected at intervals so that it will not obstruct the flow of vehicular or pedestrian traffic and will not create puddles in the paved area. Erosion and sediment controls must be implemented to prevent any negative impacts during construction or other land disturbance activities. Permanent post-development erosion controls must be implemented and maintained where necessary.

The proposed antennas and remote radio heads and additional cabling will not impact storm water drainage on the site.

7.3.7.6 Advertising Features. The size, location, design, color texture, lighting and materials of all permanent signs and outdoor advertising structures or features shall not detract from the use and enjoyment of proposed buildings and structures and the surrounding properties.

There are no signs or advertising proposed as part of the proposed antennas.

7.3.7.7 Special Features. Exposed storage areas, exposed machinery installations, service areas, truck loading areas, utility buildings and structures shall be subject to such setbacks, screen plantings or other screening methods as shall reasonably be required to prevent their being incongruous with the existing or contemplated environment and the surrounding properties. All towers, antennas and poles shall be sited, designed and sized to have minimal visual impact on nearby properties.

The antennas and remote radio heads and additional cabling will be installed at the same height as the existing antennas and designed to match in a manner that minimizes its visibility from neighboring residences and streets and in accordance with the Town of Westwood, Zoning By-Law encouragement of co-location. There will be no perceptible change to the existing conditions as a result of the proposed antennas.

7.3.7.8 Safety. With respect to personal safety, all open and enclosed spaces shall be designed to facilitate building evacuation and maximize accessibility by fire, police and other emergency personnel and equipment. Insofar as practicable, all exterior spaces and interior public and semi-public spaces shall be designed to minimize the fear and probability of personal harm or injury by increasing the potential surveillance by neighboring residents and passersby of an accident or attempted criminal act. Traffic to and from any facility shall not cause safety hazards or increased congestion in nearby residential neighborhoods.

The installation of the rooftop mounted antennas will not affect public safety as it relates to evacuation or accessibility during an emergency. It will have no effect on potential surveillance or expose residents to criminal acts.

Sprint is in compliance with federal and state regulations to ensure that its wireless telecommunications facilities are operating in compliance with all applicable standards and mandates.

Sprint operates in compliance with all of the rules and regulations promulgated by the Federal Communications Commission as required by its licensing.

7.3.7.9 Heritage. With respect to the Town's heritage, removal or disruption of historic, traditional or significant uses, structures or architectural elements shall be minimized insofar as practicable, whether these exist on the site or on adjacent properties.

The existing structure is not historic and the proposed antennas do not impact any historic structures. The existing structure currently includes the wireless telecommunications equipment of the Applicant and competitors of the Applicant.

7.3.7.10 Microclimate. With respect to the localized climatic characteristics of a given area, any development which proposes new structures, new hard-surface ground coverage or the installation of machinery which emits heat, vapor or fumes, shall endeavor to minimize, insofar as practicable, any adverse impact on light, air and water resources or on noise and temperature levels of the immediate environment.

Sprint is not proposing any new structures, new hard-surfaces ground coverage, or the installation of machinery which emits heat, vapor, or fumes. The Applicant is proposing to install antennas and add remote radio heads at its existing facility with antennas of substantially similar dimensions.

7.3.7.11 Energy Efficiency. To the maximum extent reasonably practicable, proposals shall utilize energy-efficient technology and renewable energy resources and shall adhere to the principles of energy-conscious design with regard to orientation, building materials, shading, landscaping and other elements. Efforts shall be made to harmonize energy-related components with the character of the building and its surroundings and to prevent adverse effects on the energy consumption of neighboring structures and on the environment.

The utilities will continue to be obtained from existing service in a manner consistent with current power and telephone services at the water tank.

7.3.7.12 Detrimental Effects. No proposed facility shall be detrimental to the health, safety or welfare of persons working or living in the neighborhood, or by reason of danger of fire or explosion, environmental pollution, corrosion, toxic or noxious fumes, gas, smoke, soot, dust, odors, noise or vibrations or other hazards.

The existing wireless communications facility will continue to be operated in compliance with all applicable federal and state regulations, including regulations governing radio frequency emissions. The facility will be constructed in full compliance with Federal Aviation Administration ("FAA") and Federal Communications Commission ("FCC") regulations and all other applicable state and local regulations. Sprint Wireless operates in compliance with all of the rules and regulations promulgated by the Federal Communications Commission as required by its licensing.

7.3.7.13 Nearby Properties. Nearby properties shall be protected against detrimental uses on the site.

The proposed antennas will not be a detriment to the public, and in fact, will benefit the public by lessening the visual impact by modifying an existing wireless communications facility on an existing rooftop that currently contains wireless communications facilities, decreasing the need for additional new wireless facilities in the community, and increasing Sprint's service coverage in the Town of Westwood and the surrounding community. By allowing the proposed antennas at this existing water tank utilizing the existing mounts consistent with competitors' facilities, the intent of the Bylaw will be met. The existing wireless communications facility is designed to be unobtrusive and sited to minimize visibility from nearby properties as well as reasonably possible, and will reduce any alleged adverse visual impacts by replacing antennas on existing mounts.

7.3.7.14 Specific Standards for High and Washington Street. Where the nature of the following design features is considered significant to the preservation or enhancement of the desirable visual quality and property values of a particular part of High Street or Washington Street, any new structure or alteration shall be harmoniously related to nearby pre-existing structures and the street facade in terms of color, texture, materials, scale, height, setbacks, roof and cornice lines, signs and design elements such as door and window size and location and door and window detailing, including materials for sills, lintels, frames and thresholds and any other major design elements.

This design standard is not applicable. The proposed facility is not on or in proximity to High or Washington Streets.

7.3.7.15 Air Quality. Any use whose emissions are such as to cause it to be classified as a major new stationary source of air pollution, as defined by the Environmental Protection Agency (EPA) under the Clean Air Act, and any use required to apply to the Massachusetts Department of Environmental Protection under 310 CMR 7.00 or to EPA under Section 112 of the Clean Air Act for permission to emit asbestos, benzene, beryllium, mercury, vinyl chloride, or radionuclides shall be permitted only upon determination by the Planning Board that compliance with the requirements of those agencies is assured, and that health and safety are adequately protected.

This design standard is not applicable. The proposed antennas and remote radio heads and additional cabling will not emit contamination into the air.

7.3.7.16 Plants and Animals. Location and design shall not cause avoidable damage to wildlife habitats or corridors, or to any plant species listed as endangered, threatened or of special concern by the Massachusetts Natural Heritage Program, or to any tree with more than a twenty-four (24) inch trunk diameter one (1) foot above grade. An application for a MBD special permit must include documentation to the Planning Board of having consulted with the Conservation Commission and the Massachusetts Natural Heritage Program regarding these considerations, and that the proposed site either contains no such habitats or materials, or that all feasible efforts to avoid, minimize or compensate for damage have been reflected in the development proposal.

This design standard is not applicable. There are no known wildlife habitats or corridors, or any plant species listed as endangered, threatened or/of special concern on the rooftop

7.3.7.17 Vibration. Except for blasting and other activities within the jurisdiction of the Board of Fire Prevention Regulations, no use shall be allowed which produces vibration at or beyond the boundaries of the premises exceeding two-thirds (2/3) the frequency/amplitude limitations established by the Board of Fire Prevention Regulations at 527 CMR 13.11 (18) for three (3) minutes or more in any hour between 7:00 am and 9:00 pm or for thirty (30) seconds or more in any hour between 9:00 pm and 7:00 am.

The proposed antennas and remote radio heads and additional cabling will not generate any perceptible vibration during installation or operation.

7.3.7.18 Electrical Disturbances. No EMF emission shall be permitted which adversely affects the operation of any equipment on other properties.

The facility will be constructed in full compliance with Federal Communications Commission ("FCC") regulations and all other applicable state and local regulations. Sprint operates in compliance with all of the rules and regulations promulgated by the Federal Communications Commission as required by its licensing.

7.3.7.19 Historic and Archaeological Sites. Location and design shall not cause avoidable damage or impairment to the historic or archaeological value of buildings on sites recorded on the Massachusetts Register of Historic Places. An application for a MBD special permit shall submit documentation that either the site does not contain or impact such buildings or sites, or that any potential damage or impairment has been effectively mitigated.

The rooftop at 690 Canton Street is not recorded as having historic or archaeological value on the Massachusetts Register of Historic Places.

7.3.7.20 Solid Waste. Each development must document arrangements for satisfactory disposal of tree stumps and debris resulting from construction, and must make permanent arrangement for satisfactory on-site storage of refuse pending its removal, such storage to be screened from public view, secure from vermin, birds or other animals, and located to present minimal hazard in the event of fire and minimal threat to water quality in the event of container failure.

The existing and modified wireless communications facility does not generate any solid waste.

7.3.7.21 Water Quality. Any development subject to review pursuant to this Section which involves a use prohibited or requiring a special permit in a Water Resource Protection Overlay District pursuant to Section 9.3 may be allowed if such development is located outside of the Water Resource Protection Overlay District and if the material regulated is less than twenty (20) gallons liquid or less than one hundred fifty (150) pounds dry weight. If exceeding those limits the use shall be allowed only if the Planning Board, in its review of the application pursuant to this Section, determines that the Applicant has documented that adequate safeguards for protecting the integrity of groundwater quality have been assured. Any development subject to review pursuant to this Section which involves a use prohibited or requiring a special permit under Section 9.3 and is located within a Water Resource Protection Overlay District may be allowed if such development has been granted a special permit pursuant to the provisions of Section 9.3.

The design standard is not applicable to the modification of antennas.

9.4 WIRELESS COMMUNICATION OVERLAY DISTRICT (WCOD)

9.4.7.1 Development Standards. An Applicant proposing a wireless communication facility must demonstrate to the satisfaction of the Planning Board that the visual and aesthetic impacts of the wireless communication facility on nearby properties will be minimal. The Applicant must also demonstrate that the facility must be located at the proposed site due to technical, topographical or other unique circumstances, and that no reasonable combination of locations, techniques, or technologies will mitigate the height or visual impact of the proposed wireless communication facility.

The proposed antennas will not be injurious, obnoxious, offensive, dangerous, or a nuisance to the community or the neighborhood through noise, vibration, concussion, odors, fumes, smoke, gases, dust, harmful fluids or substances, danger of fire or explosion or other objectionable feature detrimental to the community or neighborhood health, safety, convenience, morals or welfare.

The proposed antennas and remote radio heads and additional cabling will not result in a disassemble change to the existing wireless communications facility and there will not result in any impact to the integrity of adjoining districts nor will it be detrimental to health, morals or welfare.

Sprint proposed facility is both essential and desirable to the public convenience and welfare, as it will allow for improved wireless communications within the town of Westwood. Citizens of Westwood will have better wireless service for emergency, business and personal calls.

9.4.7.2 Co-location of wireless communication facilities is encouraged. To the extent possible, wireless communication facilities shall be located in or on existing buildings or structures, including, but not limited to, buildings, communication facilities, utility transmission towers or poles, water towers, and related facilities, provided that such installation preserves the character and integrity of these buildings or structures. The Applicant shall have the burden of demonstrating to the satisfaction of the Planning Board that a good faith effort has been made to co-locate on an existing building or structure, or on an existing Major or Minor wireless communication facility, that there are no feasible existing buildings or structures upon which to locate, and that no reasonable combination of locations, techniques or technologies will obviate the need for the proposed wireless communication facility.

Sprint is committed to working with local communities in siting and construction of its wireless communication facilities. Because of Sprint's desire to be a good neighbor and establish long-term relationships, Sprint makes every effort to identify potential community concerns and incorporate all appropriate mitigation measures in the site selection process. By focusing on modifying existing antennas to accommodate changes in technology, Sprint is reducing the need for additional siting. The proposed modification of antennas and remote radio heads and additional cabling will utilize an existing facility at a location that currently contains not only the applicant's equipment but the wireless equipment of its competitors.

9.4.7.3 Major wireless communication facilities shall be designed and constructed to accommodate the maximum number of presently interested users that is technologically practical, except where the Planning Board determines that a reduction in the size or height of a facility would be preferable despite a negative effect on co-location opportunity. In addition, if the number of proposed users is less than four, the applicant shall provide a plan showing how the proposed tower can be expanded to accommodate up to four users. In the event that the Planning Board finds that co-location is preferable, the applicant must agree to allow co-location pursuant to commercially reasonable terms to additional users.

This provision is not applicable to modifying antennas with the addition of remote radio heads at an existing facility on a rooftop.

9.4.7.4 All new antenna support structures shall be buildings or monopoles. Where appropriate to the surrounding area, at the sole discretion of the Planning Board, monopoles shall be disguised as flag poles or trees.

*The proposed antennas and remote radio heads and additional cabling is for an existing rooftop wireless facility.
This provision is not applicable.*

9.4.7.5 The highest point of a Major wireless communication facility, including its antenna support structure and any component thereof or attachment thereto, shall not exceed one hundred (100) feet above ground level, except that this height limit may be increased, at the sole discretion of the Planning Board, subject to a finding that such increased height will have no significant adverse impact on the town and surrounding residential properties.

This provision is not applicable to the proposed antennas with the addition of remote radio heads at an existing facility on a rooftop.

9.4.7.6 The maximum diameter or width of any Major wireless communication facility antenna support system shall be no more than three (3) feet, except that this diameter or width may be increased, at the sole discretion of the Planning Board, subject to a finding that such increased diameter or width will have no significant adverse impact on the town and surrounding residential properties.

This provision is not applicable to the proposed antennas with the addition of remote radio heads at an existing facility on a rooftop.

9.4.7.7 All Major wireless communication facilities shall be setback from all property lines abutting any public way, including any sidewalk, a distance equal to one hundred percent (100%) of the height of the highest point of the wireless communication facility, except that this setback requirement may be reduced, at the sole discretion of the Planning Board, to allow the integration of a wireless communication facility into an existing or proposed building or structure.

This provision is not applicable to the proposed antennas with the addition of remote radio heads at an existing facility on a rooftop.

9.4.7.8 No Major wireless communication facility shall be constructed with distance equal to one hundred percent (100%) of the height of the highest point of the wireless communication facility from any existing residential dwelling or any proposed dwelling for which a building permit or subdivision approval has been issued. However, this regulation shall not prohibit the later development of any residential dwelling within said distance from an existing wireless communication facility.

This provision is not applicable to the proposed antennas with the addition of remote radio heads at an existing facility on a rooftop.

9.4.7.9 All equipment enclosures and other improvements included within a wireless communication facility shall be architecturally designed to blend in with the surrounding environment and shall be maintained in good appearance and repair.

The proposed antennas and remote radio heads will not result in a dissemble change to the appearance of the existing wireless communications facility. Sprint will continue to maintain all aspects of the facility in good appearance and repair.

9.4.7.10 Unless waived by the Planning Board, fencing shall be provided to control access to the base of a Major wireless communication facility. The fencing shall be compatible with the scenic character of the Town, as determined by the Planning Board, and shall not consist of chain link, barbed wire or razor wire.

This provision is not applicable to the proposed antennas with the addition of remote radio heads at an existing facility on a rooftop.

9.4.7.11 All exterior wireless communication facilities shall be painted, colored, molded, installed or otherwise screened to minimize their visibility to abutters, adjacent streets, views from scenic roads, and residential neighborhoods. Ground mounted equipment shall be screened from view by suitable vegetation, except where a design of non-vegetative screening better reflects and complements the architectural character of the surrounding neighborhood. Existing on-site vegetation shall be preserved to the maximum extent feasible.

The proposed antennas will be installed at the same height as the existing antennas in a manner that minimizes visibility from neighboring residences and streets and in accordance with the Town of Westwood, Zoning By-Law encouragement of co-location.

9.4.7.12 All antennas on a Major wireless communication facility shall be single unit cross-polar antennas. Antennas shall be designed and mounted in such a manner as to present the smallest possible silhouette, profile, or cross-section.

The proposed antennas will utilize existing mounts that will match the color of the existing antennas, which will minimize the visibility of the devices.

9.4.7.13 Wireless communication facilities shall not be lighted unless required by the Federal Aviation Administration (FAA), or unless after consultation with the Police and Fire Chiefs, the Planning Board requires such lighting for public safety reasons, or unless the Planning Board requires the lighting of a monopole disguised as a flag pole.

The proposed antennas will not require lighting.

9.4.7.14 Wireless communication facilities shall not interfere with nor have any negative effect on the Town's emergency radio communications.

The wireless facility will continue to be operated in compliance with all applicable federal and state regulations, including regulations governing radio frequency emissions. Sprint is in compliance with federal and state regulations to ensure that its wireless telecommunications facilities are operating in compliance with all applicable standards and mandates.

9.4.7.15 Signs posted for advertisement or any other reasons shall not be allowed on or in the vicinity of a Major wireless communication facility, with the exception of one (1) sign not exceeding four (4) square feet in area at the facility which shall display the name and telephone number of the person and company responsible for the maintenance of the facility. The signage shall also display a 'No Trespassing' warning.

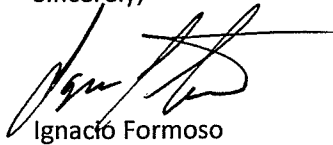
As part of the proposed antennas, no new signage is proposed by Sprint.

V. Conclusion:

The Applicant hereby requests that the Board determine that the Applicant has satisfied the requirements for EIDR Review and to further determine that the proposed modifications will not have an adverse effect on the surrounding neighborhood and the Town of Westwood as a whole. The findings are made in view of the particular unique characteristics of the Property and of the WCF's design and location, as detailed in this application.

For all of the above, the Applicant respectfully requests the Board to grant the foregoing zoning relief in the form of a special permit and/or such other relief as the Board deems necessary to allow the proposed modifications.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ignacio Formoso', with a long horizontal stroke extending to the right.

Ignacio Formoso

Agent for Sprint Spectrum, L.P.

Tower Resource Management, Inc.

16 Chestnut Street, Suite 220

Foxborough, MA 02035

Mobile: 781-733-1623

Fax: 774-215-5423

Email: iformoso@trmcom.com

Application Form

TOWN OF WESTWOOD
COMMONWEALTH of MASSACHUSETTS

Christopher A. Pfaff, Chairman
Steven H. Olanoff, Vice Chairman
Trevor W. Laubenstein, Secretary
Bruce H. Montgomery
John J. Wiggin



Abigail McCabe, Town Planner
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(781) 251-2581

Janice Barba, Planning & Land Use
Specialist
jbarba@townhall.westwood.ma.us
(781)-320-1366

PLANNING BOARD

APPLICATION, INSTRUCTIONS & CHECKLIST

**Administrative Environmental Impact and Design Review (EIDR)
Zoning Bylaw Section 7.3 of the Westwood Zoning Bylaw**

Checklist:

- Application Filing Fee:** \$100.00 Check payable to the Town of Westwood.
- 4 Copies of the complete submittal package and one electronic PDF of the following:**
 - o Application Form
 - o Narrative
 - o Plans: Site and Architectural Plans (3 sets of reduced plans 11" x 17" and 1 full size of 24" x 36")
 - o Required Reports
- Letter of Authorization from Building Commissioner** – Upon receipt of above material the Town Planner and Building Commissioner will review to determine the proposed changes are minor and thus subject to an administrative review pursuant to Section 7.3.6 of the Zoning Bylaw.

Instructions:

All applications for Planning Board review will be acted upon and all information must be complete and correct to the best of the Applicant's knowledge. Incomplete applications may cause delays and may be the basis for a denial of the application. If you have any questions regarding the Board's procedure, please contact the Town Planner at (781) 251-2581.

It is important to review the applicable section of the Westwood Zoning Bylaw relating to the requested approval, and the relevant Rules and Regulations, to ensure that all requirements for application submittal are met, including the submission of electronic copies of application materials.

The Zoning Bylaw, Zoning Map, and all of the Planning Board's Rules and Regulations are available on the Planning Board section of the Town's web site (www.townhall.westwood.ma.us).

When Ready to File:

A complete application packet with the four sets of all required material must be submitted to the Planning Department at 50 Carby Street, Monday – Friday 8:30 a.m. – 1:00 p.m. Electronic copies may be submitted on a CD to the Planning Office or emailed to Janice Barba and/or Abby McCabe at the above email addresses.

WESTWOOD PLANNING BOARD APPLICATION FOR HEARING

- 1. Requested Approval(s):
Administrative Environmental Impact & Design Review (EIDR) Approval Pursuant to Section 7.3 of the Zoning Bylaw

- 2. Brief Narrative of Proposal:
Applicant proposed to modify its existing telecommunications site by adding 3 antennas and 3 remote radio heads (RRH)

- 3. Address/Location of Property Subject to Hearing:
690 Canton Street, Westwood, MA 02090

- 4. Assessor's Map and Parcel Number(s): 37-009

- 5. Size of Parcel: 9.46 Acres

- 6. Name of Applicant:
Tower Resource Management - Ignacio Formos on behalf of Sprint Spectrum, L.P.

- 7. Applicant's Mailing Address: TRM 16 Chestnut Street, Foxborough, MA 02035

- 8. Applicant's Telephone: (H) 781-733-1623 (W) same

- 9. Applicant's E-Mail Address: iformoso@trmcom.com

- 10. Applicant is: Owner Tenant Licensee Prospective Purchaser Other

- 11. Name of Property Owner(s):

- 12. Property Owner's Mailing Address:
L&B CIP Canton Street, LLC c/o Lincoln Property Company
One Liberty Square, Boston, MA 02109

- 13. Deed Recorded in:
a. County Registry of Deeds, Book 28809 Page 172
b. Registry District of the Land Court, Certificate Number _____
Page _____ Book _____

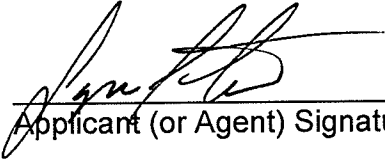
14. Has any Application ever been filed with the Planning Board regarding this Property?

Yes, When? 2014
 No

15. Has the Lot been surveyed by a Registered Land Surveyor?

Yes, When? _____
 No

The Applicant hereby requests a public hearing before the Westwood Planning Board and consents to pay for the cost of all legal advertisements required by the Zoning Bylaw and/or Planning Board Rules and Regulations, which will be billed directly to the Applicant by the newspaper at a later date. The Applicant also consents to pay for all costs required pursuant to applicable sections of the Westwood Zoning Bylaw and/or Planning Board Rules and Regulations, unless expressly waived by the Planning Board, including all project review fees, inspection fees, and costs associated transcription, in addition to all other fees, expenses and costs in connection with the Planning Board's review and evaluation of this Application.

Signed:  Authorized Agent
Applicant (or Agent) Signature
Ignacio Formoso
Printed Name of Applicant

Signed: See attached consent form
Property Owner(s) of Record Signature(s)
L&B CIP Canton Street, LLC
Printed Name(s) of Property Owner(s) of Record

Date: january 17, 2017

Payments Received: Application Fee: \$ X100.00 _____
Project Review Fees: \$ 0 _____
(if applicable)
Inspection Fees: \$ 0 _____
(if applicable)
Other Fees: \$ 0 _____
(if applicable)

FCC License



Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: NSAC, LLC

ATTN: SPECTRUM LICENSING TEAM
NSAC, LLC
12502 SUNRISE VALLEY DRIVE, M/S: VARESA0209
RESTON, VA 20196

Call Sign B051	File Number
Radio Service BR - Broadband Radio Service	
Regulatory Status Common Carrier	

FCC Registration Number (FRN): 0003768553

Grant Date 02-29-2016	Effective Date 10-27-2016	Expiration Date 03-28-2026	Print Date 11-02-2016
--------------------------	------------------------------	-------------------------------	--------------------------

Geographic Service Area: BTA 051 Boston, MA

Channel Plan:	Channel Number:	Frequency:
New	BRS1	002496.00000000 - 002502.00000000 MHz
New	BRS2	002618.00000000 - 002624.00000000 MHz
New	E1	002624.00000000 - 002629.50000000 MHz
New	E2	002629.50000000 - 002635.00000000 MHz
New	E3	002635.00000000 - 002640.50000000 MHz
New	E4	002608.00000000 - 002614.00000000 MHz
New	F1	002640.50000000 - 002646.00000000 MHz
New	F2	002646.00000000 - 002651.50000000 MHz
New	F3	002651.50000000 - 002657.00000000 MHz
New	F4	002602.00000000 - 002608.00000000 MHz
New	H1	002657.00000000 - 002662.50000000 MHz
New	H2	002662.50000000 - 002668.00000000 MHz
New	H3	002668.00000000 - 002673.50000000 MHz

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at <http://wireless.fcc.gov/uls/index.htm?job=home> and select "License Search". Follow the instructions on how to search for license information.

Waivers/Conditions:

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

Official
Copy


ULS License

Broadband Radio Service License - B051 - NSAC, LLC

Market

Call Sign	B051	Radio Service	BR - Broadband Radio Service
Market	BTA051 - Boston, MA	Channel Block	
Submarket	0	Associated Frequencies (MHz)	New BRS1: 002496.00000-002502.00000 MHz New BRS2: 002618.00000-002624.00000 MHz New E1: 002624.00000-002629.50000 MHz New E2: 002629.50000-002635.00000 MHz New E3: 002635.00000-002640.50000 MHz New E4: 002608.00000-002614.00000 MHz New F1: 002640.50000-002646.00000 MHz New F2: 002646.00000-002651.50000 MHz New F3: 002651.50000-002657.00000 MHz New F4: 002602.00000-002608.00000 MHz New H1: 002657.00000-002662.50000 MHz New H2: 002662.50000-002668.00000 MHz New H3: 002668.00000-002673.50000 MHz

Auction 06 - MDS

Define View: 

Spectrum & Market Area (MHz)

License B051 has not been partitioned or disaggregated.

Section 6409



January 17, 2017

Joseph F. Doyle Jr.
Building Inspector
Town of Westwood
50 Carby Street
Westwood, MA 02090

RE: Building Permit Application
Applicant: Sprint Spectrum L.P. ("Sprint")
Property Owner:
Property Address: 690 Canton St, Westwood, MA – BS73XC071

Dear Inspector Doyle Jr.:

Sprint Spectrum ("Sprint") seeks a building permit for the installation of transmission equipment on the existing rooftop and within the existing equipment room at the above-referenced property. Your zoning/building application form along with the applicable application fee of \$240 is submitted with this letter.

