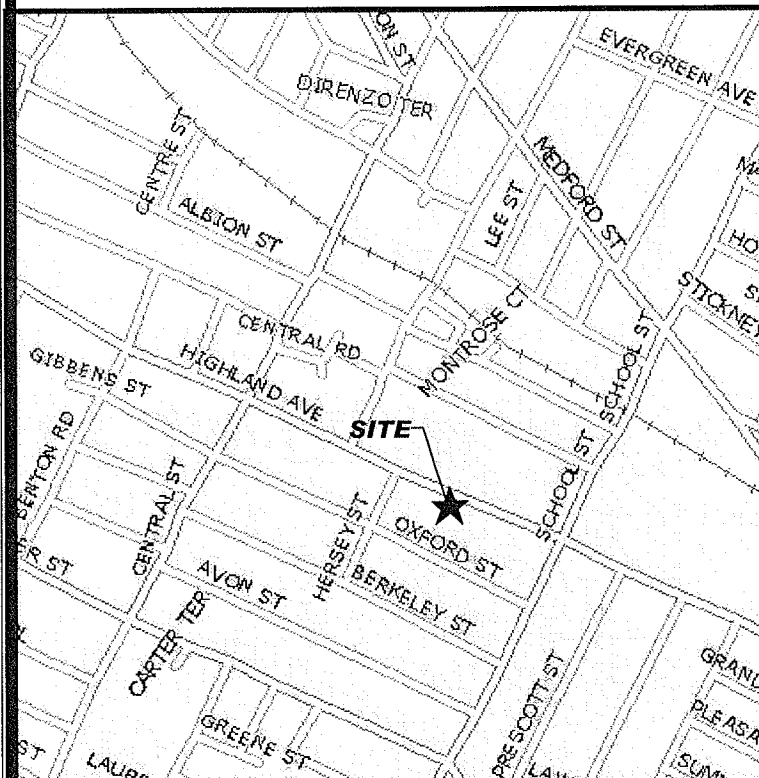


clearw're

HIGHLAND GARDENS
MA-BOS5087-A / BS13XC672-D
114 HIGHLAND AVENUE
SOMERVILLE, MA 02145



VICINITY MAP (NOT TO SCALE)

TAKE 128 NORTH TO 93 SOUTH TO EXIT 31 - ROUTE 16 TO REVERE, MERGE ONTO MYSTIC VALLEY PARKWAY, STAY ON MYSTIC THEN STRAIGHT ONTO HARVARD STREET, TAKE A LEFT ONTO MAIN STREET, STAY STRAIGHT TO GO ONTO MEDFORD STREET, TURN RIGHT ONTO CENTRAL STREET THEN LEFT ONTO HIGHLAND AVE.

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY CONSISTING OF BTS EQUIPMENT, BH AND PANEL ANTENNAS.
2. SIGNALS FROM THE ANTENNA SHALL NOT INTERFERE WITH ANY EXISTING COMMUNICATION SITES. ALL ITEMS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED.
3. THIS IS AN UNMANNED FACILITY - NO SOLID WASTE. THE SITE WILL CREATE NO TRASH, THUS REQUIRES NO DUMPSTER.
4. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
5. EMERGENCY POWER SUPPLY IS A CELL PACK BATTERY SOURCE AND NOT A FLAMMABLE LIQUID SOURCE.

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

1. MASSACHUSETTS STATE BUILDING CODE - 7TH EDITION
2. NEC 2008

SHEET	DESCRIPTION
T-1	TITLE SHEET
G-1	GENERAL NOTES
C-1	50' ABUTTERS
A-1	ROOF TOP PLAN & EQUIPMENT LAYOUT
A-2	SOUTHEAST & SOUTHWEST ELEVATIONS
A-3	NORTHWEST ELEVATION
A-4	CONSTRUCTION DETAILS
A-5	TYPICAL CABINET DETAILS
S-1	STRUCTURAL DETAILS
E-1	ELECTRICAL & GROUNDING SCHEMATIC
E-2	ANTENNA GROUNDING DETAILS

PROJECT DESCRIPTION

CODE COMPLIANCE

SHEET INDEX

APPLICANT / LESSEE

CLEARWIRE
5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033

PROPERTY INFORMATION

MSAG: 114 HIGHLAND AVE.
SOMERVILLE, MA 02415
SOMERVILLE HOUSING AUTHORITY

OWNER:

CONTACT: KEN JULIEN
P: 617-625-4522

PARCEL #: 51-C-3

CURRENT ZONING: RC - RESIDENCE C

STRUCTURE TYPE: ROOF TOP EQUIPMENT CABINETS & ANTENNAS

COORDINATES: LATITUDE: N 42° 23' 13.93"
LONGITUDE: W 71° 6' 2.22"

GROUND ELEVATION: 79.0' A.M.S.L.

HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED

CONSULTANTS:

MAXTON TECHNOLOGY, INC.
241 BOSTON POST RD WEST
MARLBOROUGH, MA. 01752

PHONE: 508-229-4100
FAX: 508-485-5321

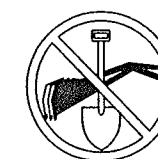
BAY STATE DESIGN, INC.
ARCHITECTS • ENGINEERS

241 BOSTON POST RD WEST
MARLBOROUGH, MA. 01752

PHONE: 508-229-4100
FAX: 508-485-5321

ENGINEER: BAY STATE DESIGN, INC.
BRYAN BAKIS

LOCAL POWER COMPANY: NSTAR



UNDERGROUND
SERVICE ALERT

CALL TOLL FREE
1-888-DIG-SAFE

THREE WORKING DAYS BEFORE YOU DIG

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033



BAY STATE
DESIGN

BAY STATE DESIGN, INC.
Architects • Engineers

241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA. 01752 Fax: 508-485-5321

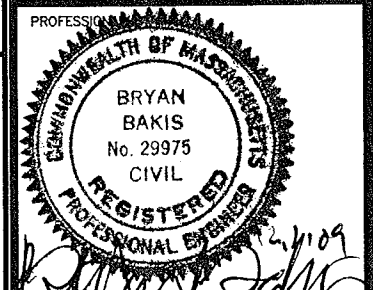
SITE NAME: HIGHLAND
GARDENS

HOST #: BS13XC672-D

SITE #: MA-BOS5087-A

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW



DRAWN BY: KB CHECKED BY: JT/BB

JOB #: 2900.097

SITE ADDRESS:
114 HIGHLAND AVE.
SOMERVILLE, MA 02145

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

DRIVING DIRECTIONS

PROJECT SUMMARY

PROJECT TEAM

GEN. CONTRACTOR NOTES

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 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 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.
- 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 KOPRSIELD.
 - 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 BURNDY 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 GROUNDINGS, 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

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 PF 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 POLYPHASER 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

- CB

CIRCUIT BREAKER
- DISCONNECT SWITCH

NON-FUSIBLE DISCONNECT SWITCH
- F

FUSIBLE DISCONNECT SWITCH
- PANEL BOARD

SURFACE MOUNTED PANEL BOARD
- T

TRANSFORMER
- METER

KILOWATT HOUR METER
- CABLE OR CONDUIT

TURNING UP IN PLAN VIEW
- CABLE OR CONDUIT

TURNING DOWN IN PLAN VIEW
- JB

JUNCTION BOX
- PB

PULL BOX TO NEC/TELCO STANDARDS
- OVERHEAD UTILITIES

OHU
- UNDERGROUND TELCO

UGT
- UNDERGROUND POWER

UGP
- REFERENCE NOTE

2
- WELD CONNECTION

EXOTHERMIC WELD CONNECTION
- MECHANICAL CONNECTION
- GROUND ROD
- GROUND ROD WITH INSPECTION SLEEVES
- GROUND BAR

T-T
- 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
- EMT

ELECTRO MAGNETIC TUBING
- 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
- 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

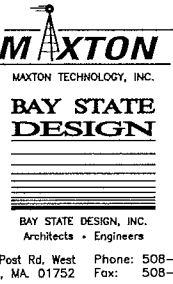
WEATHERPROOF - NEMA 3R
- W

WITH

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033



241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA 01752 Fax: 508-485-5321

