BS62XC009 BAP

HATHORNE MPO
HATHORNE, Massachusetts
019379800
2445930937-0098
01/04/2013 (800)275-8777 03:04:08 PM

Sales Receipt

| Product Description | Sale Unit Qty | Price | Final Price |
|---|---|---|---|
| PORTLAND ME 04101 | | | $5.20 |
| Zone-2 Priority Mail | | | |
| 13.40 oz. | | | |
| Expected Delivery: Mon 01/07/13 | | | |
| Certified | | | $2.95 |
| Label #: | 70082810000118463616 | | |
| Issue PVI: | | | $8.15 |
| Total: | | | $8.15 |

Paid by:
Cash $8.15

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| | |
|---|---|
| Postage | $ 5.00 |
| Certified Fee | 2.95 |
| Return Receipt Fee (Endorsement Required) | |
| Restricted Delivery Fee (Endorsement Required) | |
| Total Postage & Fees | $ 8.15 |

HATHORNE MA 01937 JAN 04 2013 USPS

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BS62XC009

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Street, Apt. No.; or PO Box No.

City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

15447

**Network Building & Consulting LLC SA**
7380 Coca Cola Drive • Suite 106 • Ph. (410) 712-7092
HANOVER, MD 21076

EZShield™ Check Fraud Protection for Business

60-912-313

DATE 01/03/13

PAY TO THE ORDER OF City of Portland, ME $ 170.00

One Hundred seventy & 00/100 DOLLARS

Security Features Included. Details on Back.

Susquehanna Bank
www.susquehanna.net

FOR 1458 BS63XC009 PPP

Diane Huffman

⑈015447⑈ ⑆031309123⑆ 6000532678 4⑈

NETWORK BUILDING
& CONSULTING, LLC

January 4, 2013

Jeanie Bourke, CEO
Building Department
389 Congress Street
Portland, ME 04101

RE: Sprint Site modification at 509 Forest Street, Portland, Maine

Jeanie,

Enclosed please find a Building Permit Application, site plans and related documents for Sprint's modification project at 509 Forest Street. Also, included is a copy of the check and the 1st page of the application could you kindly include a receipt for the check, and a "received" stamp on the 1st page of the application when the building permit is issued.

If you have any questions or comments, please feel free to contact me at the number or email listed below.

Thank you,

*Kristen LeDuc*

**Network Building & Consulting, LLC, an authorized representative of Sprint Nextel**
Kristen LeDuc
978-828-3264 Office & Mobile
kleduc@nbcllc.com
8 Brentwood Circle
Danvers, MA 01923

# General Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

| | | |
|---|---|---|
| Location/Address of Construction: 509 Forest St. | | |
| Total Square Footage of Proposed Structure/Area: N/A | Square Footage of Lot: N/A | |
| Tax Assessor's Chart, Block & Lot<br>Chart# Block# Lot#<br>127 A002001 | Applicant *must be owner, Lessee or Buyer*<br>Name Sprint<br>Address 1 International Blvd Suite 800<br>City, State & Zip Mahwah, NJ 07495 | Telephone:<br>978-828-3264<br>Kristen LeDuc Agent/Sprint |
| Lessee/DBA (If Applicable) | Owner (if different from Applicant)<br>Name Alpine Realty Corp<br>Address 380 Warren Ave.<br>City, State & Zip Portland ME 04103 | Cost Of Work: $ 15,000<br>C of O Fee: $ -<br>Total Fee: $ 190.00 |

Current legal use (i.e. single family) Commercial
If vacant, what was the previous use? N/A
Proposed Specific use: Wireless Communication Modification-Unmanned.
Is property part of a subdivision? No If yes, please name
Project description: Install Fiber Dist. box w/in lease area. Replace existing antennas, Replace existing GPS Antenna. Replace existing Coax cable w/ Hybridflex Cables. Replace existing equipment cabinets. Replace existing local exchange carrier w/ Fiber Optics.

Contractor's name: Charles B. Anti, Netcom Wireless Facilities 2
Address: 10 Acro Park Dr. Unit 3
City, State & Zip Plymouth, MA 02360 Telephone: 508-732-0020
Who should we contact when the permit is ready: Kristen LeDuc, NB&C Telephone: 978-828-3264
Mailing address: 8 Brentwood Cr. Danvers, MA 01923

**Please submit all of the information outlined on the applicable Checklist. Failure to do so will result in the automatic denial of your permit.**

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature: Kristen LeDuc, Agent Sprint Date: 1-4-13

**This is not a permit; you may not commence ANY work until the permit is issue**

Massachusetts - Department of Public Safety
Board of Building Regulations and Standards

Construction Supervisor

License: CS-094261

CHARLES B ANTI
100 BARNFIELD DRIVE
PLYMOUTH MA 02360

Commissioner

Expiration
10/29/2013

# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 4/12/12

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
O'Grady Insurance Agency
117 Court Street
Plymouth, MA 02360

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS:

| INSURER(S) AFFORDING COVERAGE | NAIC # |
|---|---|
| INSURER A: ESSEX INSURANCE CO | |
| INSURER B: QUINCY MUTUAL | |
| INSURER C: TORUS SPECIALTY INS. CO | |
| INSURER D: LIBERTY MUTUAL FIRE INS CO | |
| INSURER E: | |
| INSURER F: | |

INSURED
NETCOM WIRELESS FACILITIES 2, INC.
10 AERO PARK DR, UNIT 3
PLYMOUTH, MA 02360

COVERAGES | CERTIFICATE NUMBER: | REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE | ADDL INSR | SUBR WVD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
|---|---|---|---|---|---|---|---|---|
| A | GENERAL LIABILITY | Y | Y | 3DG5178 | 11/9/11 | 11/9/12 | EACH OCCURRENCE | $ 1,000,000 |
| | [X] COMMERCIAL GENERAL LIABILITY | | | | | | DAMAGE TO RENTED PREMISES (Ea occurrence) | $ 50,000 |
| | [ ] CLAIMS-MADE [X] OCCUR | | | | | | MED EXP (Any one person) | $ 1,000 |
| | | | | | | | PERSONAL & ADV INJURY | $ 1,000,000 |
| | | | | | | | GENERAL AGGREGATE | $ 2,000,000 |
| | GEN'L AGGREGATE LIMIT APPLIES PER: | | | | | | PRODUCTS - COMP/OP AGG | $ 1,000,000 |
| | [X] POLICY [ ] PRO-JECT [ ] LOC | | | | | | | $ |
| B | AUTOMOBILE LIABILITY | Y | Y | AFV205857 | 2/22/12 | 2/22/13 | COMBINED SINGLE LIMIT (Ea accident) | $ 1,000,000 |
| | ANY AUTO | | | | | | BODILY INJURY (Per person) | $ |
| | ALL OWNED AUTOS [X] SCHEDULED AUTOS | | | | | | BODILY INJURY (Per accident) | $ |
| | [X] HIRED AUTOS [X] NON-OWNED AUTOS | | | | | | PROPERTY DAMAGE (Per accident) | $ |
| | | | | | | | | $ |
| C | [X] UMBRELLA LIAB [X] OCCUR | Y | Y | 85215C120AL1 | 2/9/12 | 2/9/13 | EACH OCCURRENCE | $ 4,000,000 |
| | EXCESS LIAB [ ] CLAIMS-MADE | | | | | | AGGREGATE | $ 4,000,000 |
| | DED RETENTION $ | | | | | | | $ |
| D | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY | | | WC5-31S-375622-022 | 2/18/12 | 2/18/13 | WC STATU-TORY LIMITS / OTH-ER | |
| | ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N: N | N/A | | | | | E.L. EACH ACCIDENT | $ 500,000 |
| | If yes, describe under DESCRIPTION OF OPERATIONS below | | | | | | E.L. DISEASE - EA EMPLOYEE | $ 500,000 |
| | | | | | | | E.L. DISEASE - POLICY LIMIT | $ 500,000 |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

COSTROTTA CONSTRUCTION MANAGEMENT INC AND ALL OTHER PARTIES ARE REQUIRED BY CONTRACT ARE INCLUDED AS ADDITIONAL INSUREDS ON PRIMARY AND NONCONTRIBUTORY BASIS FOR ALL GENERAL LIABILITY AND AUTO LIABILITY. EXCESS LIABILITY FOLLOWS FORM OVER GENERAL LIABILITY, AUTO LIABILITY, AND EMPLOYER LIABILITY. A WAIVER OF SUBROGATION APPLIES TO ALL POLICIES IN FAVOR OF THE ADDITIONAL INSURED

CERTIFICATE HOLDER

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

PATRICK O'GRADY

# SITE AGREEMENT

Site Name: **509 Forest Ave. Portland** Sprint PCS Site ID #: **BS62XC009A**

**1. Premises and Use.** Owner leases to **Sprint Spectrum L.P. a Delaware Corporation** ("Sprint PCS"), the site described below **[*Check all appropriate boxes*]:**

- ☐ Land consisting of approximately _____ square feet upon which Sprint PCS will construct its
  - ☐ base station equipment and ☐ antenna support structure;
- ☐ Building interior space consisting of approximately _____ square feet for placement of base station equipment;
- ☒ Building exterior space consisting of approximately **200** square feet for placement of base station equipment;
- ☒ Building exterior space for attachment of antennas;
- ☐ Tower space between the ____ foot and ____ foot level on the tower for attachment of antennas;

as well as space required for cable runs to connect its equipment and antennas in the location(s) shown on **Exhibit A**, attached hereto, together with non-exclusive easements for reasonable access thereto, for placement of an underground grounding system, and for access to the appropriate source of electric and telephone facilities, in the discretion of Sprint PCS (the "Site"). The Site will be used by Sprint PCS for the purpose of installing, removing, replacing, modifying, maintaining and operating, at its expense, communications service facilities, including, without limitation, antenna and base station equipment, cable, wiring, back-up power sources (including generators and fuel storage tanks), related fixtures and, if applicable to the Site, an antenna support structure (the "Facilities"). Sprint PCS will use the Site in a manner which will not unreasonably disturb the occupancy of Owner's other tenants, if any. Sprint PCS will have unrestricted access to the Site 24 hours per day, 7 days per week.

**2. Term.** The term of this Agreement (the "Initial Term") is 5 years, commencing on the date that both Owner and Sprint PCS have executed this Agreement ("Lease Commencement Date"). This Agreement will be automatically renewed for 4 additional terms of 5 years each (each a "Renewal Term"), unless Sprint PCS provides Owner with notice of its intention not to renew not less than 90 days prior to the expiration of the Initial Term or any Renewal Term.

**3. Rent.** Until the date which is 60 days after the issuance of a building permit, or if no building permit is required, the date that is 60 days after the date Sprint PCS commences installation of the Facilities at the Site ("Rent Commencement Date"), rent will be a one-time aggregate payment of [redacted] the receipt of which Owner acknowledges. Thereafter, rent will be paid in advance in equal monthly installments of [redacted] (until increased as set forth herein), partial months to be prorated. Rent for each Renewal Term will be increased on the anniversary of the Lease Commencement Date to an amount equal to [redacted] of the rental rate in effect for the prior Term. Notwithstanding anything contained in this Section, Sprint PCS' obligation to pay rent is contingent upon Sprint PCS' receipt of a W-9 form setting forth the tax identification number of Owner or of the person or entity to whom rent checks are to be made payable as directed in writing by Owner.

**4. Title and Quiet Possession.** Owner represents and warrants to Sprint PCS and further agrees that: (a) it is the owner of the Property; (b) it has the right to enter into this Agreement; (c) the person signing this Agreement has the authority to sign; (d) Sprint PCS is entitled to access the Site at all times and to the quiet possession of the Site throughout the Initial Term and each Renewal Term so long as Sprint PCS is not in default beyond the expiration of any cure period; and (e) Owner will not have unsupervised access to the Site or to the Facilities.

**5. Assignment/Subletting.** Sprint PCS will have the right to sublease all or any portion of the Site, or assign its rights under this Agreement without notice to or consent of Owner.

**6. Notices.** All notices must be in writing and are effective only when deposited in the U.S. mail, certified and postage prepaid, or when sent via overnight delivery. Notices to Sprint PCS are to be sent to: Sprint National Lease Management, 6391 Sprint Parkway, Mailstop KSOPHT0101-Z2650, Overland Park, Kansas 66251-2650, with a copy to: Sprint Law Department, 6391 Sprint Parkway, Mailstop KSOPHT0101-Z2020, Overland Park, Kansas 66251-2020, Attn.: Sprint PCS Real Estate Attorney. Notices to Owner must be sent to the address shown underneath Owner's signature.

**7. Improvements.** Sprint PCS may, at its expense, make improvements on the Site as it deems necessary or desirable from time to time for the operation of the Facilities. Owner agrees to cooperate with Sprint PCS with respect to obtaining any required zoning or other governmental approvals for the Site and the Facilities. Upon termination or expiration of this Agreement, Sprint PCS may remove the Facilities and will restore the Site to substantially the condition existing on the Lease Commencement Date, except for ordinary wear and tear and casualty loss.

**8. Compliance with Laws.** Owner represents and warrants to Sprint PCS that Owner's property (including the Site), and all improvements located thereon, are in substantial compliance with building, life/safety, disability and other laws, codes and regulations of applicable governmental authorities. Sprint PCS will substantially comply with all applicable laws relating to its possession and use of the Site.

**9. Interference.** Sprint PCS will resolve technical interference problems with other equipment located at the Site on the Lease Commencement Date or any equipment that becomes attached to the Site at any future date when Sprint PCS desires to add additional equipment to the Site. Likewise, Owner will not permit or suffer the installation of any equipment after the Lease Commencement Date that: (a) results in technical interference problems with the Facilities; or (b) encroaches onto the Site.

**10. Utilities.** Owner represents and warrants to Sprint PCS that all utilities adequate for Sprint PCS' use of the Site are available at or near the Site. Sprint PCS will pay for all utilities used by it at the Site. Owner will cooperate with Sprint PCS in Sprint PCS' efforts to obtain utilities from any location provided by Owner or the servicing utility, including signing any easement(s) or other instrument(s) reasonably required by the utility company. If there is a loss of electrical service at the Site, Sprint PCS may, at its expense, install and maintain a temporary generator and fuel storage tank at the Site or the property adjacent to the Site at the location depicted in Exhibit A.

**11. Termination.** Notwithstanding any provision contained in this Agreement, Sprint PCS may, in Sprint PCS' sole and absolute discretion and at any time and for any or no reason, terminate this Agreement without further liability by delivering prior written notice to Owner.

**12. Default.** If either party is in default under this Agreement for a period of 30 days following receipt of written notice from the non-defaulting party, the non-defaulting party may pursue any remedies available to it against the defaulting party at law or in equity, including, but not limited to, the right to terminate this Agreement. If a non-monetary default cannot reasonably be cured within a 30-day period, this Agreement may not be terminated if the defaulting party commences action to cure the default within the 30-day period and proceeds with due diligence to fully cure the default.

**13. Indemnity.** Subject to Section 17 hereof, Owner and Sprint PCS each indemnifies and agrees to defend the other against and holds the other harmless from any and all costs (including reasonable attorneys' fees) and claims of liability or loss which arise out of the ownership, use and occupancy of the Site by the indemnifying party. This indemnity does not apply to any claims arising from the negligence or intentional misconduct of the indemnified party. The indemnity obligations under this Section will survive termination of this Agreement.



Owner Initials: _____
Sprint PCS Initials:

**14. Hazardous Substances**. Owner represents and warrants to Sprint PCS that it has no knowledge of any substance, chemical or waste on the Site that is identified as hazardous, toxic or dangerous (collectively, "Substance") in any applicable federal, state or local law or regulation. Sprint PCS will not introduce or use any Substance on the Site in violation of any applicable law. Owner will have sole responsibility for the identification, investigation, monitoring and remediation and/or cleanup of any Substance discovered at the Site unless the presence or release of the Substance is caused by the activities of Sprint PCS.

**15. Subordination and Non-Disturbance**. This Agreement is subordinate to any mortgage or deed of trust of record against the Site as of the Lease Commencement Date. Promptly after this Agreement is fully executed, however, Owner will obtain a non-disturbance agreement in a form reasonably acceptable to Sprint PCS from the holder of any mortgage or deed of trust.

**16. Property Taxes**. Sprint PCS will be responsible for payment of all personal property taxes assessed directly upon and arising solely from its use of the Facilities on the Site. Sprint PCS will pay to Owner any increase in real property taxes attributable solely to any improvements to the Site made by Sprint PCS within 60 days after receipt of satisfactory documentation indicating calculation of Sprint PCS' share of the real estate taxes and payment of the real estate taxes by Owner. Owner will pay when due all other real estate taxes and assessments attributable to the property of Owner of which the Site is a part.

**17. Insurance**. Sprint PCS will procure and maintain commercial general liability insurance, with limits of not less than $1,000,000 combined single limit per occurrence for bodily injury and property damage liability, with a certificate of insurance to be furnished to Owner within 30 days after Sprint PCS' receipt of a written request. Each party hereby waives its right of recovery against the other for any loss or damage covered by any insurance policies maintained by the waiving party. Each party will cause each insurance policy obtained by it to provide that the insurance company waives all rights of recovery by subrogation against the other party in connection with any damage covered by the policy.

**18. Maintenance**. Sprint PCS will be responsible for repairing and maintaining the Facilities and any other improvements installed by Sprint PCS at the Site in a proper operating and reasonably safe condition; provided, however, if any repair or maintenance is required due to the acts or omissions of Owner, its agents, contractors or employees, Owner will promptly reimburse Sprint PCS for the reasonable costs incurred by Sprint PCS to restore the damaged areas to the condition which existed immediately prior thereto. Owner will maintain and repair all other portions of the property of which the Site is a part in a proper operating and reasonably safe condition.

**19. Miscellaneous**. (a) This Agreement applies to and binds the heirs, successors, executors, administrators and assigns of the parties to this Agreement; (b) this Agreement is governed by the laws of the state in which the Site is located; (c) Owner agrees to promptly execute and deliver to Sprint PCS a recordable Memorandum of Agreement in the form of **Exhibit B**, attached hereto; (d) this Agreement (including the Exhibits) constitutes the entire agreement between the parties and supersedes all prior written and verbal agreements, representations, promises or understandings between the parties. Any amendments to this Agreement must be in writing and executed by both parties; (e) if any provision of this Agreement is invalid or unenforceable with respect to any party, the remainder of this Agreement or the application of the provision to persons other than those as to whom it is held invalid or unenforceable, will not be affected and each provision of this Agreement will be valid and enforceable to the fullest extent permitted by law; and (f) the prevailing party in any action or proceeding in court or mutually agreed upon arbitration proceeding to enforce the terms of this Agreement is entitled to receive its reasonable attorneys' fees and other reasonable enforcement costs and expenses from the non-prevailing party.

**20. Non-Binding Until Fully Executed**. This Agreement is for discussion purposes only and does not constitute a formal offer by either party. This Agreement is not and will not be binding on either party until and unless it is fully executed by both parties.

The following Exhibits are attached to and made a part of this Agreement: Exhibits A, A1-A2-A3-A4, B and C

**OWNER:**

**Alpine Realty Corp.**

By: _____

Name: Arthur P. Girard

Title: President

Taxpayer ID: 65-0387225

Address: 120 Exchange Street
Portland, ME 04101

_____

Date: _____

☐ See Exhibit A1 for continuation of Owner signatures

**SPRINT PCS:**

**Sprint Spectrum L.P. a Delaware Corporation**

By: _____

Name: Don Mueller

Title: Director Site Development - East

Date: _____

*Attach Exhibit A - Site Description*

*Attach Exhibit A1-A2-A3-A4 Lease Exhibit*

*Attach Exhibit B - Rider to Site Agreement*

*Attach Exhibit C - Memorandum of Agreement Form*

Sprint® VISION

SITE NUMBER:

**BS62XC009**

SITE NAME:

# 509 FOREST AVE

SITE ADDRESS:

509 FOREST AVENUE
PORTLAND, ME 04103

NOTE:

OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AN EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL REPRESENTATION OF THE EQUIPMENT LOCATED WITHIN THE SITE CONTAINED IN THESE OTHER DOCUMENTS IS ILLUSTRATIVE ONLY, AND DOES NOT LIMIT THE RIGHTS OF SPRINT AS PROVIDED FOR IN THE AGREEMENT. THE LOCATIONS OF ANY ACCESS AND UTILITY EASEMENTS ARE ILLUSTRATIVE ONLY. ACTUAL LOCATIONS MAY BE DETERMINED BY TENANT AND/OR THE SERVICING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

## SITE INFORMATION

| | |
|---|---|
| SITE NUMBER: | BS62XC009 |
| SITE NAME: | 509 FOREST AVE |
| SITE ADDRESS: | 509 FOREST AVENUE<br>PORTLAND, ME 04103 |
| COUNTY: | CUMBERLAND |
| ZONING: | COMMERCIAL |
| PARCEL ID: | 127 A002001 |
| COORDINATES: | N 43° 40' 03.59"<br>W 70° 16' 43.77" |
| GROUND ELEV.: | 36'± (AMSL) |
| STRUCTURE TYPE: | ROOF TOP |
| STRUCTURE HEIGHT: | 52.3'± (AGL) |
| ANTENNA RAD CENTER: | 59'± (AGL) |
| PROPERTY OWNER: | ALPINE REALTY CORP<br>380 WARREN AVENUE<br>PORTLAND, ME 04103 |
| STRUCTURE OWNER: | ALPINE REALTY CORP<br>380 WARREN AVENUE<br>PORTLAND, ME 04103 |
| LOCAL POWER COMPANY: | CENTRAL MAINE POWER CO.<br>162 CANCO ROAD<br>PORTLAND, ME 04103<br>(800) 750-4000 |
| LOCAL TELCO COMPANY: | FAIRPOINT<br>45 FOREST AVENUE<br>PORTLAND, ME 04101<br>(866) 984-2001 |
| APPLICANT: | SPRINT<br>1 INTERNATIONAL BLVD,<br>SUITE 800<br>MAHWAH, NJ 07495 |
| APPLICANT REPRESENTATIVE: | ALCATEL-LUCENT<br>1 ROBBINS ROAD<br>WESTFORD, MA 01886<br>(978)952-1600 |
| SITE ACQUISITION CONSULTANT: | ALCATEL-LUCENT<br>1 ROBBINS ROAD<br>WESTFORD, MA 01886<br>(978)952-1600 |
| A&E CONSULTANT: | HUDSON DESIGN GROUP LLC<br>1600 OSGOOD STREET<br>BLDG 20 NORTH, SUITE 3090<br>NORTH ANDOVER, MA 01845<br>TEL: (978) 557-5553<br>FAX: (978) 336-5586 |

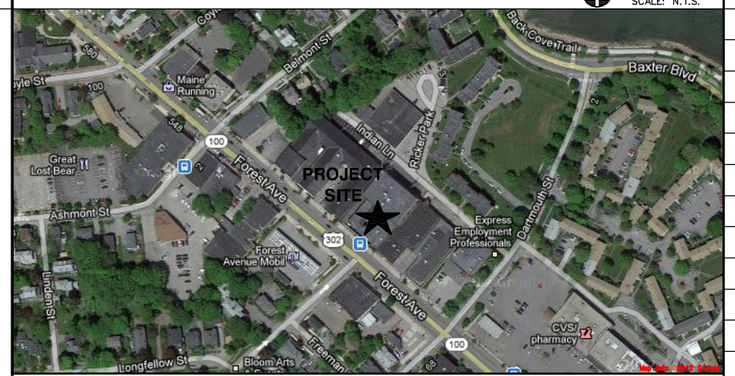
## GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
   -HANDICAPPED ACCESS NOT REQUIRED
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED
2. 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.
3. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   BUILDING CODE: IBC 2009
   ELECTRICAL CODE: 2005 NATIONAL ELECTRICAL CODE
   STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS

## VICINITY MAP

TRUE NORTH

SCALE: N.T.S.




**DIRECTIONS FROM 1 INTERNATIONAL BLVD, MAHWAH, NJ:**
HEAD NORTH ON INTERNATIONAL BLVD/PARK ST TOWARD QUEENSLAND RD. CONTINUE TO FOLLOW INTERNATIONAL BLVD. TAKE THE 3RD RIGHT ONTO PARK LN CONTINUE STRAIGHT ONTO LEISURE LN. CONTINUE ONTO NJ-17 N. TAKE THE NEW JERSEY 17 N/INTERSTATE 287 N EXIT TOWARD INTERSTATE 87/NORTH NY THRUWAY.KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-287 N/I-87/NJ-17 N/N Y. THRUWAY AND MERGE ONTO I-287 N/NJ-17 NENTERING NEW YORK. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-87 S/I-287/TAPPAN ZEE BR/NEW YORK CITY/NEW YORK THRUWAY AND MERGE ONTO I-287 E/I-87 S CONTINUE TO FOLLOW I-287 E. TAKE THE EXIT ONTO I-95 N ENTERING CONNECTICUT. TAKE EXIT 48 ON THE LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD. TAKE EXIT 29 TO MERGE ONTO CT-15 N/US-5 N TOWARD I-84 E/E HARTFORD/BOSTON. CONTINUE ONTO CT-15 N. MERGE ONTO I-84 E. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-90 E/N.H. - MAINE/BOSTON AND MERGE ONTO I-90 E. TAKE EXIT 10 TOWARD AUBURN/WORCESTER. FOLLOW SIGNS FOR I-290 E/WORCESTER AND MERGE ONTO I-290 E. TAKE EXIT 26B ON THE LEFT FOR INTERSTATE 495 N TOWARD LOWELL . MERGE ONTO I-495 N. MERGE ONTO I-95 N. SLIGHT RIGHT ONTO I-295 N. TAKE EXIT 6B TO MERGE ONTO ME-100 N/US-302 W/FOREST AVE. DESTINATION ON RIGHT.

## SCOPE OF WORK

1. INSTALL FIBER DISTRIBUTION BOX WITHIN EXISTING LEASE AREA. RETRO FIT EXISTING BTS CABINET WITH RETRO FIT KIT & REPLACE EXISTING BBU WITH (2) BBU CABINET.
2. REMOVE (3) EXISTING CDMA ANTENNAS REPLACE WITH (3) NETWORK VISION ANTENNAS & (6) RRH'S.
3. REMOVE EXISTING CDMA COAX CABLES & INSTALL (3) HYBRIFLEX CABLES FROM EQUIPMENT CABINET TO ANTENNA
4. REMOVE EXISTING GPS ANTENNA AND REPLACE WITH NEW GPS ANTENNA
5. EXISTING LOCAL EXCHANGE CARRIER LANDLINE BACKHAUL FACILITIES TO BE REPLACED WITH PROPOSED ALTERNATIVE ACCESS VENDOR (AAV) FIBER OPTIC FACILITIES INCLUDING PROPOSED OVERHEAD/UNDERGROUND CONDUITS AND NETWORK INTERFACE DEVICE.

DIG SAFE SYSTEMS, INC.
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## SHEET INDEX

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## 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.

CONSTRUCTION: _____ DATE: _____

LEASING/
SITE ACQUISITION: _____ DATE: _____

RF ENGINEER: _____ DATE: _____

LANDLORD/
PROPERTY OWNER: _____ DATE: _____


Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

Alcatel•Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
TEL: (978) 952-1600

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586


STATE OF MAINE
DANIEL P. HAMM
12/28/12
PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| 2 | 12/28/12 | ISSUED FOR CONSTRUCTION | MAP |
| 1 | 12/10/12 | ISSUED FOR REVIEW | RH |

SITE NUMBER:
BS62XC009
SITE NAME:
509 FOREST AVE
SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

DIVISION 01000 – GENERAL REQUIREMENTS

PART 1 GENERAL

REFER TO SPRINT STANDARD CONSTRUCTION SPECIFICATIONS. IN CASE OF A CONFLICT, SPRINT STANDARD CONSTRUCTION SPECIFICATIONS (LATEST EDITION) SHALL BE FOLLOWED.

PART 2 GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) SPRINT'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE THEIRSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS.

6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.

7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE CONTRACTOR SHALL MAINTAIN A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM'S OR CLARIFICATIONS AVAILABLE FOR THE USE OF ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SITE CONDITIONS DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE ALL UNNECESSARY MATERIAL.

13. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE STATE BASIC BUILDING CODE, LATEST EDITION, AND, ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT/ENGINEER.

14. THE CONTRACTOR SHALL NOTIFY SPRINT'S REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL THE CONFLICT IS RESOLVED BY SPRINT'S REPRESENTATIVE.

15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.

16. THE CONTRACTOR SHALL NOTIFY THE RF ENGINEER FOR ANTENNA AZIMUTH VERIFICATION (DURING ANTENNA INSTALLATION) PRIOR TO CONDUCTING SITE SWEEPING.

17. THE GENERAL CONTRACTOR SHALL IN ALL INSTANCES CONFORM TO THE SPECIFICATIONS ISSUED BY SPRINT.

18. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS OR RISERS THROUGH THE BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT STRUCTURAL ENGINEER'S APPROVAL. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE PACKED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE STRUCTURE. FILL FOR FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE FIRE AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.

CONCRETE

CAST–IN–PLACE CONCRETE

PART 1 – GENERAL

1.01 DESCRIPTION

WORK INCLUDES CONSTRUCTION OF CAST–IN–PLACED CONCRETE FOUNDATIONS, INCLUDING FURNISHING AND INSTALLING READY–MIX CONCRETE, REINFORCING, FORMWORK, AND ACCESSORY MATERIALS AS SHOWN ON THE DRAWINGS. CAST–IN–PLACE CONCRETE INCLUDES ALL SITE CONCRETE, INCLUDING FOUNDATIONS, SLABS ON GRADE, EQUIPMENT PADS, AND GUARD POST FOUNDATIONS.

1.02 RELATED WORK

A. COORDINATE UNDER SLAB CONDUITS

B. COORDINATE WITH GROUNDING

1.03 APPLICABLE STANDARDS

A. ACI–301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE BUILDINGS.

B. ACI 347 – GUIDE TO FORMWORK FOR CONCRETE.

C. ASTM C33 – CONCRETE AGGREGATES

D. ASTM C94 – READY–MIXED CONCRETE

E. ASTM C150 – PORTLAND CEMENT

F. ASTM C260 – AIR–ENTRAINING ADMIXTURES FOR CONCRETE.

G. ASTM C309 – LIQUID MEMBRANE FORMING COMPOUNDS FOR CURING CONCRETE.

H. ASTM C494 – CHEMICAL ADMIXTURES FOR CONCRETE.

I. ASTM A615 – DEFORMED STEEL BARS FOR CONCRETE REINFORCEMENT.

J. ASTM A185 – STEEL WELDED WIRE FABRIC FOR CONCRETE REINFORCEMENT

1.04 QUALITY ASSURANCE

CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER AS DIRECTED BY SPRINT.

1.05 TESTS

CONCRETE TESTS SHALL BE AS DETAILED BELOW OR AS DIRECTED BY SPRINT. CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER AS THE WORK PROGRESSES. FAILURE TO DETECT ANY DEFECTIVE WORK OR MATERIAL SHALL NOT IN ANY WAY PREVENT LATER REJECTION WHEN SUCH DEFECT IS DISCOVERED NOR SHALL IT OBLIGATE THE ENGINEER FOR FINAL ACCEPTANCE.

A. THREE CONCRETE TEST CYLINDERS SHALL BE TAKEN OF THE TOWER PIER FOUNDATION. ONE SHALL BE TESTED @ THREE DAYS, ONE @ TWENTY–EIGHT DAYS. THE THIRD CYLINDER SHALL BE KEPT SEPARATELY. (IF REQUIRED TO BE USED IN THE FUTURE.)

B. ONE SLUMP TEST SHALL BE TAKEN FOR EACH SET OF TEST CYLINDERS TAKEN. SLUMP SHALL NOT EXCEED 4" UNLESS OTHERWISE NOTED.

PART 2 – PRODUCT

2.01 CONCRETE MATERIALS

CONCRETE SHALL BE COMPOSED OF PORTLAND CEMENT, WATER, FINE AND COARSE AGGREGATES, AND ADMIXTURES AS SPECIFIED BELOW, ALL WELL MIXED AND BROUGHT TO PROPER CONSISTENCY, CLASS I, II, III, OR V.

A. CEMENT: CEMENT SHALL BE TYPE II, GRAY COLOR, LOW–ALKALI PORTLAND CEMENT CONFORMING TO ASTM C150.

B. FINE AND COARSE AGGREGATES: AGGREGATES FOR USE IN CONCRETE SHALL COMPLY WITH ASTM C33.

C. WATER: WATER FOR MIXING AND CURING CONCRETE SHALL BE FREE FROM SEWAGE, OIL, ACID, ALKALI, AND SALTS AND SHALL BE FREE FROM OBJECTIONABLE QUANTITIES OF SILT, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES.

2.02 ADMIXTURES

A. CHEMICAL ADMIXTURE: ASTM C494, TYPE A– WATER REDUCING OR TYPE D – WATER REDUCING AND RETARDING.

2.03 CURING COMPOUND: ASTM C309, TYPE1. CLASS B; TRANSLUCENT.

2.04 ACCESSORIES

A. NONSHRINK GROUT: PREMIXED COMPOUND CONSISTING OF NONMETALLIC AGGREGATE, CEMENT, WATER REDUCING AND PLASTICIZING AGENTS; CAPABLE OF DEVELOPING MINIMUM COMPRESSIVE STRENGTH OF 7,000 PSI IN 28 DAYS.

B. JOINT FILLER: BITUMINOUS TYPE, ASTM D1751 OR NON–BITUMINOUS TYPE ASTM D1752.

C. ANCHOR BOLTS: ASTM A307. UNPRIMED.

2.05 CONCRETE MIX

A. CONCRETE SHALL BE PROPORTIONED PER REQUIREMENTS OF ACI 301 & SPRINT CONSTRUCTION SPECIFICATIONS FOR DESIGN STRENGTH & WORKABILITY. CONCRETE SHALL BE DELIVERED WITHIN 45 MINUTES OF ADDITION OF WATER TO MIX.

B. THE FOLLOWING STRENGTHS SHALL BE USED:
1. FENCE POST FOUNDATIONS – DESIGN COMPRESSIVE STRENGTH AT 28 DAYS OF 3,000 PSI.
2. EQUIPMENT FOUNDATION – DESIGN COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS UNLESS OTHERWISE NOTED. (CONTRACTOR FURNISH 4,000 PSI CONCRETE).
3. CONCRETE STRENGTH FOR MONOPOLE OR TOWER FOUNDATION SHALL BE 1,000 PSI MORE THAN THE MANUFACTURER'S RECOMMENDATIONS, 4,000 PSI MINIMUM.

C. USE ACCELERATING ADMIXTURES IN COLD WEATHER AND RETARDING ADMIXTURES IN HOT WEATHER ONLY WHEN APPROVED BY THE ENGINEER.

D. TOTAL AIR CONTENT SHALL BE 5 PERCENT PLUS OR MINUS 1 PERCENT.

PART 3 – EXECUTION

3.01 INSPECTION

THE CONTRACTOR SHALL VERIFY ANCHORS, SEATS, PENETRATIONS, PLATES, REINFORCEMENT, AND OTHER ITEMS TO CAST INTO CONCRETE ARE ACCURATELY PLACED, HELD SECURELY, AND SHALL NOT CAUSE HARDSHIP IN PLACING CONCRETE.

3.02 PREPARATION

A. THE CONTRACTOR SHALL PREPARE PREVIOUSLY PLACED CONCRETE BY CLEANING WITH STEEL BRUSH AND APPLYING BONDING AGENT. APPLY BONDING AGENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3.03 PLACING CONCRETE

A. THE ENGINEER SHALL BE NOTIFIED NOT LESS THAN 24 HOURS IN ADVANCE OF CONCRETE PLACEMENT. UNLESS INSPECTION IS WAIVED IN EACH CASE, PLACING OF CONCRETE SHALL BE PERFORMED ONLY IN THE PRESENCE OF THE ENGINEER.

CONCRETE SHALL NOT BE PLACED UNTIL ALL FORM WORK, EMBEDDED PARTS, STEEL REINFORCEMENT, FOUNDATION SURFACES, AND JOINTS INVOLVED IN THE PLACING HAVE BEEN APPROVED, AND UNTIL FACILITIES ACCEPTABLE TO THE SPRINT REPRESENTATIVE HAVE BEEN PROVIDED AND MADE READY FOR ACCOMPLISHMENT OF THE WORK AS SPECIFIED. CONCRETE MAY NOT BE ORDERED FOR PLACEMENT UNTIL ALL ITEMS HAVE BEEN APPROVED AND SPRINT HAS PERFORMED A FINAL INSPECTION AND GIVEN APPROVAL TO START PLACEMENT IN WRITING.

B. UNLESS SPECIFIED TO BE BEVELED, EXPOSED EDGES OF FLOATED OR TROWELED SURFACES SHALL BE EDGED WITH A TOOL HAVING A 1/4" CORNER RADIUS.

C. PLACEMENT OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301.

D. THE CONTRACTOR SHALL ENSURE THAT REINFORCEMENT, INSERTS, EMBEDDED PARTS, FORMED JOINTS AND VAPOR BARRIERS ARE NOT DISTURBED DURING CONCRETE PLACEMENT.

E. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER.....2 IN.
#5 AND SMALLER & WWF.....1 1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND.
SLAB AND WALL.....3/4 IN.
BEAMS AND COLUMNS.....1 1/2 IN.

3.04 SURFACE FINISHES

A. SURFACES AGAINST WHICH BACK FILL OR CONCRETE SHALL BE PLACED REQUIRE NO TREATMENT EXCEPT REPAIR OF DEFECTIVE AREAS.

B. SURFACES THAT WILL BE PERMANENTLY EXPOSED SHALL PRESENT A UNIFORM FINISH PROVIDED BY THE REMOVAL OF FINS AND THE FILLING OF HOLES AND OTHER IRREGULARITIES WITH DRY PACK GROUT, OR BY SACKING WITH UTILITY OR ORDINARY GROUT.

