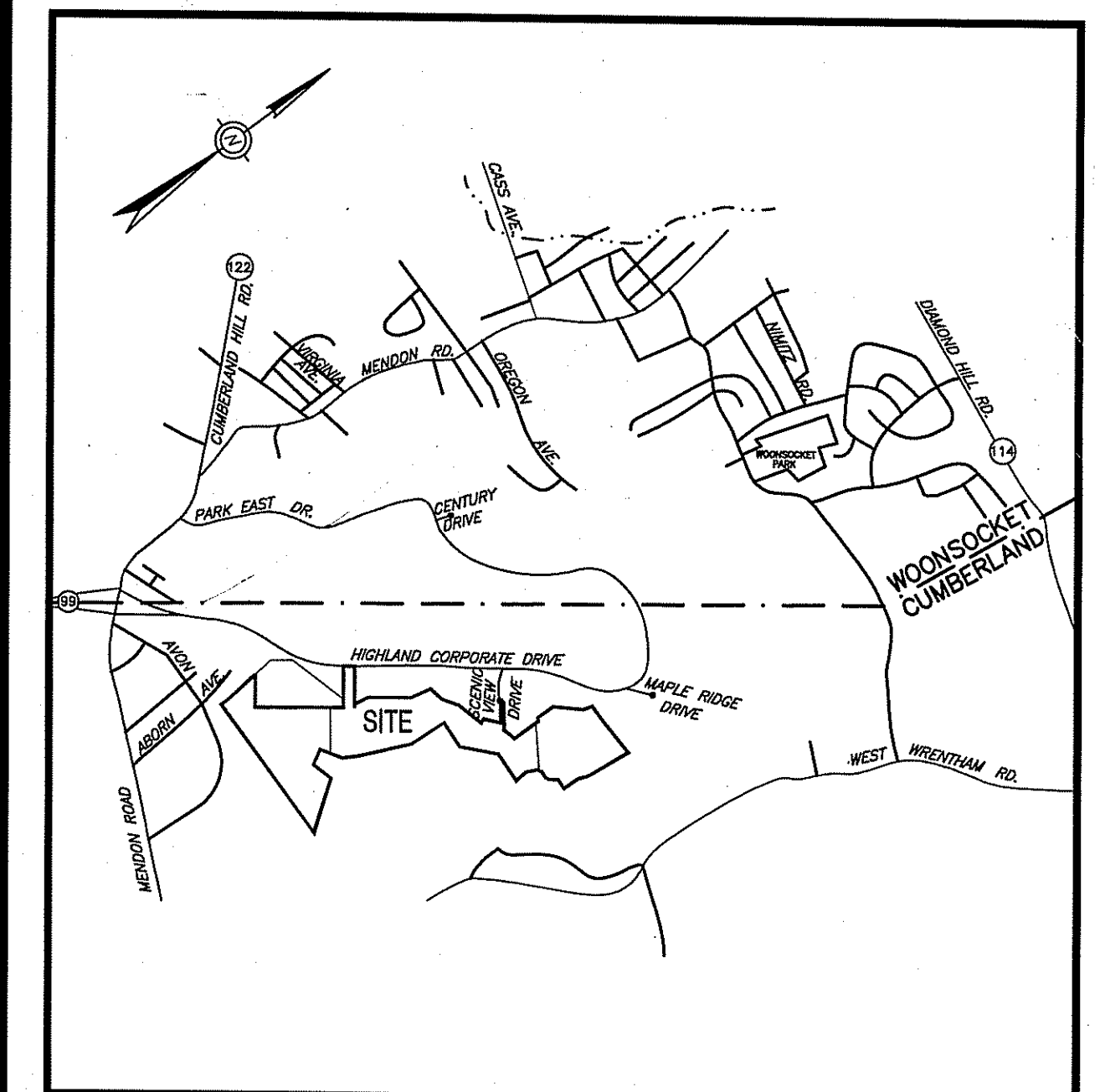


# SITE PLANS FOR HIGHLAND HILLS

## ASSESSOR'S PLAT 51 LOT 11 and PORTION OF PLAT 52 LOT 360 HIGHLAND CORPORATE DRIVE CUMBERLAND, RHODE ISLAND ZONING DISTRICT I-1/PDO



LOCATION MAP  
NOT TO SCALE

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**PREPARED FOR:**  
HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND 02865  
(401) 270-0600

**ENGINEERS:**



- Civil
- Transportation
- Environmental
- Site Planning
- Land Surveying

**CROSSMAN  
ENGINEERING, INC.**

151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cei@crossmaneng.com

**OWNER/APPLICANT:**

HIGHLAND HILLS, LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND 02865  
(401) 270-0600

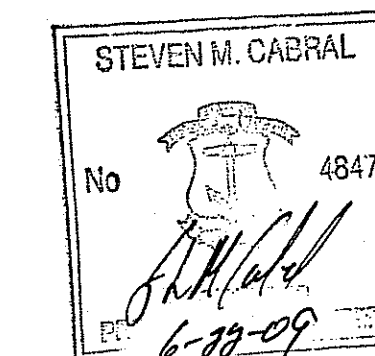
AND

**ECONOMIC DEVELOPMENT FOUNDATION OF R.I.**

1300 HIGHLAND CORPORATE DRIVE, SUITE 202  
CUMBERLAND, RHODE ISLAND 02864  
(401) 658-1050

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
R.I. WATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED AUG 13 2009 FILE # 08-6971  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION

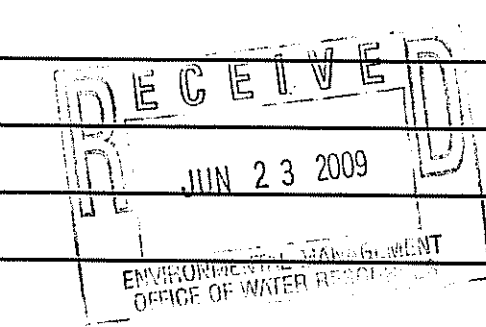
*Charles A. Hester*



**FINAL PLAN SUBMISSION**

**REVISIONS:**

NO.	DATE:	DESCRIPTION:
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/08/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT



NOVEMBER 2008  
SHEET 1 of 41

**GENERAL NOTES:**

- ALL EXISTING UTILITIES HAVE BEEN PLOTTED BASED UPON BEST AVAILABLE INFORMATION AND REPRESENT APPROXIMATE LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING DRAINAGE & UTILITIES, BOTH UNDERGROUND AND OVERHEAD, BEFORE EXCAVATION BEGINS IN ACCORDANCE WITH "DIG SAFE PROGRAM LAW" ENACTED BY THE R.I. LEGISLATURE AND BY CONTACTING THE INDIVIDUAL UTILITY COMPANIES. EXCAVATION SHALL BE IN ACCORDANCE WITH ALL STATUTES, ORDINANCES, RULES AND REGULATIONS OF ANY CITY, STATE OR FEDERAL AGENCY THAT MAY APPLY. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- SPECIFICATIONS TO GOVERN THIS PROJECT ARE R.I.D.O.T. STANDARD SPECIFICATIONS. FOR ALL EXCAVATION, PLACEMENT OF FILL, PIPE INSTALLATION, BITUMINOUS PAVEMENT, CUTTING INTO CATCHBASIN/MANHOLES, CONCRETE AND SAWCUTTING, THE CONTRACTOR SHALL PERFORM THE WORK IN FULL COMPLIANCE WITH THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION, WITH LATEST REVISIONS UNLESS OTHERWISE SHOWN ON PLANS. THE "METHOD OF MEASUREMENT" AND "BASIS OF PAYMENT" ARE NOT APPLICABLE. THESE SPECIFICATIONS CAN BE PURCHASED FROM THE OFFICE OF:  
CONTRACTS AND SPECIFICATIONS  
RIDOT, TWO CAPITOL HILL, ROOM 331  
PROVIDENCE, RI 02903 TEL. (401)277-2495, EXT. 4400
- FOR ALL EXCAVATION AND PLACEMENT OF FILL, THE CONTRACTOR SHALL PERFORM THE WORK IN FULL COMPLIANCE WITH THE R.I. STANDARD SPECIFICATION SECTION 202.
- RHODE ISLAND STANDARDS REFERENCED ARE ACCORDING TO THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS "RHODE ISLAND STANDARD DETAILS" DATED JUNE 27, 2008, WITH ALL REVISIONS AS PREPARED BY THE DEPARTMENT OF TRANSPORTATION.
- THE CONTRACTOR MUST VERIFY PRIOR TO CONSTRUCTION THAT ALL REQUIRED AUTHORIZATION TO PERFORM WORK HAS BEEN OBTAINED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION OPERATIONS INCLUDING ALL ACTIONS OR OMISSIONS OF ANY SUBCONTRACTORS, AGENTS OR EMPLOYEES. THE CONTRACTOR MUST ENSURE THAT THE CONDITIONS OF ALL PERMITS, SPECIFICATIONS AND FEDERAL, STATE AND LOCAL REGULATIONS ARE STRICTLY ENFORCED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ASPECTS OF ON-SITE SAFETY INCLUDING ANY DAMAGE TO EXISTING STRUCTURES.
- WORK SHOWN ON THE PLANS FOR WHICH THERE ARE NO PARTICULAR DETAILS OR SPECIFICATIONS DOES NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING THE WORK. THE CONTRACTOR SHALL THOROUGHLY EXAMINE THE CONTRACT DOCUMENTS AND PLANS AND INSPECT THE SITE, AND THE BID PRICE SHALL INCLUDE ALL SERVICES AND MATERIALS NECESSARY TO COMPLETE THE PROJECT. ANY CHANGES TO THE PROJECT OR THE INSTALLATION OF AN ITEM FOR WHICH NO PARTICULAR DETAIL OR SPECIFICATION WAS PROVIDED MUST BE REVIEWED BY AND MUST BE ACCEPTABLE TO THE ENGINEER.
- CONTRACTOR IS RESPONSIBLE TO VERIFY ALL EXISTING CONDITIONS DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY WORK.
- ALL DISTURBED AREAS SHALL BE REPLACED IN KIND UNLESS OTHERWISE SHOWN.

**MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC INCLUDING POLICE PROTECTION. ALL TEMPORARY CONSTRUCTION SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE LATEST REVISIONS OF MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
- TEMPORARY CONSTRUCTION SIGNS AND ALL APPLICABLE TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC.
- THE PRIVATE VEHICLES OF CONSTRUCTION WORKERS WILL NOT BE PARKED IN THE ROAD RIGHT-OF-WAY.
- ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS, CHANNELING DEVICES, ETC., SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2003 EDITION AND SUBSEQUENT REVISIONS.
- SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH THE R.I.D.O.T. SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.

**DRAINAGE SYSTEM MAINTENANCE SCHEDULE:**

THE BELOW RECOMMENDATIONS FOR MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM ARE IN ACCORDANCE WITH THE RHODE ISLAND STORMWATER MANAGEMENT STANDARDS.

- FOLLOWING CONSTRUCTION, THE CONTRACTOR SHALL INSPECT THE STORMWATER MANAGEMENT SYSTEM AND CLEAN ALL CONSTRUCTION SEDIMENT.
- AN INSPECTION SHALL OCCUR AS NOTED BELOW AND AT A MINIMUM OF ANNUALLY BY QUALIFIED PERSONNEL TO ENSURE PROPER OPERATION. THE INSPECTION SHOULD CONCENTRATE ON THE FOLLOWING:
  - EMBANKMENT SUBSIDENCE
  - EROSION
  - CRACKING
  - TREE GROWTH
  - OUTLET CONDITION
  - SEDIMENT ACCUMULATION
  - SLOPE STABILITY
- SUBSURFACE INFILTRATION/DETENTION SYSTEM:
 

INSPECTIONS SHALL OCCUR EVERY 6 MONTHS AND AFTER EVERY MAJOR STORM. AT A MINIMUM, THE INFILTRATION/DETENTION SYSTEMS SHALL BE CLEANED OF ACCUMULATED SEDIMENT ONCE EVERY TEN YEARS. IF REQUIRED, THE SYSTEMS SHALL BE DEWATERED PRIOR TO DISCHARGE. THE RESULTING SYSTEM CONDITION AFTER SEDIMENT REMOVAL MUST BE THE ORIGINAL DESIGN CONDITION. ALL REMOVED SEDIMENT IS TO BE TESTED TO DETERMINE POLLUTANT CONTENT. THE SEDIMENT IS TO BE PROPERLY DISPOSED IN UPLAND AREAS BASED UPON THE TEST RESULTS AND LOCAL, STATE, AND FEDERAL REGULATIONS.