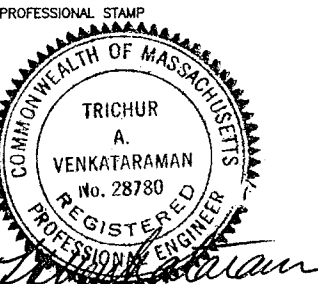
SITE NAME:
HIGHLAND
GARDENS

HOST #:
BS13XC672-D

SITE #:
MA-BOS5087-A

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW



DRAWN BY: KO CHECKED BY: JT/RS

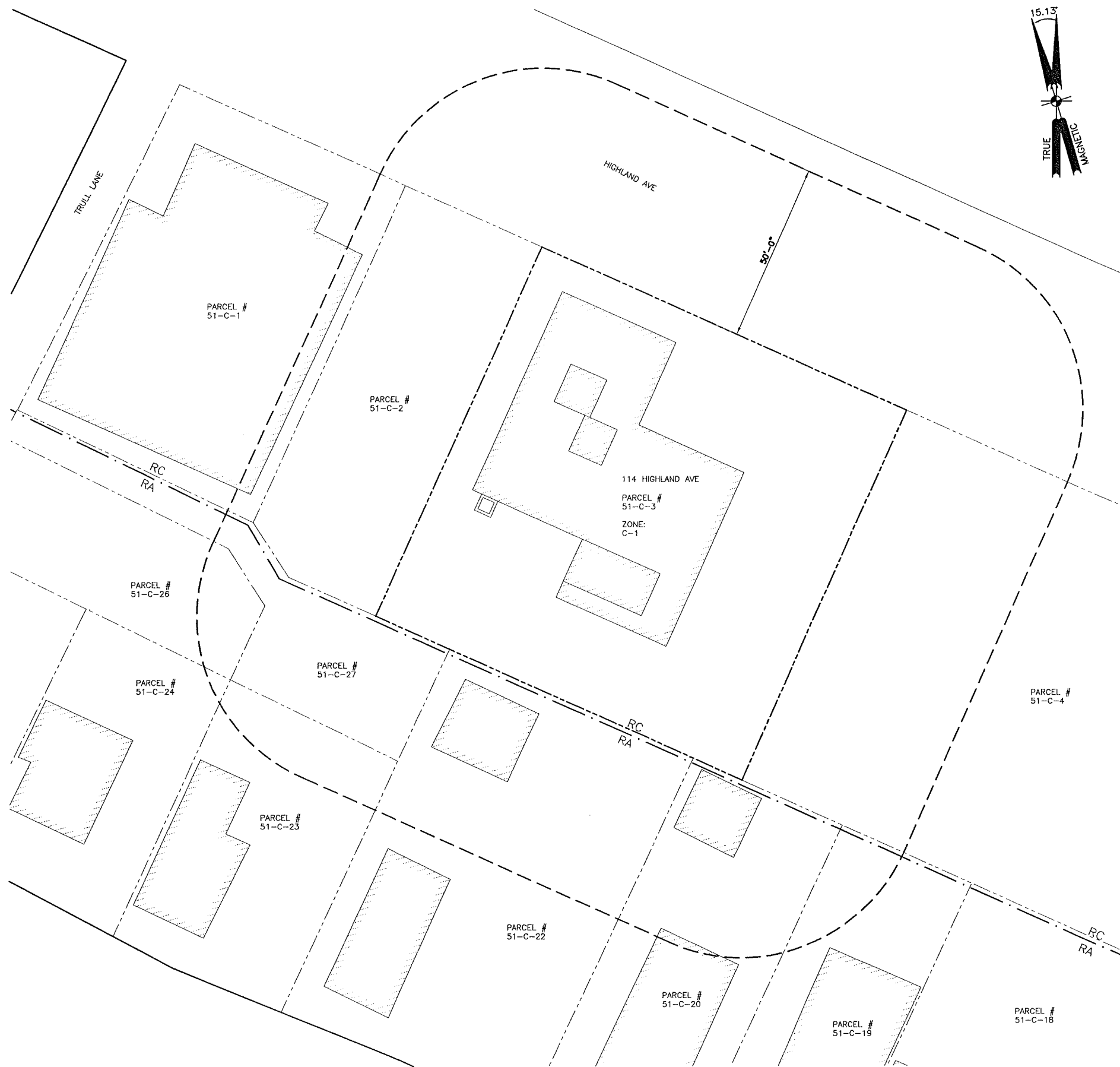
JOB #: 2900.097

SITE ADDRESS:
114 HIGHLAND AVE.
SOMERVILLE, MA 02145

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:

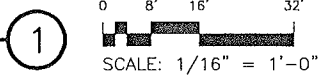
G-1



ZONING DISTRICTS TABLE	
RA	RESIDENTIAL A
RC	RESIDENTIAL C
NOTE: ABUTTERS PLAN IS NOT THE RESULT OF A SURVEY. IT IS BASED ON INFORMATION OBTAINED FROM THE TOWN OF SOMMERVILLE WEB SITE. ALL INFORMATION SHOWN IS APPROXIMATE ONLY AND SUBJECT TO ANY CONDITION THAT A SURVEY MAY REVEAL.	

LEGEND TABLE	
---	50' ABUTTERS
---	LOCUS PROPERTY LINE
---	(E) PROPERTY LINE
---	(E) RIGHT OF WAY
---	(E) ZONING BOUNDARY

50' ABUTTERS MAP
SCALE: 1/16"=1'



APPLICANT:
clearw're
5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033

MAXTON
MAXTON TECHNOLOGY, INC.
BAY STATE DESIGN
BAY STATE DESIGN, INC.
Architects • Engineers
241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME:
HIGHLAND GARDENS

HOST #:
BS13XC672-D

SITE #:
MA-BOS5087-A

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP
COMMONWEALTH OF MASSACHUSETTS
TRICHUR
A.
VENKATARAMAN
No. 28780
REGISTERED PROFESSIONAL ENGINEER

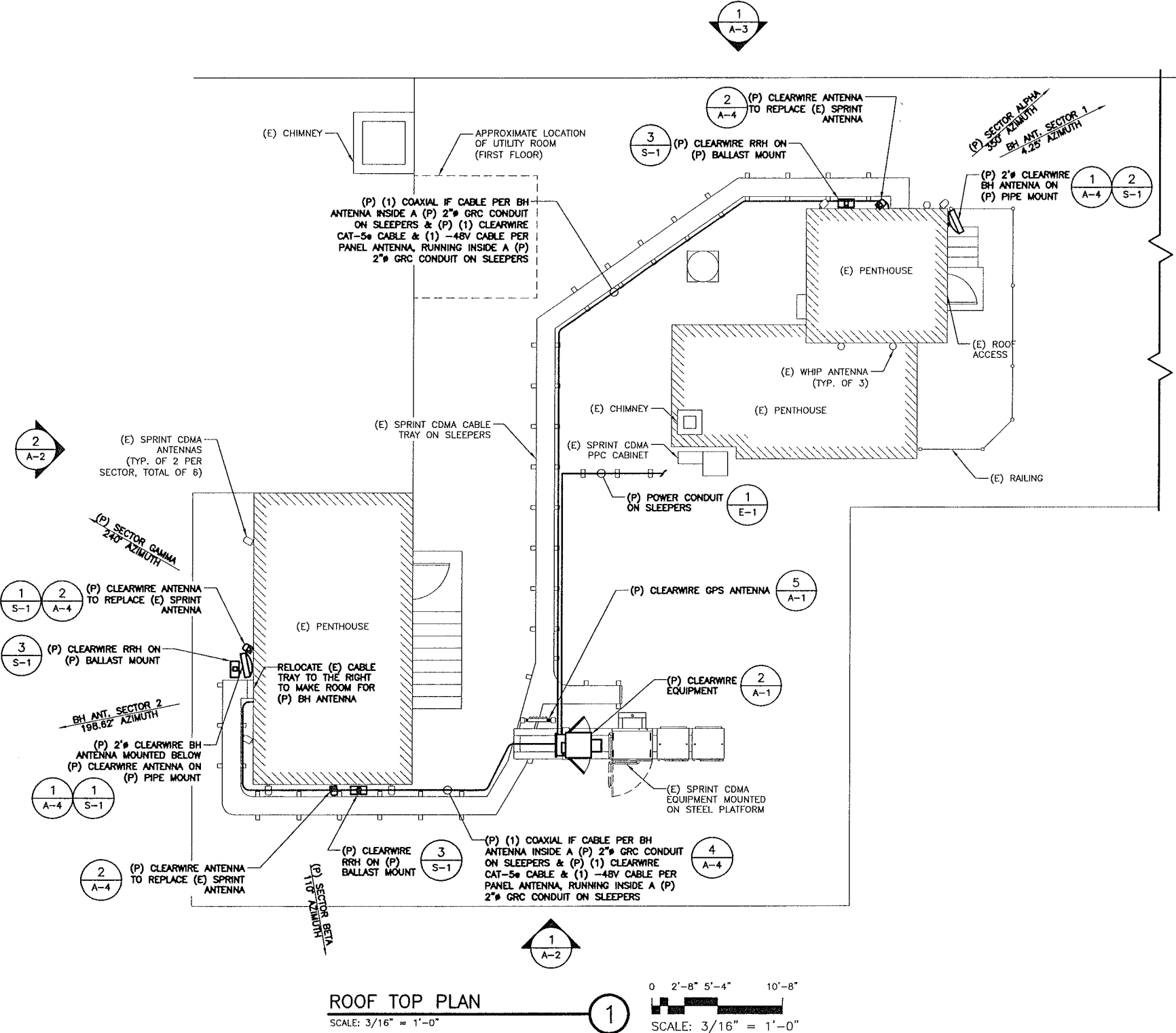
DRAWN BY: KO CHECKED BY: JT/RS

JOB #:
2900.097

SITE ADDRESS:
**114 HIGHLAND AVE.
SOMERVILLE, MA 02145**

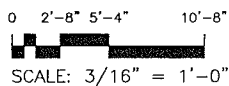
SHEET TITLE:
**50' ABUTTERS
MAP**

SHEET NUMBER:
C-1

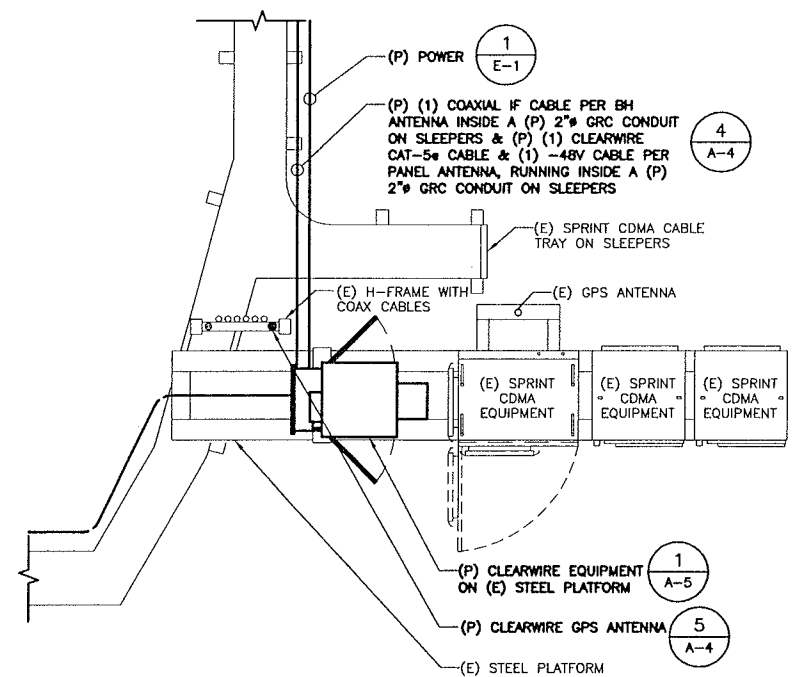
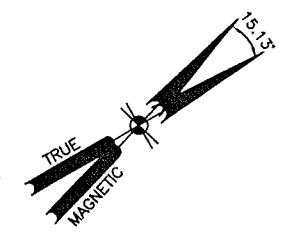


ROOF TOP PLAN

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

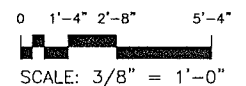


(P) = PROPOSED
(E) = EXISTING



EQUIPMENT LAYOUT

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



APPLICANT:
clearw're
5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033



241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA 01752 Fax: 508-485-5321

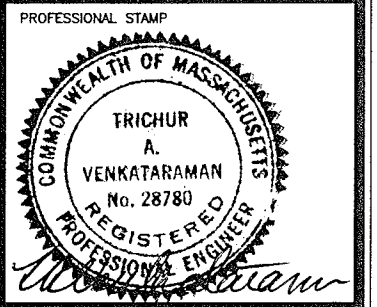
SITE NAME: **HIGHLAND GARDENS**

HOST #: **BS13XC672-D**

SITE #: **MA-BOS5087-A**

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW



DRAWN BY: KO CHECKED BY: JT/RS

JOB #: 2900.097

SITE ADDRESS:
**114 HIGHLAND AVE.
SOMERVILLE, MA 02145**

SHEET TITLE:
**ROOF TOP PLAN
& EQUIPMENT
LAYOUT**

SHEET NUMBER:
A-1

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033

MAXTON
MAXTON TECHNOLOGY, INC.