C. SURFACES THAT WOULD NORMALLY BE LEVEL AND WHICH WILL BE PERMANENTLY EXPOSED TO THE WEATHER SHALL BE SLOPED FOR DRAINAGE. UNLESS ENGINEER'S DESIGN DRAWING SPECIFIES A HORIZONTAL SURFACE OR SHOWS THE SLOPE REQUIRED. THE TOPS OF NARROW SURFACES, SUCH AS STAIR TREADS, WALLS, CURBS, AND PARAPETS SHALL BE SLOPED APPROXIMATELY 3/8" /FT OF WIDTH. BROADER SURFACES SUCH AS WALKS, ROADS, PARKING AREAS AND PLATFORMS SHALL BE SLOPED APPROXIMATELY 1/4" /FT.

D. SURFACES THAT WILL BE COVERED BY BACKFILL OR CONCRETE SHALL BE SMOOTH SCREEDED.

E. EXPOSED SLAB SURFACES SHALL BE CONSOLIDATED, SCREEDED, FLOATED, AND "STEEL TROWELED." HAND OR POWER–DRIVEN EQUIPMENT MAY BE USED FOR FLOATINGS WHICH SHALL BE STARTED AS SOON AS THE SCREENED SURFACE HAS ATTAINED A STIFFNESS TO PERMIT FINISHING OPERATIONS. ALL EDGES MUST HAVE A 3/4" CHAMFER. CONCRETE EXPANSION ANCHORS AND EPOXY ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS, SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. MANUFACTURER'S MINIMUM CONCRETE EDGE DISTANCE SHALL BE MAINTAINED DURING INSTALLATION.

3.05 PATCHING

THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY UPON REMOVAL OF THE FORMS TO OBSERVE CONCRETE SURFACE CONDITIONS. IMPERFECTIONS SHALL BE PATCHED ACCORDING TO THE ENGINEERS DIRECTION.

3.06 DEFECTIVE CONCRETE

THE CONTRACTOR SHALL MODIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LEVELS AND LINES, DETAILS, AND ELEVATIONS AS SPECIFIED IN ACI 301.

3.07 PROTECTION

A. IMMEDIATELY AFTER PLACEMENT, THE CONTRACTOR SHALL PROTECT THE CONCRETE FROM PREMATURE DRYING. EXCESSIVELY HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY. FINISHED WORK SHALL BE PROTECTED.

B. CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.

C. ALL CONCRETE SHALL BE WATER CURED PER ACCEPTABLE PRACTICES SPECIFIED BY ACI CODE.

METALS

PART 1 – GENERAL

1.01 WORK INCLUDED

A. THE WORK CONSISTS OF THE FABRICATION AND INSTALLATION OF ALL MATERIALS TO BE FURNISHED, AND WITHOUT LIMITING THE GENERALITY THEREOF, INCLUDES ALL EQUIPMENT, LABOR AND SERVICES REQUIRED FOR ALL STRUCTURAL STEEL WORK, INCLUDING ALL ITEMS INCIDENTAL THERETO AS SPECIFIED HEREIN AND AS SHOWN ON THE DRAWINGS. INCLUDING:

1. STEEL FRAMING INCLUDING BEAMS, ANGLES, CHANNELS AND PLATES.

2. WELDING AND BOLTING OF ATTACHMENTS.

1.02 REFERENCE STANDARDS

A. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:

1. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS, AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS IN BUILDING CODES"

2. AWS: AMERICAN WELDING SOCIETY INC., AS PUBLISHED IN "STANDARD D1.1–2006, STRUCTURAL WELDING CODE".

3. AISC: AMERICAN INSTITUTE FOR STEEL CONSTRUCTION, AS PUBLISHED IN "CODE FOR STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"; "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".

4. EIA/TIA–222–G STRUCTURAL STANDARDS FOR STEEL ANTENNA SUPPORTING STRUCTURES.

PART 2 – STRUCTURAL NOTES

ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND SPRINT SPECIFICATIONS UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM–992–50 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION". MISC. STEEL TO BE A36.

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, ANSI/TIA–222–G STRUCTURAL STANDARDS FOR STEEL ANTENNA SUPPORTING STRUCTURES.

2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.

3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".

4. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD–FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE A, OR ASTM A53 PIPE STEEL BLACK AND HOT–DIPPED ZINC–COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.

5. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE)AND CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". UNLESS OTHERWISE NOTED, ALL BOLTS SHALL BE 5/8" DIA TYPE X.

6. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT–DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.

7. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC–COATING (HOT–DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.

8. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREEMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.

9. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". 13TH EDITION.

10. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.

11. UNISTRUTS SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA. UNLESS OTHERWISE NOTED, AND SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION FOR EXTERNAL USE APPLICATIONS.

12. UNLESS OTHERWISE NOTED, EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF 1/2" DIAMETER STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI–HIT HY–20 AND OR HY–150 SYSTEMS (AS SPECIFIED ON DWG.) OR ENGINEERS APPROVED EQUAL WITH 4–1/4" MIN. EMBEDMENT DEPTH.

13. UNLESS OTHERWISE NOTED, EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF–S–325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT II OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE THREE AND ONE HALF (3 1/2) INCHES.

14. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY.

WOOD

1. PLYWOOD SHALL MEET THE RECOMMENDATIONS OF THE A.P.A.
2. ALL LUMBER SHALL BE SPRUCE–PINE–FIR (SPF) #1 GRADE.
3. ALL LUMBER SHALL BE PRESSURE TREATED WITH PRESERVATIVES. ALLOWABLE BENDING STRESS: fb min = 1,000 PSI MODULUS OF ELASTICITY: 1.6x10± PSI
4. ALL JOIST HANGERS, CLIP ANGLES AND PLATES TO BE HEAVY GALVANIZED AS MANUFACTURED BY SIMPSON CO., OR APPROVED EQUAL.
5. ALL LVL'S TO BE MANUFACTURED BY BOSIE CASCADE OR APPROVED EQUAL.

SPECIAL CONSTRUCTION ANTENNA INSTALLATION

PART 1 – GENERAL

1.01 WORK INCLUDED

A. ANTENNAS AND COAXIAL CABLES SHALL BE AS SPECIFIED ON THESE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND PROPERTY. STRICT ADHERENCE TO OSHA STANDARDS IS MANDATED.

B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND SPRINT SPECIFICATIONS.

C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

D. INSTALL COAXIAL CABLES AND TERMINATION'S BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.

E. ANTENNA MOUNTS AND HARDWARE SHALL BE PAINTED TO MATCH EXISTING CONDITIONS.

F. ANTENNA AND COAXIAL CABLE GROUNDING:
1. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED.
2. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS).

ROOF WORK

1. IF ROOF WORK IS REQUIRED, CAUTION SHALL BE EXERCISED WHILE WORKING ON THE ROOF. EVERY EFFORT MUST BE MADE TO PRESERVE THE ROOF WARRANTY.

2. WHEN ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE THE WORK WITH THE BUILDING OWNER AND THE EXISTING ROOFING INSTALLER.

RELATED WORK (ROOF TOP SITES)

FURNISHED THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH OTHER TRADES PRIOR TO BID:

1. FLASHING OF OPENING INTO OUTSIDE WALLS
2. SEALING AND CAULKING ALL OPENINGS
3. PAINTING
4. CUTTING AND PATCHING

1.03 REQUIREMENTS OR REGULATOR AGENCIES

A. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.

B. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATION IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, AND SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

1. EIA/TIA – ELECTRONIC INDUSTRIES ASSOCIATION RS – 222. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.

2. FAA – FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460–IH, OBSTRUCTION MARKING AND LIGHTING.

3. FCC – FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES AND FORM 715A, HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.

4. NEC – NATIONAL ELECTRICAL CODE

5. UL – UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.

6. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.

IF ASSUMED EXISTING CONDITION DIFFERS, ENGINEER MUST BE INFORMED OF ACTUAL FIELD CONDITION. SUBCONTRACTOR TO VERIFY EXISTING DIMENSIONS PRIOR TO STEEL FABRICATION.


Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

Alcatel•Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
TEL: (978) 952-1600

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586


STATE OF MAINE
DANIEL P. HAMM
12344
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
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| 2 | 12/28/12 | ISSUED FOR CONSTRUCTION | MAP |
| 1 | 12/10/12 | ISSUED FOR REVIEW | RH |

SITE NUMBER:
BS62XC009

SITE NAME:
509 FOREST AVE

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN–1

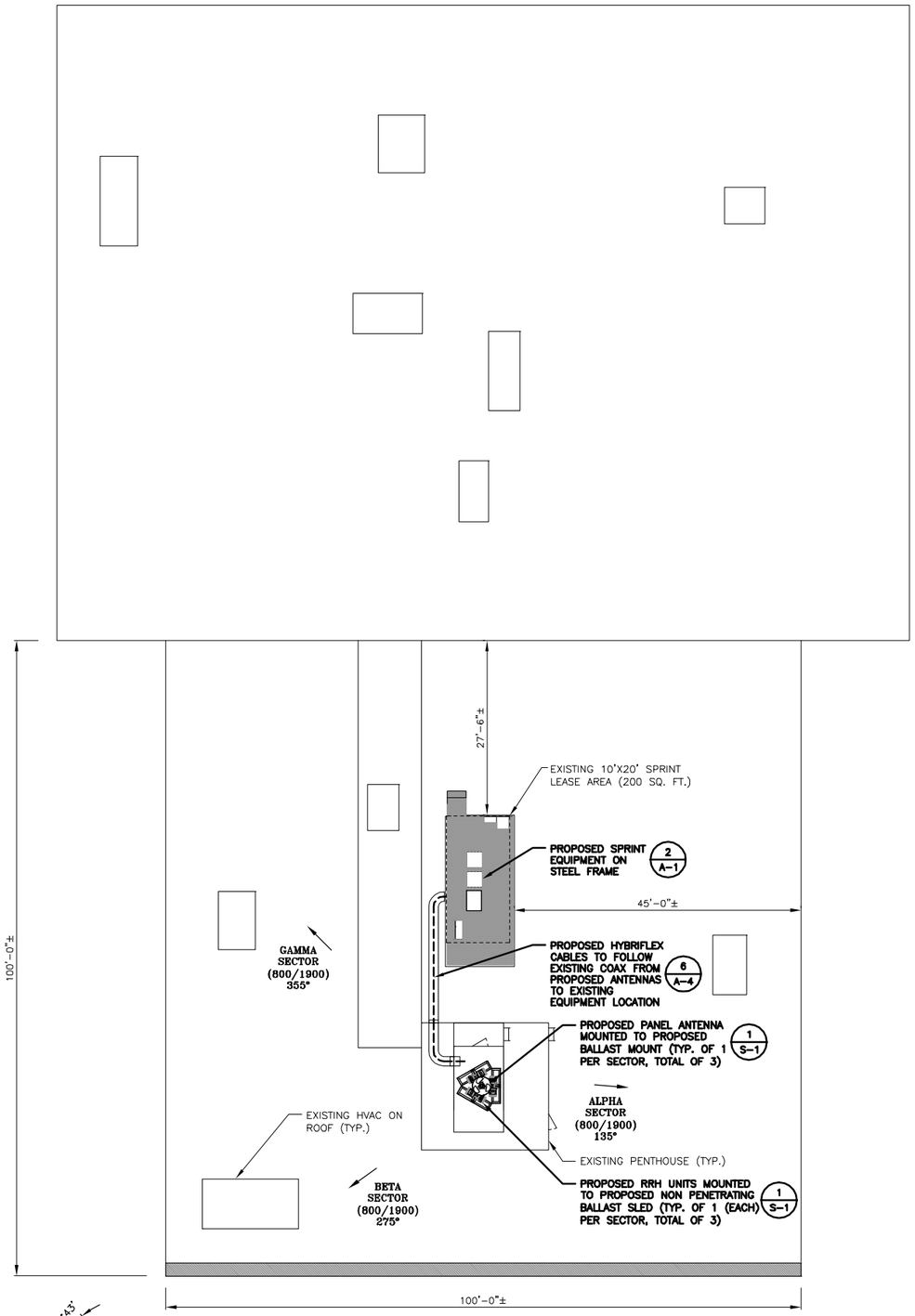
**NOTES:**

**1) VERIFY EXACT ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.**

**2) REMOVE EXISTING GPS ANTENNA AND REPLACE WITH NEW GPS ANTENNA.**

STRUCTURAL NOTE:

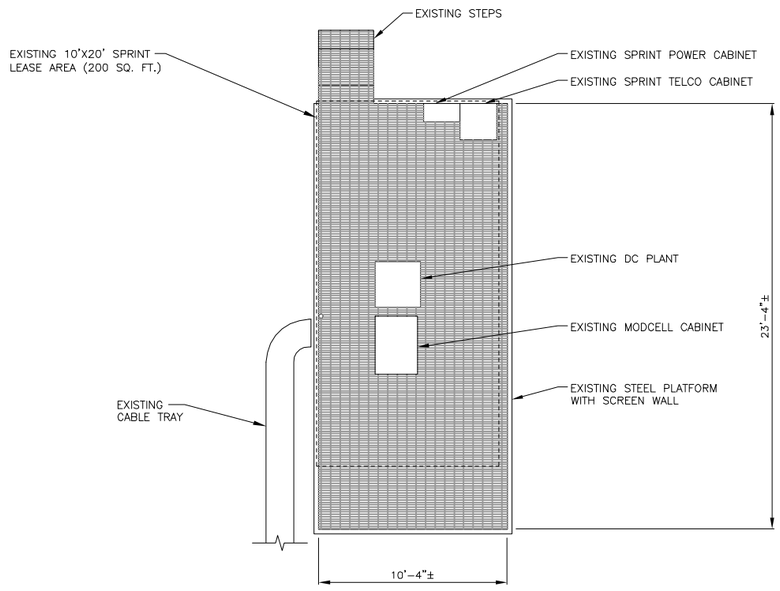
STRUCTURAL INFORMATION TAKEN FROM STRUCTURAL ANALYSIS PERFORMED BY HUDSON DESIGN GROUP, LLC. DATED: DECEMBER 11, 2012



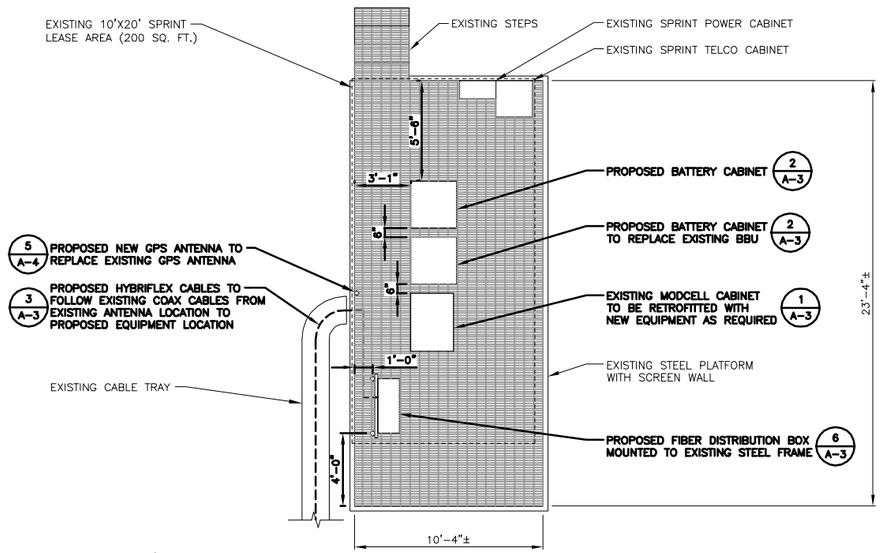

**ROOF PLAN** 1 A-1
SCALE: 3/16"=1'-0"

GRAPHIC SCALE 0 2'-8" 5'-4" 10'-8" 16'-0"

3 A-2




EXISTING




PROPOSED

15°43' TRUE NORTH MAGNETIC NORTH

**EQUIPMENT PLANS** 2 A-1
SCALE: 1/4"=1'-0"

GRAPHIC SCALE 0 2'-0" 4'-0" 8'-0" 12'-0"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Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586


STATE OF MAINE DANIEL P. HAMM 13144 LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
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| 2 | 12/28/12 | ISSUED FOR CONSTRUCTION | MAP |
| 1 | 12/10/12 | ISSUED FOR REVIEW | RH |

SITE NUMBER:
BS62XC009

SITE NAME:
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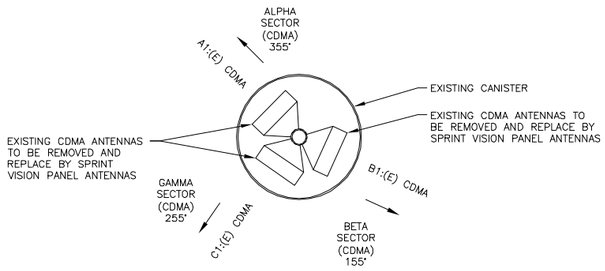
SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
ROOF PLAN & EQUIPMENT LAYOUT

SHEET NUMBER
A-1




**ANTENNA STATUS LEGEND:**

(E) – EXISTING

CDMA – SPRINT ANTENNA

(P) – PROPOSED

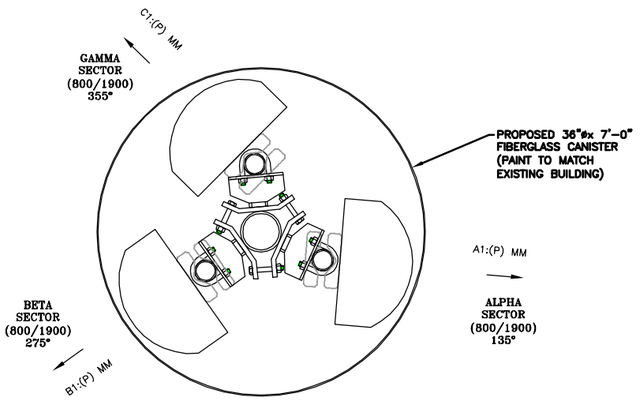
MM – MULTIMODAL ANTENNA

**NOTE:**

EXISTING ANTENNA AND PLATFORM ORIENTATIONS HAS BEEN TAKEN FROM NETWORK VISION 3G RAN PLANNING PLAYBOOK. G.C. TO VERIFY EXISTING ORIENTATIONS PRIOR TO PROPOSED INSTALLATION.

**NOTE:**

HOT SWAP OF PROPOSED ANTENNAS IS REQUIRED



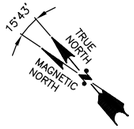

STRUCTURAL NOTE:

STRUCTURAL INFORMATION TAKEN FROM STRUCTURAL ANALYSIS PERFORMED BY HUDSON DESIGN GROUP, LLC. DATED: DECEMBER 11, 2012

**NOTES:**

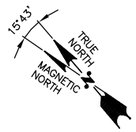
1) VERIFY EXACT ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

2) REMOVE EXISTING GPS ANTENNA AND REPLACE WITH NEW GPS ANTENNA.



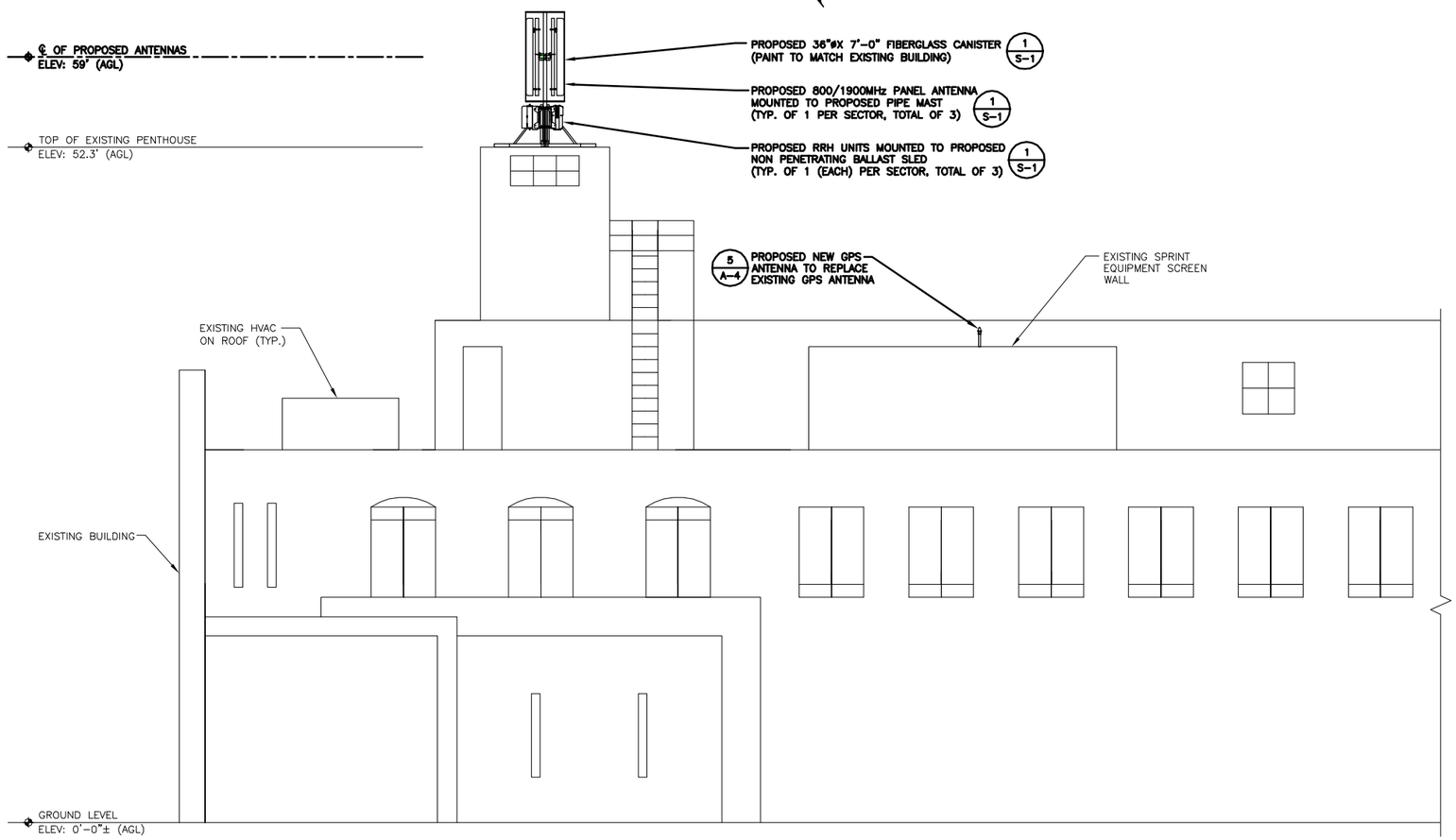

## EXISTING ANTENNA PLAN (1 / A–2)

SCALE: N.T.S.




## INTERMEDIATE/FINAL ANTENNA PLAN (2 / A–2)

SCALE: N.T.S.




## PARTIAL SOUTH EAST ELEVATION (3 / A–2)

SCALE: 3/16"=1'-0"

GRAPHIC SCALE

0 2'-8" 5'-4" 10'-8" 16'-0"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Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586


STATE OF MAINE — DANIEL P. HAMM — 13244 — LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
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| 2 | 12/28/12 | ISSUED FOR CONSTRUCTION | MAP |
| 1 | 12/10/12 | ISSUED FOR REVIEW | RH |

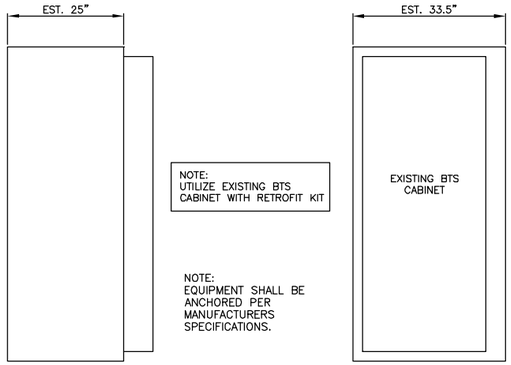
SITE NUMBER:
BS62XC009

SITE NAME:
509 FOREST AVE

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
ANTENNA SCENARIO & ELEVATION

SHEET NUMBER
A–2

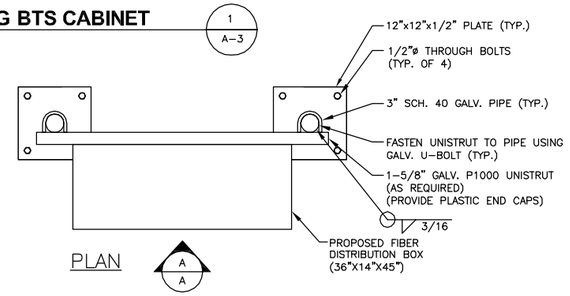


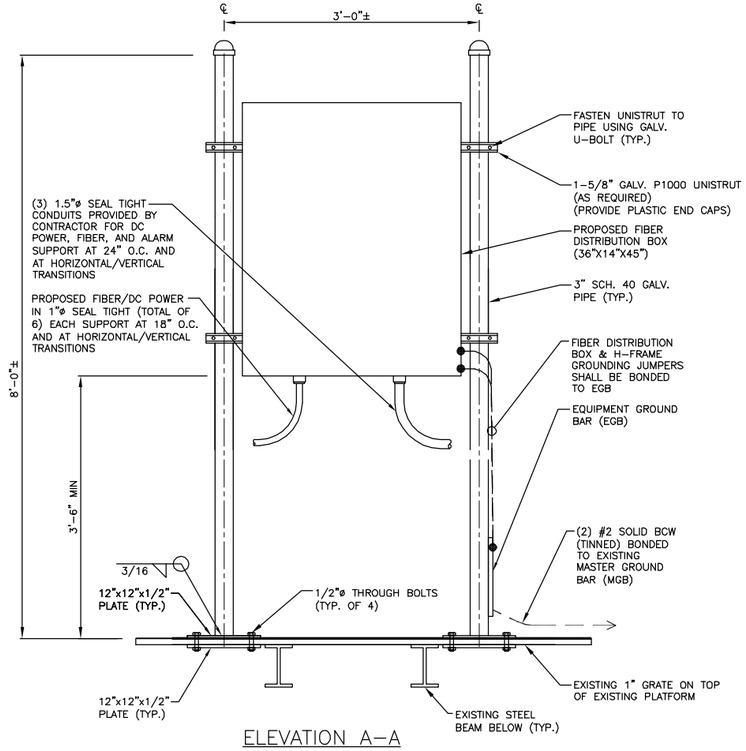

## EXISTING BTS CABINET

SCALE: N.T.S. (1 / A-3)

NOTE:
EQUIPMENT SHALL BE ANCHORED PER MANUFACTURERS SPECIFICATIONS.

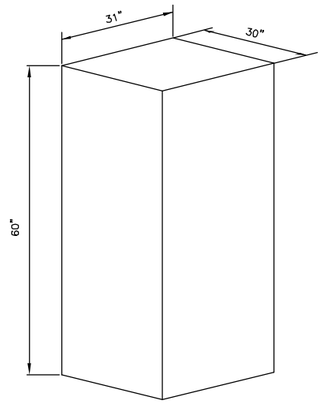
| FIBER DISTRIBUTION BOX SPECIFICATIONS | |
|---|---|
| HEIGHT | 45" |
| WIDTH | 36" |
| DEPTH | 14" |




## FIBER DISTRIBUTION BOX

SCALE: N.T.S. (4 / A-3)

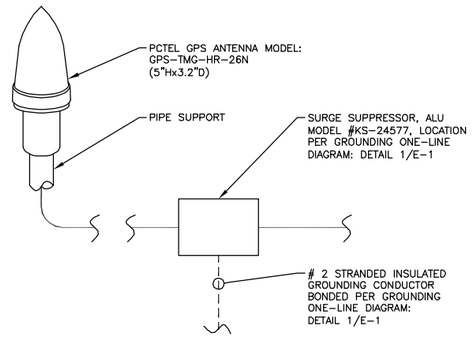



NOTE:
EQUIPMENT SHALL BE ANCHORED PER MANUFACTURERS SPECIFICATIONS.

| 60ECv2 CABINET SPECIFICATIONS | |
|---|---|
| HEIGHT | 60" |
| WIDTH | 31" |
| DEPTH | 30" |
| TYPICAL WEIGHT (3) BATTERY-STRINGS | 1625 LBS. |
| MAX. WEIGHT (5) BATTERY-STRINGS | 2830 LBS. |

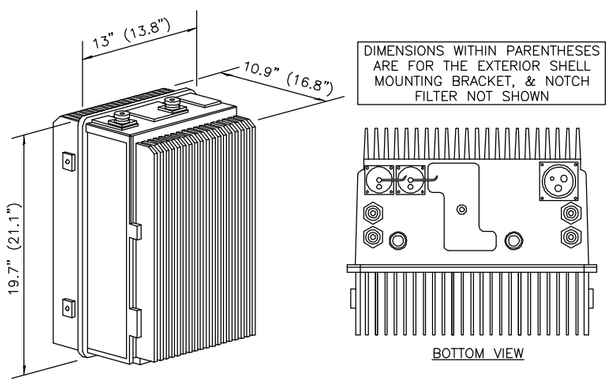
## BATTERY BACK-UP CABINET

SCALE: N.T.S. (2 / A-3)



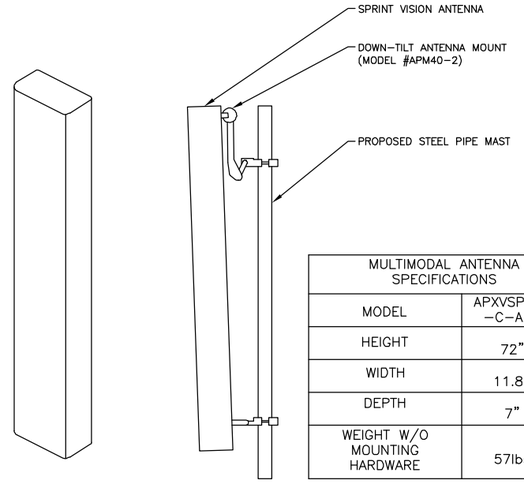

## GPS ANTENNA DETAIL

SCALE: N.T.S. (5 / A-3)




## FD-RRH-2x50-800

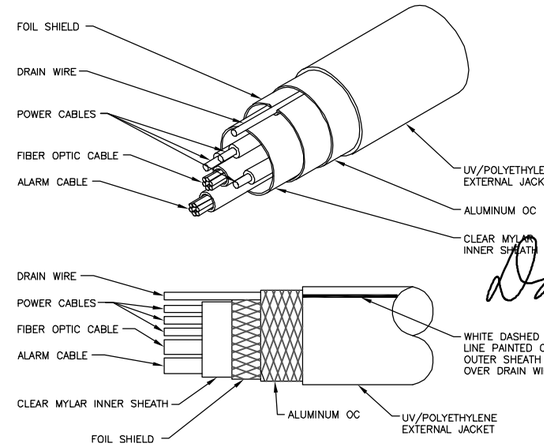
SCALE: N.T.S. (7 / A-3)




| MULTIMODAL ANTENNA SPECIFICATIONS | |
|---|---|
| MODEL | APXVSPP18 -C-A20 |
| HEIGHT | 72" |
| WIDTH | 11.8" |
| DEPTH | 7" |
| WEIGHT W/O MOUNTING HARDWARE | 57lbs |

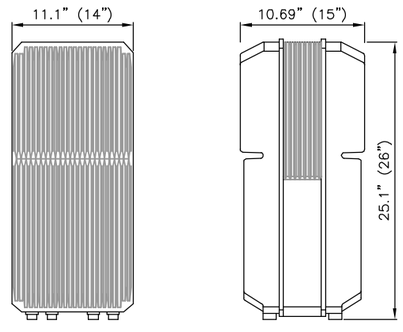
## MULTIMODAL ANTENNA DETAIL

SCALE: N.T.S. (3 / A-3)




## HYBRIFLEX CABLE DETAIL

SCALE: N.T.S. (6 / A-3)




## FD-RRH-4x40-1900

SCALE: N.T.S. (8 / A-3)

Sprint VISION
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MAHWAH, NJ 07495
TEL: (800) 357-7641

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TEL: (978) 952-1600

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF MAINE
DANIEL P. HAMM
No. 13144
PROFESSIONAL ENGINEER
Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
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| 2 | 12/28/12 | ISSUED FOR CONSTRUCTION | MAP |
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SITE NUMBER:
BS62XC009

SITE NAME:
509 FOREST AVE

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
DETAILS

SHEET NUMBER
A-3

| | Market | VT-NH-ME | | |
|---|---|---|---|---|
| | Cascade ID | BS62XC009 | | |
| | | SECTOR 1 | SECTOR 2 | SECTOR 3 |
| | Split sector present | No | No | No |
| 1900 | 1900MHz_Azimuth | 135 | 275 | 355 |
| 1900 | 1900MHz_No_of_Antennas | 1 | 1 | 1 |
| 1900 | 1900MHz_RADCenter(ft) | 57.1 (**)59 | 57.1 (**)59 | 57.1 (**)59 |
| 1900 | 1900MHz_Antenna Make | RFS | RFS | RFS |
| 1900 | 1900MHz_Antenna Model | APXVSPP18-C-A20 | APXVSPP18-C-A20 | APXVSPP18-C-A20 |
| 1900 | 1900MHz_Horizontal_Beamwidth | 65 | 65 | 65 |
| 1900 | 1900MHz_Vertical_Beamwidth | 5.5 | 5.5 | 5.5 |
| 1900 | 1900MHz_AntennaHeight (ft) | 6 | 6 | 6 |
| 1900 | 1900MHz_AntennaGain(dBd) | 15.9 | 15.9 | 15.9 |
| 1900 | 1900MHz_E_Tilt | -5 | 0 | 0 |
| 1900 | 1900MHz _M_Tilt | 0 | 0 | 0 |
| 1900 | 1900MHz_Carrier_Forecast_Year_2013 | 2 | 2 | 2 |
| 1900 | 1900MHz_RRH Manufacturer | ALU | ALU | ALU |
| 1900 | 1900MHz_RRH Model | RRH 1900 4X45 65MHz | RRH 1900 4X45 65MHz | RRH 1900 4X45 65MHz |
| 1900 | 1900MHz_RRH Count | 1 | 1 | 1 |
| 1900 | 1900MHz_RRH Location | Top of the Pole/Tower | Top of the Pole/Tower | Top of the Pole/Tower |
| 1900 | 1900MHz Combiner Model | No Combiner Required | No Combiner Required | No Combiner Required |
| 1900 | 1900MHz_Top_Jumper #1_Length (RRH or Combiner-to-Antenna for TT or Main Coax to | 10 (*)10 | 10 (*)10 | 10 (*)10 |
| 1900 | 1900MHz_Top_Jumper #1_Cable_Model (RRH or Combiner-to-Antenna for TT or Main Coax | LCF12-50J | LCF12-50J | LCF12-50J |
| 1900 | 1900MHz_Top_Jumper #2_Length (RRH to Combiner for TT if applicable, ft) | N/A | N/A | N/A |
| 1900 | 1900MHz_Top_Jumper #2_Cable_Model (RRH to Combiner for TT if applicable) | N/A | N/A | N/A |
| 1900 | 1900MHz_Main_Coax_Cable_Length (ft) | N/A (*)90 | N/A (*)90 | N/A (*)90 |
| 1900 | 1900MHz_Main_Coax_Cable_Model | N/A | N/A | N/A |
| 1900 | 1900MHz_Bottom_Jumper #1_Length (Ground based RRH to Combiner-OR-Main Coax, ft) | N/A | N/A | N/A |
| 1900 | 1900MHz_Bottom_Jumper #1_Cable_Model (Ground based RRH to Combiner-OR-Main Coax) | N/A | N/A | N/A |
| 1900 | 1900MHz_Bottom_Jumper #2_Length (Ground based-Combiner to Main Coax, ft) | N/A | N/A | N/A |
| 1900 | 1900MHz_Bottom_Jumper #2_Cable_Model (Ground based-Combiner to Main Coax) | N/A | N/A | N/A |
| 800 | 800MHz_Azimuth | 135 | 275 | 355 |
| 800 | 800MHz_No_of_Antennas | 0 | 0 | 0 |
| 800 | 800MHz_RADCenter(ft) | 57.1 (**)59 | 57.1 (**)59 | 57.1 (**)59 |
| 800 | 800MHz_AntennaMake | RFS | RFS | RFS |
| 800 | 800MHz_AntennaModel | APXVSPP18-C-A20 (Shared w/1900) | APXVSPP18-C-A20 (Shared w/1900) | APXVSPP18-C-A20 (Shared w/1900) |
| 800 | 800MHz_Horizontal_Beamwidth | 65 | 65 | 65 |
| 800 | 800MHz_Vertical_Beamwidth | 11.5 | 11.5 | 11.5 |
| 800 | 800MHz_AntennaHeight (ft) | 6 | 6 | 6 |
| 800 | 800MHz_AntennaGain (dBd) | 13.4 | 13.4 | 13.4 |
| 800 | 800MHz_E_Tilt | 0 | -8 | -8 |
| 800 | 800MHz_M_Tilt | 0 | 0 | 0 |
| 800 | 800MHz_RRH Manufacturer | ALU | ALU | ALU |
| 800 | 800MHz_RRH Model | 800 MHz RRH 2x50W | 800 MHz RRH 2x50W | 800 MHz RRH 2x50W |
| 800 | 800MHz_RRH Count | 1 | 1 | 1 |
| 800 | 800MHz_RRH Location | Top of the Pole/Tower | Top of the Pole/Tower | Top of the Pole/Tower |
| 800 | 800_Top_Jumper #1_Length (RRH to Antenna for TT or Main Coax to Antenna for GM) | 10 (*)10 | 10 (*)10 | 10 (*)10 |
| 800 | 800_Top_Jumper_Cable_Model (RRH to Antenna for TT or Main Coax to Antenna for GM) | LCF12-50J | LCF12-50J | LCF12-50J |
| 800 | 800MHz_Main_Coax_Cable_Length (ft) | N/A (*)90 | N/A (*)90 | N/A (*)90 |
| 800 | 800MHz_Main_Coax_Cable_Model | N/A | N/A | N/A |
| 800 | 800_Bottom_Jumper #1_Length (Ground based RRH to Main Coax) | N/A | N/A | N/A |
| 800 | 800_Bottom_Jumper #1_Cable_Model (Ground based RRH to Main Coax) | N/A | N/A | N/A |
| | **Plumbing Scenario *** | 124 | 124 | 124 |
| Comments | * If plumbing scenario does not match the material received, please contact your Construction Manager | | | |
| Comments | 11/9/2012 | | | |
| Comments | | | | |
| Comments | | | | |

## RF DATA SHEET

SCALE: N.T.S.