IF STANDING WATER REMAINS 72 HOURS AFTER A STORM EVENT, THE SYSTEM WILL REQUIRE IMMEDIATE CLEANING, EVALUATION AND, IF NECESSARY, REPAIR.
- DEEP SUMP CATCHBASINS:
 

AN INSPECTION SHALL OCCUR ON AN ANNUAL BASIS OR WHENEVER THE DEPTH OF SEDIMENT IS GREATER THAN OR EQUAL TO ONE HALF THE DEPTH FROM THE BOTTOM OF THE INVERT OF THE LOWEST PIPE IN THE BASIN.
- CATCHBASINS, MANHOLES, AND DRAIN LINES:
 

AN INSPECTION SHALL OCCUR ON AN ANNUAL BASIS BY QUALIFIED PERSONNEL TO ENSURE PROPER OPERATION. THE INSPECTION SHOULD, AT A MINIMUM, CONCENTRATE ON THE FOLLOWING:

  - DAMAGE TO GRATES/COVERS
  - EVIDENCE OF STANDING WATER
  - DEBRIS REMOVAL
  - STRUCTURAL ALIGNMENT/INTEGRITY

ANY DEFICIENCY NOTED DURING THE INSPECTION WILL BE IMMEDIATELY REPAIRED OR REPLACED.
- OIL/WATER SEPARATOR
 

IN THE FIRST YEAR OF OPERATION, SEASONAL INSPECTIONS OF THE ACCUMULATED SEDIMENT VOLUME WITHIN THE CHAMBER ARE NECESSARY TO ESTABLISH AN APPROPRIATE MAINTENANCE PLAN. AFTER THE FIRST YEAR, THE INSPECTION SCHEDULE SHOULD BE ESTABLISHED TO CLEAN THE CHAMBER ON A YEARLY BASIS OR MORE FREQUENTLY IF REQUIRED. THE OWNER SHALL MAINTAIN, CONDUCT INSPECTIONS, AND CLEAN THE CHAMBER AS REQUIRED. THE SYSTEM NEEDS TO BE CLEANED WHEN INSPECTION REVEALS THAT THE SEDIMENT DEPTH HAS ACCUMULATED WITHIN SIX INCHES OF THE DRY-WEATHER WATER LEVEL.

CLEAN OUT SHOULD NOT OCCUR WITHIN 24 HOURS OF A RAIN EVENT TO ALLOW ENTIRE COLLECTION SYSTEM TO DRAIN DOWN. ALL REMOVED SEDIMENT IS TO BE TESTED TO DETERMINE POLLUTANT CONTENT AND SHALL BE PROPERLY DISPOSED OF.
- SEDIMENT REMOVAL
 

FOLLOWING CONSTRUCTION, THE CATCHBASINS ARE TO BE CLEANED OF ACCUMULATED SEDIMENT AS REQUIRED. ALL REMOVED SEDIMENT IS TO BE TESTED TO DETERMINE POLLUTANT CONTENT. THE SEDIMENT IS TO BE PROPERLY DISPOSED IN UPLAND AREAS BASED UPON THE TEST RESULTS AND LOCAL, STATE, AND FEDERAL REGULATIONS.

**SOIL SURVEY NOTE:**

ACCORDING TO THE SOIL SURVEY OF RHODE ISLAND AND BASED UPON ON-SITE TESTING, THE DEVELOPMENT AREA IS COMPRISED OF:

CANTON AND CHARLTON VERY & CANTON AND CHARLTON FINE  
STONY FINE SANDY LOAMS (Chc) & SANDY LOAMS (Cec)

THE SOIL CONSERVATION SERVICE CLASSIFIES BOTH SOILS AS SUITABLE FOR COMMUNITY DEVELOPMENT. STONINESS AND BEDROCK OUTCROPS ARE PRESENT AND ARE TO BE REMOVED IN DEVELOPMENT AREA.

**FLOOD ZONE NOTE:**

THE SITE IS WITHIN FLOOD ZONE X. AREAS DETERMINED TO BE OUTSIDE 500 YEAR FLOOD PLAN, ACCORDING TO FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 440016\_0001\_B, REVISED FEBRUARY 16, 1990 AND 440016\_0003\_B, REVISED FEBRUARY 16, 1990.

**MAP REFERENCE:**

- REFERENCE IS MADE TO THE PLAN SET ENTITLED "HIGHLAND II URBAN COLLECTOR, STATION 18+00 TO STATION 116+04 (STA. 37A+47.67 PARK EAST DRIVE), TOWN OF CUMBERLAND AND CITY OF WOONSOCKET, COUNTY OF PROVIDENCE," R.I. CONTRACT NO. 9450 DATE LAST REVISED: JULY 20, 1994, SHEETS 1-221, PREPARED BY CROSSMAN ENGINEERING INC.
- REFERENCE IS MADE TO A PLAN SET ENTITLED "PROPOSED ZONING AMENDMENT, ASSESSOR'S PLAT 51, LOT 11, HIGHLAND CORPORATE DRIVE, CUMBERLAND, RHODE ISLAND" PREPARED BY CROSSMAN ENGINEERING, INC. MAY 2007, SHEETS 1 THRU 7.

**PROPOSED ROADWAY PAVEMENT STRUCTURE:**

- 1-1/2" BITUMINOUS CONCRETE SURFACE COURSE, CLASS 1-1
- 2" BITUMINOUS CONCRETE BASE COURSE
- 8" GRAVEL BORROW SUBBASE

**DRAINAGE SYSTEM NOTE:**

STORMWATER RUNOFF GENERATED FROM THIS SITE WILL FLOW INTO AN ON-SITE DETENTION SYSTEM, THE ROOFTOP INFILTRATION SYSTEMS AND THE HIGHLAND CORPORATE DRIVE CLOSED DRAINAGE SYSTEM (VIA SCENIC VIEW DRIVE). THESE SYSTEMS HAVE BEEN DESIGNED TO ACCEPT AND DETAIN RUNOFF FOR THE 2, 10, 25 AND 100 YEAR EVENT.

**LAYOUT NOTE:**

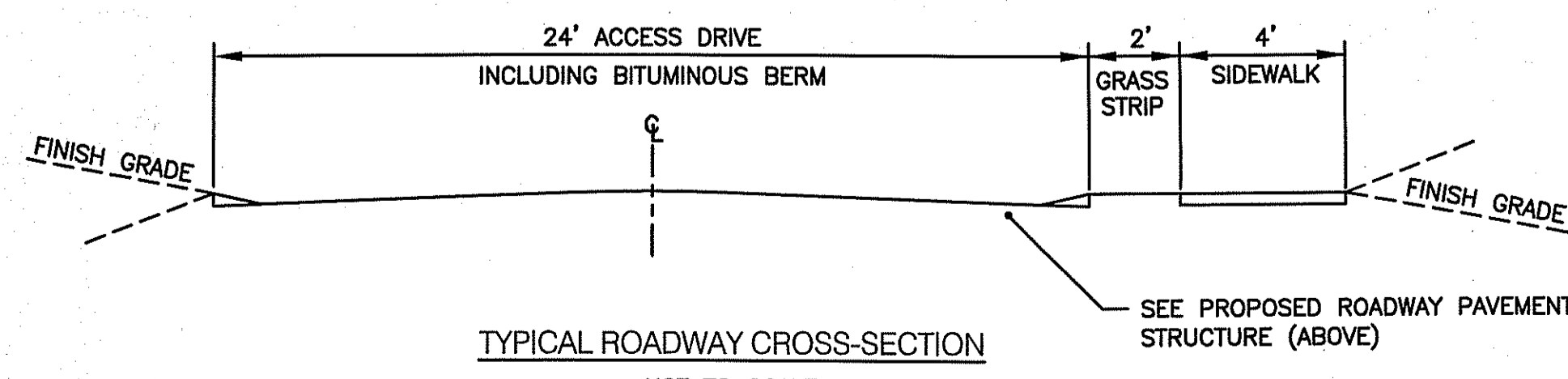
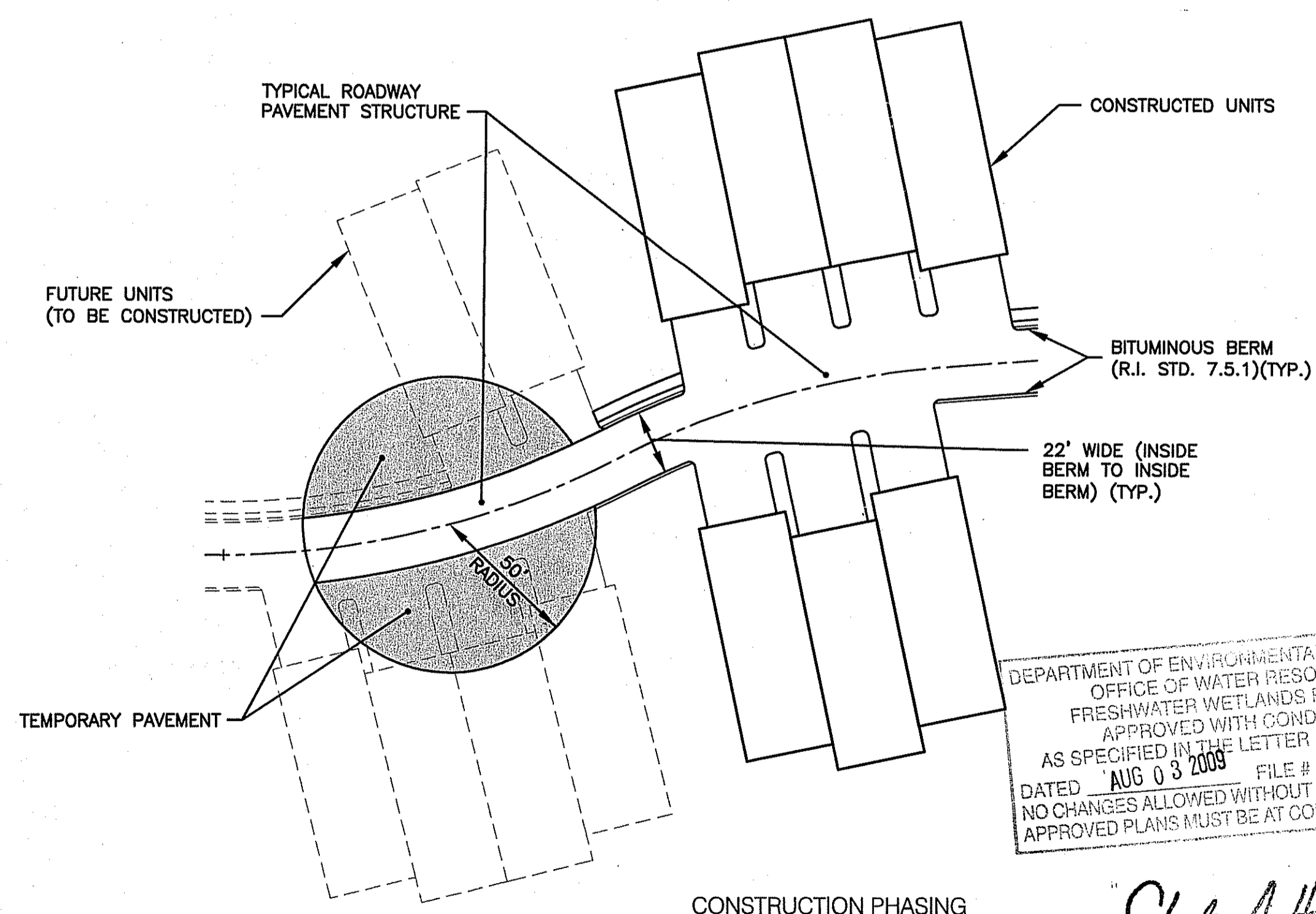
THE LAYOUT SHOWN REPRESENTS A GRAPHICAL DESIGN, AND PRIOR TO THE CONSTRUCTION, THE CONTRACTOR SHALL ENGAGE A PROFESSIONAL LAND SURVEYOR (PLS) REGISTERED IN THE STATE OF RHODE ISLAND TO SET AND VERIFY ALL LINES AND GRADES. ALL EXISTING UTILITY LOCATIONS AND ELEVATIONS ARE TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY ITEM FOUND WHICH DOES NOT MATCH THE PLANS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO CONSTRUCTION FOR REVIEW. NO WORK SHALL PROCEED UNTIL AUTHORIZED BY THE ENGINEER.