BAY STATE DESIGN

BAY STATE DESIGN, INC.
Architects • Engineers

241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME: **HIGHLAND GARDENS**

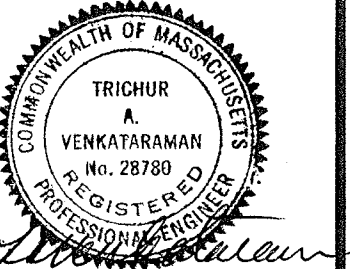
HOST #: **BS13XC672-D**

SITE #: **MA-BOS5087-A**

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP



DRAWN BY: KO CHECKED BY: JT/RS

JOB #: 2900.097

SITE ADDRESS:

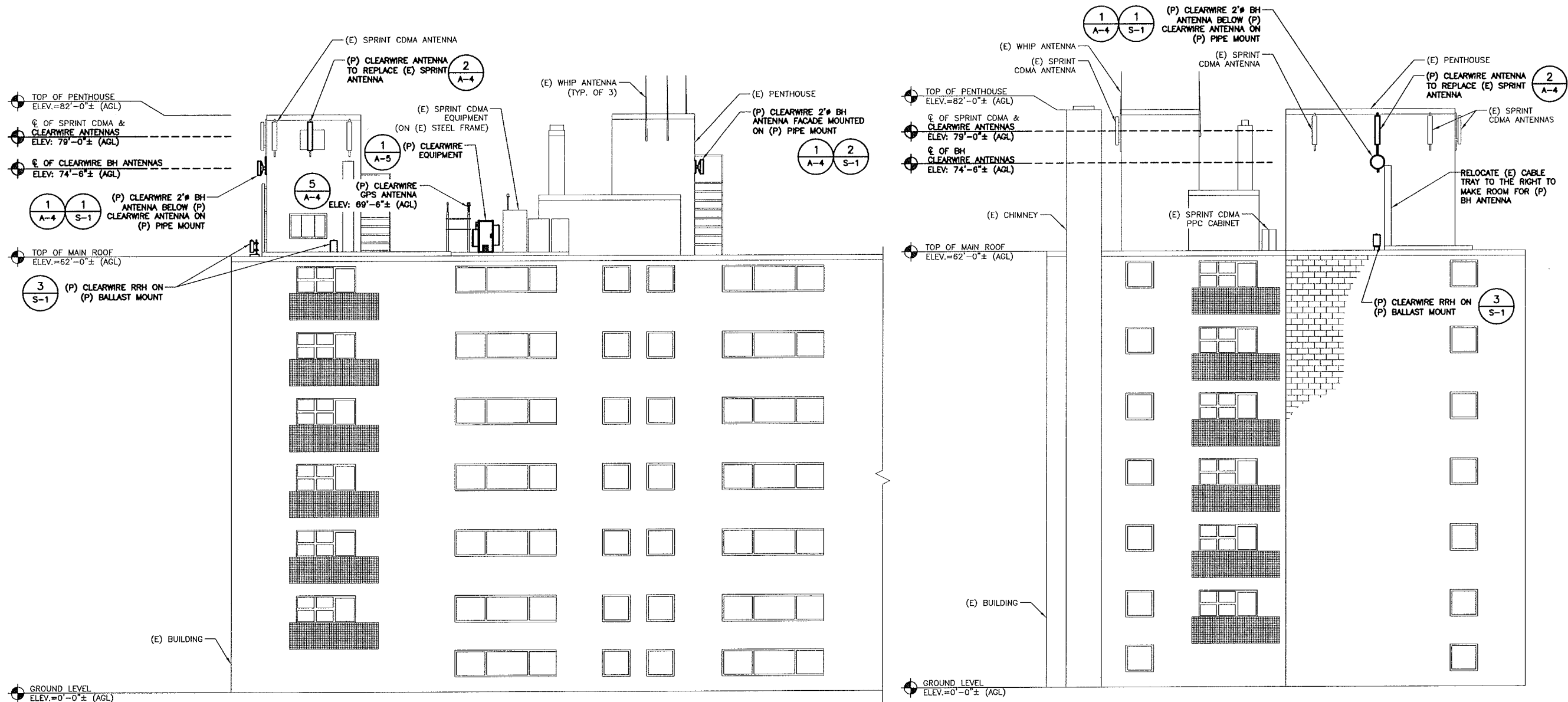
114 HIGHLAND AVE.
SOMERVILLE, MA 02145

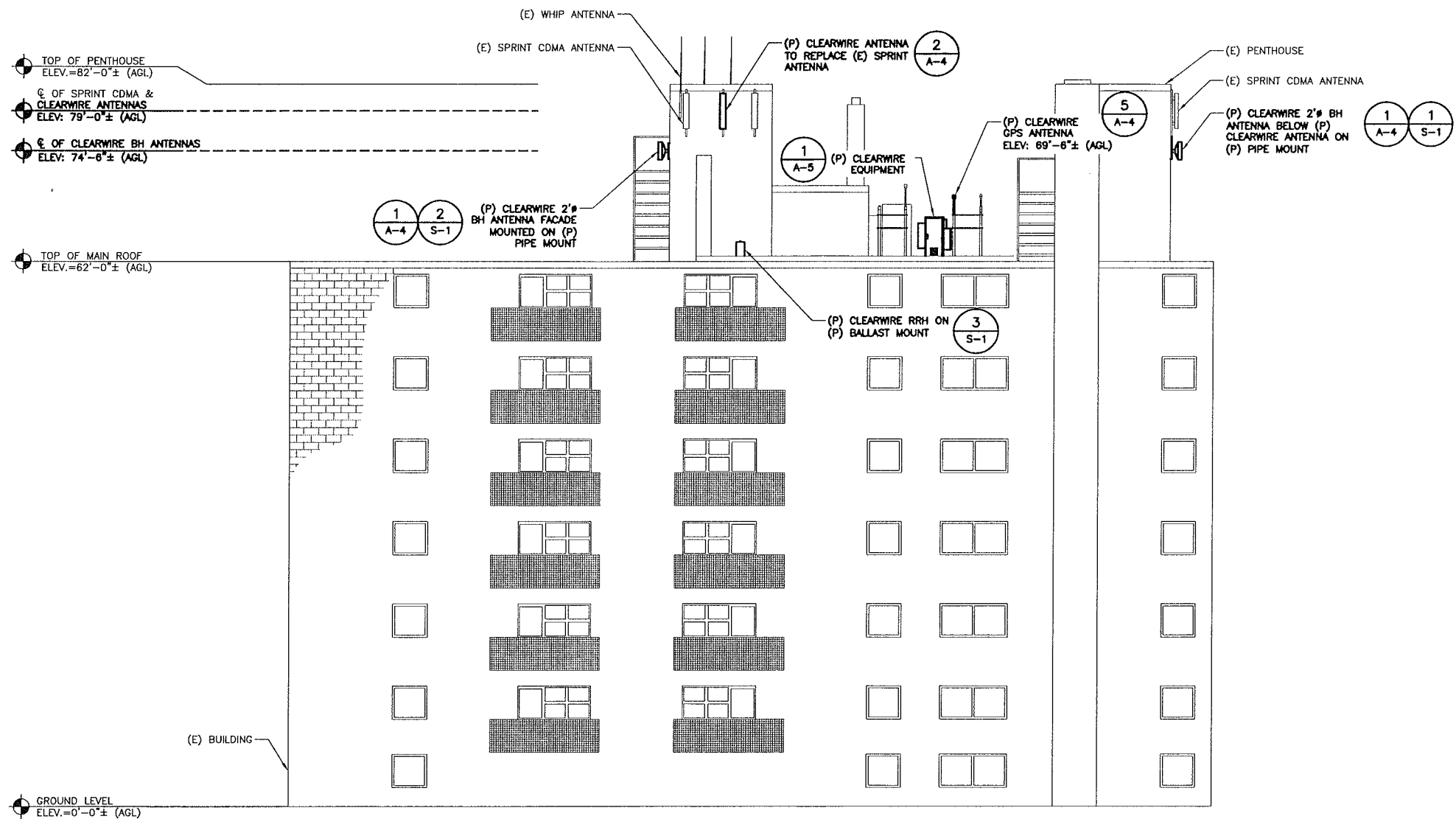
SHEET TITLE:

**SOUTHEAST &
SOUTHWEST
ELEVATIONS**

SHEET NUMBER:

A-2





NORTHWEST ELEVATION

1

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

(P) = PROPOSED
(E) = EXISTING

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033

MAXTON
MAXTON TECHNOLOGY, INC.

