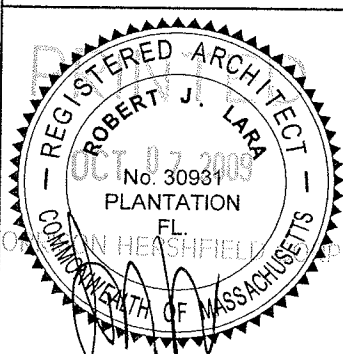




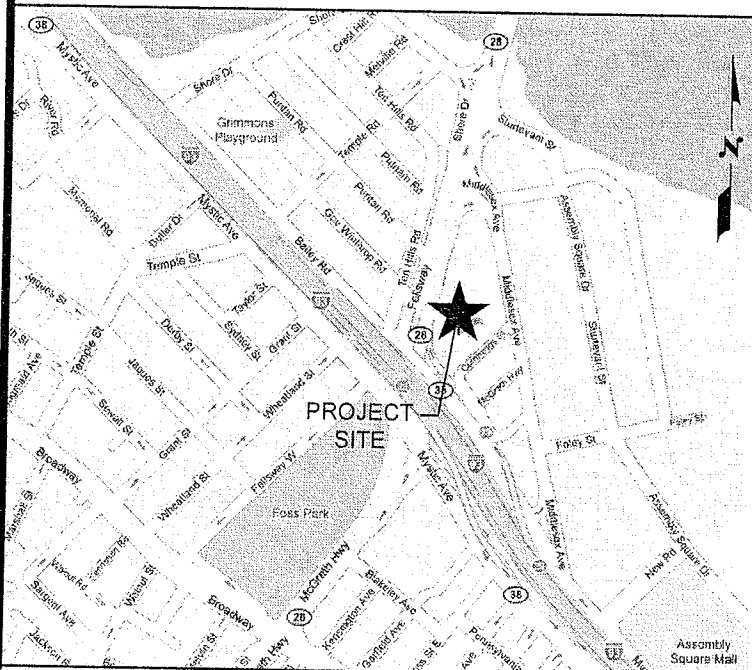
CLEARWIRE SITE NAME : MCGRATH HIGHWAY  
CLEARWIRE SITE ID : MA-BOS5091a / BS54XC903  
PROJECT TYPE : ADD NEW ANTENNAS AND NEW EQUIPMENT CABINETS AT EXISTING TELECOMMUNICATIONS SITE ON EXISTING ROOFTOP  
PROJECT LOCATION : 23 CUMMINGS STREET  
SOMERVILLE, MA 02145

DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF MORRISON HERSHFIELD CORPORATION. NEITHER MORRISON HERSHFIELD NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.



ROBERT JERRY LARA  
REGISTERED ARCHITECT  
STATE OF MASSACHUSETTS  
30931

### VICINITY MAP



### SITE DIRECTIONS

FROM BOSTON-LOGAN AIRPORT, TAKE THE RAMP TO MA-1A S. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-93/MA-1A AND MERGE ONTO MA-1A S, PARTIAL TOLL ROAD. TAKE THE US-1/MA-1A/MA-3 EXIT TOWARD I-93. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-93 AND MERGE ONTO I-93 N. TAKE EXIT 29 TO MERGE ONTO FELLSWAY/MA-28 TOWARD EVERETT. TURN RIGHT TOWARD MIDDLESEX AVE. TURN RIGHT AT MIDDLESEX AVE. TURN RIGHT AT CUMMINGS ST.

### APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER :		
CLEARWIRE REPRESENTATIVE :		

### SCOPE OF WORK

1. INSTALL NEW BACKHAUL ANTENNAS ON EXISTING BUILDING.
2. INSTALL NEW GROUND EQUIPMENT CABINET ON EXISTING SPRINT EQUIPMENT LEASE AREA.
3. ROUTE NEW CABLES FROM NEW ANTENNAS TO NEW EQUIPMENT CABINET ON EXISTING SPRINT CABLE TRAY.
4. INSTALL NEW POWER TO NEW CABINET.

### PROJECT INFORMATION

APPLICANT : CLEARWIRE  
4400 CARILLON POINT  
KIRKLAND, WA 98033

PROPERTY OWNER : LA QUINTA

POWER COMPANY : NSTAR ELECTRIC  
(800) 592-2000

JURISDICTION : CITY OF SOMERVILLE  
PROPERTY IDENTIFICATION : 68/B/6///  
ZONING CLASSIFICATION : N/A

LATITUDE : 42.39430000'  
LONGITUDE : -71.08468000'  
GROUND ELEVATION : 15 (IN FEET A.M.S.L.)

SITE ACQUISITION CONSULTANT : KRISTIN GAVIN  
(617) 894-7338

CONSULTANT REPRESENTATIVE : CORLA BAHAM  
PROJECT MANAGER  
MORRISON HERSHFIELD CORPORATION  
PHONE: (770) 379-8578

ARCHITECT : ROBERT JERRY LARA  
STATE OF MASSACHUSETTS LIC.#30931  
MORRISON HERSHFIELD  
PHONE: (954) 577-4655

### LIST OF DRAWINGS

#### ARCHITECTURAL

- |     |                                                           |       |   |
|-----|-----------------------------------------------------------|-------|---|
| T-1 | COVER SHEET                                               | ISSUE | 0 |
| T-2 | GENERAL NOTES, LEGEND & ABBREVIATIONS                     | 0     | 0 |
| A-1 | ROOF PLAN                                                 | 0     | 0 |
| A-2 | BUILDING ELEVATION                                        | 0     | 0 |
| A-3 | ANTENNAS ORIENTATION                                      | 0     | 0 |
| A-4 | CABINET DETAILS                                           | 0     | 0 |
| A-5 | CABLES COLOR CODING & RF SYSTEM SCHEDULE (PANEL ANTENNAS) | 0     | 0 |
| A-6 | FIRE STOPPING DETAILS                                     | 0     | 0 |
| A-7 | BH ANTENNA DETAILS & RF SYSTEM SCHEDULE (BH ANTENNAS)     | 0     | 0 |

#### ELECTRICAL

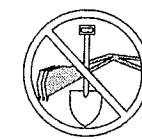
- |     |                              |       |   |
|-----|------------------------------|-------|---|
| E-1 | GROUNDING DETAILS            | ISSUE | 0 |
| E-2 | BH ANTENNA GROUNDING DETAILS | 0     | 0 |

### CODE COMPLIANCE

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

- MASSACHUSETTS STATE BUILDING CODE - 7TH EDITION
- MASSACHUSETTS ELECTRICAL CODE
- MASSACHUSETTS FIRE PREVENTION REGULATIONS 527-CMR21

### GENERAL NOTES



UNDERGROUND  
SERVICE ALERT  
CALL TOLL FREE  
1-888-DIG-SAFE

THREE WORKING DAYS BEFORE YOU DIG

Client:  
**Sprint  
clearwire**  
4400 CARILLON POINT KIRKLAND, WA 98033

Project:  
**MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145**

Drawing Title:

**COVER SHEET**

Project No.  
6090052

Designer:  
LR, CC, RB

Drawn By:  
AM

PM Review:  
CB

Issue No.  
0

Date:  
05/26/09

Checked By:  
CB

Client Approval

Drawing No.  
T-1

C:\Temp\AutoCAD\6090052 MA-BOS5091a CD REV0 090829.dwg plotted by: Calandras 07 Dec 2009 - 11:10am

## GENERAL NOTES

### 1. GENERAL

- EXAMINE THE SITE CONDITIONS VERY CAREFULLY AND THE SCOPE OF PROPOSED WORK TOGETHER WITH THE WORK OF ALL OTHER TRADES AND INCLUDE IN THE BID PRICE ALL COSTS FOR WORK SUCH AS EQUIPMENT AND WIRING MADE NECESSARY TO ACCOMMODATE THE SYSTEMS SHOWN AND SYSTEMS OF OTHER TRADES.
- SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
- PERFORM DETAILED VERIFICATION OF WORK PRIOR TO ORDERING THE EQUIPMENT AND COMMENCING CONSTRUCTION. ISSUE A WRITTEN NOTICE TO THE CONSULTANT OF ANY DISCREPANCIES.
- OBTAIN ALL PERMITS, PAY ASSOCIATED FEES AND SCHEDULE INSPECTION.
- PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, INSURANCE, AND SERVICES TO COMPLETE THIS PROJECT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND PRESENT IT AS FULLY OPERATIONAL TO THE SATISFACTION OF THE OWNER.
- CARRY OUT WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
- PRIOR TO BEGINNING WORK COORDINATE ALL POWER AND TELCO WORK WITH THE LOCAL UTILITY COMPANY AS IT MAY APPLY TO THIS SITE. ALL WORK TO COMPLY WITH THE RULES AND REGULATIONS OF THE UTILITIES INVOLVED.
- FABRICATION AND INSTALLATION OF THE COMPLETE ELECTRICAL SYSTEM SHALL BE DONE IN A FIRST CLASS WORKMANSHIP PER NECA STANDARD 1-2000 BY QUALIFIED PERSONNEL EXPERIENCED IN SUCH WORK AND SHALL SCHEDULE THE WORK IN AN ORDERLY MANNER SO AS NOT TO IMPEDE PROGRESS OF THE PROJECT.
- DURING PROGRESS OF THE WORK, MAINTAIN AN ACCURATE RECORD OF THE INSTALLATION OF THE SYSTEMS, LOCATING EACH CIRCUIT PRECISELY AND DIMENSIONING EQUIPMENT, CONDUIT AND CABLE LOCATIONS. UPON COMPLETION OF THE INSTALLATION, TRANSFER ALL RECORD DATA TO BLACK LINE PRINTS OF THE ORIGINAL DRAWINGS AND SUBMIT THESE DRAWINGS AS RECORD DRAWINGS TO THE CONSULTANT.
- COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL, OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
- CONTRACTOR SHALL CONSULT MANUFACTURER'S PLANS, SHOP DRAWINGS, AND SPECS FOR INDOOR/OUTDOOR EQUIPMENT LOCATION AND INSTALLATION. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN ACCESSIBLE AREAS ONLY.
- COORDINATE EXACT TELEPHONE REQUIREMENTS AND SERVICE ROUTING WITH LOCAL TELEPHONE COMPANY. APPLY FOR TELEPHONE SERVICE IMMEDIATELY UPON AWARD OF CONTRACT.

### 2. BASIC MATERIALS AND METHODS

- ALL ELECTRICAL WORK SHALL CONFORM TO THE EDITION OF THE NEC ACCEPTED BY THE LOCAL JURISDICTION AND TO THE APPLICABLE LOCAL CODES AND REGULATIONS.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW. MATERIALS AND EQUIPMENT SHALL BE THE STANDARD PRODUCTS OF MANUFACTURER'S CURRENT DESIGN. ANY FIRST-CLASS PRODUCT MADE BY A REPUTABLE MANUFACTURER MAY BE USED PROVIDING IT CONFORMS TO THE CONTRACT REQUIREMENTS AND MEETS THE APPROVAL OF THE CONSULTANT AND THE OWNER.
- ARRANGE CONDUIT, WIRING, EQUIPMENT, AND OTHER WORK GENERALLY AS SHOWN, PROVIDING PROPER CLEARANCES AND ACCESS. CAREFULLY EXAMINE ALL CONTRACT DRAWINGS AND FIT THE WORK IN EACH LOCATION WITHOUT SUBSTANTIAL ALTERATION. WHERE DEPARTURES ARE PROPOSED BECAUSE OF FIELD CONDITIONS OR OTHER CAUSES, PREPARE AND SUBMIT DETAILED DRAWINGS FOR ACCEPTANCE.
- THE CONTRACT DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ALL OFFSETS, BENDS, FITTINGS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. PROVIDE ALL SUCH ITEMS AS MAY BE REQUIRED TO FIT THE WORK TO THE CONDITIONS.
- MAINTAIN ALL CLEARANCES AS REQUIRED BY NEC.
- SEAL AROUND CONDUITS AND AROUND CONDUCTORS WITHIN CONDUITS ENTERING THE PREFABRICATED SHELTER/CABINETS WHERE PENETRATION OCCURS WITH A SILICONE SEALANT TO PREVENT MOISTURE PENETRATION INTO BUILDING/SHELTER.
- SILICONE SEAL AROUND ALL BOLTS AND SCREWS USED TO SECURE EQUIPMENT TO EXTERIOR OF BUILDING.

### 3. RACEWAYS AND BOXES

- ALL CONDUIT SHALL BE UL LABELED.
- ALL EMPTY CONDUITS INSTALLED FOR FUTURE USE SHALL HAVE A PULL CORD.
- SHEET METAL BOXES SHALL CONFORM TO NEMA OS1; CAST-METAL BOXES SHALL CONFORM TO NEMA 81 AND SHALL BE SIZED IN ACCORDANCE WITH NEC UNLESS NOTED OTHERWISE.