1
A-4

**IMPORTANT:**

**GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY THAT THE LATEST RF DATA SHEET ARE USED FOR EQUIPMENT INSTALLATION.**

**SPRINT CONSTRUCTION STANDARDS:**

**GENERAL CONTRACTOR SHALL ADHERE TO THE FOLLOWING SPRINT CONSTRUCTION STANDARDS (AS AMENDED FROM TIME TO TIME AND AVAILABLE ON THE ALU FST DATABASE):**

- **CONSTRUCTION STANDARDS: INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES – VERSION 4.0, INCLUDING EXHIBITS A–M.**
- **CONSTRUCTION SPECIFICATIONS: CONSTRUCTION STANDARDS EXHIBIT A – STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES (VERSION 4.0).**
- **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 (DRAFT) V3 09–08–11.**

NOTE:

(*) NOTE: ALU CM SHALL CONFIRM ALL JUMPER/HYBRIFLEX LENGTHS BEFORE PREPARING B.O.M.


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Hudson Design Group LLC
1600 OSGOOD STREET
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STATE OF MAINE
DANIEL P. HAMM
No. 13144
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
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| 2 | 12/28/12 | ISSUED FOR CONSTRUCTION | MAP |
| 1 | 12/10/12 | ISSUED FOR REVIEW | RH |

SITE NUMBER:
BS62XC009

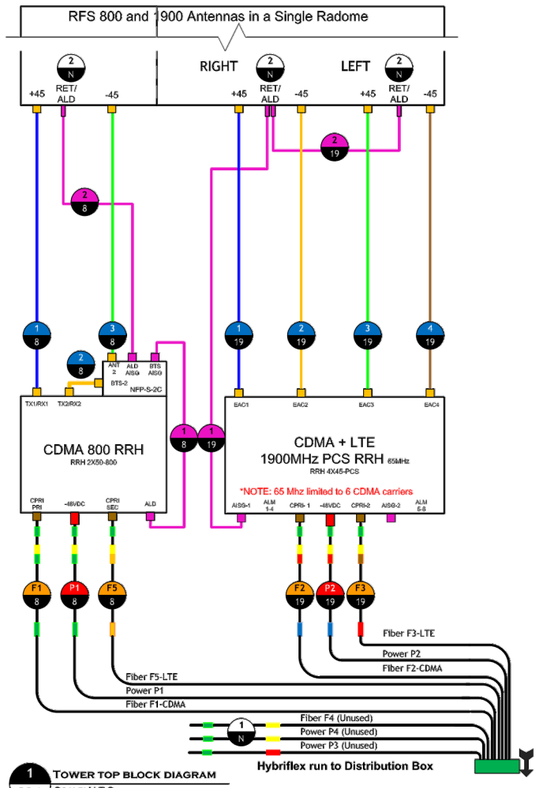
SITE NAME:
509 FOREST AVE

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

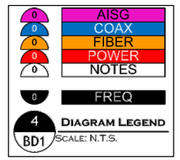
SHEET TITLE
RF DATA SHEET

SHEET NUMBER
A-4

SCENARIO 124_v2.0




1 BD1 TOWER TOP BLOCK DIAGRAM
SCALE: N.T.S.




4 BD1 DIAGRAM LEGEND
SCALE: N.T.S.

**Power Feed Polarity Definition:**
IF wires are BLACK AND BLACK/ WHITE STRIPE:
- Black= -48VDC Feed (Battery)
- Black/White Stripe= Return

IF wires are RED AND BLACK:
- Red= -48VDC Feed (Battery)
- Black= Return

**NOTE:** For power feed use the same Hybriflex OEM color designator as the fiber.

- MM Pair 1= F1= Green= P1(Green)
- MM Pair 2= F2= Blue= P2(Blue)
- MM Pair 3= F3= Red= P3(Red)
- MM Pair 4= F4= Yellow= P4(Yellow)
- MM Pair 5= F5= Orange= (No P5 power feed)

2 BD1 HYBRIFLEX OEM COLOR CODE
SCALE: N.T.S.

| | |
|---|---|
| P3 19 | DC Power Pair 3 Hybriflex, 1900 LTE RRH1 -48VDC port TO/FROM Distribution Box Breaker 3 (S1), 7 (S2), 11 (S3) 1900Mhz |
| F3 19 | Fiber Pair 3, 1900 RRH2 CPRI PRI port TO/FROM Distribution Box, Top LC Bulkhead, Position 3-4 (S1), 9-10 (S2), Lower LC BH, Position 3-4 (S3) 1900Mhz |
| PJ1 19 | DC Power Jumper, Power Pair 3 CTAP TO/FROM 1900 LTE RRH2 -48VDC port (42" Jumper) 1900Mhz |
| FJ1 19 | Fiber Jumper, 1900 RRH1 CPRI SEC port TO/FROM 1900 RRH2 CPRI SEC port 1900Mhz |
| 1 19 | AISG Cable jumper, 1900 CDMA RRH1 AISG port TO/FROM 1900 Antenna RET/ADL port 1900Mhz |
| 2 19 | AISG Cable jumper, 1900 Antenna RET/ADL port TO/FROM 1900 Antenna RET/ALD port (RET Motors) 1900Mhz |
| 1 19 | Coax jumper, 1900 LTE RRH1 TX1/RX1 port TO/FROM Combiner Port G1 1900Mhz |
| 2 19 | Coax jumper, 1900 LTE RRH1 TX2/RX2 port TO/FROM Combiner Port G2 1900Mhz |
| 3 19 | Coax jumper, 1900 LTE RRH2 TX1/RX1(logical TX/RX3) port TO/FROM Combiner Port G3 1900Mhz |
| 4 19 | Coax jumper, 1900 LTE RRH2 TX2/RX2(logical TX/RX4) port TO/FROM Combiner Port G4 1900Mhz |
| P2 19 | DC Power Pair 2 Hybriflex, 1900 CDMA RRH1 -48VDC port TO/FROM Distribution Box Breaker 2(S1), 6 (S2), 10 (S3) 1900Mhz |
| F2 19 | Fiber Pair 2, 1900 CDMA RRH1 CPRI PRI port TO/FROM Distribution Box, Top LC Bulkhead, Position 13-14 (S1), 19-20 (S2), Lower LC BH, Position 13-44 (S3) 1900Mhz |
| PJ2 19 | DC Power Jumper, Power Pair 2 CTAP TO/FROM 1900 CDMA RRH2 -48VDC port (42" Jumper) 1900Mhz |
| FJ2 19 | Fiber Jumper, 1900 RRH1 CPRI SEC port TO/FROM 1900 RRH2 CPRI SEC port 1900Mhz |
| 5 19 | Coax jumper, 1900 CDMA RRH1 TX1/RX1 port TO/FROM Combiner Port A1B1 1900Mhz |
| 6 19 | Coax jumper, 1900 CDMA RRH1 TX2/RX2 port TO/FROM Combiner Port A2B2 1900Mhz |
| 7 19 | Coax jumper, 1900 CDMA RRH2 TX1/RX1(logical TX/RX3) port TO/FROM Combiner Port A3B3 1900Mhz |
| 8 19 | Coax jumper, 1900 CDMA RRH2 TX2/RX2(logical TX/RX4) port TO/FROM Combiner Port A4B4 1900Mhz |
| 9 19 | Coax jumper, 1900 Combiner COM 1 port TO/FROM Antenna +45 port 1900Mhz |
| 10 19 | Coax jumper, 1900 Combiner COM 2 port TO/FROM Antenna -45 port 1900Mhz |
| 11 19 | Coax jumper, 1900 Combiner COM 3 port TO/FROM Antenna +45 port 1900Mhz |
| 12 19 | Coax jumper, 1900 Combiner COM 4 port TO/FROM Antenna -45 port 1900Mhz |
| 1 N | Spare Fiber Pairs & DC Power terminated, weatherproofed, spooled and tie wrapped to side of 800Mhz RRH. (cable management) Notes |
| 2 N | Alarm jumper cap connection. This alarm jumper must be in place to make the RRH # 2 of the pair. (# 2 is always the one farthest from the pipe) Notes |
| 3 N | Power Cable "Y" jumper. C-Tap jumper from Pair 3 to 1900 RRH2. Weatherproof C-Tap and leave 18-24" loop. Notes |

**CONNECTION LEGEND**
SCALE: N.T.S.

**IMPORTANT:**
GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY THAT THE LATEST NETWORK VISION RAN CONNECTION DIAGRAMS ARE USED FOR EQUIPMENT INSTALLATION

**IMPORTANT:**
VELCRO STRAPS ONLY MAY BE USED ON FIBER. CABLE TIES OR TIE WRAP MUST NOT BE USED ON FIBER.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STATE OF MAINE
DANIEL P. HAMM
10844
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
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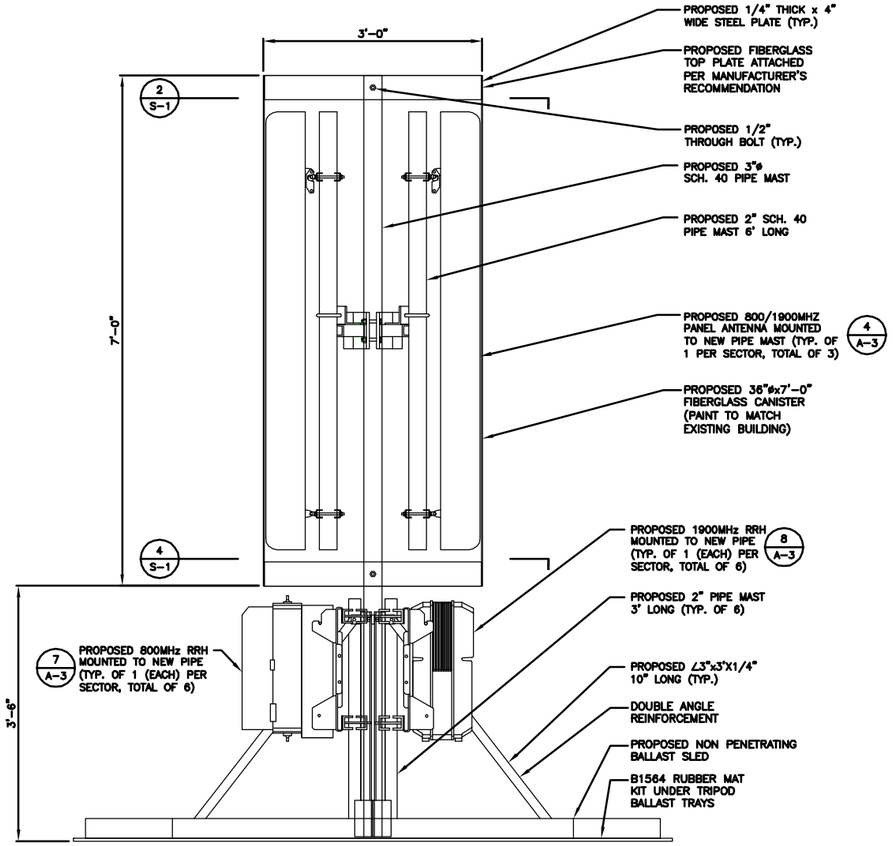
SITE NUMBER:
BS62XC009

SITE NAME:
509 FOREST AVE

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
CABINET & ANTENNA WIRING DIAGRAM

SHEET NUMBER
A-5

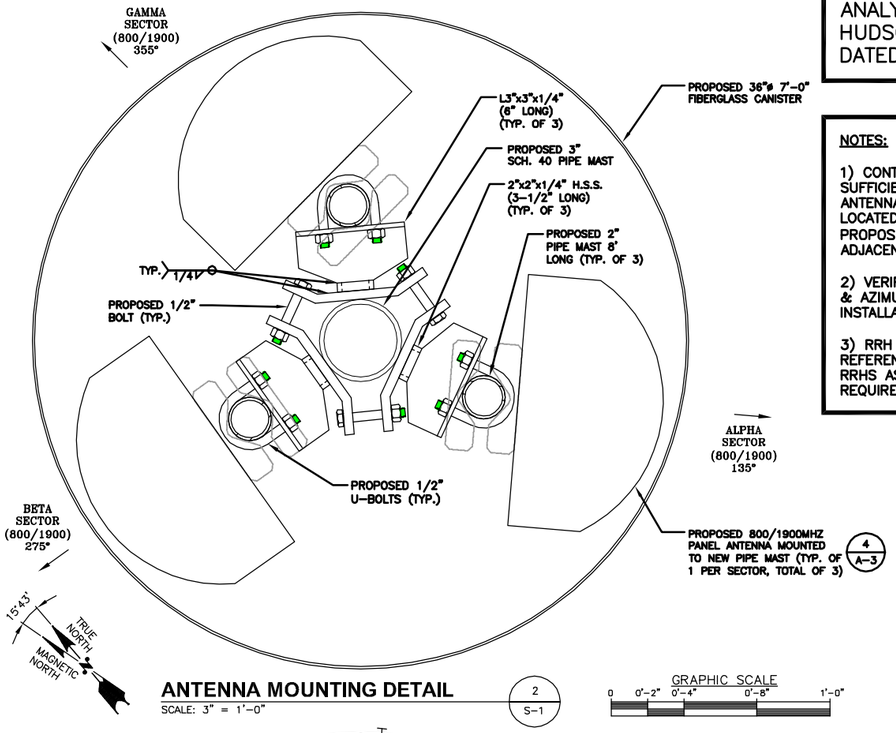



## ANTENNA MOUNTING DETAIL

SCALE: 1" = 1'-0"

1 S-1

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

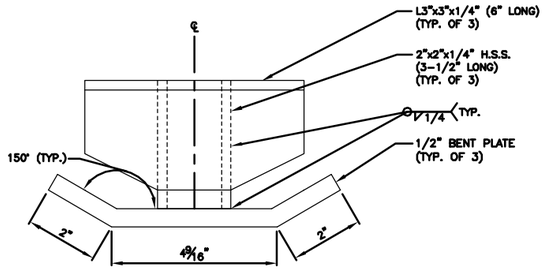



## ANTENNA MOUNTING DETAIL

SCALE: 3" = 1'-0"

2 S-1

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

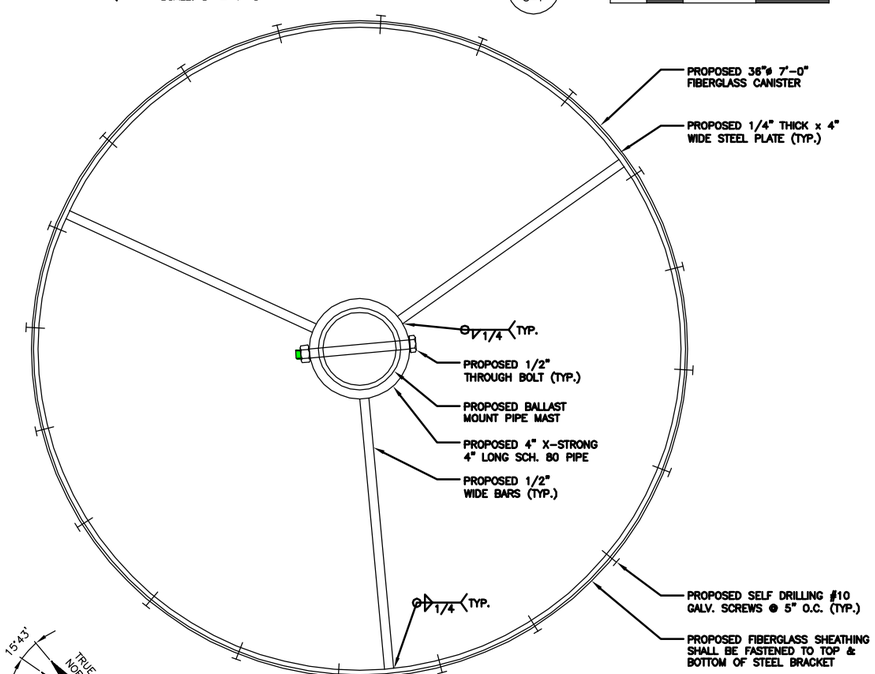



## PLATE DETAIL

SCALE: 6" = 1'-0"

3 S-1

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




## FIBERGLASS CANISTER MOUNTING DETAIL

SCALE: 3" = 1'-0"

4 S-1

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

**STRUCTURAL NOTE:**

STRUCTURAL INFORMATION TAKEN FROM STRUCTURAL ANALYSIS PERFORMED BY HUDSON DESIGN GROUP, LLC. DATED: DECEMBER 11, 2012

**NOTES:**

1) CONTRACTOR TO VERIFY THAT THERE IS SUFFICIENT ROOM BEHIND PROPOSED ANTENNAS FOR PROPOSED RRHS TO BE LOCATED WITHOUT CONFLICTING WITH OTHER PROPOSED RRHS/MOUNTING PIPES ON ADJACENT SECTORS.

2) VERIFY EXACT RRH AND ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

3) RRH LOCATION ONLY SHOWN AS REFERENCE. CONTRACTOR TO CONFIGURE RRHS AS NEED TO MEET PROPOSED REQUIREMENTS.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STATE OF MAINE
DANIEL P. HAMM
PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

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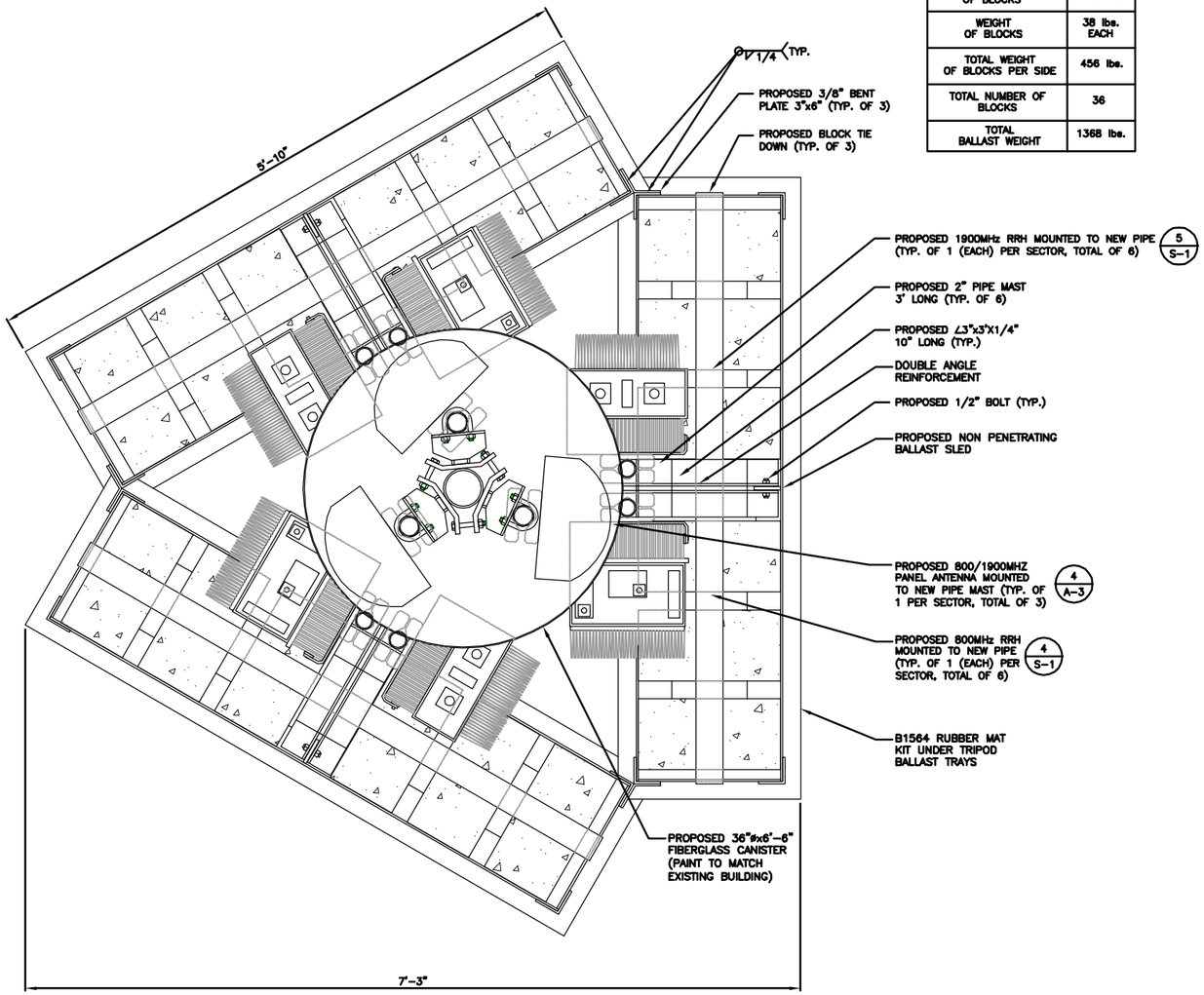
SITE NAME:
509 FOREST AVE

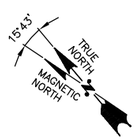
SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
STRUCTURAL DETAILS

SHEET NUMBER
S-1

| | |
|---|---|
| NUMBER OF BLOCKS PER SIDE | 12 |
| SIZE OF BLOCKS | 4"x8"x16" |
| WEIGHT OF BLOCKS | 38 lbs. EACH |
| TOTAL WEIGHT OF BLOCKS PER SIDE | 456 lbs. |
| TOTAL NUMBER OF BLOCKS | 36 |
| TOTAL BALLAST WEIGHT | 1368 lbs. |




**RRH MOUNTING LAYOUT** 1 S-2

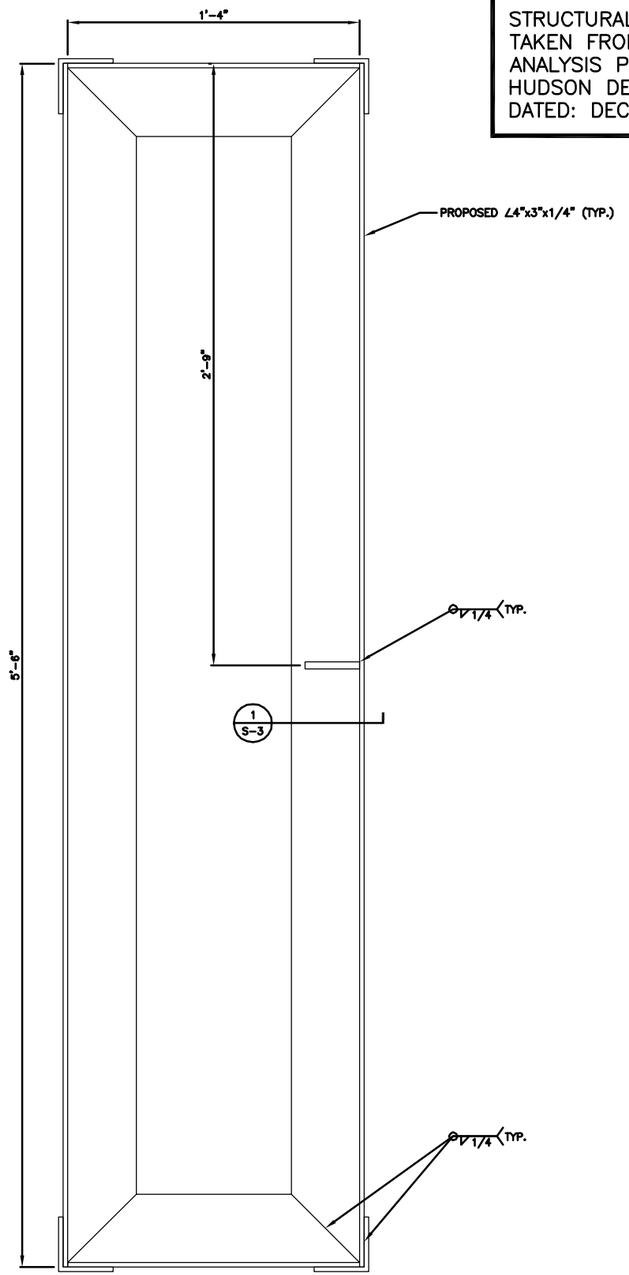
SCALE: 1-1/2" = 1'-0"

GRAPHIC SCALE

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

**STRUCTURAL NOTE:**

STRUCTURAL INFORMATION TAKEN FROM STRUCTURAL ANALYSIS PERFORMED BY HUDSON DESIGN GROUP, LLC. DATED: DECEMBER 11, 2012




**BALLAST SLED DETAIL** 2 S-2

SCALE: 3" = 1'-0"

GRAPHIC SCALE

0 0'-2" 0'-4" 0'-8" 1'-0"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STATE OF MAINE
DANIEL P. HAMM
PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
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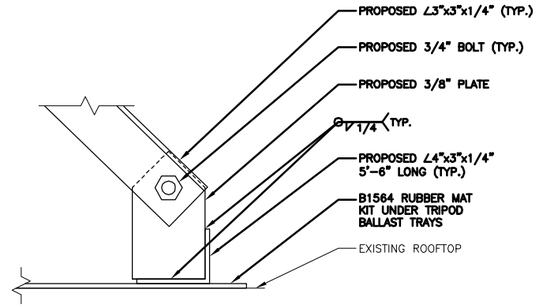
509 FOREST AVE

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
STRUCTURAL DETAILS

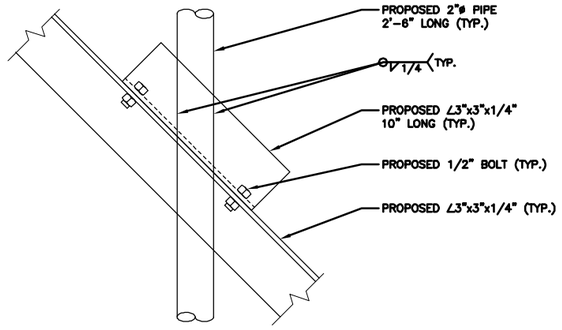
SHEET NUMBER
S-2




**BALLAST SLED DETAIL 1** (1 / S-3)

SCALE: 3" = 1'-0"

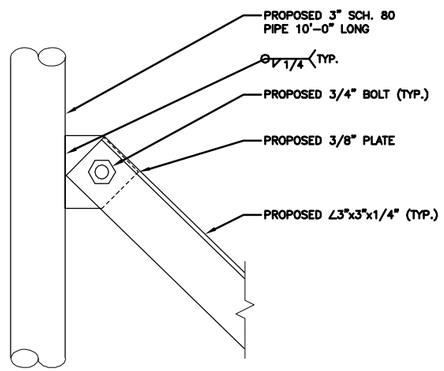
GRAPHIC SCALE 0 0'-2" 0'-4" 0'-8" 1'-0"




**BALLAST SLED DETAIL 2** (2 / S-3)

SCALE: 3" = 1'-0"

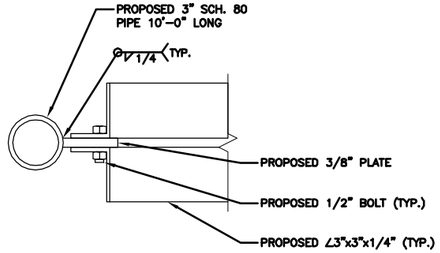
GRAPHIC SCALE 0 0'-2" 0'-4" 0'-8" 1'-0"




**BALLAST SLED DETAIL 3** (3 / S-3)

SCALE: 3" = 1'-0"

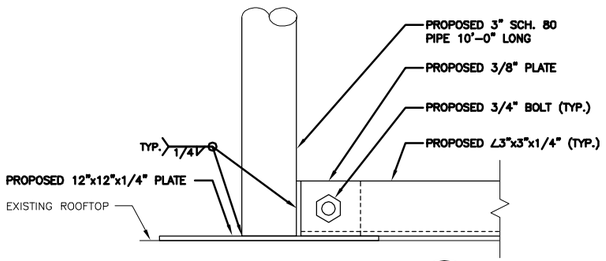
GRAPHIC SCALE 0 0'-2" 0'-4" 0'-8" 1'-0"




**BALLAST SLED DETAIL 4** (4 / S-3)

SCALE: 3" = 1'-0"

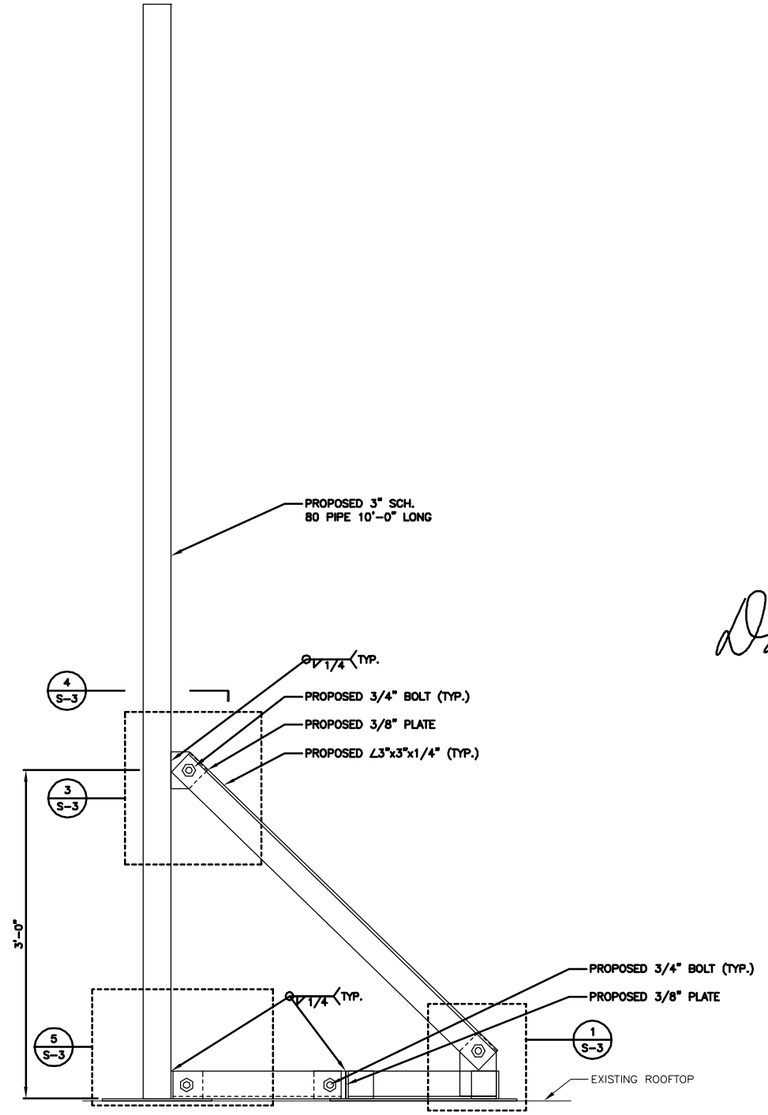
GRAPHIC SCALE 0 0'-2" 0'-4" 0'-8" 1'-0"




**BALLAST SLED DETAIL 5** (5 / S-3)

SCALE: 3" = 1'-0"

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




**BALLAST SLED DETAIL 6** (6 / S-3)

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

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

**STRUCTURAL NOTE:**

STRUCTURAL INFORMATION TAKEN FROM STRUCTURAL ANALYSIS PERFORMED BY HUDSON DESIGN GROUP, LLC. DATED: DECEMBER 11, 2012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STATE OF MAINE — DANIEL P. HAMM — 13144 — LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

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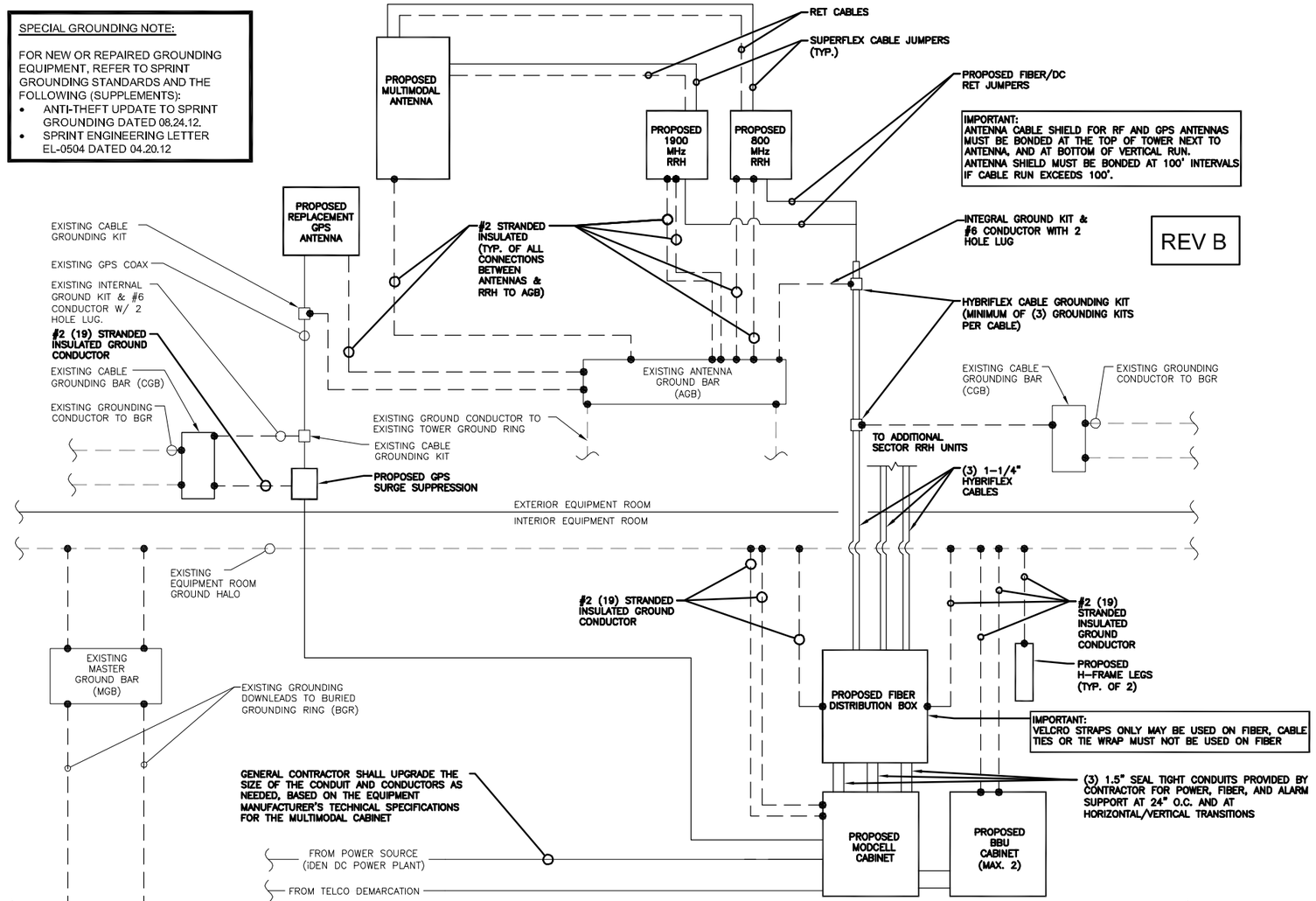
SHEET TITLE
STRUCTURAL DETAILS

SHEET NUMBER
S-3

SPECIAL GROUNDING NOTE:

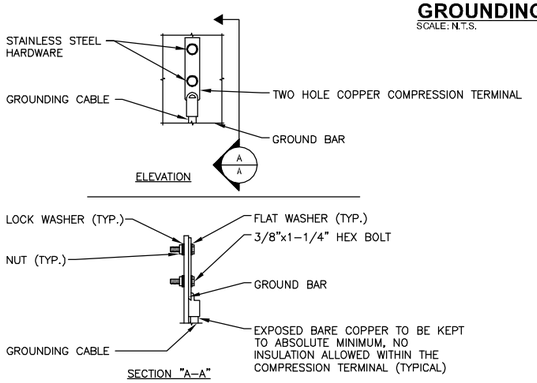
FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND THE FOLLOWING (SUPPLEMENTS):

- ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08.24.12.
- SPRINT ENGINEERING LETTER EL-0504 DATED 04.20.12




## TOWER TOP INTERIOR TYPICAL POWER & GROUNDING ONE LINE DIAGRAM

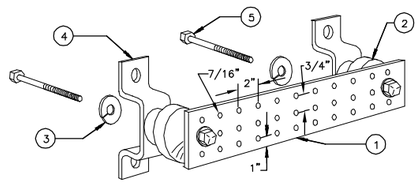
SCALE: N.T.S. — 1 / E-1




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

## TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S. — 2 / E-1




LEGEND

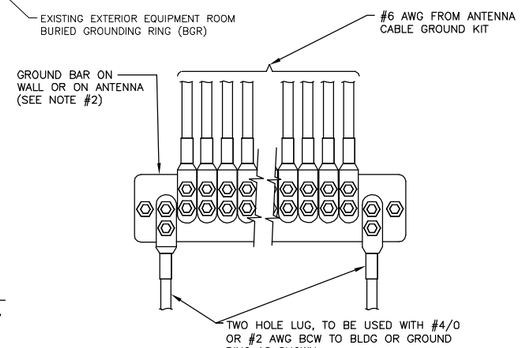
1- COPPER TINNED GROUND BAR, 1/4"x4"x20", OR OTHER LENGTH AS REQUIRED, HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 OR EQUAL
3- 5/8" LOCKWASHERS OR EQUAL
4- WALL MOUNTING BRACKETS, NEWTON INSTRUMENT CO. CAT NO. A-6056 OR EQUAL
5- 5/8- 11x1" H.H.C.S.BOLTS

NOTES:

1. ALL BOLTS, NUTS, WASHERS AND LOCK WASHERS SHALL BE 18-8 STAINLESS STEEL.
2. ALL GROUND BARS SHALL BE GALVANIZED WITH ANTI-THEFT HARDWARE.