**CONSTRUCTION NOTES:**

- THE CONTRACTOR IS REQUIRED TO OBTAIN AND REVIEW ALL ENGINEERING DOCUMENTS COMPLETED FOR FINAL DESIGN INCLUDING BUT NOT LIMITED TO GEOTECHNICAL REPORTS. THE GEOTECHNICAL REPORTS SPECIFY SOIL COMPACTION METHODS AND OTHER CONSTRUCTION RELATED REQUIREMENTS.
  - THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLATION OF UTILITIES ON SITE. THE COORDINATION IS NECESSARY FOR THE ENGINEER TO SCHEDULE SITE INSPECTIONS AS REQUIRED.
  - THE CONTRACTOR IS REQUIRED TO MAINTAIN DETAILED AS-BUILT INFORMATION FOR ALL UTILITY INSTALLATION. AS-BUILT INFORMATION INCLUDES MATERIAL LIST, PIPE DEPTH NOTATIONS AND SWING TIE LOCATIONS (2 MINIMUM) FROM NEW PIPE TO BUILDING CORNERS. ALL PIPE BEND/ELBOW LOCATIONS SHALL BE DIMENSIONED.
- INFILTRATION SYSTEM NOTES:**
- THE SYSTEM INSTALLATION SHALL CONFORM TO ALL MANUFACTURER'S SPECIFICATIONS.
  - CRUSHED STONE SHALL BE USED FOR BEDDING UP TO 6" ABOVE THE CULTC RECHARGER.
  - THE FILTER FABRIC SHOULD BE COMPATIBLE WITH THE SOIL TEXTURES AND AS REQUIRED BY CULTC.
  - AS REQUIRED, REMOVE A AND B HORIZONS (OR APPROVED EQUAL SOILS). REPLACE REMOVED SOIL WITH BANK RUN GRAVEL FROM SYSTEM TO BOTTOM OF EXCAVATION.
  - THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE BANK RUN GRAVEL UNDER SYSTEM YIELDS A INFILTRATION RATE OF 15 MIN/INCH OR FASTER. THE CONTRACTOR SHALL CONTACT ENGINEER TO CONDUCT INFILTRATION TESTS OF BANK RUN GRAVEL AFTER PLACEMENT TO VERIFY INFILTRATION RATE. TWO INFILTRATION TESTS PER SYSTEM (MIN.) IS REQUIRED. CONTRACTOR SHALL REPLACE BANK RUN GRAVEL IF INFILTRATION RATE IS SLOWER THAN 15 MIN/INCH AT NO ADDITIONAL COST TO OWNER.
  - THE BANK RUN GRAVEL BELOW THE INFILTRATION SYSTEMS SHALL BE INSTALLED UNDER THE SUPERVISION OF AN ENGINEER TO ENSURE PLACEMENT IS APPROPRIATE FOR STABILITY AND TO ENSURE THAT THE DESIGN INFILTRATION RATE OF 15 MIN/INCH IS MAINTAINED. AFTER PLACEMENT, THE CONTRACTOR SHALL CONTACT ENGINEER TO VERIFY INFILTRATION RATES AS NOTED IN NOTE 5 (ABOVE).

**LEGEND**

EXISTING	PROPOSED
298	510
302.84	517.7
(FE) >	
⊕	CONTOUR
⊙	SPOT GRADE
⊖	FLARED END
○WG	CATCH BASIN
⊖	SEWER MANHOLE
⊖	DRAINAGE MANHOLE
⊖	WATER GATE
⊖	HYDRANT
⊖	GAS GATE
⊖ #38	UTILITY POLE
	ELECTRIC MANHOLE
	LIGHT POLE
	RETAINING WALL
	GUARDRAIL
	SEWER FORCE MAIN
	UNDERGROUND ELEC./TELEPHONE/ COMMUNICATIONS LINE
	GAS LINE
	WATER LINE
	DRAIN LINE
	TEST PIT
	PROPERTY LINE
	PERMANENT DRAINAGE EASEMENT BOUNDARY
	PERMANENT (SLOPE) EASEMENT BOUNDARY
	APPROXIMATE TREELINE
	WETLAND EDGE FLAGS
	50' PERIMETER WETLAND
	EXISTING PROPERTY LINE TO BE REMOVED

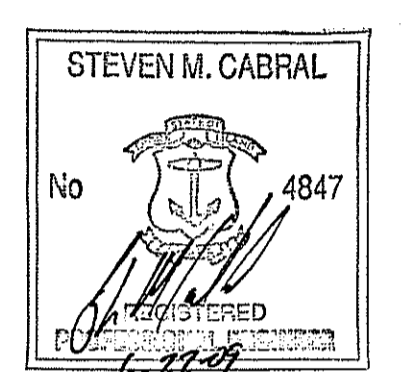


CONSTRUCTION PHASING  
TEMPORARY CUL-DE-SAC INSTALLATION  
SCALE: 1"=40'

- NOTES:**
- IF CONSTRUCTION OF UNITS AND SITE IMPROVEMENTS ARE CONDUCTED IN PHASES, A TEMPORARY CUL-DE-SAC SHALL BE INSTALLED AT THE END OF ROADWAY.
  - TEMPORARY CUL-DE-SAC SHALL BE INSTALLED PRIOR TO OCCUPANCY OF ANY UNIT. THE TEMPORARY CUL-DE-SAC SHALL BE REMOVED UPON COMPLETION OF THE NEXT PHASE AND INSTALLATION OF THE NEXT SUBSEQUENT TEMPORARY CUL-DE-SAC.
  - TEMPORARY CUL-DE-SAC SHALL HAVE A 50' RADIUS WITH PAVEMENT BEING A MINIMUM OF 2" BITUMINOUS SURFACE ON 8" GRAVEL BORROW SUBBASE.

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cel@crossmaneng.com

- Civil
- Transportation
- Environmental
- Site Planning
- Land Surveying



PROJECT TITLE:  
**HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.**

PREPARED FOR:  
**HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND**

**GENERAL NOTES and LEGEND**

DATE: NOVEMBER 2008 SCALE: AS NOTED

DWG. NAME: 1519-C1-NOTE-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS APPROVED WITH CONDITIONS
3	04/08/09	R.I.D.E.M. COMMENTS
4	08/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED AUG 03 2009 FILE # 08-0371  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

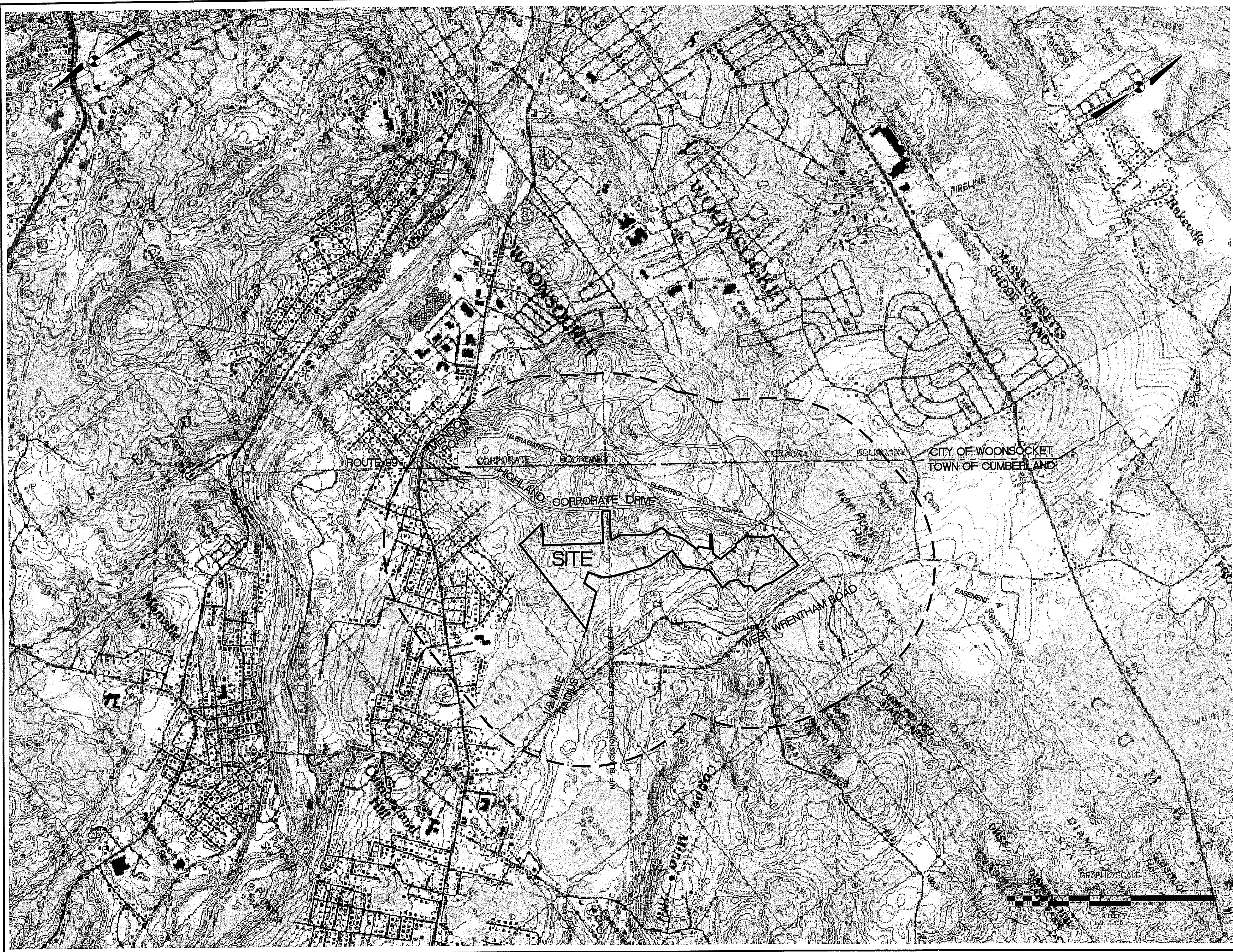
*Charles A. Herbert*

DRAWING NUMBER: **C1**

DATE: JUN 23 2009

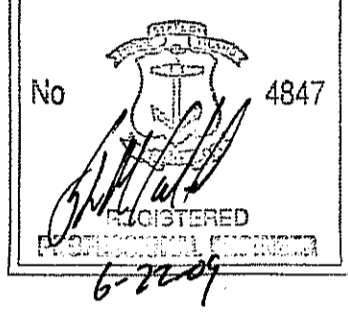
SHEET: 2 OF 41

**FINAL PLAN SUBMISSION**



**CROSSMAN  
ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
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Email: cel@crossmaneng.com

STEVEN M. CABRAL



PROJECT TITLE:

HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:

VICINITY MAP

DATE: NOVEMBER 2008 SCALE: 1" = 800'

DWG. NAME: 1519-C2-VICINITY-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/08/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATE: AUG 03 2009 FILE # 08-0371  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLAN MUST BE AT CONSTRUCTION

*Charles A. Houbert*

DRAWING NUMBER

RECEIVE  
JUN 23 2009  
SHEET 3 OF 41

FINAL PLAN SUBMISSION

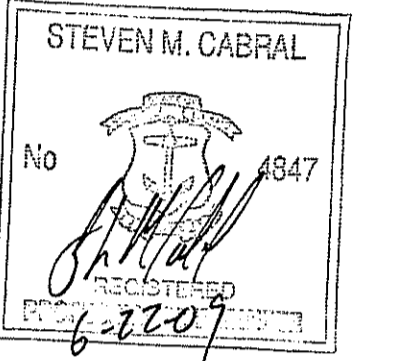
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- Civil  
- Transportation  
- Environmental  
- Site Planning  
- Land Surveying

**CROSSMAN  
ENGINEERING, INC.**

151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cei@crossmaneng.com



PROJECT TITLE:

HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO

HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:

AERIAL PHOTO

DATE: NOVEMBER 2008 SCALE: 1" = 200'

DWG. NAME: 1519-C3-AERIAL-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/08/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

AUG 13 2009 08-0311

*Charles A. Herbert*

DRAWING NUMBER

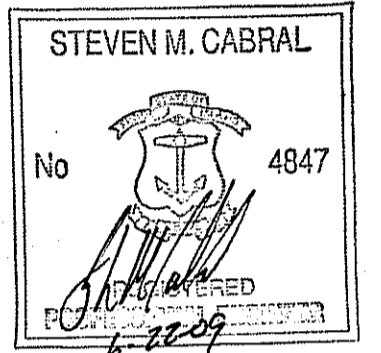
**C3**

SHEET: 4 OF 41

FINAL PLAN SUBMISSION



**CROSSMAN ENGINEERING, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: cei@crossmaneng.com



PROJECT TITLE:

HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:

200' RADIUS MAP

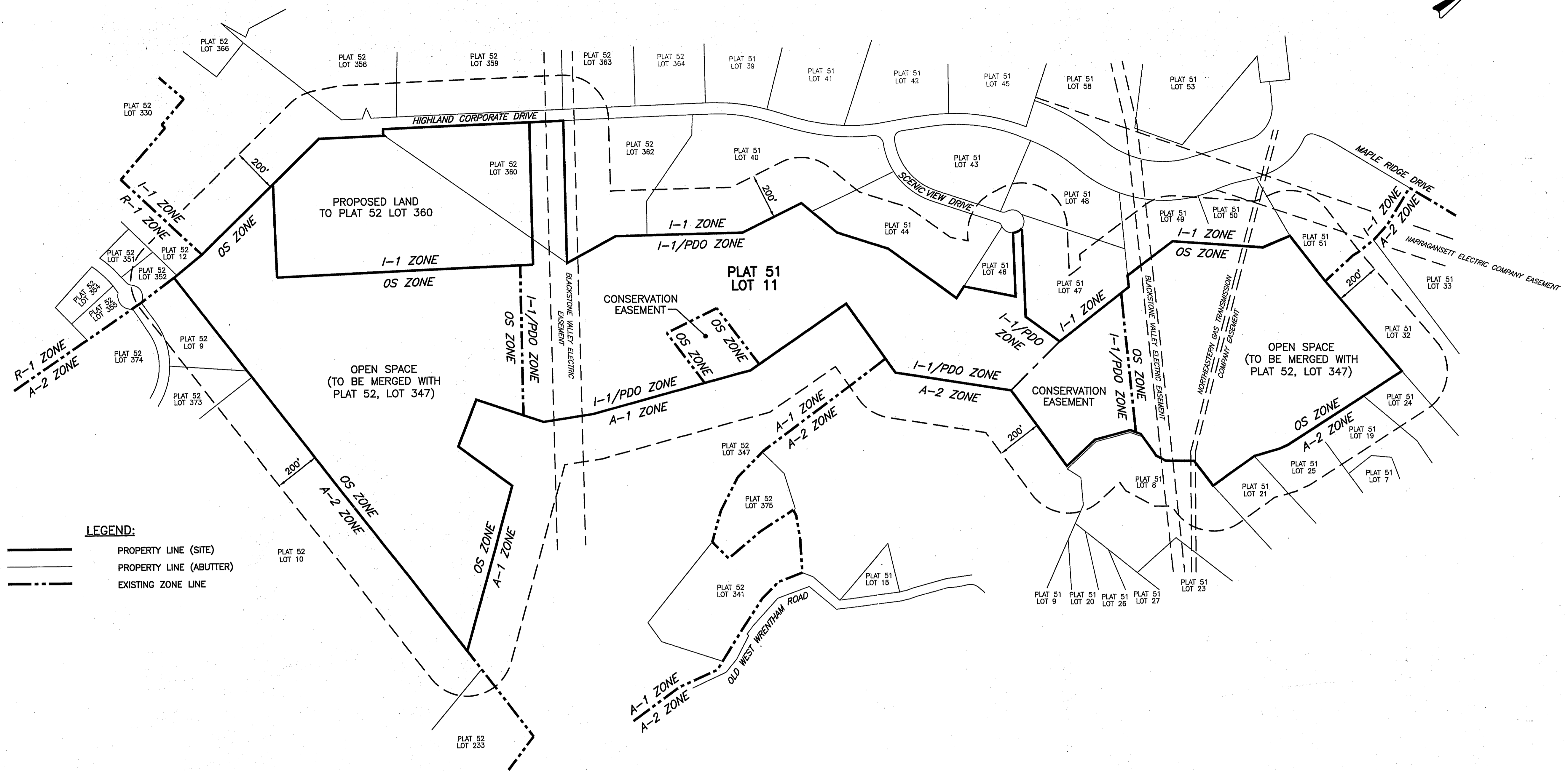
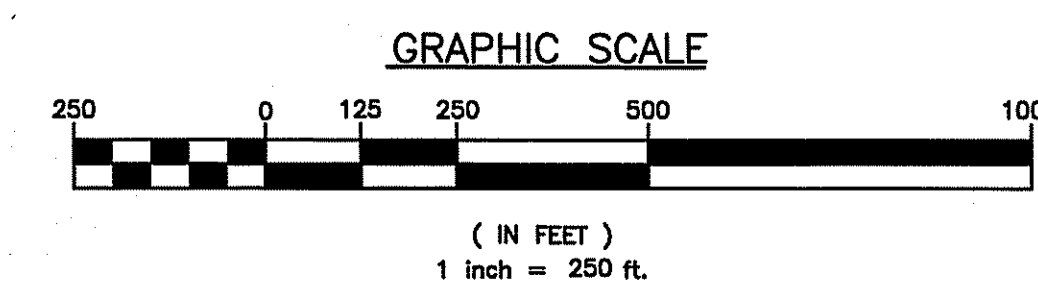
DATE: NOVEMBER 2008 SCALE: 1"=250'

DWG. NAME: 1519-C4-RADIUS-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/08/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 SHAW-WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 03 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Herbert*



**LEGEND:**

- PROPERTY LINE (SITE)
- PROPERTY LINE (ABUTTER)
- EXISTING ZONE LINE

**LIST OF ABUTTERS WITHIN 200'**  
 (CURRENT AS OF 5-28-08)

AP 51, LOT 7  
 ROGER C. AND SANDRA A. GAGNON  
 158 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 8  
 GERALD C. ETUX AND VALERIE KAVENY  
 152 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 9  
 RODNEY W. AND MONIQUE A. DURKIN  
 40 OLD WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 11  
 HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RI 02865

AP 51, LOT 15  
 MARK J. AND CHERYL DURKIN  
 22 OLD WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 19  
 JEFFERY A. AND ELIZABETH A. BENTLEY  
 160 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 20  
 ARTHUR A. AND MICHELLE C. DUNN  
 215 MANVILLE HILL ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 21  
 KENNETH C. RHODES  
 154 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 23  
 VALERIE C. KAVENY  
 152 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 24  
 JAMIE AND MARIA MUNOZ  
 164 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 25  
 WITHOLD H. ETUX AND  
 KIMBERLY JO KLOCZKOWSKI  
 156 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 26  
 RACHEL B. PAILTHORPE TRUSTEE  
 56 OLD WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 27  
 JOSEPH A. AND PATRICIA A. DIAS  
 60 OLD WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 32  
 NEIL A. ETUX AND DONNA ROWEY  
 180 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 33  
 SCOTT F. ETUX AND JAYNE A. CONFORTI  
 184 WEST WRENTHAM ROAD  
 CUMBERLAND, RI 02864

AP 51, LOT 40  
 R.B. HIGHLAND HOLDINGS LLC  
 C/O PAUL ANTROP  
 200 SCENIC VIEW DRIVE, SUITE 201  
 CUMBERLAND, RI 02864

AP 51, LOT 43  
 CVS PHARMACY  
 ONE CVS DRIVE  
 WOONSOCKET, RI 02895

AP 51, LOT 44  
 SMT REAL ESTATE GROUP LLC  
 400 SCENIC VIEW DRIVE  
 CUMBERLAND, RI 02864

AP 51, LOT 46  
 TOWN OF CUMBERLAND  
 45 BROAD STREET  
 CUMBERLAND, RI 02864

AP 51, LOT 47  
 HECO REALTY LLC  
 800 SCENIC VIEW DRIVE  
 CUMBERLAND, RI 02864

AP 51, LOT 48  
 THE ECONOMIC DEVELOPMENT  
 FOUNDATION OF RHODE ISLAND  
 1300 HIGHLAND CORPORATE DRIVE, SUITE 202  
 CUMBERLAND, RI 02864

AP 51, LOT 49  
 THE ECONOMIC DEVELOPMENT  
 FOUNDATION OF RHODE ISLAND  
 1300 HIGHLAND CORPORATE DRIVE, SUITE 202  
 CUMBERLAND, RI 02864

AP 51, LOT 50  
 THE ECONOMIC DEVELOPMENT  
 FOUNDATION OF RHODE ISLAND  
 1300 HIGHLAND CORPORATE DRIVE, SUITE 202  
 CUMBERLAND, RI 02864

AP 51, LOT 51  
 POLYRACK NORTH AMERICA CORPORATION  
 235 PROMENADE STREET, SUITE 535  
 PROVIDENCE, RI 02908

AP 51, LOT 53  
 CVS PHARMACY  
 ONE CVS DRIVE  
 WOONSOCKET, RI 02895

AP 51, LOT 58  
 THE ECONOMIC DEVELOPMENT  
 FOUNDATION OF RHODE ISLAND  
 1300 HIGHLAND CORPORATE DRIVE, SUITE 202  
 CUMBERLAND, RI 02864

AP 52, LOT 9  
 PAUL AND ROBIN HERNEY  
 28 AVON AVENUE  
 CUMBERLAND, RI 02864

AP 52, LOT 10  
 AVB LAND CO. INC. AND JT TWO LLC  
 10 WEYBOSSETT STREET  
 PROVIDENCE, RI 02903

AP 52, LOT 12  
 FRANK AND DANIELLE E. JAUNTO  
 10 ART AVENUE  
 CUMBERLAND, RI 02864

AP 52, LOT 233  
 J TWO LLC  
 ONE CUSTOM HOUSE STREET  
 PROVIDENCE, RI 02918

AP 52, LOT 330  
 THE ECONOMIC DEVELOPMENT  
 FOUNDATION OF RHODE ISLAND  
 1300 HIGHLAND CORPORATE DRIVE, SUITE 202  
 CUMBERLAND, RI 02864

AP 52, LOT 347  
 TOWN OF CUMBERLAND  
 45 BROAD STREET  
 CUMBERLAND, RI 02864

AP 52, LOT 351  
 NEIL T. AND MAUREEN A. MORAN  
 8 AVON AVENUE  
 CUMBERLAND, RI 02864

AP 52, LOT 352  
 KENNETH L. AND JANINE M. SPADER ETUX  
 10 AVON AVENUE  
 CUMBERLAND, RI 02864

AP 52, LOT 354  
 ELIZABETH I. PACHECO  
 7 AVON AVENUE  
 CUMBERLAND, RI 02864

AP 52, LOT 355  
 DOUGLAS P. AND MONIKA MCMANAMY  
 9 AVON AVENUE  
 CUMBERLAND, RI 02864

AP 52, LOT 358  
 JDS LOT 1 LLC  
 C/O NEW ENGLAND CONSTRUCTION  
 295 BOURNE AVENUE  
 RUMFORD, RI 02916

AP 52, LOT 359  
 CINTAS CORPORATION NO. 2  
 300 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, RI 02864

AP 52, LOT 362  
 GENERIC REALTY LLC  
 400 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, RI 02864

AP 52, LOT 363  
 THE ECONOMIC DEVELOPMENT  
 FOUNDATION OF RHODE ISLAND  
 1300 HIGHLAND CORPORATE DRIVE, SUITE 202  
 CUMBERLAND, RI 02864