### 4. GROUNDING

- ALL SAFETY GROUNDING OF THE ELECTRICAL EQUIPMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT REVISION NEC.
- ALL GROUND LUG AND COMPRESSION CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT AGENT, SUCH AS NO-OX, NOALOX, PENETROX OR KOPRSHIELD.
- GROUND ALL EXPOSED METALLIC OBJECTS ON BUILDING EXTERIOR INCLUDING BUILDING TIE DOWN BRACKETS.
- PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. USE STAINLESS STEEL HARDWARE THROUGHOUT.
- DO NOT INSTALL GROUND RING OUTSIDE OF PROPERTY LINE.
- REMOVE ALL PAINT AND CLEAN ALL DIRT FROM SURFACES REQUIRING GROUND CONNECTIONS, REPAINT TO MATCH AFTER CONNECTION IS MADE TO MAINTAIN CORROSION RESISTANCE.
- ALL EXTERIOR GROUNDING CONDUCTORS INCLUDING EXTERIOR GROUND RING SHALL BE #2 AWG SOLID BARE TINNED COPPER UNLESS NOTED OTHERWISE. MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE. AVOID SHARP BENDS. THE RADIUS OF ANY BEND SHALL NOT BE LESS THAN 8" AND THE ANGLE OF ANY BEND SHALL NOT EXCEED 90°. GROUNDING CONDUCTORS SHALL BE ROUTED DOWNWARD TOWARD THE BURIED GROUND RING.
- BOND ALL EXTERIOR CONDUITS, PIPES AND CYLINDRICAL METALLIC OBJECTS WITH A PENN-UNION GT SERIES CLAMP, BLACKBURN GUV SERIES CLAMP OR A BURNEDY GAR 3900BU SERIES CLAMP ONLY, NO SUBSTITUTES ACCEPTED.
- ALL GROUND CONNECTIONS SHALL BE APPROVED FOR THE METALS BEING CONNECTED.
- ALL EXTERNAL GROUND CONNECTIONS SHALL BE EXOTHERMICALLY WELDED. ALL EXOTHERMIC WELDS TO EXTERIOR GROUND RING SHALL BE THE PARALLEL TYPE, EXCEPT FOR THE GROUND RODS WHICH ARE TEE EXOTHERMIC WELDS. REPAIR ALL GALVANIZED SURFACES THAT HAVE BEEN DAMAGED BY EXOTHERMIC WELDING. USE SPRAY GALVANIZER SUCH AS HOLUB LECTROSOL #15-501.
- CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE BURIED GROUND RING IS INSTALLED SO THE REPRESENTATIVE CAN INSPECT THE GROUND RING BEFORE IT IS BACKFILLED WITH SOIL.
- FOR METAL FENCE POST GROUNDING, USE A HEAVY DUTY TYPE GROUNDING CLAMP OR EXOTHERMIC WELD CONNECTION TO POST. GROUND ALL FENCE POSTS WITHIN 6' OF EQUIPMENT.
- WHERE MECHANICAL CONNECTORS (TWO-HOLE OR CLAMP) ARE USED, APPLY A LIBERAL PROTECTIVE COATING OF AN ANTI-OXIDE COMPOUND SUCH AS "NO OXIDE A" BY DEARBORN CHEMICAL COMPANY ON ALL CONNECTORS.

## PROJECT INFORMATION

THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNALS FOR THE PURPOSE OF PROVIDING PUBLIC BROADBAND SERVICE.

NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.

NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.

NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

**CLEARWIRE** MAINTENANCE CREW (TYPICALLY ONE PERSON) WILL MAKE AN AVERAGE OF ONE TRIP PER MONTH AT ONE HOUR PER VISIT.

### 5. COAXIAL ANTENNA CABLE NOTES

- THE COAXIAL ANTENNA CABLE INSTALLER SHALL BE RESPONSIBLE FOR PERFORMING AND SUPPLYING CLEARWIRE WITH TYPE-WRITTEN SWEEP TESTS (ANTENNA RETURN LOSS TEST). THIS TEST SHALL BE PERFORMED TO THE SPECIFICATIONS AND PARAMETERS OUTLINED BY THE CLEARWIRE RADIO FREQUENCY (RF) ENGINEER. THIS TEST SHALL BE PERFORMED PRIOR TO FINAL ACCEPTANCE OF SITE.
- VAPOR WRAP WILL BE USED TO SEAL ALL CONNECTIONS.
- ALL COAXIAL CABLE WILL BE GROUNDED PRIOR TO ENTERING THE EQUIPMENT SPACE AND AS SPECIFIED IN THE ELECTRICAL DRAWINGS.
- ALL MAIN TRANSMISSION CABLE WILL BE TERMINATED AT A NEW/EXISTING POLYPHASE SURGE PROTECTOR LOCATED WITH THE EQUIPMENT SPACE.
- ALL COAXIAL CABLE WILL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 4'-0" WITH HARDWARE SPECIFIED IN THE COAXIAL CABLE ROUTING DETAILS.
- ANTENNA CABLE LENGTHS HAVE BEEN PROVIDED BY OTHERS. CABLE LENGTHS LISTED ARE APPROXIMATE AND ARE NOT INTENDED TO BE USED FOR FABRICATION DUE TO FIELD CONDITIONS. ACTUAL ANTENNA CABLE LENGTHS REQUIRED MAY VARY FROM LENGTHS TABULATED. CONTRACTORS MUST FIELD VERIFY ANTENNA CABLE LENGTHS PRIOR TO ORDER.
- ALL MAIN CABLES WILL BE COLOR CODED AT THREE (3) LOCATIONS:
  - AT ANTENNA PRIOR TO JUMPER
  - PRIOR TO ENTERING EQUIPMENT CABINET, AT CABLE ENTRY PORT
  - INTERIOR SIDE OF EQUIPMENT CABINET, AT CABLE ENTRY PORT
- ALL MAIN CABLES WILL BE GROUNDED AT:
  - AT ANTENNA MOUNTING PIPE
  - AT CABLE SUPPORT ASSEMBLY ON ROOF
  - PRIOR TO ENTERING EQUIPMENT CABINET
- ALL TOP JUMPERS WILL BE MADE UP OF 1/2" DIA. LDF. THE CONTRACTOR SHALL USE ALL REASONABLE EFFORTS TO MINIMIZE THE LENGTH OF THE JUMPERS.

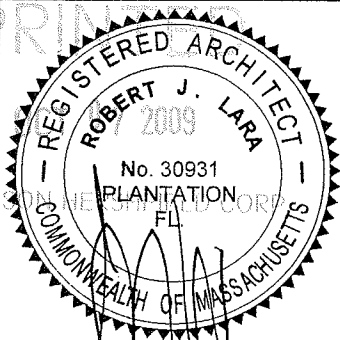
## LEGEND

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
	TRANSFORMER
	KILOWATT HOUR METER
	DENOTES CABLE OR CONDUIT TURNING UP IN PLAN VIEW
	DENOTES CABLE OR CONDUIT TURNING DOWN IN PLAN VIEW
	JUNCTION BOX
	PULL BOX TO NEC/TELCO STANDARDS
	OVERHEAD UTILITIES
	UNDERGROUND TELCO
	UNDERGROUND POWER
	DENOTES REFERENCE NOTE
	EXOTHERMIC WELD CONNECTION
	MECHANICAL CONNECTION (E.G. LUG, C-TAP)
	GROUND ROD
	GROUND ROD WITH INSPECTION SLEEVES
	GROUND BAR
	PIN AND SLEEVE RECEPTACLE
	GROUND CONDUCTOR

## ABBREVIATIONS

AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
BFG	BELOW FINISHED GRADE
C	CONDUIT
CRGB	CELL REFERENCE GROUND BAR
CU	COPPER
C/W	COMPLETE WITH
D.T.T.	DRY TYPE TRANSFORMER
DIA.	DIAMETER
EC	EMPTY CONDUIT
G	GROUND
GE	GROUNDING ELECTRODE
GEC	GROUNDING ELECTRODE CONDUCTOR
GRC	GALVANIZED RIGID CONDUIT
MTS	MANUAL TRANSFER SWITCH
NEC	NATIONAL ELECTRICAL CODE
O/H	OVERHEAD
PDC	POWER DISTRIBUTION CABINET
PVC	POLYVINYL CHLORIDE
RNC	RIGID NON-METALLIC CONDUIT (SCHEDULE 80 PVC)
SCHED	SCHEDULE
SD	SERVICE DISCONNECT SWITCH
SE	SERVICE ENTRANCE
SN	SOLID NEUTRAL
TGB	TELCO GROUND BAR
TEGB	TOWER EXIT GROUND BAR
TR	TRANSFORMER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
U/G	UNDERGROUND
WP	WEATHERPROOF - NEMA 3R
W	WITH

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ROBERT JERRY LARA  
REGISTERED ARCHITECT  
STATE OF MASSACHUSETTS  
30931


0	06/29/09	ISSUED FOR PERMIT
A	06/11/09	ISSUED FOR CLIENT REVIEW
No.	Date	Action

**MORRISON HERSHFIELD**  
Two South University Drive, Suite 245,  
Plantation, FL 33324  
Tel: 954.577.4655 Fax: 954.577.4656  
State of Florida CO# 00008508  
www.morrisonhershfield.com

Client:  
**Sprint**  
**clearwire**  
4400 CARILLON POINT KIRKLAND, WA 98033

Project:  
**MCGRATH HIGHWAY**  
**MA-BOS5091a**  
**23 CUMMINGS STREET**  
**SOMERVILLE, MA 02145**

Drawing Title:  
**GENERAL NOTES,**  
**LEGEND &**  
**ABBREVIATIONS**

Project No. 6090052	Date: 05/26/09
Designer: LR, CC, RB	Checked By: CB
Drawn By: AM	Client Approval
PM Review: CB	
Issue No. 0	Drawing No. T-2

SCALE IS BASED ON 22" x 34" @ 1/8" = 1'

Seal of the State of Massachusetts, featuring a Native American figure with a bow and arrow, surrounded by the text "SIGILLUM REIPUBLICAE MASSACHUSETTENSIS".

O	06/29/09	ISSUED FOR PERMIT
A	06/11/09	ISSUED FOR CLIENT REVIEW
No.	Date	Action



**MORRISON HERSHFIELD**

Two South University Drive, Suite 245,  
Plantation, FL 33324  
Tel: 954.577.4655 Fax: 954.577.4656  
State of Florida CO# 00008508  
[www.morrisonhershfield.com](http://www.morrisonhershfield.com)

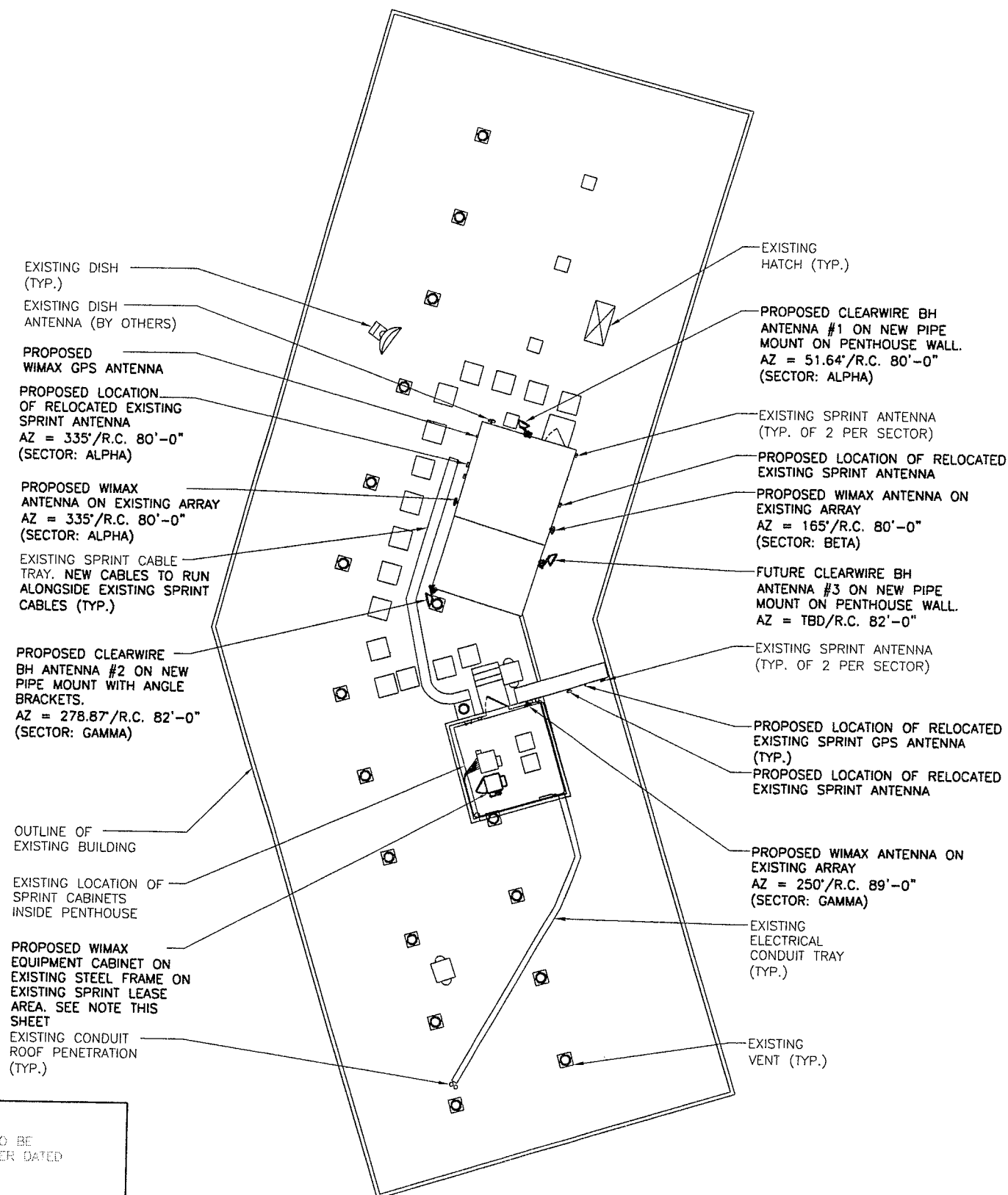
Client: **Sprint**  
**clearwire**

Project:  
MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145

Drawing Title:

ROOF PLAN

Project No. 6090052	
Designer: LR, CC, RB	Date: 05/26/09
Drawn By: AM	Checked By: CB
PM Review: CB	Client Approval
Issue No.  0	Drawing No.  A-1



NOTE:  
PRIOR TO INSTALLATION OF NEW CABINET, EXISTING STEEL FRAME IS TO BE  
REINFORCED PER RECOMMENDATIONS OF HUDSON DESIGN GROUP LETTER DATED  
APRIL 28, 2008

**NOTE:**  
RUN NEW CLEARWIRE CABLES ON EXISTING  
SPRINT CABLE TRAY OR ICE BRIDGE. NOTIFY MM  
IN CASE OF ANY DISCREPANCY.