## TYPICAL GROUND BAR DETAIL

SCALE: N.T.S. — 3 / E-1




NOTES:

1. CONTRACTOR TO UTILIZE KOPR-SHIELD (THOMAS & BETTS) ON ALL LUG CONNECTIONS.
2. ALL GROUND BARS SHALL BE GALVANIZED WITH ANTI-THEFT HARDWARE.

## TYPICAL INSTALLATION OF GROUND WIRE TO GROUND BAR DETAIL

SCALE: N.T.S. — 4 / E-1

### ELECTRICAL NOTES

1) ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.

2) THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.

3) ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.

4) ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.

5) 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.

6) ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.

7) THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.

8) GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.

9) 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.

10) BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.

11) ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.

12) 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.

13) 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.

14) ABOVE GROUND PORTION OF CONDUIT BETWEEN BTS AND PROJECT OWNER'S CELL SITE PPC SHALL BE RIGID CONDUIT.

15) FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND THE FOLLOWING SUPPLEMENTS

ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08.24.12

SPRINT ENGINEERING LETTER EL-0504 DATED 04.20.12

### GROUNDING NOTES

1) ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

2) ALL GROUND WIRE SHALL BE BARE COPPER #2 AWG UNLESS OTHERWISE NOTED.

3) ALL GROUND WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.

4) EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER GROUND BAR (MGB) WITH #2 AWG INSULATED STRANDED COPPER WIRE. EQUIPMENT CABINETS SHALL EACH HAVE (2) CONNECTIONS.

5) PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED AGB (TYP.)

6) ANTENNA GROUND KITS SHALL BE FURNISHED BY SPRINT AND INSTALLED BY ELECTRICAL CONTRACTOR.

7) COORDINATE NEW SPRINT GROUND SYSTEM WITH EXISTING SITE GROUND SYSTEM.

8) GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH PROJECT OWNER'S BTS SITE GROUNDING STANDARDS.

9) GROUND HYBRIFLEX CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS HYBRIFLEX CABLE GROUNDING KITS.

10) ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.

11) ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 8" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.

12) CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.

13) APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.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TEL: (978) 952-1600

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586


STATE OF MAINE — DANIEL P. HAMM — 12144 — LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

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| | | | |
| 2 | 12/28/12 | ISSUED FOR CONSTRUCTION | MAP |
| 1 | 12/10/12 | ISSUED FOR REVIEW | RH |

SITE NUMBER:
BS62XC009

SITE NAME:
509 FOREST AVE

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04103

SHEET TITLE
TYPICAL POWER & GROUNDING ONE LINE DIAGRAM

SHEET NUMBER
E-1

Sprint®
VISION
™

SITE NUMBER:
**BS62XC009**

SITE NAME:
# PORTLAND

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04101

## SITE INFORMATION

| | |
|---|---|
| SITE NUMBER: | BS62XC009 |
| SITE NAME: | PORTLAND |
| SITE ADDRESS: | 509 FOREST AVENUE<br>PORTLAND, ME 04101 |
| COUNTY: | CUMBERLAND |
| ZONING: | B2b - BUSINESS COMMUNITY |
| PARCEL ID: | MAP 127 LOT A002 |
| COORDINATES: | N 43°40'3.59"<br>W 70°16'43.77" |
| GROUND ELEV.: | 36'± (AMSL) |
| STRUCTURE TYPE: | ROOF TOP |
| STRUCTURE HEIGHT: | 55' (AGL) |
| ANTENNA RAD CENTER: | 59'± (AGL) |
| PROPERTY OWNER: | ALPINE REALTY CORP.<br>380 WARREN AVENUE<br>PORTLAND, ME 04103 |

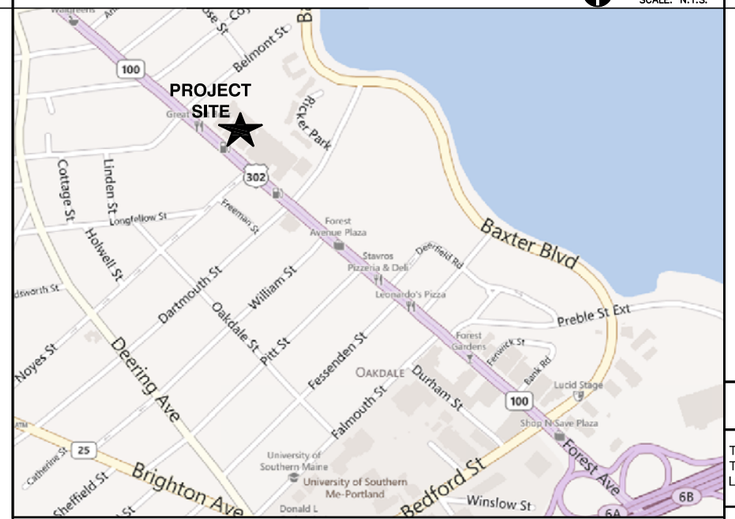
| | |
|---|---|
| LOCAL POWER COMPANY: | CENTRAL MAINE POWER |
| AAV PROVIDER: | FAIRPPOINT |
| APPLICANT: | SPRINT<br>1 INTERNATIONAL BLVD,<br>SUITE 800<br>MAHWAH, NJ 07495 |
| APPLICANT REPRESENTATIVE: | ALCATEL-LUCENT<br>1 ROBBINS ROAD<br>WESTFORD, MA 01886<br>TEL: (978) 952-1600 |
| SITE ACQUISITION CONSULTANT: | ALCATEL-LUCENT<br>1 ROBBINS ROAD<br>WESTFORD, MA 01886<br>TEL: (978) 952-1600 |
| A&E CONSULTANT: | HUDSON DESIGN GROUP LLC<br>1600 OSGOOD STREET<br>BLDG 20 NORTH, SUITE 2-101<br>NORTH ANDOVER, MA 01845<br>TEL: (978) 557-5553<br>FAX: (978) 336-5586 |

## GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
   -HANDICAPPED ACCESS NOT REQUIRED
   - PORTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED
2. 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.
3. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   BUILDING CODE: MASSACHUSETTS STATE BUILDING CODE 780 CMR - 8TH EDITION
   ELECTRICAL CODE: 2008 NATIONAL ELECTRICAL CODE
   STRUCTURAL CODE: TIA/EIA-222-G OR LATEST EDITION

## VICINITY MAP

TRUE NORTH
SCALE: N.T.S.

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## SHEET INDEX

| SHEET | DESCRIPTION | REV |
|---|---|---|
| T-1 | TITLE SHEET | 0 |
| T-2 | SITE PHOTOS | 0 |
| A-1 | COMPOUND PLAN | 0 |
| A-2 | DETAILS | 0 |

## 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.

ALCATEL-LUCENT REP: _____ DATE: _____

AAV REP: _____ DATE: _____

SITE ACQUISITION: _____ DATE: _____

LANDLORD/
PROPERTY OWNER: _____ DATE: _____


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FAX: (978) 336-5586


CHECKED BY: KB

APPROVED BY: DPH

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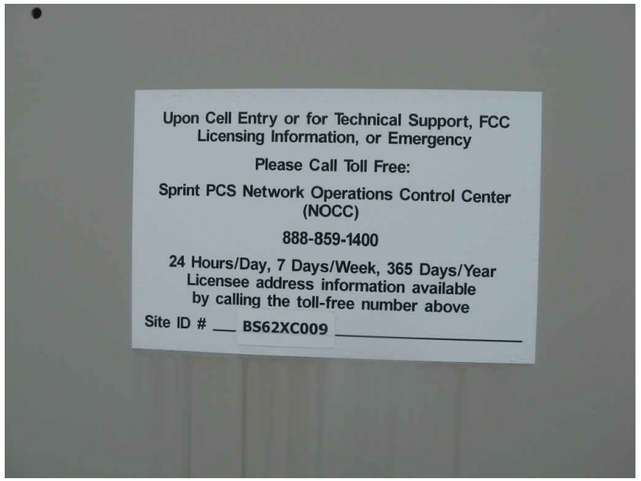
| 0 | 08/27/12 | FOR REVIEW | MA |

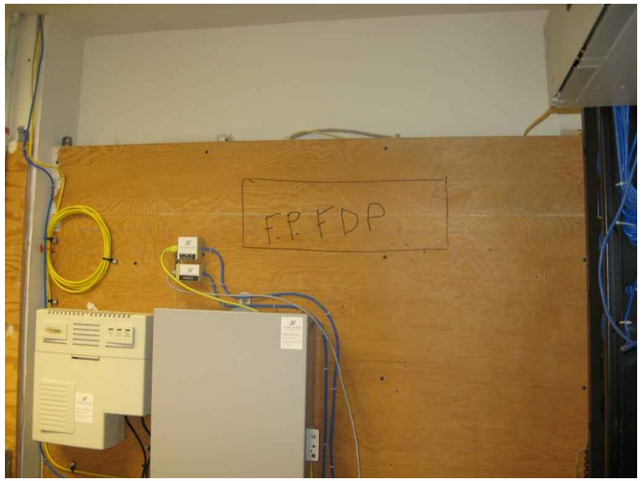
SITE NUMBER:
BS62XC009
SITE NAME:
PORTLAND
SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04101

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1




**EXISTING SIGNAGE** 1 / T–2



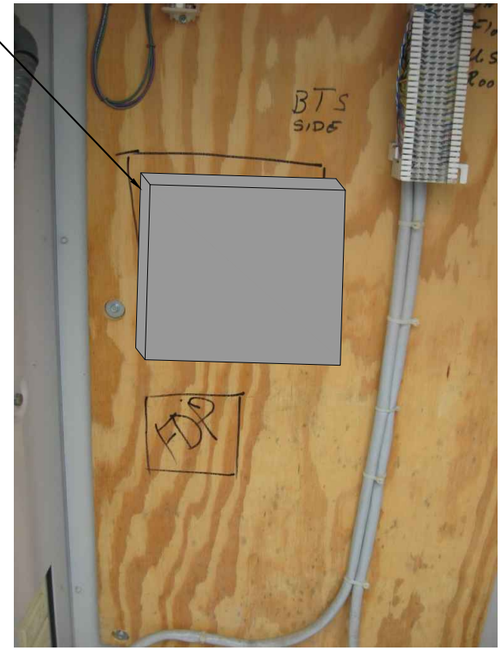

**PROPOSED MEET POINT** 2 / T–2

**EXISTING EQUIPMENT AREA** 3 / T–2


**EXISTING TELCO CABINET** 4 / T–2

**EXISTING POWER SOURCE** 5 / T–2

PROPOSED INSTALL NEW METRO NID INSIDE EXISTING SPRINT TELCO CABINET




**PROPOSED NID EQUIPMENT LOCATION** 6 / T–2

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APPROVED BY: DPH

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SITE NUMBER:
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SITE NAME:
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SITE ADDRESS:
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PORTLAND, ME 04101

SHEET TITLE

SITE PHOTOS

SHEET NUMBER

T–2

## AAV SCOPE OF WORK NOTES:

1. FIBER RUN: PROPOSED FIBER DISTRIBUTION BOX ON EXISTING BACKBOARD IN 2ND FLOOR TELCO ROOM.
2. FAIRPOINT FIBER TO ORIGINATE FROM PROPOSED FIBER DISTRIBUTION BOX AND WITHIN EXISTING 2"ø RGS A.G. TO SPRINT TELCO CABINET (APPROX. 100'±)
3. PROPOSED METRONID TO BE MOUNTED INSIDE EXISTING SPRINT TELCO CABINET.
4. FIBER TO CONTINUE FROM PROPOSED METRONID AND RUN WITHIN EXISTING 1-1/2"ø LIQUID TIGHT CONDUIT A.G. TO PROPOSED MM-BTS CABINET. (APPROX 20'±)
5. PROPOSED FIBER FROM PROPOSED FIBER DISTRIBUTION BOX TO PROPOSED MM-BTS CABINET (APPROX. 120'± TOTAL)
- A. POWER RUN: PROPOSED INSTALL 1 1/4"ø RGS CONDUIT A.G. FROM THE PROPOSED MM-BTS TO PROPOSED METRONID (APPROX. 20'±) (DC POWER CONDUCTORS *TBD BY SPRINT GC*)

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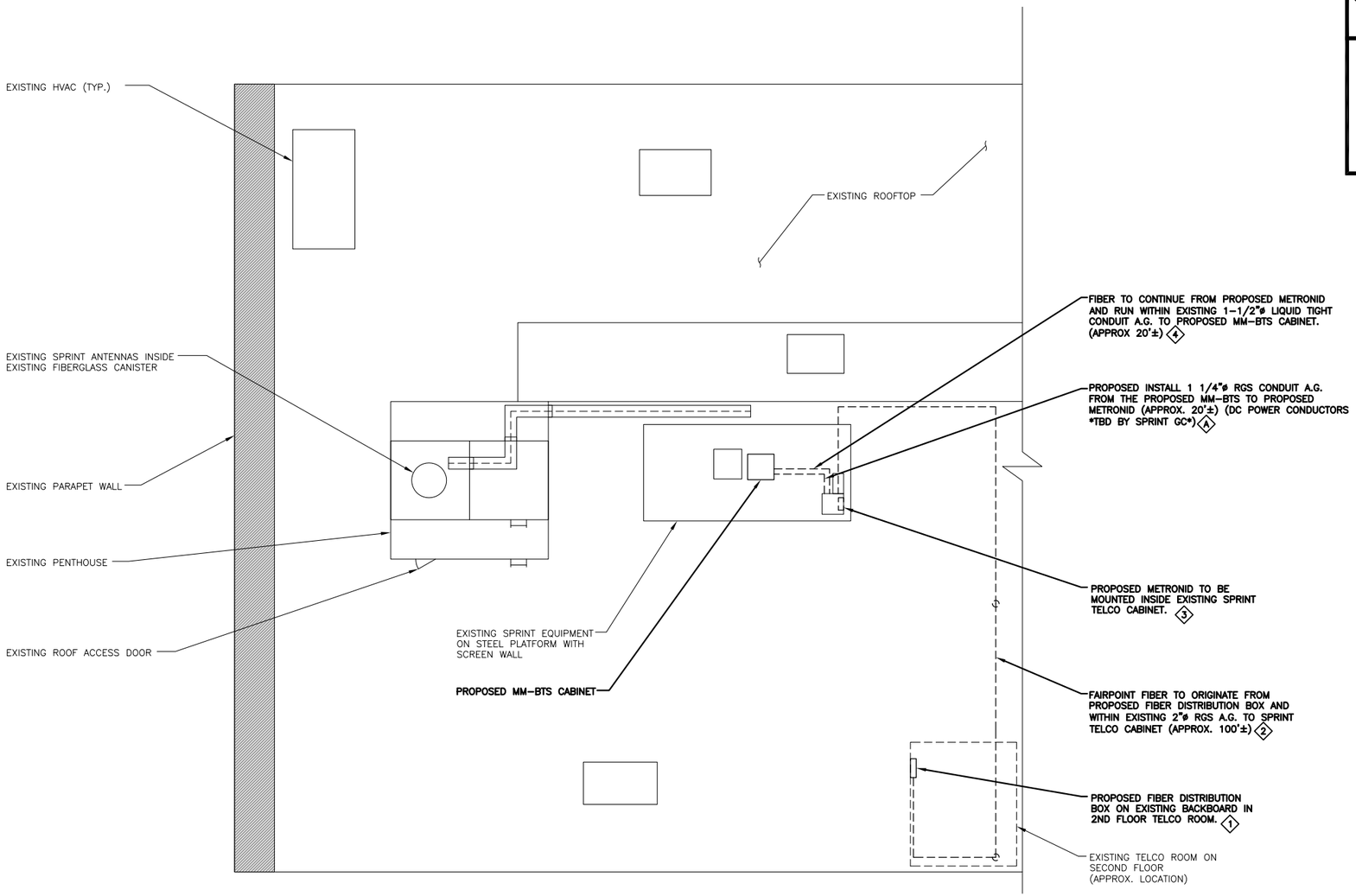
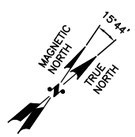
SPRINT TO PROVIDE MULE TAPE AND INNERDUCT IN EXISTING/PROPOSED CONDUIT PATHS UNLESS OTHERWISE NOTED




NOTE: EQUIPMENT ON ROOF NOT SHOWN FOR CLARITY




**COMPOUND PLAN** (1 / A-1)
SCALE: 1/8"=1'-0"

GRAPHIC SCALE
0 4 8 16 24 FEET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N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586


CHECKED BY: KB

APPROVED BY: DPH

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SITE NAME:
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SITE ADDRESS:
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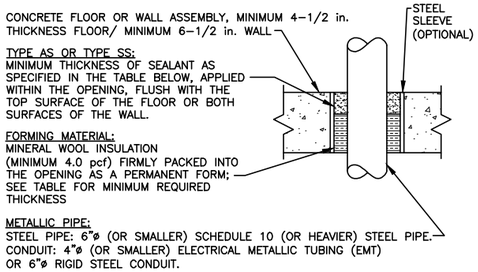
SHEET TITLE
COMPOUND PLAN

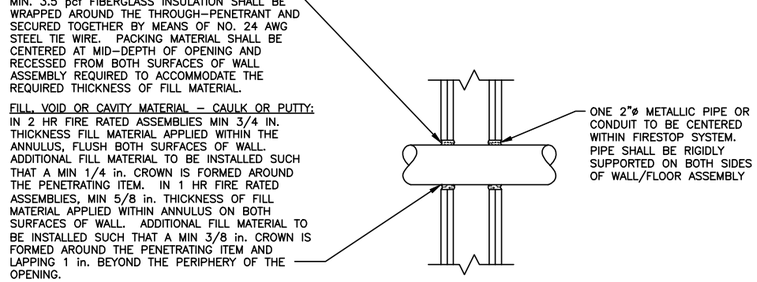
SHEET NUMBER
A-1

| MAXIMUM PIPE DIAMETER (%) | MAXIMUM EMT | ANNULAR SPACE (in.) | FORMING MATERIAL THICKNESS (in.) | MINIMUM SEALANT THICKNESS (in.) | F RATING (HOURS) | T RATING (HOURS) |
|---|---|---|---|---|---|---|
| 1–1/2 | – | 3/8 TO 2–1/8 | 2–1/2 | 2 | 3 | 1 |
| 6 | 4 | 3/8 TO 3/4 | 3–1/2 | 1 | 3 | 0 |
| 6 | 4 | 3/8 TO 1 | 2–1/2 | 2 | 3 | 0 |



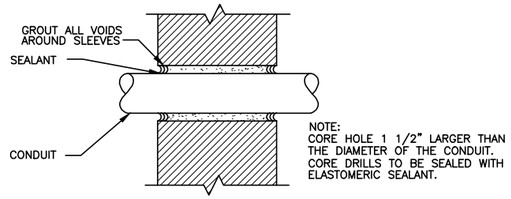

**UL SYSTEM NUMBER: C–AJ–1020**
**F RATING – 3 HR.**

PIPE AND CONDUIT PENETRATION
DETAIL IN CONCRETE OR MASONRY




**UL SYSTEM NUMBER: W–L–1029**
**F RATING – 1 & 2 HR.**

PIPE AND CONDUIT PENETRATION
DETAIL IN GYPSUM WALLBOARD



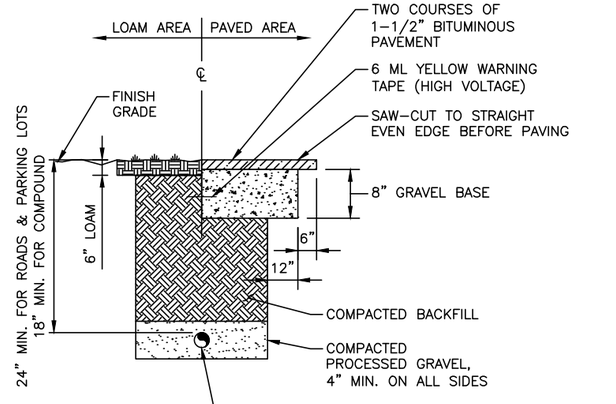

ALL CORES THROUGH ELECTRIC ROOMS TO BE FIRE-STOPPED.

USE FULL CONDUIT RUNS THROUGH PENETRATIONS

PIPE AND CONDUIT PENETRATION
DETAIL IN NON-RATED PARTITION

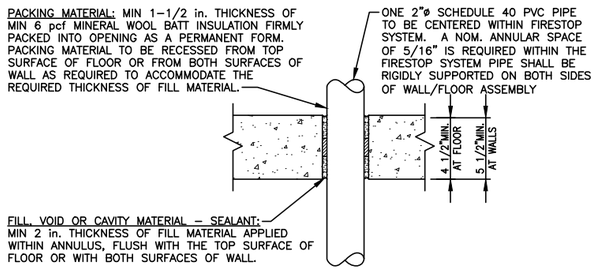
## PENETRATION DETAILS

SCALE: N.T.S.




## BURIED CONDUIT DETAIL

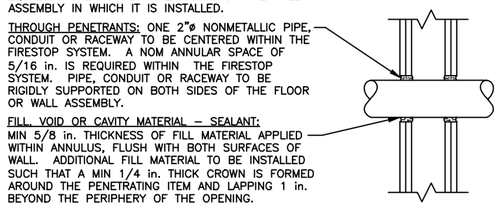
SCALE: N.T.S.




**UL SYSTEM NUMBER: C–AJ–2057**
**F RATING – 2 HR.**

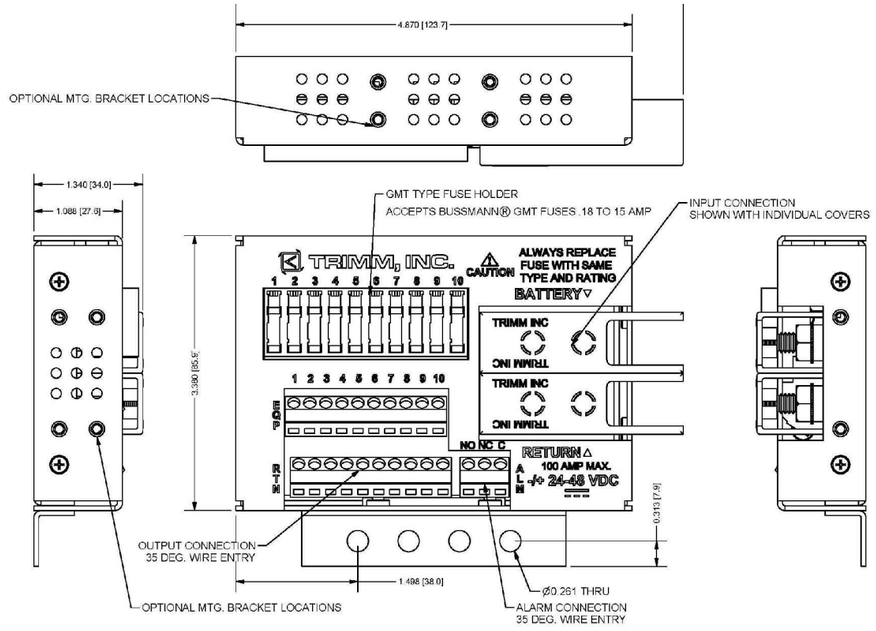
PVC CONDUIT PENETRATION
DETAIL IN CONCRETE OR MASONRY

| WALL HR | MAX DIAM OF THROUGH PENETRANT in. | T RATING HR |
|---|---|---|
| 1 | 2 | 1 |
| 1 | 1–1/4 | 1 |
| 2 | 2 | 1 |
| 2 | 1–1/4 | 1 1/2 |



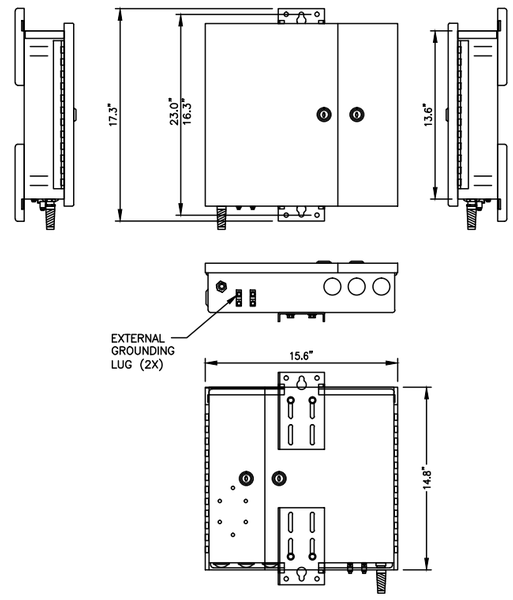

**UL SYSTEM NUMBER: W–L–2093**
**F RATING – 1 & 2 HR.**

PVC CONDUIT PENETRATION
DETAIL IN GYPSUM WALLBOARD




## FUSE PANEL DETAIL

SCALE: N.T.S.




## METRO NID CABINET DETAIL

SCALE: N.T.S.

Sprint VISION
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Hudson Design Group LLC
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N. ANDOVER, MA 01845
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CHECKED BY: KB

APPROVED BY: DPH

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SITE NUMBER:
BS62XC009

SITE NAME:
PORTLAND

SITE ADDRESS:
509 FOREST AVENUE
PORTLAND, ME 04101

SHEET TITLE
DETAILS

SHEET NUMBER
A–2

# STRUCTURAL ANALYSIS REPORT

For

## BS62XC009

509 FOREST AVE

509 Forest Avenue
Portland, ME 04103

## Antennas inside a Canister on the Roof; Equipment Platform on the Roof


**Prepared for:**

Sprint VISION

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TEL: (800) 357-7641

Alcatel•Lucent

1 ROBBINS ROAD
WESTFORD, MA 01886
TEL: (978) 952-1600

**Dated:**
**December 11, 2012**

STATE OF MAINE
DANIEL P. HAMM
No. 10344
LICENSED PROFESSIONAL ENGINEER
12/11/2012

**Prepared by:**

Hudson Design Group LLC

1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

Hudson Design Group LLC

## SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by Sprint to conduct a structural evaluation of the structure supporting the proposed Sprint equipment located in the areas depicted in the latest HDG's construction drawings.

This report represents this office's findings, conclusions and recommendations pertaining to the support of Sprint's proposed equipment.

This office conducted an on-site visual survey of the above area on November 12, 2012. Attendees included Bradley Loeb (HDG-Associate).

## CONCLUSION SUMMARY:

Building Plans were not available and could not be obtained for our use. A previous set of construction drawings prepared by Infinigy Engineering dated March 22, 2012 were available for our reference. A limited visual survey of the structure was completed in or near the areas of the Proposed Work.

*The structural analysis/PE certification completed by Hudson Design Group LLC (HDG) on behalf of ALU was inclusive of the equipment support structures, antenna masts, antenna mounts, and all other aspects of the structure applicable to the installation of the network vision antenna system and BTS and that the site will support the Sprint Network Vision Antennas and RRH's deployment* for the interim and final equipment scenarios.

**Equipment Support frame:**
Based on our evaluation, we have determined that the existing equipment platform **IS CAPABLE** of supporting the proposed Sprint equipment.

***HDG was not able to confirm the roof construction at the time of our visit. No building plans or as-built drawings were available for our reference. HDG is under the assumption that the steel platform has been located over structurally adequate beams or columns to support the existing/proposed loading. However, HDG recommends the client/contractor to verify the roof construction prior to any equipment installation***

***Reference sheet no. 5 of this report for additional limitations and assumptions. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible. Further design may be required.***

**Penthouse Roof Structure:**
Based on our evaluation, we have determined that the penthouse roof **IS CAPABLE** of supporting the proposed ballast mount.

**HDG recommends that the existing ballast mount be replaced with a new ballast mount as shown in the latest HDG construction drawings.**

Hudson Design Group LLC

A summary of the proposed support types and attachment locations are as follows:

**(2) 60ECv2 Battery Back-Up Cabinet (Wt. = 2830 lbs. /each)...**Supported by the existing equipment platform on the roof.

**(1) Alcatel-Lucent 9928 Outdoor Cabinet (Wt. = 1390 lbs.)...**Supported by the existing equipment platform on the roof.

**(3) New APXVSPP18-C-A20 (800/1900 MHz) RFS antennas (One per sector) (Wt. = 57 lbs. /each)...**Supported Mounted inside the proposed FRP canister.

**(3) FD-RRH-2x50-800 (1 per sector) (Wt. = 50 lbs. /each)...**Mounted on new pipes secured to the proposed ballast mount.

**(3) FD-RRH-4x40-1900 (1 per sector) (Wt. = 50 lbs. /each)...**Mounted on new pipes secured to the proposed ballast mount.

Referenced documents are attached.

Hudson Design Group LLC

**DESIGN CRITERIA:**

1. International Building Code 2009, ASCE 7-10 Minimum Design Loads for Buildings and Other Structures.

   Wind Analysis:

| | | |
|---|---|---|
| Reference Wind Speed: | 100 MPH | (FIG 26.5-1C; ASCE 7-10) |
| Category: | C | (26.7.3; ASCE 7 -10) |
| Gust Effect Factor (G): | 0.85 | (26.9.1; ASCE 7-10) |
| Force Coefficient (Cf): | Varies | (FIG 29.5-1 thru 29.5-3; ASCE 7-10) |
| F = qz * G * Cf * Af: | | (Equation 29.5-1; ASCE 7-10) |

   Snow Loading:

| | | |
|---|---|---|
| Ground Snow Load (Pg): | 50 psf | (FIG 7-1; ASCE 7-10) |
| Flat Roof Snow Load (Pf): | 31.5 psf | |

   Pf = 0.7 * Ce * Ct * I * Pg (Equation 7.3-1; ASCE 7-10)

   *Ce=0.9; Ct=1.0; I=1.0*

2. EIA/TIA -222- G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

| | |
|---|---|
| County: | Cumberland |
| Wind Load: | 100 mph |

3. Approximate height above grade to antennas:

   59'-0"± (Center of Canister)

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## BUILDING/PENTHOUSE ROOF CONSTRUCTION:

Building plans were not available at the time of our site visit; therefore the roof construction is unknown.

## ANTENNA SUPPORT RECOMMENDATIONS:

HDG recommends the new LTE antennas be mounted inside the proposed non-penetrating ballast tripod mount on the penthouse roof.

## RRH SUPPORT RECOMMENDATIONS:

HDG recommends the new RRH's be mounted on new steel pipes secured to the proposed non-penetrating ballast tripod mount.

Limitations and assumptions:

1. Reference the latest HDG drawings for all equipment locations and details.
2. Mount all equipment per manufacturer's specifications.
3. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
4. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
5. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
6. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.
7. Mount all equipment per manufacturer's specifications.
8. HDG recommends adding tie-downs to the new ballast mounts.
9. HDG is under the assumption that the equipment platform has been located over structurally adequate roof supports (i.e. beam, column or bearing wall). HDG was not able to verify the roof structure and its components at the time of our visit.
10. HDG recommends locating the ballast mount over existing reinforcement for adequate support.

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**ANTENNA LOCATIONS:**

**Photo 1:** Sample photo showing the existing ballasted canister to be removed and replaced.

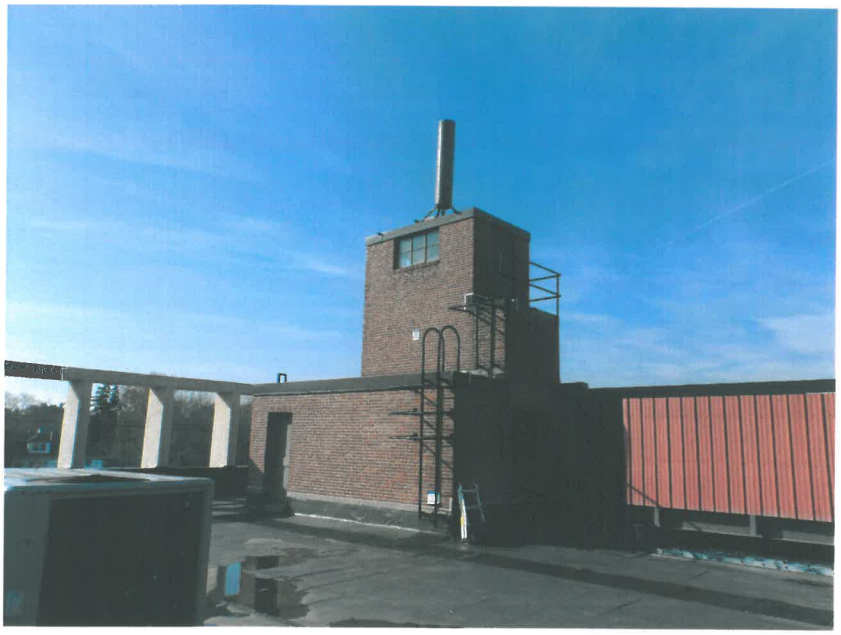

**Photo 2:** Sample photo showing the existing ballasted canister to be removed and replaced.

**EXISTING EQUIPMENT:**

**Photo 4:** Sample photo showing the existing Sprint equipment platform.

**Photo 5:** Sample photo showing the existing Sprint equipment.

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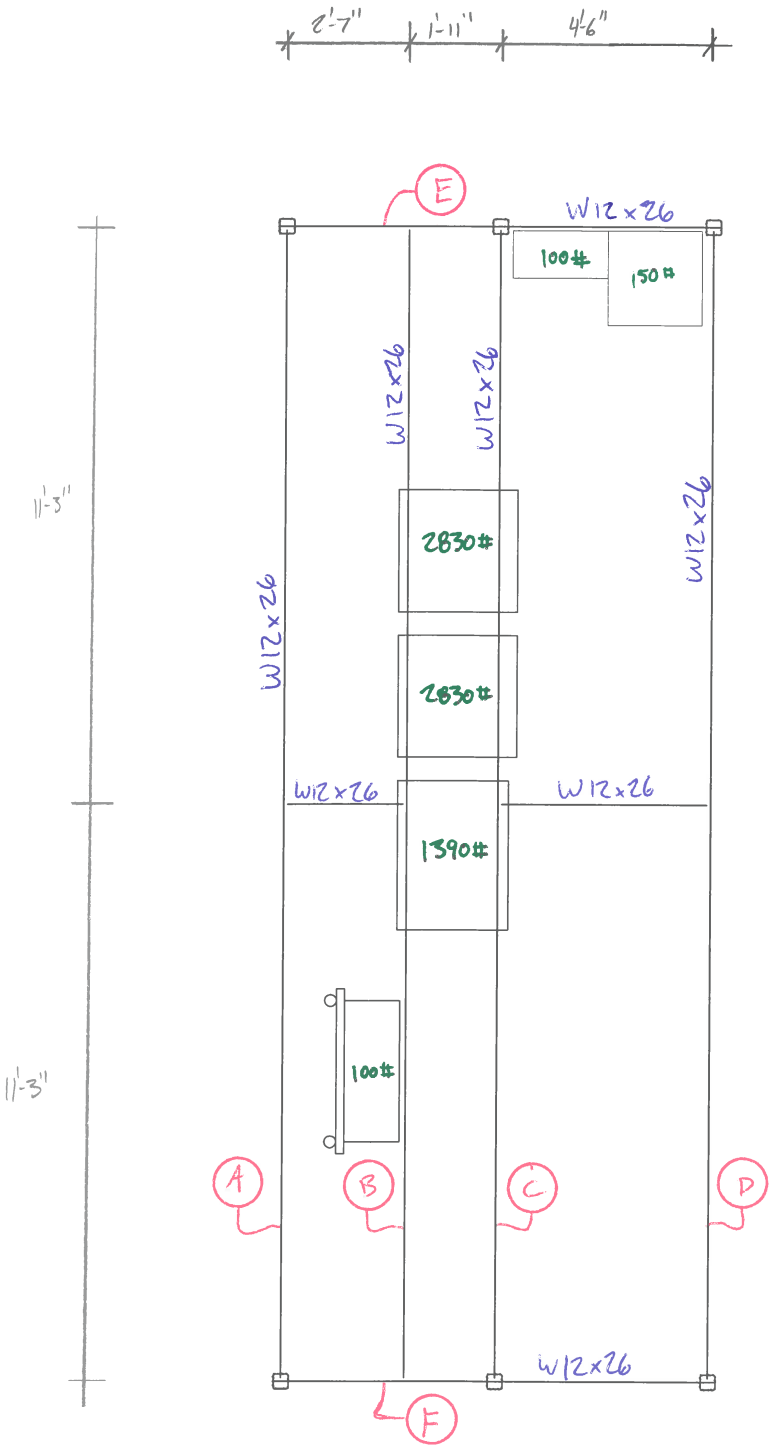
# Calculations

BS62xC009
12/5/12
BL



Project: BS62XC009

Location: Beam A
Multi-Loaded Multi-Span Beam
[2009 International Building Code(AISC 13th Ed ASD)]
A36 W12x26 x 22.5 FT
Section Adequate By: 933.2%
Controlling Factor: Moment

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| DEFLECTIONS | Center | |
|---|---|---|
| Live Load | 0.03 | IN L/8658 |
| Dead Load | 0.07 | in |
| Total Load | 0.10 | IN L/2721 |

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

| REACTIONS | A | B |
|---|---|---|
| Live Load | 360 lb | 360 lb |
| Dead Load | 761 lb | 785 lb |
| Total Load | 1121 lb | 1145 lb |
| Bearing Length | 0.68 in | 0.68 in |

| BEAM DATA | Center |
|---|---|
| Span Length | 22.5 ft |
| Unbraced Length-Top | 0 ft |
| Unbraced Length-Bottom | 22.5 ft |