Introduction to Section 6409

Sprint applies for the building permit under Section 6409 of the federal Middle Class Tax Relief and Job Creation Act of 2012, signed into law by the President on February 22, 2012. While your town retains discretionary zoning review over the construction of new towers, simple collocations and/or equipment upgrades such as reflected in this application must now be approved with the issuance of a building permit. The new law provides that:

"a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station."

The federal law defines an "eligible facilities request" as "(A) **collocation of new transmission equipment**; (B) removal of transmission equipment; or (C) replacement of transmission equipment." The new law authorizes the immediate installation of these eligible facilities to help improve the economy, create jobs, and speed the deployment of the services they provide. A complete copy of Section 6409 of this new federal law is enclosed.

Section 6409 Benefits Your Community and has been Embraced Across the Country

Acknowledging that there is no valid basis in zoning to deny an application such as the one proposed here, municipalities across the nation have approved installations under Section 6409 with the issuance of a building permit. With the new federal law providing guidance, municipalities have been quick to embrace the benefits of a streamlined administrative review for simple collocations and equipment modifications. Unlike the construction of a new tower, simple collocations and/or equipment modifications such as this one have been quickly approved to expedite the deployment of wireless broadband. Municipalities want their residents, businesses and emergency responders to benefit from

improved wireless coverage and the latest technology (4G LTE for the iPhone 5 and other handsets) as quickly as possible.

Sprint's Application Must Be Approved

Sprint's application must be approved under this new federal law because the proposed installation involves "a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station."

Sprint's existing facility consists of three (3) panel antennas and associated coaxial cables at a centerline height of 60'2" on the existing rooftop on the property. Sprint's facility also consists of radio cabinets within the existing equipment room.

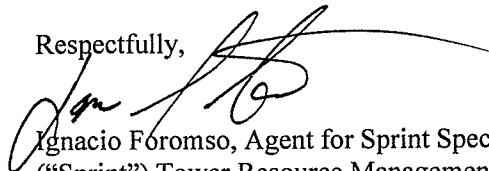
As shown on the enclosed plans prepared by Chappell Engineering Associates, LLC, dated 4/2/2014 Sprint's proposed modification to the existing facility consists principally of the following elements:

- 1) On the Rooftop: add three (3) new panel antennas mounted at an antenna centerline height of 60'2" three (3) remote radio heads, (RRHs), and associated coaxial and fiber cables.
- 2) In the Existing Equipment Room: Retrofit existing MMBTS cabinet with 2.5 Radio Access Network (RAN) equipment. Also, install one (1) additional battery string inside existing Battery Backup (BBU) cabinet.

Sprint's installation will not increase the height of the rooftop nor the dimensions of the equipment room. The installation is similar to others on the existing rooftop. As a result, the installation "does not substantially change the physical dimensions of such rooftop or base station." The installation will enhance wireless communication services to the community and will enable users to access a state-of-the-art, fully digital system for voice communications, messaging, and data transmission and reception.

Sprint respectfully requests that the building permit be issued as soon as possible so that Sprint can proceed with this installation immediately. If we can provide any further information regarding this application, please let us know.

Respectfully,



Ignacio Foromso, Agent for Sprint Spectrum, L.P.
("Sprint") Tower Resource Management
16 Chestnut Street, Suite 220
Foxborough, MA 02035
Phone: 781-733-1623

enclosures: EIDR Adming Review/Building Permit Application Form
Construction Drawings
Tax Relief Act - Section 6409



PUBLIC NOTICE

Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

News Media Information 202 / 418-0500
Internet: <http://www.fcc.gov>
TTY: 1-888-835-5322

WIRELESS TELECOMMUNICATIONS BUREAU OFFERS GUIDANCE ON INTERPRETATION OF SECTION 6409(a) OF THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012

DA 12-2047
January 25, 2013

On February 22, 2012, the Middle Class Tax Relief and Job Creation Act of 2012 (Tax Act)¹ became law. Section 6409(a) of the Tax Act provides that a state or local government “may not deny, and shall approve” any request for collocation, removal, or replacement of transmission equipment on an existing wireless tower or base station, provided this action does not substantially change the physical dimensions of the tower or base station.² The full text of Section 6409(a) is reproduced in the Appendix to this Public Notice.

To date, the Commission has not received any formal petition to interpret or apply the provisions of Section 6409(a). We also are unaware of any judicial precedent interpreting or applying its terms. The Wireless Telecommunications Bureau has, however, received informal inquiries from service providers, facilities owners, and state and local governments seeking guidance as to how Section 6409(a) should be applied. In order to assist interested parties, this Public Notice summarizes the Bureau’s understanding of Section 6409(a) in response to several of the most frequently asked questions.³

What does it mean to “substantially change the physical dimensions” of a tower or base station?

Section 6409(a) does not define what constitutes a “substantial[] change” in the dimensions of a tower or base station. In a similar context, under the *Nationwide Collocation Agreement* with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers, the Commission has applied a four-prong test to determine whether a collocation will effect a “substantial increase in the size of [a] tower.”⁴ A proposed collocation that does not involve a substantial increase in

¹ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112-96, H.R. 3630, 126 Stat. 156 (enacted Feb. 22, 2012) (Tax Act).

² *Id.*, § 6409(a).

³ Although we offer this interpretive guidance to assist parties in understanding their obligations under Section 6409(c), *see, e.g., Truckers United for Safety v. Federal Highway Administration*, 139 F.3d 934 (D.C.Cir. 1998), the Commission remains free to exercise its discretion to interpret Section 6409(a) either by exercising its rulemaking authority or through adjudication. With two exceptions not relevant here, the Tax Act expressly grants the Commission authority to “implement and enforce” this and other provisions of Title VI of that Act “as if this title is a part of the Communications Act of 1934 (47 U.S.C. 151 et seq.)” Tax Act § 6003.

⁴ 47 C.F.R. Part 1, App. B, *Nationwide Programmatic Agreement for the Collocation of Wireless Antennas*, § I.C (*Nationwide Collocation Agreement*).

size is ordinarily excluded from the Commission's required historic preservation review under Section 106 of the National Historic Preservation Act (NHPA).⁵ The Commission later adopted the same definition in the *2009 Declaratory Ruling* to determine whether an application will be treated as a collocation when applying Section 332(c)(7) of the Communications Act of 1934.⁶ The Commission has also applied a similar definition to determine whether a modification of an existing registered tower requires public notice for purposes of environmental review.⁷

Under Section I.C of the *Nationwide Collocation Agreement*, a "substantial increase in the size of the tower" occurs if:

- 1) [t]he mounting of the proposed antenna on the tower would increase the existing height of the tower by more than 10%, or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet, whichever is greater, except that the mounting of the proposed antenna may exceed the size limits set forth in this paragraph if necessary to avoid interference with existing antennas; or
- 2) [t]he mounting of the proposed antenna would involve the installation of more than the standard number of new equipment cabinets for the technology involved, not to exceed four, or more than one new equipment shelter; or
- 3) [t]he mounting of the proposed antenna would involve adding an appurtenance to the body of the tower that would protrude from the edge of the tower more than twenty feet, or more than the width of the tower structure at the level of the appurtenance, whichever is greater, except that the mounting of the proposed antenna may exceed the size limits set forth in this paragraph if necessary to shelter the antenna from inclement weather or to connect the antenna to the tower via cable; or
- 4) [t]he mounting of the proposed antenna would involve excavation outside the current tower site, defined as the current boundaries of the leased or owned property surrounding the tower and any access or utility easements currently related to the site.

Although Congress did not adopt the Commission's terminology of "substantial increase in size" in Section 6409(a), we believe that the policy reasons for excluding from Section 6409(a) collocations that substantially change the physical dimensions of a structure are closely analogous to those that animated the Commission in the *Nationwide Collocation Agreement* and subsequent proceedings. In light of the Commission's prior findings, the Bureau believes it is appropriate to look to the existing definition of "substantial increase in size" to determine whether the collocation, removal, or replacement of equipment

⁵ See 16 U.S.C. § 470f, *see also* 47 C.F.R. § 1.1307(a)(4) (requiring applicants to determine whether proposed facilities may affect properties that are listed, or are eligible for listing, in the National Register of Historic Places).

⁶ See Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify All Wireless Siting Proposals as Requiring a Variance, WT Docket No. 08-165, *Declaratory Ruling*, 24 FCC Rcd. 13994, 14012, para. 46 & n.146 (2009) (*2009 Declaratory Ruling*), *recon. denied*, 25 FCC Rcd. 11157 (2010), *pet. for review denied sub nom. City of Arlington, Texas v. FCC*, 668 F.3d 229 (5th Cir.), *cert. granted*, 113 S.Ct. 524 (2012); 47 U.S.C. § 332(c)(7).

⁷ See 47 C.F.R. § 17.4(c)(1)(B); National Environmental Policy Act Compliance for Proposed Tower Registrations, WT Docket No. 08-61, *Order on Remand*, 26 FCC Rcd. 16700, 16720-21, para. 53 (2011).

on a wireless tower or base station substantially changes the physical dimensions of the underlying structure within the meaning of Section 6409(a).

What is a “wireless tower or base station”?

A “tower” is defined in the *Nationwide Collocation Agreement* as “any structure built for the sole or primary purpose of supporting FCC-licensed antennas and their associated facilities.”⁸ The Commission has described a “base station” as consisting of “radio transceivers, antennas, coaxial cable, a regular and backup power supply, and other associated electronics.”⁹ Section 6409(a) applies to the collocation, removal, or replacement of equipment on a wireless tower or base station. In this context, we believe it is reasonable to interpret a “base station” to include a structure that currently supports or houses an antenna, transceiver, or other associated equipment that constitutes part of a base station.¹⁰ Moreover, given the absence of any limiting statutory language, we believe a “base station” encompasses such equipment in any technological configuration, including distributed antenna systems and small cells.

Section 6409(a) by its terms applies to any “wireless” tower or base station. By contrast, the scope of Section 332(c)(7) extends only to facilities used for “personal wireless services” as defined in that section.¹¹ Given Congress’s decision not to use the pre-existing definition from another statutory provision relating to wireless siting, we believe the scope of a “wireless” tower or base station under Section 6409(a) is not intended to be limited to facilities that support “personal wireless services” under Section 332(c)(7).

May a state or local government require an application for an action covered under Section 6409(a)?

Section 6409(a) states that a state or local government “may not deny, and shall approve, any eligible facilities request....” It does not say that a state or local government may not require an application to be filed. The provision that a state or local government must approve and may not deny a request to take a covered action, in the Bureau’s view, implies that the relevant government entity may require the filing of an application for administrative approval.

⁸ See *Nationwide Collocation Agreement*, § I.B.

⁹ See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, WT Docket No. 10-133, *Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, Fifteenth Report*, 26 FCC Rcd. 9664, 9481, para. 308 (2011).

¹⁰ See also 47 C.F.R. Part 1, App. C, *Nationwide Programmatic Agreement Regarding the Section 106 National Historic Preservation Act Review Process*, § II.A.14 (defining “tower” to include “the on-site fencing, equipment, switches, wiring, cabling, power sources, shelters, or cabinets associated with that Tower but not installed as part of an Antenna as defined herein”).

¹¹ 47 U.S.C. § 332(c)(7)(A). “Personal wireless services” is in turn defined to mean “commercial mobile services, unlicensed wireless services, and common carrier wireless exchange access services.” *Id.* § 332(c)(7)(C)(1).

Is there a time limit within which an application must be approved?

Section 6409(a) does not specify any period of time for approving an application. However, the statute clearly contemplates an administrative process that invariably ends in approval of a covered application. We believe the time period for processing these applications should be commensurate with the nature of the review.

In the *2009 Declaratory Ruling*, the Commission found that 90 days is a presumptively reasonable period of time to process collocation applications.¹² In light of the requirement of Section 6409(a) that the reviewing authority “may not deny, and shall approve” a covered request, we believe that 90 days should be the maximum presumptively reasonable period of time for reviewing such applications, whether for “personal wireless services” or other wireless facilities.

Wireless Telecommunications Bureau contact: Maria Kirby at (202) 418-1476 or by email: Maria.Kirby@fcc.gov.

-FCC-

For more news and information about the Federal Communications Commission please visit: www.fcc.gov

¹² See *2009 Declaratory Ruling*, 24 FCC Rcd. at 14012-13, paras. 46-47.

APPENDIX

SEC. 6409. WIRELESS FACILITIES DEPLOYMENT.

(a) FACILITY MODIFICATIONS.

(1) IN GENERAL. Notwithstanding section 704 of the Telecommunications Act of 1996 (Public Law 104–104) or any other provision of law, a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station.

(2) ELIGIBLE FACILITIES REQUEST. For purposes of this subsection, the term “eligible facilities request” means any request for modification of an existing wireless tower or base station that involves —
(A) collocation of new transmission equipment;
(B) removal of transmission equipment; or
(C) replacement of transmission equipment.

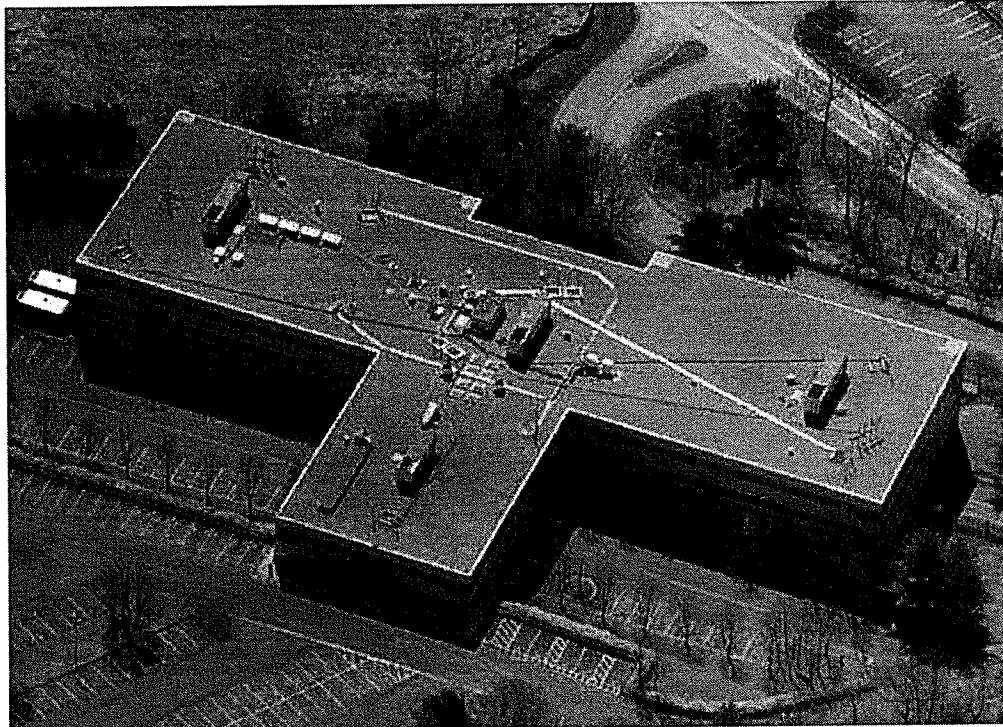
(3) APPLICABILITY OF ENVIRONMENTAL LAWS. Nothing in paragraph (1) shall be construed to relieve the Commission from the requirements of the National Historic Preservation Act or the National Environmental Policy Act of 1969.

Structural Analysis



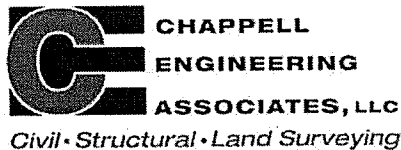
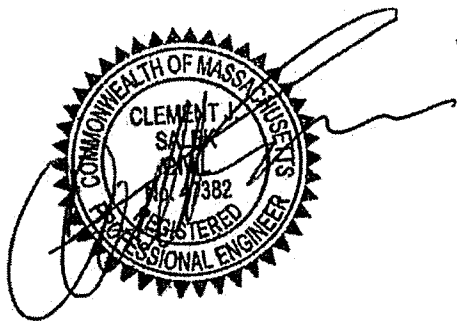
1 International Blvd
Suite 800
Mahwah, NJ 07495

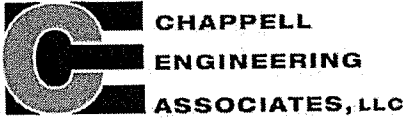
STRUCTURAL ANALYSIS
BS73XC071 - BLUE HILLS



Address:
690 CANTON STREET
WESTWOOD, MA 02090

Date:
1 MAY 2014





Civil • Structural • Land Surveying

May 1, 2014

Sprint

1 International Blvd
Suite 800
Mahwah, NJ 07495

RE:

Candidate Number BS73XC071
Candidate Name Blue Hills
Candidate Address 690 Canton Street, Westwood, MA 02090

To whom it may concern:

Chappell Engineering Associates, LLC has performed a structural analysis of the existing roof mounted ballast antenna frames at the above-referenced location. We have also reviewed the Atlantis Group construction drawings dated 09-26-2012 detailing the installation of the now-current antenna installation and the total ballast weights required for the 2012 installation.

Based upon the site audit completed by others for the rooftop installation, the existing antenna mounts consist of roof mounted ballast antenna frames for sectors alpha, beta and gamma.

Alpha and beta sector's ballast frames are similar and each sector consists of two (2) independent ballast frames supporting the existing Sprint installation. One ballast frame supports the 800/1900 MHz panel antenna, the 800/1900 MHz RRH's and a single Clearwire WiMAX panel antenna. The second ballast frame at alpha and beta is currently vacant.

Gamma sector consists of a single ballast frame supporting the 800/1900MHz panel antenna and the Clearwire WiMAX panel antenna.

As shown on the enclosed drawings, Sprint proposes to re-configure the existing antenna configuration by installing one additional 2500MHz antenna and 2500MHz radio head. For alpha and beta sectors, the proposed 2500MHz antenna and RRH will be installed on the existing vacant ballast frame. At gamma sector, the proposed antenna will be located alongside the existing antennas. Because of this, gamma sector can be considered the controlling ballast frame for a stability analysis.

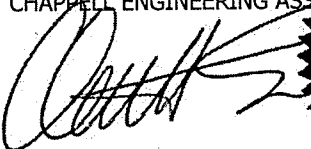
Chappell Engineering Associates, LLC has completed a stability analysis of the existing ballast frames for the proposed antenna installation detailed on our drawings (enclosed) and we have compared these values to the existing ballast weights currently installed and recommended by Atlantis Group on their 2012 drawings (also enclosed for your convenience).

Based upon our evaluation, the existing antenna mounts are sufficient to support the proposed antenna installation. Based upon our stability calculations, the recommended weights shown on the HDG drawings are adequate for the proposed antenna re-configuration. It appears, however, that the installation (as now constructed) may **not** contain the minimum required ballast as shown below to support the proposed antenna loads. It is our recommendation that, upon completion of the additional antenna installation, the contractor verify that the minimum required ballast (summarized below) be installed:

Sectors	Front Tray	Rear Tray
Gamma	362 lbs	543 lbs

If you have any questions regarding this matter, please do not hesitate to call.

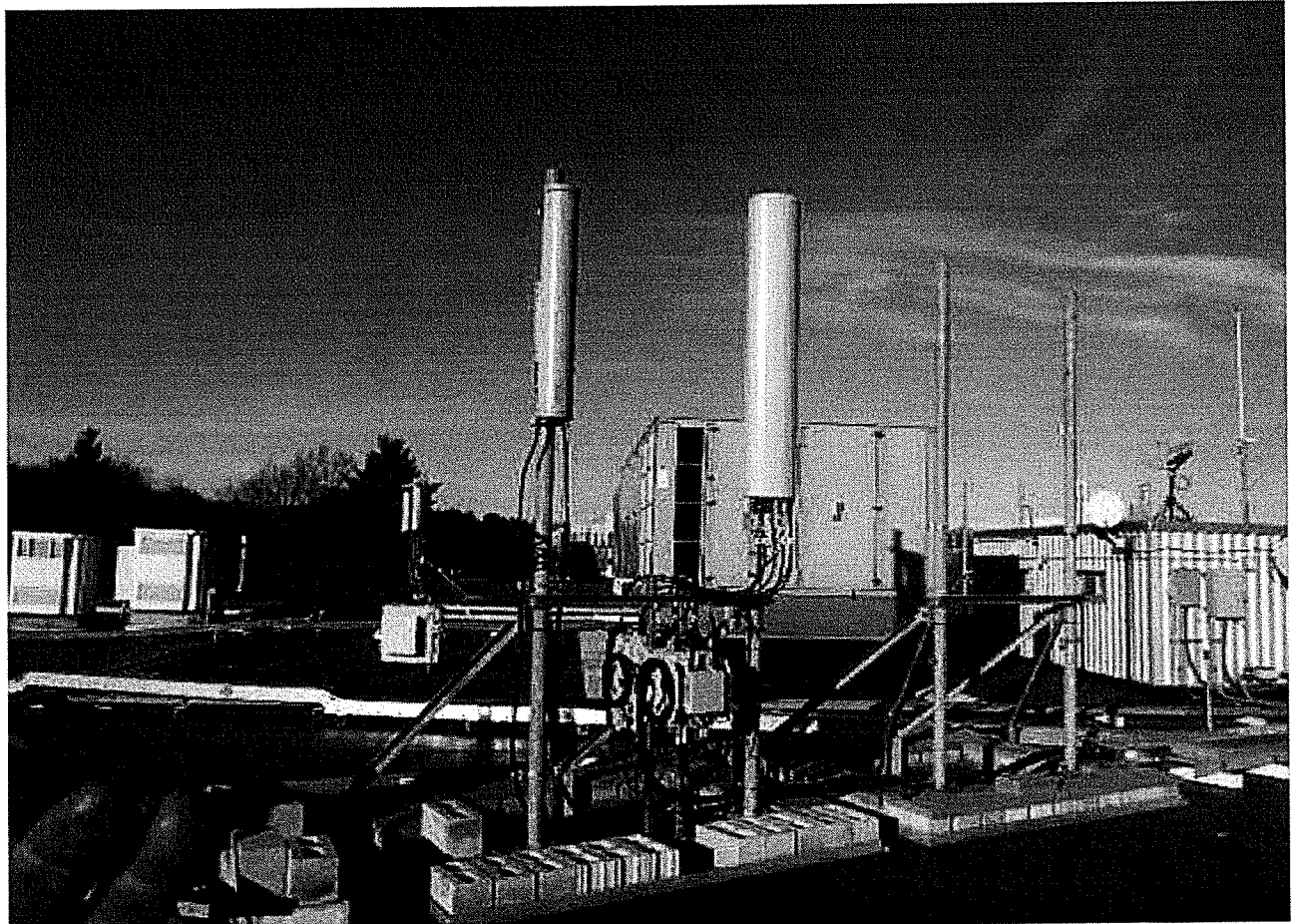
Very truly yours,
CHAPPELL ENGINEERING ASSOCIATES, LLC


Clement J Salek, P.E.
CJS/cjs






Existing Alpha Sector Antennas



Existing Beta Sector Antennas



Existing Gamma Sector Antennas

Site Name/Number:	BS73XC071 Blue Hills	 CHAPPELL ENGINEERING ASSOCIATES, LLC <i>Civil • Structural • Land Surveying</i>
Site Address:	690 Canton Street, Westwood, MA 02090	
CEA Job Number:	1238.085	
Date:	1-May-14	

Appurtenances Attached to Ballast Frame:

	Sprint Antenna 2500MHz	Sprint 2500MHz RRH	Clearwire WIMAX Panel	Sprint Antenna (800/1900MHz)	Sprint 800MHz RRH	Sprint 1900MHz RRH				
Depth, d =	6.3 in	6.7 in	8.0 in	8.0 in	16.8 in	15.0 in				
Width, w =	12.6 in	18.6 in	10.0 in	12.0 in	13.8 in	14.0 in				
Height, h =	56.3 in	26.1 in	48.0 in	72.0 in	21.0 in	26.0 in				
Height ARL =	7.5 ft	3 ft	7.5 ft	7.5 ft	3 ft	3 ft				
Weight =	60 lbs	60 lbs	30 lbs	60 lbs	60 lbs	60 lbs				

Design Code: ASCE 7

Z (Above Ground Level) =	67 ft	67 ft	67 ft	67 ft	67 ft	67 ft	67 ft	67 ft	67 ft	67 ft	
Height of Projection Area =	4.7 ft	2.2 ft	4.0 ft	6.0 ft	1.8 ft	2.2 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	
Width of Projection Area =	1.1 ft	1.6 ft	0.8 ft	1.0 ft	1.2 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	
Af (Projected Area of Gross) =	4.9 s.f.	3.4 s.f.	3.3 s.f.	6.0 s.f.	2.0 s.f.	2.5 s.f.	0.0 s.f.	0.0 s.f.	0.0 s.f.	0.0 s.f.	
Reference Wind Velocity, V =	108 mph	108 mph	108 mph	108 mph	108 mph	108 mph	108 mph	108 mph	108 mph	108 mph	
Exposure =	B	B	B	B	B	B	B	B	B	B	Section 6.5.6.3
G (Gust effect factor) =	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	Section 6.5.8
Cr (Force Coefficient) =	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	Fig 6-20 to 6-23
Kz (Exposure Coefficients) =	1	1	1	1	1	1	1	1	1	1	6.5.6.6, Table 6-3
K1 (Multiplier) =	0	0	0	0	0	0	0	0	0	0	Figure 6-2
K2 (Multiplier) =	0	0	0	0	0	0	0	0	0	0	Figure 6-2
K3 (Multiplier) =	0	0	0	0	0	0	0	0	0	0	Figure 6-2
Kzt (Topographic Factor) : (1+K1*K2*K3)^2 =	1	1	1	1	1	1	1	1	1	1	Section 6.5.7.2
Kd =	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	Table 6-4
I (Importance Factor) =	1	1	1	1	1	1	1	1	1	1	Table 6-2
Qz = .00256*Kz*Kzt*Ka*V^2*I (psf) =	25.4 psf	25.4 psf	25.4 psf	25.4 psf	25.4 psf	25.4 psf	25.4 psf	25.4 psf	25.4 psf	25.4 psf	25.4 psf, Section 6.5.10
Reference Wind Pressure, p =	30.2 psf	30.2 psf	30.2 psf	30.2 psf	30.2 psf	30.2 psf	30.2 psf	30.2 psf	30.2 psf	30.2 psf	

F, lbs = 149 102 101 181 61 76 0 0 0 0

Required Minimum Ballast:

Ballast Frame Geometry

Frame width =	7.1 ft
Frame depth =	8.42 ft
Centroid of front ballast to toe, dr =	0.67 ft
Centroid of rear ballast to toe, dr =	7.75 ft
Frame Footprint Area =	59.76 ft ²
Weight of steel frame =	425 lbs

Safety Factor for Overturning = 1.2 Total Appurtenance Wgt = 330 lbs

Let Wt = total ballast required, lbs
Let Wr = 0.4 Wt
Let Wf = 0.6 Wt

For Stability;

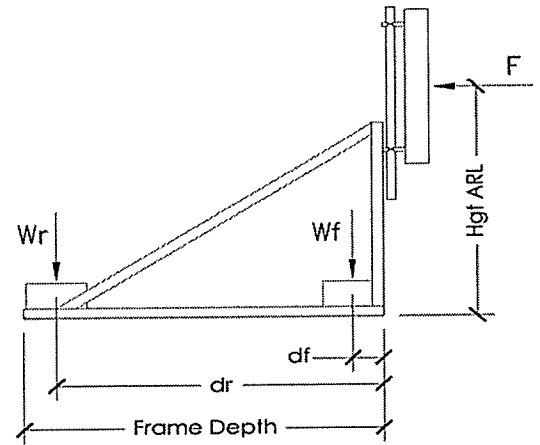
Mcausing <= Mresisting			
Mcausing <= Mframe wgt	+	Mrear ballast	+
Mcausing <= Mframe wgt	+	0.6 (Wt)(dr)	+
		Mfront ballast	
		0.4 (Wt)(df)	

Solving for Wt;

$\frac{Mcausing - Mframe wgt}{0.60 dr + 0.40 df} <= Wt$	(min total ballast req'd)	
$\frac{4453.07}{4.92} <= Wt$		
		Mcausing = 4736.4 ft-lbs
		Mframe wgt = 283.3 ft-lbs
		0.6 dr = 4.65 ft
		0.4 df = 0.27 ft

Min. Total Ballast Req'd (Wt) = 906 lbs <= Wt < 1000lbs recommended in 2012 Atlantis Group, OK

Min. Front Ballast Req'd (Wr) = 362 lbs
Min. Rear Ballast Req'd (Wf) = 543 lbs
Total Loaded Frame Weight = 1661 lbs



Frame Geometry

Landlord Authorization



VIA CERTIFIED MAIL

December 12, 2016

L&B CIP 690 Canton Street LLC
C/O Lincoln Property Company
One Liberty Square
Boston, MA 02109

RE: PCS Site Agreement between EOP-Westwood Business Centre LLC ("Landlord") and Sprint Spectrum, L.P., ("Tenant") dated September 27, 2000 (Site Agreement), with respect to the real property located at 670 Canton Street, Westwood, MA 02090 (Site), Cascade No. BS73XC071.