NOTES:

1. REFER TO "ANTENNA ORIENTATION, RF SYSTEM SCHEDULE & ANTENNA MOUNT DETAIL" SHEET FOR ANTENNA INFORMATION.
2. CONTRACTOR SHALL COORDINATE ALL INSTALLATION REQUIREMENTS WITH **CLEARWIRE** REPRESENTATIVE PRIOR TO CONSTRUCTION.
3. ALL ANTENNAS SHALL BE PAINTED WITH RF TRANSPARENT PAINT TO MATCH EXISTING BUILDING EXTERIOR COLOR. HARDWARE, EQUIPMENT, ETC. SHALL BE PAINTED TO MATCH EXISTING BUILDING EXTERIOR COLOR.

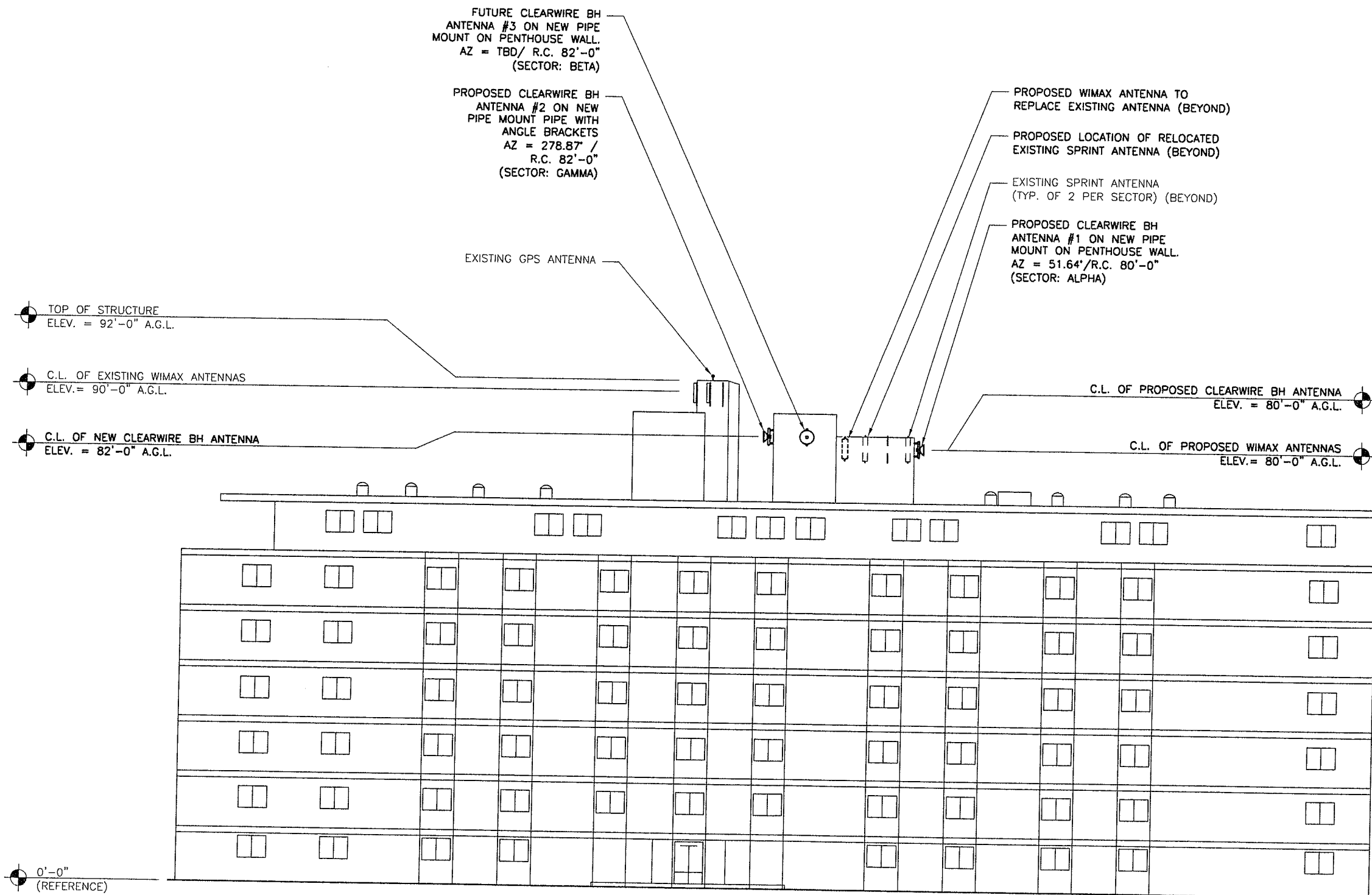
**ROOF PLAN**

**A**  
A-1

$\frac{3}{32}'' = 1'-0''$  (BASED ON 22" x 34" PAPER)  
 $\frac{3}{64}'' = 1'-0''$  (BASED ON 11" x 17" PAPER)



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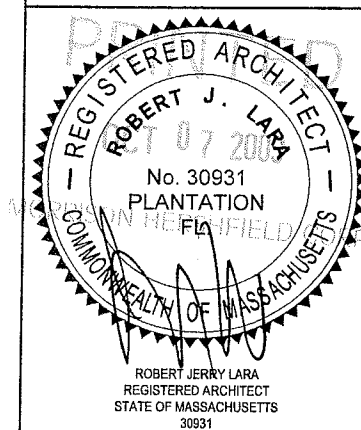


**A BUILDING ELEVATION**  
A-2  
3/32" = 1'-0" (BASED ON 22" x 34" PAPER)  
3/64" = 1'-0" (BASED ON 11" x 17" PAPER)

**NOTE:**  
RUN NEW CLEARWIRE CABLES ON EXISTING SPRINT CABLE TRAY OR ICE BRIDGE. NOTIFY MH IN CASE OF ANY DISCREPANCY.

**NOTE:**  
ALL ANTENNAS SHALL BE PAINTED WITH RF TRANSPARENT PAINT TO MATCH EXISTING BUILDING EXTERIOR COLOR. HARDWARE, EQUIPMENT, ETC. SHALL BE PAINTED TO MATCH EXISTING BUILDING EXTERIOR COLOR.

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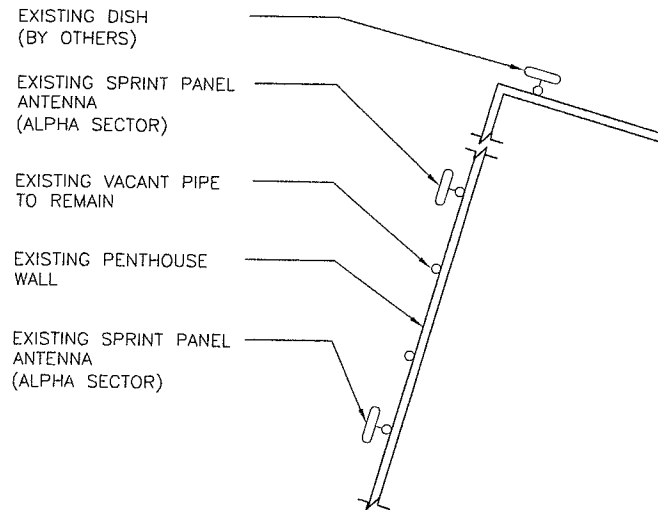
Client:  
**Sprint clearwire**  
4400 CARILLON POINT KIRKLAND, WA 98033

Project:  
**MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145**

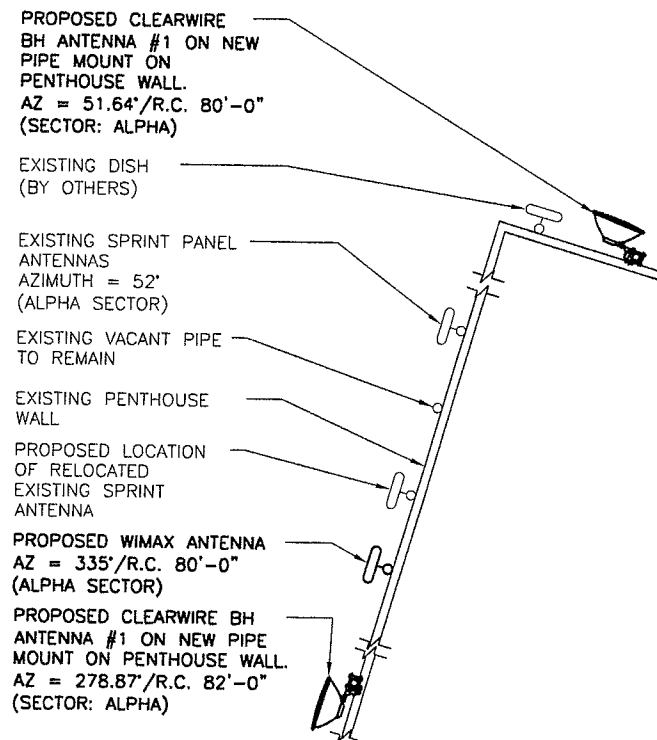
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**BUILDING  
ELEVATION**

Project No. 6090052	Date: 05/26/09
Designer: LR, CC, RB	Checked By: CB
Drawn By: AM	Client Approval:
PM Review: CB	
Issue No. 0	Drawing No. A-2

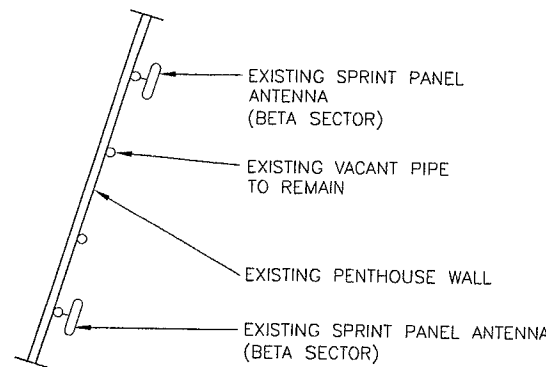
SCALE IS BASED ON 22" x 34" 1/4" SIZE



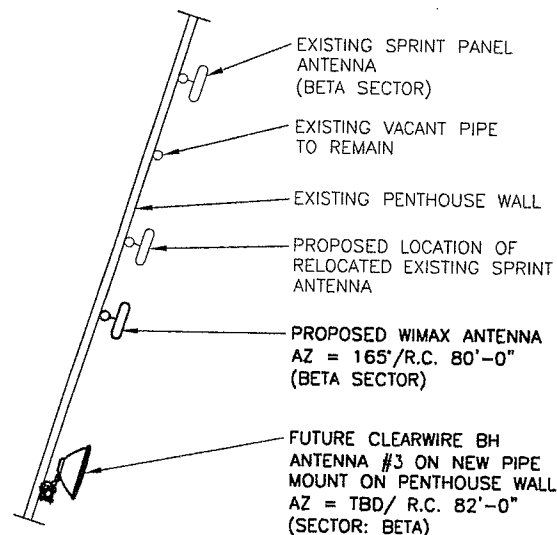
SECTOR ALPHA  
EXISTING CONFIGURATION



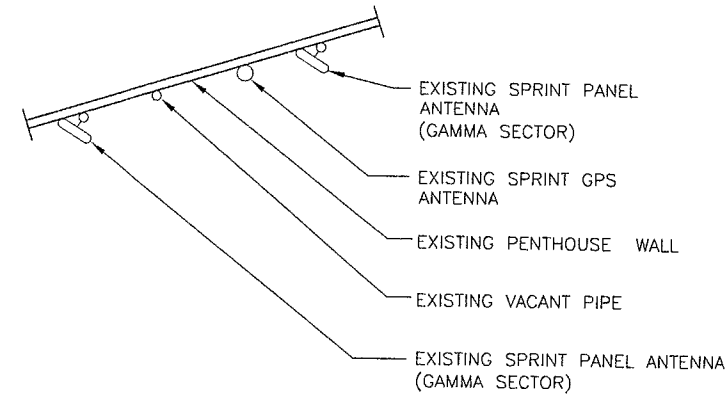
SECTOR ALPHA  
PROPOSED CONFIGURATION



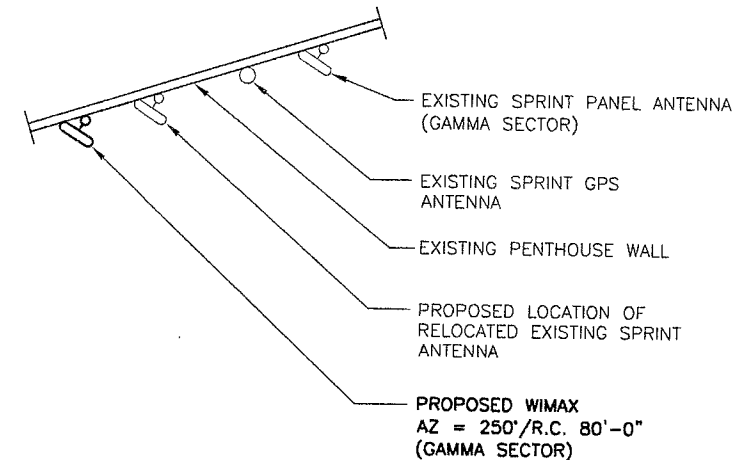
SECTOR BETA  
EXISTING CONFIGURATION



SECTOR BETA  
PROPOSED CONFIGURATION



SECTOR GAMMA  
EXISTING CONFIGURATION

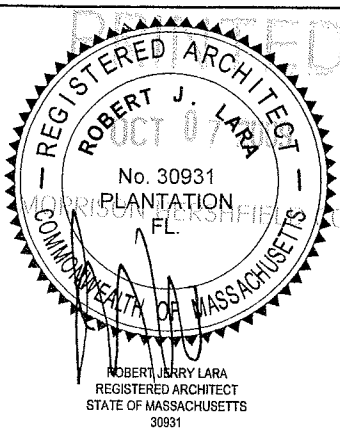


SECTOR GAMMA  
PROPOSED CONFIGURATION

- NOTES:**
1. CONTRACTOR SHALL RELOCATE OR REPLACE EXISTING SPRINT IDEN/CDMA PANEL ANTENNAS AS REQUIRED TO ACCOMMODATE PROPOSED CLEARWIRE WIMAX PANEL ANTENNAS TO MEET RF DESIGN REQUIREMENTS PER EBTS, PER APPROVED TOWER STRUCTURAL ANALYSIS.
  2. CONTRACTOR TO PROVIDE EXISTING ANTENNAS VERIFICATION TO INCLUDE MOUNTING HEIGHT, RC, TOP AND BOTTOM OF ANTENNA AND AZIMUTHS FOR ALL ANTENNAS.
  3. CONTRACTOR SHALL VERIFY NEW PARTS BEFORE ORDERING.
  4. REFER TO "RF SYSTEM SCHEDULE PANEL ANTENNAS", SHEET A-4 FOR ANTENNAS SPECS.