**STEEL PROPERTIES**
W12x26 - A36

**Properties:**

| | | |
|---|---|---|
| Yield Stress: | Fy = | 36 ksi |
| Modulus of Elasticity: | E = | 29000 ksi |
| Depth: | d = | 12.2 in |
| Web Thickness: | tw = | 0.23 in |
| Flange Width: | bf = | 6.49 in |
| Flange Thickness: | tf = | 0.38 in |
| Distance to Web Toe of Fillet: | k = | 0.68 in |
| Moment of Inertia About X-X Axis: | Ix = | 204 in4 |
| Section Modulus About X-X Axis: | Sx = | 33.4 in3 |
| Plastic Section Modulus About X-X Axis: | Zx = | 37.2 in3 |

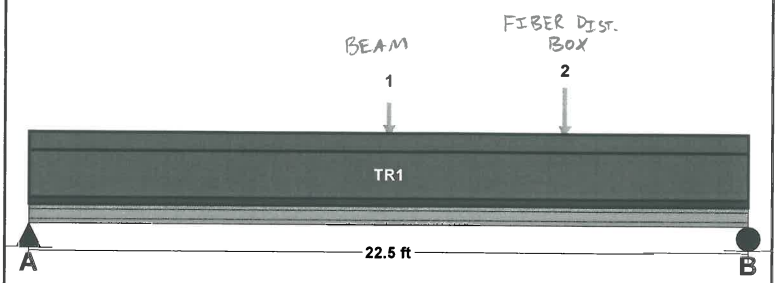
**Design Properties per AISC 13th Edition Steel Manual:**

| | | |
|---|---|---|
| Flange Buckling Ratio: | FBR = | 8.54 |
| Allowable Flange Buckling Ratio: | AFBR = | 10.79 |
| Web Buckling Ratio: | WBR = | 47.13 |
| Allowable Web Buckling Ratio: | AWBR = | 106.72 |
| Controlling Unbraced Length: | Lb = | 0 ft |
| Limiting Unbraced Length - for lateral-torsional buckling: | Lp = | 6.29 ft |
| Nominal Flexural Strength w/ safety factor: | Mn = | 66826 ft-lb |
| Controlling Equation: | F2-1 | |
| Web height to thickness ratio: | h/tw = | 47.13 |
| Limiting height to thickness ratio for eqn. G2-2: | h/tw-limit = | 63.58 |
| Cv Factor: | Cv = | 1 |
| Controlling Equation: | G2-2 | |
| Nominal Shear Strength w/ safety factor: | Vn = | 40406 lb |

**Controlling Moment:** 6468 ft-lb
11.25 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
**Controlling Shear:** -1145 lb
22.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

| Comparisons with required sections: | Req'd | Provided |
|---|---|---|
| Moment of Inertia (deflection): | 18 in4 | 204 in4 |
| Moment: | 6468 ft-lb | 66826 ft-lb |
| Shear: | -1145 lb | 40406 lb |

**LOADING DIAGRAM**




| UNIFORM LOADS | Center |
|---|---|
| Uniform Live Load | 0 plf |
| Uniform Dead Load | 0 plf |
| Beam Self Weight | 26 plf |
| Total Uniform Load | 26 plf |

| POINT LOADS - CENTER SPAN | One | Two |
|---|---|---|
| Load Number | | |
| Live Load | 0 lb | 0 lb |
| Dead Load | 33 lb | 50 lb |
| Location | 11.25 ft | 16.75 ft |

| TRAPEZOIDAL LOADS - CENTER SPAN | One | Two |
|---|---|---|
| Load Number | | |
| Left Live Load | 32 plf | 0 plf |
| Left Dead Load | 19 plf | 20 plf |
| Right Live Load | 32 plf | 0 plf |
| Right Dead Load | 19 plf | 20 plf |
| Load Start | 0 ft | 0 ft |
| Load End | 22.5 ft | 22.5 ft |
| Load Length | 22.5 ft | 22.5 ft |

LOAD BREAKDOWN

POINT LOADS

$\frac{-\text{DEAD}}{(\text{BEAM})} = \frac{\text{W12x26}\,(2.5\text{ft})}{2} = 32.5\# \Rightarrow \text{SAY } 33\#$

$\frac{-\text{DEAD}}{(\text{FIBER BOX})} = \frac{100\#}{2\ \text{BEAMS}} = 50\#$

TRAPEZOIDAL LOADS

$\frac{-\text{LIVE}}{(\text{SERVICE})} = \frac{2.5\text{ft}}{2} \times 25\text{psf} = 31.25\text{plf} \Rightarrow \text{SAY } 32\text{plf}$

$\frac{-\text{DEAD}}{(\text{GRATING})} = \frac{2.5\text{ft}}{2} \times 15\text{psf} = 18.75 \Rightarrow \text{SAY } 19\text{plf}$

$\frac{-\text{DEAD}}{(\text{SCREEN WALL})} = 20\text{plf}$

Project: BS62XC009

Location: Beam B
Multi-Loaded Multi-Span Beam
[2009 International Building Code(AISC 13th Ed ASD)]
A36 W12x26 x 22.5 FT
Section Adequate By: 184.3%
Controlling Factor: Moment

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| DEFLECTIONS | Center |
|---|---|
| Live Load | 0.06 IN L/4860 |
| Dead Load | 0.28 in |
| Total Load | 0.34 IN L/799 |
| Live Load Deflection Criteria: L/360 | Total Load Deflection Criteria: L/240 |

| REACTIONS | A | B |
|---|---|---|
| Live Load | 641 lb | 641 lb |
| Dead Load | 2765 lb | 2193 lb |
| Total Load | 3406 lb | 2834 lb |
| Bearing Length | 0.68 in | 0.68 in |

| BEAM DATA | Center |
|---|---|
| Span Length | 22.5 ft |
| Unbraced Length-Top | 0 ft |
| Unbraced Length-Bottom | 22.5 ft |

**STEEL PROPERTIES**
W12x26 - A36

**Properties:**

| | | |
|---|---|---|
| Yield Stress: | Fy = | 36 ksi |
| Modulus of Elasticity: | E = | 29000 ksi |
| Depth: | d = | 12.2 in |
| Web Thickness: | tw = | 0.23 in |
| Flange Width: | bf = | 6.49 in |
| Flange Thickness: | tf = | 0.38 in |
| Distance to Web Toe of Fillet: | k = | 0.68 in |
| Moment of Inertia About X-X Axis: | Ix = | 204 in4 |
| Section Modulus About X-X Axis: | Sx = | 33.4 in3 |
| Plastic Section Modulus About X-X Axis: | Zx = | 37.2 in3 |

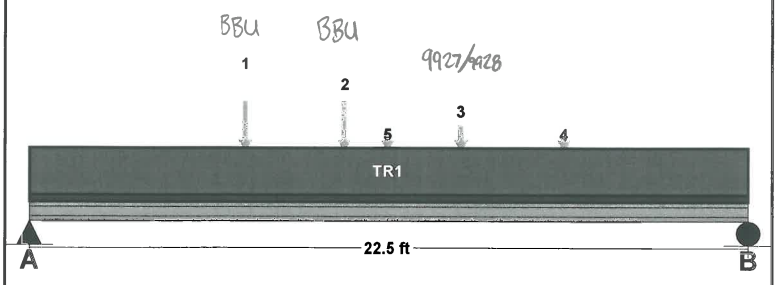
**Design Properties per AISC 13th Edition Steel Manual:**

| | | |
|---|---|---|
| Flange Buckling Ratio: | FBR = | 8.54 |
| Allowable Flange Buckling Ratio: | AFBR = | 10.79 |
| Web Buckling Ratio: | WBR = | 47.13 |
| Allowable Web Buckling Ratio: | AWBR = | 106.72 |
| Controlling Unbraced Length: | Lb = | 0 ft |
| Limiting Unbraced Length - for lateral-torsional buckling: | Lp = | 6.29 ft |
| Nominal Flexural Strength w/ safety factor: | Mn = | 66826 ft-lb |
| Controlling Equation: | F2-1 | |
| Web height to thickness ratio: | h/tw = | 47.13 |
| Limiting height to thickness ratio for eqn. G2-2: | h/tw-limit = | 63.58 |
| Cv Factor: | Cv = | 1 |
| Controlling Equation: | G2-2 | |
| Nominal Shear Strength w/ safety factor: | Vn = | 40406 lb |

**Controlling Moment:** 23505 ft-lb
9.9 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
**Controlling Shear:** 3406 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

| Comparisons with required sections: | Req'd | Provided |
|---|---|---|
| Moment of Inertia (deflection): | 61.29 in4 | 204 in4 |
| Moment: | 23505 ft-lb | 66826 ft-lb |
| Shear: | 3406 lb | 40406 lb |

**LOADING DIAGRAM**




| UNIFORM LOADS | Center |
|---|---|
| Uniform Live Load | 0 plf |
| Uniform Dead Load | 0 plf |
| Beam Self Weight | 26 plf |
| Total Uniform Load | 26 plf |

| POINT LOADS - CENTER SPAN | | | | | |
|---|---|---|---|---|---|
| Load Number | One | Two | Three | Four | Five |
| Live Load | 0 lb | 0 lb | 0 lb | 0 lb | 0 lb |
| Dead Load | 1415 lb | 1415 lb | 695 lb | 50 lb | 33 lb |
| Location | 6.75 ft | 9.88 ft | 13.54 ft | 16.75 ft | 11.25 ft |

| TRAPEZOIDAL LOADS - CENTER SPAN | |
|---|---|
| Load Number | One |
| Left Live Load | 57 plf |
| Left Dead Load | 34 plf |
| Right Live Load | 57 plf |
| Right Dead Load | 34 plf |
| Load Start | 0 ft |
| Load End | 22.5 ft |
| Load Length | 22.5 ft |

LOAD BREAK DOWN

POINT LOADS

$-\frac{\text{DEAD}}{(\text{BEAM})} = \frac{\text{W12x26}\ (22.5\text{ft})}{2} = 32.5\# \Rightarrow \text{SAY } 33\#$

$-\frac{\text{DEAD}}{(\text{FIBER BOX})} = \frac{100\#}{2\ \text{BEAMS}} = 50\#$

TRAPEZOIDAL LOADS

$-\frac{\text{LIVE}}{(\text{SERVICE})} = \left(\frac{2.5\text{ft}}{2} + \frac{2\text{ft}}{2}\right) \times 25\text{psf} = 56.25\text{plf} \Rightarrow \text{SAY } 57\text{plf}$

$-\frac{\text{DEAD}}{(\text{GRATING})} = \left(\frac{2.5\text{ft}}{2} + \frac{2\text{ft}}{2}\right) \times 15\text{psf} = 33.75\text{plf} \Rightarrow \text{SAY } 34\text{plf}$

Project: BS62XC009

Location: Beam C
Multi-Loaded Multi-Span Beam
[2009 International Building Code(AISC 13th Ed ASD)]
A36 W12x26 x 22.5 FT
Section Adequate By: 157.0%
Controlling Factor: Moment

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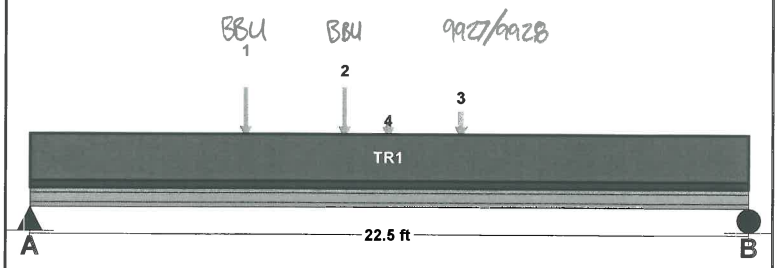
| DEFLECTIONS | Center |
|---|---|
| Live Load | 0.08 IN L/3379 |
| Dead Load | 0.30 in |
| Total Load | 0.38 IN L/717 |

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

| REACTIONS | A | B |
|---|---|---|
| Live Load | 923 lb | 923 lb |
| Dead Load | 2934 lb | 2337 lb |
| Total Load | 3857 lb | 3260 lb |
| Bearing Length | 0.68 in | 0.68 in |

| BEAM DATA | Center |
|---|---|
| Span Length | 22.5 ft |
| Unbraced Length-Top | 0 ft |
| Unbraced Length-Bottom | 22.5 ft |

**LOADING DIAGRAM**




**STEEL PROPERTIES**
W12x26 - A36

**Properties:**

| | | | |
|---|---|---|---|
| Yield Stress: | Fy = | 36 | ksi |
| Modulus of Elasticity: | E = | 29000 | ksi |
| Depth: | d = | 12.2 | in |
| Web Thickness: | tw = | 0.23 | in |
| Flange Width: | bf = | 6.49 | in |
| Flange Thickness: | tf = | 0.38 | in |
| Distance to Web Toe of Fillet: | k = | 0.68 | in |
| Moment of Inertia About X-X Axis: | Ix = | 204 | in4 |
| Section Modulus About X-X Axis: | Sx = | 33.4 | in3 |
| Plastic Section Modulus About X-X Axis: | Zx = | 37.2 | in3 |

**Design Properties per AISC 13th Edition Steel Manual:**

| | | | |
|---|---|---|---|
| Flange Buckling Ratio: | FBR = | 8.54 | |
| Allowable Flange Buckling Ratio: | AFBR = | 10.79 | |
| Web Buckling Ratio: | WBR = | 47.13 | |
| Allowable Web Buckling Ratio: | AWBR = | 106.72 | |
| Controlling Unbraced Length: | Lb = | 0 | ft |
| Limiting Unbraced Length - for lateral-torsional buckling: | Lp = | 6.29 | ft |
| Nominal Flexural Strength w/ safety factor: | Mn = | 66826 | ft-lb |
| Controlling Equation: | F2-1 | | |
| Web height to thickness ratio: | h/tw = | 47.13 | |
| Limiting height to thickness ratio for eqn. G2-2: | h/tw-limit = | 63.58 | |
| Cv Factor: | Cv = | 1 | |
| Controlling Equation: | G2-2 | | |
| Nominal Shear Strength w/ safety factor: | Vn = | 40406 | lb |

**Controlling Moment:** 26002 ft-lb
9.9 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
**Controlling Shear:** 3857 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

| Comparisons with required sections: | Req'd | Provided |
|---|---|---|
| Moment of Inertia (deflection): | 68.25 in4 | 204 in4 |
| Moment: | 26002 ft-lb | 66826 ft-lb |
| Shear: | 3857 lb | 40406 lb |

| UNIFORM LOADS | Center |
|---|---|
| Uniform Live Load | 0 plf |
| Uniform Dead Load | 0 plf |
| Beam Self Weight | 26 plf |
| Total Uniform Load | 26 plf |

**POINT LOADS - CENTER SPAN**

| Load Number | One | Two | Three | Four |
|---|---|---|---|---|
| Live Load | 0 lb | 0 lb | 0 lb | 0 lb |
| Dead Load | 1415 lb | 1415 lb | 695 lb | 59 lb |
| Location | 6.75 ft | 9.88 ft | 13.54 ft | 11.25 ft |

**TRAPEZOIDAL LOADS - CENTER SPAN**

| Load Number | One |
|---|---|
| Left Live Load | 82 plf |
| Left Dead Load | 49 plf |
| Right Live Load | 82 plf |
| Right Dead Load | 49 plf |
| Load Start | 0 ft |
| Load End | 22.5 ft |
| Load Length | 22.5 ft |

LOAD BREAKDOWN

POINT LOADS:

$\frac{-\text{DEAD}}{(\text{BEAM})} = \frac{W12x26(4.5ft)}{2} = 58.5\# \Rightarrow$ USE 59 #

TRAPEZOIDAL LOADS

$\frac{-\text{LIVE}}{(\text{SERVICE})} = \left(\frac{4.5ft}{2} + \frac{2ft}{2}\right) \times 25psf = 81.25plf \Rightarrow$ USE 82plf

$\frac{-\text{DEAD}}{(\text{GRATING})} = \left(\frac{4.5ft}{2} + \frac{2ft}{2}\right) \times 15psf = 48.75plf \Rightarrow$ USE 49plf

Project: BS62XC009

Location: Beam D
Multi-Loaded Multi-Span Beam
[2009 International Building Code(AISC 13th Ed ASD)]
A36 W12x26 x 22.5 FT
Section Adequate By: 642.4%
Controlling Factor: Moment

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| DEFLECTIONS | Center | |
|---|---|---|
| Live Load | 0.06 | IN L/4860 |
| Dead Load | 0.08 | in |
| Total Load | 0.14 | IN L/1962 |

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

| REACTIONS | A | B |
|---|---|---|
| Live Load | 641 lb | 641 lb |
| Dead Load | 930 lb | 930 lb |
| Total Load | 1571 lb | 1571 lb |
| Bearing Length | 0.68 in | 0.68 in |

| BEAM DATA | Center |
|---|---|
| Span Length | 22.5 ft |
| Unbraced Length-Top | 0 ft |
| Unbraced Length-Bottom | 22.5 ft |

**STEEL PROPERTIES**
W12x26 - A36

**Properties:**

| | | |
|---|---|---|
| Yield Stress: | Fy = | 36 ksi |
| Modulus of Elasticity: | E = | 29000 ksi |
| Depth: | d = | 12.2 in |
| Web Thickness: | tw = | 0.23 in |
| Flange Width: | bf = | 6.49 in |
| Flange Thickness: | tf = | 0.38 in |
| Distance to Web Toe of Fillet: | k = | 0.68 in |
| Moment of Inertia About X-X Axis: | Ix = | 204 in4 |
| Section Modulus About X-X Axis: | Sx = | 33.4 in3 |
| Plastic Section Modulus About X-X Axis: | Zx = | 37.2 in3 |

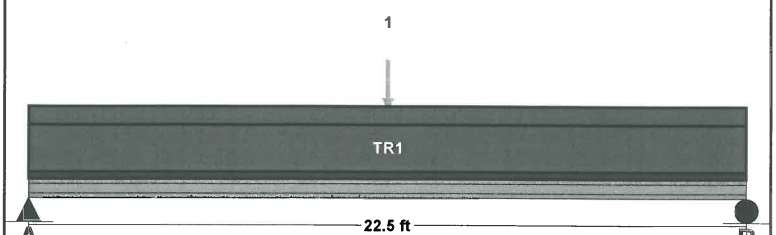
**Design Properties per AISC 13th Edition Steel Manual:**

| | | |
|---|---|---|
| Flange Buckling Ratio: | FBR = | 8.54 |
| Allowable Flange Buckling Ratio: | AFBR = | 10.79 |
| Web Buckling Ratio: | WBR = | 47.13 |
| Allowable Web Buckling Ratio: | AWBR = | 106.72 |
| Controlling Unbraced Length: | Lb = | 0 ft |
| Limiting Unbraced Length - for lateral-torsional buckling: | Lp = | 6.29 ft |
| Nominal Flexural Strength w/ safety factor: | Mn = | 66826 ft-lb |
| Controlling Equation: | F2-1 | |
| Web height to thickness ratio: | h/tw = | 47.13 |
| Limiting height to thickness ratio for eqn. G2-2: | h/tw-limit = | 63.58 |
| Cv Factor: | Cv = | 1 |
| Controlling Equation: | G2-2 | |
| Nominal Shear Strength w/ safety factor: | Vn = | 40406 lb |

**Controlling Moment:** 9001 ft-lb
11.25 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
**Controlling Shear:** 1571 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

| Comparisons with required sections: | Req'd | Provided |
|---|---|---|
| Moment of Inertia (deflection): | 24.95 in4 | 204 in4 |
| Moment: | 9001 ft-lb | 66826 ft-lb |
| Shear: | 1571 lb | 40406 lb |

**LOADING DIAGRAM**




| UNIFORM LOADS | Center |
|---|---|
| Uniform Live Load | 0 plf |
| Uniform Dead Load | 0 plf |
| Beam Self Weight | 26 plf |
| Total Uniform Load | 26 plf |

| POINT LOADS - CENTER SPAN | |
|---|---|
| Load Number | One |
| Live Load | 0 lb |
| Dead Load | 59 lb |
| Location | 11.25 ft |

| TRAPEZOIDAL LOADS - CENTER SPAN | | |
|---|---|---|
| Load Number | One | Two |
| Left Live Load | 57 plf | 0 plf |
| Left Dead Load | 34 plf | 20 plf |
| Right Live Load | 57 plf | 0 plf |
| Right Dead Load | 34 plf | 20 plf |
| Load Start | 0 ft | 0 ft |
| Load End | 22.5 ft | 22.5 ft |
| Load Length | 22.5 ft | 22.5 ft |

LOAD BREAKDOWN

POINT LOADS

$\frac{-\text{DEAD}}{(\text{BEAM})} = \frac{W12\times26\ (4.5ft)}{2} = 58.5\# \Rightarrow$ USE 59#

TRAPEZOIDAL LOADS

$\frac{-\text{LIVE}}{(\text{SERVICE})} = \frac{4.5ft}{2} \times 25psf = 56.25plf \Rightarrow$ USE 57plf

$\frac{-\text{DEAD}}{(\text{GRATING})} = \frac{4.5ft}{2} \times 15psf = 33.75plf \Rightarrow$ USE 34 plf

$\frac{-\text{DEAD}}{(\text{SCREENWALL})} = 20plf$

Project: BS62XC009

Location: Beam E
Multi-Loaded Multi-Span Beam
[2009 International Building Code(AISC 13th Ed ASD)]
A992-50 W12x26 x 9.0 FT (4.5 + 4.5)
Section Adequate By: 801.6%
Controlling Factor: Shear

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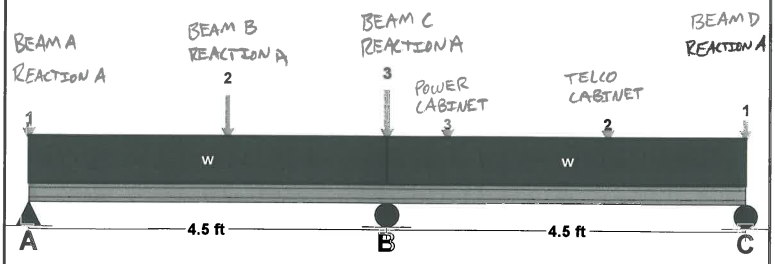
| DEFLECTIONS | Center | | Right | |
|---|---|---|---|---|
| Live Load | 0.00 | IN L/MAX | 0.00 | IN L/MAX |
| Dead Load | 0.00 | in | 0.00 | in |
| Total Load | 0.00 | IN L/MAX | 0.00 | IN L/MAX |

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

| REACTIONS | A | B | C |
|---|---|---|---|
| Live Load | 583 lb | 1402 lb | 579 lb |
| Dead Load | 1783 lb | 5439 lb | 832 lb |
| Total Load | 2367 lb | 6841 lb | 1411 lb |
| Bearing Length | 0.68 in | 0.68 in | 0.68 in |

| BEAM DATA | Center | Right |
|---|---|---|
| Span Length | 4.5 ft | 4.5 ft |
| Unbraced Length-Top | 0 ft | 0 ft |
| Unbraced Length-Bottom | 4.5 ft | 4.5 ft |

**LOADING DIAGRAM**




| UNIFORM LOADS | Center | Right |
|---|---|---|
| Uniform Live Load | 0 plf | 0 plf |
| Uniform Dead Load | 20 plf | 20 plf |
| Beam Self Weight | 26 plf | 26 plf |
| Total Uniform Load | 46 plf | 46 plf |

| POINT LOADS - CENTER SPAN | | | |
|---|---|---|---|
| Load Number | One | Two | Three |
| Live Load | 360 lb | 641 lb | 923 lb |
| Dead Load | 761 lb | 2765 lb | 2934 lb |
| Location | 0 ft | 2.5 ft | 4.5 ft |
| **RIGHT SPAN** | | | |
| Load Number | One | Two | Three |
| Live Load | 641 lb | 0 lb | 0 lb |
| Dead Load | 930 lb | 150 lb | 100 lb |
| Location | 4.5 ft | 2.75 ft | 0.75 ft |

**STEEL PROPERTIES**
W12x26 - A992-50

**Properties:**

| | | | |
|---|---|---|---|
| Yield Stress: | Fy = | 50 | ksi |
| Modulus of Elasticity: | E = | 29000 | ksi |
| Depth: | d = | 12.2 | in |
| Web Thickness: | tw = | 0.23 | in |
| Flange Width: | bf = | 6.49 | in |
| Flange Thickness: | tf = | 0.38 | in |
| Distance to Web Toe of Fillet: | k = | 0.68 | in |
| Moment of Inertia About X-X Axis: | Ix = | 204 | in4 |
| Section Modulus About X-X Axis: | Sx = | 33.4 | in3 |
| Plastic Section Modulus About X-X Axis: | Zx = | 37.2 | in3 |

**Design Properties per AISC 13th Edition Steel Manual:**

| | | | |
|---|---|---|---|
| Flange Buckling Ratio: | FBR = | 8.54 | |
| Allowable Flange Buckling Ratio: | AFBR = | 9.15 | |
| Web Buckling Ratio: | WBR = | 47.13 | |
| Allowable Web Buckling Ratio: | AWBR = | 90.55 | |
| Controlling Unbraced Length: | Lb = | 0 | ft |
| Limiting Unbraced Length - for lateral-torsional buckling: | Lp = | 5.33 | ft |
| Nominal Flexural Strength w/ safety factor: | Mn = | 92814 | ft-lb |
| Controlling Equation: | F2-1 | | |
| Web height to thickness ratio: | h/tw = | 47.13 | |
| Limiting height to thickness ratio for eqn. G2-2: | h/tw-limit = | 53.95 | |
| Cv Factor: | Cv = | 1 | |
| Controlling Equation: | G2-2 | | |
| Nominal Shear Strength w/ safety factor: | Vn = | 56120 | lb |

LOAD BREAKDOWN

UNIFORM LOADS

-DEAD (SCREENWALL) = 20 plf

**Controlling Moment:** 2942 ft-lb
2.48 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2, 3
**Controlling Shear:** -6224 lb
5.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

| Comparisons with required sections: | Req'd | Provided |
|---|---|---|
| Moment of Inertia (deflection): | 1.19 in4 | 204 in4 |
| Moment: | 2942 ft-lb | 92814 ft-lb |
| Shear: | -6224 lb | 56120 lb |

Project: BS62XC009

Location: Beam F
Multi-Loaded Multi-Span Beam
[2009 International Building Code(AISC 13th Ed ASD)]
A992-50 W12x26 x 9.0 FT (4.5 + 4.5)
Section Adequate By: 971.8%
Controlling Factor: Shear

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| DEFLECTIONS | Center | | Right | |
|---|---|---|---|---|
| Live Load | 0.00 | IN L/MAX | 0.00 | IN L/MAX |
| Dead Load | 0.00 | in | 0.00 | in |
| Total Load | 0.00 | IN L/MAX | 0.00 | IN L/MAX |

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

| REACTIONS | A | B | C |
|---|---|---|---|
| Live Load | 583 lb | 1402 lb | 579 lb |
| Dead Load | 1627 lb | 4235 lb | 797 lb |
| Total Load | 2210 lb | 5637 lb | 1376 lb |
| Bearing Length | 0.68 in | 0.68 in | 0.68 in |

| BEAM DATA | Center | Right |
|---|---|---|
| Span Length | 4.5 ft | 4.5 ft |
| Unbraced Length-Top | 0 ft | 0 ft |
| Unbraced Length-Bottom | 4.5 ft | 4.5 ft |

**STEEL PROPERTIES**
W12x26 - A992-50

**Properties:**

| | | | |
|---|---|---|---|
| Yield Stress: | Fy = | 50 | ksi |
| Modulus of Elasticity: | E = | 29000 | ksi |
| Depth: | d = | 12.2 | in |
| Web Thickness: | tw = | 0.23 | in |
| Flange Width: | bf = | 6.49 | in |
| Flange Thickness: | tf = | 0.38 | in |
| Distance to Web Toe of Fillet: | k = | 0.68 | in |
| Moment of Inertia About X-X Axis: | Ix = | 204 | in4 |
| Section Modulus About X-X Axis: | Sx = | 33.4 | in3 |
| Plastic Section Modulus About X-X Axis: | Zx = | 37.2 | in3 |

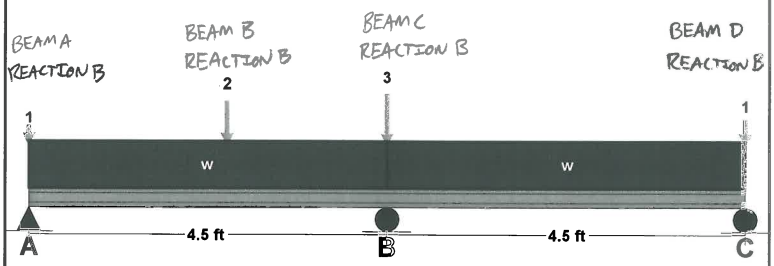
**Design Properties per AISC 13th Edition Steel Manual:**

| | | | |
|---|---|---|---|
| Flange Buckling Ratio: | FBR = | 8.54 | |
| Allowable Flange Buckling Ratio: | AFBR = | 9.15 | |
| Web Buckling Ratio: | WBR = | 47.13 | |
| Allowable Web Buckling Ratio: | AWBR = | 90.55 | |
| Controlling Unbraced Length: | Lb = | 0 | ft |
| Limiting Unbraced Length - for lateral-torsional buckling: | Lp = | 5.33 | ft |
| Nominal Flexural Strength w/ safety factor: | Mn = | 92814 | ft-lb |
| Controlling Equation: | F2-1 | | |
| Web height to thickness ratio: | h/tw = | 47.13 | |
| Limiting height to thickness ratio for eqn. G2-2: | h/tw-limit = | 53.95 | |
| Cv Factor: | Cv = | 1 | |
| Controlling Equation: | G2-2 | | |
| Nominal Shear Strength w/ safety factor: | Vn = | 56120 | lb |

**Controlling Moment:** 2495 ft-lb
2.48 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2, 3
**Controlling Shear:** -5236 lb
5.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

| Comparisons with required sections: | Req'd | Provided |
|---|---|---|
| Moment of Inertia (deflection): | 1.01 in4 | 204 in4 |
| Moment: | 2495 ft-lb | 92814 ft-lb |
| Shear: | -5236 lb | 56120 lb |

**LOADING DIAGRAM**




| UNIFORM LOADS | Center | | Right | |
|---|---|---|---|---|
| Uniform Live Load | 0 | plf | 0 | plf |
| Uniform Dead Load | 20 | plf | 20 | plf |
| Beam Self Weight | 26 | plf | 26 | plf |
| Total Uniform Load | 46 | plf | 46 | plf |

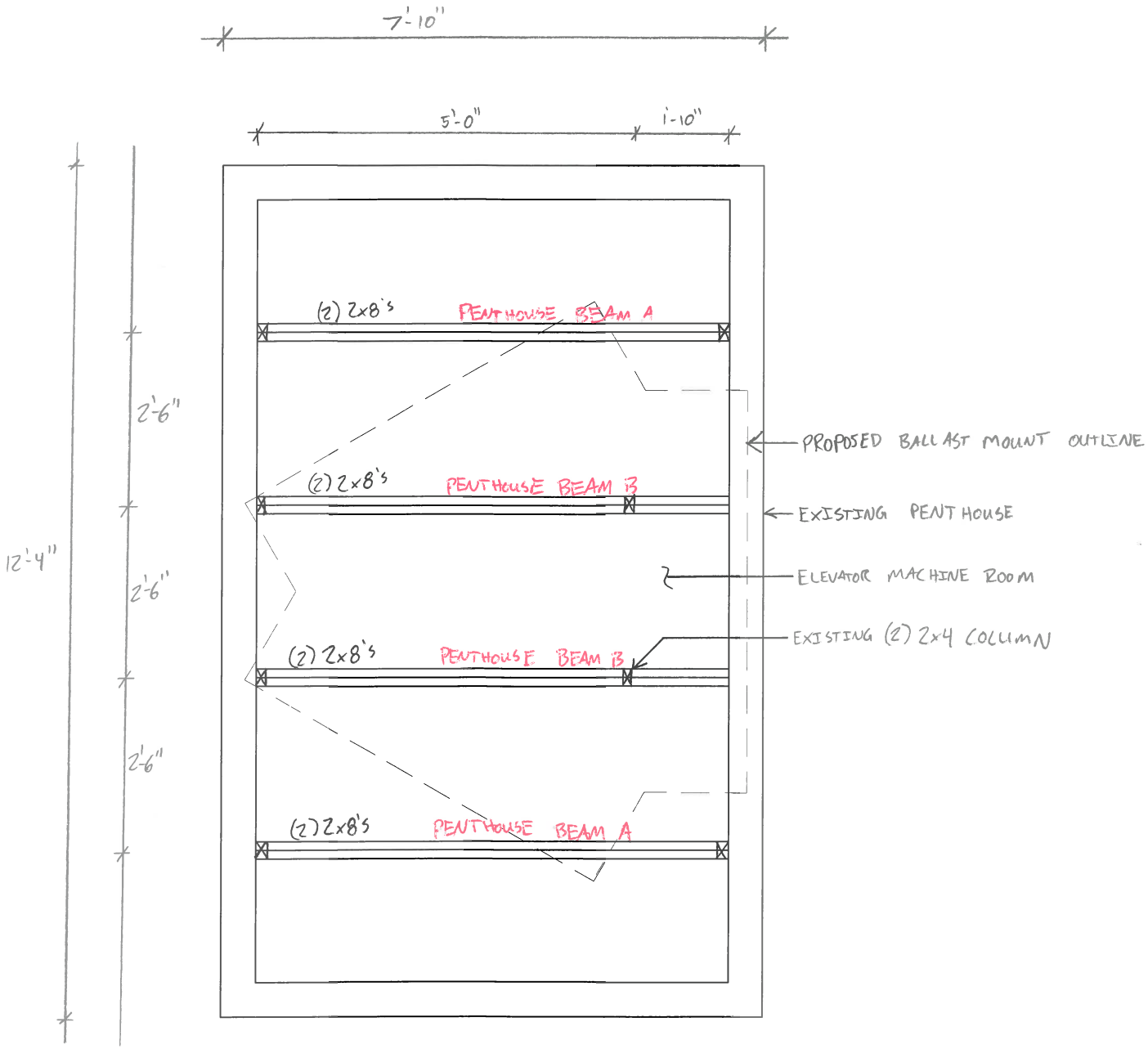
| POINT LOADS - CENTER SPAN | | | |
|---|---|---|---|
| Load Number | One | Two | Three |
| Live Load | 360 lb | 641 lb | 923 lb |
| Dead Load | 785 lb | 2193 lb | 2337 lb |
| Location | 0 ft | 2.5 ft | 4.5 ft |

| RIGHT SPAN | |
|---|---|
| Load Number | One |
| Live Load | 641 lb |
| Dead Load | 930 lb |
| Location | 4.5 ft |

LOAD BREAKDOWN

REFER TO "BEAM E"

BS62XC009
12/10/12
BL



DATE: 12/10/12
Project Name: 509 FOREST AVE
Project No.: BS62XC009
Design By: BL Chk'd By: MSC Page 1 of 2

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WIND LOAD ANALYSIS (IBC 2009)

- STRUCTURE CLASSIFICATION = CLASS II
- EXPOSURE CATEGORY = C
- BASIC WIND SPEED = 100 mph

$P_{NET} = 0.00256\ V^2\ k_z\ C_{NET}\ [I\ k_{ZT}]$ (IBC 2009 [EQUATION 16-34])

$V = 100$ MPH
$k_z = 1.13$ [TABLE 27.3-1 ASCE 7-10]
$C_{NET} = 0.681$ [TABLE 1609.6.2(2) INTERPOLATION]
$I = 1.0$
$k_{ZT} = 1.0$ [ASCE 28.6.2]

$P_{NET} = 0.00256\ (100\ MPH)^2\ (1.13)(0.681)(1)(1) = 19.7\ psf$

- APPURTENANCE:

- CANISTER = 36"ϕ x 78" = 17.33 ft²
- RRH 800 = 19.7"H x 13"W = 1.78 ft²
- RRH 1900 = 25.1"H x 11.1"W = 1.93 ft²

- WIND FORCES: F = P x A

- CANISTER = 19.7 psf x 17.33 ft² = 341.4 #
- RRH 800 = 19.7 psf x 1.78 ft² = 35.1 #
- RRH 1900 = 19.7 psf x 1.93 ft² = 38.02 #

157132

DATE: 12/10/12
Project Name: 509 FOREST AVE
Project No.: BS62XC009
Design By: BL Chk'd By: MSC Page 2 of 2

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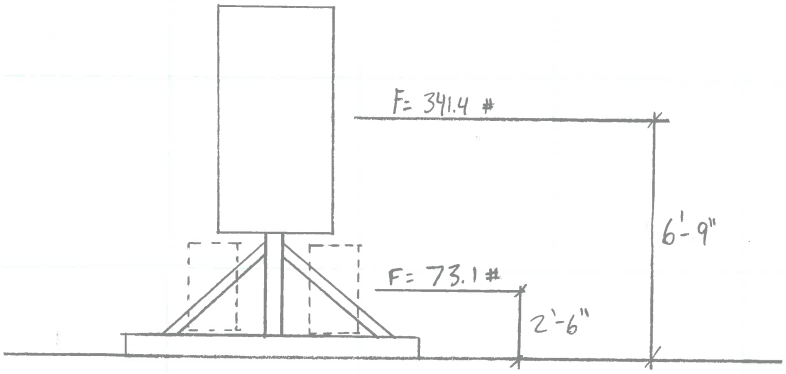
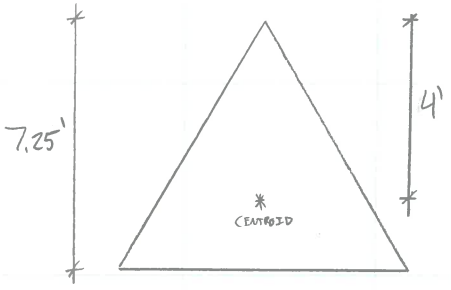
## CHECK OVERTURNING MOMENT




ELEVATION
N.T.S.