Dear Sir or Madam:

This letter is to advise you a slight change has been made to the equipment modifications that you consented to on May 29, 2014. Basically, we were unable to modify the site when we originally contacted you due to a delay in the equipment reaching the market. Sprint has now entered into a deal with a new equipment manufacturer resulting in a change to the antenna models depicted on the old drawings. The antennas will be switched to a new model of similar size, weight, and length. Even though this change is minimal, Sprint believes that it is should always inform each landlord exactly what is taking place at their respective property. As discussed previously, these improvements are being undertaken in order to ensure the continued technical and economic feasibility of Tenant's facility, and are needed for Tenant to make optimal use of the Site for the purposes intended by the Site Agreement. As described below, these modifications should have no significant impact on Landlord's property or operations. However, in accordance with the Site Lease Agreement, Tenant requests that Landlord acknowledge notice of, and consent to, the following modifications:

Adding three (3) panel antennas and three (3) RRH's to the existing antenna mounts located at 60'-3" feet on the rooftop. Conduits, cables and associated coax jumper cables will run from the antennas to the equipment cabinets located on the 3rd floor in the existing, Sprint equipment room. All proposed modifications will be done within the existing lease area.

Please indicate your acknowledgement and consent by signing below and returning one signed original copy of this letter and the signed **1st page of the construction drawing** to me at the address set forth above.

Thank you in advance for your prompt attention to this matter.

Regards,

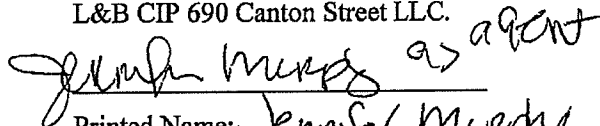
By: 

Tower Resource Management, an authorized representative of Sprint Nextel

Ignacio Formoso
Tower Resource Management, Inc.
16 Chestnut Street
Suite 420
Foxborough, MA 02035
mobile: 781-733-1623
fax: 774-215-5423

ACKNOWLEDGED AND AGREED TO: ✖

L&B CIP 690 Canton Street LLC.

 as agent

Printed Name: Jennifer Murphy

Title: General manager

Date: Jan 5, 2017

(Date must be completed)

✖ subject to
accept of applicable
town of Westwood
permitting.



PROJECT: 2.5 EQUIPMENT DEPLOYMENT
SITE NAME: BLUE HILLS
SITE CASCADE: BS73XC071
SITE ADDRESS: 690 CANTON STREET
 WESTWOOD, MA 02090
SITE TYPE: ROOFTOP

SITE INFORMATION

STRUCTURE OWNER:
 L&B OF CANTON STREET, LLC
 C/O LINCOLN PROPERTY COMPANY
 ONE LINCOLN SQUARE
 BOSTON, MA 02109

LATITUDE (NAD83):
 GOOGLE EARTH 2.0 CONFIRMATION
 N 42 17 05.90"

LONGITUDE (NAD83):
 GOOGLE EARTH 2.0 CONFIRMATION
 W 71 09 28.66"

COUNTY:
 MIDDLESEX

ZONING JURISDICTION:
 TOWN OF WESTWOOD

ZONING DISTRICT:
 INDUSTRIAL

POWER COMPANY:
 NEW ENGLAND POWER
 PHONE: 1-888-633-3577

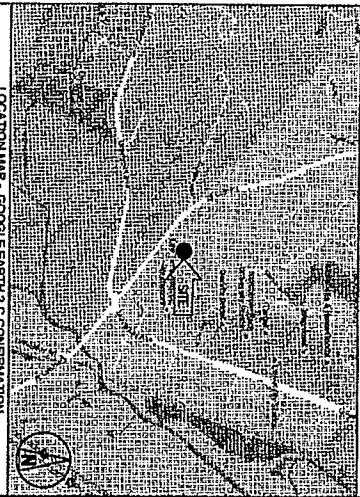
AVP PROVIDER:
 COMCAST

PHONE: 1-800-CALLSPRINT

SPRINT CARE:
 RICHARD REARD
 800-441-4812
 RICHARD@cs.sprint.com

EQUIPMENT SUPPLIER:
 ALPHEA-LUCENT
 690 CANTON STREET
 WESTWOOD, MA 02090
 (408) 546-9090

AERIAL MAP



LOCATION MAP - GOOGLE EARTH 2.0 CONFIRMATION

PROJECT DESCRIPTION

SPRINT EQUIPMENT INSTALLATION REQUIRED TO SUPPORT DEPLOYMENT OF AN EQUIPMENT CABINET ON EXISTING ROOFTOP AT THE ABOVE ADDRESS. THE PROJECT IS SUBJECT TO ALL APPLICABLE REGULATIONS AND ORDINANCES. THE PROJECT IS SUBJECT TO ALL APPLICABLE REGULATIONS AND ORDINANCES. THE PROJECT IS SUBJECT TO ALL APPLICABLE REGULATIONS AND ORDINANCES.

GENERAL NOTES:

- THIS IS A PRELIMINARY AND TENTATIVE DRAWING. IT IS NOT TO BE USED FOR CONSTRUCTION OR FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER. THE ARCHITECT/ENGINEER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND AUTHORITIES. THE ARCHITECT/ENGINEER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND AUTHORITIES.
- THE ARCHITECT/ENGINEER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND AUTHORITIES. THE ARCHITECT/ENGINEER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND AUTHORITIES.

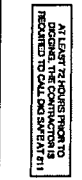
DRAWING INDEX

SHEET NO.	TITLE	REV.	CHK.	BY.
T-1	TITLE SHEET	0	JLT	NMC
S-1	OUTLINE SPECIFICATIONS	0	JLT	NMC
S-2	OUTLINE SPECIFICATIONS	0	JLT	NMC
S-3	OUTLINE SPECIFICATIONS	0	JLT	NMC
A-1	TOP & EQUIPMENT PLAN	0	JLT	NMC
A-2	ELEVATION PLANS	0	JLT	NMC
A-3	SECTION PLANS	0	JLT	NMC
A-4	ELECTRICAL DETAILS & CONNECTIONS	0	JLT	NMC
S-1	STRUCTURAL DETAILS	0	JLT	NMC
S-2	STRUCTURAL DETAILS	0	JLT	NMC
E-1	ONE-LINE DIAGRAM & PFC DETAILS	0	JLT	NMC
E-2	GROUNDING DETAILS & NOTES	0	JLT	NMC

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ANY CHANGES TO THESE DOCUMENTS SHALL BE MADE BY THE ARCHITECT/ENGINEER AND APPROVED BY THE CONTRACTOR AND ALL APPLICABLE AGENCIES AND AUTHORITIES.

ROLE	NAME	DATE
ARCHITECT/ENGINEER	[Signature]	1/15/11
CONTRACTOR	[Signature]	
OWNER	[Signature]	
PERMITTING AGENCY	[Signature]	



AT LEAST 72 HOURS BEFORE ANY EXCAVATION, CALL 811 TO REPORT THE LOCATION OF ALL UTILITIES. CALL 811 AT LEAST 72 HOURS BEFORE ANY EXCAVATION.

* Subject to permitting requirements

SPRINT VISION
 1-800-441-4812
 RICHARD@cs.sprint.com

TRM
 18 CANTON STREET, SUITE 200
 WESTWOOD, MA 02090
 (617) 318-4400

CIVIL ENGINEERING
 18 CANTON STREET, SUITE 200
 WESTWOOD, MA 02090
 (617) 318-4400

DAVID J. STAVES
 PROFESSIONAL ENGINEER
 LICENSE NO. 10000
 STATE OF MASSACHUSETTS

THESE DOCUMENTS ARE THE PROPERTY OF SPRINT AND ARE TO BE USED ONLY FOR THE PROJECT AND SITE IDENTIFIED HEREIN. ANY REPRODUCTION OR DISTRIBUTION OF THESE DOCUMENTS WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT IS PROHIBITED.

ISSUED BY: JLT

APPROVED BY: JLT

SUBMITTALS

NO.	DATE	DESCRIPTION	BY
1			
2			
3			

DATE/7/ISSUED PER NUMBER

DATE	ISSUED PER NUMBER

SITE NUMBERS: BS73XC071
SITE NAME: BLUE HILLS
SITE ADDRESS: 690 CANTON STREET
 WESTWOOD, MA 02090

TITLE SHEET

SHEET NO.: T-1

SITE PLAN

Sprint[®] VISION



PROJECT: 2.5 EQUIPMENT DEPLOYMENT

SITE NAME: BLUE HILLS

SITE CASCADE: BS73XC071

SITE ADDRESS: 690 CANTON STREET
WESTWOOD, MA 02090

SITE TYPE: ROOFTOP

**Sprint[®]
VISION**

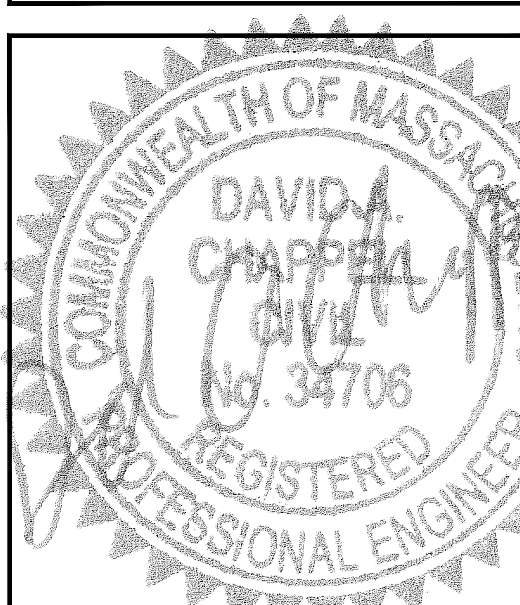
1 INTERNATIONAL BLVD, SUITE 800
MAHAH, NJ 07495
(800) 357-7641

TRM

16 CHESTNUT STREET, SUITE 220
FOXBOROUGH, MA 02035
(774) 215-5421
www.trmcom.com

**CHAPPELL
ENGINEERING
ASSOCIATES, LLC**
Civil - Structural - Land Surveying

R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST, SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com



THESE DOCUMENTS ARE
CONFIDENTIAL AND ARE THE SOLE
PROPERTY OF SPRINT AND MAY
NOT BE REPRODUCED,
DISSEMINATED OR REDISTRIBUTED
WITHOUT THE EXPRESS WRITTEN
CONSENT OF SPRINT.

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/20/16	ISSUED FOR CONSTRUCTION	CMC
0	12/01/16	ISSUED FOR REVIEW	NWC

SITE NUMBER:
BS73XC071

SITE NAME:
BLUE HILLS

SITE ADDRESS:
690 CANTON STREET
WESTWOOD, MA 02090

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

SITE INFORMATION

STRUCTURE OWNER:
L&B CIP CANTON STREET, LLC
C/O LINCOLN PROPERTY COMPANY
ONE LIBERTY SQUARE
BOSTON, MA 02109

LATITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
N 42° 12' 05.90"
N 42.201639°

LONGITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
W 71° 09' 38.66"
W 71.160739°

COUNTY:
NORFOLK

ZONING JURISDICTION:
TOWN OF WESTWOOD

ZONING DISTRICT:
INDUSTRIAL

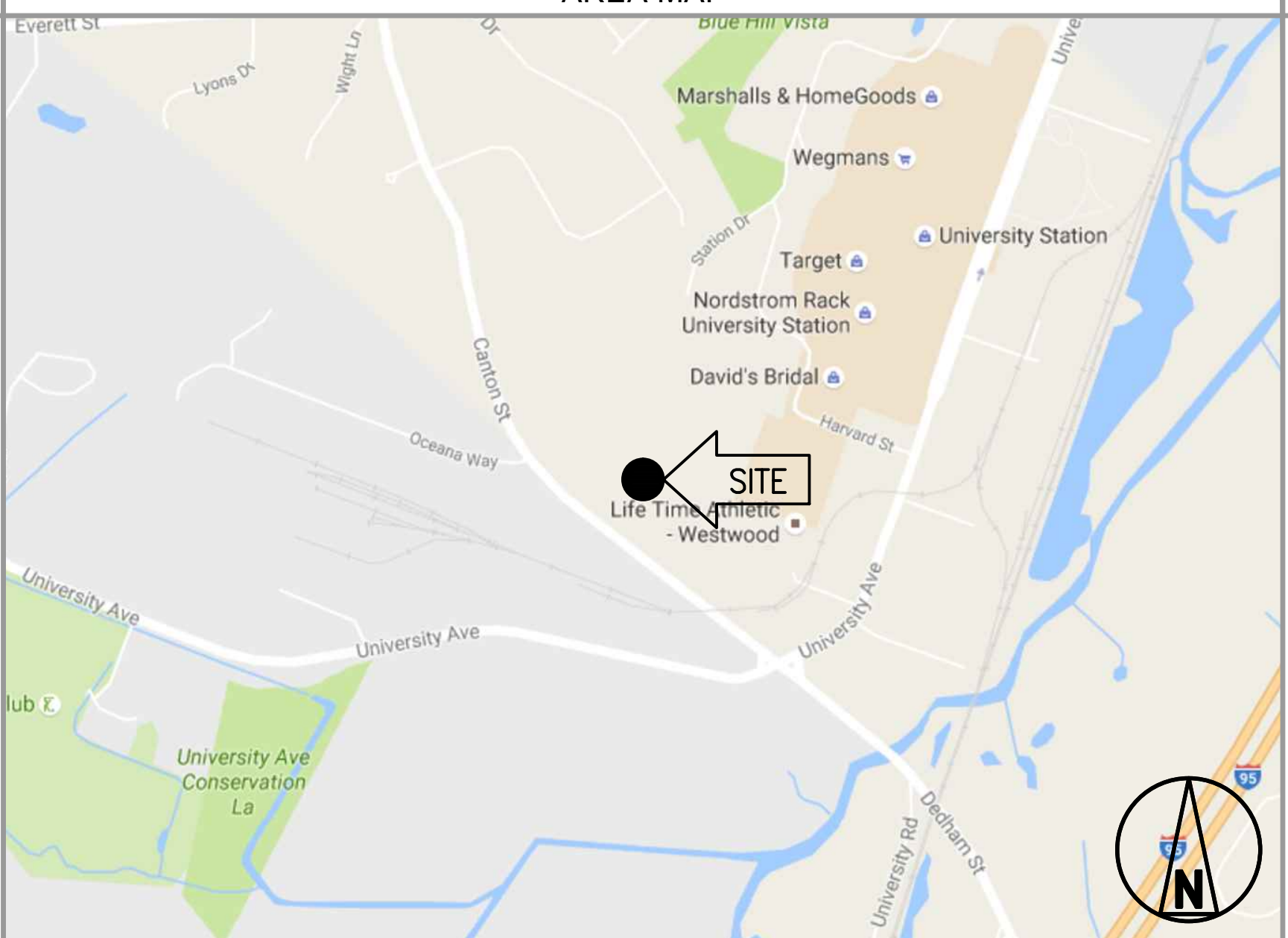
POWER COMPANY:
NSTAR ELECTRIC COMPANY
PHONE: 1-888-633-3797

AAV PROVIDER:
COMCAST
PHONE: 1-800-COMCAST

SPRINT CM:
RONALD HIBBARD
PHONE: 774-269-8812
Ronald.Hibbard@sprint.com

EQUIPMENT SUPPLIER:
ALCATEL-LUCENT
600 MOUNTAIN AVENUE
MURRAY HILL, NJ 07974
(908) 508-8080

AREA MAP



LOCATION MAP - GOOGLE EARTH 2-C CONFIRMATION

PROJECT DESCRIPTION

SPRINT EQUIPMENT MODIFICATIONS REQUIRED TO SUPPORT MODERNIZATION OF AN EXISTING WIRELESS COMMUNICATIONS FACILITY AND UTILIZATION OF FCC BROADBAND SPECTRUM LICENSE FOR 2.5GHz FREQUENCY, INCLUDING INSTALLATION OF:

GROUND-LEVEL RAN EQUIPMENT, CONSISTING OF

- NO CHANGES

TOWER-TOP EQUIPMENT, INCLUDING INSTALLATION OF:

- (3) PANEL ANTENNAS
- (3) REMOTE RADIO HEADS (RRH)
- (9) CABLES (ETHERNET, FIBER, & AC)

SPECIAL ZONING NOTE:
BASED ON INFORMATION PROVIDED BY SPRINT REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW, ADMINISTRATIVE REVIEW).

GENERAL NOTES

- THIS IS AN UNMANNED AND RESTRICTED ACCESS TELECOMMUNICATION FACILITY, AND IS NOT FOR HUMAN HABITATION. IT WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
 - ADA COMPLIANCE NOT REQUIRED.
 - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
 - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
- CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
- NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
 - BUILDING CODE: MASSACHUSETTS STATE BUILDING CODE 780 CMR-8TH EDITION
 - ELECTRICAL CODE: 2014 NATIONAL ELECTRICAL CODE
 - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

AT LEAST 72 HOURS PRIOR TO
DIGGING, THE CONTRACTOR IS
REQUIRED TO CALL DIG SAFE AT 811



DRAWING INDEX

SHEET NO.	SHEET TITLE	REV.	CHK.	BY.
T-1	TITLE SHEET	1	JMT	NWC
SP-1	OUTLINE SPECIFICATIONS	1	JMT	NWC
SP-2	OUTLINE SPECIFICATIONS	1	JMT	NWC
SP-3	OUTLINE SPECIFICATIONS	1	JMT	NWC
A-1	ROOF & EQUIPMENT PLAN	1	JMT	NWC
A-2	ELEVATION	1	JMT	NWC
A-3	ANTENNA PLANS	1	JMT	NWC
A-4	RF DATA SHEET	1	JMT	NWC
A-5	RAN WIRING DIAGRAMS	1	JMT	NWC
A-6	EQUIPMENT DETAILS & CONSTRUCTION SPECS	1	JMT	NWC
S-1	STRUCTURAL DETAILS	1	JMT	NWC
S-2	STRUCTURAL DETAILS	1	JMT	NWC
E-1	ONE-LINE DIAGRAM & PPC DETAILS	1	JMT	NWC
E-2	GROUNDING DETAILS & NOTES	1	JMT	NWC

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

SPRINT: _____ DATE: _____

CONSTRUCTION MANAGER: _____ DATE: _____

LEASING/SITE ACQUISITION: _____ DATE: _____

RF ENGINEER: _____ DATE: _____

LANDLORD/TOWER OWNER: _____ DATE: _____

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION 01 100 - SCOPE OF WORK

PART 1 – GENERAL

- 1.1 **THE WORK:** THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 **RELATED DOCUMENTS:**
- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 **PRECEDENCE:** SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.
- 1.4 **NATIONALLY RECOGNIZED CODES AND STANDARDS:**
- A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
- GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
 - GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY -GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
 - NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
 - AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
 - INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
 - AMERICAN CONCRETE INSTITUTE (ACI)
 - AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
 - CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
 - AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
 - PORTLAND CEMENT ASSOCIATION (PCA)
 - NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
 - BRICK INDUSTRY ASSOCIATION (BIA)
 - AMERICAN WELDING SOCIETY (AWS)
 - NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
 - SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
 - DOOR AND HARDWARE INSTITUTE (DHI)
 - OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
 - APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.
- 1.5 **DEFINITIONS:**
- A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
- B. COMPANY: SPRINT CORPORATION
- C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
- D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
- E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
- F. OFC: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.
- G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...
- 1.6 **SITE FAMILIARITY:** CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.
- 1.7 **POINT OF CONTACT:** COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.
- 1.8 **ON-SITE SUPERVISION:** THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.
- 1.9 **DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE:** THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
- A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.
- B. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.
- 1.10 **USE OF JOB SITE:** THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

- 1.11 **UTILITIES SERVICES:** WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:
- 1.12 **PERMITS / FEES:** WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.
- 1.14 **METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION:** CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.
- TOP HAT
 - HOW TO INSTALL A NEW CABINET
 - BASE BAND UNIT IN EXISTING UNIT
 - INSTALLATION OF BATTERIES
 - INSTALLATION OF HYBRID CABLE
 - INSTALLATION OF RRRH'S
 - CABLING
 - TS-0200 REV 4 – ANTENNA LINE ACCEPTANCE STANDARDS
 - SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.
 - COMMISSIONING MOPS
 - SPRINT CELL SITE ENGINEERING NOTICE – EN-2013-002
 - SPRINT ENGINEERING LETTER – EL-0504
 - SPRINT ENGINEERING LETTER – EL-0568
 - SPRINT TECHNICAL SPECIFICATION – TS-0193
- 1.15 **USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:**
- A. CONTRACTOR WILL UTILIZE ITS BEST EFFORTS TO WORK WITH SPRINT ELECTRONIC PROJECT MANAGEMENT SYSTEMS. CONTRACTOR UNDERSTANDS THAT SUFFICIENT INTERNET ACCESS, EQUIVALENT TO "BROADBAND" OR BETTER, IS REQUIRED TO TIMELY AND EFFECTIVELY UTILIZE SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS AND AGREES TO MAINTAIN APPROPRIATE CONNECTIONS FOR CONTRACTOR'S STAFF AND OFFICES THAT ARE COMPATIBLE WITH SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

- 3.1 **TEMPORARY UTILITIES AND FACILITIES:** THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.
- 3.2 **ACCESS TO WORK:** THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.
- 3.3 **TESTING; REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS.** SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.
- 3.4 **DIMENSIONS:** VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.
- 3.5 **EXISTING CONDITIONS:** NOTIFY THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

SECTION 01 200 - COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

- 1.1 **THE WORK:** THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 **RELATED DOCUMENTS:**
- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- PART 2 – PRODUCTS (NOT USED)**
- PART 3 – EXECUTION**
- 3.1 **RECEIPT OF MATERIAL AND EQUIPMENT:**
- COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.
 - THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
 - ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
 - VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
 - TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
 - RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
 - PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
 - COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.
- 3.2 **DELIVERABLES:**
- COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.
 - IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.
 - UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 - CELL SITE CONSTRUCTION

PART 1 – GENERAL

- 1.1 **THE WORK:** THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 **RELATED DOCUMENTS:**
- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 **NOTICE TO PROCEED:**
- A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.
- B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.
- PART 2 – PRODUCTS (NOT USED)**
- PART 3 – EXECUTION**

3.1 FUNCTIONAL REQUIREMENTS:

- THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.
- SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.
- MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES
- PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
 - PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
 - MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
 - INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
 - INSTALL ABOVE GROUND GROUNDING SYSTEMS.
 - PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
 - INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
 - INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
 - ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
 - PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
 - PROVIDE SLABS AND EQUIPMENT PLATFORMS.
 - INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
 - PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
 - CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
 - INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
 - INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
 - INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
 - PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
 - PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
 - REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

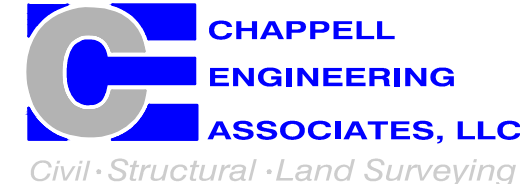
- CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
 - EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
 - CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
 - IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
 - CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
 - CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION
 - CONDUCT TESTING AS REQUIRED HEREIN.
- 3.3 DELIVERABLES:**
- CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
 - PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
 - ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
 - PROJECT PROGRESS REPORTS.
 - CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
 - CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 - SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.