**ANTENNAS ORIENTATION**  
NOT TO SCALE

DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF MORRISON HERSHFIELD CORPORATION. NEITHER MORRISON HERSHFIELD NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.



No.	Date	Action
O	06/29/09	ISSUED FOR PERMIT
A	06/11/09	ISSUED FOR CLIENT REVIEW

**MORRISON HERSHFIELD**  
Two South University Drive, Suite 245,  
Plantation, FL 33324  
Tel: 954.577.4655 Fax: 954.577.4656  
State of Florida CC# 00008508  
www.morrisonherffield.com

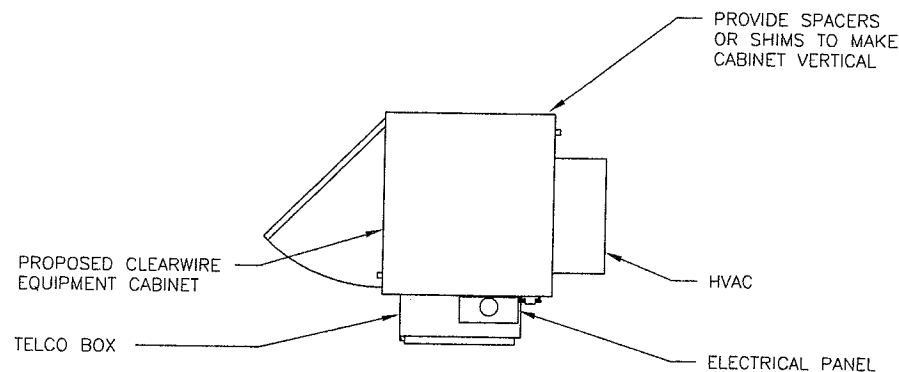
Client:  
**Sprint clearwire**  
4400 CARILLON POINT KIRKLAND, WA 98033

Project:  
**MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145**

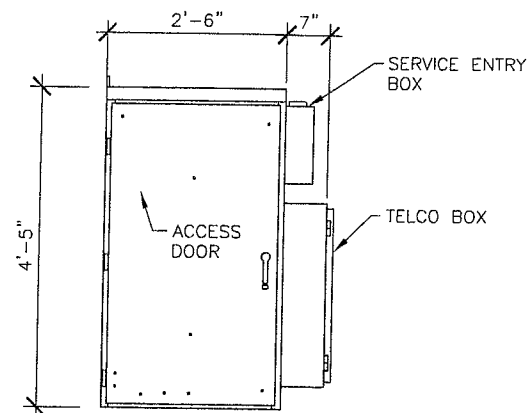
Drawing Title:  
**ANTENNAS  
ORIENTATION**

Project No. 6090052	Designer: LR, CC, RB	Date: 05/26/09
Drawn By: AM	Checked By: CB	Client Approval:
PM Review: CB	Issue No. 0	Drawing No. A-3

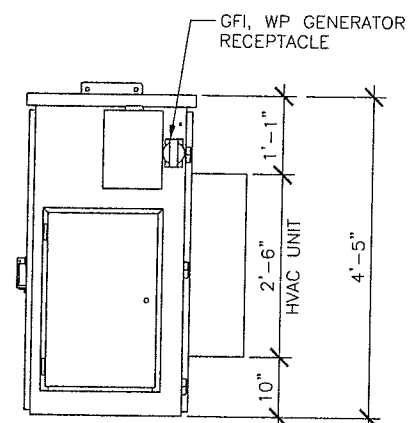
SCALE IS BASED ON 22" x 34" 10" SIZE



TOP VIEW



RIGHT SIDE VIEW



FRONT VIEW

**A** 20D-50DDXCW-2B-ACD CABINET DETAILS  
A-4 NOT TO SCALE

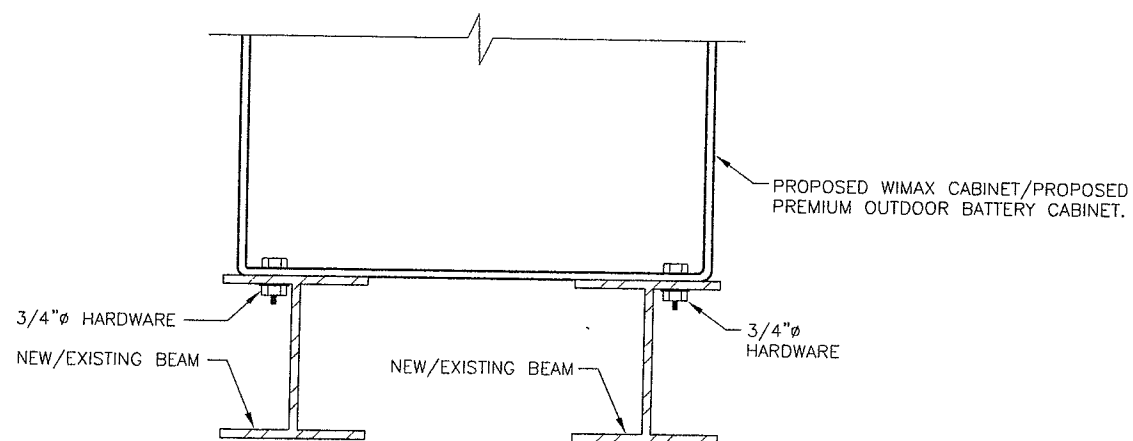
**STRUCTURAL STEEL NOTES:**

1. FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES:  
AISC-ASD-1989 SPECIFICATION FOR STRUCTURAL STEEL CONSTRUCTION.
2. STRUCTURAL TUBING TO CONFORM TO A500 GRADE B (46 KSI). ANGLES AND PLATES TO CONFORM TO ASTM A36.
3. FABRICATOR AND WELDERS MUST BE CERTIFIED TO APPLICABLE SECTIONS OF ANSI/AWS D1.1-94-STRUCTURAL WELDING CODE - STEEL. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES.
4. BOLTED CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS CONFORMING TO "RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS". ALL BOLTS SHALL BE PRE-TENSIONED USING TURN-OF-THE-NUT METHOD.
5. SURFACE PREPARATION OF ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF STEEL STRUCTURES PAINTING COUNCIL SPECIFICATION FOR COMMERCIAL BLAST CLEANING SPPC-SP6
6. ALL STEEL SHALL BE HOT DIP GALVANIZED TO MEET THE REQUIREMENTS OF ASTM STANDARD SPECIFICATION A123. FIELD TOUCH UP WITH ZINC RICH PAINT AFTER CONSTRUCTION.

**CONCRETE NOTES:**

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" AND TO THE PROJECT SPECIFICATIONS. HOT WEATHER CONCRETE TO COMPLY WITH ACI 05R.
2. UNLESS OTHERWISE NOTED, ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI IN 28 DAYS.
3. ALL CONCRETE IS TO BE NORMAL DENSITY CONCRETE WITH A MAXIMUM SLUMP OF 4 INCHES. MAXIMUM AGGREGATE SIZE 3/4 INCH. NO ADDITIONAL WATER SHALL BE ADDED TO THE CONCRETE AT THE JOB SITE. DO NOT ADD CHLORIDE CONTAINING ADMIXTURES.
4. NO HOLES OR SLEEVES SHALL BE MADE THROUGH CONCRETE WORK OTHER THAN THOSE INDICATED ON THE STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER.
5. ALL REINFORCING STEEL BARS SHALL BE ASTM A615, GRADE 60, DEFORMED BARS UNO. WELDING OF REINFORCING BARS IS PROHIBITED.
6. REINFORCING STEEL SHALL BE DETAILED, FABRICATED, BENT AND PLACED IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE AND THE ACI 315 (LATEST EDITION).
7. SPACING DEVICES SHALL BE USED AS REQUIRED TO MAINTAIN THE SIDE & BOTTOM CLEARANCE BETWEEN THE STEEL REINFORCEMENT AND EXCAVATION.

**NOTE:**  
PROPOSED WIMAX CABINET. REFER TO CABINET MANUFACTURER INSTRUCTIONS FOR CABINET INSTALLATION.



**B** OUTDOOR CABINETS ATTACHMENT  
A-4 NOT TO SCALE

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**Sprint clearwire**  
4400 CARILLON POINT KIRKLAND, WA 98033

Project:  
**MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145**

Drawing Title:  
**CABINET DETAILS**

Project No. 6090052	
Designer: LR, CC, RB	Date: 05/26/09
Drawn By: AM	Checked By: CB
PM Review: CB	Client Approval
Issue No. 0	Drawing No. A-4

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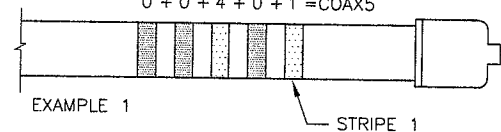
# BH LINE COLOR CHART

CABLE	LSB STRIPE 1 (1) *	STRIPE 2 (2)	STRIPE 3 (4)	STRIPE 4 (8)	MSB STRIPE 5 (16)
1	YELLOW	PURPLE	PURPLE	PURPLE	PURPLE
2	PURPLE	YELLOW	PURPLE	PURPLE	PURPLE
3	YELLOW	YELLOW	PURPLE	PURPLE	PURPLE
4	PURPLE	PURPLE	YELLOW	PURPLE	PURPLE
5	YELLOW	PURPLE	YELLOW	PURPLE	PURPLE
6	PURPLE	YELLOW	YELLOW	PURPLE	PURPLE
7	YELLOW	YELLOW	YELLOW	PURPLE	PURPLE
8	PURPLE	PURPLE	PURPLE	YELLOW	PURPLE
9	YELLOW	PURPLE	PURPLE	YELLOW	PURPLE
10	PURPLE	YELLOW	PURPLE	YELLOW	PURPLE
11	YELLOW	YELLOW	PURPLE	YELLOW	PURPLE
12	PURPLE	PURPLE	YELLOW	YELLOW	PURPLE
13	YELLOW	PURPLE	YELLOW	YELLOW	PURPLE
14	PURPLE	YELLOW	YELLOW	YELLOW	PURPLE
15	YELLOW	YELLOW	YELLOW	YELLOW	PURPLE
16	PURPLE	PURPLE	PURPLE	PURPLE	YELLOW
17	YELLOW	PURPLE	PURPLE	PURPLE	YELLOW
18	PURPLE	YELLOW	PURPLE	PURPLE	YELLOW
19	YELLOW	YELLOW	PURPLE	PURPLE	YELLOW
20	PURPLE	PURPLE	YELLOW	PURPLE	YELLOW
21	YELLOW	PURPLE	YELLOW	PURPLE	YELLOW
22	PURPLE	YELLOW	YELLOW	PURPLE	YELLOW
23	YELLOW	YELLOW	YELLOW	PURPLE	YELLOW
24	PURPLE	PURPLE	PURPLE	YELLOW	YELLOW

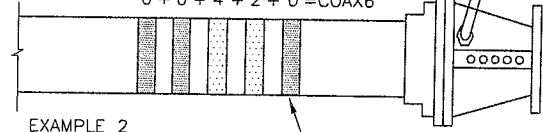
MSB-----LSB

16 8 4 2 1

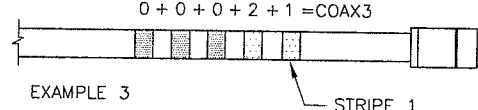
0 + 0 + 4 + 0 + 1 = COAX5



0 + 0 + 4 + 2 + 0 = COAX6



0 + 0 + 0 + 2 + 1 = COAX3



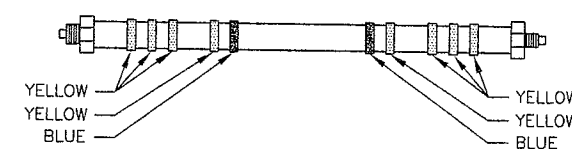
**NOTE:** STRIPE 1 SHALL BE PLACED CLOSEST TO THE CONNECTOR END OF THE CABLE.  
\*

## BH ANTENNAS CABLES COLOR CODING

A  
A-5  
NOT TO SCALE

## WIMAX GPS ANTENNA COLOR CODE CHART

TECHNOLOGY	CABLE CODE
CLEARWIRE	(4) YELLOW + (1) BLUE



## WIMAX GPS ANTENNA COLOR CODE CHART

B  
A-5  
NOT TO SCALE

## WIMAX ANTENNA INFORMATION

SECTOR	AZIMUTH IN DEGREES	RADIATION CENTER	ANTENNA MODEL	POWER (IN.)	FIBER (IN.)	COAX LENGTH (FT.)	MARKING METHOD: COLORED BAND	MARKING METHOD: NUMBER OF BANDS
ALPHA	335	80	ARGUS-LLPX310R	5/8	1/4	130	RED	1
BETA	165	80	ARGUS-LLPX310R	5/8	1/4	130	BLUE	2
GAMMA	250	80	ARGUS-LLPX310R	5/8	1/4	130	YELLOW	3

### GPS ANTENNA LOCATION OPTIONS:

- (1) ICE BRIDGE MAST
- (2) EQUIPMENT CABINET
- (3) H-FRAME, COORDINATE WITH CLEARWIRE & MANAGER IN FIELD

### LABEL MARKINGS SHOULD BE PLACED AT:

- (1) WITHIN 12" OF CABLE AT BOTH ENDS
- (2) AT OR NEAR TOWER MGB
- (3) EITHER PRIOR TO ENTRY INTO THE CABINET OR CABLE SUPPORT BRIDGE
- (4) BOTTOM OF ANTENNA MAST PIPES

NEW  
WIMAX  
ANTENNA

1/2" JUMPER  
(TYP. OF 2)

PROPOSED DC  
POWER CABLE  
PROPOSED  
FIBER CABLE

#2 STRANDED GROUND LEAD  
ATTACHED TO PIPE W/  
EXOTHERMIC WELD

NEW PIPE MOUNT. (LENGTH  
DETERMINED BY ANTENNAS  
LAYOUT)

NEW DAP RADIO SEE NOTES

### NOTES:

1. SEE DAP RADIO INSTALLATION INSTRUCTIONS FOR MOUNTING DETAILS.
2. REFER TO CLEARWIRE ESS SHEET FOR DAP RADIO OPTIONAL LOCATION.
3. IF PROPOSED CLEARWIRE ANTENNA IS TO BE MOUNTED ON A NEW OR EXISTING PIPE ON AN EXISTING ANTENNA MOUNT, CONTRACTOR SHALL FIELD VERIFY EXISTING CLEARANCE OF NEW/EXISTING PIPE FOR DAP RADIO INSTALLATION BEHIND PROPOSED ANTENNA. IF THERE IS NO AVAILABLE SPACE, EXISTING PIPE SHALL BE REPLACED WITH NEW PIPE. NEW PIPES LENGTH SHALL BE 8'-0" MINIMUM, AND DAP RADIO SHALL BE MOUNTED BELOW PROPOSED CLEARWIRE ANTENNA. COORDINATE WITH CLEARWIRE CONSTRUCTION MANAGER IN FIELD.