$M = (341.4\ \#)(6.75') + (73.1\ \#)(2.5') = 2487.2\ ft\cdot\#$

HOLD DOWN FORCE $= \frac{2487.2\ ft\cdot\#}{4ft} = 621.8\ \#/SIDE$

## BALLAST REQUIREMENTS:

- ASSUME WEIGHT OF MOUNT PER SIDE = 80 #/SIDE
- ASSUME (2) RRH'S @ 50#/EACH AT EACH SIDE = 100 #/SIDE

TOTAL BALLAST REQUIRED = 621.8# − 80# − 100# = 441.8 #/SIDE

⇒ USE 4x8x16 SOLID CONCRETE BLOCKS (38 #/EACH)

TOTAL NUMBER OF BLOCKS PER SIDE = $\frac{441.8\ \#/SIDE}{38\ \#/Block} = 11.63$ BLOCKS/SIDE

USE 12 BLOCKS/SIDE

## CALCULATED LOAD ON ROOF

| | |
|---|---|
| (3) ANTENNAS (57# EACH) | = 171 # |
| (6) RRH (50# EACH) | = 300 # |
| (1) BALLAST MOUNT + MAST + CANISTER | = 450 # |
| (36) 4x8x16 SOLID CONCRETE BLOCKS (38 # EACH) | = 1368# |
| | = 2289 # |

MOUNT AREA = 22 ft²

AREA LOAD = $\frac{2289\ \#}{22\ ft^2} = 104 psf$

157132

Project: BS62XC009

Location: Antenna Mounting Pipe
Multi-Loaded Multi-Span Beam
[2009 International Building Code(AISC 13th Ed ASD)]
Pipe 4 Std. x 10.0 FT (3 + 7) / ASTM A500-GR.B-42
Section Adequate By: 159.3%
Controlling Factor: Deflection

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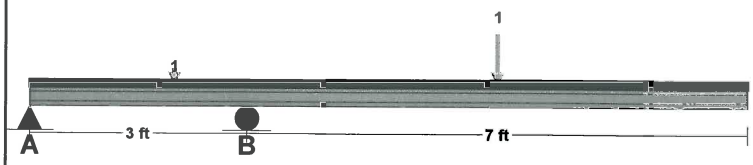
| DEFLECTIONS | Center | | Right | |
|---|---|---|---|---|
| Live Load | -0.01 | IN L/5962 | 0.18 | IN 2L/934 |
| Dead Load | 0.00 | in | 0.04 | in |
| Total Load | -0.01 | IN L/4943 | 0.22 | IN 2L/750 |

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

| REACTIONS | A | | B | |
|---|---|---|---|---|
| Live Load | 25 | lb | 790 | lb |
| Dead Load | -72 | lb | 181 | lb |
| Total Load | -48 | lb | 971 | lb |
| **Uplift (1.5 F.S)** | **-471** | **lb** | 0 | **lb** |
| Bearing Length | 0.00 | in | 0.44 | in |

| BEAM DATA | Center | | Right | |
|---|---|---|---|---|
| Span Length | 3 | ft | 7 | ft |
| Unbraced Length-Top | 0 | ft | 0 | ft |
| Unbraced Length-Bottom | 3 | ft | 7 | ft |

**LOADING DIAGRAM**




| UNIFORM LOADS | Center | | Right | |
|---|---|---|---|---|
| Uniform Live Load | 0 | plf | 0 | plf |
| Uniform Dead Load | 0 | plf | 0 | plf |
| Beam Self Weight | 11 | plf | 11 | plf |
| Total Uniform Load | 11 | plf | 11 | plf |

**POINT LOADS - CENTER SPAN**

| Load Number | One |
|---|---|
| Live Load | 74 lb |
| Dead Load | 0 lb |
| Location | 2 ft |

**RIGHT SPAN**

| Load Number | One |
|---|---|
| Live Load | 342 lb |
| Dead Load | 0 lb |
| Location | 3.5 ft |

**STEEL PROPERTIES**
Pipe 4 Std. - A500-GR.B-42

**Properties:**

| | | | |
|---|---|---|---|
| Steel Yield Strength: | Fy = | 42 | ksi |
| Modulus of Elasticity: | E = | 29000 | ksi |
| Tube Steel Section (X Axis): | dx = | 4.5 | in |
| Tube Steel Section (Y Axis): | dy = | 4.5 | in |
| Tube Steel Wall Thickness: | t = | 0.221 | in |
| Area: | A = | 2.97 | in2 |
| Moment of Inertia (X Axis): | Ix = | 6.82 | in4 |
| Section Modulus (X Axis): | Sx = | 3.03 | in3 |
| Plastic Section Modulus: | Z = | 4.05 | in3 |

**Design Properties per AISC 13th Edition Steel Manual:**

| | | | |
|---|---|---|---|
| Flange Buckling Ratio: | FBR = | 20.36 | |
| Allowable Flange Buckling Ratio: | AFBR = | 48.33 | |
| Allowable Flange Buckling Ratio non-compact: | AFBR_NC = | 214.05 | |
| Nominal Flexural Strength w/ Safety Factor: | Mn = | 8488 | ft-lb |
| Controlling Equation: | F8-1 | | |
| Shear Buckling Stress Coefficient Eqn. G6-2a: | Fcr = | 25 | ksi |
| Nominal Shear Strength w/ Safety Factor: | Vn = | 22408 | lb |

**Controlling Moment:** -1463 ft-lb
Over right support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 3
**Controlling Shear:** -553 lb
At right support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

| Comparisons with required sections: | Req'd | Provided |
|---|---|---|
| Moment of Inertia (deflection): | 2.63 in4 | 6.82 in4 |
| Moment: | -1463 ft-lb | 8488 ft-lb |
| Shear: | -553 lb | 22408 lb |

Project: BS62XC009

Location: Penthouse Beam A
Multi-Loaded Multi-Span Beam
[2009 International Building Code(2005 NDS)]
( 2 ) 1.5 IN x 7.25 IN x 6.58 FT (ASSUMED)
#2 - Hem-Fir - Dry Use
Section Adequate By: 17.2%
Controlling Factor: Moment

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**CAUTIONS**
* Laminations are to be fully connected to provide uniform transfer of loads to all members

| DEFLECTIONS | Center | |
|---|---|---|
| Live Load | 0.03 | IN L/2635 |
| Dead Load | 0.09 | in |
| Total Load | 0.12 | IN L/659 |

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

| REACTIONS | A | | B | |
|---|---|---|---|---|
| Live Load | 290 | lb | 290 | lb |
| Dead Load | 869 | lb | 869 | lb |
| Total Load | 1158 | lb | 1158 | lb |
| Bearing Length | 0.95 | in | 0.95 | in |

| BEAM DATA | Center | |
|---|---|---|
| Span Length | 6.58 | ft |
| Unbraced Length-Top | 0 | ft |
| Unbraced Length-Bottom | 6.58 | ft |
| Live Load Duration Factor | 1.00 | |
| Notch Depth | 0.00 | |

**LOADING DIAGRAM**


| UNIFORM LOADS | Center | |
|---|---|---|
| Uniform Live Load | 88 | plf |
| Uniform Dead Load | 260 | plf |
| Beam Self Weight | 4 | plf |
| Total Uniform Load | 352 | plf |

**MATERIAL PROPERTIES**
#2 - Hem-Fir

| | Base Values | | Adjusted | |
|---|---|---|---|---|
| Bending Stress: | Fb = 850 | psi | Fb' = 1020 | psi |
| | *Cd=1.00 CF=1.20* | | | |
| Shear Stress: | Fv = 150 | psi | Fv' = 150 | psi |
| | *Cd=1.00* | | | |
| Modulus of Elasticity: | E = 1300 | ksi | E' = 1300 | ksi |
| Min. Mod. of Elasticity: | E_min = 470 | ksi | E_min' = 470 | ksi |
| Comp. ⊥ to Grain: | Fc - ⊥ = 405 | psi | Fc - ⊥' = 405 | psi |

**Controlling Moment:** 1905 ft-lb
3.29 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
**Controlling Shear:** -1158 lb
7.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

| Comparisons with required sections: | Req'd | Provided |
|---|---|---|
| Section Modulus: | 22.42 in3 | 26.28 in3 |
| Area (Shear): | 11.58 in2 | 21.75 in2 |
| Moment of Inertia (deflection): | 34.71 in4 | 95.27 in4 |
| Moment: | 1905 ft-lb | 2234 ft-lb |
| Shear: | -1158 lb | 2175 lb |

Project: BS62XC009

Location: Penthouse Beam B
Multi-Loaded Multi-Span Beam
[2009 International Building Code(2005 NDS)]
( 2 ) 1.5 IN x 7.25 IN x 6.58 FT (5 + 1.6) (ASSUMED)
#2 - Hem-Fir - Dry Use
Section Adequate By: 124.7%
Controlling Factor: Shear

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**CAUTIONS**
* Laminations are to be fully connected to provide uniform transfer of loads to all members

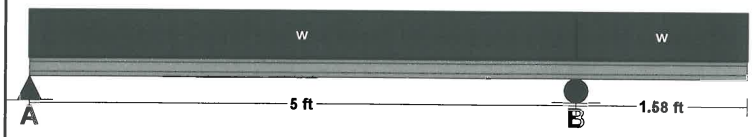
| DEFLECTIONS | Center | | Right | |
|---|---|---|---|---|
| Live Load | 0.01 | IN L/6006 | -0.01 | IN 2L/3754 |
| Dead Load | 0.02 | in | -0.02 | in |
| Total Load | 0.03 | IN L/1829 | -0.03 | IN 2L/1490 |

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

| REACTIONS | A | B |
|---|---|---|
| Live Load | 220 lb | 381 lb |
| Dead Load | 594 lb | 1143 lb |
| Total Load | 814 lb | 1524 lb |
| Bearing Length | 0.67 in | 1.25 in |

| BEAM DATA | Center | Right |
|---|---|---|
| Span Length | 5 ft | 1.58 ft |
| Unbraced Length-Top | 0 ft | 0 ft |
| Unbraced Length-Bottom | 5 ft | 1.58 ft |
| Live Load Duration Factor | 1.00 | |
| Notch Depth | 0.00 | |

**LOADING DIAGRAM**




| UNIFORM LOADS | Center | | Right | |
|---|---|---|---|---|
| Uniform Live Load | 88 | plf | 88 | plf |
| Uniform Dead Load | 260 | plf | 260 | plf |
| Beam Self Weight | 4 | plf | 4 | plf |
| Total Uniform Load | 352 | plf | 352 | plf |

**MATERIAL PROPERTIES**
#2 - Hem-Fir

| | Base Values | | Adjusted | |
|---|---|---|---|---|
| Bending Stress: | Fb = | 850 psi | Fb' = | 1020 psi |
| | *Cd=1.00 CF=1.20* | | | |
| Shear Stress: | Fv = | 150 psi | Fv' = | 150 psi |
| | *Cd=1.00* | | | |
| Modulus of Elasticity: | E = | 1300 ksi | E' = | 1300 ksi |
| Min. Mod. of Elasticity: | E_min = | 470 ksi | E_min' = | 470 ksi |
| Comp. ⊥ to Grain: | Fc - ⊥ = | 405 psi | Fc - ⊥' = | 405 psi |

**Controlling Moment:** 942 ft-lb
2.3 Ft from left support of span 2 (Center **S**pan)
Created by combining all dead loads and live loads on span(s) 2
**Controlling Shear:** -968 lb
At right support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2, 3

| **Comparisons with required sections:** | Req'd | Provided |
|---|---|---|
| Section Modulus: | 11.08 in3 | 26.28 in3 |
| Area (Shear): | 9.68 in2 | 21.75 in2 |
| Moment of Inertia (deflection): | 15.34 in4 | 95.27 in4 |
| Moment: | 942 ft-lb | 2234 ft-lb |
| Shear: | -968 lb | 2175 lb |

Project: BS62XC009

Location: Penthouse Support Columns
Column
[2009 International Building Code(2005 NDS)]
( 2 ) 1.5 IN x 7.25 IN x 8.0 FT (ASSUMED)
#2 - Hem-Fir - Dry Use
Section Adequate By: 66.2%

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**CAUTIONS**
* Laminations to be nailed together per National Design Specifications for Wood Construction Section 15.3.3.1

**VERTICAL REACTIONS**

| | | | |
|---|---|---|---|
| Live Load: | Vert-LL-Rxn = | 381 | lb |
| Dead Load: | Vert-DL-Rxn = | 1175 | lb |
| Total Load: | Vert-TL-Rxn = | 1556 | lb |

**COLUMN DATA**

| | | |
|---|---|---|
| Total Column Length: | 8 | ft |
| Unbraced Length (X-Axis) Lx: | 8 | ft |
| Unbraced Length (Y-Axis) Ly: | 8 | ft |
| Column End Condtion-K (e): | 1 | |
| Axial Load Duration Factor | 1.00 | |

**COLUMN PROPERTIES**
#2 - Hem-Fir

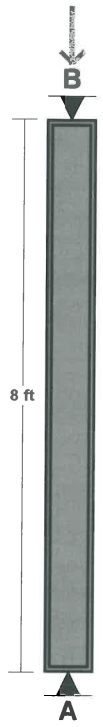
| | Base Values | | Adjusted | |
|---|---|---|---|---|
| Compressive Stress: | Fc = 1300 | psi | Fc' = 212 | psi |
| | *Cd=1.00 Cf=1.05 Cp=0.16* | | | |
| Bending Stress (X-X Axis): | Fbx = 850 | psi | Fbx' = 1020 | psi |
| | *Cd=1.00 CF=1.20* | | | |
| Bending Stress (Y-Y Axis): | Fby = 850 | psi | Fby' = 1020 | psi |
| | *Cd=1.00 CF=1.20* | | | |
| Modulus of Elasticity: | E = 1300 | ksi | E' = 1300 | ksi |
| Min. Mod. of Elasticity: | E_min = 470 | ksi | E_min' = 470 | ksi |

| | | | |
|---|---|---|---|
| Column Section (X-X Axis): | dx = | 7.25 | in |
| Column Section (Y-Y Axis): | dy = | 3 | in |
| Area: | A = | 21.75 | in2 |
| Section Modulus (X-X Axis): | Sx = | 26.28 | in3 |
| Section Modulus (Y-Y Axis): | Sy = | 5.44 | in3 |
| Slenderness Ratio: | Lex/dx = | 13.24 | |
| | Ley/dy = | 32 | |

**Column Calculations (Controlling Case Only):**
Controlling Load Case: Axial Total Load Only (L + D)

| | | | |
|---|---|---|---|
| Actual Compressive Stress: | Fc = | 72 | psi |
| Allowable Compressive Stress: | Fc' = | 212 | psi |
| Eccentricity Moment (X-X Axis): | Mx-ex = | 0 | ft-lb |
| Eccentricity Moment (Y-Y Axis): | My-ey = | 0 | ft-lb |
| Moment Due to Lateral Loads (X-X Axis): | Mx = | 0 | ft-lb |
| Moment Due to Lateral Loads (Y-Y Axis): | My = | 0 | ft-lb |
| Bending Stress Lateral Loads Only (X-X Axis): | Fbx = | 0 | psi |
| Allowable Bending Stress (X-X Axis): | Fbx' = | 1020 | psi |
| Bending Stress Lateral Loads Only (Y-Y Axis): | Fby = | 0 | psi |
| Allowable Bending Stress (Y-Y Axis): | Fby' = | 1020 | psi |
| **Combined Stress Factor:** | **CSF =** | **0.34** | |

**LOADING DIAGRAM**




**AXIAL LOADING**

| | | | |
|---|---|---|---|
| Live Load: | PL = | 381 | lb |
| Dead Load: | PD = | 1143 | lb |
| Column Self Weight: | CSW = | 32 | lb |
| Total Load: | PT = | 1556 | lb |

Hudson Design Group LLC

# Reference Documents

PROJECT DESCRIPTION:

CONSTRUCTION OF PERSONAL COMMUNICATION SYSTEM (PCS) CONSISTING OF EQUIPMENT CABINETS AND PLATFORM ON AN EXISTING ROOF AND AN ANTENNA ARRAY ON AN EXISTING PENTHOUSE. NO WATER OR SEWER IS REQUIRED.

CODE COMPLIANCE:

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

1. ME BUILDING CODE
2. UNIFORM BUILDING CODE
3. BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA)
4. UNIFORM MECHANICAL CODE
5. ANSI/TIA/EIA-222-F
6. UNIFORM PLUMBING CODE
7. NATIONAL ELECTRIC CODE
8. LOCAL BUILDING CODE
9. CITY/COUNTY ORDINANCES

Sprint

# PORTLAND

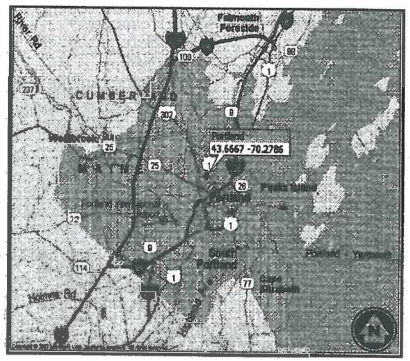
PROPOSED UNMANNED WIRELESS TELECOMMUNICATION SITE

## SITE NUMBER: BS62XC009A

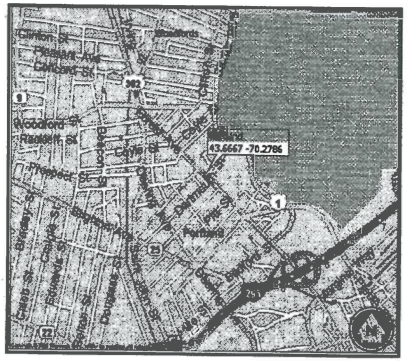
509 FOREST AVENUE
PORTLAND, ME

DIRECTIONS:

TAKE I-295 TO FOREST AVENUE EXIT. TAKE FOREST AVENUE NORTH TO SITE AT 509 FOREST AVENUE.




VICINITY MAP
N.T.S.




LOCATION MAP
N.T.S.

infinigy
engineering

251 NEW KARNER
ALBANY, NEW YORK 12208
OFFICE #: (518) 456-3553
FAX #: (518) 456-3733
CONTACT: PAUL PENMAN

RAD CENTER: ±52.3' AGL
LATITUDE: 43° 40' 03.59"
LONGITUDE: 70° 15' 43.77"

PORTLAND, ME

Sprint

DIG ALERT:
CALL FOR UNDERGROUND UTILITIES PRIOR TO DIGGING:
1-888-354-7233

EMERGENCY:
CALL 911

## PROJECT INFORMATION

| | |
|---|---|
| SITE NAME: | PORTLAND |
| SITE ADDRESS: | 509 FOREST AVENUE PORTLAND, ME |
| ZONING DISTRICT: | COMMERCIAL |
| ZONING JURISDICTION: | PORTLAND |
| TAX MAP NUMBER: | |
| CONSTRUCTION AREA: | ±200 SQ. FT. |
| LATITUDE: | 43.6676° |
| LONGITUDE: | 70.2786° |

## PROJECT DIRECTORY

BUILDING OWNER: ALPINE REALITY TRUST

CONTACT: JOHN WISE (207) 775-3499

## APPLICANT

SPRINT SPECTRUM, LLC
CROSSROADS CORPORATE CENTER
INTERNATIONAL BOULEVARD, SUITE 800
MAHWAH, NJ 07495
OFFICE: 201·684·4328
FAX: 201·684·4070 CONTACT: JOSHUA MOSTOW

POWER COMPANY: MAINE POWER AND LIGHT
CONTACT:

TELCO COMPANY: VERIZON
CONTACT:

## DRAWING INDEX

| DRWG. # | TITLE | REV.# | DATE |
|---|---|---|---|
| T1 | TITLE SHEET | 0 | 03/22/04 |
| C1 | GENERAL NOTES & LEGEND | 0 | 03/22/04 |
| C2 | SITE LAYOUT & STAKING PLAN | 0 | 03/22/04 |
| C3 | BUILDING ELEVATIONS & RF INFORMATION | 0 | 03/22/04 |
| C4 | CABLE DETAILS & NOTES | 0 | 03/22/04 |
| C5 | STRUCTURAL DETAILS | 0 | 03/22/04 |
| C6 | STRUCTURAL DETAILS | 0 | 03/22/04 |
| C7 | CONDUIT PENETRATION DETAILS | 0 | 03/22/04 |
| C8 | CELL SITE INSTALLATION | 0 | 03/22/04 |
| E1 | ELECTRICAL/GROUNDING NOTES & ONE-LINE DIAGRAM | 0 | 03/22/04 |
| E2 | ELECTRICAL SITE PLAN | 0 | 03/22/04 |
| E3 | GROUNDING SITE PLAN | 0 | 03/22/04 |
| E4 | ELECTRICAL DETAILS | 0 | 03/22/04 |
| E5 | GROUNDING DETAILS | 0 | 03/22/04 |
| E6 | GROUNDING DETAILS | 0 | 03/22/04 |
| E7 | GROUNDING DETAILS | 0 | 03/22/04 |

## GENERAL NOTES

1. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
2. DO NOT CHANGE SIZE NOR SPACING OF STRUCTURAL ELEMENTS.
3. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
4. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
5. BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
6. DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
7. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE OWNER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE APPROVAL.
8. EACH CONTRACTOR SHALL COOPERATE WITH THE OWNER'S REPRESENTATIVE, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND SPECIFICATIONS AND COORDINATE HIS WORK WITH THE WORK OF ALL OTHER CONTRACTORS TO ENSURE THAT WORK PROGRESSION IS NOT INTERRUPTED.
10. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY SITE, YARD AND GROUNDS. REMOVE AND DISPOSE OFF SITE ALL RUBBISH, WASTE MATERIALS, LITTER, AND ALL FOREIGN SUBSTANCES. REMOVE PETRO-CHEMICAL SPILLS, STAINS AND OTHER FOREIGN DEPOSITS. RAKE GROUNDS TO A SMOOTH EVEN-TEXTURED SURFACE.
11. THE PLANS SHOW SOME KNOWN SUBSURFACE STRUCTURES, ABOVE-GROUND STRUCTURES AND/OR UTILITIES BELIEVED TO EXIST IN THE WORKING AREA, EXACT LOCATION OF WHICH MAY VARY FROM THE LOCATIONS INDICATED. IN PARTICULAR, THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE LOCATION OF SUCH PIPELINES, SUBSURFACE STRUCTURES AND/OR UTILITIES IN THE AREA MAY BE SHOWN OR MAY NOT BE SHOWN; AND IT SHALL BE HIS RESPONSIBILITY TO PROCEED WITH GREAT CARE IN EXECUTING ANY WORK. 48 HOURS BEFORE YOU DIG, DRILL OR BLAST, CALL 1-800-922-4455.
12. THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
13. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.
14. THE CONTRACTOR SHALL RESTORE ALL PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO AT LEAST AS GOOD OF CONDITION AS BEFORE DISTURBED AS DETERMINED BY THE OWNER OR OWNER'S REPRESENTATIVE.
15. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PERMITS.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, AND INCURRING THE COST OF ALL REQUIRED PERMITS, INCLUDING, BUT NOT LIMITED TO, THE BUILDING PERMIT, INSPECTIONS, CERTIFICATES, ETC.
17. ALL UTILITY WORK INVOLVING CONNECTIONS TO EXISTING SYSTEMS SHALL BE COORDINATED WITH THE OWNER OR OWNER'S REPRESENTATIVE AND THE UTILITY OWNER. NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE AND THE UTILITY OWNER BEFORE EACH AND EVERY CONNECTION TO EXISTING SYSTEMS IS MADE.
18. MAINTAIN FLOW FOR ALL EXISTING UTILITIES.
19. ALL IMPROVEMENTS TO CONFORM WITH LOCAL JURISDICTION CONSTRUCTION STANDARDS AND SPECIFICATIONS, LATEST EDITION.

## DESIGN DATA

1. DEAD LOADS

| | |
|---|---|
| BATTERY CABINET | 2825# |
| FUTURE BATTERY CABINET | 2825# |
| MODCELL 3.0 PRIMARY CABINET | 1210# |
| MODCELL 3.0 GROWTH CABINET | 1210# |
| PPC FRAME | 270# |
| WIREWAY | 40# |

## ANTENNA SUPPORT BRACKET NOTES

1. DESIGN RESPONSIBILITY OF ANTENNA MOUNTING BRACKETS AND POLES AND ALL COMPONENTS THERE OF AND ATTACHMENT THERE TO SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER. MFR SHALL PROVIDE TO THE ENGINEER FOR APPROVAL, DRAWINGS DETAILING ALL COMPONENTS OF THE ASSEMBLY, INCLUDING CONNECTIONS, DESIGN LOADS, AND ALL OTHER PERTINENT DATA. ALL SUBMISSIONS SHALL BEAR THE STAMP AND SIGNATURE OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE THE WORK IS BEING PERFORMED.
2. BRACKETS SHALL BE DESIGNED TO SUPPORT CURRENT AND FUTURE PANEL ANTENNAS COAXIAL CABLES AS SHOWN.

## STRUCTURAL STEEL NOTES

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
2. ALL INTERIOR STRUCTURAL STEEL USED SHALL BE, WHEN DELIVERED, FINISHED WITH ONE COAT FABRICATOR'S NON-LEAD, RED OXIDE PRIMER. PRIMING SHALL BE PERFORMED AFTER SHOP FABRICATION TO THE GREATEST EXTENT POSSIBLE. ALL DINGS, SCRAPES, MARS, AND WELDS IN THE PRIMED AREAS SHALL BE REPAIRED BY FIELD TOUCH-UP PRIOR TO COMPLETION OF THE WORK.
3. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH SPECIFICATION ASTM A572 (50 ksi) UNLESS OTHERWISE NOTED. GALVANIZING SHALL BE PERFORMED AFTER SHOP FABRICATION TO THE GREATEST EXTENT POSSIBLE. ALL DINGS, SCRAPES, MARS, AND WELDS IN THE GALVANIZED AREAS SHALL BE REPAIRED BY FIELD TOUCH-UP PRIOR TO COMPLETION OF THE WORK.
4. DO NOT PLACE HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
5. CONNECTIONS:
   - A. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION ", 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
   - B. BOLTED CONNECTIONS SHALL USE BEARING TYPE GALVANIZED ASTM A325 BOLTS (3/4" DIA) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
   - C. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. GALVANIZED ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
   - D. CONNECTION DESIGN BY FABRICATOR WILL BE SUBJECT TO REVIEW AND APPROVAL BY ENGINEER.

## CIVIL LEGEND

| EXISTING | | PROPOSED |
|---|---|---|
| | FENCE | |
| UNDERGROUND ELECTRIC | UNDERGROUND ELECTRIC | |
| UNDERGROUND TELEPHONE | UNDERGROUND TELEPHONE | |
| OVERHEAD WIRES | OVERHEAD TELEPHONE | |
| | OVERHEAD ELECTRIC | |
| | LEASE LINE | |
| | UTILITY POLE | |
| | CURB | |
| | ASPHALT PAVEMENT | |
| | BUILDING | |
| | TREES, SHRUBS, BUSHES | |

X / X — REPRESENTS DETAIL NUMBER / REF. DRAWING NUMBER

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 0 | 3/22/04 | ISSUED FOR CONSTRUCTION | PHR | CJW | PMP |

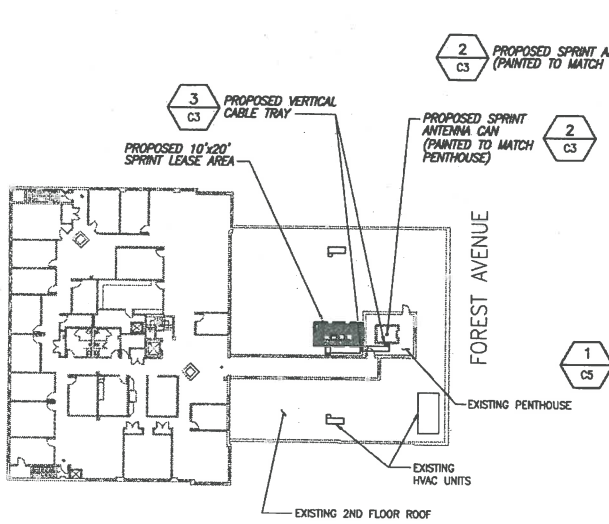
infinigy engineering
251 NEW KARNER ROAD
ALBANY, NY 12205
109-20

Sprint
CROSSROADS CORPORATE CENTER
INTERNATIONAL BOULEVARD
SUITE 800
MAHWAH, NJ 07495

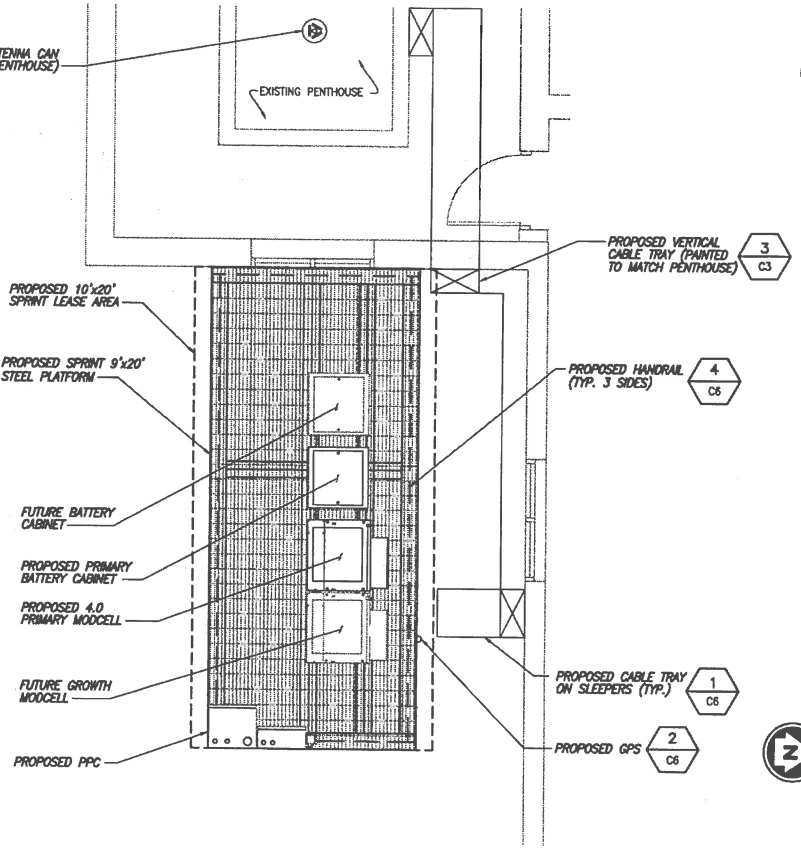
PORTLAND MAINE
509 FOREST AVENUE
PORTLAND, ME 04101

GENERAL NOTES & LEGEND
BS62XC009A
DATE: 03/22/04
C1
REV 0

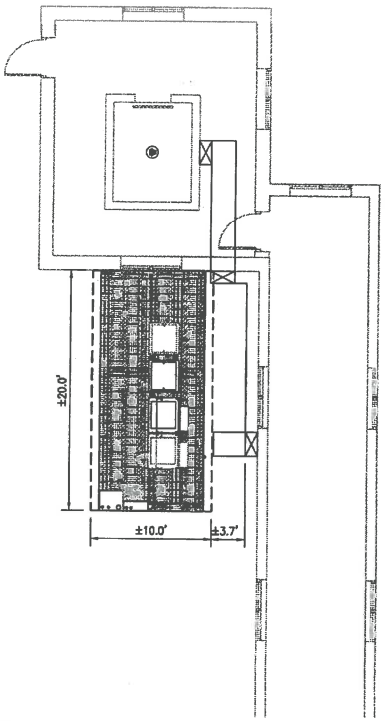
STATE OF MAINE
Paul M. Penman
10312
REGISTERED PROFESSIONAL ENGINEER




1 — OVERALL SITE LAYOUT
SCALE:
50' 0 50'




2 — SITE LAYOUT
SCALE:
5' 0 5'




3 — STAKING PLAN
SCALE:
10' 0 10'

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 0 | 3/22/04 | ISSUED FOR CONSTRUCTION | PHR | CJW | PMP |

infinigy engineering
251 NEW KARNER ROAD
ALBANY, NY 12205
109-20

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CROSSROADS CORPORATE CENTER
INTERNATIONAL BOULEVARD
SUITE 800
MAHWAH, NJ 07495

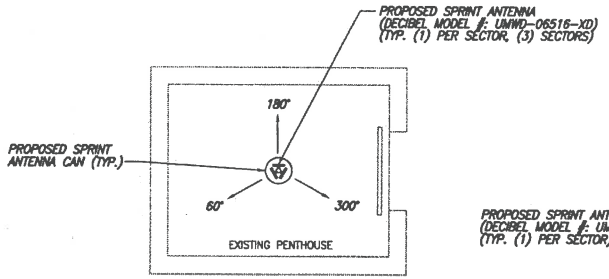
PORTLAND MAINE
509 FOREST AVENUE
PORTLAND, ME 04101

SITE LAYOUT & STAKING PLAN
BS62XC009A
DATE: 03/22/04
C2
REV 0

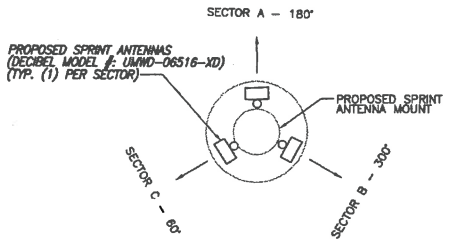
STATE OF MAINE
Paul M. Penman
10312
REGISTERED PROFESSIONAL ENGINEER

## GENERAL NOTES:

1. VERIFY COAX SIZE WITH SPRINT.
2. COLOR CODE AT TOP CONNECTOR, BOTTOM CONNECTOR AND BTS JUMPERS BELOW FRAME.
3. REFER TO FINAL RF APPROVAL.
4. ALL CABLES SHALL BE MARKED AT THE TOP AND BOTTOM WITH 2" COLORED TAPE AND STENCIL TAG. COLOR TAPE MAY BE OBTAINED FROM GRAYBAR ELECTRONIC. FOURTH RING IS ONLY NECESSARY ON CELL INSTALLATIONS SERVING TWO SWITCHES. THIS SHOULD BE PERFORMED AND ANNOTATED LOCALLY.
5. AS-BUILT DRAWINGS TO BE COMPLETED BY FIELD ENGINEER WITH ACTUAL LENGTHS.
6. AZIMUTHS ARE ORIENTED CLOCKWISE FROM TRUE NORTH.
7. COAXIAL CABLE LENGTHS HAVE BEEN DETERMINED BASED ON THESE DRAWINGS. LENGTHS LISTED ARE APPROXIMATE AND ARE NOT INTENDED TO BE USED FOR FABRICATION. DUE TO FIELD CONDITIONS, REQUIRED ANTENNA CABLE LENGTH MAY VARY FROM LENGTH TABULATED. CONTRACTOR MUST FIELD VERIFY ANTENNA CABLE LENGTHS PRIOR TO ORDER AND NOTIFY ENGINEER IF ACTUAL LENGTH EXCEEDS ESTIMATED LENGTH.
8. ALL COAXIAL CABLE (INCLUDING JUMPERS) SHALL BE MARKED AT EACH END WITH COLORED TAPES. SEE COLOR CODING DETAIL (SHEET C8).
9. ALL TOP AND BOTTOM JUMPERS WILL BE (8) FEET IN LENGTH OR AS APPROVED BY SPRINT.
10. ALL COAXIAL CABLE SHOULD BE INSTALLED WITH ANY AND ALL BENDS WITHIN THE ALLOWABLE BENDING RADIUS AS SUPPLIED BY THE MANUFACTURER.
11. ALL COAXIAL CABLE WILL BE SECURED TO SUPPORT HARDWARE WITH A DISTANCE NOT TO EXCEED 4'-0".
12. SUBCONTRACTOR TO RECORD EXACT CABLE LENGTHS IN TABLE (SHEET C4) TO BE SUBMITTED WITH AS-BUILTS.
13. CONTRACTOR SHALL VERIFY ANTENNA RAD CENTER AND AZIMUTHS WITH SPRINT PCS PRIOR TO INSTALLATION.
14. PROPOSED CAN AND CABLE TRAY TO BE PAINTED TO MATCH COLOR OF EXISTING PENTHOUSE.
15. CONTRACTOR SHALL VERIFY ANTENNA RAD CENTER AND AZIMUTHS WITH SPRINT PRIOR TO INSTALLATION.