BAY STATE
DESIGN

BAY STATE DESIGN, INC.
Architects • Engineers

241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME:

HIGHLAND
GARDENS

HOST #:

BS13XC672-D

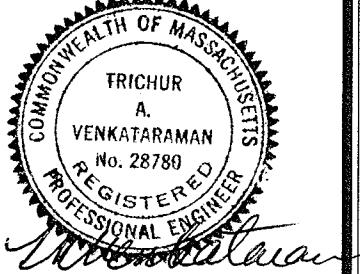
SITE #:

MA-BOS5087-A

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP



DRAWN BY: KO

CHECKED BY: JT/RS

JOB #:

2900.097

SITE ADDRESS:

114 HIGHLAND AVE.
SOMERVILLE, MA 02145

SHEET TITLE:

NORTHWEST
ELEVATION

SHEET NUMBER:

A-3

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033



BAY STATE DESIGN, INC.
Architects • Engineers
241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA. 01752 Fax: 508-485-5321

SITE NAME:
HIGHLAND
GARDENS

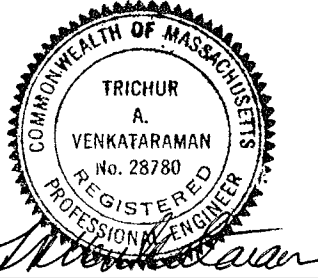
HOST #:
BS13XC672-D

SITE #:
MA-BOS5087-A

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP



DRAWN BY: KO CHECKED BY: JT/RS

JOB #: 2900.097

SITE ADDRESS:
114 HIGHLAND AVE.
SOMERVILLE, MA 02145

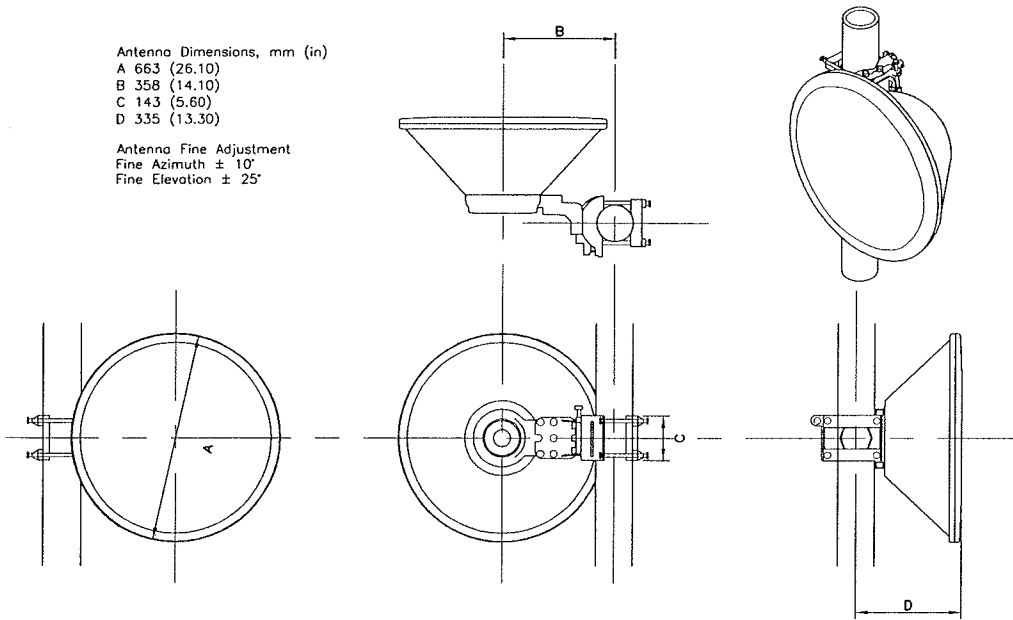
SHEET TITLE:
CONSTRUCTION
DETAILS

SHEET NUMBER:

A-4

Antenna Dimensions, mm (in)
A 663 (26.10)
B 358 (14.10)
C 143 (5.60)
D 335 (13.30)

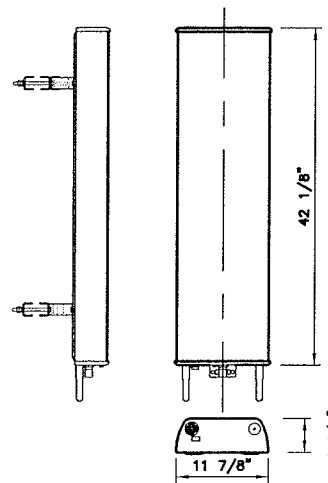
Antenna Fine Adjustment
Fine Azimuth $\pm 10^\circ$
Fine Elevation $\pm 25^\circ$



DRAGONWAVE VHLP 2
BACKHAUL ANTENNA (TYP.)

SCALE: N.T.S.

1

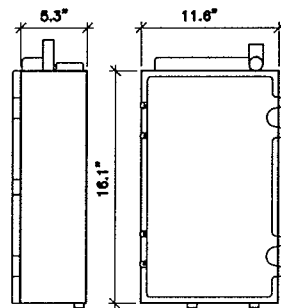


LLPX310R ARGUS PANEL ANTENNA	
ANTENNA DIMENSIONS	42.12"x11.81"x4.52"
ANTENNA WEIGHT	28.66 LBS.

LLPX310R ARGUS
PANEL ANTENNA (TYP.)

SCALE: N.T.S.

2



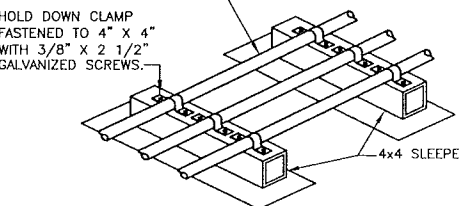
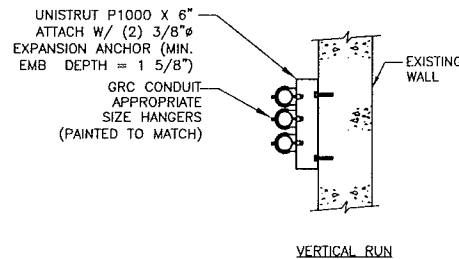
MANUFACTURER: SAMSUNG
HEIGHT: 16.1"
WIDTH: 11.6"
DEPTH: 5.3"
WEIGHT: 35 LBS

NOTE:
INSTALL RRH BEHIND PANEL ANTENNA
PER MANUFACTURER'S SPECIFICATIONS

SAMSUNG
REMOTE RADIO HEAD (RRH)

SCALE: N.T.S.

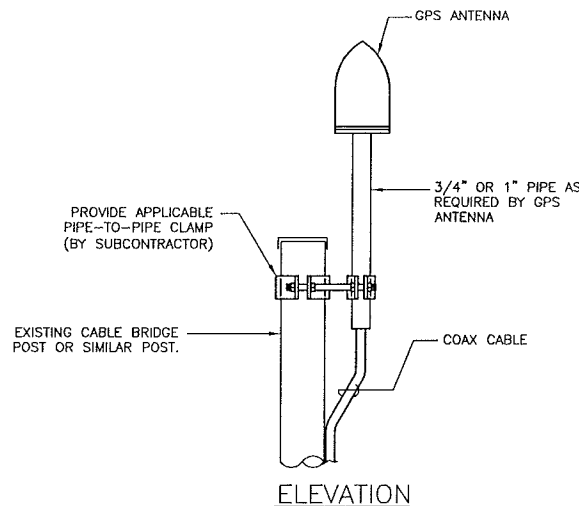
3



EMT CONDUIT
MOUNTING DETAIL

SCALE: N.T.S.

4



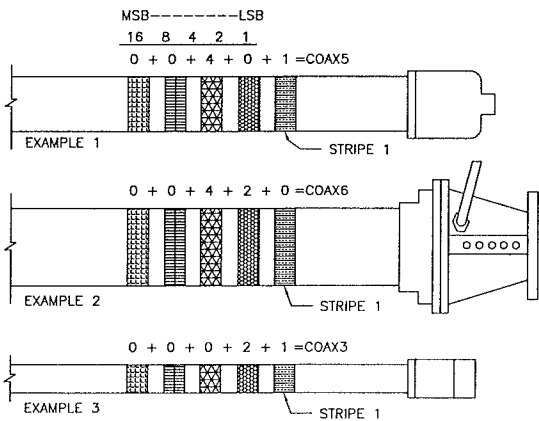
NOTES:

1. LOCATION OF ANTENNA MUST HAVE CLEAR VIEW OF SKY AND CANNOT HAVE ANY BLOCKAGES EXCEEDING 25% OF THE SURFACE AREA OF A HEMISPHERE AROUND THE GPS ANTENNA.
2. ALL GPS ANTENNA LOCATIONS MUST BE ABLE TO RECEIVE CLEAR SIGNALS FROM A MINIMUM OF FOUR (4) SATELLITES. VERIFY WITH HANDHELD GPS BEFORE FINAL LOCATION OF GPS ANTENNA.

GPS ANTENNA
PIPE MOUNT

SCALE: N.T.S.