## PANEL ANTENNA MOUNT DETAIL

C  
A-5  
NOT TO SCALE

### NOTES:

1. CABLE LENGTHS ARE ESTIMATES, CONTRACTOR SHALL VERIFY IN FIELD.
2. MINIMUM SEPARATION BETWEEN GPS ANTENNAS IS 4'-0". INSTALL GPS FOR SOUTHERN EXPOSURE AND REGIONAL SNOW DEPTHS.
3. EXISTING IDEN AND CDMA GPS ANTENNAS TO REMAIN.

## RF SYSTEM SCHEDULE PANEL ANTENNAS

D  
A-5  
NOT TO SCALE

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**Sprint  
clearwire**  
4400 CARILLON POINT KIRKLAND, WA 98033

Project:  
**MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145**

Drawing Title:  
**CABLES COLOR  
CODING & RF  
SYSTEM SCHEDULE  
(PANEL ANTENNAS)**

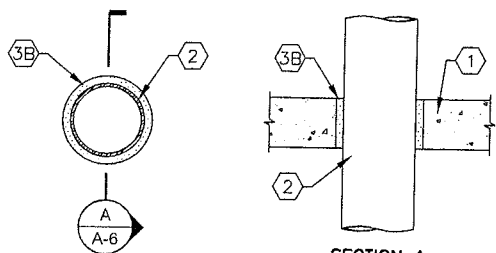
Project No. 6090052	Date: 05/26/09
Designer: LR, CC, RB	Checked By: CB
Drawn By: AM	Client Approval
PM Review: CB	

Issue No. 0	Drawing No. A-5
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# GUIDE XHEZ THROUGH-PENETRATION FIRESTOP SYSTEMS

(01/01/00)  
C-AJ-1089 - A CARD

SYSTEM NO. C-AJ-1089  
(FORMERLY SYSTEM NO. 476)  
F-RATING - 3 HR  
T-RATING - 1/2 HR



SECTION A  
(CONT'D ON C-AJ-1089 - B CARD)

GUIDE XHEZ 01/01/00  
THROUGH-PENETRATION C-AJ-1089 - B CARD  
FIRESTOP SYSTEMS

SYSTEM NO. C-AJ-1089  
(FORMERLY SYSTEM NO. 476)  
F RATING -- 3 HR  
T RATING -- 1/2 HR

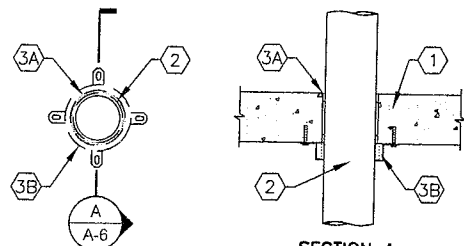
- 1 FLOOR OR WALL ASSEMBLY -- MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAX DIAM OF OPENING IS 8 IN. SEE CONCRETE BLOCK (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- 2 THROUGH PENETRANTS -- ONE METALLIC PIPE, CONDUIT OR TUBING TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. A NOM ANNULAR SPACE OF 1/16 IN. IS REQUIRED WITHIN FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:  
A. STEEL PIPE -- NOM 6 IN. DIAM (OR SMALLER) SCHEDULE 5 (OR HEAVIER) STEEL PIPE.  
B. IRON PIPE -- NOM 6 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.  
C. CONDUIT -- NOM 4 IN. DIAM (OR SMALLER) ELECTRICAL METALLIC TUBING OR NOM 6 IN. DIAM (OR SMALLER) RIGID GALV. STEEL CONDUIT.
- 3 FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:  
A. FORMS -- (NOT SHOWN) -- USED AS A FORM TO PREVENT LEAKAGE OF FILL MATERIAL DURING INSTALLATION. FORMS TO BE A RIGID SHEET MATERIAL CUT TO FIT THE CONTOUR OF THE PENETRATING ITEM AND FASTENED TO THE UNDERSIDE OF FLOOR OR BOTH SIDES OF WALL. FORMS TO BE REMOVED AFTER FILL MATERIAL HAS CURED.  
B. FILL, VOID OR CAVITY MATERIAL\* -- MORTAR -- MIN 4-1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS. FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. MORTAR IS TO BE MIXED AT A RATE OF 1.2 PARTS DRY MIX TO ONE PART WATER BY WEIGHT MANUFACTURER'S INSTALLATION INSTRUCTIONS. SPECIFIED TECHNOLOGIES INC. -- SPECSEAL MORTAR.

\*BEARING THE UL CLASSIFICATION MARKING

# GUIDE XHEZ THROUGH-PENETRATION FIRESTOP SYSTEMS

(01/01/00)  
C-AJ-2038 - A CARD

SYSTEM NO. C-AJ-2038  
(FORMERLY SYSTEM NO. 534)  
F-RATING - 3 HR  
T-RATING - 3 HR  
L RATING AT AMBIENT - 1 CFM/SQ FT  
L RATING AT 400 F - LESS THAN 1 CFM/SQ FT



SECTION A  
(CONT'D ON C-AJ-2038 - B CARD)

GUIDE XHEZ 01/01/00  
THROUGH-PENETRATION C-AJ-2038 - B CARD  
FIRESTOP SYSTEMS

SYSTEM NO. C-AJ-2038  
(FORMERLY SYSTEM NO. 534)  
F RATING 3 HR  
T RATING 3 HR  
L RATING AT AMBIENT -- 1 CFM/SQ FT  
L RATING AT 400 F -- LESS THAN 1 CFM/SQ FT

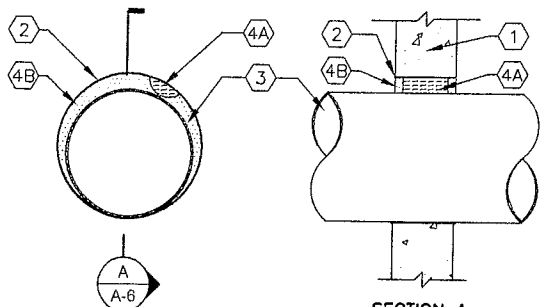
- 1 FLOOR OR WALL ASSEMBLY -- MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. FLOOR MAY ALSO BE CONSTRUCTED OF ANY MIN 6 IN. THICK UL CLASSIFIED HOLLOW-CORE PRECAST CONCRETE UNITS\*. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX DIAM OF OPENING IS 5 IN. SEE CONCRETE BLOCKS (CAZT) AND PRECAST CONCRETE UNITS (CFTV) CATEGORIES IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- 2 THROUGH PENETRANTS -- ONE NONMETALLIC PIPE OR CONDUIT TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. A NOM ANNULAR SPACE OF 1/4 IN. IS REQUIRED WITHIN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NONMETALLIC PIPES OF CONDUITS MAY BE USED:  
A. POLYVINYL CHLORIDE (PVC) PIPE -- NOM 4 IN. DIAM (OR SMALLER) SCHEDULE 40 SOLID OR CELLULAR CORE PVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS.  
B. RIGID NONMETALLIC CONDUIT+ -- NOM 4 IN. DIAM (OR SMALLER) SCHEDULE 40 OR 80 PVC CONDUIT INSTALLED IN ACCORDANCE WITH ARTICLE 347 OF THE NATIONAL ELECTRICAL CODE (NFPA NO. 70).  
C. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE -- NOM 4 IN. DIAM (OR SMALLER) SDR17 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS.  
D. ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE -- NOM 4 IN. DIAM (OR SMALLER) SCHEDULE 40 SOLID OR FOAMED CORE ABS PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS.
- 3 FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:  
A. FILL, VOID OR CAVITY MATERIAL\* -- CAULK FORCED INTO ANNULAR SPACE TO MAX EXTENT POSSIBLE. CAULK SHALL BE INSTALLED FLUSH WITH BOTH SURFACES OF FLOOR OR WALL ASSEMBLY. SPECIFIED TECHNOLOGIES INC. -- SPECSEAL 100, 101 OR 105 SEALANT  
B. FIRESTOP DEVICE\* -- GALV STEEL COLLAR LINED WITH AN INTUMESCENT MATERIAL SIZED TO FIT THE SPECIFIC DIAM OF THE THROUGH-PENETRANT. DEVICE SHALL BE INSTALLED AROUND THROUGH-PENETRANT IN ACCORDANCE WITH THE ACCOMPANYING INSTALLATION INSTRUCTIONS. DEVICE INCORPORATES ANCHOR TABS FOR SECUREMENT TO BOTTOM SURFACE OF FLOOR OR TO BOTH SURFACES OF WALL ASSEMBLY BY MEANS OF 1/4 IN. DIAM BY 1-3/4 IN. LONG CONCRETE ANCHORS IN CONJUNCTION WITH 1/4 IN. DIAM BY 1-1/2 IN. STEEL FENDER WASHERS. SPECIFIED TECHNOLOGIES INC. -- SPECSEAL FIRESTOP COLLAR

\*BEARING THE UL CLASSIFICATION MARKING

# GUIDE XHEZ THROUGH-PENETRATION FIRESTOP SYSTEMS

(01/01/00)  
W-J-1070 - A CARD

SYSTEM NO. W-J-1070  
F RATING - 4 HR  
T RATING - 0 HR  
L RATING AT AMBIENT - LESS THAN 1 CFM/SQ FT  
L RATING AT 400 F - LESS THAN 1 CFM/SQ FT



SECTION A  
(CONT'D ON W-J-1070 - B CARD)

GUIDE XHEZ 01/01/00  
THROUGH-PENETRATION W-J-1070 - B CARD  
FIRESTOP SYSTEMS

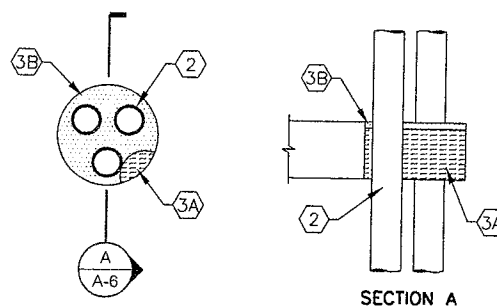
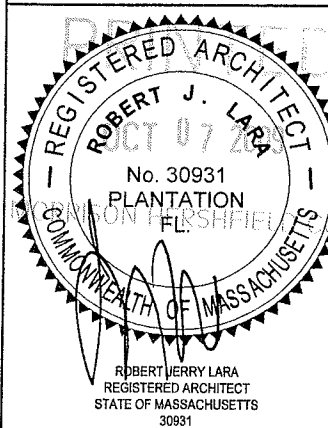
SYSTEM NO. W-J-1070  
F RATING -- 4 HR  
T RATING -- 0 HR  
L RATING AT AMBIENT -- LESS THAN 1 CFM/SQ FT  
L RATING AT 400 F -- LESS THAN 1 CFM/SQ FT

- 1 WALL ASSEMBLY -- MIN 7-5/8 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX DIAM OF OPENING IS 26 IN. SEE CONCRETE BLOCK (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- 2 STEEL SLEEVE -- (OPTIONAL) -- CYLINDRICAL SLEEVE FABRICATED FROM MIN 0.031 IN. THICK (NO. 22 MSG) GALV SHEET STEEL AND HAVING A MIN 2 IN. LAP ALONG THE LONGITUDINAL SEAM. THE ENDS OF THE STEEL SLEEVE SHALL BE INSTALLED FLUSH WITH EACH FACE OF THE WALL OR EXTEND A MAX 1/4 IN. BEYOND EACH SURFACE OF THE WALL.
- 3 THROUGH PENETRANTS -- ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN THE PIPE, CONDUIT OR TUBING AND THE PERIPHERY OF THE OPENING SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 2 IN. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:  
A. STEEL PIPE -- NOM 24 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.  
B. IRON PIPE -- NOM 24 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.  
C. CONDUIT -- NOM 6 IN. DIAM (OR SMALLER) RIGID STEEL CONDUIT, NOM 4 IN. DIAM (OR SMALLER) ELECTRICAL METALLIC TUBING OR NOM 1 IN. DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT.  
D. COPPER TUBING -- NOM 6 IN. DIAM (OR SMALLER) TYPE M (OR HEAVIER) COPPER TUBING.  
E. COPPER PIPE -- NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
- 4 FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:  
A. PACKING MATERIAL -- MIN 5-5/8 IN. THICKNESS OF 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM EACH EDGE OF SLEEVE TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.  
B. FILL, VOID OR CAVITY MATERIAL\* -- CAULK -- MIN 1 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH ENDS OF STEEL SLEEVE. A MIN 1/4 IN. THICK BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE POINT CONTACT LOCATION ON BOTH SURFACES OF WALL. WHEN SLEEVE PROJECTS BEYOND SURFACE OF WALL, A MIN 1/4 IN. THICK BEAD OF CAULK SHALL BE APPLIED TO OUTER PERIMETER OF SLEEVE AT INTERFACE WITH WALL SURFACES. SPECIFIED TECHNOLOGIES INC. -- SPECSEAL 100, 101, 102, 129, 105 SEALANT

\*BEARING THE UL CLASSIFICATION MARKING

# GUIDE XHEZ THROUGH-PENETRATION FIRESTOP SYSTEMS

DO NOT SCALE DRAWINGS. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND ADVISE CONSULTANTS OF ANY ERRORS OR OMISSIONS. NO VARIATIONS OR MODIFICATIONS TO WORK SHOWN SHALL BE IMPLEMENTED WITHOUT PRIOR WRITTEN APPROVAL. ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED BY THE LATEST REVISION. ALL DRAWINGS AND SPECIFICATIONS REMAIN THE PROPERTY OF MORRISON HERSHFIELD CORPORATION. NEITHER MORRISON HERSHFIELD NOR THE ARCHITECT WILL BE PROVIDING CONSTRUCTION REVIEW OF THIS PROJECT.