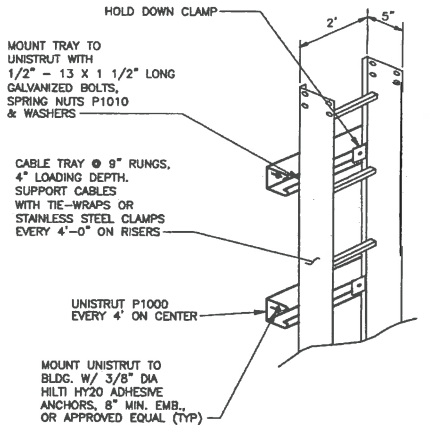

1 TOP VIEW
NOT TO SCALE



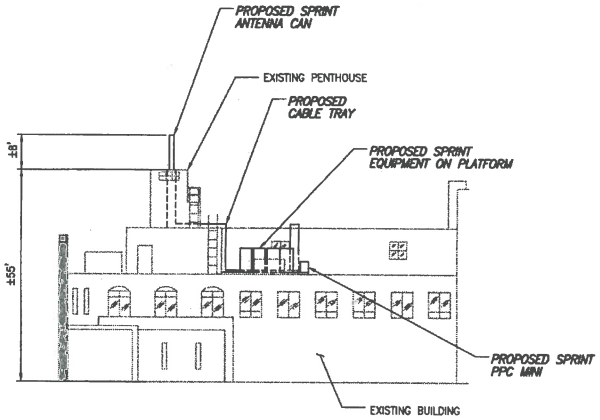

TRUE NORTH

2 ANTENNA PLAN
NOT TO SCALE

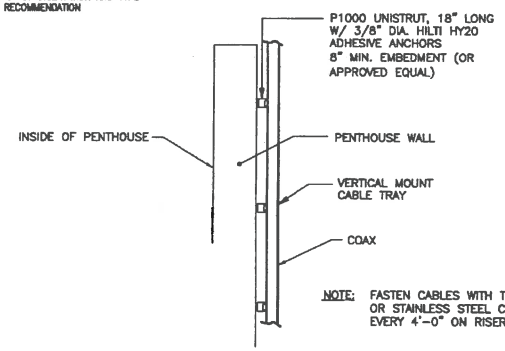
NOTE:
CONTRACTOR TO COORDINATE EXACT ORIENTATION AND TYPE OF ANTENNAS PER FINAL RF RECOMMENDATION




3 VERTICAL MOUNT CABLE TRAY
NOT TO SCALE




4 BUILDING ELEVATION
NOT TO SCALE




5 CABLE MOUNTING ON PENTHOUSE
NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL CONTACT OWNER TO DETERMINE IF ROOF WARRANTY EXISTS. IF WARRANTY EXISTS, ALL ROOF PENETRATIONS SHALL BE BY METHODS APPROVED BY ROOFING COMPANY TO MAINTAIN ANY EXISTING WARRANTIES. IF WARRANTY DOES NOT EXIST, ROOF PENETRATIONS MEANS AND METHOD SHALL BE AS SHOWN ON THE DRAWING OR APPROVED BY ENGINEER.

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 0 | 3/22/04 | ISSUED FOR CONSTRUCTION | PHR | CJW | PMP |


infinigy engineering
251 NEW KARNER ROAD
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109-20

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CROSSROADS CORPORATE CENTER
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MAHWAH, NJ 07495

PORTLAND MAINE

509 FOREST AVENUE
PORTLAND, ME 04101

BUILDING ELEVATIONS & RF INFORMATION

BS62XC009A

C3

DATE: 03/22/04

REV 0

STATE OF MAINE
Paul M. Pitman
REGISTERED PROFESSIONAL ENGINEER

## ANTENNA CABLE CONFIGURATION

| SITE NAME: TW RAFTERY | SITE NO.: CT59XC926 | A&E FIRM: INFINIGY ENGINEERING |
|---|---|---|

| ITEM NO. | DESCRIPTION | QUANTITY (EACH) | LENGTH (FT. EACH) | TOTAL LENGTH |
|---|---|---|---|---|
| 1 | ANTENNAS:<br>* ANDREWS UMWD-06516-XDM<br>* GPS - LUCENT # 407517689 | 3<br>1 | N/A<br>N/A | N/A<br>N/A |
| 2 | TILT BRACKET MODEL #D85098 | 3 | N/A | N/A |
| 3 | JUMPER CABLES:<br>* FLEXWELL COAXIAL JUMPER ASSEMBLY (CABLEWAVE 815398-003P)<br>* FLEXWELL COAXIAL JUMPER ASSEMBLY (CABLEWAVE 826031-004P)<br>* FOAM COAXIAL JUMPER ASSEMBLY<br>* FOAM COAXIAL JUMPER ASSEMBLY | 6<br>6 | 3<br>4 | 18'<br>24'<br>N/A<br>N/A |
| 4 | MAIN CABLES:<br>* 1/2" DIA. FOAM COAXIAL (CABLEWAVE 810918-001)<br>* 7/8" DIA. FLEXWELL COAXIAL (CABLEWAVE 810921-001)<br>* 1-1/4" DIA. FOAM COAXIAL<br>* 1-5/8" DIA. FLEXWELL COAXIAL (CABLEWAVE 810920-001) | 1<br>6<br>N/A<br>N/A | FIELD CUT TO LENGTH | TBD<br>600'<br>N/A<br>N/A |
| 5 | GROUNDING KITS WITH 60" GROUND CABLE AND 2-HOLE LUGS FOR THE FOLLOWING:<br>* 1/2" CABLE (CABLEWAVE 916382)<br>* 7/8" CABLE (CABLEWAVE 916385)<br>* 1-1/4" FOAM CABLE<br>* 1-5/8" CABLE (CABLEWAVE 916391) | N/A<br>12<br>N/A<br>N/A | N/A<br>N/A<br>N/A<br>N/A | N/A<br>N/A<br>N/A<br>N/A |
| 6 | CONNECTORS - UNATTACHED FOR GPS AND MAIN CABLES:<br>* MALE "DIN" 1/2" (CABLEWAVE 734803)<br>* FEMALE "N" 1/2" (CABLEWAVE 734806)<br>* MALE "DIN" 7/8" (CABLEWAVE 734737)<br>* FEMALE "N" 7/8" (CABLEWAVE 734837)<br>* FEMALE "DIN" 1-5/8" (CABLEWAVE 734756) | 2<br>N/A<br>N/A<br>12<br>N/A | N/A<br>N/A<br>N/A<br>N/A<br>N/A | N/A<br>N/A<br>N/A<br>N/A<br>N/A |
| 7 | PPC MINI (200 AMP), IN LINE TYPE AS MANUFACTURED BY NORTHERN TECHNOLOGIES, MODEL # N2101-W01 | 1 | N/A | N/A |
| 8 | HOISTING GRIPS<br>* 1/2" CABLE<br>* 7/8" CABLE<br>* 1-5/8" CABLE (CABLEWAVE 910311) | 1<br>6<br>N/A | N/A<br>N/A<br>N/A | N/A<br>N/A<br>N/A |
| 9 | WEATHERPROOFING KITS | 24 | N/A | N/A |

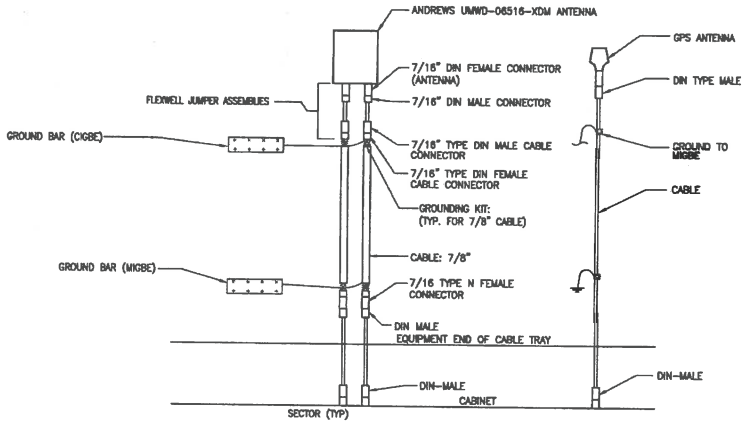
NOTES: 1. ITEMS LISTED TO BE SUPPLIED BY OWNER.
2. ITEMS 3 AND 4 ARE FIELD FABRICATED BE CONTRACTOR.

## ANTENNA CABLE CONFIGURATION

* ESTIMATED LENGTHS FROM AVAILABLE INFORMATION. FIELD ENGINEER TO UPDATE ON AS-BUILT DRAWINGS.

| FROM/TO | AZIMUTH: 60° COAX CABLE TYPE/SIZE | MECHANICAL DOWNTILT = 2° LENGTH (FT)* RX/TX ① | MECHANICAL DOWNTILT = 2° LENGTH (FT)* GROWTH | AZIMUTH: 180° COAX CABLE TYPE/SIZE | MECHANICAL DOWNTILT = 2° LENGTH (FT)* RX/TX ③ | MECHANICAL DOWNTILT = 2° LENGTH (FT)* GROWTH | AZIMUTH: 300° COAX CABLE TYPE/SIZE | MECHANICAL DOWNTILT = 2° LENGTH (FT)* RX/TX ⑤ | MECHANICAL DOWNTILT = 2° LENGTH (FT)* GROWTH | GPS ANTENNA COAX CABLE TYPE/SIZE | GPS ANTENNA LENGTH (FT)* GPS ⑦ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOP JUMPER CABLE | 1/2" | 3<br>3 | N/A | 1/2" | 3<br>3 | N/A | 1/2" | 3<br>3 | N/A | N/A | - |
| FROM TOP JUMPER TO ANTENNA CABLE COVER ASSEMBLY | 7/8" | 100'<br>100' | N/A | 7/8" | 100'<br>100' | N/A | 7/8" | 100'<br>100' | N/A | 1/2" | TBD |
| ANTENNA CABLE COVER ASSEMBLY TO PRIMARY RADIO CABINET | 1/2" | 4<br>4 | N/A | 1/2" | 4<br>4 | N/A | 1/2" | 4<br>4 | N/A | N/A | TBD |

NOTE: CONTRACTOR TO CERTIFY ANTENNA AZIMUTHS ARE WITHIN ± 2° OF INFORMATION SHOWN WITH REGISTERED LAND SURVEYOR.

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CABLE DETAILS & NOTES
BS62XC009A
C4
DATE: 03/22/04
REV 0

STATE OF MAINE
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6012
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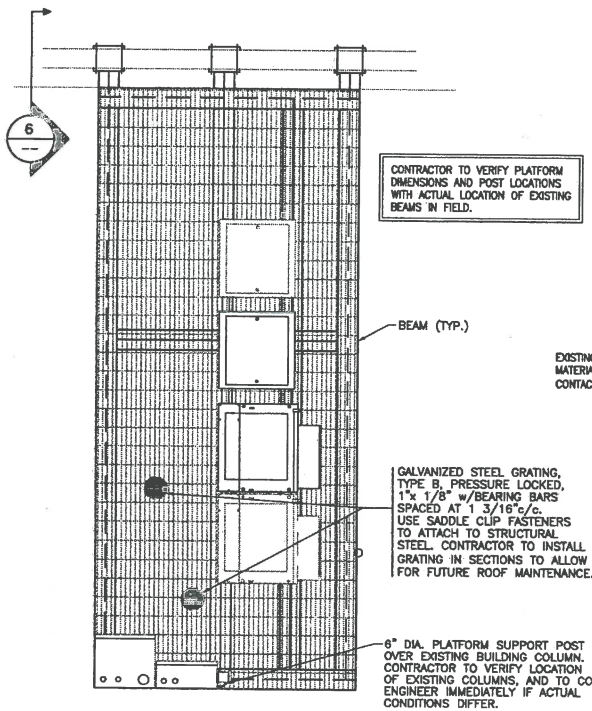
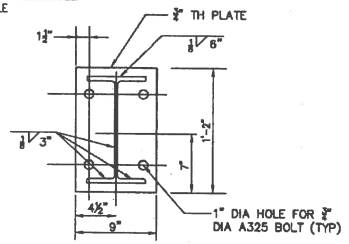



NOTE:
ALL BEAMS TO BE W12x26

1 PLATFORM LAYOUT
NOT TO SCALE




2 END PLATE DETAIL
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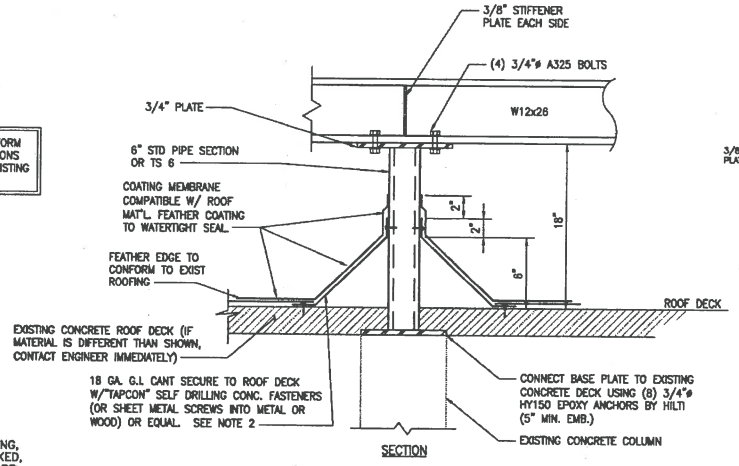
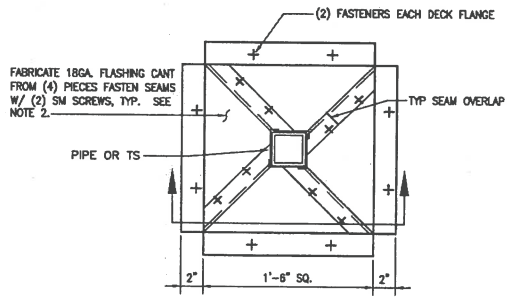



SECTION

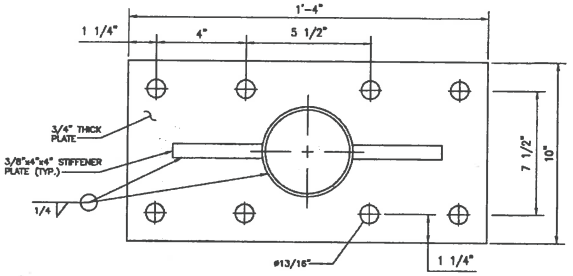



PLAN-FLASHING CANT AT POST

NOTES:

1. SUBCONTRACTOR SHALL CONTACT OWNER TO DETERMINE IF ROOF WARRANTY EXISTS. IF WARRANTY EXISTS, ALL ROOF PENETRATIONS SHALL BE BY METHODS APPROVED BY ROOFING COMPANY TO MAINTAIN ANY EXISTING WARRANTIES. IF WARRANTY DOES NOT EXIST, ROOF PENETRATIONS MEANS AND METHOD SHALL BE AS SHOWN ON THE DRAWING OR APPROVED BY ENGINEER.
2. MANUFACTURED EDPM OR NEOPRENE, FLEXIBLE, FLASHING COLLARS MAY BE INSTALLED IN LIEU OF GALV. IRON CANT AND MEMBRANE. USE ONLY WHERE EXISTING ROOFING MATERIAL IS COMPATIBLE. (e.g. RETROFIT FLASHING BY PORTALS PLUS, INC.)
3. CONTRACTOR TO ANCHOR BASE PLATE TO EXISTING I-BEAM USING (4) 3/4"ø A325 BOLTS OR EQUIVALENT APPROVED BY ENGINEER. CONTRACTOR TO VERIFY WIDTH OF EXISTING DECK IN ORDER TO ENSURE CORRECT LENGTH OF SUPPORT POSTS.

3 BASE FLASHING AT ROOF STRUCTURAL BEARING SUPPORTS
NOT TO SCALE




4 BEARING PLATE DETAIL
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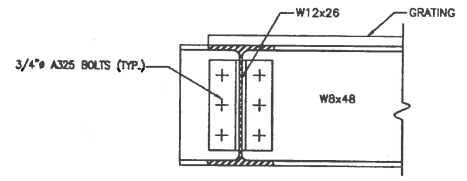


5 BEAM CONNECTION DETAIL
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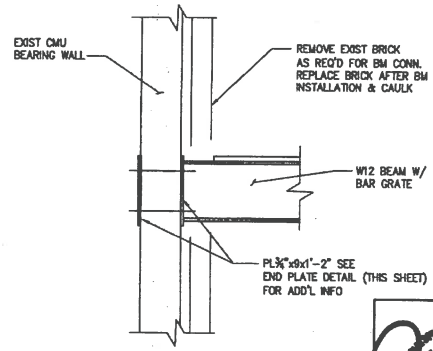


6 BEAM CONN TO CMU WALL
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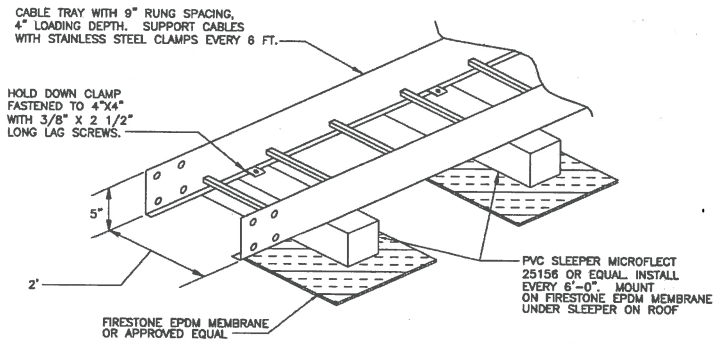


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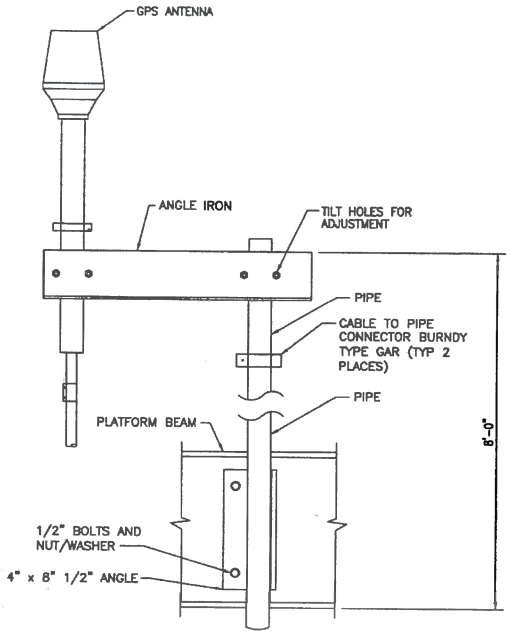


2 GPS ANTENNA
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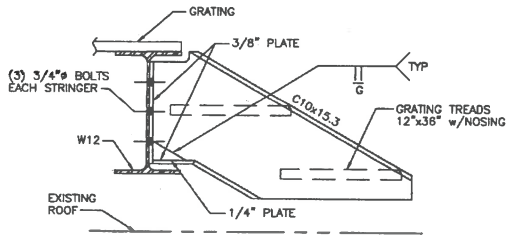
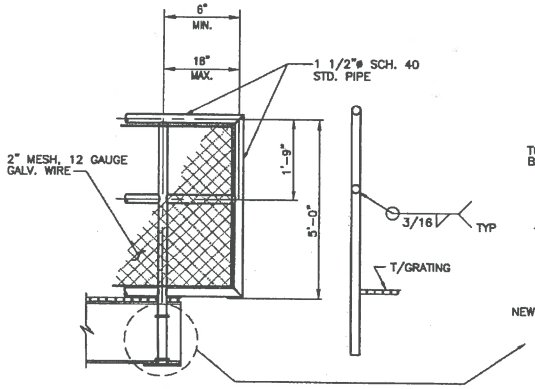


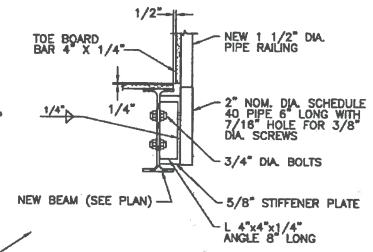

3 TYPICAL STAIRS DETAIL
NOT TO SCALE

NOTE:

CONTRACTOR TO VERIFY FINAL LOCATION OF PROPOSED STAIRS




4 TYPICAL HANDRAIL DETAILS
NOT TO SCALE




RAILING DETAIL
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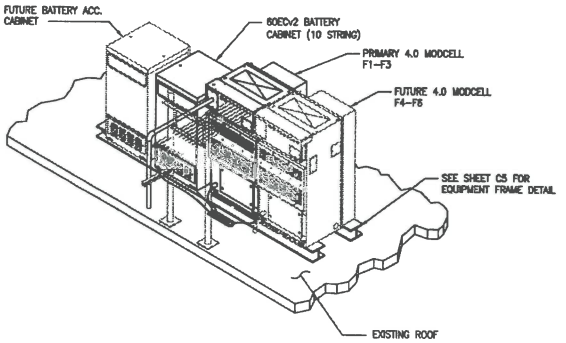


5 ISOMETRIC EQUIPMENT VIEW
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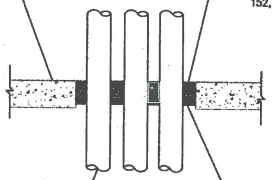


FLOOR OR WALL ASSEMBLY – MIN. 4 1/2" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF) CONCRETE FLOOR OF UL CLASSIFIED CONCRETE BLOCK WALL (MAXIMUM AREA OF OPENING IS 87 SQ. IN. WITH MAXIMUM DIMENSION OF 14 1/2")

FIRESTOP SYSTEM – FILL VOID OR CAVITY MATERIAL–CAULK–MIN 1/2" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL ASSEMBLY. SPECIFIED TECHNOLOGIES INC. – SPEC SEAL LC150, 151, 152, OR 155 SEALANT.

UL SYSTEM #CAJ1208 & #CAJ1209 3 HR. RATING

THROUGH PENETRATION – ONE OR MORE CONDUITS MAY BE INSTALLED WITHIN THE OPENING. THE ANNULAR SPACE BETWEEN THE CONDUIT AND THE PERIPHERY OF THE OPENING SHALL BE MIN. 1" TO A MAX. 1 1/2". THE SPACE BETWEEN THE CONDUITS SHALL BE MIN. 1/2" TO MAX. 1 1/2". CONDUITS TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. CONDUIT – NOM. 3" DIAMETER (OR SMALLER) EMT OR STEEL CONDUIT.

FIRESTOP SYSTEM – (PACKING MATERIAL) – MIN. 3" THICKNESS OF MIN. 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.

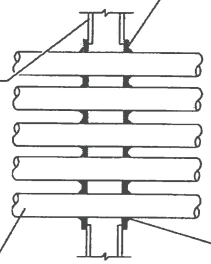
FIRE RATED PENETRATION – MULTIPLE METALLIC CONDUIT AT CONCRETE FLOOR AND UL CLASSIFIED CONCRETE BLOCK WALL

NOT TO SCALE

WALL ASSEMBLY – THE 1 OR 2 HR. FIRE RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING:

STUDS – WALL FRAMING SHALL CONSIST OF MIN. 3 5/8" WIDE STEEL CHANNEL STUDS SPACED MAX. 24" O.C.

WALLBOARD GYPSUM – 5/8" THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALL BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPES AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX. AREA OF OPENING IS 66 SQ. IN. WITH A MAX. DIMENSION OF 22". THE HOURLY F RATINGS OF THE FIRESTOP SYSTEM ARE DEPENDENT ON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.



FIRESTOP SYSTEM – GYPSUM WALLBOARD – TWO LAYERS OF 5/8" THICK WALLBOARD CUT TO FIT THE CONTOUR OF THE THROUGH PENETRANTS ON BOTH SURFACES OF THE WALL. THE ANNULAR SPACE BETWEEN THE THROUGH PENETRANTS AND THE CUT–OUTS OF THE GYPSUM WALLBOARD SHALL BE A MIN. OF 1/4" TO A MAX. 3/8" GYPSUM WALLBOARD SHALL EXTEND A MIN. OF 2" BEYOND THE PERIPHERY OF THE OPENING ON BOTH SURFACES OF THE WALL. PRIOR TO SECURING THE GYPSUM WALLBOARD TO BOTH SURFACES OF THE WALL, A MIN. 1/2" THICKNESS OF FILL MATERIAL IS TO BE APPLIED WITHIN THE JOINTS OF EACH LAYER OF GYPSUM WALLBOARD. ON BOTH SURFACES OF THE WALL, EACH LAYER OF GYPSUM WALLBOARD SHALL BE SECURED TO WALL BY MEANS OF 1 1/4" LONG TYPE G STEEL SCREWS SPACED 6" O.C.

THROUGH PENETRANT – ONE OR MORE CONDUITS TO BE INSTALLED WITHIN THE OPENING. THE SPACE BETWEEN CONDUITS SHALL BE A MIN. OF 1/2" TO A MAX. OF 1". THE SPACE BETWEEN CONDUITS AND PERIPHERY OF OPENING SHALL BE A MIN. 0" (POINT CONTACT) TO MAX. 1 1/4". CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. NOM. 2" DIAMETER (OR SMALLER) ELECTRICAL METALLIC TUBING OR GALVANIZED STEEL CONDUIT.

UL SYSTEM #WL1093 1 & 2 HR. F RATING

FIRESTOP MATERIAL – FILL, VOID OR CAVITY MATERIAL–SEALANT – ON BOTH SURFACES OF THE WALL, A MIN. 1/2" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE JOINTS OF EACH LAYER OF GYPSUM WALLBOARD. AFTER INSTALLATION OF BOTH LAYERS OF GYPSUM WALLBOARD, 1" THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULAR SPACE BETWEEN THE CUT–OUTS OF THE GYPSUM WALLBOARD AND THE PENETRATING ITEMS. ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN. 1/4" THICK CROWN OF FILL MATERIAL APPLIED AROUND THE OUTER CIRCUMFERENCE OF THE THROUGH PENETRANTS ON BOTH SURFACES OF WALL. SPECIFIED TECHNOLOGIES INC. – LC150, 151, 152 OR 155 SEALANT.

FIRE RATED PENETRATION – MULTIPLE METALLIC CONDUIT AT GYPSUM BOARD WALL

NOT TO SCALE

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CONDUIT PENETRATION DETAILS
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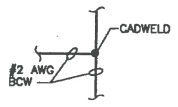
## CELL SITE INSTALLATION NOTES:

THE FOLLOWING INSTALLATION NOTES HAVE BEEN COMPILED FROM EXISTING PROJECT DOCUMENTS (I.E. PROJECT SPECIFICATIONS, SPRINT STANDARD PRACTICE, LUCENT DOCUMENTS, ETC.) FOR USE. THESE NOTES SHALL BE UTILIZED FOR THE CONSTRUCTION OF THE CELL SITES TO ENSURE COMPLIANCE WITH THE PROJECT DESIGN AND SPECIFICATION REQUIREMENTS.

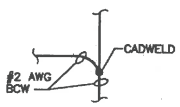
A. GROUNDING:

1. ALL METAL CONDUIT FOR GROUNDING DOWN CONDUCTORS SHALL BE BONDED TO THE GROUND SYSTEM AT BOTH ENDS.
2. N/A
3. LOPR-SHIEL ANTI-OXIDATION COMPOUND SHALL BE USED ON ALL GROUNDING CONNECTIONS.
4. ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE CADWELD PROCESS.
5. ALL CADWELDS SHALL BE INSTALLED USING THE PROPER CONNECTION/MOLD AND MATERIALS FOR THE PARTICULAR CONNECTION AND/OR APPLICATION.

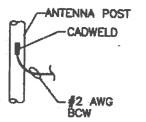
TEE CONNECTION



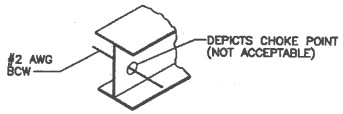

SWEEP CONNECTION




POST CONNECTION

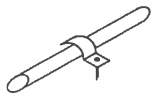



6. ALL BOLTED GROUNDING CONNECTIONS SHALL BE INSTALLED WITH A LOCK WASHER UNDER THE NUT. HARDWARE FOR BOLTED CONNECTIONS SHALL BE MINIMUM OF 3/8" DIAMETER AND SHALL BE STAINLESS STEEL.
7. GROUNDING WIRE SHALL NOT BE INSTALLED OR ROUTED THROUGH HOLES IN ANY METAL OBJECTS OR SUPPORTS TO PRECLUDE ESTABLISHING A "CHOKE" POINT.




8. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL NOT BE USED, THE FOLLOWING CLIPS MAY BE USED TO FASTEN AND SUPPORT GROUNDING CONDUCTORS.

* METAL CLIPS WHICH DO NOT COMPLETELY SURROUND THE GROUND CONDUCTOR



9. STANDARD BUSS BARS (CIGBES AND MIGBS) SHALL BE FURNISHED AND INSTALLED. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD.
10. THE GROUNDING CONNECTION TO THE POWER AND TELCO CABINETS OF THE PPC SHALL BE MADE BY CONNECTING THE CONDUCTOR FROM THE GROUND RING TO THE FACTORY FURNISHED BUSS BAR IN EACH COMPARTMENT.
11. ALL GROUNDING WIRES SHALL BE INSTALLED WITHOUT LOOPS (PIGTAILS) AND SHARP BEND RADIUS.

B. ANTENNA COAXIAL CABLES (WAVEGUIDE)

NOTE: THE RF TRANSMISSION LINE INSTALLED BETWEEN THE PRIMARY RADIO CABINET (PRC), FURNISHED BY LUCENT, AND THE ANTENNA CONSISTS OF A COAXIAL CABLE, SOMETIMES REFERRED TO AS A WAVEGUIDE.

1. ALL ANTENNA COAXIAL CABLES AND JUMPERS SHALL BE INSTALLED WITHOUT LOOPS AND/OR PIGTAILS.
2. ANTENNA COAXIAL CABLE GROUND KITS SHALL NOT BE INSTALLED ON THE JUMPER BETWEEN THE ANTENNA AND MAIN LINE CABLE.
3. ANTENNA COAXIAL CABLE GROUND KITS SHALL BE INSTALLED AS CLOSE TO THE CONNECTOR AS POSSIBLE AT EACH ANTENNA. IF THIS IS NOT FEASIBLE THE GROUND KIT SHALL BE INSTALLED IMMEDIATELY AFTER THE BEND ON THE FIRST STRAIGHT RUN OF CABLE. THE GROUNDKIT SHALL BE INSTALLED ON STRAIGHT SECTION OF CABLE ONLY AND NOT ON BENDS
4. ANTENNA COAXIAL CABLE SHALL BE INSTALLED TO COMPLY WITH THE MANUFACTURER'S MINIMUM BEND RADIUS SPECIFIED BELOW. THE CONTRACTOR SHALL INSTALL RACEWAY FOR COAXIAL CABLE USING THE PROPER FITTINGS NECESSARY TO ENSURE THAT THE MINIMUM BEND RADIUS REQUIREMENTS ARE MET. (REFERENCE: TECHNICAL INFORMATION BULLETIN NO. 96-026)

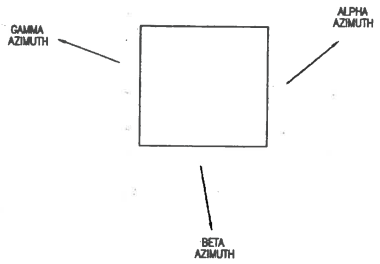
COAXIAL CABLE MINIMUM BEND RADIUS

| MANUFACTURER | CABLE TYPE | CABLE SIZE (DIAMETER) | MINIMUM BEND RADIUS IN TRAY | MINIMUM BEND RADIUS IN 4" OR 6" CONDUIT |
|---|---|---|---|---|
| CABLEWAVE | FLC 12-50J | 1/2" | 5" | 10" |
| CABLEWAVE | FLC 78-50J | 7/8" | 10" | 18" |
| CABLEWAVE | FLC 114-50J | 1 1/4" | 15" | 22" |
| CABLEWAVE | FLC 158-50J | 1 5/8" | 20" | 28" |
| | | | | |

5. THE GPS ANTENNA COAXIAL CABLE SHALL BE A CONTINUOUS CABLE RUN, FROM THE CONNECTOR AT THE ANTENNA HEAD TO THE CONNECTION AT THE BTS CABINETS, WITHOUT JUMPERS.
6. THE ANTENNA COAXIAL CABLE AT THE BTS SHALL BE INSTALLED IN THE ACCA. THE FINISHED ANTENNA CABLES (WITH CONNECTOR AND GROUND KIT INSTALLED) SHALL BE INSTALLED SO THAT THE END OF THE CONNECTOR PROTRUDES NO FARTHER THAN 12 INCHES INTO THE ACCA.
7. THE COAXIAL CABLE ENTRY HATCHPLATE ON THE REAR OF THE ACCA SHALL BE INSTALLED WITH THE SMALL 1/2" DIAMETER HOLE (FOR THE GPS ANTENNA AND GROUND WIRES) TO THE RIGHT (WHEN FACING THE ACCA FROM THE REAR OF THE PRC).
8. ALL ANTENNA COAXIAL CABLES SHALL BE MARKED AND TAGGED IN ACCORDANCE WITH THE REQUIREMENTS IN PROJECT SPECIFICATION C-002, SECTION 16000, PARAGRAPHS 36 AND 37. THE FIGURE TO THE RIGHT INDICATES AN EXAMPLE OF THE COLOR CODE MARKED ON THE COAXIAL CABLES.
9. SINCE THERE ARE A NUMBER OF DIFFERENT COAXIAL CABLE ENTRY HATCHPLATES THAT MAY BE SUPPLIED WITH THE ACCA, THE CONTRACTOR SHALL ORIENT THE COAXIAL CABLE ENTRANCE IN TO THE ACCA IN ACCORDANCE WITH THE DIRECTION ISSUED BY EACH MTA. THE FIGURE SHOWN BELOW INDICATES THE PROPER ORIENTATION FOR THE COAXIAL CABLE ENTRANCE INTO THE ACCA.

C. ELECTRICAL

1. THE ELECTRICAL RACEWAY INSTALLED FROM THE MINI-PPC TO THE PRIMARY RADIO CABINET, FURNISHED BY LUCENT, SHALL HAVE AN 1 1/4"" MALE CONNECTOR/REDUCER FOR THE TIE TO THE ELECTRICAL FITTING ON THE CABINET. THIS MAY BE ACCOMPLISHED USING EITHER A 1 1/4" CONDUIT, 1 1/4" FLEXIBLE CONDUIT OR A 1 1/4" BUSHING.




ALPHA SECTOR
COAX 1 YELLOW/BROWN/WHITE
COAX 2 YELLOW/ORANGE/WHITE

BETA SECTOR
COAX 1 RED/BROWN/WHITE
COAX 2 RED/ORANGE/WHITE

GAMMA SECTOR
COAX 1 GREEN/BROWN/WHITE
COAX 2 GREEN/ORANGE/WHITE

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CELL SITE INSTALLATION NOTES
BS62XC009A
C8
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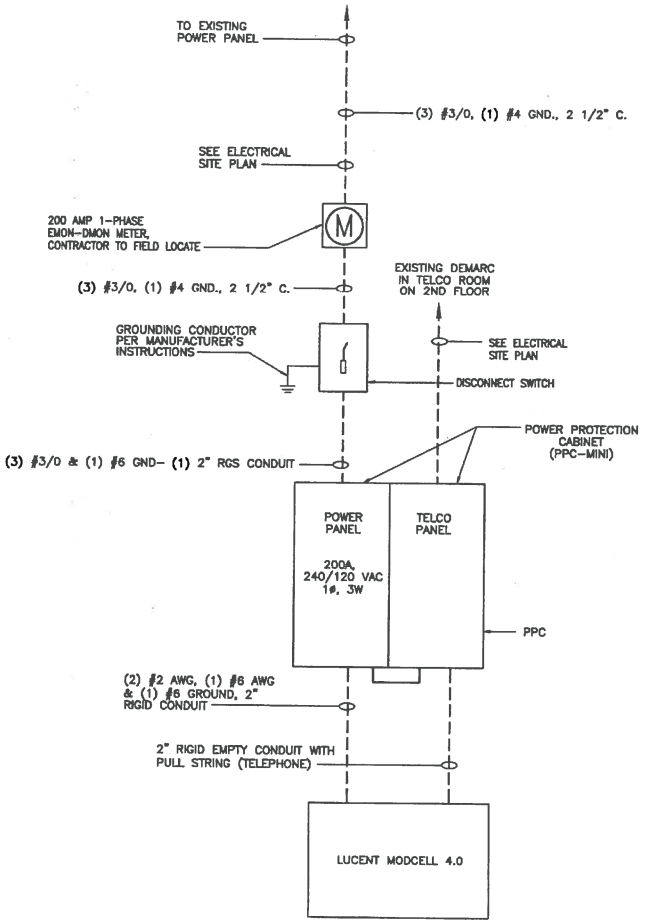
## INCOMING POWER AND TELEPHONE SERVICE NOTES:

1. CONNECTION TO EXISTING UTILITIES AND INCOMING POWER AND TELEPHONE SERVICES IS FOR CONCEPT ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH THE ELECTRIC AND TELEPHONE UTILITIES AND SPRINT.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH THE ELECTRIC AND TELEPHONE UTILITIES TO ENSURE TO A TIMELY INSTALLATION OF THE INCOMING POWER AND TELEPHONE SERVICES. SPRINT WILL OBTAIN AN ELECTRIC SERVICE ORDER (ESO) FOR THIS SITE PRIOR TO THE CONTRACTOR INITIATING ANY WORK ON-SITE.
3. THE INCOMING ELECTRIC SERVICE SHALL BE INSPECTED BY THE AUTHORITY HAVING JURISDICTION AND A CERTIFICATE OF SUCH INSPECTION SHALL BE FURNISHED TO SPRINT. WITH A COPY FORWARDED TO THAT UTILITY.
4. ANY UTILITY CHARGES ASSOCIATED WITH THIS SITE SHALL BE PAID BY SPRINT. AND NO CHARGES, THEREFORE SHALL ACCRUE TO THE CONTRACTOR.
5. FOR INCOMING UNDERGROUND TELEPHONE SERVICE, THE CONTRACTOR SHALL INSTALL THE CONDUIT INCLUDING A PULLWIRE BETWEEN THE UTILITY POLE (OR PEDESTAL, WHERE APPLICABLE) AND POWER PROTECTION CABINET (PPC), AT THE PROPOSED UTILITY POLE EXTEND TELEPHONE CONDUIT UP POLE APPROXIMATELY 1'-0" AND SEAL.
6. COORDINATE METER SOCKET REQUIREMENTS AND UTILITY METER ENCLOSURE WITH SPRINT AND ELECTRIC UTILITY.
7. INCOMING ELECTRIC SERVICES SHALL BE IN CONFORMANCE WITH THE UTILITIES STANDARDS (LATEST EDITION).
8. THIS SITE INCLUDES EXISTING CRITICAL UNDERGROUND ELECTRIC, TELEPHONE AND OTHER SERVICES IN THE VICINITY OF THE NEW UNDERGROUND SERVICES AND EQUIPMENT SUPPORTS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID SERVICE DISRUPTION TO THESE FACILITIES. THE CONTRACTOR SHALL ALSO CONTACT ELECTRIC AND TELEPHONE, AND ALL OTHER APPROPRIATE AGENCIES PRIOR TO EXCAVATION AT THIS SITE. ALL EXCAVATION IN THE IMMEDIATE VICINITY OF ANY EXISTING UTILITY POLES SHALL BE PERFORMED BY HAND.
9. TELCO CONDUIT SHALL BE INSTALLED TO ACCOMMODATE THE FUTURE USE OF FIBER OPTIC.
10. T-1 LINE: (1) 25-TWISTED PAIR CATEGORY 5 RATED CABLE, 24 GAUGE SOLID WIRE. INSTALL CABLE WITHOUT SPLICE (FROM DEMARCATION TO PPC). LEAVE 15'-0" OF SLACK CABLE AT EACH END. LABEL AS "T-1" AT EACH END AND AT ALL PULL BOXES.
11. PROVIDE 4" DIAMETER, SCHEDULE 40 PVC CONDUIT WITH MINIMUM 3'-0" RADIUS SWEEPS AND ELBOWS FOR UNDERGROUND TELEPHONE CONDUIT UNLESS NOTED OTHERWISE.
12. INSTALL PULL ROPES IN ALL CONDUITS UNLESS NOTED OTHERWISE.
13. TELCO CONDUIT RUNS IN/ON BUILDINGS SHALL BE 2" DIA. AND HAVE A MINIMUM 12" RADIUS ON BENDS AND ELBOWS.
14. CONDUIT RUNS SHALL HAVE ONE 18"x18"x8" PULLBOX AFTER 270 DEGREES OF BEND.
15. STRAIGHT RUNS SHALL HAVE A PULLBOX AFTER EACH 75'-0" OF STRAIGHT RUN.