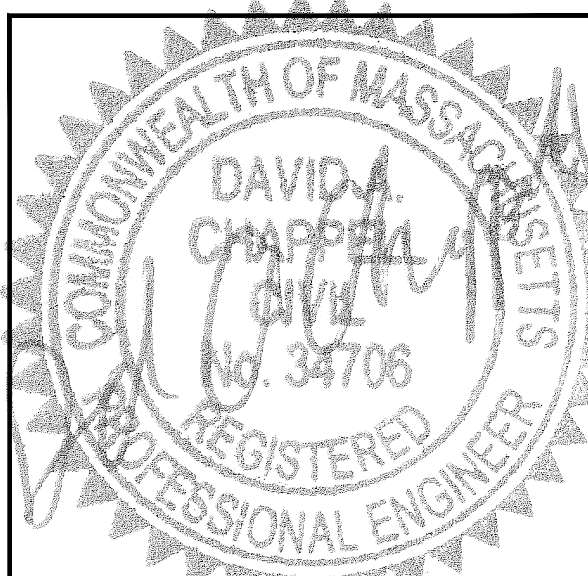
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CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	12/20/16	ISSUED FOR CONSTRUCTION	CMC
0	12/01/16	ISSUED FOR REVIEW	NWC

SITE NUMBER:
BS73XC071

SITE NAME:
BLUE HILLS

SITE ADDRESS:
690 CANTON STREET
WESTWOOD, MA 02090

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP-1

CONTINUED FROM SP-1:

SECTION 01 400 - SUBMITTALS, TESTS, AND INSPECTIONS

PART 1 – GENERAL

1.1 **THE WORK:** THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 **RELATED DOCUMENTS:**

- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.

1.3 **SUBMITTALS:**

- A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
- B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.
 1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
 3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
 4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
 5. CHEMICAL GROUNDING DESIGN.
- C. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 **TESTS AND INSPECTIONS:**

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. COAX SWEEPS AND FIBER TESTS PER SPRINT TS-0200 CURRENT VERSION ANTENNA LINE ACCEPTANCE STANDARDS.
 2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
 1. AZIMUTH, DOWNTILT, AGL – UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
 2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 3. ALL AVAILABLE JURISDICTIONAL INFORMATION
 4. PDF SCAN OF REDLINES PRODUCED IN FIELD
 5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
 6. LIEN WAIVERS
 7. FINAL PAYMENT APPLICATION
 8. REQUIRED FINAL CONSTRUCTION PHOTOS
 9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
 10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 **COMMISSIONING:** PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPS

1.6 **INTEGRATION:** PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPS

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 **REQUIREMENTS FOR TESTING:**

- A. THIRD PARTY TESTING AGENCY: WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
 1. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
 2. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
 3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 **REQUIRED TESTS:**

- A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
 2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
 3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
 4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
 5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
 6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
 7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
 8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
 9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 **REQUIRED INSPECTIONS:**

- A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.
- B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
 2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
 3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
 4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
 5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
 6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS – ANTENNALIGN ALIGNMENT TOOL (AAT)
 7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
 8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
 9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
 10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 11. ALL AVAILABLE JURISDICTIONAL INFORMATION
 12. PDF SCAN OF REDLINES PRODUCED IN FIELD
- E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- F. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 **DELIVERABLES:** TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

- A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.
 1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
 2. STRUCTURAL BACKFILL COMPACTION REPORTS.
 3. SITE RESISTANCE TO EARTH TEST.
 4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
 5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
 6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".
- B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING:
 1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
 2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
 3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
 4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
 6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
 7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
 8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
 9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 500 - PROJECT REPORTING

PART 1 – GENERAL

1.1 **THE WORK:** THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 **RELATED DOCUMENTS:**

- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 **WEEKLY REPORTS:**

- A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 **PROJECT CONFERENCE CALLS:**

- A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 **PROJECT TRACKING IN SMS:**

- A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 **ADDITIONAL REPORTING:**

- A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 **PROJECT PHOTOGRAPHS:**

- A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:
 1. SHELTER AND TOWER OVERVIEW.
 2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
 3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
 4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
 5. PHOTOS OF TOWER SECTION STACKING.
 6. CONCRETE TESTING / SAMPLES.
 7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
 8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
 9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
 10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
 11. COAX CABLE ENTRY INTO SHELTER.
 12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
 14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
 15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
 16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
 17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
 18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
 19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
 21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).
 23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).
 24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).
 25. ALL BTS GROUND CONNECTIONS.
 26. ALL GROUND TEST WELLS.
 27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
 28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
 29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
 30. GPS ANTENNAS.
 31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
 32. DOGHOUSE/CABLE EXIT FROM ROOF.
 33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
 34. MASTER BUS BAR.
 35. TELCO BOARD AND NIU.
 36. ELECTRICAL DISTRIBUTION WALL.
 37. CABLE ENTRY WITH SURGE SUPPRESSION.
 38. ENTRANCE TO EQUIPMENT ROOM.
 39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.
 40. COAX GROUNDING --TOP AND BOTTOM OF TOWER.
 41. ANTENNA AND MAST GROUNDING.
 42. LANDSCAPING – WHERE APPLICABLE.

3.6 **FINAL PROJECT ACCEPTANCE:** COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

SECTION 07 500 - ROOF CUTTING, PATCHING AND REPAIR

SUMMARY: THIS SECTION SPECIFIES CUTTING AND PATCHING EXISTING ROOFING SYSTEMS WHERE CONDUIT OR CABLES EXIT THE BUILDING ONTO THE ROOF OR BUILDING-MOUNTED ANTENNAS, AND AS REQUIRED FOR WATERTIGHT PERFORMANCE. ROOFTOP ENTRY OPENINGS IN MEMBRANE ROOFTOPS SHALL BE CONSTRUCTED TO COMPLY WITH LANDLORD, ANY EXISTING WARRANTY, AND LOCAL JURISDICTIONAL STANDARDS.

1.4 **SUBMITTALS:**

- A. PRE-CONSTRUCTION ROOF PHOTOS: COMPLETE A ROOF INSPECTION PRIOR TO THE INSTALLATION OF SPRINT EQUIPMENT ON ANY ROOFTOP BUILD. AT A MINIMUM INSPECT AND PHOTOGRAPH (MINIMUM 3 EA.) ALL AREAS IMPACTED BY THE ADDITION OF THE SPRINT EQUIPMENT.
- B. PROVIDE SIMILAR PHOTOGRAPHS SHOWING ROOF CONDITIONS AFTER CONSTRUCTION (MINIMUM 3 EA.)
- C. ROOF INSPECTION PHOTOGRAPHS SHOULD BE UPLOADED WITH CLOSEOUT PHOTOGRAPHS.

SECTION 09 900 - PAINTING

QUALITY ASSURANCE:

- A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS OF ACCEPTABLE MANUFACTURERS WHICH HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR THREE YEARS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- B. COMPLY WITH ALL ENVIRONMENTAL REGULATIONS FOR VOLATILE ORGANIC COMPOUNDS.

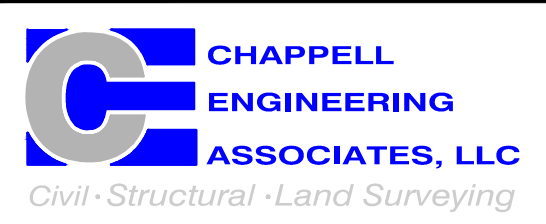
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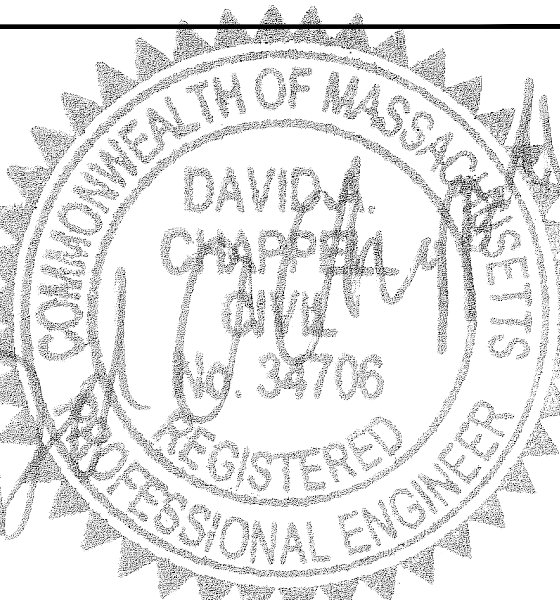
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SITE NUMBER:
BS73XC071

SITE NAME:
BLUE HILLS

SITE ADDRESS:
690 CANTON STREET
WESTWOOD, MA 02090

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP-2

CONTINUED FROM SP-2:

MATERIALS:

- A. MANUFACTURERS: BENJAMIN MOORE, ICI DEVOE COATINGS, PPG, SHERWIN WILLIAMS OR APPROVED EQUAL. PROVIDE PREMIUM GRADE, PROFESSIONAL-QUALITY PRODUCTS FOR COATING SYSTEMS.

PAINT SCHEDULE:

- A. EXTERIOR ANTENNAE AND ANTENNA MOUNTING HARDWARE: ONE COAT OF PRIMER AND TWO FINISH COATS. PAINT FOR ANTENNAE SHALL BE NON-METALLIC BASED AND CONTAIN NO METALLIC PARTICLES. PROVIDE COLORS AND PATTERNS AS REQUIRED TO MASK APPEARANCE OF ANTENNAE ON ADJACENT BUILDING SURFACES AND AS ACCEPTABLE TO THE OWNER. REFER TO ANTENNA MANUFACTURER'S INSTRUCTIONS WHENEVER POSSIBLE.

- B. ROOF TOP CONSTRUCTION: TOUCH UP – PREPARE SURFACES TO BE REPAIRED. FOLLOW INDUSTRY STANDARDS AND REQUIREMENTS OF OWNER TO MATCH EXISTING COATING AND FINISH.

PAINTING APPLICATION:

- 1. INSPECT SURFACES, REPORT UNSATISFACTORY CONDITIONS IN WRITING; BEGINNING WORK MEANS ACCEPTANCE OF SUBSTRATE.
- 2. COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR PREPARATION, PRIMING AND COATING WORK. COORDINATE WITH WORK OF OTHER SECTIONS.
- 3. MATCH APPROVED MOCK-UPS FOR COLOR, TEXTURE, AND PATTERN. RE-COAT OR REMOVE AND REPLACE WORK WHICH DOES NOT MATCH OR SHOWS LOSS OF ADHESION.
- 4. CLEAN UP, TOUCH UP AND PROTECT WORK.

TOUCHUP PAINTING:

- 1. GALVANIZING DAMAGE AND ALL BOLTS AND NUTS SHALL BE TOUCHED UP AFTER TOWER ERECTION WITH "GALVANOX," "DRY GALV," OR "ZINC-IT."
- 2. FIELD TOUCHUP PAINT SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- 3. ALL METAL COMPONENTS SHALL BE HANDLED WITH CARE TO PREVENT DAMAGE TO THE COMPONENTS, THEIR PRESERVATIVE TREATMENT, OR THEIR PROTECTIVE COATINGS.

SECTION 11 700 - ANTENNA ASSEMBLY, REMOTE RADIO HEADS AND CABLE INSTALLATION

SUMMARY:

THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRR'S, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RRR'S:

THE NUMBER AND TYPE OF ANTENNAS AND RRR'S TO BE INSTALLED IS DETAILED ON THE CONSTRUCTION DRAWINGS.

HYBRID CABLE:

HYBRID CABLE WILL BE DC/FIBER AND FURNISHED FOR INSTALLATION AT EACH SITE. CABLE SHALL BE INSTALLED PER THE CONSTRUCTION DRAWINGS AND THE APPLICABLE MANUFACTURER'S REQUIREMENTS.

JUMPERS AND CONNECTORS:

FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRR'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRR'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE. DO NOT USE SUPERFLEX OUTDOORS. JUMPERS SHALL BE FACTORY FABRICATED IN APPROPRIATE LENGTHS WITH A MAXIMUM OF 4 FEET EXCESS PER JUMPER AND HAVE CONNECTORS AT EACH END, MANUFACTURED BY SUPPLIER. IF JUMPERS ARE FIELD FABRICATED, FOLLOW MANUFACTURER'S REQUIREMENTS FOR INSTALLATION OF CONNECTORS

REMOTE ELECTRICAL TILT (RET) CABLES:

MISCELLANEOUS:

INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHEET, FURNISHED BY SPRINT.

ANTENNA INSTALLATION:

THE CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE A DESIGNATED ON THE CONSTRUCTION DRAWINGS.

- A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.
- B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE DRAWINGS.

HYBRID CABLES INSTALLATION:

- A. THE CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADII.
- C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.
 - 1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE PERMANENTLY FASTENED TO THE COAX LADDER AT 4"-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS.
 - 2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBTS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
 - a. FIBER: SUPPORT FIBER BUNDLES USING 1/2" VELCRO STRAPS OF THE REQUIRED LENGTH @ 18" OC. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
 - b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
 - 3. FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL BUTTERFLY CLIPS.
 - 4. CABLE INSTALLATION:
 - a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
 - b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.
 - c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURES RECOMMENDED MAXIMUM BEND RADIUS.

- 5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
- 6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED PER SPRINT TS-0200 CURRENT VERSION.
- 7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

- A. ALL FIBER & COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.
- B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.
 - 1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
 - 2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.
 - 3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
 - 4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE STATIONS (MMBTS) AND RELATED EQUIPMENT

SUMMARY:

- A. THIS SECTION SPECIFIES MMBTS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).
- B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRE BY THE APPLICABLE INSTALLATION MOPS.
- C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

DC CIRCUIT BREAKER LABELING

- A. LABEL CIRCUIT BREAKERS ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.

SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE TRANSCIEVER STATIONS (MMBTS) AND RELATED EQUIPMENT

SUMMARY:

- A. THIS SECTION SPECIFIES MMBTS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).
- B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRE BY THE APPLICABLE INSTALLATION MOPS.
- C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

SUPPORTING DEVICES:

- A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
 - 1. ALLIED TUBE AND CONDUIT
 - 2. B-LINE SYSTEM
 - 3. UNISTRUT DIVERSIFIED PRODUCTS
 - 4. THOMAS & BETTS
- B. FASTENERS: TYPES, MATERIALS, AND CONSTRUCTION FEATURES AS FOLLOWS:
 - 1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
 - 2. POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL, DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.
 - 3. FASTEN BY MEANS OF WOOD SCREWS ON WOOD.
 - 4. TOGGLE BOLTS ON HOLLOW MASONRY UNITS.
 - 5. CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE OR SOLID MASONRY.
 - 6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS ON STEEL.
 - 7. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
 - 8. DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
 - 9. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.

SUPPORTING DEVICES:

- A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.
- B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES.
- C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:
- D. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.
- E. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS.

ELECTRICAL IDENTIFICATION:

- A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.
- B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AS SUCH AT THE BRANCH CIRCUIT PANELBOARD.

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

CONDUIT:

- A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR ENCASED RUNS IN CONCRETE. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. FITTINGS SHALL BE THREADED – SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND.
- B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.
- C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.
- D. EMT OR RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT-DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATION C80.3, FEDERAL SPECIFICATION WW-C-563, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.
- E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT. FITTINGS SHALL BE METALLIC GLAND TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6- FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRE BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.
- F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21MM).

HUBS AND BOXES:

- A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED. HUB SHALL INCLUDE LOCKNUT AND NEOPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION.
- B. CABLE TERMINATION FITTINGS FOR CONDUIT
 - 1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL.
 - 2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO – CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.
- C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAB SERIES OR EQUAL.
- D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKETED COVERS. OUTLET BODIES SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CROUSE-HINDS FORM 8 OR EQUAL.
- E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CROUSE-HINDS, COOPER, ADALET, APPLETON, O-Z GEDNEY, RACO, OR APPROVED EQUAL.

SUPPLEMENTAL GROUNDING SYSTEM

- A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM AS INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMETS. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS AS INDICATED.
- B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO HOLE SPADES WITH NO OX.
- C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CM FOR REPLACEMENT INSTRUCTION USING THREADED ROD KITS.

EXISTING STRUCTURE:

- A. EXISTING EXPOSED WIRING AND ALL EXPOSED OUTLETS, RECEPTACLES, SWITCHES, DEVICES, BOXES, AND OTHER EQUIPMENT THAT ARE NOT TO BE UTILIZED IN THE COMPLETED PROJECT SHALL BE REMOVED OR DE-ENERGIZED AND CAPPED IN THE WALL, CEILING, OR FLOOR SO THAT THEY ARE CONCEALED AND SAFE. WALL, CEILING, OR FLOOR SHALL BE PATCHED TO MATCH THE ADJACENT CONSTRUCTION.

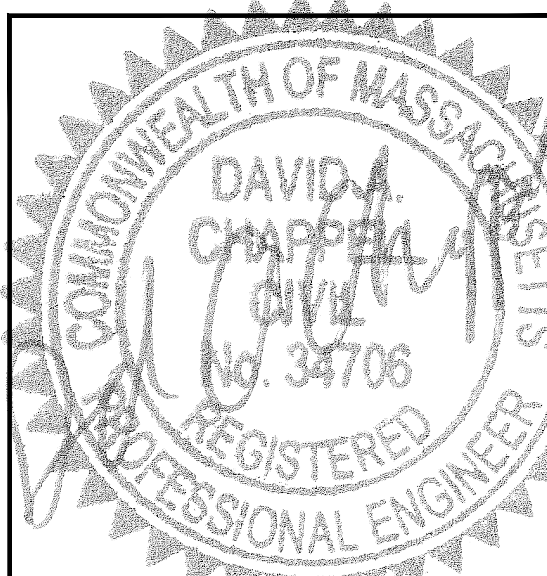
CONDUIT AND CONDUCTOR INSTALLATION:

- A. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
- B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.

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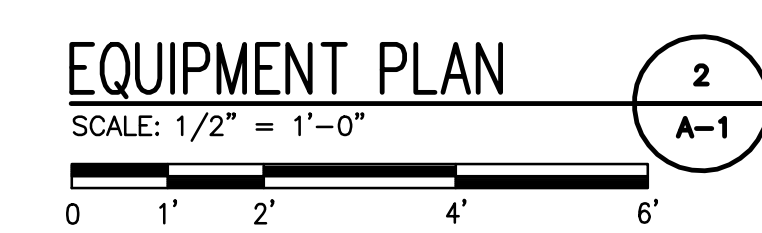
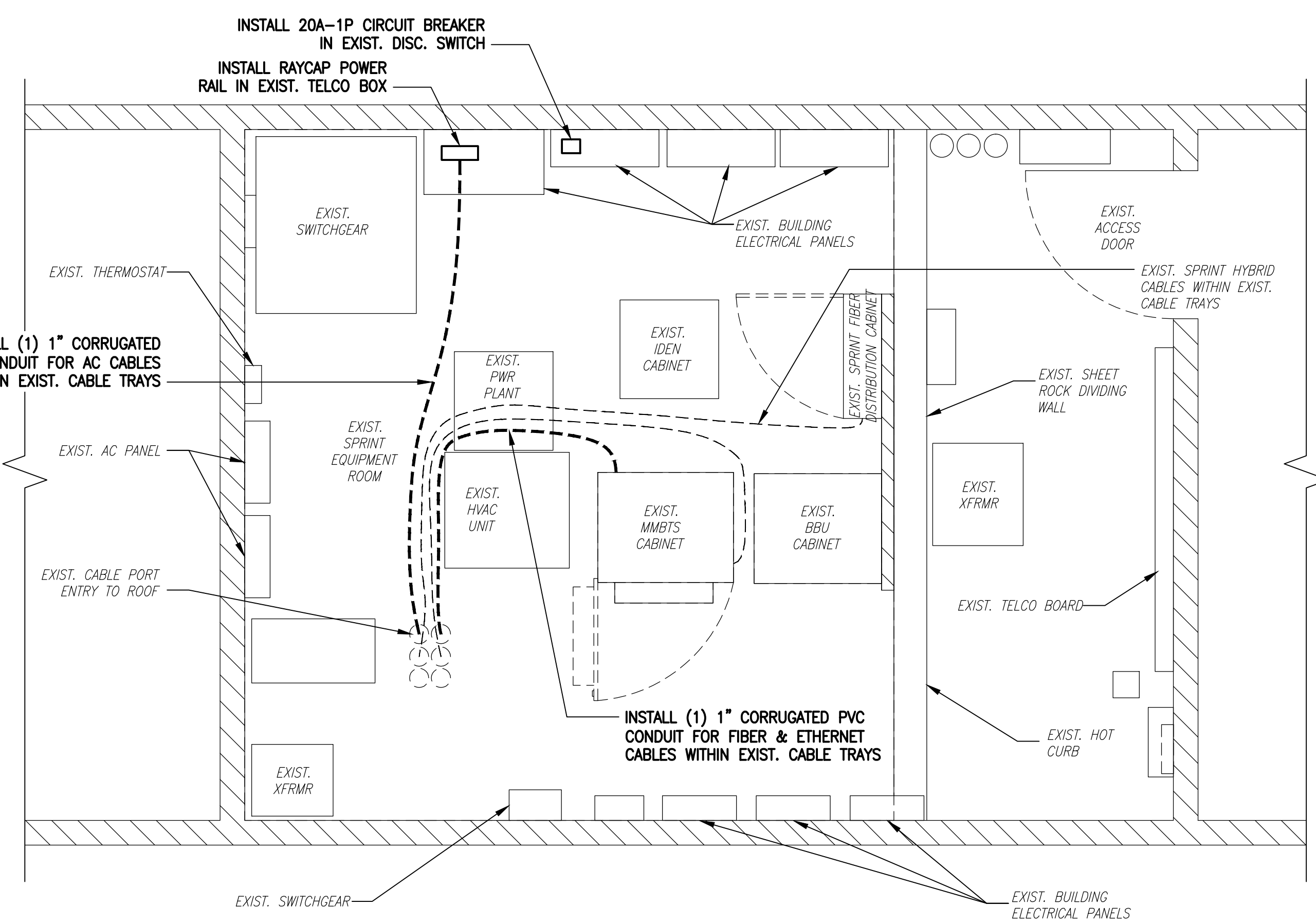
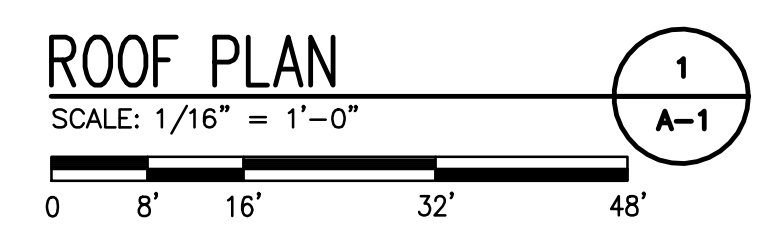
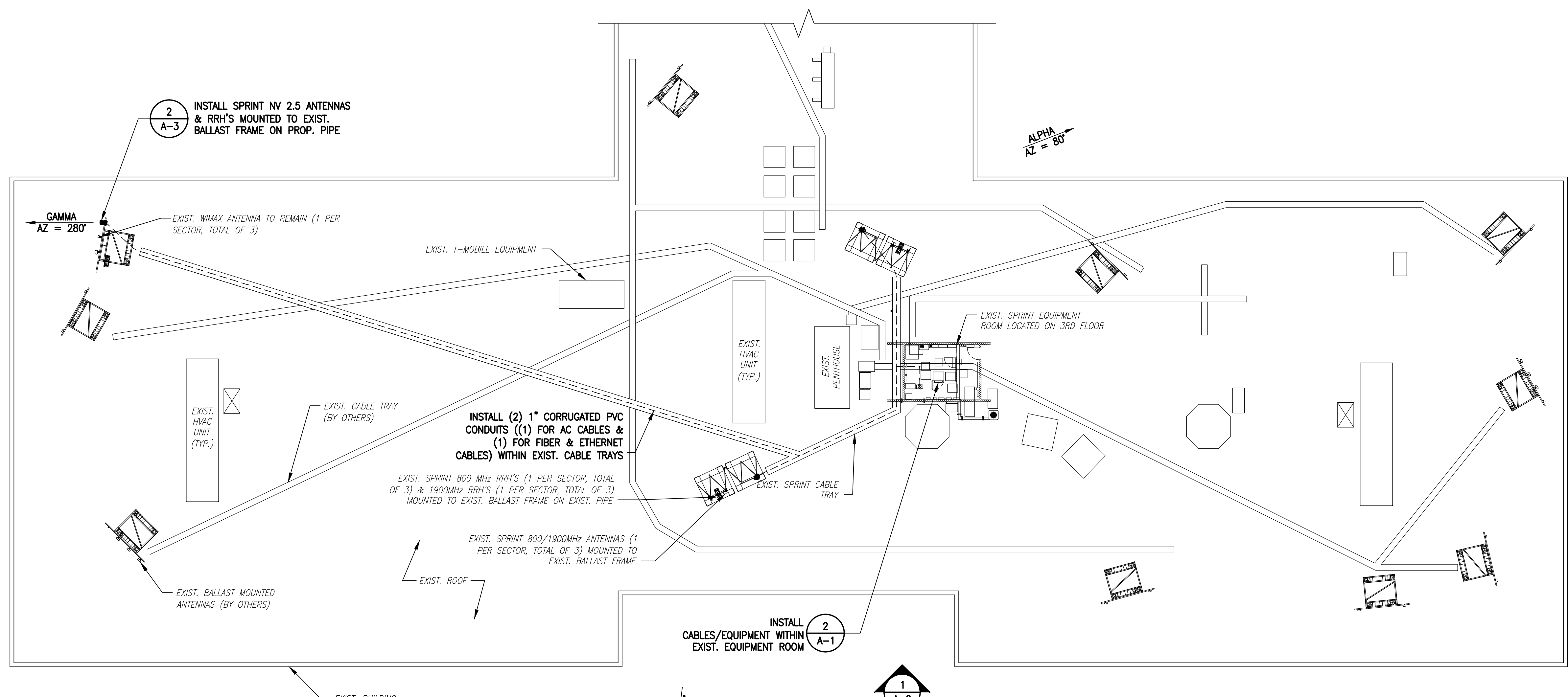
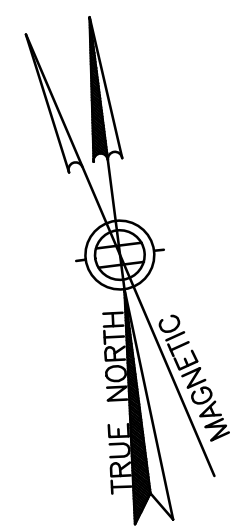
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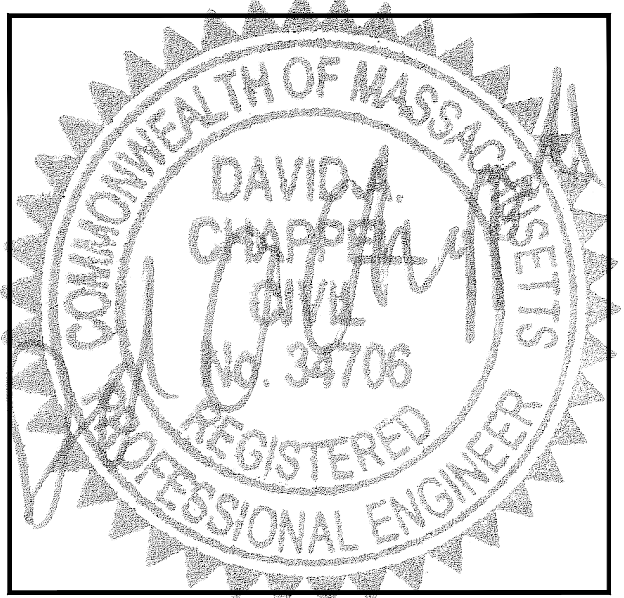
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 WESTWOOD, MA 02090