SECTION A

GUIDE XHEZ 01/01/00  
THROUGH-PENETRATION C-AJ-1048 - B CARD  
FIRESTOP SYSTEMS

SYSTEM NO. C-AJ-1048  
(FORMERLY SYSTEM NO. 329)  
F RATING -- 3 HR  
T RATING -- 1/2 HR  
L RATING AT AMBIENT -- LESS THAN 1 CFM/SQ FT  
L RATING AT 400 F -- LESS THAN 1 CFM/SQ FT

- 1 FLOOR OR WALL ASSEMBLY -- MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE FLOOR OR MIN 5 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX DIAM OF OPENING IS 8 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- 2 THROUGH PENETRANTS -- THREE METALLIC PIPES, CONDUITS OR TUBING TO BE INSTALLED WITHIN THE OPENING. THE SPACE BETWEEN PIPES, CONDUITS OR TUBING SHALL BE A NOM 1 IN. THE SPACE BETWEEN PIPES, CONDUITS OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN 5/8 IN. TO MAX 2-5/8 IN. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:  
A. STEEL PIPE -- NOM 2 IN. DIAM (OR SMALLER) SCHEDULE 5 (OR HEAVIER) STEEL PIPE.  
B. CONDUIT -- NOM 2 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR RIGID STEEL CONDUIT.
- 3 FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:  
A. PACKING MATERIAL -- MIN 4 IN. THICKNESS OF MIN 4.8 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.  
B. FILL, VOID OR CAVITY MATERIAL\* -- CAULK -- MIN 1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. GENERAL ELECTRIC CO. -- PENSIL 100 CAULK FOR FLOORS AND WALLS. SPECIFIED TECHNOLOGIES INC. -- PENSIL 100 SEALANT FOR FLOORS AND WALL, PENSIL 300 SEALANT FOR FLOORS AND WALLS AND PENSIL 300 S/L SEALANT FOR FLOORS ONLY.

\*BEARING THE UL CLASSIFICATION MARKING

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A	06/11/09	ISSUED FOR CLIENT REVIEW
No.	Date	Action

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4400 CARILLON POINT KIRKLAND, WA 98033

Project:  
**MCGRATH HIGHWAY**  
**MA-BOS5091a**  
**23 CUMMINGS STREET**  
**SOMERVILLE, MA 02145**

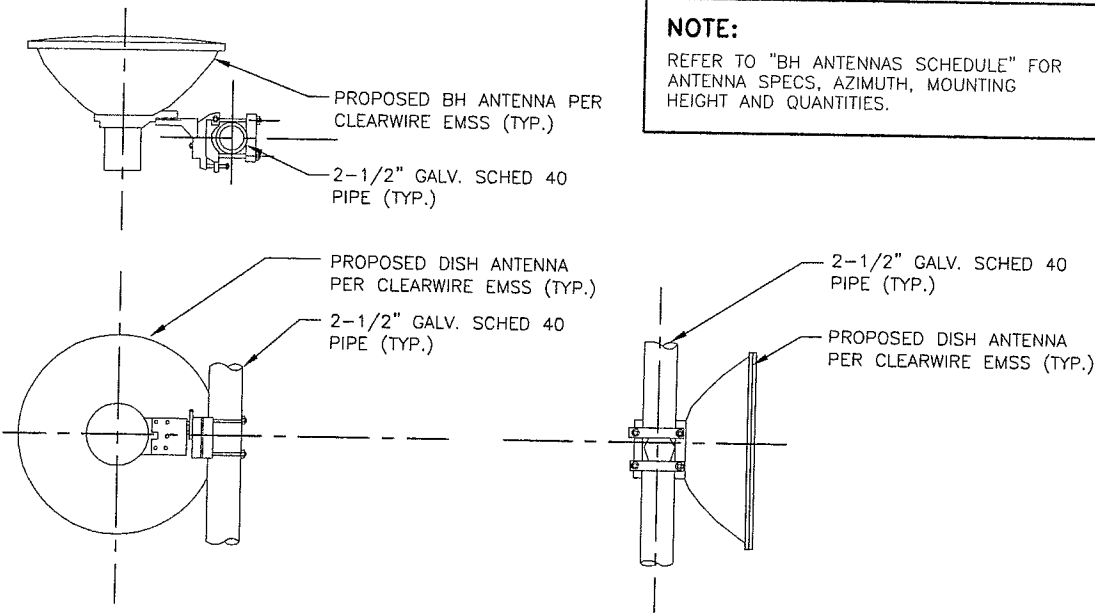
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**FIRE STOPPING**  
**DETAILS**

Project No. 6090052	Designer: LR, CC, RB	Date: 05/26/09
Drawn By: AM	Checked By: CB	Client Approval
PM Review: CB	Issue No. 0	Drawing No. A-6

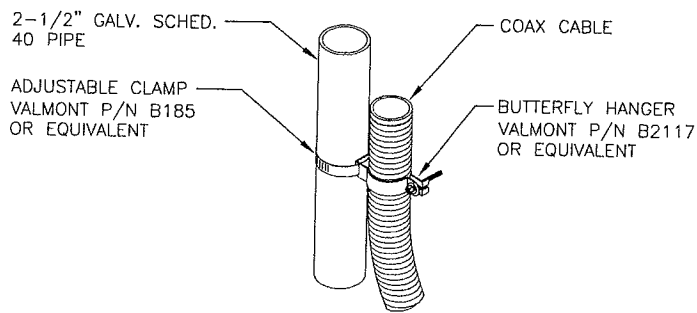


PROPOSED BH ANTENNAS INFORMATION TABLE													
ANTENNA ID	MODEL #	DIAMETER (FT)	FREQUENCY (GHZ)	AZIMUTH (DEGREES)	RAD CENTER HEIGHT (FT)	MOUNT LOCATION (SECTOR)	MOUNT TYPE	SECTOR POSITION	COAX CABLES			SITE #2 (Z END SITE ID)	RADIO MODEL
									SIZE	APPROX. LENGTH (FT)	# OF RUNS		
BH # 1	ANDREW VHLP2-23	2	23	51.64	80	ALPHA	ON NEW PIPE	SEE A/A-3	1/2"	130	1	MA-BOS6080	DRAGONWAVE HD HP
BH # 2	ANDREW VHLP2-23	2	23	278.87	82	GAMMA	ON NEW PIPE	SEE A/A-3	1/2"	130	1	MA-BOS5092	DRAGONWAVE HD HP
BH # 3	ANDREW VHLP2-23	2	23	TBD	82	TBD	ON NEW PIPE	SEE A/A-3	1/2"	130	1	TBD	DRAGONWAVE HD HP

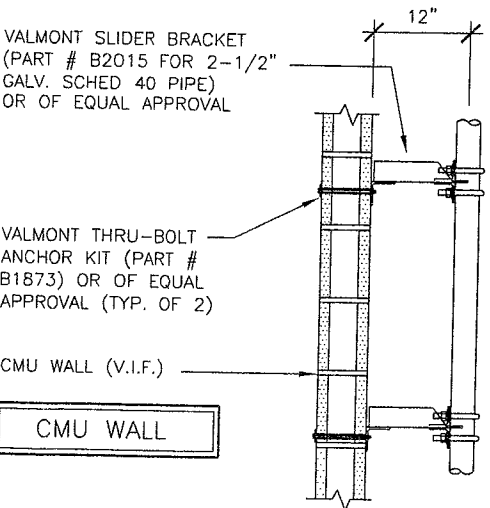
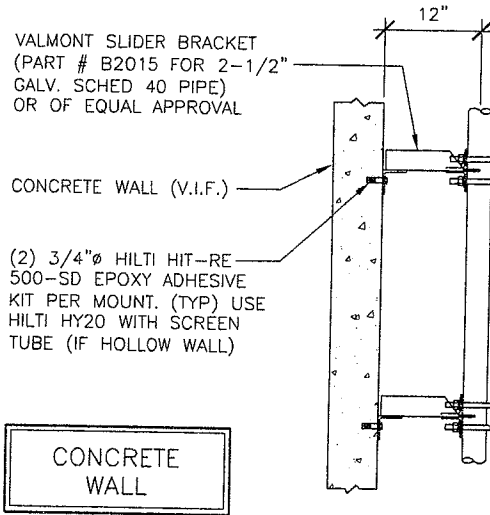
**A** BH ANTENNAS SCHEDULE  
A-7 NOT TO SCALE



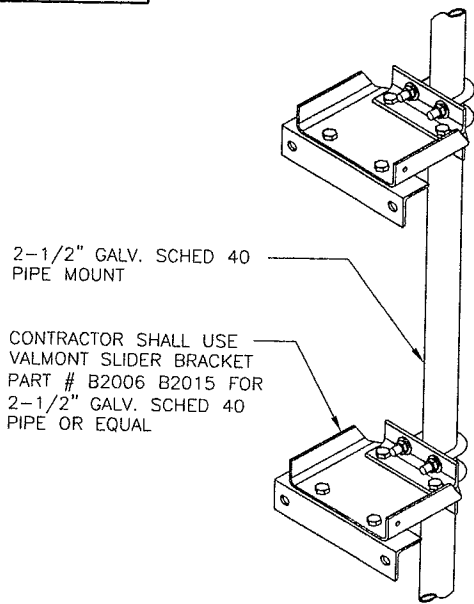
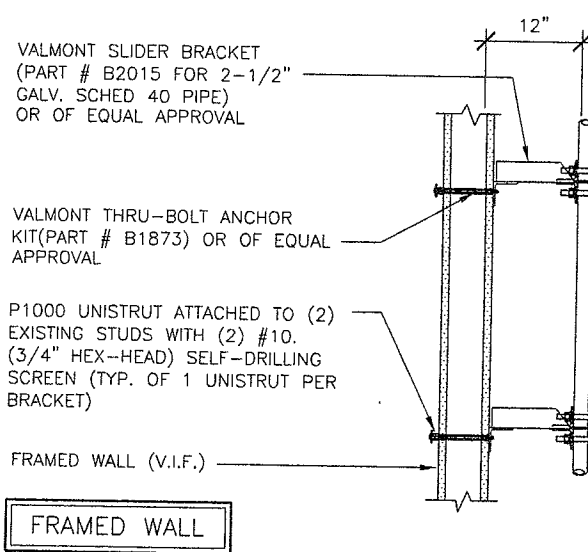
**B** BACKHAUL ANTENNA DETAILS  
A-7 NOT TO SCALE



**C** COAX ATTACHMENT DETAIL  
A-7 NOT TO SCALE



**D** ANTENNA MOUNT DETAIL (IF REQUIRED)  
A-7 NOT TO SCALE



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No.	Date	Action

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www.morrisonhershfield.com

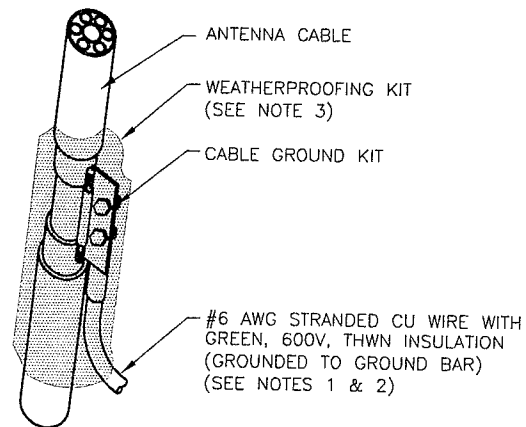
Client:  
**Sprint clearwire**  
4400 CARILLON POINT KIRKLAND, WA 98033

Project:  
**MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145**

Drawing Title:  
**BH ANTENNA  
DETAILS & RF  
SYSTEM SCHEDULE  
(BH ANTENNAS)**

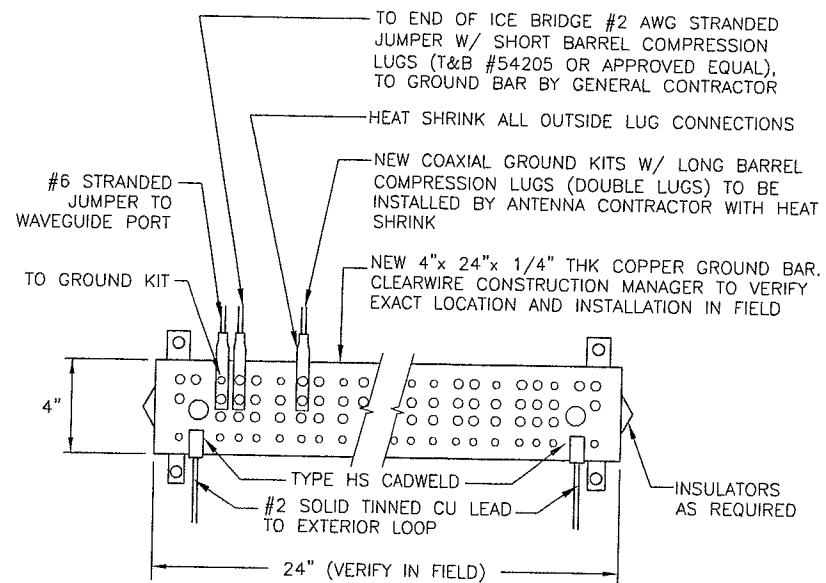
Project No. 6090052	Date: 05/26/09
Designer: LR, CC, RB	Checked By: CB
Drawn By: AM	Client Approval
PM Review: CB	Issue No. 0
Drawing No. A-7	

- NOTES:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
  - GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
  - WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.