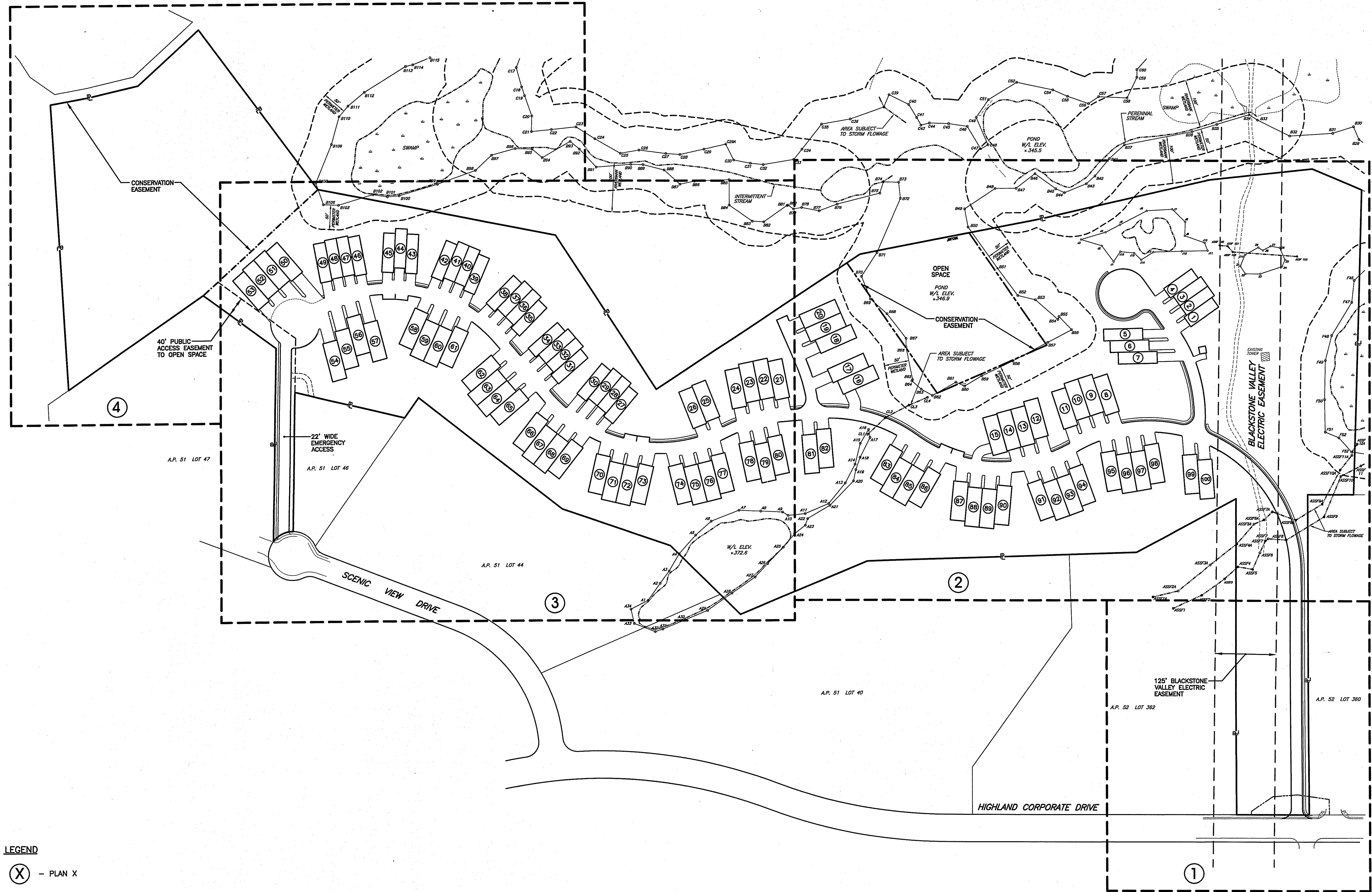
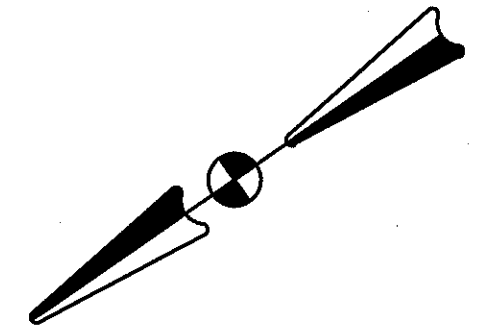
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 FOUNDATION OF RHODE ISLAND  
 1300 HIGHLAND CORPORATE DRIVE,  
 CUMBERLAND, RI 02864

AP 52, LOT 373  
 HUNG NGUYEN  
 50 AVON AVENUE  
 CUMBERLAND, RI 02864

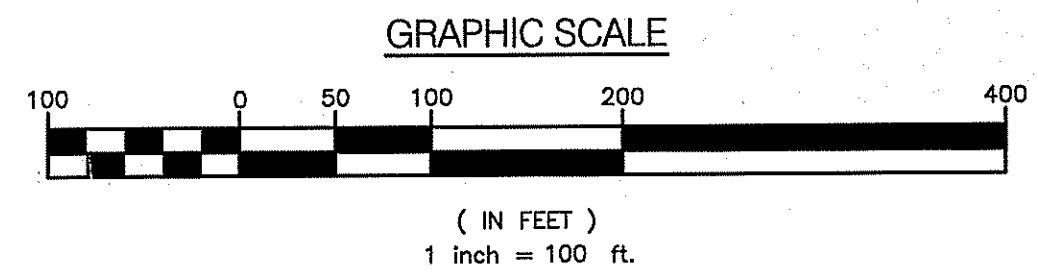
AP 52, LOT 374  
 EDWARD O. QUINN AND MELISSA DISCULLIO  
 17 AVON AVENUE  
 CUMBERLAND, RI 02864

S:\1519 - Highways - Cumberland\Current\1519-C4-RADIUS-REV4.dwg, Model, 6/17/2009 7:33:48 AM, 1:250

S:\1519 - Highland Hills\Cumberland\Current\ACAD Dwg\02-Design Plans\04 Prelim-Final Design Plans\05 Revision 4\1519-C5-KEY-REV4.dwg, Model, 6/17/2009 7:34:53 AM, 1:100

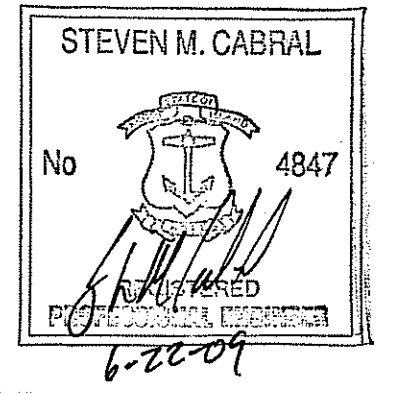


LEGEND  
 (X) - PLAN X



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 02 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVAL PLANS MUST BE CONSISTENT WITH THE  
 Charles A. Haber

**CROSSMAN ENGINEERING, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: cel@crossmaneng.com



PROJECT TITLE:  
**HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.**

PREPARED FOR:  
**HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND**

DRAWING TITLE:  
**KEY PLAN**

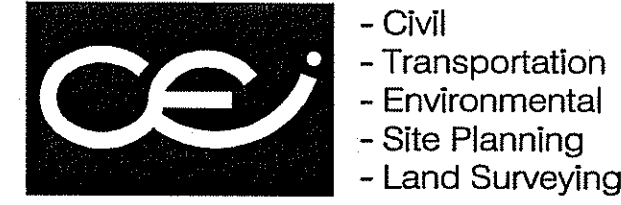
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NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/08/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

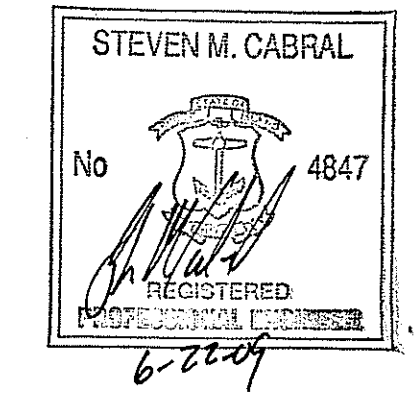
APPROVED FOR SUBMITTAL  
 JUN 23 2009  
**C5**  
 DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 6 OF 41

PRELIMINARY PLAN SUBMISSION





**CROSSMAN, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: cei@crossmaneng.com



PROJECT TITLE:  
**HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO**  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:  
**HIGHLAND HILLS LLC**  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

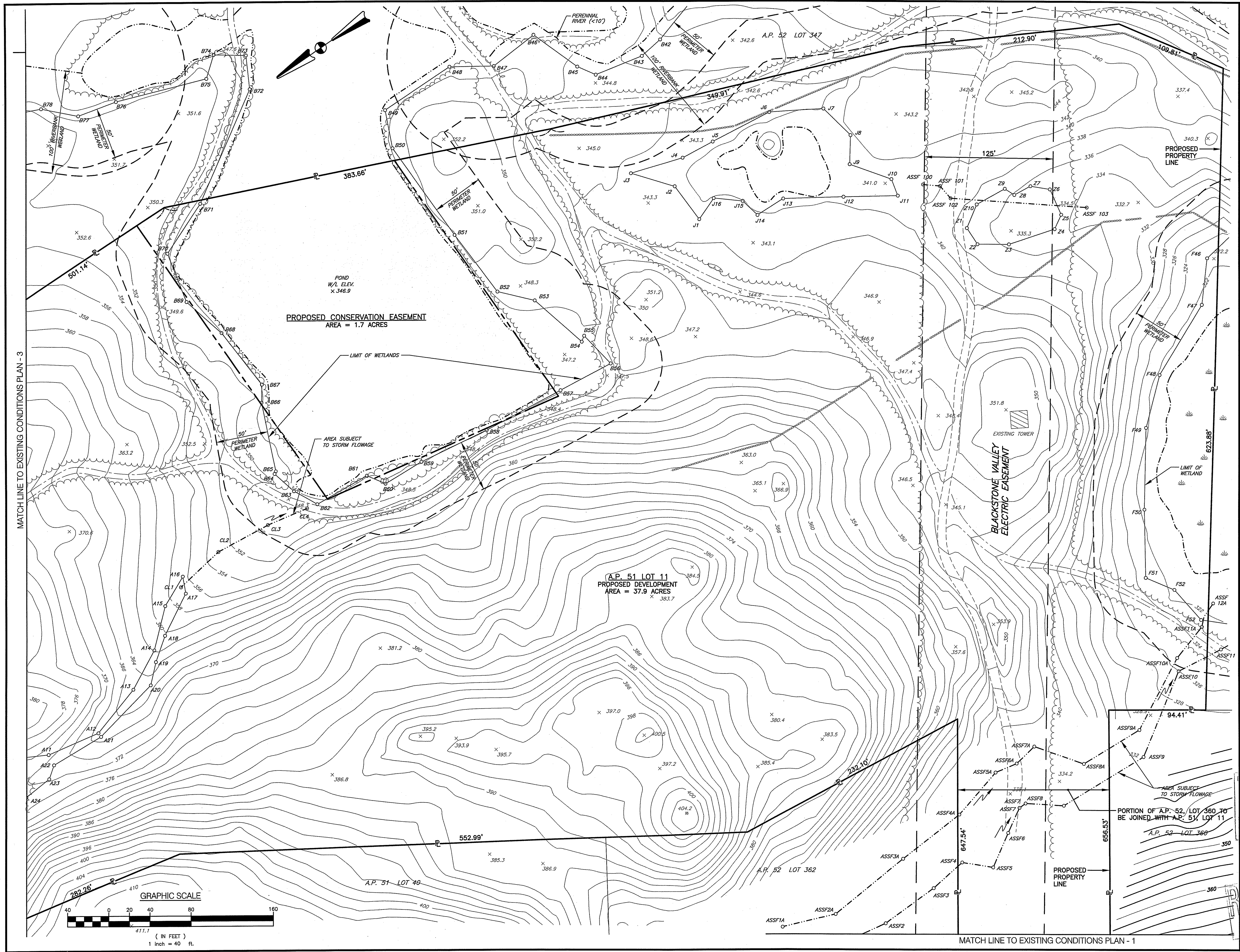
DRAWING TITLE:  
**EXISTING CONDITIONS  
 PLAN - 2**