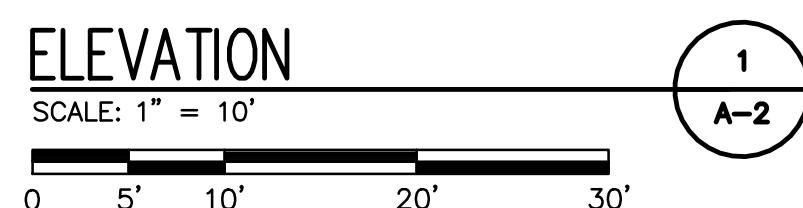
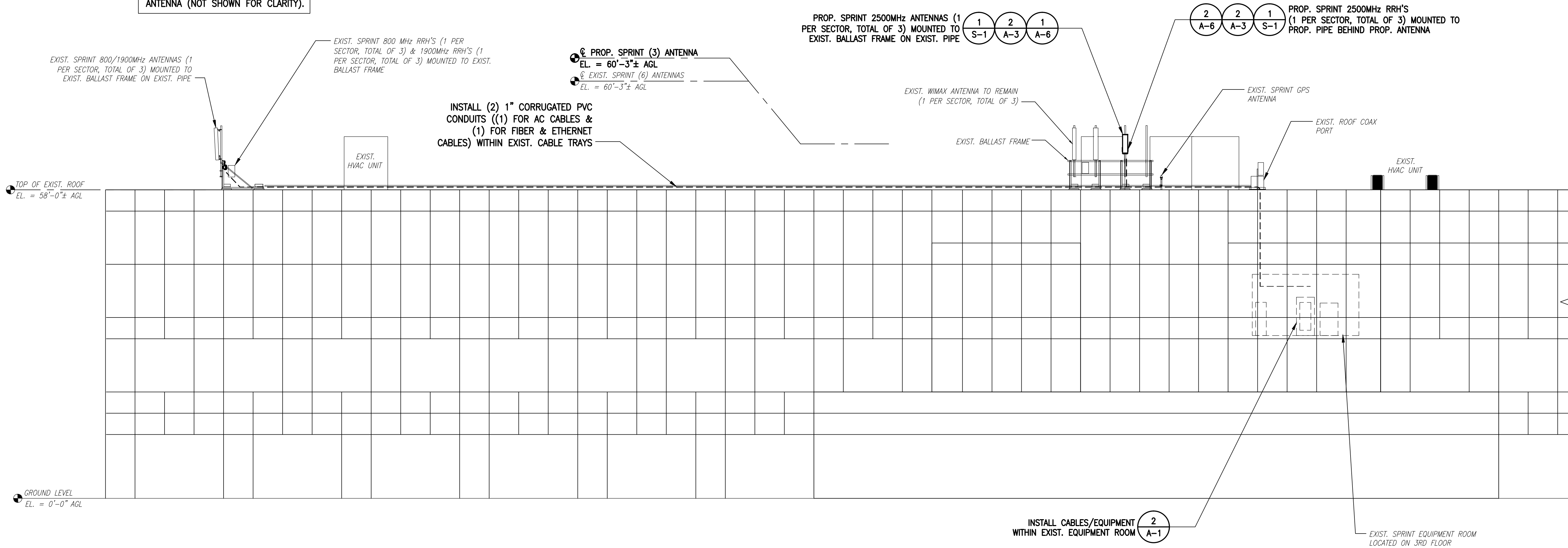
SHEET TITLE
ROOF & EQUIPMENT PLAN

SHEET NUMBER
A-1

SPECIAL CONSTRUCTION NOTES:
 SPRINT WORK IS CONTINGENT ON THE FOLLOWING:

- COMPLETION OF A STRUCTURAL ANALYSIS/ASSESSMENT.
- GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT. (IF REQUIRED)
- TOWER OWNER SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP-DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

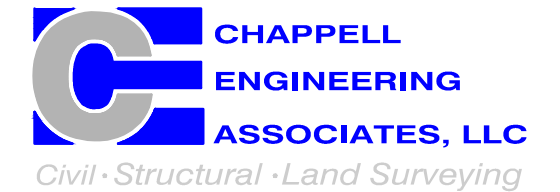
NOTE:
 PROPOSED GAMMA SECTOR ANTENNA
 LOCATED BEHIND EXISTING PANEL
 ANTENNA (NOT SHOWN FOR CLARITY).



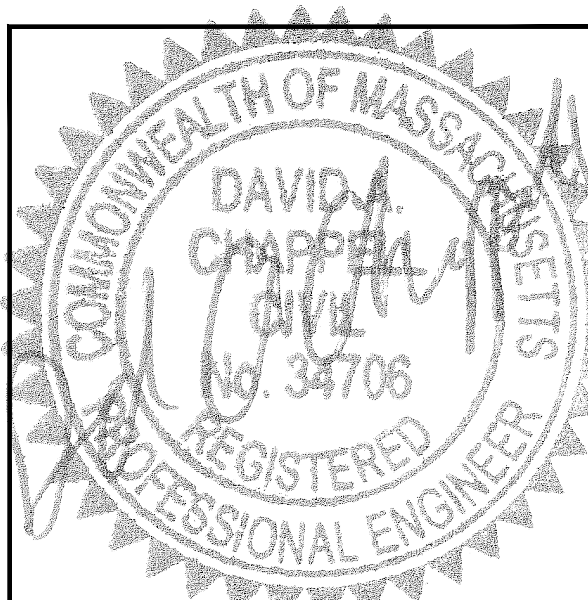
1 INTERNATIONAL BLVD, SUITE 800
 MAHWAH, NJ 07495
 (800) 357-7641



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0	12/01/16	ISSUED FOR REVIEW	NWC

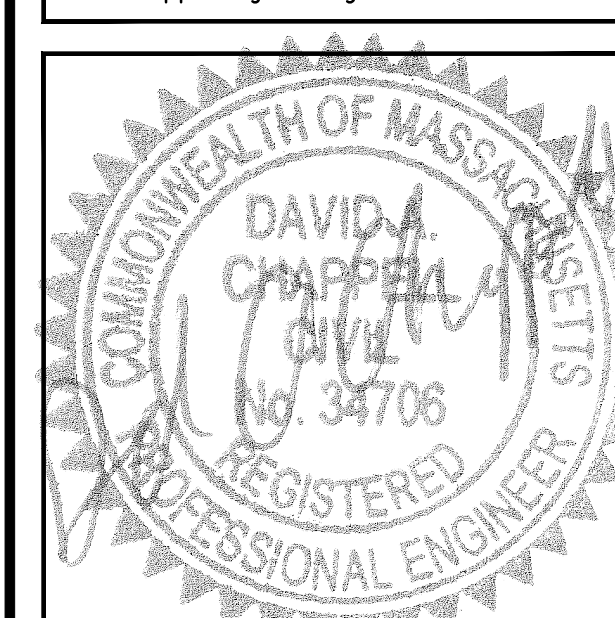
SITE NUMBER:
BS73XC071

SITE NAME:
BLUE HILLS

SITE ADDRESS:
 690 CANTON STREET
 WESTWOOD, MA 02090

SHEET TITLE
ELEVATION

SHEET NUMBER
A-2



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SITE NAME:
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SITE ADDRESS:
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WESTWOOD, MA 02090

SHEET TITLE

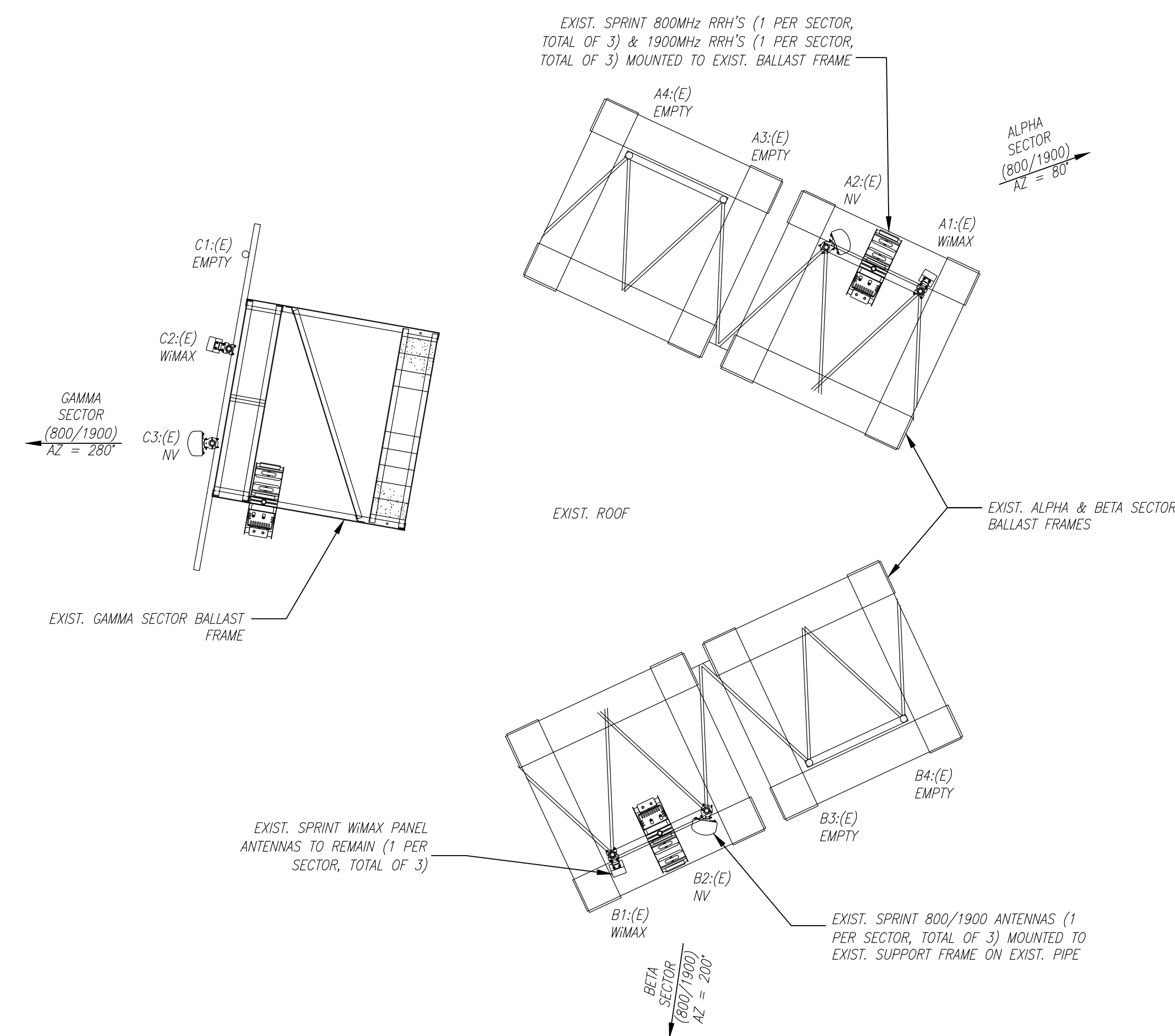
ANTENNA PLANS

SHEET NUMBER

A-3

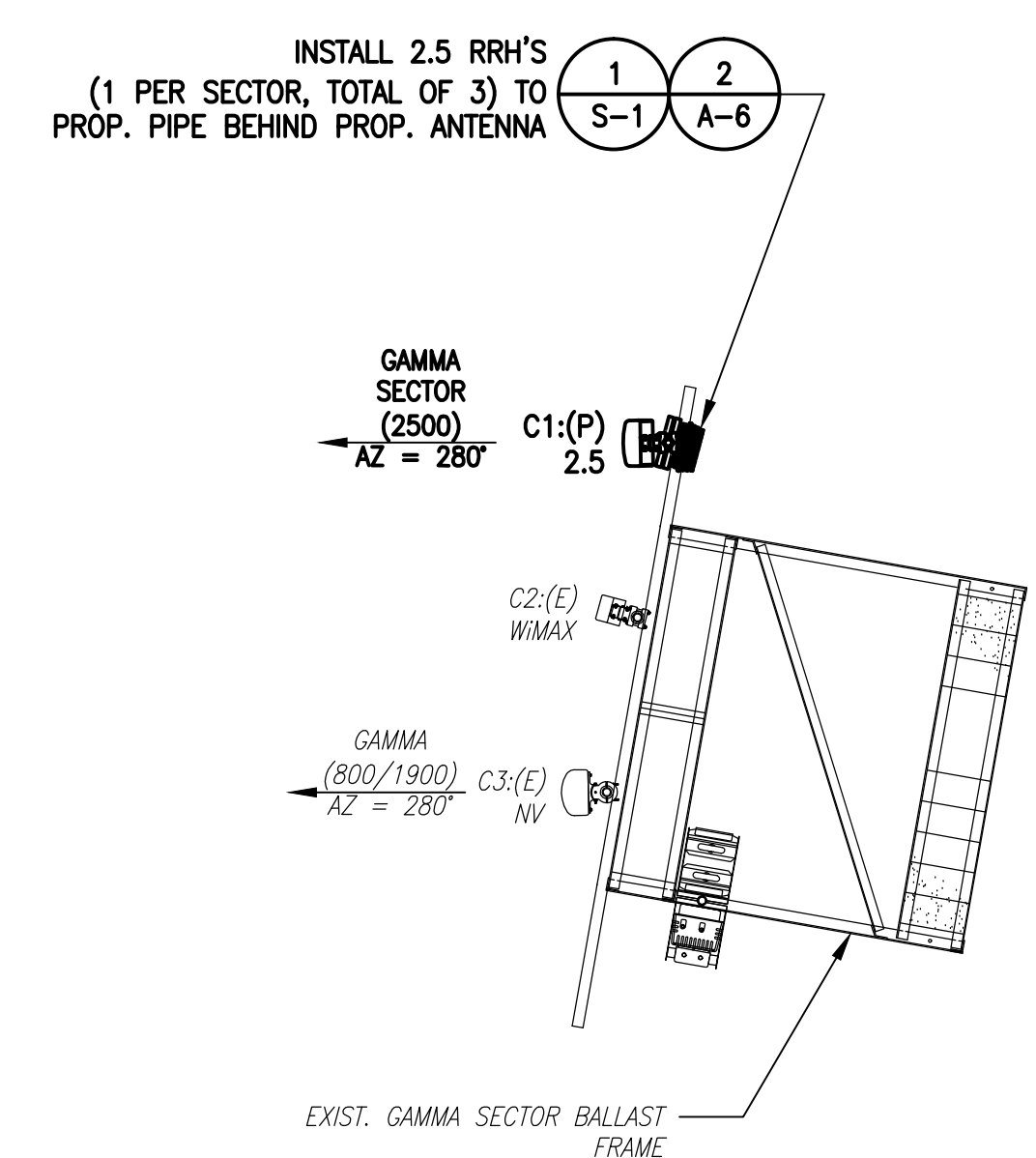
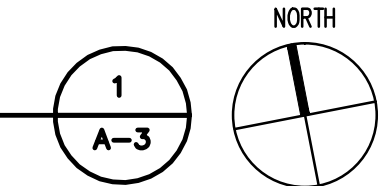
ANTENNA STATUS LEGEND:

- EMPTY – EMPTY PIPE
- (E) – EXISTING
- (P) – INSTALL
- NV – SPRINT ANTENNA
- 2.5 – SPRINT ANTENNA



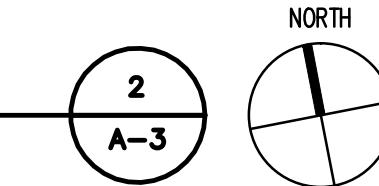
EXIST. ANTENNA PLAN

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



PROP. ANTENNA PLAN

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



SPECIAL INSTALLATION NOTE:
COAX JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.



RFDS Sheet

General Site Information

Site ID	BS73XC071	Equipment Vendor	NOKIA/COMMSCOPE
Market	42.201639	Latitude	42.204133
Region	New England	Longitude	-71.160739
MLA	None	LL SITE ID	N/A
Structure Type	Rooftop		
BTS Type	Outdoor Macro		
Solution ID	N/A	Siterra SR Equipment type	N/A
		Incremental Power Draw needed by added Equipment	0

Base Equipment

BBU Kit	None	Top Hat	None
BBU Kit Qty	N/A	Top Hat Qty	N/A
		Top Hat Dimensions	N/A
Growth Cabinet	None	Top Hat Weight (lbs)	N/A
Growth Cabinet Qty	N/A		
Growth Cabinet Dimensions	N/A		
Growth Cabinet Weight	N/A		

RF Path Information

RRH	NOKIA Mini Macro	
RRH Qty	3	
RRH Dimensions. Inches	9.68 x 12.83 x 6.3	
RRH Weight. lbs.	26.45	
RRH Mount Weight. Lbs.	TBD	
Power and Fiber Cable	Ethernet, AC SOOW, Fiber	
Cable Qty	9	
Weight per foot. Lbs.	TBD	
Diameter. Inches.	TBD	
Length Ft.	526*	(calculated as antenna height plus 20%)
Coax Jumper	Coax Jumper. Mfg TBD.	ALPHA: 96'
Coax Jumper Qty	6	BETA: 110'
Coax Jumper Length. Feet.	8	GAMMA: 320'
Coax Jumper Weight	1.7	
Coax Jumper Diameter. Inches	0.5	
AISG Cable	Commscope ATCB-B01-006	} DAISY CHAIN TO EXIST. ANTENNAS
AISG Cable Qty	3	
AISG Diameter. Inches.	0.315	
AISG Cable length.	8	
Weight of entire AISG cable. Lbs.	1.3	

Antenna Sector Information

	Sector 1	Sector 2	Sector 3
Antenna make/model	COMMSCOPE LLPX310R-V1	COMMSCOPE LLPX310R-V1	COMMSCOPE LLPX310R-V1
Antenna qty	1	1	1
Antenna Dimensions. Inches	42.4 x 11.8 x 4.5	42.4 x 11.8 x 4.5	42.4 x 11.8 x 4.5
Antenna Weight. Lbs	27.6	27.6	27.6
Antenna Mounting Kit Weight. Lbs.	11.5	11.5	11.5
CL Height	60.2	60.2	60.2
Antenna Azimuth	80	200	280
Antenna Mechanical Downtilt	0	0	0
Antenna etilt	-2	-2	-2

Sprint RFDS Sheet 12/1/2016 Confidential

SPRINT CONSTRUCTION STANDARDS:

GENERAL CONTRACTOR SHALL ADHERE TO THE FOLLOWING SPRINT CONSTRUCTION STANDARDS.

- CONSTRUCTION STANDARDS: INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES - (CURRENT VERSION), INCLUDING EXHIBITS A-M.
- CONSTRUCTION SPECIFICATIONS: CONSTRUCTION STANDARDS EXHIBIT A - STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES (CURRENT VERSION).
- GROUNDING STANDARDS: EXTERIOR GROUNDING SYSTEM DESIGN. GROUNDING STANDARDS (SUPPLEMENT): ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412 AND SPRINT ENGINEERING LETTER EL-0504 DATED 04.20.12.
- WEATHER PROOFING STANDARDS: EXCERPT FROM CONSTRUCTION STANDARDS EXHIBIT A, SECTION 3.6 WEATHERPROOFING CONNECTORS AND GROUND KITS.
- COLOR CODING: SPRINT NEXTEL ANT AND LINE COLOR CODING PER SPRINT TS-0200 CURRENT VERSION.
- GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND CL HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT IN RFDS, HALT ANTENNA WORK FOR WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING SPRINT-PROVIDED CONTACT INFORMATION FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5GHz ANTENNA AT SAME CL AS 1.9GHz ANTENNA AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILD DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT 1900MHz AND 800MHz ANTENNA CL HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
- AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHz, 1.9GHz, AND 2.5GHz. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
- GENERAL CONTRACTOR MUST INSURE THAT NO OBJECT IS LOCATED IN FRONT OF ANTENNA. THIS MEANS NO OBJECT IS TO BE LOCATED 45 DEGREES LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5GHz ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.
- GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREES. DOWNTILT AND ROLL(LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILTS SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL. HTTP://WWW.3ZTELECOM.COM/ANTENNA-ALIGNMENT-TOOL/.

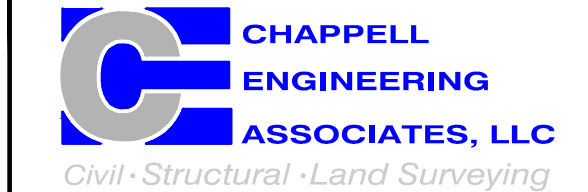
NOTES:
 1. COMMENTS IN RED TEXT PROVIDED BY A&E VENDOR.
 2. ANTENNA RAD CENTER BASED ON COLLOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS.
 3. SPRINT CM SHALL CONFIRM CABLE LENGTH, COAX JUMPER LENGTH AND AISG CABLE LENGTH BEFORE PREPARING BOM. A&E RECOMMENDED CABLE LENGTH BASED ON NV 2.5 EQUIPMENT AUDIT PLUS 20 FEET FOR (2) 10-FOOT COILS AT EACH END OF THE FIBER TRUNK.