### CONNECTION OF GROUND KIT TO ANTENNA CABLE

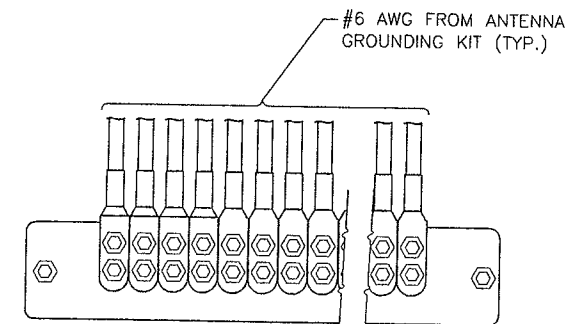
A  
E-1  
NOT TO SCALE



### GROUND BAR DETAIL (MASTER & BASE OF TOWER)

- NOTES:**
- ALL HARDWARE 8-88 STAINLESS STEEL INCLUDING BELLVILLES COAT MATING SURFACES WITH KOPR-SHIELD BEFORE ATTACHMENT.
  - FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
  - ALL HOLES ARE COUNTERSUNK 1/16".
  - ALL LUGS ARE DOUBLE HOLED.
  - HEAT SHRINK ALL OUTSIDE LUG CONNECTIONS.

**NOTE:**  
CONTRACTOR TO USE KOPR-SHIELD, PENETROX TYPE "E" AT THESE CONNECTIONS.



### GROUND BAR DETAIL (ANTENNA & INTERMEDIATE)

B  
E-1  
NOT TO SCALE

### NOTES:

- SEE "COMPOUND PLAN" ON ARCHITECTURAL SHEET FOR CABINET LOCATIONS.
- FIELD VERIFY ROUTING OF NEW CABLES.
- ALL -48V CABLES WILL BE RED AND ALL GROUND CABLES WILL BE BLACK. DETAIL FOR REFERENCE ONLY, SEE MANUFACTURER CABINET INSTALLATION MANUAL FOR CONNECTION DETAILS AND EXACT REQUIREMENTS.

EXISTING SPRINT POWER PPC CABINET W/ 120/240V-1Ø-3W 200A RATED LOADCENTER COMPLETE WITH 200A-2P MAIN CIR. BREAKER

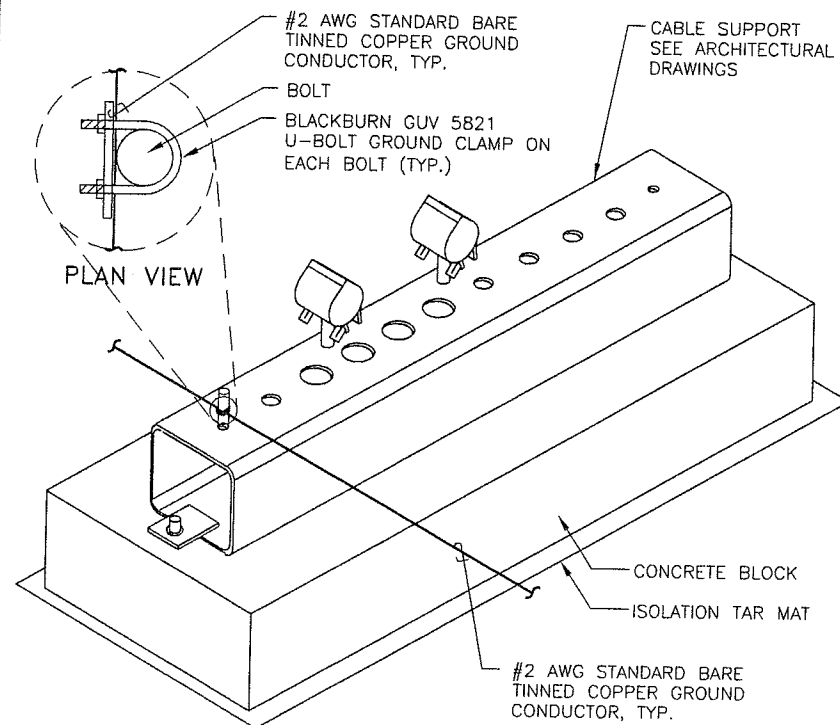
PROVIDE (3) #3 AWG CU. AND (1) #8 AWG CU. GROUND IN 1-1/2" CONDUIT

NEW 100A-2P CIR. BREAKER  
100A RATED AC LOADCENTER (PANEL "PP1") PRE-EQUIPPED WITH CABINET

(1) DOOR DAP CABINET MODEL 20D-50DDXCW-2B-ACD

### WIMAX INDOOR CABINET POWER DETAIL (IF REQUIRED)

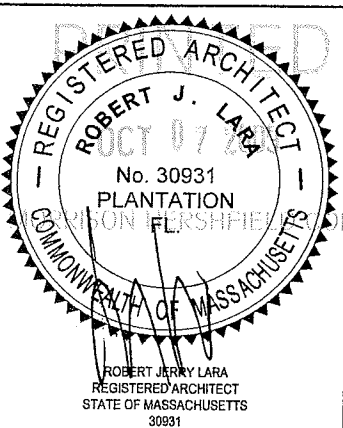
D  
E-1  
NOT TO SCALE



### ANTENNA CABLE SUPPORT GROUNDING DETAIL

C  
E-1  
NOT TO SCALE

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clearwire**  
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Project:  
**MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145**

Drawing Title:  
**GROUNDING  
DETAILS**

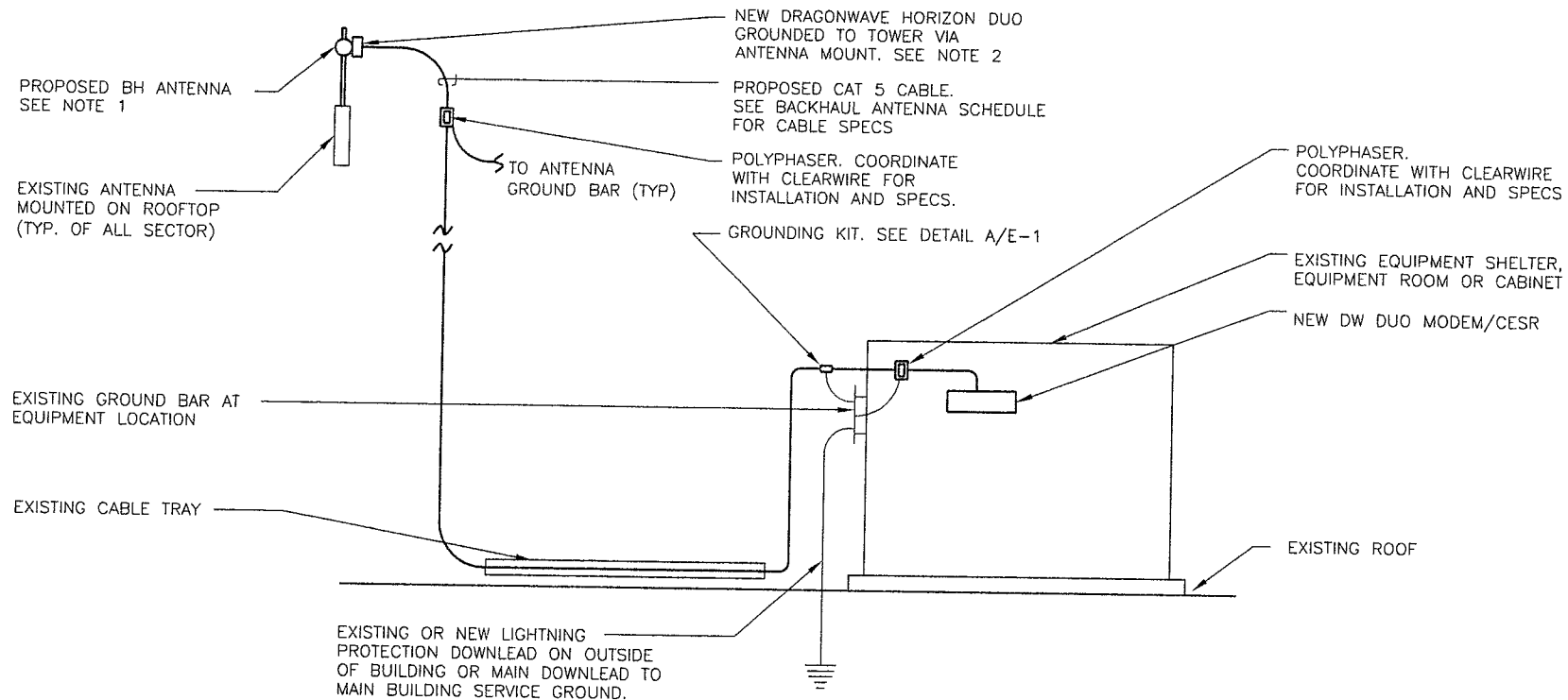
Project No.  
6090052

Designer: LR, CC, RB	Date: 05/26/09
Drawn By: AM	Checked By: CB
PM Review: CB	Client Approval

Issue No. 0	Drawing No. E-1
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# NOTES:

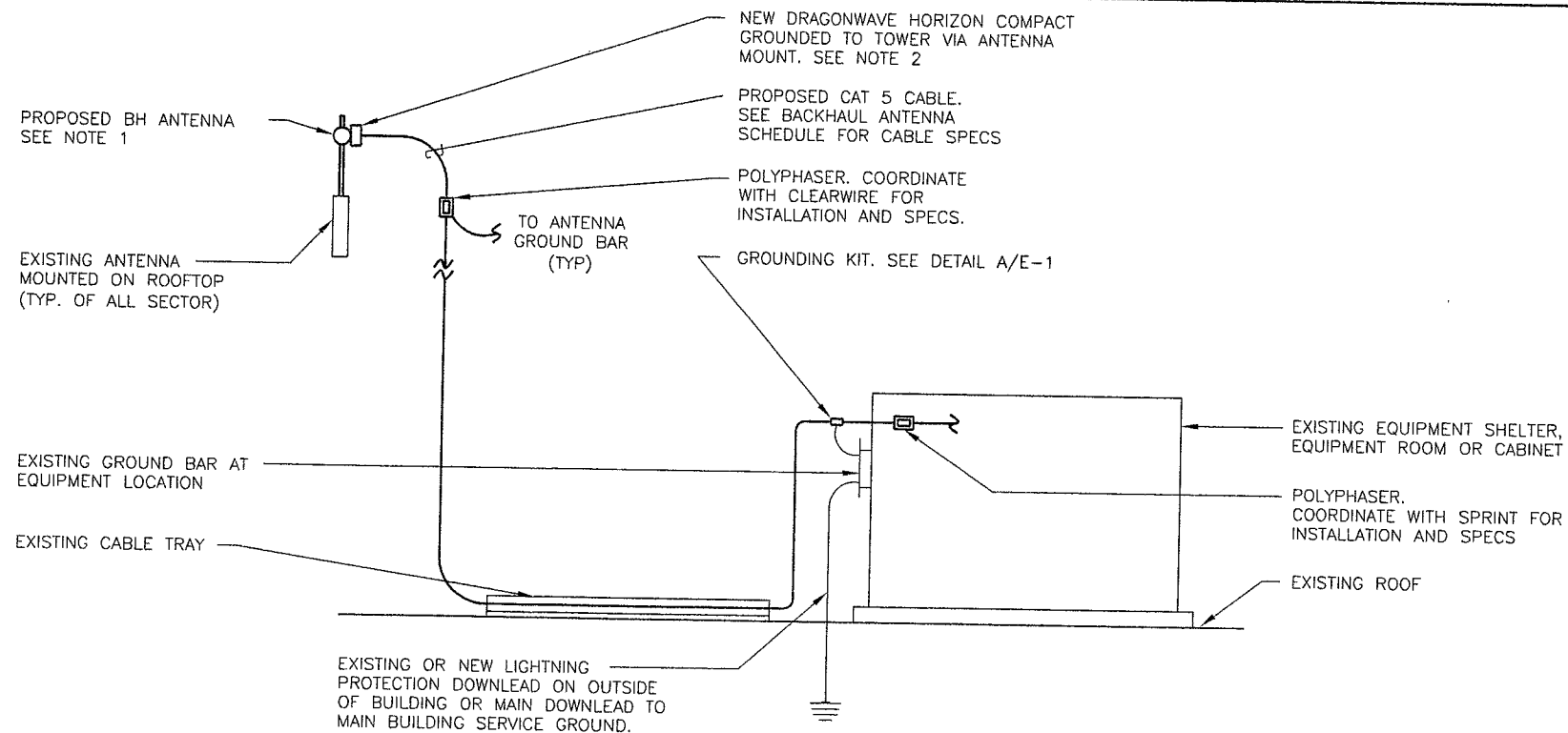
1. REFER TO "BH ANTENNA SCHEDULE" ON ARCHITECTURAL SHEET FOR ANTENNA SPECS AND INSTALLATION.
2. INSTALL NEW HORIZON DUO SYSTEM AS PER MANUFACTURER SPECS.



**A** DRAGONWAVE HORIZON DUO SYSTEM GROUNDING DIAGRAM (IF REQUIRED)  
E-2 NOT TO SCALE

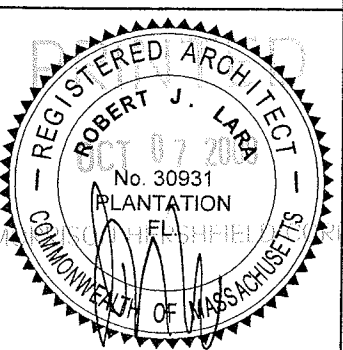
# NOTES:

1. REFER TO "BH ANTENNA SCHEDULE" ON ARCHITECTURAL SHEET FOR ANTENNA SPECS AND INSTALLATION.
2. INSTALL NEW HORIZON COMPACT SYSTEM AS PER MANUFACTURER SPECS.