5



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

- LABEL MARKINGS SHALL BE PLACED AT:
1. WITHIN 12" OF CABLE AT BOTH ENDS
 2. AT/NEAR TOWER MGB
 3. EITHER PRIOR TO ENTRY INTO THE CABINET FOR A CABLE SUPPORT BRIDGE
- * COORDINATE BACKHAUL INSTALLATION WITH FINAL ENGS

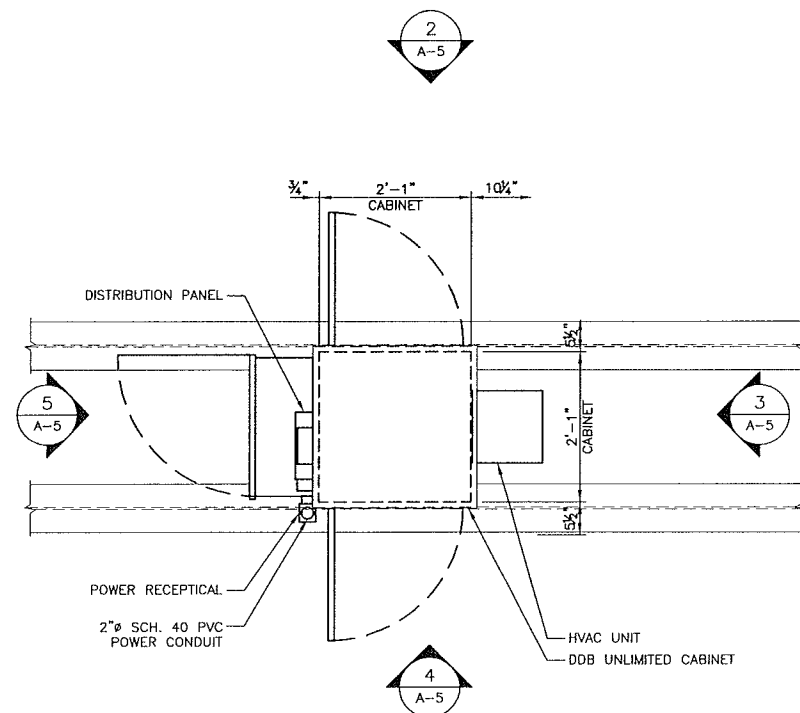
MICROWAVE LINE COLOR CHART

CABLE	LSB					MSB
	STRIPE 1 (1)	STRIPE 2 (2)	STRIPE 3 (4)	STRIPE 4 (8)	STRIPE 5 (16)	
1	YELLOW	PURPLE	PURPLE	PURPLE	PURPLE	PURPLE
2	PURPLE	YELLOW	PURPLE	PURPLE	PURPLE	PURPLE
3	YELLOW	YELLOW	PURPLE	PURPLE	PURPLE	PURPLE
4	PURPLE	PURPLE	YELLOW	PURPLE	PURPLE	PURPLE

CLEARWIRE ANTENNA
INFORMATION & COLOR CODING

SCALE: N.T.S.

6



EQUIPMENT PLAN

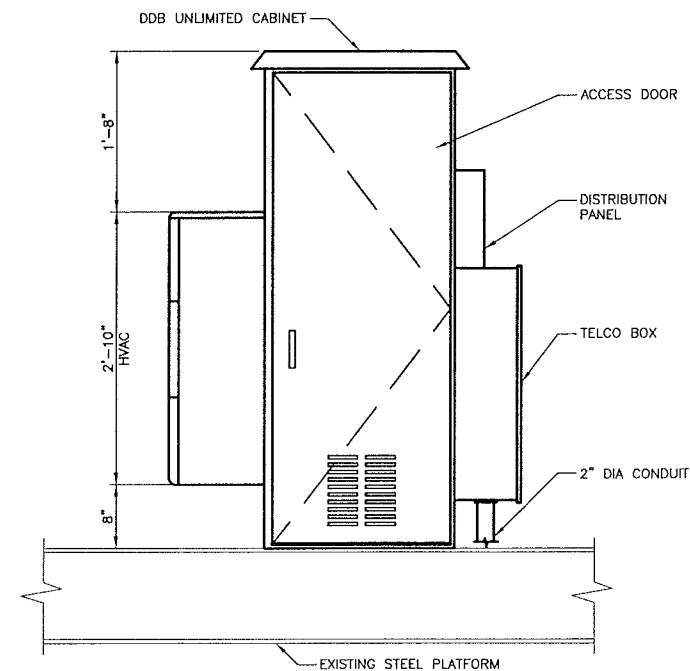
SCALE: 3/4" = 1'-0"

1

BATTERY INFORMATION:

- LONG DURATION SERIES - TEL 12-70
1. FLAM E-ARRESTING ONE-WAY PRESSURE-RELIEF VENT FOR SAFETY AND LONG LIFE.
 2. THERMALLY WELDED CASE-TO-COVER BOND TO ENSURE A LEAK-PROOF SEAL.
 3. FLAME-RETARDANT POLYPROPYLENE CASE AND COVER COMPLIANT WITH UL94 V-0 WITH AN OXYGEN LIMITING INDEX OF GREATER THAN 28.
 4. COMPLIES WITH UL 1778, 924, 1989 AND 94 V-0.
 5. UL-RECOGNIZED COMPONENT.
 6. NOT RESTRICTED FOR SURFACE TRANSPORT-CLASSIFIED AS NON-HAZARDOUS MATERIAL AS RELATED TO DOT-CFR TITLE 49 PARTS 171-189.

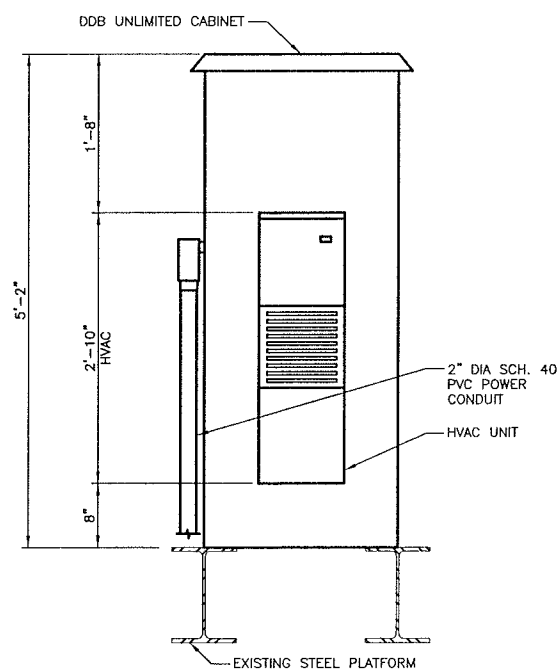
TEL 12-70 SPECIFICATIONS:
 CELLS PER UNIT = 6
 VOLTAGE PER UNIT = 12.84
 WEIGHT = 55 LBS
 ELECTROLYTE = ABSORBED H2SO4 / SG = 1.300
 VOLUME: 8.02" X 10.17" X 6.65" = 542.40 cu in
 MAX = 4



CABINET ELEVATION (BACK)

SCALE: 1" = 1'-0"

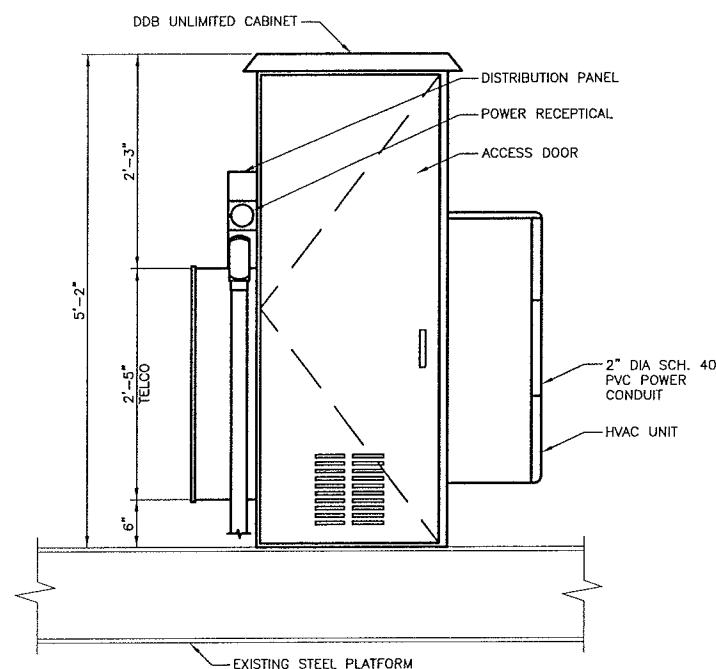
2



CABINET ELEVATION (RIGHT)

SCALE: 1" = 1'-0"

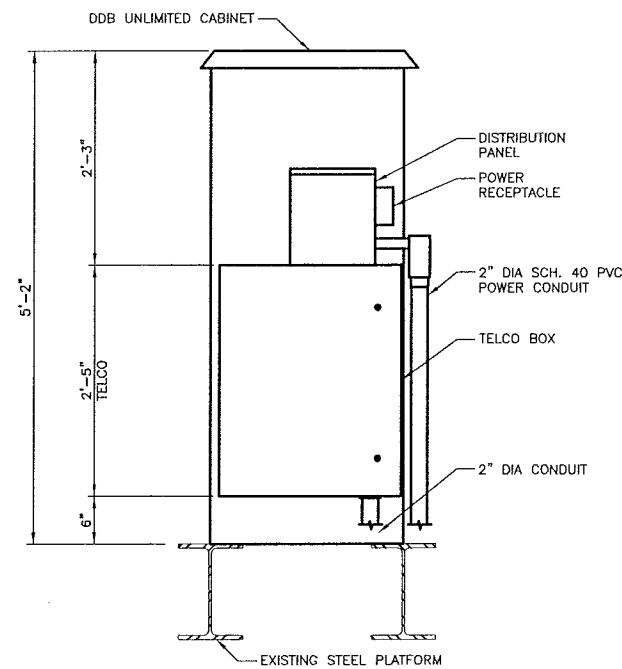
3



CABINET ELEVATION (FRONT)

SCALE: 1" = 1'-0"

4



CABINET ELEVATION (LEFT)

SCALE: 1" = 1'-0"

5

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
 SUITE 300
 KIRKLAND, WA 98033

MAXTON
 MAXTON TECHNOLOGY, INC.