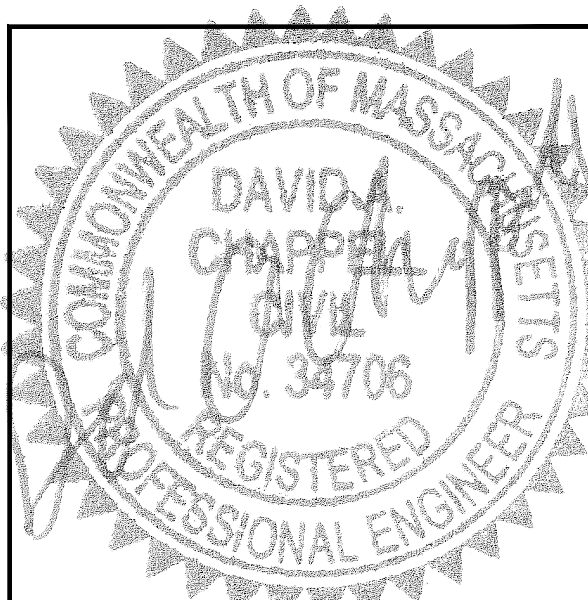
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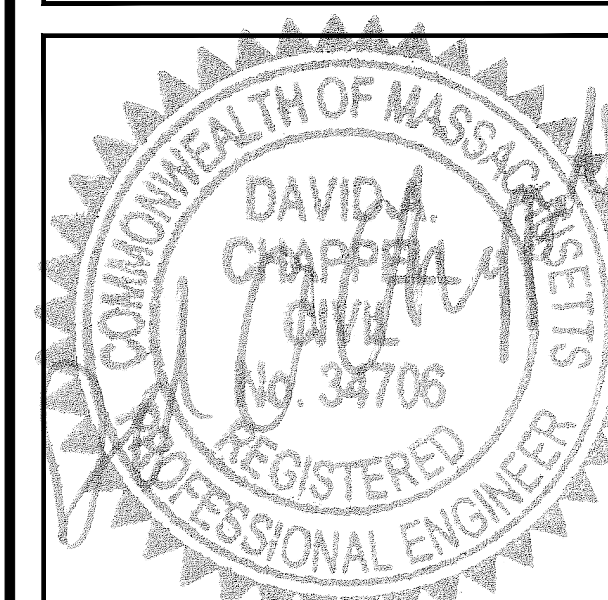
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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
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0	12/01/16	ISSUED FOR REVIEW	NWC

SITE NUMBER:
BS73XC071
 SITE NAME:
BLUE HILLS
 SITE ADDRESS:
 690 CANTON STREET
 WESTWOOD, MA 02090

SHEET TITLE
 RF DATA SHEET

SHEET NUMBER
A-4



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SITE NUMBER:

BS73XC071

SITE NAME:

BLUE HILLS

SITE ADDRESS:

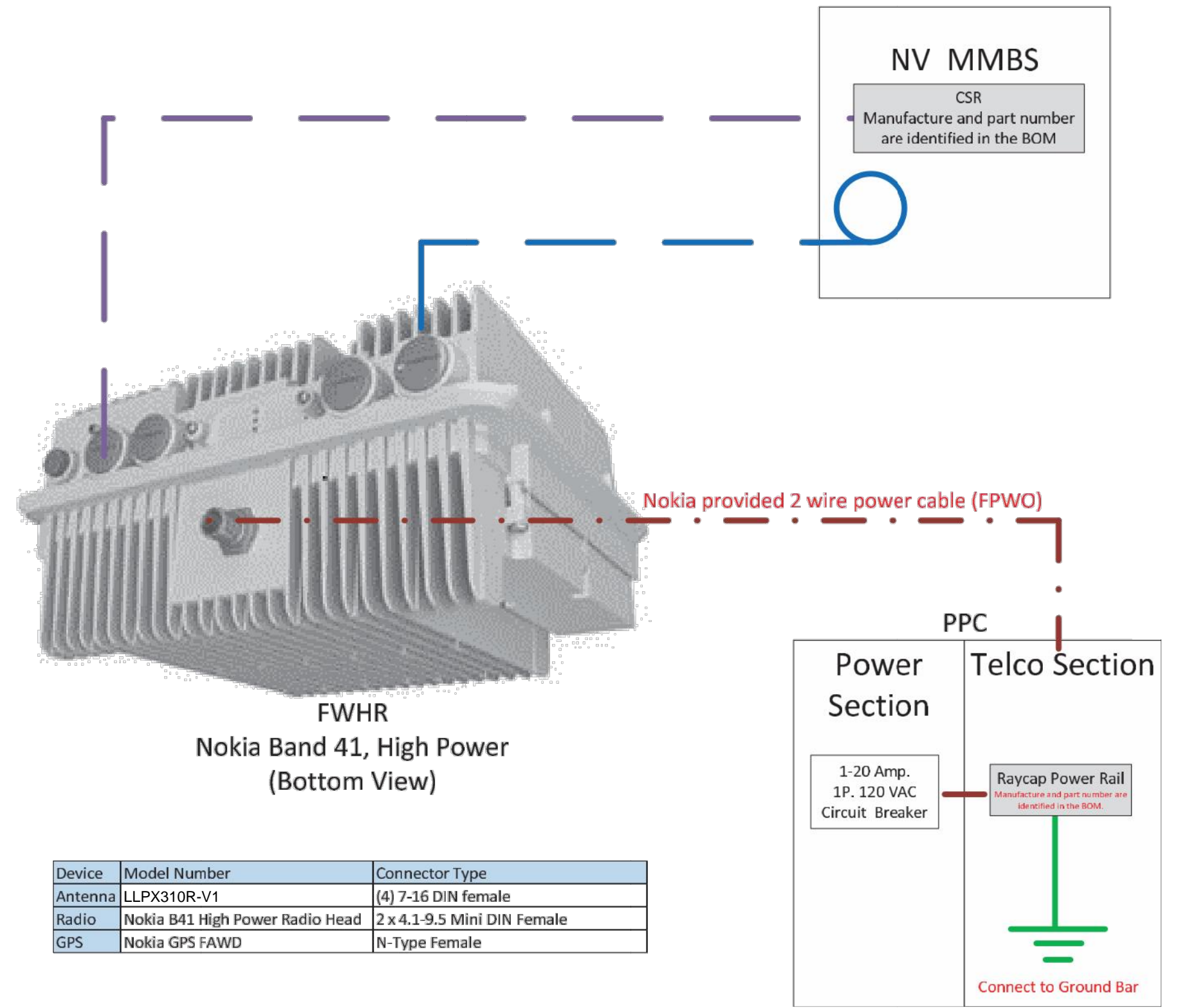
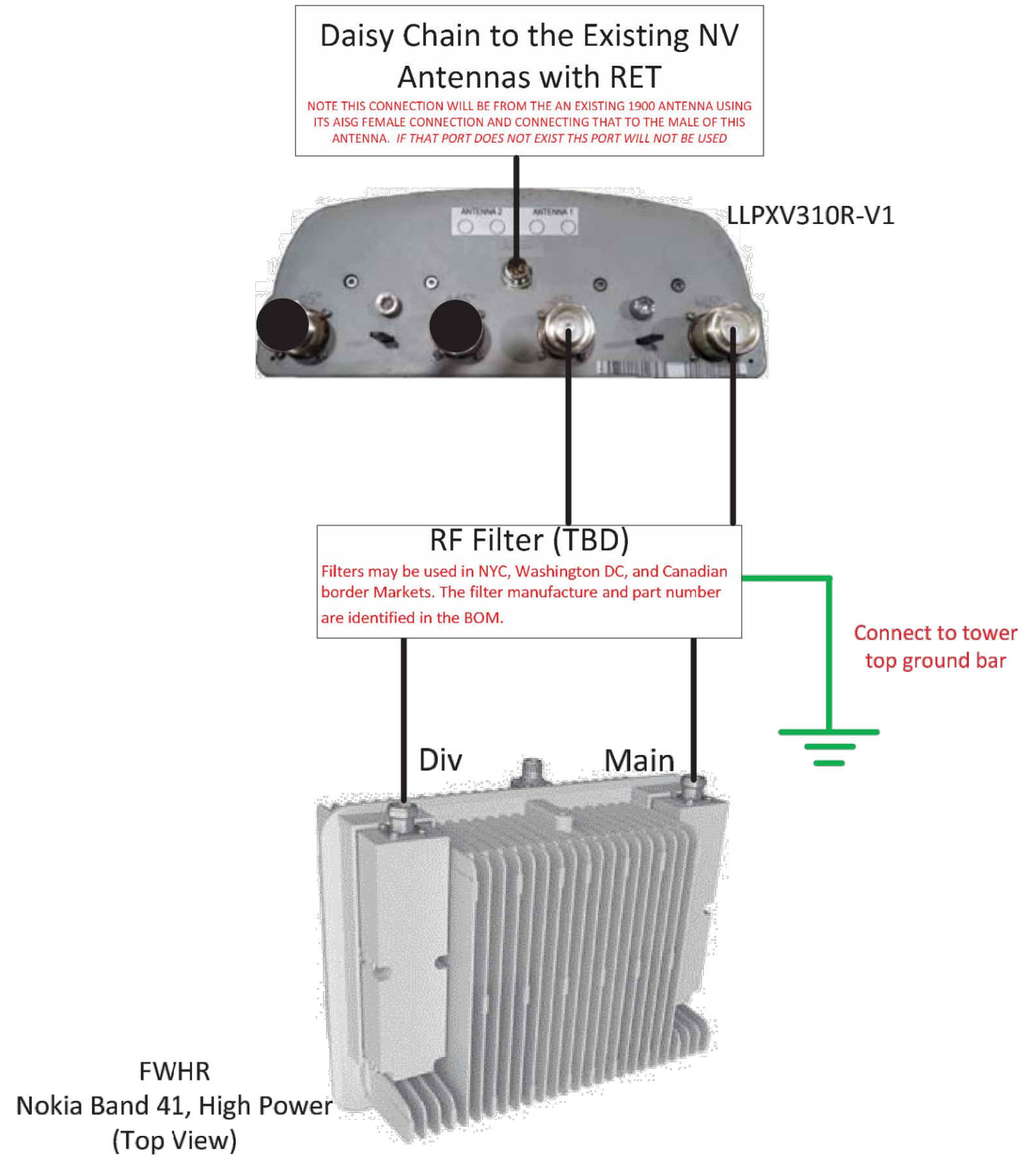
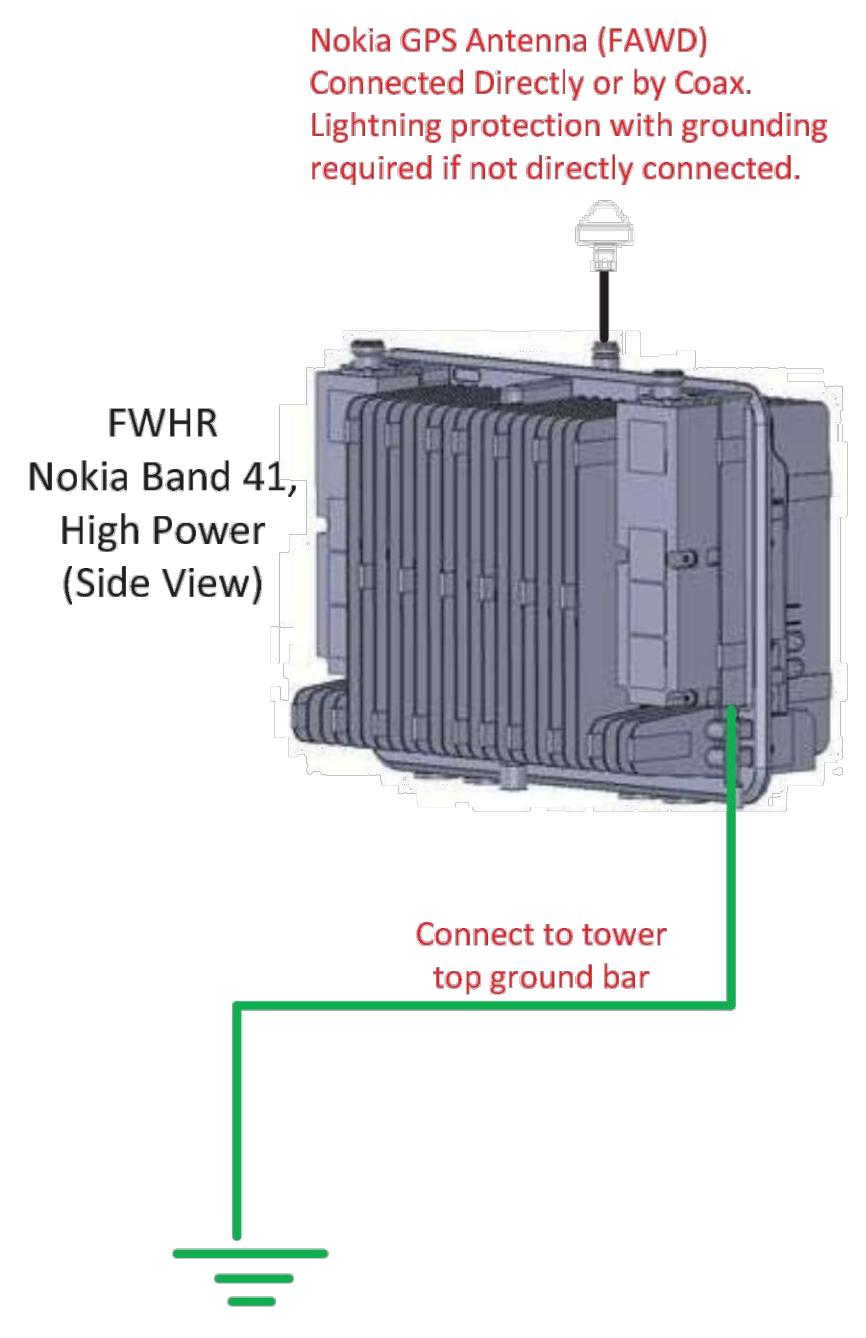
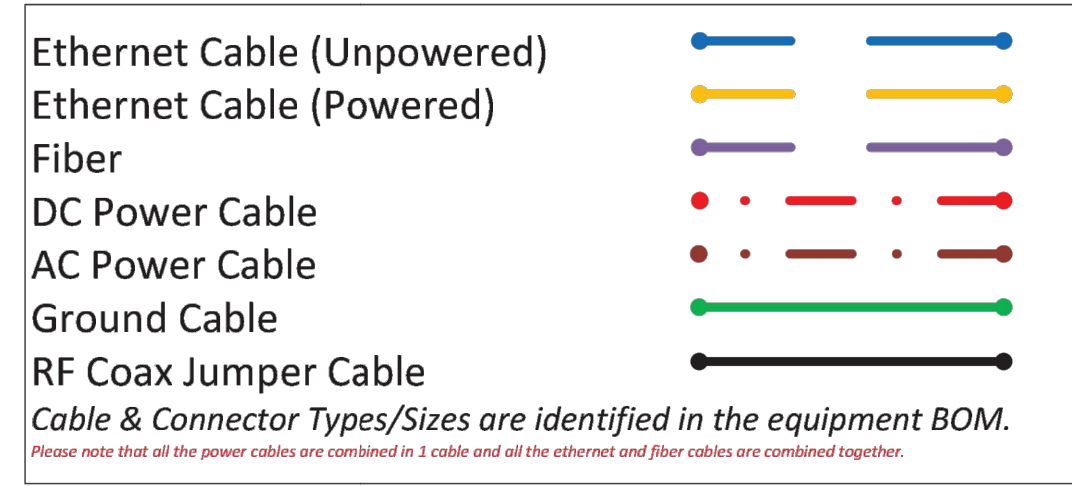
690 CANTON STREET
WESTWOOD, MA 02090

SHEET TITLE

RAN WIRING
DIAGRAMS

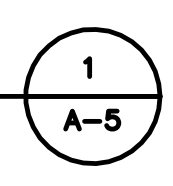
SHEET NUMBER

A-5

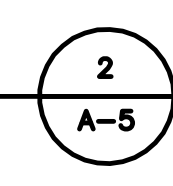


Device	Model Number	Connector Type
Antenna	LLPX310R-V1	(4) 7-16 DIN female
Radio	Nokia B41 High Power Radio Head	2 x 4.1-9.5 Mini DIN Female
GPS	Nokia GPS FAWD	N-Type Female

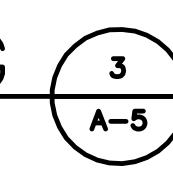
2.5 RRH GROUNDING
SCALE: N.T.S.

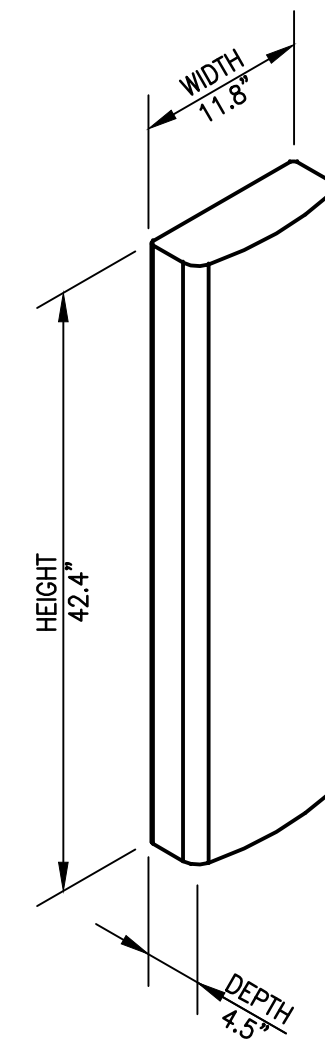


2.5 RRH TO ANTENNA WIRING
SCALE: N.T.S.



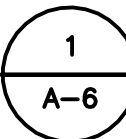
2.5 RRH TO EQUIPMENT WIRING
SCALE: N.T.S.





COMMSCOPE LLPX310R-V1 PANEL ANTENNA
 DIMENSIONS: 42.4"H x 11.8"W x 4.5"D
 WEIGHT: 27.6 LBS
 1 PER SECTOR, TOTAL OF 3

ANTENNA DETAIL
 SCALE: N.T.S.



1) BASIC REQUIREMENTS

- a) MEET ALL REQUIREMENTS OF JURISDICTIONS.
- b) INSTALLATIONS MUST COMPLY WITH THE NATIONAL ELECTRICAL CODE (LATEST VERSION) AND EIA/TIA 222 REV G.
- c) INSTALLERS ARE TO UTILIZE THIS DOCUMENT IN CONJUNCTION WITH SPRINT'S PLUMBING DIAGRAM, THE SITE-SPECIFIC RF DATA INFORMATION (RFD), AND THE CONSTRUCTION DRAWINGS AND INSTALLATION INSTRUCTIONS TO CONSTRUCT EACH SITE.
- d) IF EQUIPMENT FURNISHED BY COMPANY DOES NOT MATCH THE EQUIPMENT LISTED ON THE RFD AND SHOWN ON THE PERMITTING DRAWINGS, RESOLVE DISCREPANCY THROUGH INSTALLER'S CONSTRUCTION MANAGER AND COMPANY'S POINT OF CONTACT.
- e) CABLE INSTALLATIONS
 - i) ALL CABLES MUST BE OUTDOOR RATED AND HAVE UV RESISTANT OUTER JACKETS.
 - ii) CABLE BENDS MUST NOT EXCEED MANUFACTURER'S ALLOWABLE CABLE BEND RADII.
 - iii) AT RADIOS INSTALL SERVICE LOOPS FOR POWER, FIBER AND ETHERNET SECURED AT LEAST TWICE AT 180 TO THE STRUCTURE.
 - iv) SPARE FIBERS MUST BE ENCASED IN A LOW PROFILE WEATHERTIGHT ASSEMBLY.
 - f) FIBERS MUST BE FIELD-TERMINATED WITH LC-TYPE CONNECTORS.
 - g) ON TOWER AND ANTENNA SUPPORT STRUCTURES, SECURE INDIVIDUAL CABLES AND JUMPERS TO STRUCTURE USING UV RESISTANT VELCO STRAPPING ON 18" INTERVALS.
 - h) FOR BURIED CONDUITS, HAND DIG TRENCHES INSIDE COMPOUNDS.
 - i) AT MMBS CABINETS, AND PPC TELCO SECTION (OR HOFFMAN BOX FOR DIN-RAIL CIRCUIT BREAKER ASSEMBLY) THE LAST 3' OF CONDUIT RUN CAN BE MADE WITH LIQUID TIGHT FLEXIBLE METALLIC CONDUIT.
 - j) SECURE AND SUPPORT CONDUITS AND CABLES ON TOWERS AT NO MORE THAN 48" INTERVALS EXCEPT INSIDE MONOPOLES PROVIDE HANGING GRIPS AT EACH HANDHOLE ABOVE GROUND LEVEL.
 - k) WEATHER PROOF RF CONNECTIONS WITH 1 LAYER OF SELF-AMALGAMATING TAPE AND 1 LAYER OF PVC TAPE OVERWRAP.
 - l) ON TOWER SITES RGS CONDUITS MAY BE SURFACE MOUNTED AWAY FROM WALKWAYS AND ACCESS/EGRESS PATHS. IF INSTALLATIONS IN WALKWAYS AND ACCESS/EGRESS PATHS CANNOT BE AVOIDED, IDENTIFY THE CONDUIT ENVELOPE/TRIP HAZARD BY ALTERNATING YELLOW AND BLACK STRIPES PAINTED ON CONCRETE AND CONDUIT.

2) SPRINT-FURNISHED EQUIPMENT

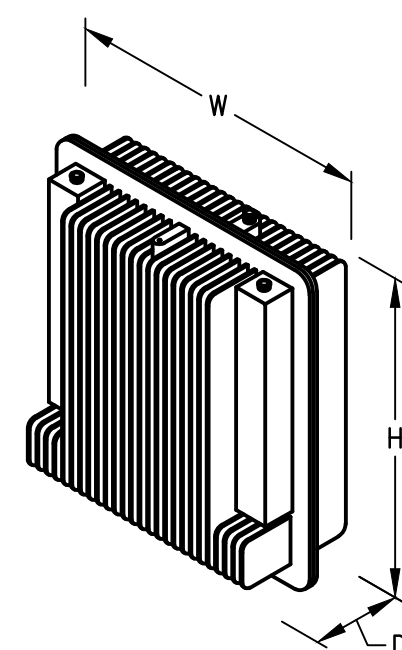
- a) INSTALL THE FOLLOWING EQUIPMENT AT LOCATIONS AND AZIMUTHS SHOWN ON THE CONSTRUCTION DRAWINGS.
- i) PANEL ANTENNAS: UTILIZE MANUFACTURER'S MOUNTING BRACKET. SET MECHANICAL DOWN-TILT AS INDICATED IN THE RFD. WEATHER PROOF RF CONNECTIONS WITH 1 LAYER OF SELF-AMALGAMATING TAPE AND 1 LAYER OF PVC TAPE OVERWRAP. FACTORY-MADE WEATHER-PROOFING BOOTS MAY BE ACCEPTABLE BUT MUST BE APPROVED BY SPRINT.
- ii) RADIOS - UTILIZE MANUFACTURER'S MOUNTING BRACKET. INSTALL RADIO BEHIND THE ANTENNA OR COLLAR MOUNT (MONOPOLES).
- iii) GPS ANTENNAS: MOUNT DIRECTLY TO RADIO. GPS ANTENNAS MUST SEE THE SOUTHERN SKY AT THE APPROPRIATE ANGLE AND NOT BE OBSCURED BY ANTENNAS OR TOWER MEMBERS. BEHIND ANTENNAS, INSTALL RADIOS SUCH THAT GPS IS LEVEL WITH ANTENNA AND PIPE MUST TIP. FOR COLLAR MOUNTS ROTATE RADIOS TO A SOUTHERN EXPOSURE SUCH THAT THE POLE, ANTENNA OR ANTENNA MAST DOES NOT OBSCURE THE ANTENNA.
- iv) FILTERS - RADIOS MAY SHIP WITH FILTERS PRE-INSTALLED (PIGGY-BACK) ON THE RADIO. IN SOME CASES AN EXTERNAL FILTER MUST BE INSTALLED.
- v) SPRINT'S 120 VOLT DIN-RAIL CIRCUIT BREAKER ASSEMBLY
- vi) CELL SITE ROUTERS (CSRS) AND SFPS (SMALL FORM PLUGGABLE); VARIOUS MODELS; REFER TO EQUIPMENT LIST AND WIRING DIAGRAMS

3) TOWER INSTALLATIONS

- a) MEET ALL REQUIREMENTS OF THE TOWER OWNER.
- b) ROUTE CONDUITS AND CABLES INSIDE OR OUTSIDE TOWER AS INDICATED ON THE CONSTRUCTION DRAWINGS.
- c) ETHERNET AND FIBER CABLES IN CONDUIT: RUN CABLES IN A SINGLE CORRUGATED FLEXIBLE CONDUIT ON THE TOWER, AND RIGID GALVANIZED STEEL CONDUIT WITH THREADED FITTINGS ON THE ICE BRIDGE AND WHERE EXPOSED ON EXISTING SLABS. AT CONDUIT EXIT FROM LOWER TOWER HAND HOLES, PROVIDE DRIP LOOPS AND WEEP HOLES. INSTALL OUTDOOR WEATHER TIGHT METALLIC PULL BOXES TO CONNECT CORRUGATED PVC CONDUIT TO RIGID METALLIC CONDUIT AT ICE BRIDGE.
- d) POWER CABLES - ROUTE MULTI-CONDUCTOR SOOW CABLE FROM POWER PROTECTION CABINET DIN-RAIL CIRCUIT BREAKER ASSEMBLY TO TOWER TOP PLATFORM. ROUTE CABLE IN RGS FROM PPC, ALONG ICE BRIDGE AND TO WITHIN 12" OF THE TOWER. INSTALL METALLIC THREADED CABLE TERMINATION FITTING ON RGS. SOOW CABLE CONTINUES ROUTING EXPOSED UP TOWER. AT TOWER TOP (SPRINT RAD CENTER) TURN CABLE HORIZONTAL ONTO STRUCTURE, INSTALL CABLE CLAMP AND TERMINATE CONDUCTORS IN THE POWER TERMINAL BOX. SPICE PROPRIETARY POWER CABLE AND EXTEND POWER TO RADIOS.

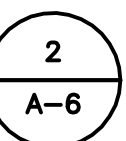
4) ROOFTOP AND FACILITY INSTALLATIONS

- a) MEET ALL LANDLORD REQUIREMENTS
- b) ON ROOFTOPS
 - i) BEFORE WORKING ON A ROOF, CONDUCT A CONDITION ASSESSMENT, MAKE NOTES, AND PHOTOGRAPH THE AREA INSIDE THE CONSTRUCTION LIMITS. REPORT ANY UNDESIRABLE ROOF CONDITIONS TO THE INSTALLER'S CONSTRUCTION MANAGER AND COMPANY POINT OF CONTACT.
 - ii) MOUNT EQUIPMENT VERTICALLY ON PARAPETS OR PENTHOUSE WALLS. IF EQUIPMENT IS TO BE MOUNTED ON A ROOF SKID OR TRIPOD, INSTALLATION MUST BE NON-PENETRATING.
 - iii) BUILDING PENETRATIONS: SIDE WALL PENETRATIONS ARE PREFERRED. FOR PENETRATING BRICK, CONCRETE, CMU AND SIMILAR WALLS USE SUITABLE METALLIC CONDUIT ENTRANCE FITTINGS. THRU-ROOF PENETRATIONS AND TREATMENT MUST BE EXPLICITLY APPROVED BY THE FACILITY OWNER AND MUST NOT VOID EXISTING ROOF WARRANTIES.
 - iv) ON ROOFTOPS INSTALL 3/C SOOW POWER CABLES, AND ETHERNET/FIBER CABLES EACH IN A DEDICATED 1" CORRUGATED FLEXIBLE CONDUIT. ROUTE FLEXIBLE CONDUITS IN EXISTING CABLE TRAY. AT SECTORS, TERMINATE CONDUITS USING ROXTEC CABLE TERMINATION FITTINGS WITHIN 3' OF RADIOS. AT CABINETS INSTALL UV RESISTANT PVC GASKETED HUBS.
- c) IN FACILITIES:
 - i) ROUTE 3/C SOOW POWER CABLES AND FIBER/ETHERNET CABLES IN SEPARATE RGS CONDUITS FOLLOWING THE LINES OF THE STRUCTURE.
 - ii) REPAIR ANY DISTURBED EXISTING CONSTRUCTION IN-KIND.
 - iii) MAINTAIN INTEGRITY OF FACILITY FIRE WALLS USING FIRE STOP PRODUCTS BY 3M, AND SIMILAR MANUFACTURERS.
 - iv) IN FACILITY ENVIRONMENTAL AIR PLENUMS INSTALL CABLES IN RGS CONDUIT.
 - v) FOR INDOOR MMBS (TENANT IMPROVEMENT) MAKE FINAL 3' CONNECTION TO MMBS AND DIN-RAIL CIRCUIT BREAKER ASSEMBLY ENCLOSURE WITH LIQUID-TIGHT FLEXIBLE METALLIC TUBING.