DATE: **NOVEMBER 2008** SCALE: **1" = 40'**  
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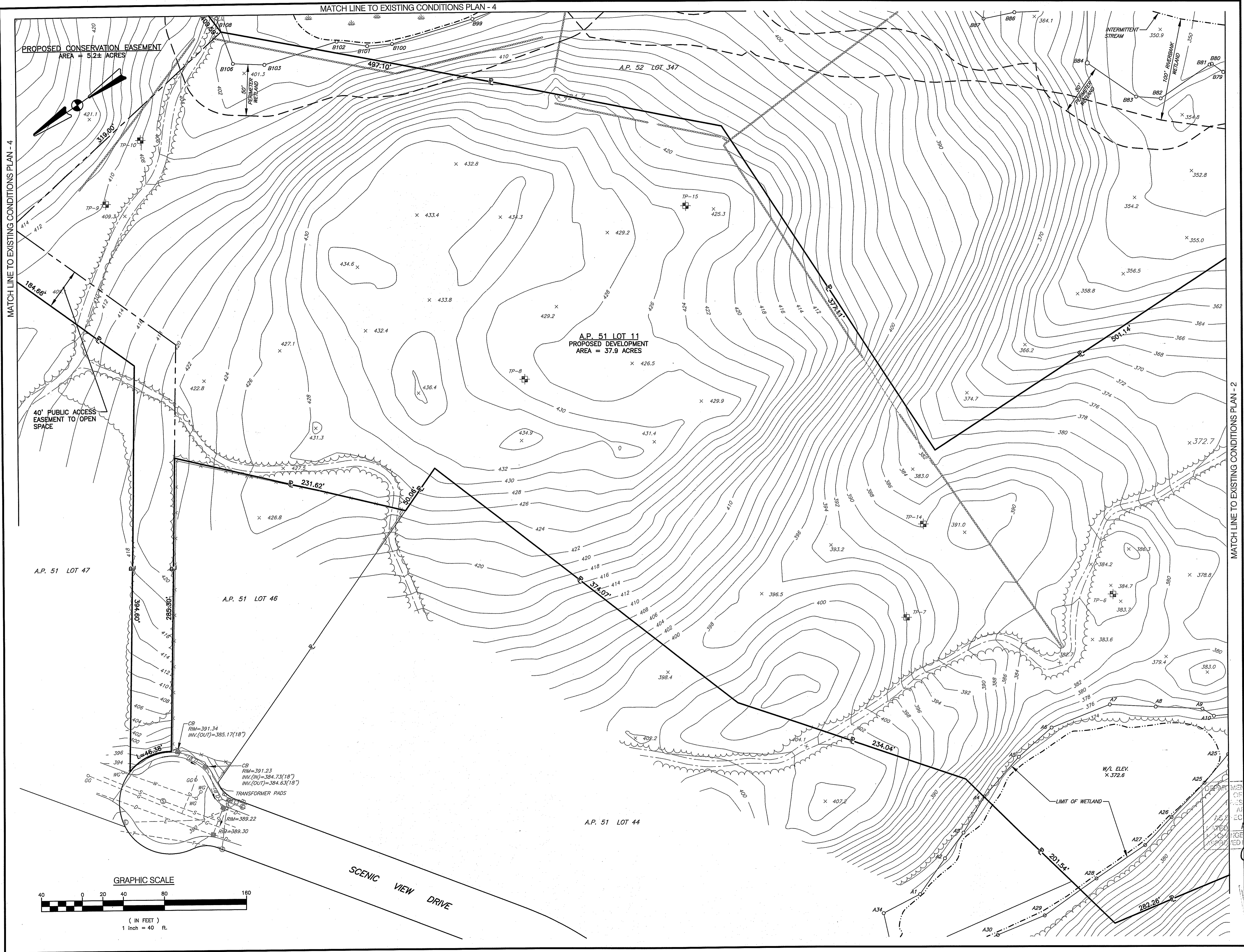
NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	08/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED **AUG 13 2009** FILE # **05-0371**  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

CHARLES A. HANCOCK  
 DRAWING NUMBER: **C6.2**  
 SHEET **8** OF **41**  
**FINAL PLAN SUBMISSION**



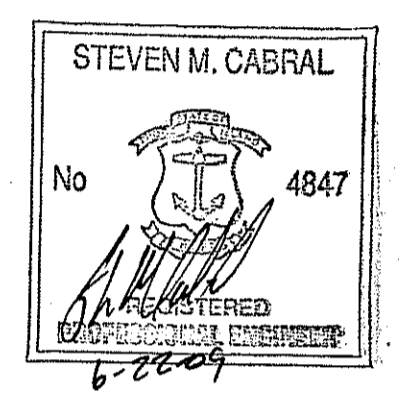
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**CE**

- Civil
- Transportation
- Environmental
- Site Planning
- Land Surveying

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cei@crossmaneng.com



PROJECT TITLE:

**HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO**

HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:

**HIGHLAND HILLS LLC**  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:

**EXISTING CONDITIONS  
PLAN - 3**

DATE: NOVEMBER 2008 SCALE: 1" = 40'

DWG. NAME: 1519-C6.3-EXCN3-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

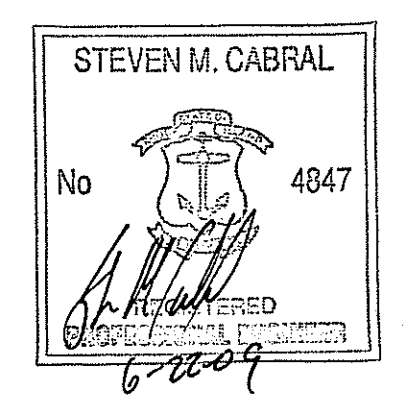
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
RIVER AND WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
SPECIFIED IN THE LETTER OF APPROVAL  
AUG 02 2009 FILE # 06-0311  
CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
ALL CHANGES MUST BE AT CONSTRUCTION SITE

Charles J. Harter  
DRAWING NUMBER  
**06.3**  
JUN 23 2009  
SHEET: 9 OF 41  
FINAL PLAN SUBMISSION

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 - Civil  
 - Transportation  
 - Environmental  
 - Site Planning  
 - Land Surveying  
**CROSSMAN ENGINEERING, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: cel@crossmaneng.com



**PROJECT TITLE:**  
 HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

**PREPARED FOR:**  
 HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

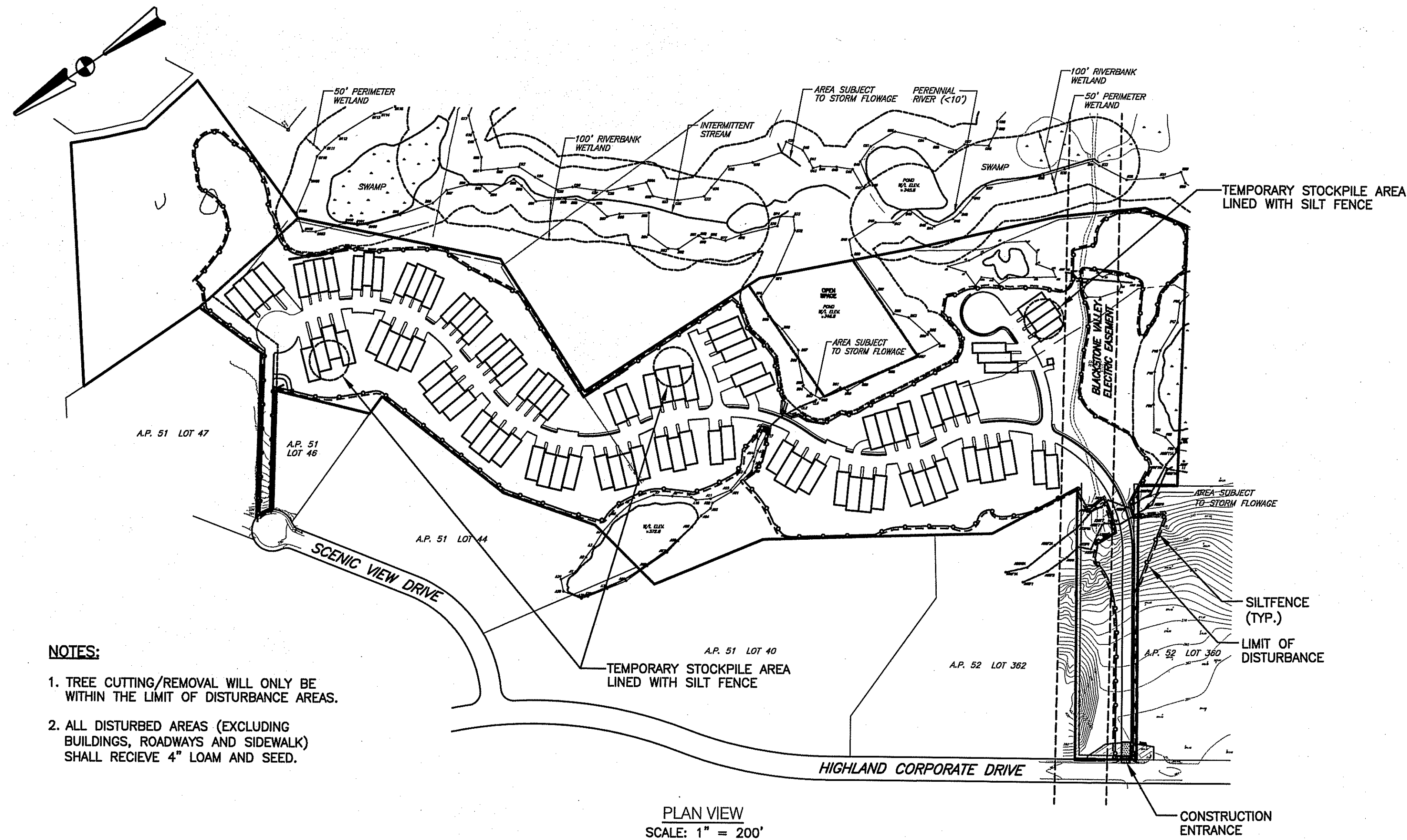
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 EXISTING CONDITIONS  
 PLAN - 4  
 DATE: NOVEMBER 2008 SCALE: 1" = 40'  
 DWG. NAME: 1519-C6.4-EXCN4-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/20/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL PLANNING  
 OFFICE OF WATER RESOURCES  
 FRESH WATER LANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 03 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
 Charles A. Haber

**RECEIVED**  
 JUN 23 2009  
 SHEET NO. 41 OF 41  
**C6.4**  
 FINAL PLAN SUBMISSION

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- NOTES:**
- TREE CUTTING/REMOVAL WILL ONLY BE WITHIN THE LIMIT OF DISTURBANCE AREAS.
  - ALL DISTURBED AREAS (EXCLUDING BUILDINGS, ROADWAYS AND SIDEWALK) SHALL RECEIVE 4" LOAM AND SEED.

PLAN VIEW  
SCALE: 1" = 200'

**DUST CONTROL NOTES:**

ON AN AS-NEEDED BASIS OR AS DIRECTED BY THE TOWN OR OWNER, THE CONTRACTOR SHALL UTILIZE ONE OF THE FOLLOWING METHODS (AS RECOMMENDED BY THE "R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK") TO CONTROL DUST:

- WATER THE EXPOSED SOIL SURFACE SHOULD BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.
- CALCIUM CHLORIDE SHOULD BE EITHER LOOSE DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH A SPREADER AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE.

THE METHODS SHOULD BE REPEATED AS NEEDED, AND SPECIAL ATTENTION MUST BE GIVEN TO THE ACCESS DRIVES.

**INSPECTION/MAINTENANCE NOTES:**

- PRIOR TO COMMENCING CLEARING AND GRUBBING OPERATIONS, SILT FENCING SHALL BE PLACED SO AS TO PREVENT SEDIMENT FROM ENTERING EXISTING ROADWAY DRAINAGE SYSTEM, WETLANDS AND ADJUTING PROPERTIES.
- EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING THE ROADWAY DRAINAGE SYSTEM.
- ALL DISTURBED AREAS WHICH BECOME SUBJECT TO EROSION TENDENCIES WHETHER THEY BE NEWLY FILLED OR EXCAVATED SHALL RECEIVE SLOPE PROTECTION - SUCH AS RIP-RAP.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING PERIODS OF RAINFALL.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE AND SHALL INSPECT / REPLACE DAILY DURING CONSTRUCTION, FOLLOWING RAINFALL AND WEEKLY DURING NON CONSTRUCTION PERIODS.
- ADDITIONAL SILT FENCING OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
- THE "R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, 1989, MUST BE UTILIZED BY THE CONTRACTOR AS A GUIDE.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL DUST CONTROL AND FOR THE ENTIRE PROJECT DURATION, INCLUDING TEMPORARY SHUT-DOWN PERIODS, MUST MONITOR AND REPAIR, AS NEEDED, ALL SLOPES TO ENSURE A STABLE PRODUCT.