BAY STATE
 DESIGN

BAY STATE DESIGN, INC.
 Architects • Engineers

241 Boston Post Rd. West Phone: 508-229-4100
 Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME: HIGHLAND GARDENS

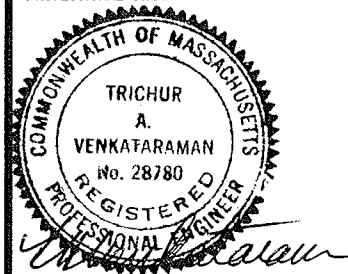
HOST #: BS13XC672-D

SITE #: MA-BOS5087-A

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP



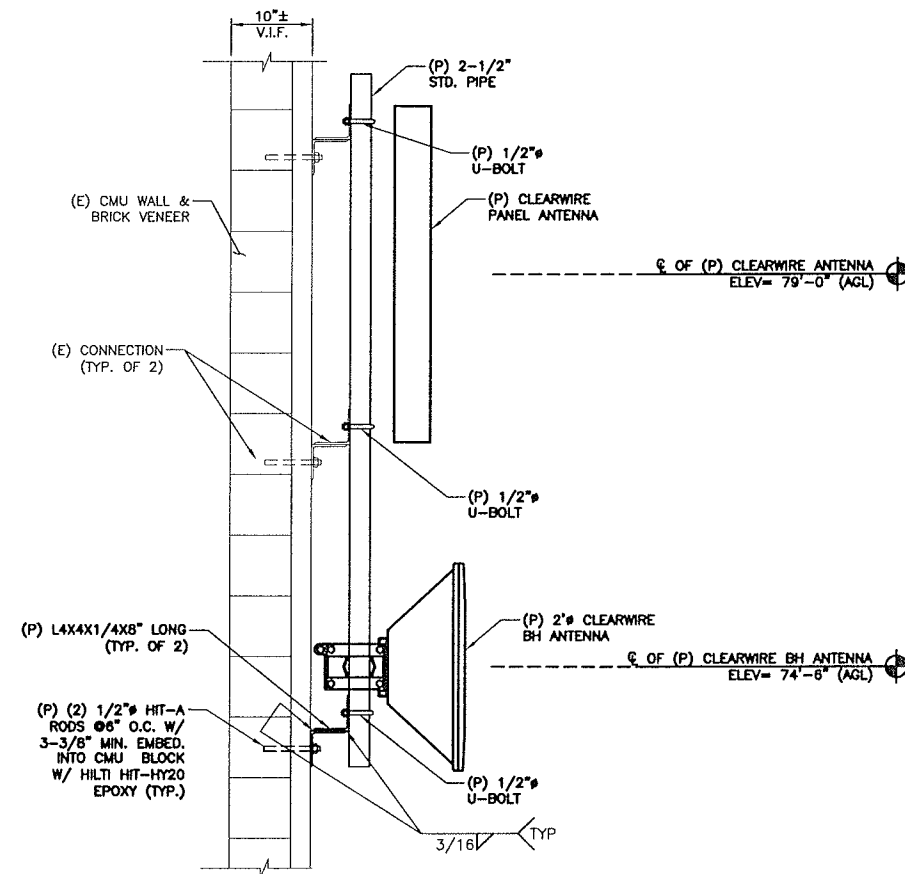
DRAWN BY: KO CHECKED BY: JT/RS

JOB #: 2900.097

SITE ADDRESS:
 114 HIGHLAND AVE.
 SOMERVILLE, MA 02145

SHEET TITLE:
 TYPICAL
 CABINET
 DETAILS

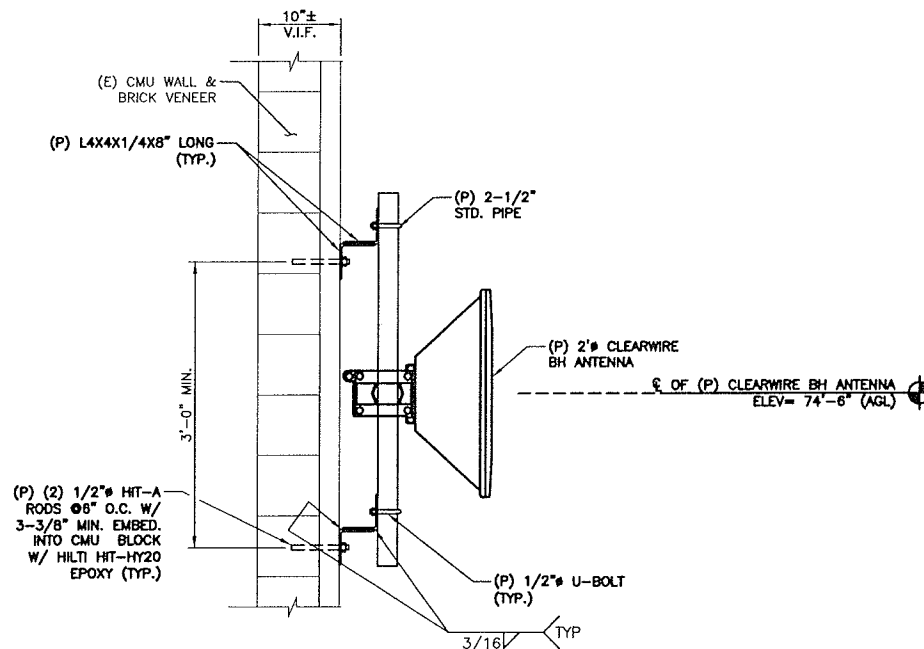
SHEET NUMBER:
 A-5



ANTENNA MOUNT DETAIL

SCALE: N.T.S.

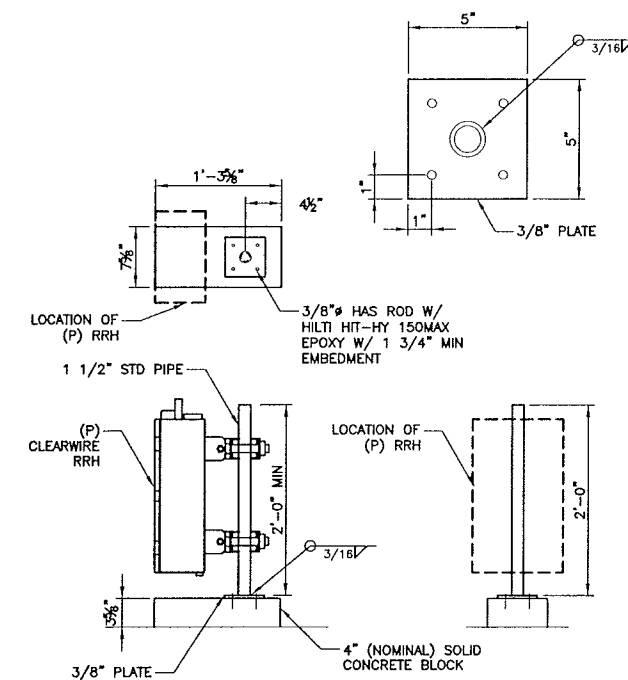
1



BH ANTENNA MOUNT DETAIL

SCALE: N.T.S.

2



RHH BALLAST MOUNTING DETAIL

SCALE: N.T.S.

3

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033

MAXTON
MAXTON TECHNOLOGY, INC.

BAY STATE DESIGN

BAY STATE DESIGN, INC.
Architects • Engineers

241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME: **HIGHLAND GARDENS**

HOST #: **BS13XC672-D**

SITE #: **MA-BOS5087-A**

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW

PROFESSIONAL

COMMONWEALTH OF MASSACHUSETTS

TRICHUR A. VENKATARAMAN
No. 28780
REGISTERED PROFESSIONAL ENGINEER

Trichur A. Venkataraman

DRAWN BY: KO CHECKED BY: JT/RS

JOB #: 2900.097

SITE ADDRESS:

**114 HIGHLAND AVE.
SOMERVILLE, MA 02145**

SHEET TITLE:

STRUCTURAL DETAILS

SHEET NUMBER:

S-1

EXISTING SPRINT SERVICE: 100A, 120/240V

EXISTING SPRINT PPC: 100A-2P MAIN CIRCUIT BREAKER

EXISTING SPRINT PPC CIRCUIT BREAKERS:

- (1) 100A-2P,
- (2) 60A-2P, (ONE OF WHICH IS TVSS--NO LOAD)
- (2) 20A,
- (1) 10A
- (1) (UNKNOWN 2P LABELED "WIMAX"--OFF)

EXISTING CIRCUIT B
SPACES AVAILABLE:

SPRINT DEMAND LOAD: 54.3A (12.5 KW)

PROPOSED CLEARWIRE
CABINET REQUIREMENTS: 100A 2P MAIN CIRCUIT BREAKER

HVAC CALCULATION

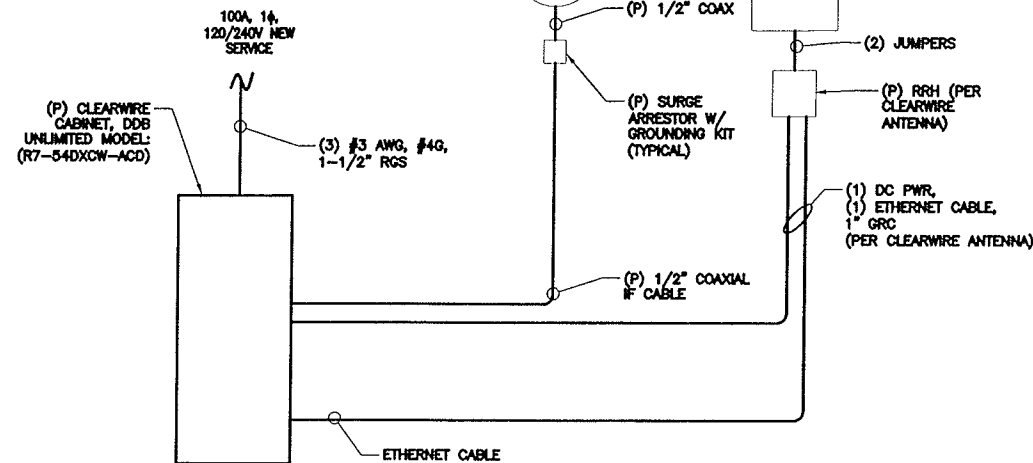
N/A

CONCLUSION:

THE ADDITION OF A 100A-2P CIRCUIT BREAKER FOR THE CLEARWIRE OUTDOOR CABINET EXCEEDS THE 80% LIMITS OF THE EXISTING 100A LOAD CENTER.