1 TYP. ONE-LINE DIAGRAM
NOT TO SCALE

NOTE:

1. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT FOR PPC, REFER TO VENDOR WIRING DIAGRAM PROVIDED BY MANUFACTURER & REFERENCED INSIDE PPC CABINET.
2. EACH ELECTRICAL SERVICE SHALL BE RATED 200A, 120/240V, 1# 3W.
3. PROVIDE (2) 80 AMP, SINGLE PHASE BREAKERS IN LOAD CENTER FOR MOD CELL 4.0.

### GROUNDING SYMBOLS

- GROUND ROD
- ACCESS WELL
- GROUND ROD WITH ACCESS
- —G— #2 BCW GROUNDING WIRE U.N.O
- (#) INDICATES CODED NOTE

### ELECTRICAL SYMBOLS

- RECEPTACLE
- BURIED RACEWAY
- TOWER LIGHT SYSTEM
- (#) INDICATES CODED NUMBER
- INDICATES DISCONNECT SWITCH

### ABBREVIATIONS

| | |
|---|---|
| CIGBE | COAX ISOLATED GROUND BAR EXTERNAL |
| MIGB | MASTER ISOLATED GROUND BAR |
| SST | SELF SUPPORTING TOWER |
| GPS | GLOBAL POSITIONING SYSTEM |
| TYP. | TYPICAL |
| DWG | DRAWING |
| BCW | BARE COPPER WIRE |
| BFG | BELOW FINISH GRADE |
| W/ | WITH |
| PVC | POLYVINYL CHLORIDE |
| CAB | CABINET |
| C | CONDUIT |
| SS | STAINLESS STEEL |
| G | GROUND |
| AWG | AMERICAN WIRE GAUGE |
| RGS | RIGID GALVANIZED STEEL |

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ELECTRICAL/GROUNDING NOTES & ONE-LINE DIAGRAM

BS62XC009A

E1

DATE: 03/22/04

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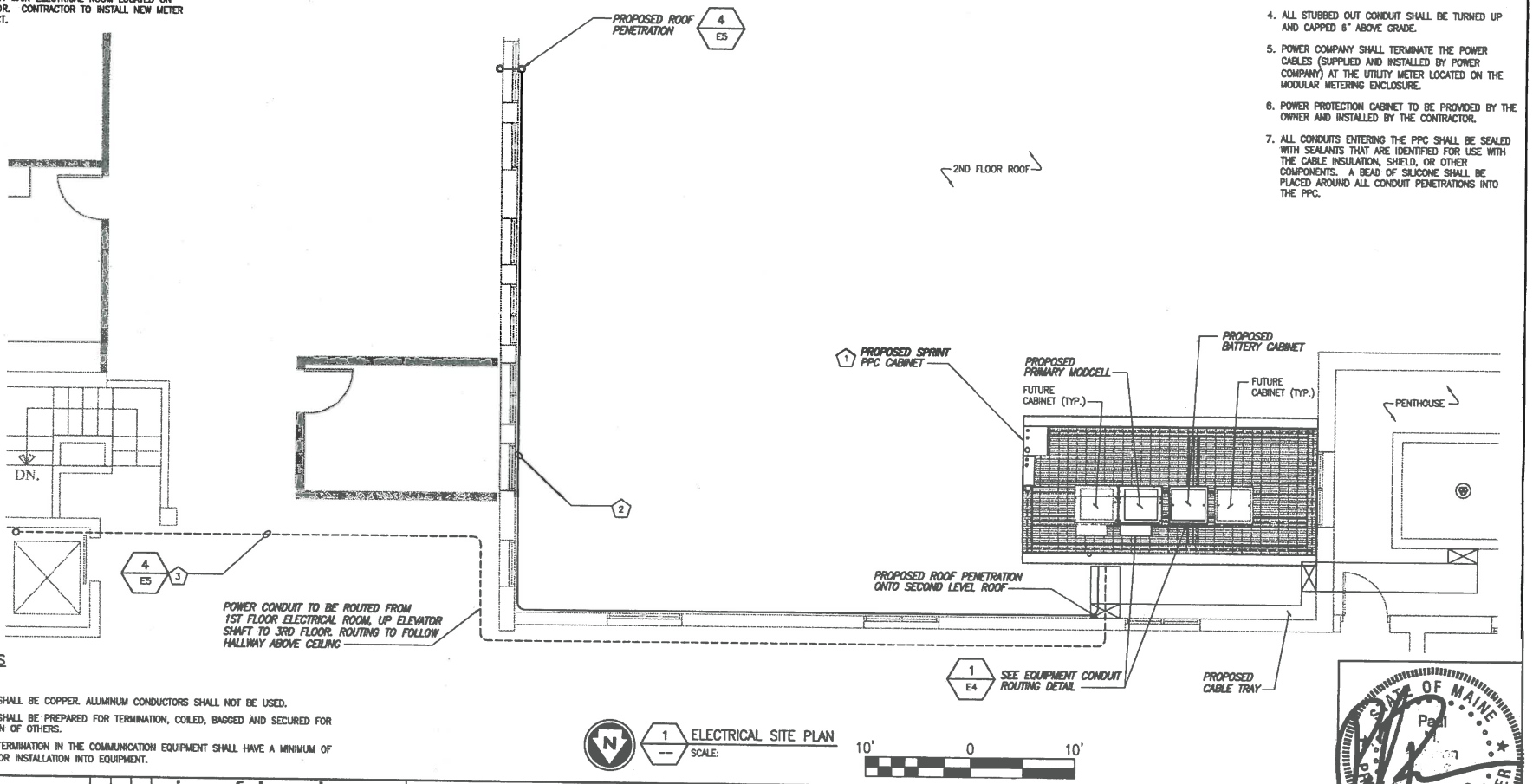
STATE OF MAINE
Paul
REGISTERED PROFESSIONAL ENGINEER

## CODED DRAWING NOTES:

1. PROPOSED PPC (FURNISHED BY SPRINT). COORDINATE STUB-UPS WITH EQUIPMENT SHOP DRAWINGS.
2. (1) 2" RGS DATA CONDUIT WITH (2) PULL STRINGS AND (1) 25-TWISTED PAIR CATEGORY 5 RATED CABLE, 24 GAUGE SOLID WIRE. CONTRACTOR TO ROUTE CONDUIT FROM TELEPHONE ROOM LOCATED ON THE SECOND FLOOR.
3. (1) 200A, 1Ø, 120V CIRCUIT IN A 2 1/2" RGS CONDUIT WITH PULLSTRING. CONTRACTOR TO ROUTE TO EXISTING POWER PANEL IN MAIN ELECTRICAL ROOM LOCATED ON THE FIRST FLOOR. CONTRACTOR TO INSTALL NEW METER AND DISCONNECT.

## GENERAL ELECTRICAL NOTES:

1. CONTRACTOR SHALL REFERENCE SPRINT PCS ELECTRICAL STANDARD SPECIFICATIONS. IN CASE OF A CONFLICT BETWEEN SSLP STANDARD PRACTICES AND EITHER THE CONSTRUCTION SPECIFICATIONS OR THE DRAWINGS, THE SPRINT PCS STANDARD PRACTICES SHALL GOVERN.
2. COORDINATE ALL CONDUIT STUB-UP LOCATIONS WITH UTILITY COMPANY.
3. PROVIDE WEATHERPROOF SEALS FOR ALL CONDUIT STUB-UPS.
4. ALL STUBBED OUT CONDUIT SHALL BE TURNED UP AND CAPPED 6" ABOVE GRADE.
5. POWER COMPANY SHALL TERMINATE THE POWER CABLES (SUPPLIED AND INSTALLED BY POWER COMPANY) AT THE UTILITY METER LOCATED ON THE MODULAR METERING ENCLOSURE.
6. POWER PROTECTION CABINET TO BE PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.
7. ALL CONDUITS ENTERING THE PPC SHALL BE SEALED WITH SEALANTS THAT ARE IDENTIFIED FOR USE WITH THE CABLE INSULATION, SHIELD, OR OTHER COMPONENTS. A BEAD OF SILICONE SHALL BE PLACED AROUND ALL CONDUIT PENETRATIONS INTO THE PPC.




## GENERAL NOTES

### ELECTRICAL NOTES

1. ALL CONDUCTORS SHALL BE COPPER. ALUMINUM CONDUCTORS SHALL NOT BE USED.
2. ALL CONDUCTORS SHALL BE PREPARED FOR TERMINATION, COILED, BAGGED AND SECURED FOR FUTURE CONNECTION OF OTHERS.
3. ALL CONDUCTORS TERMINATION IN THE COMMUNICATION EQUIPMENT SHALL HAVE A MINIMUM OF 8'-0" OF SLACK FOR INSTALLATION INTO EQUIPMENT.

1 — SCALE: ELECTRICAL SITE PLAN

10' 0 10'

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ELECTRICAL SITE PLAN

BS62XC009A

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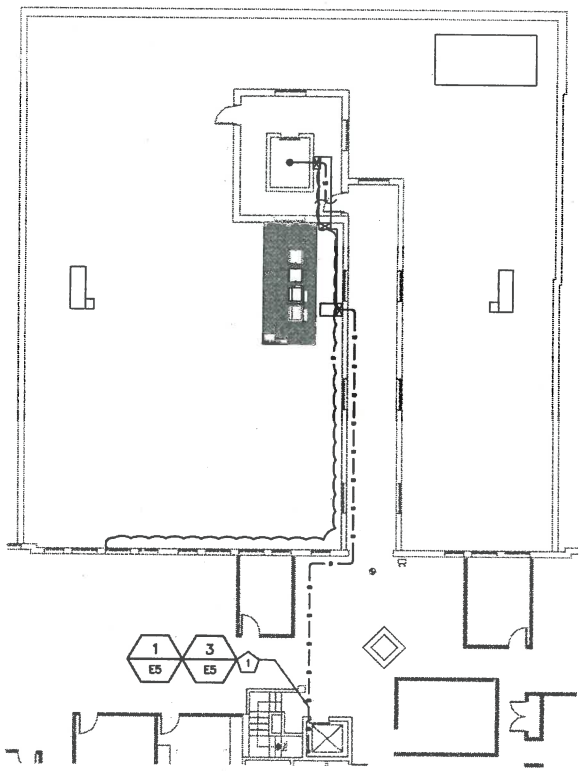
## CODED DRAWING NOTES

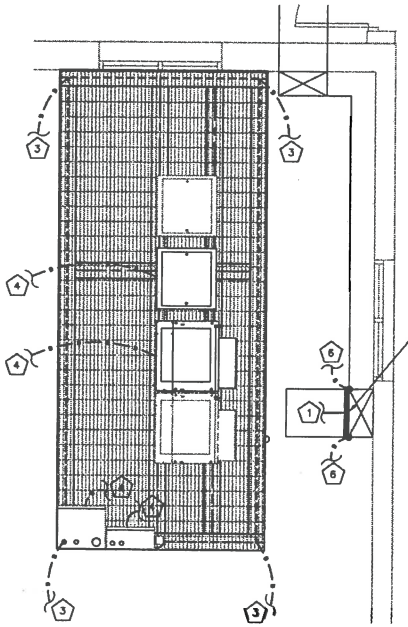
1. (2) #4/0 AWG; (1) IN 2" RGS TO COLD WATER, LOCATION TO BE DETERMINED, & (1) IN 2" RGS TO GROUND ROD IN GROUND BY WATER MAIN. (CONTRACTOR TO FIELD VERIFY ROUTE – SEE DETAIL 1/E5 & 3/E5)
2. PROPOSED MASTER ISOLATED GROUND BAR MOUNTED NEAR EQUIPMENT CABINET.
3. #2 AWG BCW STEEL FRAME GROUND UNDERNEATH PLATFORM TO W CHANNEL.
4. BOND ALL PROPOSED EQUIPMENT & CIGBE TO MIGB WITH #2 SOLID TINNED BCW.
5. BOND GPS TO MIGB WITH #2 SOLID TINNED BCW.
6. BOND CABLE TRAY TO MIGB.

## GROUNDING SYSTEM NOTES:

1. THE CONTRACTOR SHALL VERIFY THAT THE SYSTEM IS EFFECTIVELY GROUNDED, MEETS NEC ARTICLE 250 REQUIREMENTS, IS ACCEPTABLE TO THE LOCAL UTILITY AND THE LOCAL AUTHORITY HAVING JURISDICTION, AND MEETS SPRINT ELECTRICAL AND GROUNDING SPECIFICATIONS.
2. ALL EXTERIOR AND UNDERGROUND CONNECTIONS SHALL BE IN ACCORDANCE WITH SPRINT ELECTRICAL AND GROUNDING SPECIFICATIONS.
3. ALL INTERIOR GROUNDING AND BONDING CONNECTIONS WITHIN BUILDINGS SHALL BE IN ACCORDANCE WITH SPRINT ELECTRICAL AND GROUNDING SPECIFICATIONS.
4. REFER TO DRAWINGS FOR GROUND SYSTEM REQUIREMENTS. WHERE SHOWN ON DRAWINGS, CABLE SHALL BE AS FOLLOWS:
   - A. LIGHTNING PROTECTION CONNECTION, WATER SERVICE CONNECTION, BUILDING STEEL CONNECTION. (ABOVE GROUND APPLICATIONS) — #4/0
   - B. ANTENNA CABLE GROUND CONNECTIONS — #2 AWG THWN (GREEN)
   - C. SOLID OUTDOOR GROUND RING, ALL EQUIPMENT ON POLES AND TOWERS, CABLE TRAY GROUNDING — #2 AWG SOLID TINNED COPPER
   - D. ROOFTOP GROUND RING — #2 AWG SOLID TINNED COPPER
   - E. INDOOR HALO RING — #2 STRANDED (INSULATED GREEN)
   - F. FENCE GROUNDING CONNECTIONS — #2 AWG BARE COPPER WIRE
   - G. FENCE GATE JUMPER — 4/0 WELDING CABLE
5. ROOFTOP GROUND RING (IF APPLICABLE) SHALL ENCIRCLE STRUCTURAL MEMBERS WITH A MINIMUM RADIUS OF 8" AND ONE SINGLE PATH TO THE MAIN ISOLATED GROUND BAR (MIGB).
6. CABLE TRAY GROUNDING SHALL BE AS INDICATED ON DRAWINGS.




1 GROUNDING SITE PLAN
SCALE:
20' 0 20'




2 ENLARGED GROUNDING SITE PLAN
SCALE:
5' 0 5'

## GENERAL GROUNDING NOTES:

1. ALL GROUNDING CONNECTIONS MADE THROUGHOUT THIS DRAWING SHALL BE MADE WITH THOMAS AND BETTS KOPR-SHIELD (TM OF JET LUBE INC.). THERE IS NO EQUIVALENT FOR THIS ANTI-OXIDATION COMPOUND. NO OTHER COMPOUND WILL BE ACCEPTED. COAT ALL WIRES BEFORE LUGGING. COAT ALL SURFACES BEFORE CONNECTING.
2. ALL GROUNDING CABLE IN CONCRETE OR THROUGH WALLS SHALL BE IN 3/4" PVC CONDUIT. SEAL AROUND CONDUIT THROUGH WALLS. NO METALLIC CONDUIT SHALL BE USED FOR GROUNDING CONDUCTORS.
3. CONTRACTOR SHALL VERIFY THE ADEQUACY OF THE INSTALLED SYSTEM. CONTRACTOR SHALL CONDUCT "SITE RESISTANCE TO EARTH GROUNDING TESTING" PER SPRINT STANDARD 98104 – RELEASE 5. INSTALLED SYSTEM SHALL ACHIEVE A GROUND RESISTANCE OF LESS THAN 10 OHMS. RECORD GROUND RESISTANCE TEST RESULTS ON SPRINT SPECTRUM "GROUND RESISTANCE TEST" FORM.
4. TEST SHALL BE WITNESSED BY SPRINT REPRESENTATIVE.
5. MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE. AVOID SHARP BENDS. ALL BENDS SHALL BE A MINIMUM 8" RADIUS AND NO GREATER THAN 90 DEGREES.
6. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE GROUNDING SYSTEM IS COMPLETE. THE CONSTRUCTION MANAGER SHALL INSPECT THE GROUNDING SYSTEM PRIOR TO BACKFILLING. (IF APPLICABLE)
7. THE MINIMUM SPACING BETWEEN GROUND RODS SHALL BE 10'-0" (MAX. 15'-0"). (IF APPLICABLE)
8. BOND CIGBE TO EXTERNAL GROUND RING WITH 2 RUNS OF #2 BARE, TINNED, SOLID COPPER CONDUCTOR IN PVC. CONNECT BAR END WITH 2 HOLE LUG, AND "CADWELD" THE OTHER END TO THE EXTERNAL GROUND ROD. (IF APPLICABLE)

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GROUNDING SITE PLAN
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REGISTERED PROFESSIONAL ENGINEER

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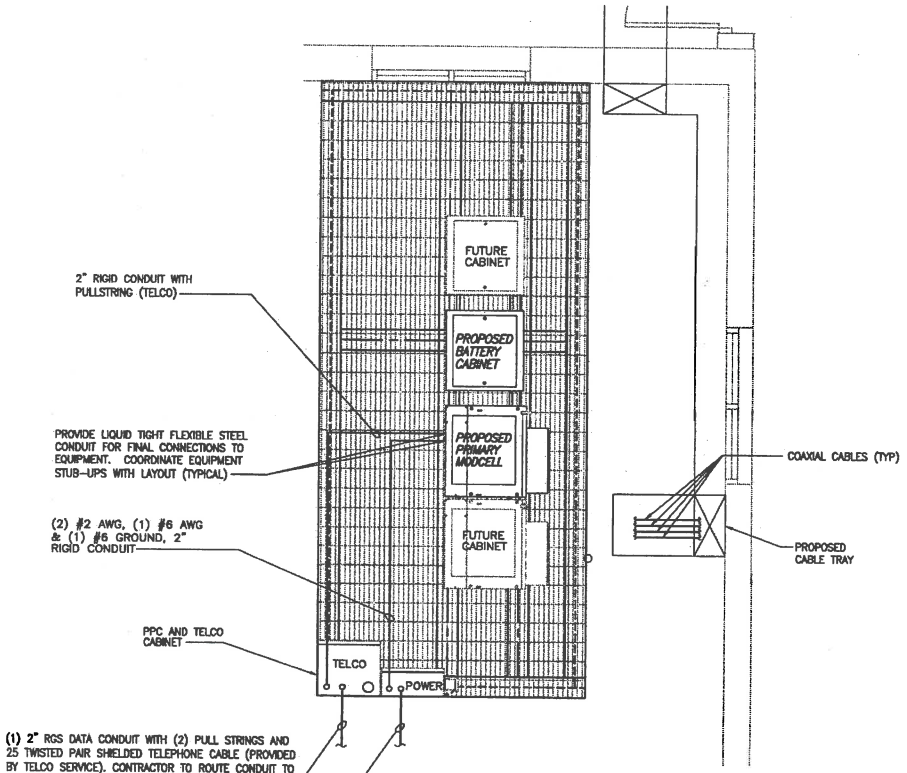
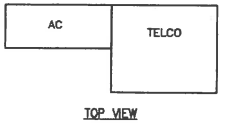
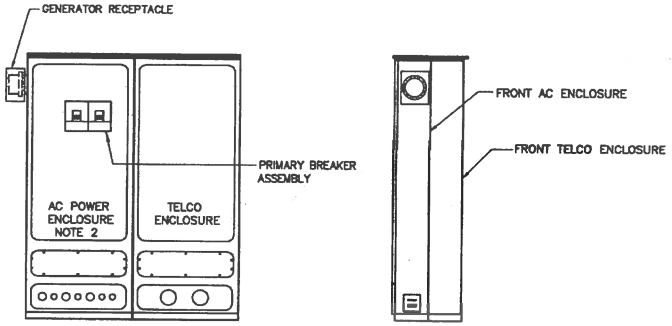



1 / E2 EQUIPMENT PLATFORM CONDUIT ROUTING DETAIL
NOT TO SCALE

NOTES:
1. COORDINATE EQUIPMENT CONNECTIONS, REQUIREMENTS, AND EXACT DIMENSIONS WITH MANUFACTURER'S SPECIFICATIONS.




TOP VIEW




FRONT VIEW SIDE VIEW

NOTES
1. METER SOCKET BY THIS CONTRACT. METER TO BE SUPPLIED BY LOCAL UTILITY COMPANY.
2. AC POWER ENCLOSURE. 200 A, 120/240V, 1ø, 3W W/GROUND. 200A/2P MAIN CIRCUIT BREAKER.
3. ALL EQUIPMENT SHALL BE GROUNDED PER LATEST EDITION OF NEC AND AS INDICATED.
4. ELECTRICAL EQUIPMENT SHALL BE MIN. 3'-0" FROM ANY STRUCTURE AND AS REQUIRED BY LOCAL UTILITY COMPANIES AND AHJ.
5. CONTRACTOR MUST LABEL ALIKE BREAKERS IN POWER CABINET.
6. REFER TO ACTUAL EQUIPMENT DRAWINGS

2 / --- PPC DETAIL
NOT TO SCALE

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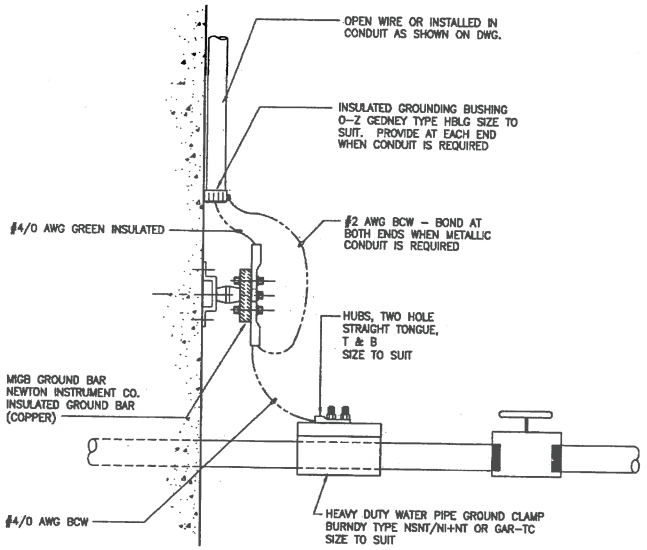
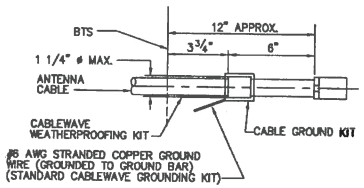
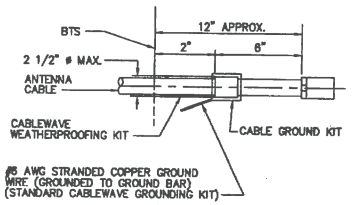



1 GROUNDING TO WATER MAIN
NOT TO SCALE



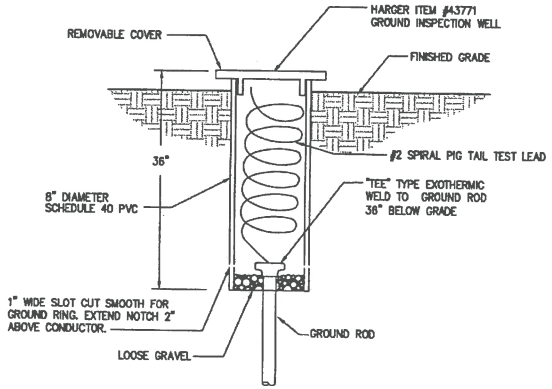

TO ANTENNA GPS CABLE



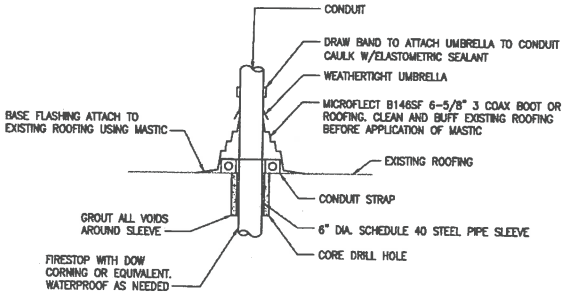

TO ANTENNA CABLE

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

2 CABLE GROUND KIT CONNECTION
NOT TO SCALE




3 GROUND ROD WITH ACCESS
NOT TO SCALE




4 ROOF PENETRATION
NOT TO SCALE

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GROUNDING DETAILS

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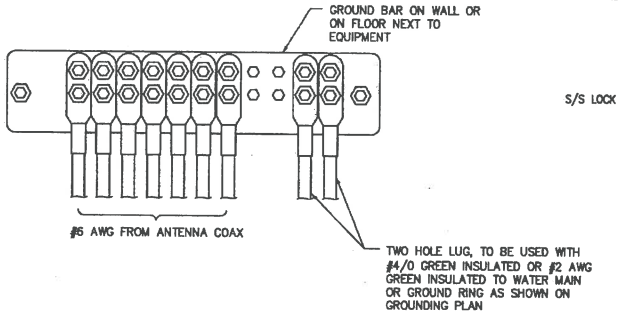
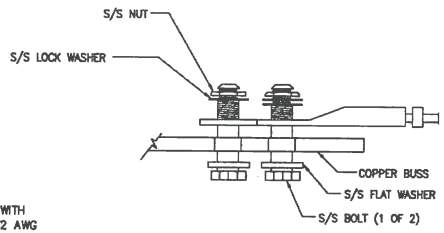


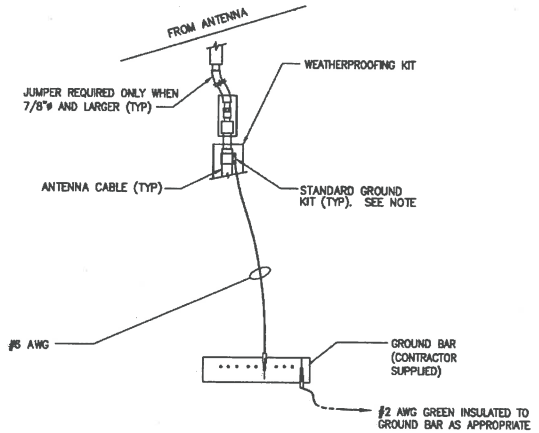

1 MASTER ISOLATED GROUND BAR
NOT TO SCALE

CONTRACTOR TO USE KOPR-SHIELD (THOMAS & BETTS) ON ALL LUG CONNECTIONS.



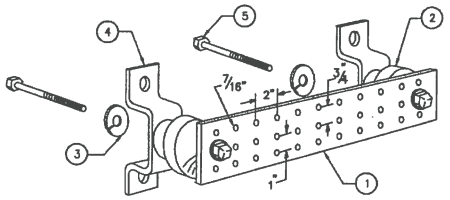

2 LUG DETAIL
NOT TO SCALE

1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING BELLEVILLES. COAT ALL SURFACES WITH KOPR-SHEILD BEFORE MATING.
2. FOR GROUND, BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH KOPR-SHEILD.




NOTE: DO NOT INSTALL CABLE GROUND KIT AT A BEND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

3 CONNECTION OF GROUND WIRES TO GROUNDING BARS @ ANTENNAS




LEGEND

1 – SOLID TINNED COPPER GROUND BAR, 1/4"x 4"x 20" MIN., NEWTON INSTRUMENT CO. CAT. NO. B-6142. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2 – INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
3 – 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8
4 – WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056
5 – 5/8-11 X 1" H.H.C.S. BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1
6 – GROUND BAR SHALL BE SIZED TO ACCOMODATE ALL GROUNDING CONNECTIONS REQUIRED PLUS PROVIDE 50% SPARE CAPACITY
7 – GROUND BARS SHALL NEITHER BE FIELD FABRICATED NOR NEW HOLES DRILLED
8 – GROUND LUGS SHALL MATCH THE HOLE SPACING ON THE BAR
9 – HARDWARE DIAMETER SHALL BE MINIMUM 3/8"
10 – APPLY COPPER NO-OX TO EXPOSED AREA OF GROUND BAR.

4 STANDARD GROUND BAR
NOT TO SCALE

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| 0 | 3/22/04 | ISSUED FOR CONSTRUCTION | AJH | CJW | PMP |

infinigy engineering
351 NEW KARNER ROAD
ALBANY, NY 12205
109-20

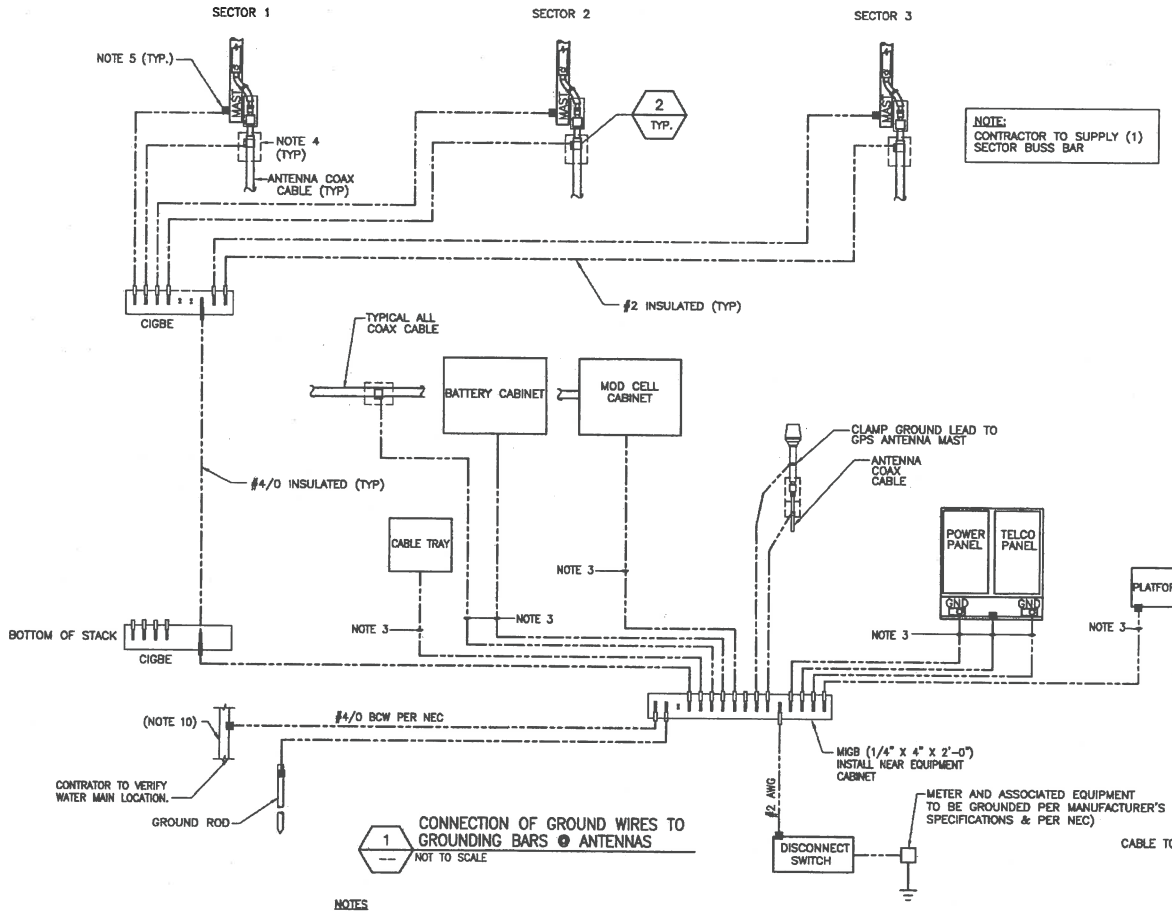
Sprint
CROSSROADS CORPORATE CENTER
INTERNATIONAL BOULEVARD
SUITE 800
MAHWAH, NJ 07495

PORTLAND MAINE
509 FOREST AVENUE
PORTLAND, ME 04101

GROUNDING DETAILS
BS62XC009A
DATE: 03/22/04

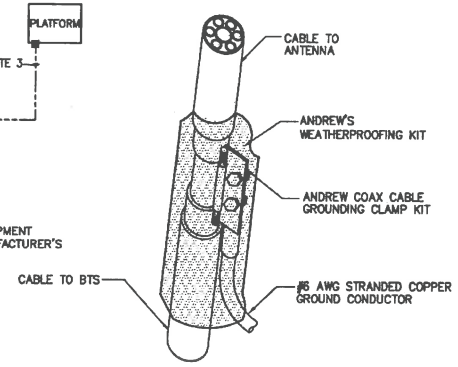
E6
REV 0

STATE OF MAINE
Paul
REGISTERED PROFESSIONAL ENGINEER




1 CONNECTION OF GROUND WIRES TO GROUNDING BARS @ ANTENNAS
NOT TO SCALE

NOTES
1. PROVIDE #2 AWG GROUNDING CONDUCTOR UNLESS NOTED OTHERWISE.
2. PROVIDE BONDING AND GROUNDING CONDUCTORS WITH GREEN TYPE THWN INSULATION UNLESS OTHERWISE NOTED.
3. PROVIDE SOLID TINNED BARE COPPER WIRE GROUNDING CONDUCTOR.
4. PROVIDE STANDARD COAX CABLE GROUNDING KIT OR FIELD FABRICATE TO SUIT CONDITIONS. TOTAL LENGTH OF GROUNDING CONDUCTOR SHALL NOT EXCEED 10'-0".
5. CADWELD CONNECTION.
6. PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN, DRAWING E3.
7. PROVIDE MIGB AT PLATFORM NEAR RF CABINET.
8. METER WILL BE REMOVED FROM BACK OF PPC MINI WHEN MULTI-TENANT METER BACKBOARD IS USED.
9. PROVIDE & INSTALL A #2/0 THWN STRANDED GROUNDING CONDUCTOR WITH GREEN INSULATION.
10. BOND TO EXISTING WATER MAIN AND DRIVEN GROUND ROD. CONTRACTOR TO VERIFY EXACT LOCATION.




NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND IN CABLE.
2. ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
3. 2-1/2" ø MAX FOR TX/RX ANTENNA CABLES.
4. 1-1/4" ø MAX FOR GPS ANTENNA CABLES.

2 COAX CABLE GROUND
NOT TO SCALE

## GENERAL GROUNDING NOTES:

1. CONTRACTOR SHALL COORDINATE INSTALLATION OF GROUND ROD(S) WITH UNDERGROUND CONDUIT INSTALLATION. (IF APPLICABLE)
2. REFER TO SPRINT SPECIFICATIONS FOR TERMINATION, CONDUCTOR, GROUND ROD AND TESTING REQUIREMENTS.
3. CONTRACTOR SHALL BOND NEW SPRINT MIGB TO EXIST BUILDING STEEL OR WATER MAIN & NEW GROUND ROD.
4. CONTRACTOR SHALL MOUNT MASTER ISOLATED GROUND BAR (MIGB) NEAR EQUIPMENT CABINETS, ROUTE (2) #2 AWG BCW FROM GROUND SOURCES (SEE NOTE 3 ABOVE) TO MIGB.
5. CONTRACTOR SHALL CONNECT TO COAX ISOLATED GROUND BAR (CIGBE) NEAR COAX ANTENNA CABLES.
6. GROUND SERVICE DISCONNECT MEANS PER NEC.
7. GROUND EQUIPMENT ON PLATFORM PER SPRINT AND MANUFACTURER'S RECOMMENDATIONS.
8. COAX GROUND CONNECTION KITS ARE FURNISHED BY SPRINT PCS AND INSTALLED BY ELECTRICAL CONTRACTOR.
9. COAX GROUND CONNECTION TO BE MADE ON VERTICAL PORTION OF THE CABLE ABOVE THE 90° BEND TO THE ICE BRIDGE/CABLE TRAY.
10. ALL GROUND WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND; WITH GRADUAL BENDS TO CHANGE DIRECTION, IF NECESSARY; GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
11. TRENCHES (IF APPLICABLE) SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND UNTIL THE GROUNDING SYSTEM CONFORMS TO THE REQUIREMENTS OF THE DRAWINGS AND SPRINT SPECIFICATIONS.
12. SPACING BETWEEN GROUND RODS SHALL BE A MAXIMUM OF 10'-0" ON CENTERS. (IF APPLICABLE)
13. CADWELD GROUND TO FOUR CORNERS AT EQUIPMENT PLATFORM.

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