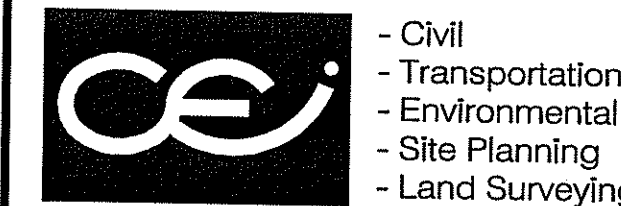
**GENERAL PROJECT WIDE NOTES:**

- SILT FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, MAINTAINED ON A REGULAR BASIS, AND SHALL BE PLACED TO PREVENT SEDIMENTATION ONTO ADJACENT PROPERTY.
- THE CONTRACTOR MUST REPLACE AND/OR RESEED ANY VEGETATION THAT DOES NOT DEVELOP/SURVIVE WITHIN THE PERIOD OF ONE YEAR AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.
- ALL SILT FENCES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED AND POTENTIAL SEDIMENTATION SOURCES ARE REMOVED.
- TREES AND OTHER EXISTING VEGETATION SHALL BE RETAINED WHENEVER FEASIBLE; THE AREA BEYOND THE DROPLINE SHALL BE FENCED OR ROPED OFF TO PROTECT TREES FROM CONSTRUCTION EQUIPMENT.
- AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESODDED, RESEED, OR OTHERWISE RESTORED AT THE CONTRACTOR'S EXPENSE.
- STOCKPILES SHALL HAVE NO SLOPE STEEPER THAN 2:1 AND SHALL BE SURROUNDED BY STAKED HAY BALES OR SILT FENCING.
- STOCKPILES EXPOSED FOR EXCESSIVE PERIODS SHALL RECEIVE TEMPORARY TREATMENT CONSISTING OF HAY, STRAW OR FIBER MATTING.

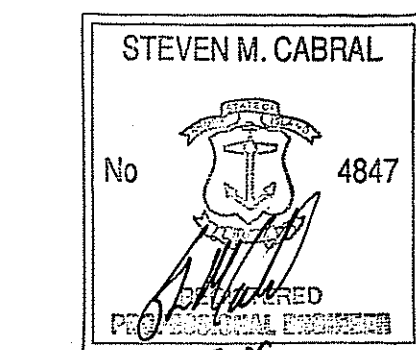
**ALTERNATE CONTROL MEASURES**

ALTERNATE SOIL EROSION AND SEDIMENT CONTROL MEASURES MAY BE UTILIZED BUT MUST BE APPROVED BY ENGINEER PRIOR TO INSTALLATION. LISTED BELOW ARE "POTENTIAL ALTERNATE CONTROL MEASURES".

- |                                  |   |
|----------------------------------|---|
| <b>PROPOSED MEASURE</b>          | <b>ALTERNATE MEASURE UPON ENGINEER APPROVAL</b> |
| • SILT FENCE                     | • STAKED HAYBALES                               |
| • FILTER FABRIC DEWATERING BASIN | • FILTREXX FILTER SOXX                          |
|                                  | • FILTREXX FILTER RING                          |



**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: ce@crossmaneng.com



PROJECT TITLE:  
**HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.**

PREPARED FOR:  
**HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND**

DRAWING TITLE:  
**SOIL EROSION AND  
SEDIMENT CONTROL PLAN**

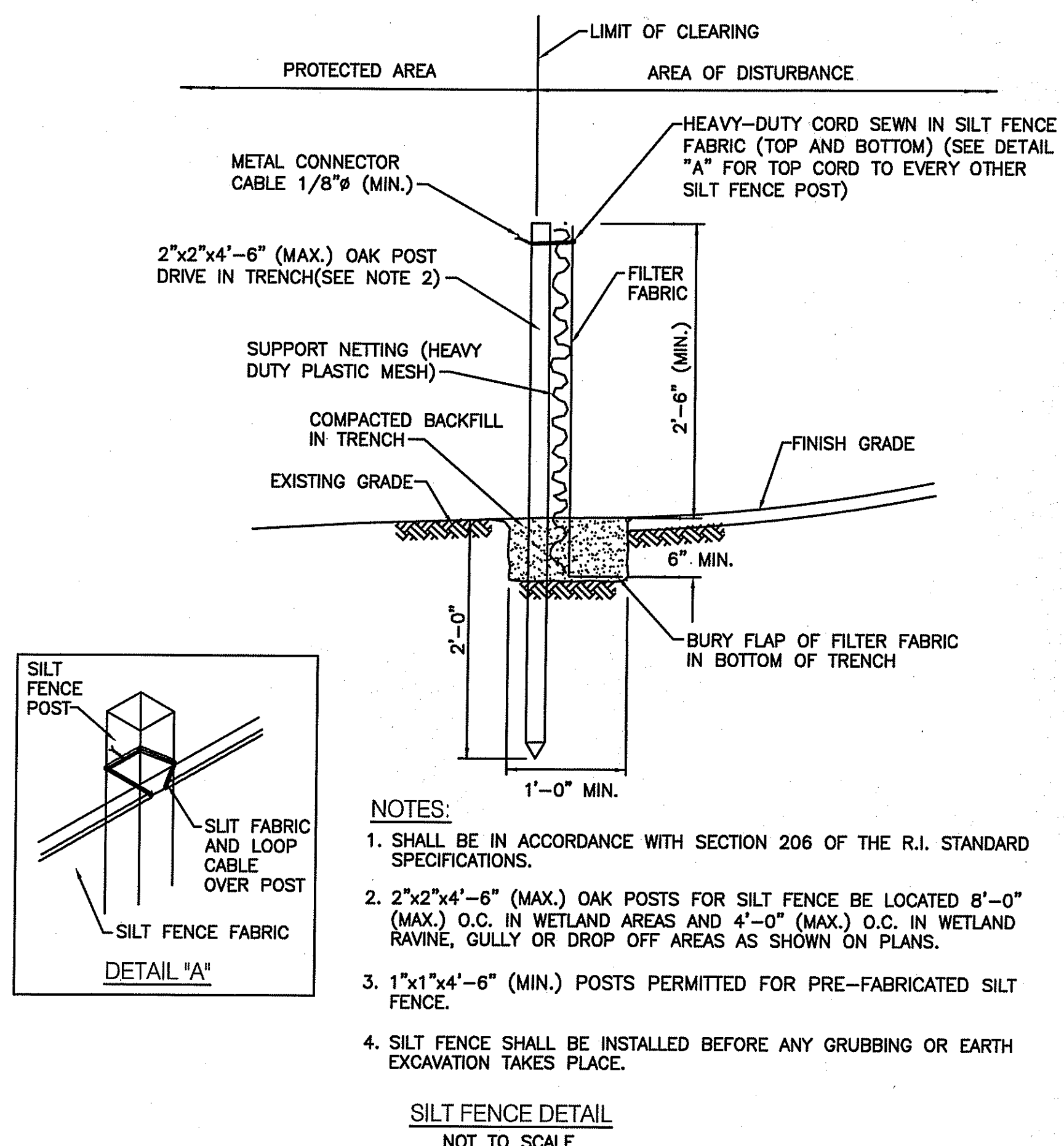
DATE: **NOVEMBER 2008** SCALE: **1"=200'**

DWG. NAME: **1519-C7-EROS-REV4.dwg**

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	08/15/09	R.I.D.E.M. COMMENT

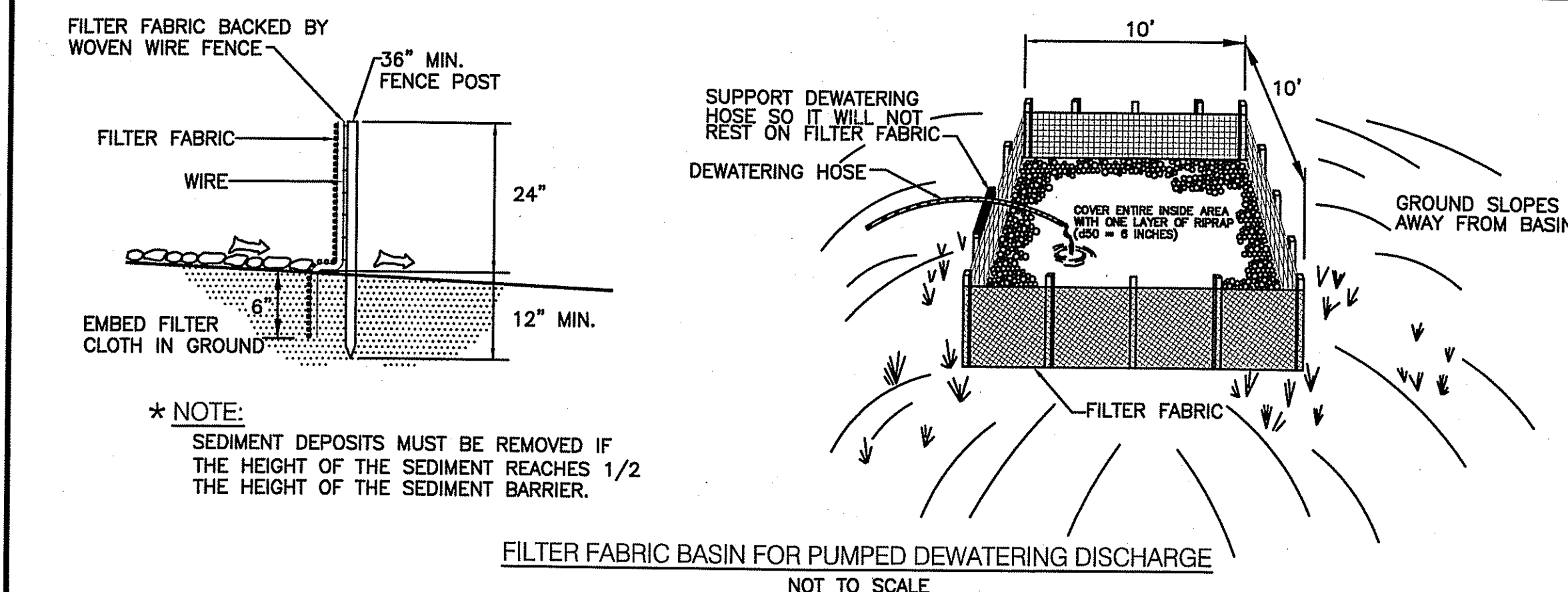
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF PERMITS AND REGULATORY SERVICES  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED AUG 03 2009 FILE # 08-0371  
APPROVED FOR THE PROJECT BY  
[Signature]