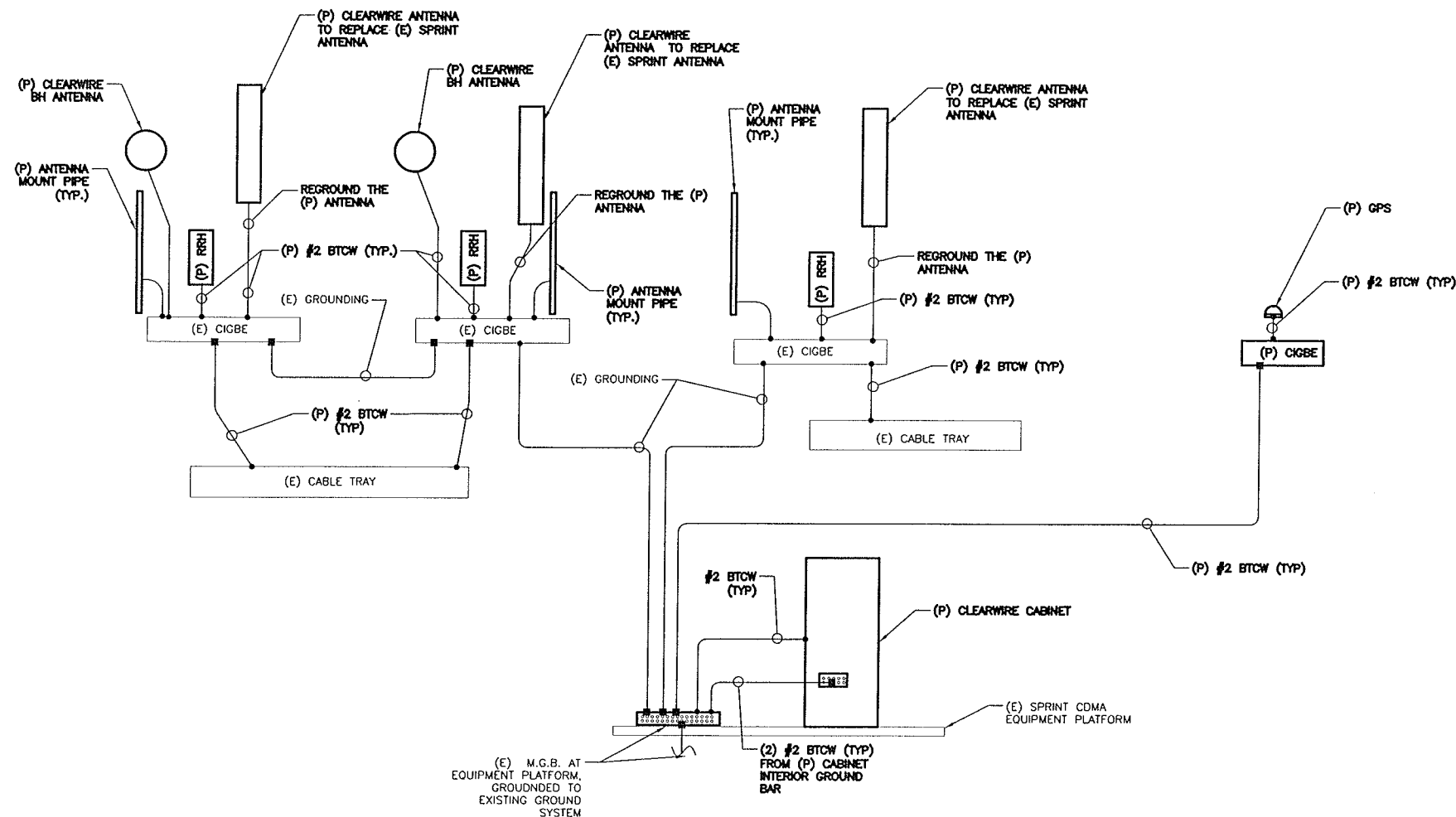
NOTE:

NEEDS ELECTRICAL UPGRADE,
BASED UPON SPRINT REQUIREMENTS THAT AN
ADDITIONAL CIRCUIT BREAKER NOT CAUSE SUM OF
LOADS TO EXCEED 80% OF MAIN CIRCUIT
BREAKER.



ELECTRICAL ONE-LINE DIAGRAM

SCALE: NTS



GROUNDING SCHEMATIC DIAGRAM

SCALE: NTS

(P) = PROPOSED
(E) = EXISTING

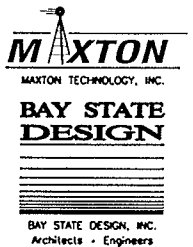
GROUNDING SPECIFICATIONS:

1. GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
2. ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LISTED FOR THEIR INTENDED USE.
3. GROUND WIRES SHALL BE TINNED #2 AWG BARE SOLID Cu UNLESS NOTED OTHERWISE.
4. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC (CADWELD) UNLESS NOTED OTHERWISE. CLEAN SURFACES TO SHINY METAL. WHERE GROUND WIRES ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
5. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 8" RADIUS.
6. PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETSS KOPR-SHIELD (TM OF JET LUB INC.) PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
7. WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 3/4" PVC SLEEVE, FROM 1'-0" ABOVE GRADE AND SEAL TOP WITH SILICONE MATERIAL.
8. PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.
9. GROUNDING WIRE CONNECTIONS SHALL BE 3-CRIMP C-TAP COMPRESSION TYPE. SPLIT BOLTS ARE NOT ACCEPTABLE.
10. GROUND RODS SHALL BE COPPER CLAD STEEL 5/8"x10" SPACED NOT LESS THAN 10' O.C.
11. CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS.
12. SURFACE CONNECTIONS SHALL BE MADE TO BARE METAL. PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. APPLY NON-OXIDIZING AGENT TO CONNECTIONS.
13. COPPER BUSES SHALL BE CLEANED, POLISHED AND A NON-OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
14. GROUNDING CONDUCTORS SHALL BE RUN THROUGH PVC SLEEVE WHERE ROUTED THROUGH WALLS, FLOORS AND CEILING. ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
15. HARDWARE (I.E. NUTS, BOLTS, WASHERS, ECT.) IS TO BE STAINLESS STEEL.
16. EXOTHERMIC WELDS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
17. THE ENTIRE SYSTEM SHALL BE SOLIDLY GROUNDED USING LOCKNUTS AND BONDING NUTS ON CONDUITS AND PROPERLY BONDED GROUND CONDUCTORS. RECEPTACLES AND EQUIPMENT BRANCH CIRCUITS SHALL BE GROUNDED WITH A FULL SIZED EQUIPMENT GROUNDING CONDUCTOR RUN IN THE CIRCUIT'S CONDUIT.
18. INSTALL GROUND BUSHINGS ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.
19. GROUND BARS (SECTOR, COLLECTOR, MASTER) SHALL BE BARE 1/4"x4" COPPER; LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICALLY INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
20. APPLY T&B KOPR-SHIELD OR APPROVED EQUAL PRIOR TO MAKING MECHANICAL CONNECTIONS. CONNECTIONS SHALL BE MADE WITH STAINLESS STEEL BOLTS, NUTS AND LOCK WASHERS 3/8" DIAMETER MIN. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH 'GALVONOX' OR EQUAL.
21. ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANELS, FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE WITH STAINLESS STEEL SELF-TAPPING SCREWS.
22. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON-CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
23. ALL BOLTS, WASHERS AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
24. THE CONTRACTOR SHALL ENGAGE AN INDEPENDENT ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT RESISTANCE TO EARTH DOES NOT EXCEED 5.0 OHMS. PROVIDE A COPY OF TESTING REPORT, INCLUDING THE METHOD AND INSTRUMENTS USED TO VERIFY RESISTANCE TO CLEARWIRE REPRESENTATIVE.
25. BOND CABINET THROUGH THE MAIN GROUND BAR.
26. THE CONTRACTOR TO SECURE A COPY OF ANY SOIL RESISTIVITY AND/OR SITE RESISTANCE TO EARTH TESTING PREVIOUSLY PERFORMED. IF NO RECORDS ARE AVAILABLE A FOUR POINT SOIL RESISTIVITY TEST SHALL BE PERFORMED TO ASSURE 5 OHMS OR LESS WITH SOIL RESISTIVITY UP TO 50,000 OHM-CM.
27. WHEN CLEARWIRE ANTENNAS EXCEED IN ELEVATION THE EXISTING LIGHTNING RODS THEN LIGHTNING RODS SHALL BE ADDED TO CLEAR WIRE ANTENNAS AS DETAILED IN SNP-312-203.
28. GROUNDING SYSTEM SHALL MEET CLEARWIRE GROUNDING STANDARDS.

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033



241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA. 01752 Fax: 508-485-5321

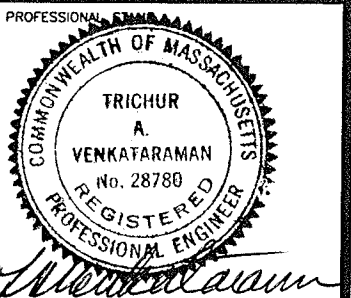
SITE NAME: **HIGHLAND GARDENS**

HOST #:
BS13XC672-D

SITE #:
MA-BOS5087-A

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW



DRAWN BY: KO CHECKED BY: JT

JOB #: 2900.097

SITE ADDRESS:

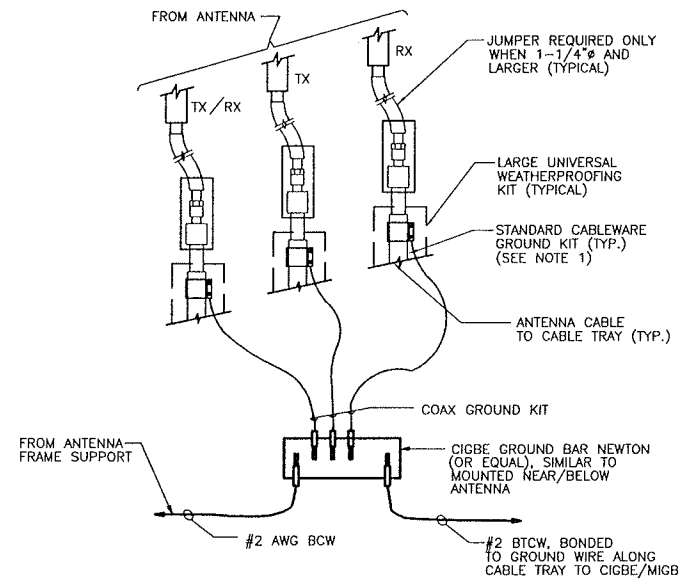
114 HIGHLAND AVE.
SOMERVILLE, MA 02145

SHEET TITLE:

ELECTRICAL & GROUNDING SCHEMATIC

SHEET NUMBER:

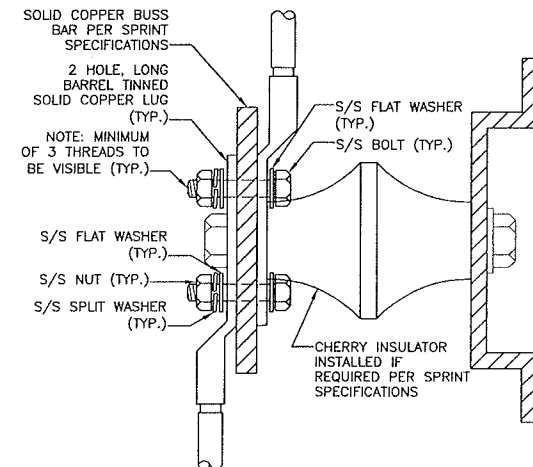
E-1



CONNECTION OF GROUND WIRES TO GROUNDING BAR

SCALE: N.T.S.