NOKIA MINI-MACRO BAND 41 RADIO
 DIMENSIONS: 9.68"H x 12.83"W x 6.3"D
 WEIGHT: 26.45 LBS
 1 PER SECTOR, TOTAL OF 3

RRH DETAIL
 SCALE: N.T.S.



5) CONCEALMENTS

- a) MEET JURISDICTION REQUIREMENTS FOR APPEARANCE AND NOISE.
- b) CONCEALMENTS MUST BE DESIGNED SUCH THAT THE THERMAL OPERATING LIMITS OF THE RADIOS AND ANCILLARY EQUIPMENT INSTALLED IN THE CONCEALMENT ARE NOT EXCEEDED.
- i) CONCEALMENT DESIGNS MUST BE APPROVED BY SPRINT.
- c) PAINTING MUST NOT COVER LABELS ON ANY EQUIPMENT INCLUDING RADIOS, ANTENNAS, FILTERS AND SIMILAR
- d) PAINTING AND CONCEALMENT OF ANTENNAS: PROVIDE MATERIALS THAT ARE RF TRANSPARENT.
- e) PAINTING AND CONCEALMENT OF RADIOS: PROVIDE HIGH TEMPERATURE PAINTING SYSTEMS WITH RATING SUITABLE FOR TYPICAL CASE TEMPERATURE OF THE RADIO HEAD.
- 6) AC POWER TIE-IN
 - a) INSTALL SPRINT'S 120 VOLT DIN-RAIL CIRCUIT BREAKER ASSEMBLY IN THE EXISTING POWER PROTECTION CABINET TELCO SECTION.
 - b) CONNECT SOOW CABLE POWER CONDUCTORS TO DIN RAIL.
 - c) CONNECT DIN-RAIL CIRCUIT BREAKERS WITH INTEGRAL CORD WHIP TO NEW 20-1P CIRCUIT BREAKER IN POWER PANEL.
 - i) IF NO TELCO SECTION EXISTS, INSTALL THE DIN-RAIL ASSEMBLY IN A METALLIC NEMA 4 LOCKABLE HOFFMAN BOX, 12" X 12" X 6" MINIMUM.

7) GROUNDING

- a) 120 VOLT CIRCUITS: POWER CIRCUITS/CABLES MUST BE 3-WIRE WITH EQUIPMENT GROUNDING CONDUCTOR.
- i) SUPPLEMENTAL GROUNDING: ALL GROUNDING HARDWARE MUST BE UL STAMPED AS SUITABLE FOR GROUNDING HARDWARE.
- b) RADIOS: BOND RADIO TO THE TOWER TOP OR SECTOR GROUND BAR WITH #2 BARE TINNED COPPER WIRE (GREEN INSULATED ON ROOFTOPS).
- c) DIN-RAIL CIRCUIT BREAKER ASSEMBLY: BOND SURGE ARRESTOR TO PPC TELCO BOARD GROUND BAR.
- i) ASSEMBLY INSTALLED IN HOFFMAN BOX: BOND ENCLOSURE AND SURGE ARRESTOR GROUND CONNECTION TO EFFECTIVELY GROUNDED H-FRAME OR BUILDING STEEL, MAIN GROUND BAR AT EQUIPMENT LINEUP, BURIED GROUND RING, GROUNDED STEEL WATER PIPE, OR LIGHTNING DOWN CONDUCTOR.

8) MINOR MATERIALS

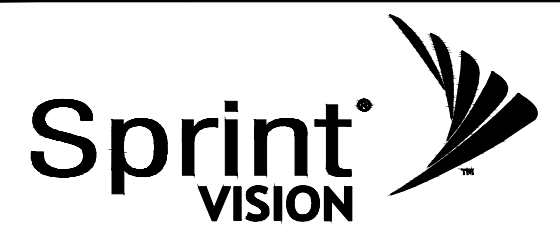
- a) CONDUIT.
 - i) RIGID GALVANIZED STEEL CONDUIT (RGS): UL LISTED, COMPLIANT WITH ANSI STANDARD C80, HOT-DIP GALVANIZED, WITH THREADED FITTINGS. SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. MANUFACTURERS: ALLIED, REPUBLIC, WHEATLAND, OR EQUAL.
 - ii) CORRUGATED FLEXIBLE CONDUIT: DURALINE OR EQUAL.
 - iii) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LFMC): UL LABELED, UV RESISTANT, FLAME RETARDANT PVC JACKET, HOT-DIP GALVANIZED, GREY. MANUFACTURERS: AFC, ANACONDA, SOUTHWIRE OR EQUAL.
 - iv) PVC CONDUIT: SCHEDULE 40, CARLON OR EQUAL.
 - v) CABINET HUBS AND CABLE TERMINATION FITTINGS- PROVIDE OZ GEDNEY OR ROXTEC TERMINATION FITTINGS AND HUBS. AT CABINETS PROVIDE METALLIC HUBS AND FITTINGS FOR METAL CONDUITS. TO TERMINATE CORRUGATED FLEXIBLE CONDUIT, INSTALL ROXTEC CES TERMINATORS.
 - b) COAXIAL CABLE JUMPERS: 1/2" LDF-4. MANUFACTURERS: COMMSCOPE, RFS OR FCT. CONNECTORS MUST BE OF THE SAME MANUFACTURER AS THE CABLE.
 - c) WALL PENETRATIONS IN FACILITIES: SUITABLE METALLIC, GASKETED CONDUIT OR CABLE FITTINGS AS MANUFACTURED BY OZ GEDNEY, ROXTEC OR SIMILAR.
 - d) FASTENERS AND HARDWARE.
 - i) TO SECURE RACEWAYS, UTILIZE NON CORRODING METALLIC FASTENERS AND HARDWARE SUITABLE FOR THE PURPOSE. GALVANIZED HARDWARE MUST BE HOT-DIPPED. ELECTRO-GALVANIZED HARDWARE WILL NOT BE ACCEPTABLE.
 - ii) BUTTERFLY CLIPS, BANDING, COAX BLOCKS AND SIMILAR: STAINLESS STEEL.
 - iii) CROSSOVER PLATES, U-BOLTS, AND SIMILAR TOWER MOUNTING HARDWARE: HOT-DIP GALVANIZED.
 - iv) UNISTRUT, B-LINE AND SIMILAR METAL FRAMING SHAPES: HOT-DIP GALVANIZED.
 - e) POWER CABLES:
 - i) PROVIDE MULTI-CONDUCTOR SOOW CABLES, SOUTHWIRE, CAROL, OKONITE OR EQUAL.
 - (a) #12 AWG CONDUCTORS FOR CIRCUITS <200 FEET.
 - (b) #10 AWG CONDUCTORS FOR CIRCUITS >200 FEET.
 - ii) ON ROOFTOPS RUN 3/C SOOW TO EACH SECTOR.
 - iii) ON TOWERS RUN A SINGLE 9 CONDUCTOR (OR 10 CONDUCTOR IF COMMONLY AVAILABLE) SOOW CABLE TO THE TOWER TOP.
 - f) ETHERNET CABLES AND CONNECTORS: OUTDOOR RATED, CAT 5E, BELDEN OR EQUAL.
 - i) CONNECTORS: RJ45 CONNECTORS: AIM CAMBRIDGE CAT5E CINCH CONNECTORS, 32-2298UL RJ45UL (8P8C), FOR SHIELDED, STRAIGHT, ROUND CABLE, OR EQUIVALENT.
 - g) FIBER CABLES: CORNING FREEDOM FAN-OUT TIGHT-BUFFERED CABLE RISER, OUTDOOR, 4F, SINGLE MODE.
 - i) CONNECTORS: TYPE LC. INSTALL EXTENDER BOOT.
 - h) RF TRANSPARENT PAINT FOR ANTENNA CONCEALMENT: SELECT NO/LOW CARBON PAINTS, WITH NO/LOW TITANIUM DIOXIDE, AND WITHOUT SUSPENDED METAL PARTICLES (ALUMINUM, ZINC, COPPER, ETC.)

9) COLOR CODING

- a) COLOR CODE CABLES AND CONDUITS AS REQUIRED BY SPRINT STANDARD TS-0200.

10) TESTING AND CONSTRUCTION COMPLETE

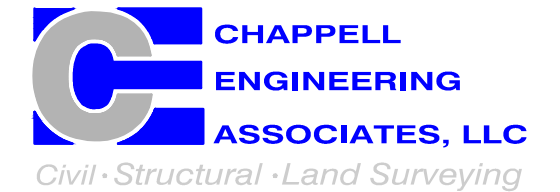
- a) SWEEP ALL COAXIAL CABLES ACCORDING TO SPRINT STANDARD TS-0200.
- b) PANEL ANTENNA ALIGNMENT - USING ELECTRONIC ALIGNMENT TOOL, SUNSIGHT OR EQUAL. AZIMUTH/DOWNTILT +/- 1 DEGREE.
- c) LEAVE ALL EQUIPMENT TURNED OFF UNTIL INSTRUCTED BY THE COMMISSIONING AND INTEGRATION TO TURN EQUIPMENT ON.
- d) OTHER REQUIREMENTS AND DELIVERABLES MAY BE REQUIRED BEFORE THE CONSTRUCTION COMPLETE MILESTONE CAN BE ACTUALIZED IN SITERRA (SPRINT'S DATABASE-OF-RECORD).



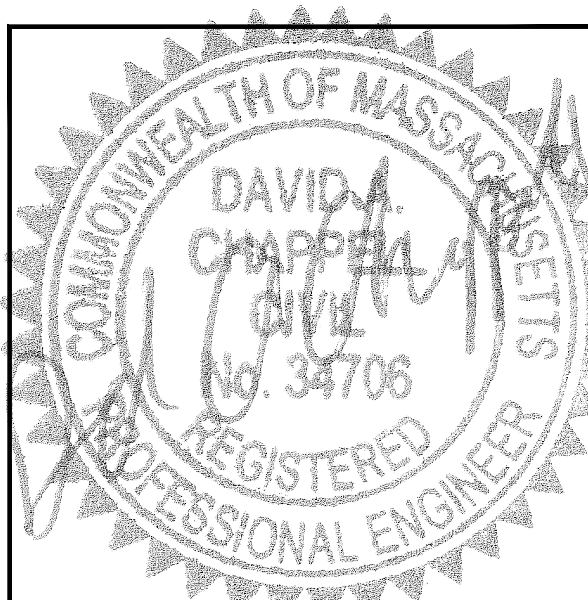
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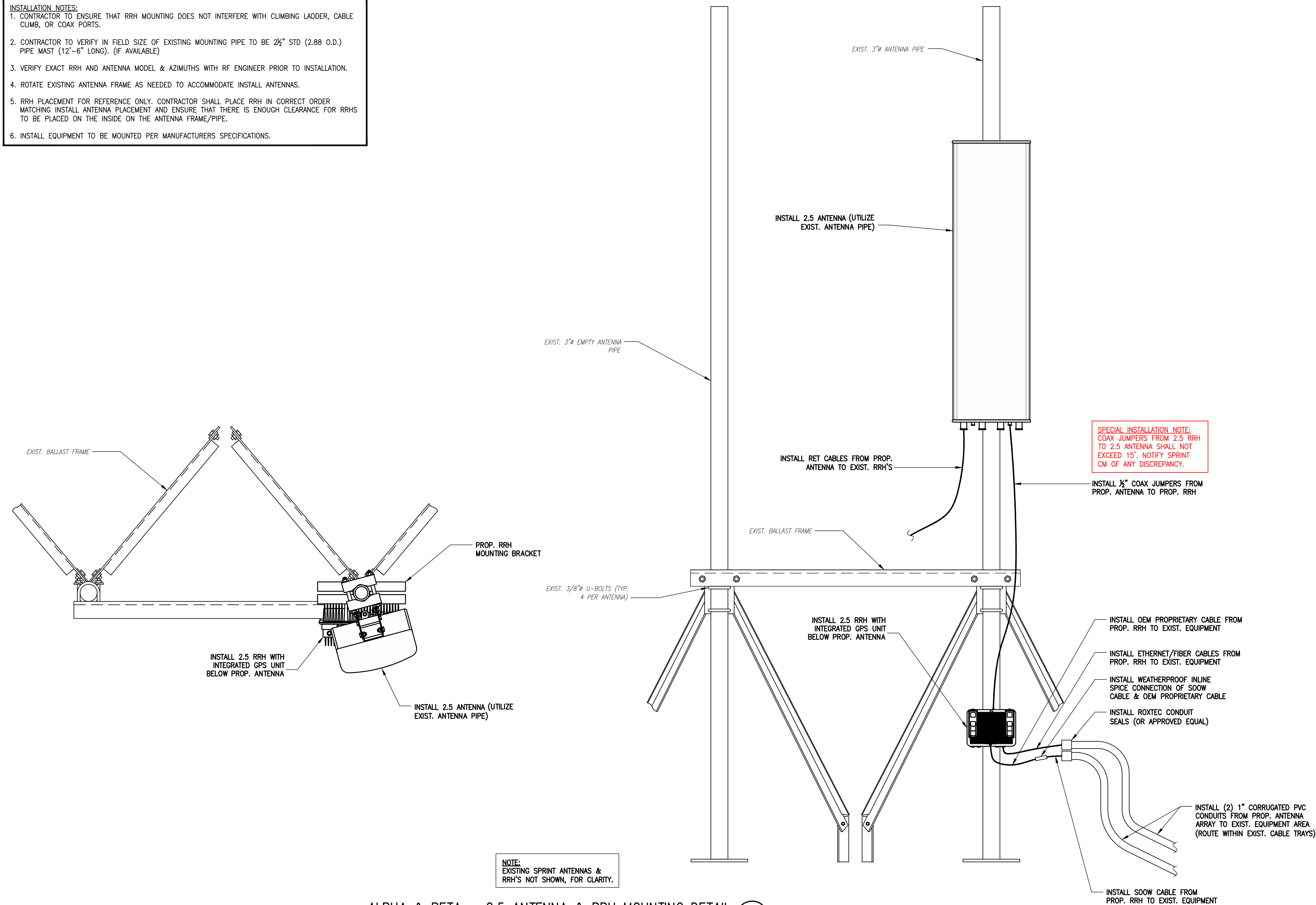
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	12/20/16	ISSUED FOR CONSTRUCTION	CMC
0	12/01/16	ISSUED FOR REVIEW	NWC

SITE NUMBER:
BS73XC071
 SITE NAME:
BLUE HILLS
 SITE ADDRESS:
 690 CANTON STREET
 WESTWOOD, MA 02090

SHEET TITLE
EQUIPMENT DETAILS & CONSTRUCTION SPECIFICATIONS

SHEET NUMBER
A-6

- INSTALLATION NOTES:**
1. CONTRACTOR TO ENSURE THAT RRH MOUNTING DOES NOT INTERFERE WITH CLIMBING LADDER, CABLE CLIMB, OR COAX PORTS.
 2. CONTRACTOR TO VERIFY IN FIELD SIZE OF EXISTING MOUNTING PIPE TO BE 2½" STD (2.88 O.D.) PIPE MAST (12'-6" LONG). (IF AVAILABLE)
 3. VERIFY EXACT RRH AND ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.
 4. ROTATE EXISTING ANTENNA FRAME AS NEEDED TO ACCOMMODATE INSTALL ANTENNAS.
 5. RRH PLACEMENT FOR REFERENCE ONLY. CONTRACTOR SHALL PLACE RRH IN CORRECT ORDER MATCHING INSTALL ANTENNA PLACEMENT AND ENSURE THAT THERE IS ENOUGH CLEARANCE FOR RRHS TO BE PLACED ON THE INSIDE ON THE ANTENNA FRAME/PIPE.
 6. INSTALL EQUIPMENT TO BE MOUNTED PER MANUFACTURERS SPECIFICATIONS.



ALPHA & BETA - 2.5 ANTENNA & RRH MOUNTING DETAIL

1
S-1

Sprint VISION

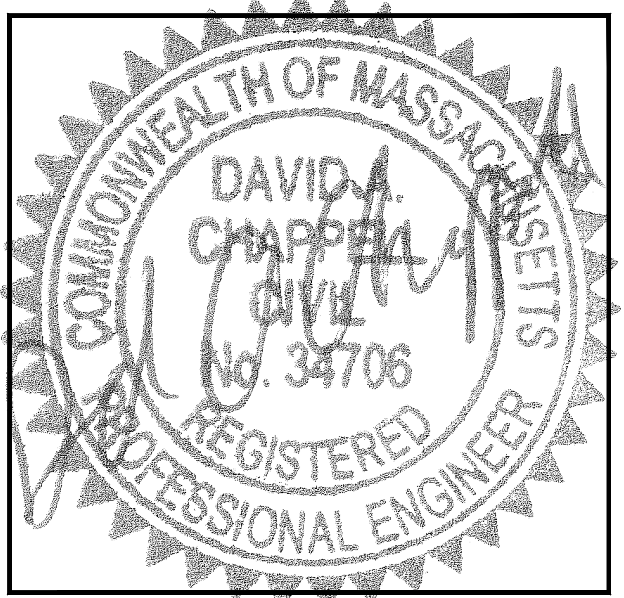
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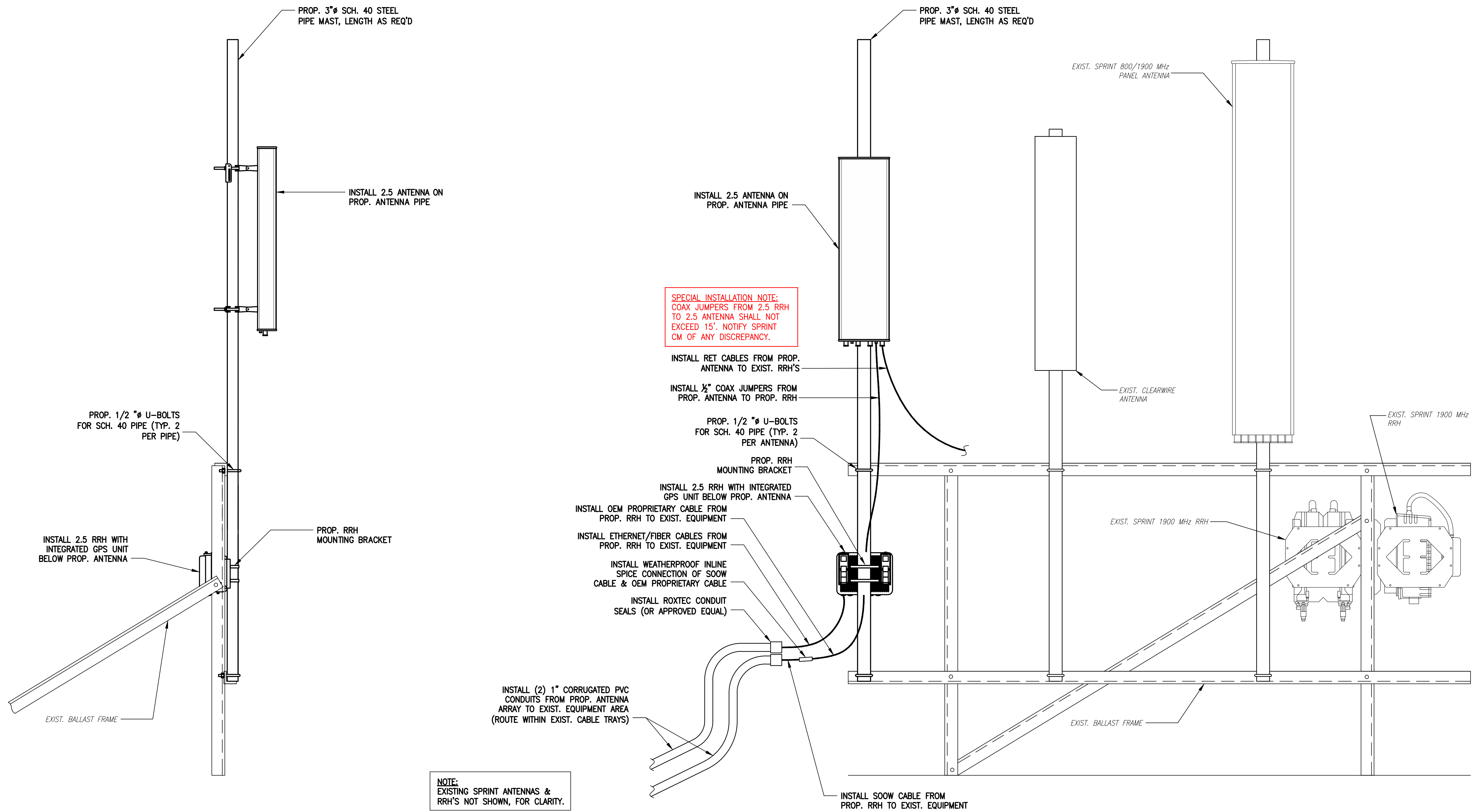
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BLUE HILLS

SITE ADDRESS:
690 CANTON STREET
WESTWOOD, MA 02090

SHEET TITLE
STRUCTURAL DETAILS

SHEET NUMBER
S-1

- INSTALLATION NOTES:**
1. CONTRACTOR TO ENSURE THAT RRH MOUNTING DOES NOT INTERFERE WITH CLIMBING LADDER, CABLE CLIMB, OR COAX PORTS.
 2. CONTRACTOR TO VERIFY IN FIELD SIZE OF EXISTING MOUNTING PIPE TO BE 3" STD (3.50 O.D.) PIPE MAST (LENGTH AS REQ'D)
 3. VERIFY EXACT RRH AND ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.
 4. ROTATE EXISTING ANTENNA FRAME AS NEEDED TO ACCOMMODATE INSTALLED ANTENNAS.
 5. RRH PLACEMENT FOR REFERENCE ONLY. CONTRACTOR SHALL PLACE RRH IN CORRECT ORDER MATCHING INSTALL ANTENNA PLACEMENT AND ENSURE THAT THERE IS ENOUGH CLEARANCE FOR RRHS TO BE PLACED ON THE INSIDE ON THE ANTENNA FRAME/PIPE.
 6. INSTALLED EQUIPMENT TO BE MOUNTED PER MANUFACTURERS SPECIFICATIONS.



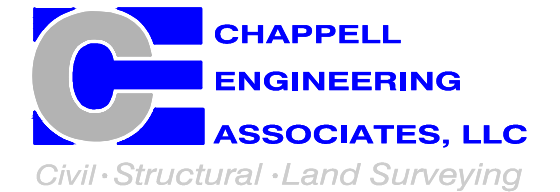
GAMMA - 2.5 ANTENNA & RRH MOUNTING DETAIL 1
N.T.S. S-2



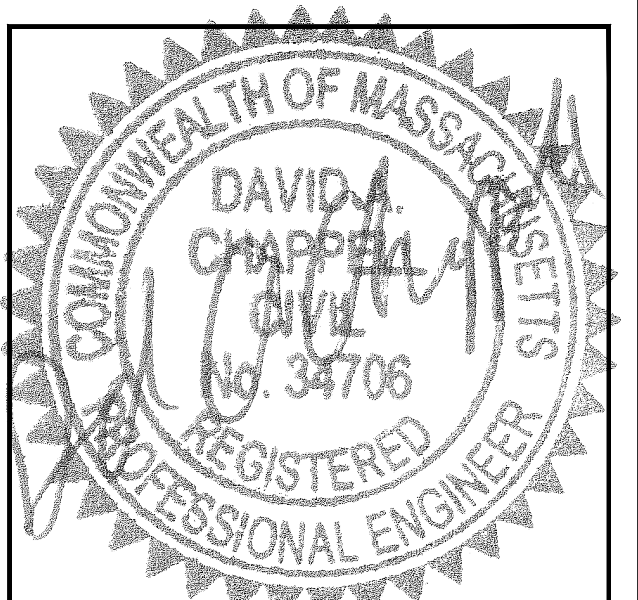
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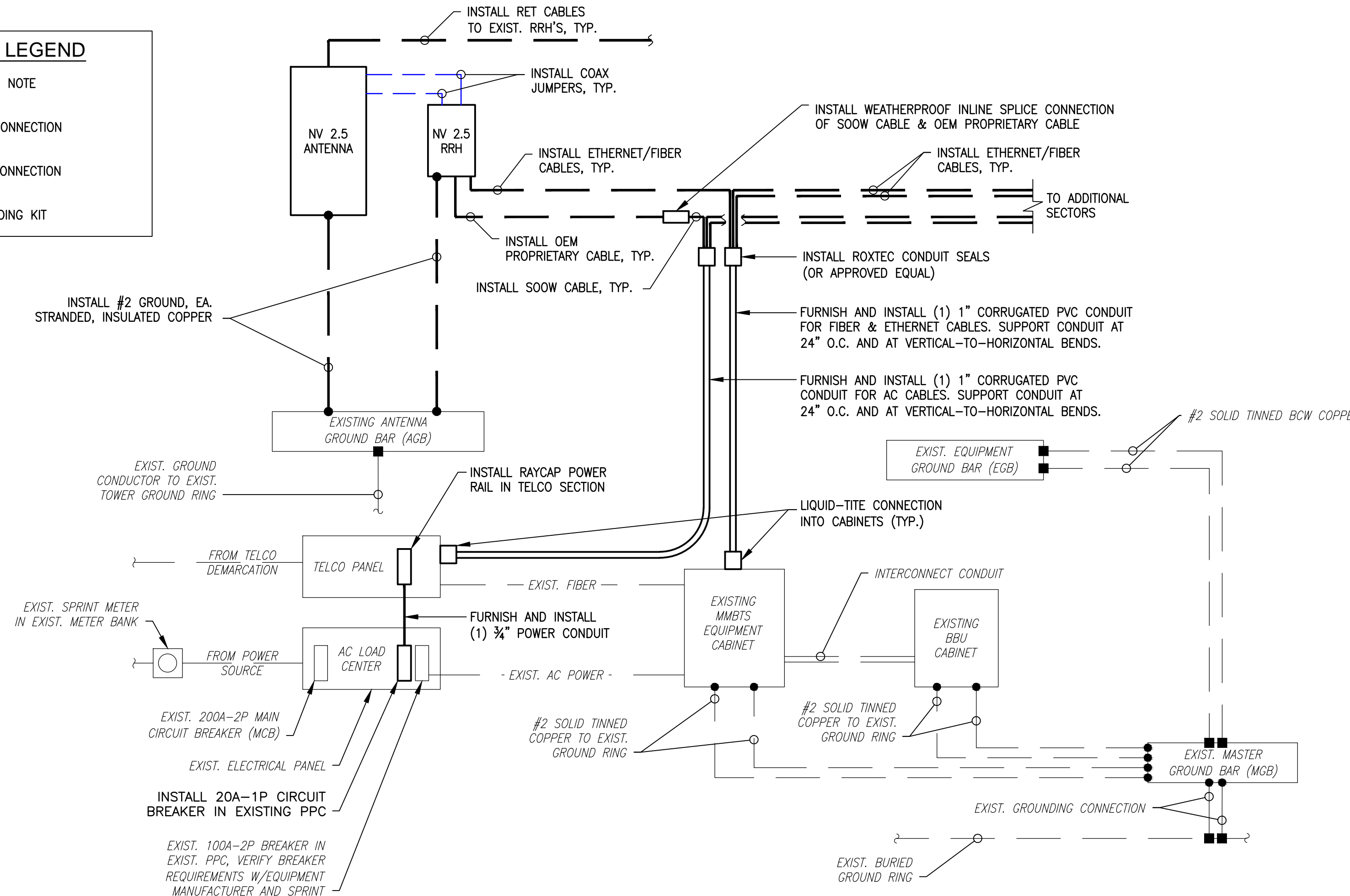
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SHEET TITLE
**STRUCTURAL
DETAILS**

SHEET NUMBER
S-2

SYMBOL LEGEND

- (X) SPECIAL WORK NOTE
- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- CABLE GROUNDING KIT



TYPICAL POWER & GROUNDING ONE-LINE
SCALE: NTS

SPECIAL WORK NOTE:

- G.C. TO FURNISH AND INSTALL ALL COMPONENTS TO UPGRADE EXISTING ELECTRICAL SERVICE, CONDUIT, CONDUCTOR, PPC AND MCB IN ACCORDANCE WITH SPRINT CONSTRUCTION STANDARDS NV 2.5 ADDENDUM "ENGINEERING NOTICE 2013-002 (POWER UPGRADES) REV.0" (OR CURRENT VERSION)
- G.C. TO FURNISH AND INSTALL UPGRADE THE EXISTING MMBTS BREAKER, CONDUCTOR, AND CONDUIT TO A MINIMUM NEC RATING FOR A 100-AMP, 240V CIRCUIT.
- FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
-ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08-24-12 (OR CURRENT VERSION)
-SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12 (OR CURRENT VERSION)

- ELECTRICAL NOTES**
- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
 - THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
 - ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.
 - ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
 - GENERAL CONTRACTOR SHALL PROVIDE ALL DIRECT BURIED CONDUITS WITH PLASTIC WARNING TAPE IDENTIFYING CONTENTS. TAPE COLORS SHALL BE ORANGE FOR TELEPHONE AND RED FOR ELECTRIC.
 - ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
 - THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
 - GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
 - ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
 - BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
 - ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
 - RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
 - RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
 - FIBER OPTIC CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 770-OPTICAL FIBER CABLES AND RACEWAYS.
 - COMMUNICATIONS CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 800-COMMUNICATIONS SYSTEMS.