**B** DRAGONWAVE HORIZON COMPACT SYSTEM GROUNDING DIAGRAM (IF REQUIRED)  
E-2 NOT TO SCALE

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ROBERT JERRY LARA  
REGISTERED ARCHITECT  
STATE OF MASSACHUSETTS  
30931

No.	Date	Action
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Project:  
**MCGRATH HIGHWAY  
MA-BOS5091a  
23 CUMMINGS STREET  
SOMERVILLE, MA 02145**

Drawing Title:  
**BH ANTENNA  
GROUNDING  
DETAILS**

Project No.  
6090052

Designer: LR, CC, RB	Date: 05/26/09
Drawn By: AM	Checked By: CB
PM Review: CB	Client Approval:

Issue No. 0	Drawing No. E-2
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PREPARED FOR



PROPOSED WIRELESS  
TELECOMMUNICATIONS INSTALLATION

MA-BOS5091  
MCGRATH HIGHWAY

PROVIDED BY:  
BAY STATE DESIGN, INC.  
OCTOBER 2009

BAY STATE  
DESIGN





**Site Name: McGrath Highway**  
**Site Number: MA-BOS5091**

**23 Cummings Street**  
**Somerville, MA 02145**

**Provided By:**

Bay State Design, Inc.  
241 Boston Post Road West  
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Issued: October 2009

Rev. 1:

Rev. 2:

Drawn By: A.L.

Checked By: J.T.

*Note: These photo simulations are intended to represent modifications relative to a person observing the aesthetics of the proposed telecommunications installation. Therefore, they are inherently approximate in nature and should not be used as an exact, scaled, engineering drawing.*



# VISIBILITY MAP

DeLORME

Street Atlas USA® 2008

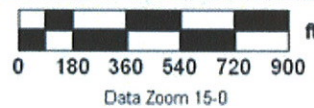


23 Cummings Street  
Somerville, MA 02145

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● view location

● not visible



VIEW 1





VIEW 1







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VIEW 2





VIEW 3



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PREPARED FOR



PROPOSED WIRELESS  
TELECOMMUNICATIONS INSTALLATION

MA-BOS5091  
MCGRATH HIGHWAY

PROVIDED BY:  
BAY STATE DESIGN, INC.  
NOVEMBER 2009





**Site Name: McGrath Highway**  
**Site Number: MA-BOS5091**

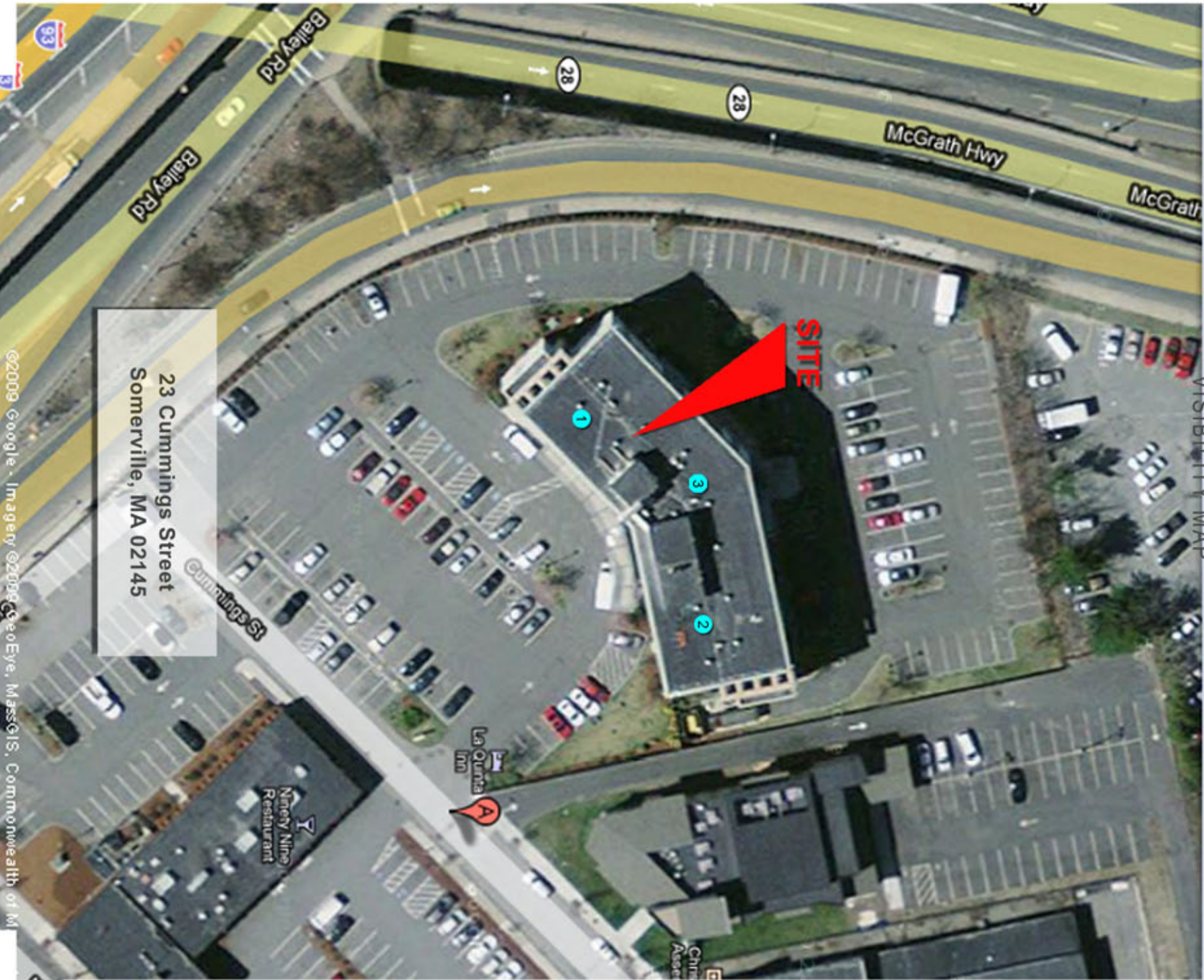
**23 Cummings Street**  
**Somerville, MA 02145**

**Provided By:**

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Mar;borough MA 01752  
ph. 508| 229.4100  
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Somerville, MA 02145

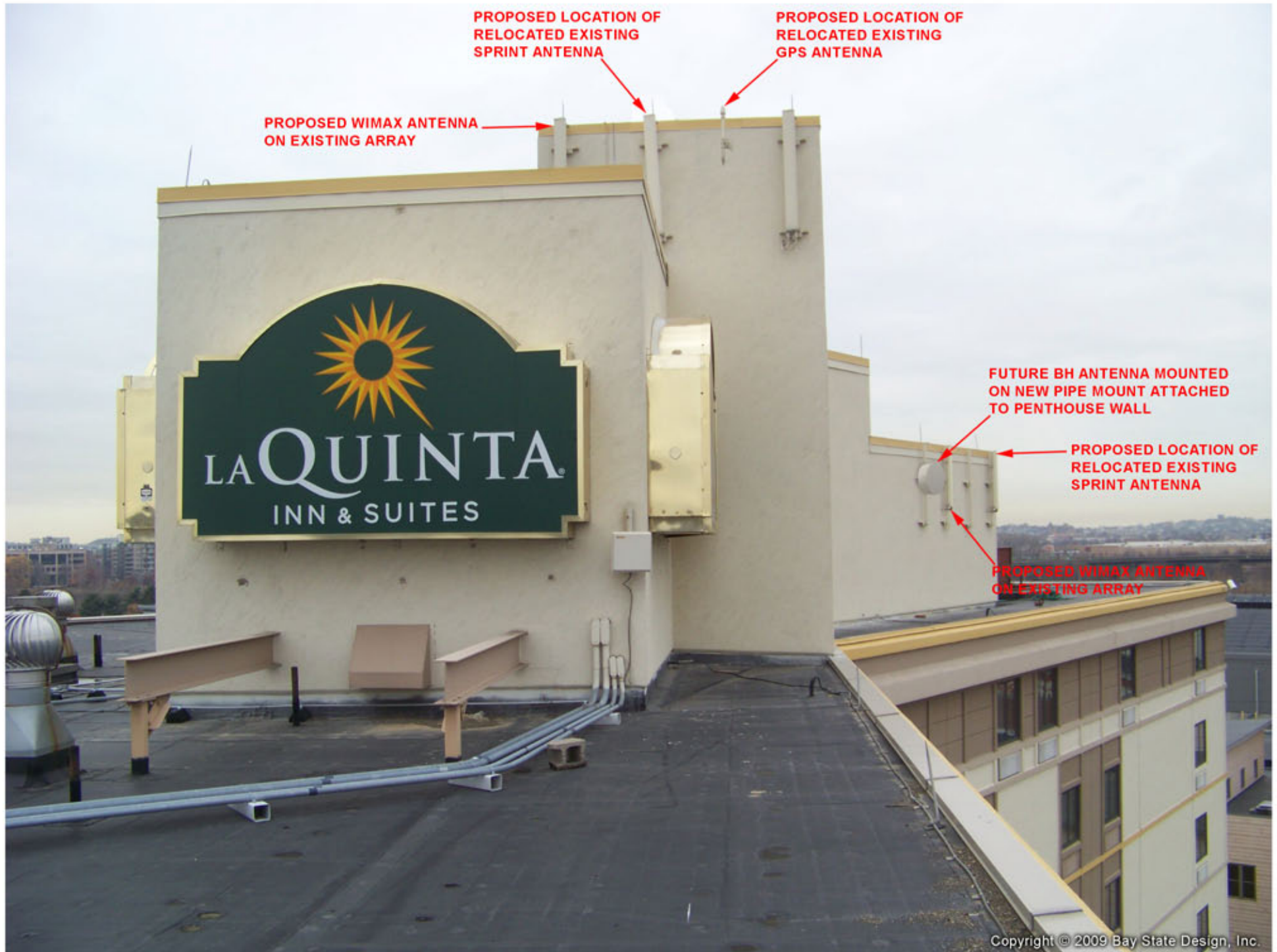
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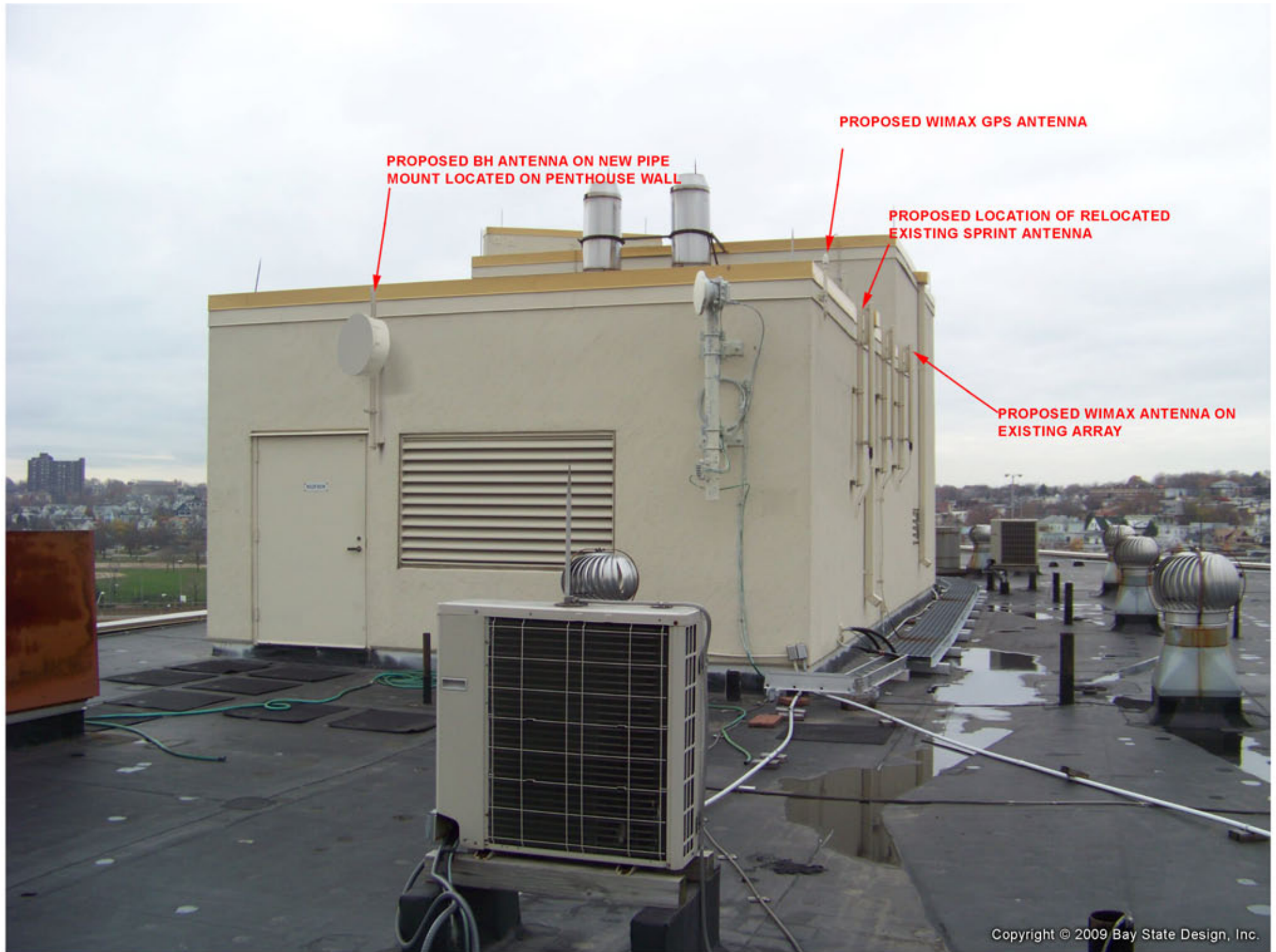
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PROPOSED BH ANTENNA ON NEW PIPE  
MOUNT LOCATED ON PENTHOUSE WALL

PROPOSED WIMAX GPS ANTENNA

PROPOSED LOCATION OF RELOCATED  
EXISTING SPRINT ANTENNA

PROPOSED WIMAX ANTENNA ON  
EXISTING ARRAY



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