1



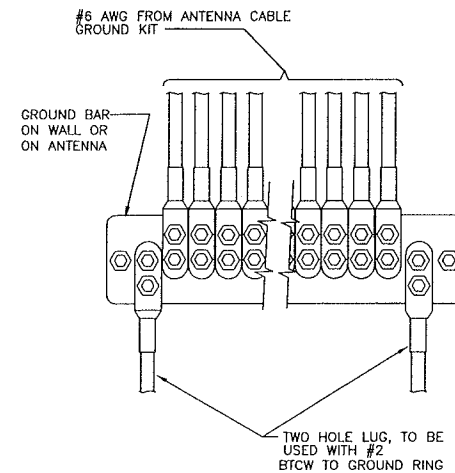
NOTES:

1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION LUG BARREL AND CRIMPING.
3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

GROUND LUG DETAIL

SCALE: N.T.S.

2



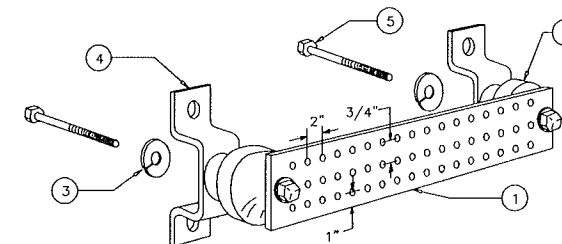
NOTE:

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

INSTALLATION OF GROUND WIRE TO GROUND BAR

SCALE: N.T.S.

3



LEGEND

- 1- COPPER HARGER GROUND BAR, 1/4" X 4" X 20", GBIT 14420 J 2-7 HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
- 2- STANDOFF INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
- 3- 5/8" LOCKWASHERS, OR EQUAL
- 4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056 OR EQUAL
- 5- 5/8-11 X 1" HEX HEAD CAP SCREW BOLT

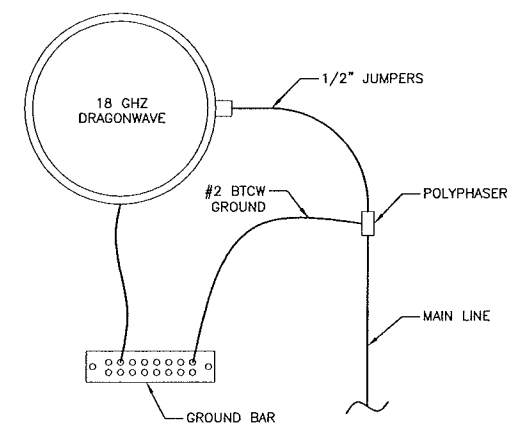
NOTE:

- ALL BOLTS, NUTS, WASHERS, AND LOCK WASHERS SHALL BE 18-8 STAINLESS STEEL.

GROUNDING - STANDARD DETAIL GROUND BAR

SCALE: N.T.S.

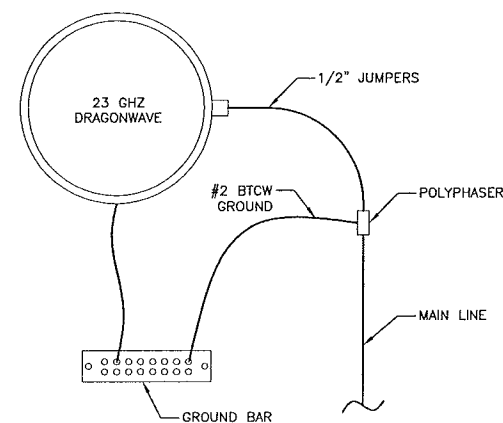
4



18 GHZ DRAGONWAVE GROUNDING

SCALE: N.T.S.

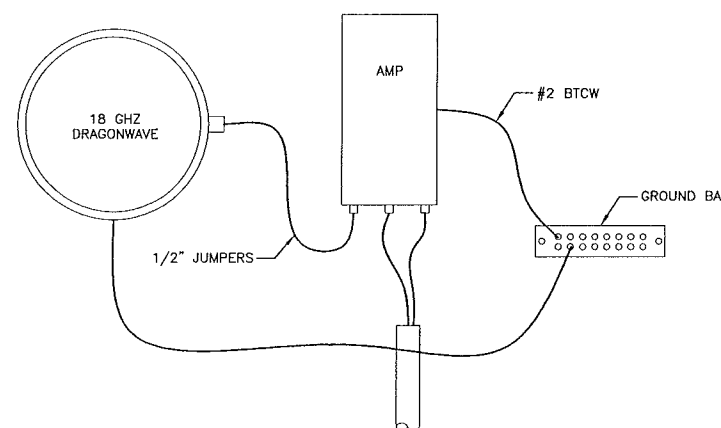
5



23 GHZ DRAGONWAVE GROUNDING

SCALE: N.T.S.

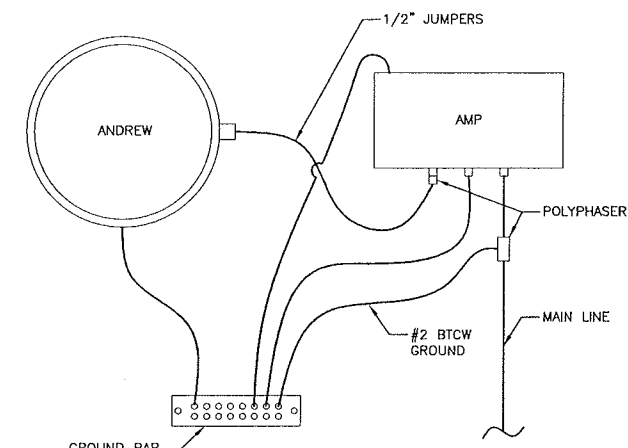
6



18 GHZ DRAGONWAVE/AMP GROUNDING

SCALE: N.T.S.

7



ANDREW GROUNDING

SCALE: N.T.S.

8

(P) = PROPOSED
(E) = EXISTING

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE
SUITE 300
KIRKLAND, WA 98033

MAXTON
MAXTON TECHNOLOGY, INC.

BAY STATE DESIGN

BAY STATE DESIGN, INC.
Architects - Engineers

241 Boston Post Rd. West Phone: 508-229-4100
Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME:

HIGHLAND GARDENS

HOST #:

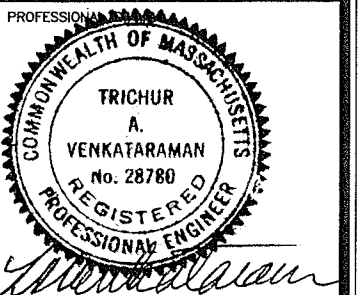
BS13XC672-D

SITE #:

MA-BOS5087-A

CONSTRUCTION DWG'S

1	12/1/09	PER COMMENTS
0	08/19/09	FOR CONSTRUCTION
A	06/30/09	ISSUED FOR REVIEW



DRAWN BY: KO

CHECKED BY: JT

JOB #:

2900.097

SITE ADDRESS:

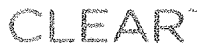
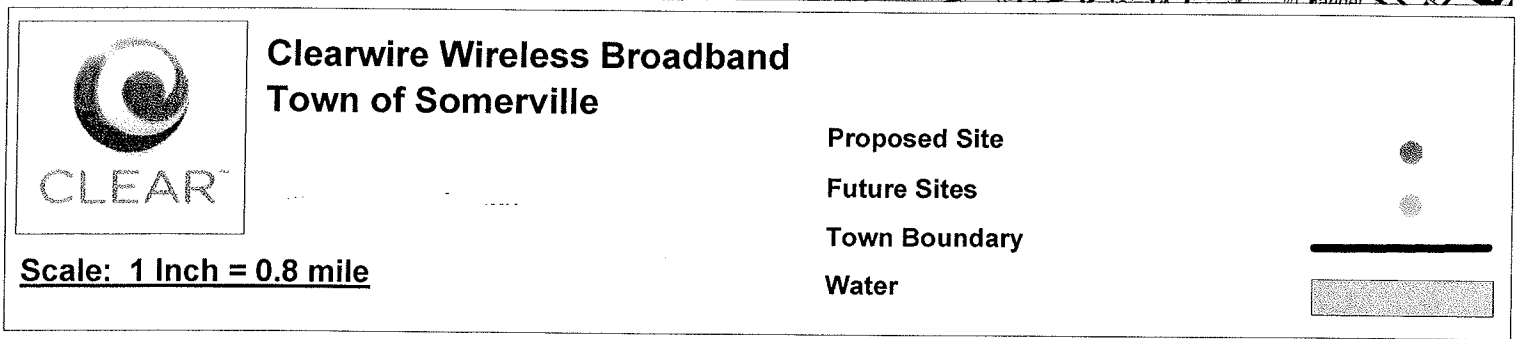
114 HIGHLAND AVE.
SOMERVILLE, MA 02145

SHEET TITLE:

ANTENNA GROUNDING DETAILS

SHEET NUMBER:

E-2



Water

Scale: 1 Inch = 0.8 mile