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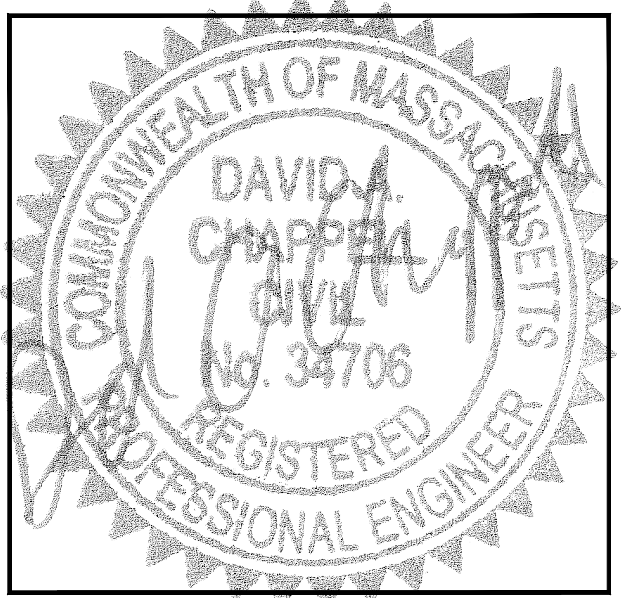
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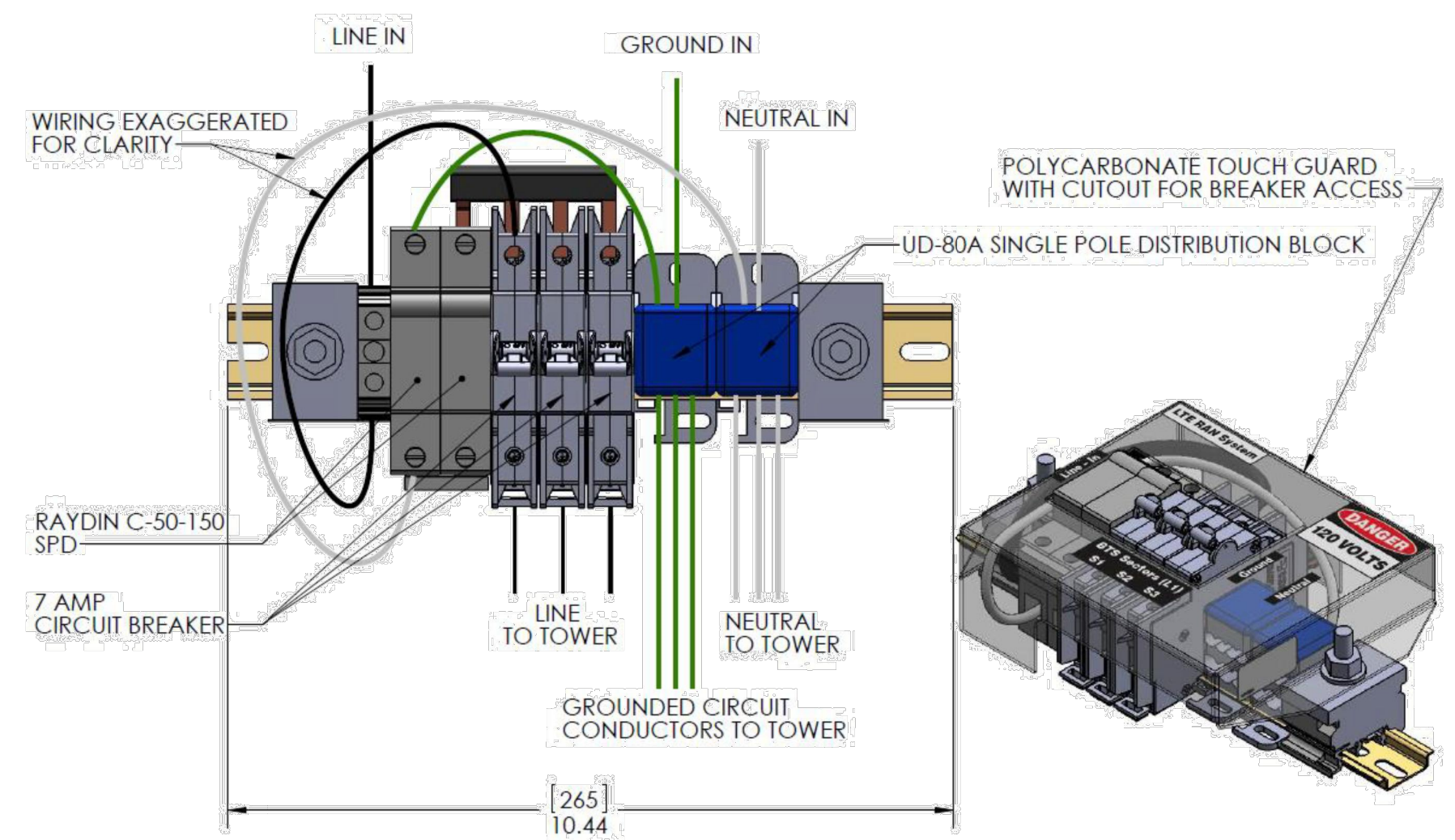
SHEET TITLE
ONE-LINE DIAGRAM & PPC DETAILS

SHEET NUMBER
E-1

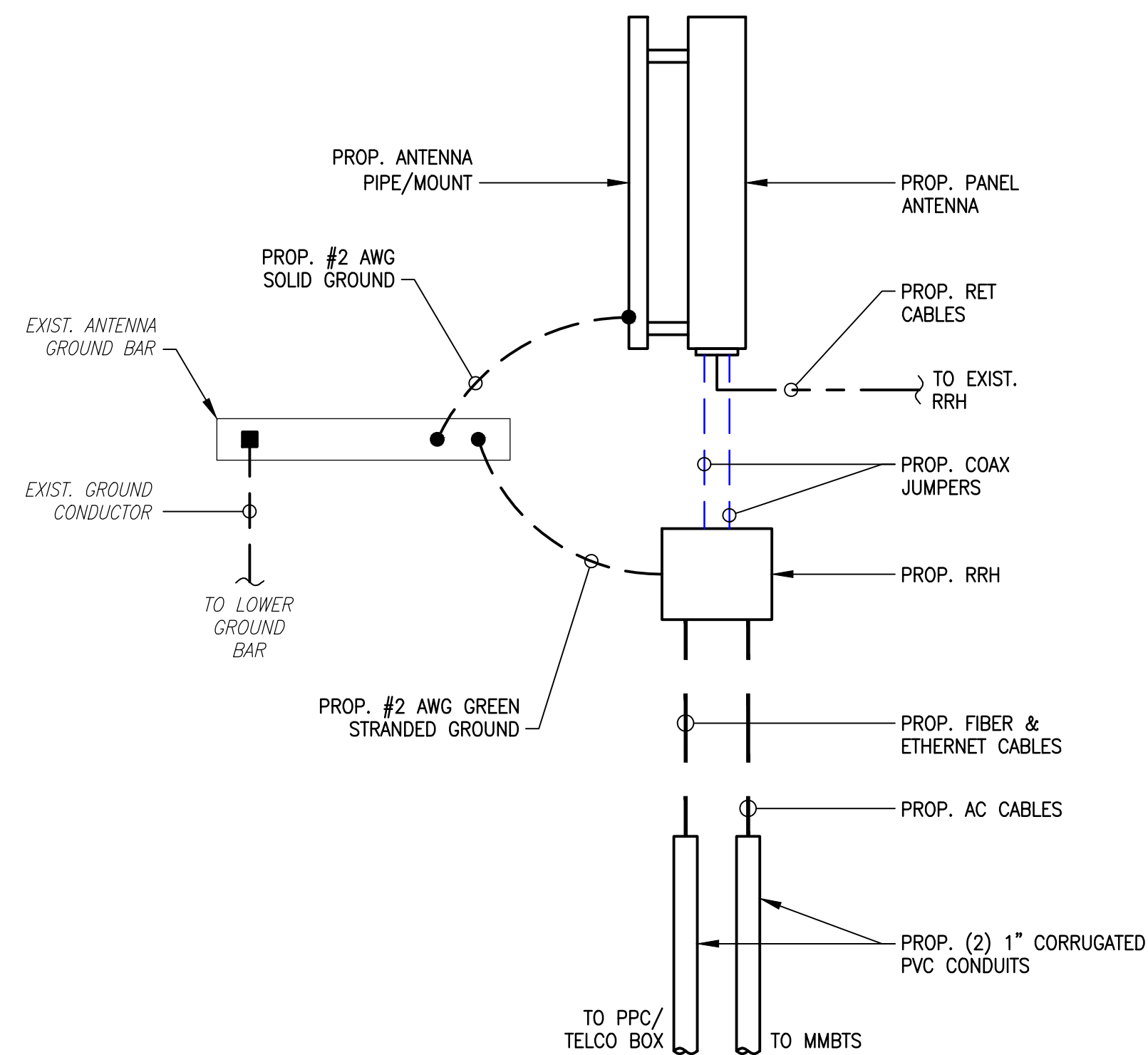


SOURCE: SPRINT SITE AUDIT 12/05/13

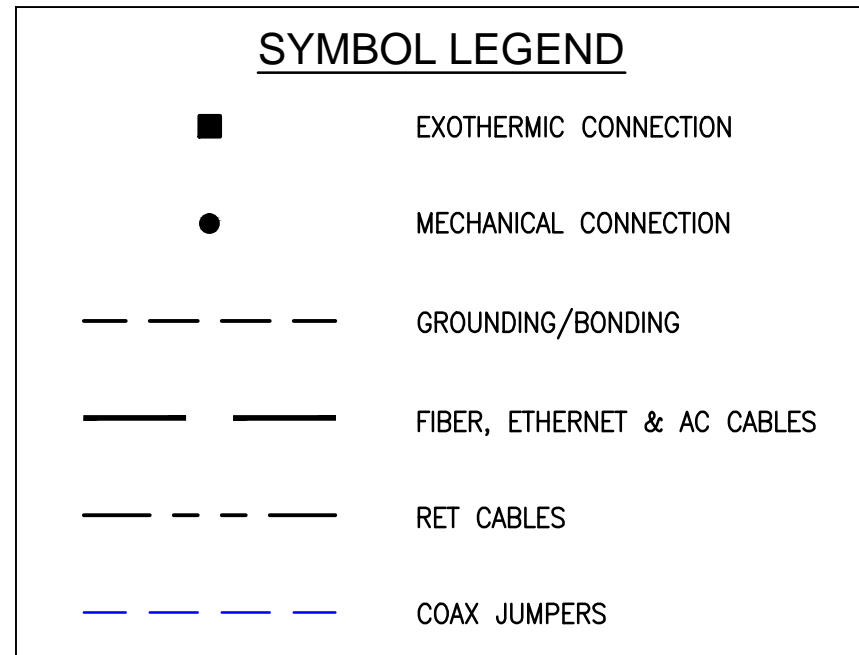
EXIST. PPC BREAKER PANEL
SCALE: NTS



RAYCAP POWER RAIL
SCALE: NTS



TOWER TOP GROUNDING SCHEMATIC 1
SCALE: N.T.S. E-2



UNLESS NOTED OTHERWISE, ALL BONDING CONDUCTORS ARE 2# SOLID TINNED BCW.

NOTE: EXISTING NV EQUIPMENT CONDUITS NOT SHOWN FOR CLARITY. REFER TO RECORD AS-BUILT NV PHOTOS AND NV AS-BUILT DRAWINGS.

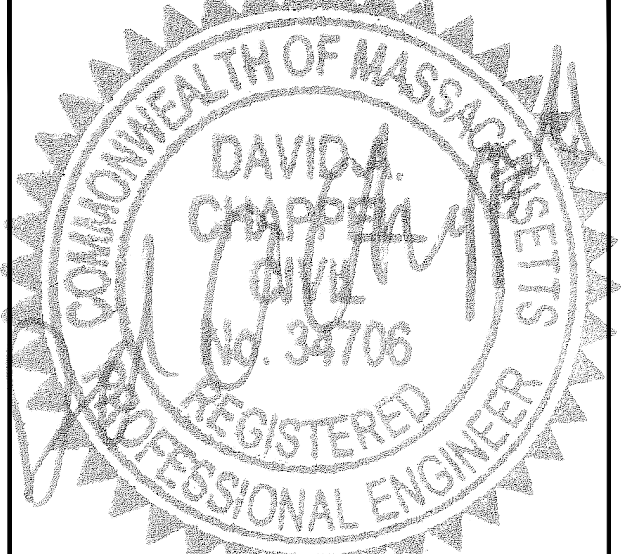
PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:

1. GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250-GROUNDING AND BONDING.
2. GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT SSEO DOCUMENTS 3.018.02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES" AND 3.018.10.002 "SITE RESISTANCE TO EARTH TESTING".
3. PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
4. GROUND CONNECTIONS: CLEAN SURFACES THOROUGHLY BEFORE APPLYING GROUND LUGS OR CLAMPS. IF SURFACE IS COATED, REMOVE THE COATING, APPLY A NON-CORROSIVE APPROVED COMPOUND TO CLEAN SURFACE AND INSTALL LUGS OR CLAMPS. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH "GALVAMOX" OR EQUAL.
5. ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
6. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
7. ALL GROUND WIRES SHALL BE #2 SOLID TINNED BCW UNLESS NOTED OTHERWISE.
8. PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
9. GROUND ANTENNA BASES, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 INSULATED TINNED STRANDED COPPER GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
10. EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 SOLID TINNED BCW EQUIPMENT CABINETS WILL HAVE (2) CONNECTIONS.
11. GROUND HYBRIFLEX SHIELD AT TOP, BOTTOM AND AT TRANSITION TO HYBRIFLEX JUMPER CABLES AT EQUIPMENT CABINET ENTRANCE USING MANUFACTURER'S GUIDELINES. WHEN HYBRIFLEX CABLE EXCEEDS 200', GROUND AT INTERVALS NOT EXCEEDING 100'.
12. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
13. EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL OTHERWISE. THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE-2 HOLES, LONG BARREL LUGS OR DOUBLE CRIMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH AN ANTI-OXIDANT (THOMAS BETTS KOPR-SHIELD) BEFORE MAKING THE CRIMP CONNECTIONS THE CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDED TORQUES ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS.
14. AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANEL, AND FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING. CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE LUGS WITH STAINLESS STEEL SELF-TAPPING SCREWS.
15. THE MASTER GROUND BAR (MGB) SHALL BE MADE OF BARE 1/4"x2" COPPER (FOR OUTDOOR APPLICATIONS IT SHALL BE TINNED COPPER) AND LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICAL INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
16. ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
17. ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI-CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH SPRINT CONSTRUCTION MANAGER.
18. FOR NEW OR REPAIRED GROUNDING EQUIPMENT. REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
-ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08-24-12 (OR CURRENT VERSION)
-SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12 (OR CURRENT VERSION)

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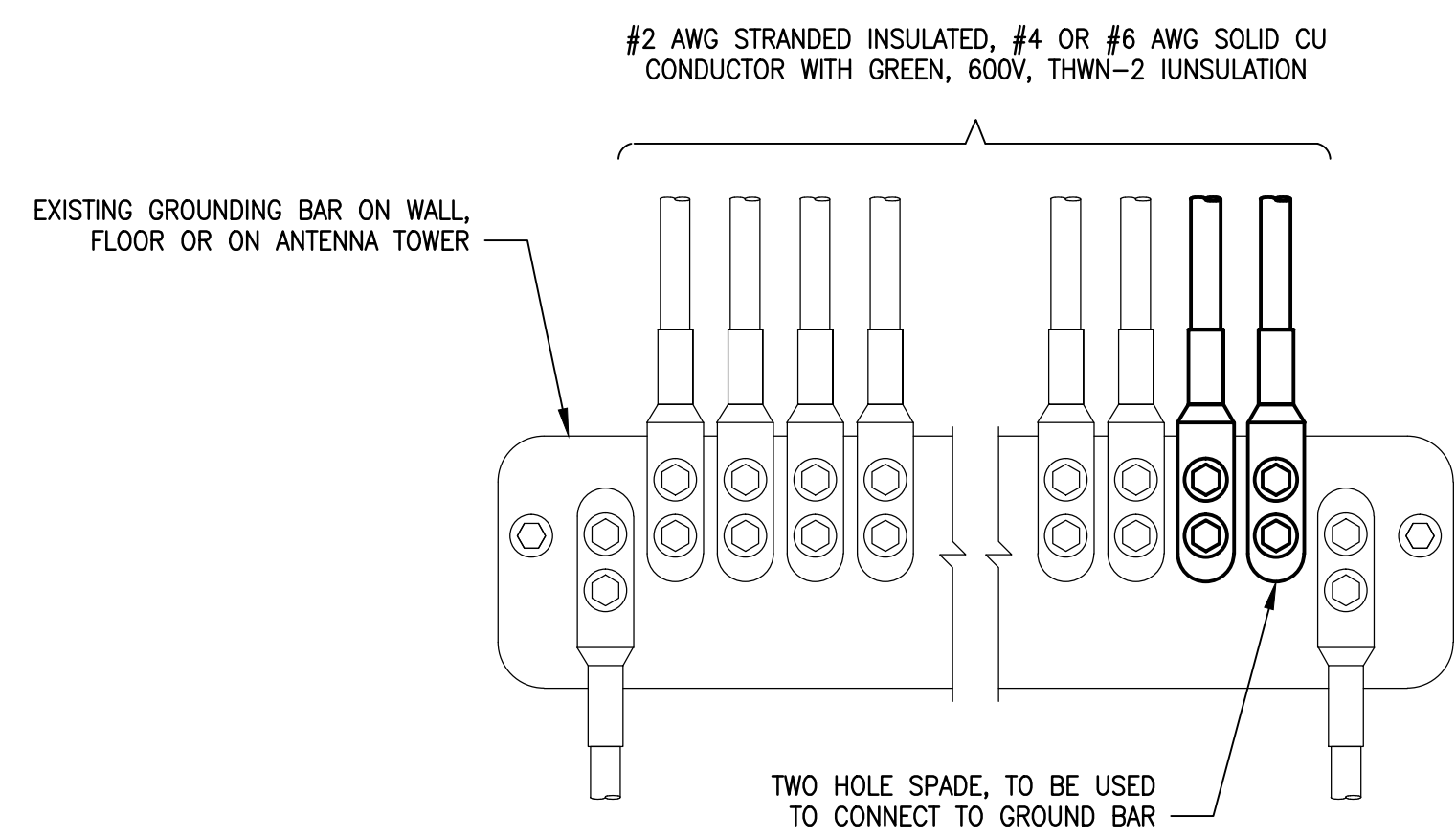
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BS73XC071
SITE NAME:
BLUE HILLS
SITE ADDRESS:
690 CANTON STREET
WESTWOOD, MA 02090

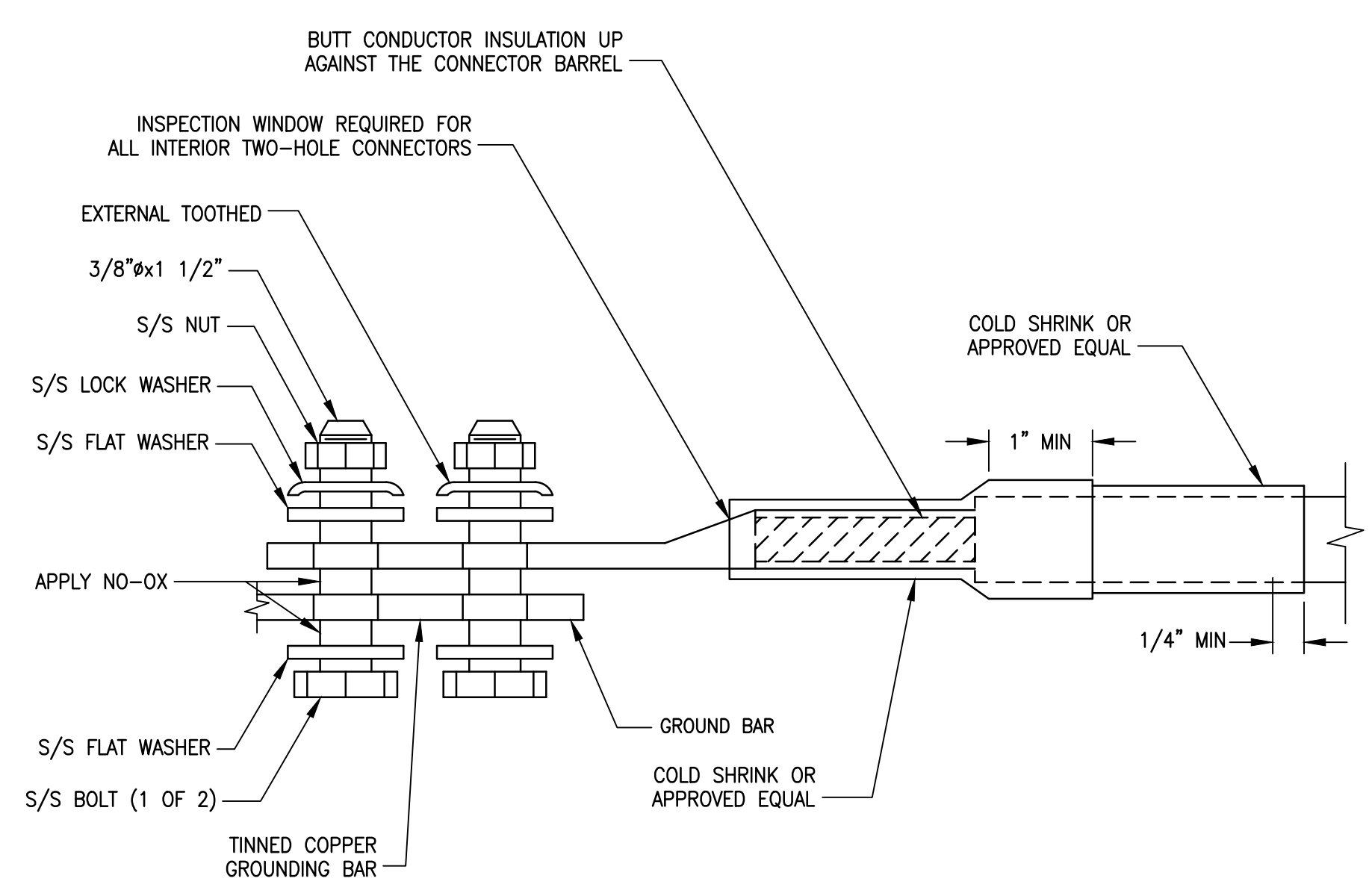
SHEET TITLE
GROUNDING DETAILS & NOTES

SHEET NUMBER
E-2



- NOTES**
1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
 2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR 2
SCALE: N.T.S. E-2



TWO HOLE LUG 3
SCALE: N.T.S. E-2