DRAWING NUMBER  
**RECEIVED C7**  
JUN 23 2009 SHEET 41 OF 41  
FINAL PLAN SUBMISSION



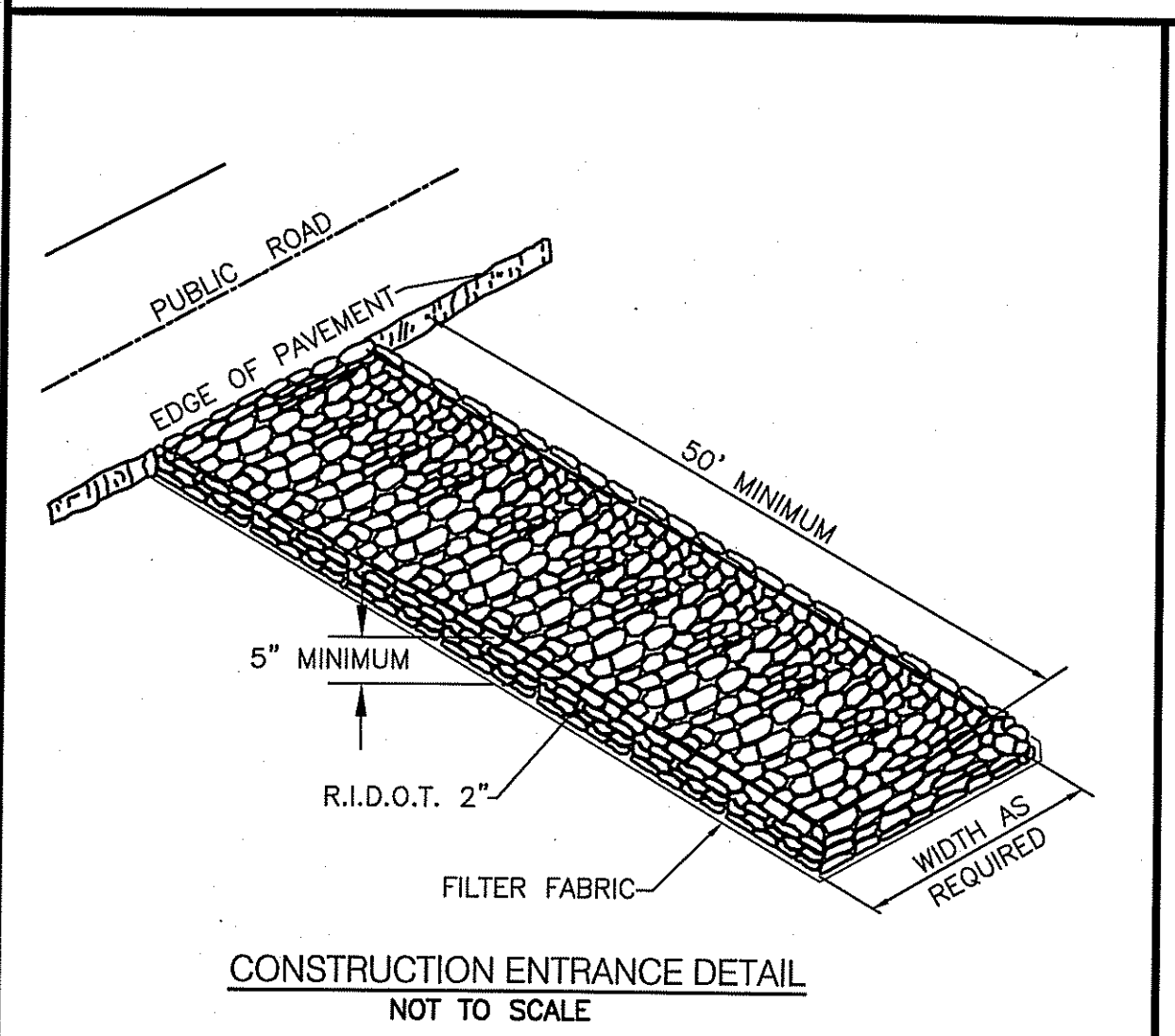
- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
  - 2"x2"x4'-6" (MAX.) OAK POSTS FOR SILT FENCE BE LOCATED 8'-0" (MAX.) O.C. IN WETLAND AREAS AND 4'-0" (MAX.) O.C. IN WETLAND RAVINE, GULLY OR DROP OFF AREAS AS SHOWN ON PLANS.
  - 1"x1"x4'-6" (MIN.) POSTS PERMITTED FOR PRE-FABRICATED SILT FENCE.
  - SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

SILT FENCE DETAIL  
NOT TO SCALE

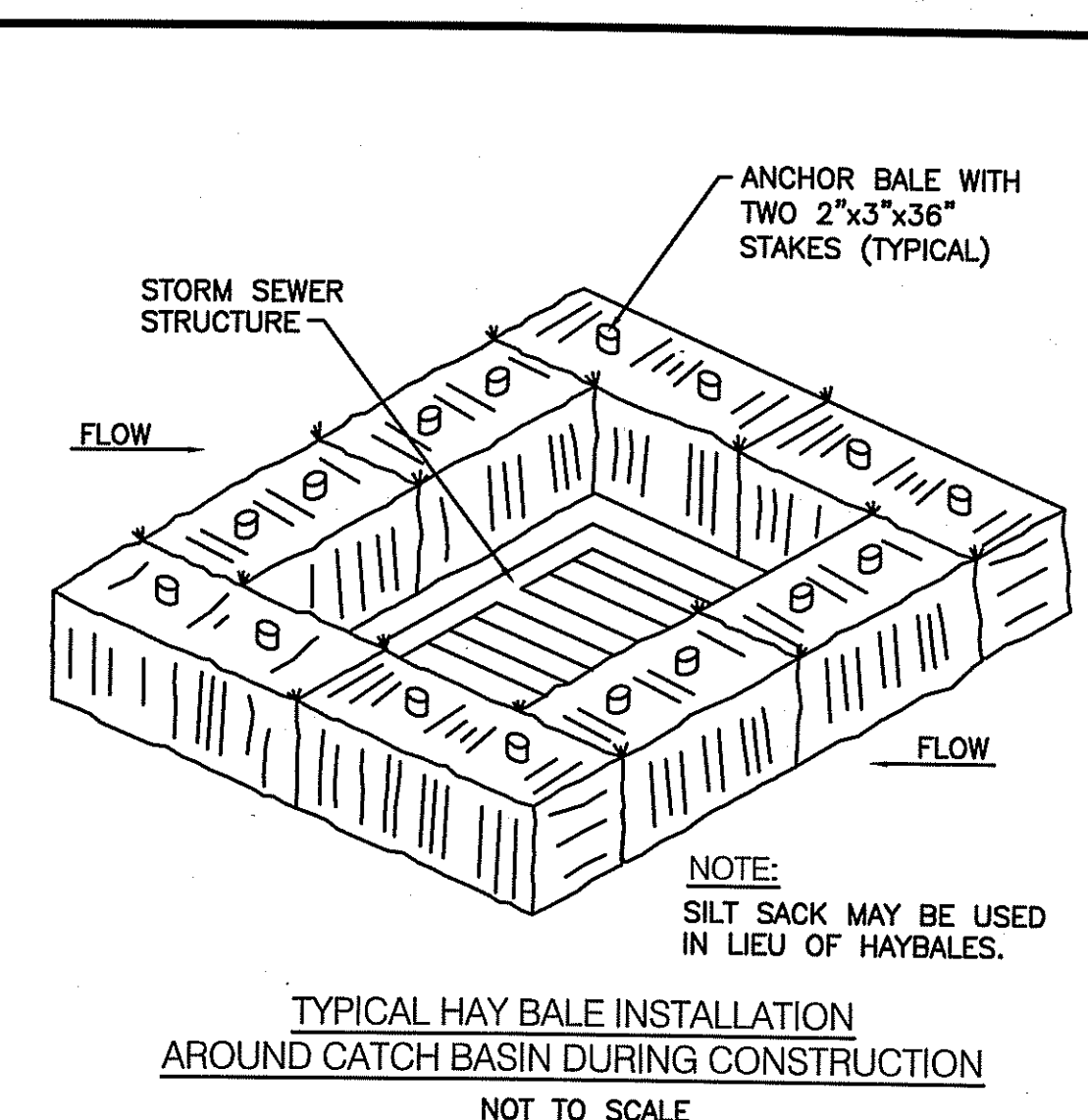


- \* NOTE:**  
SEDIMENT DEPOSITS MUST BE REMOVED IF THE HEIGHT OF THE SEDIMENT REACHES 1/2 THE HEIGHT OF THE SEDIMENT BARRIER.

FILTER FABRIC BASIN FOR PUMPED DEWATERING DISCHARGE  
NOT TO SCALE



CONSTRUCTION ENTRANCE DETAIL  
NOT TO SCALE



- NOTE:**  
SILT SACK MAY BE USED IN LIEU OF HAYBALES.

TYPICAL HAY BALE INSTALLATION  
AROUND CATCH BASIN DURING CONSTRUCTION  
NOT TO SCALE

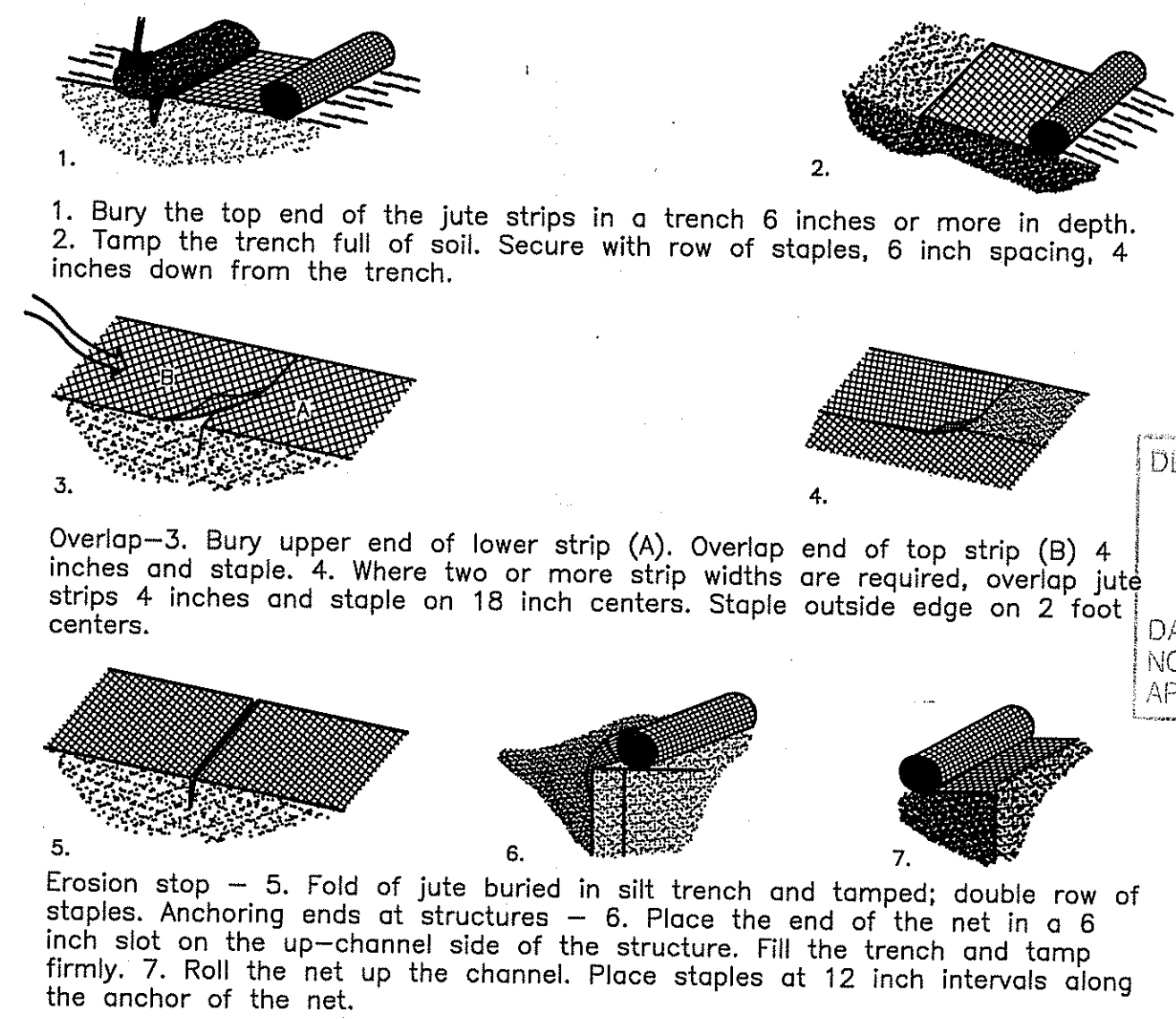
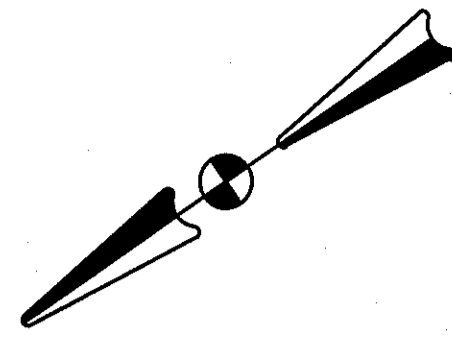


FIGURE 5-1 DETAIL FOR INSTALLATION OF JUTE NETTING  
R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK  
NOT TO SCALE

S:\1519 - Highland Hills - Cumberland\Current\CAD Dwg\02-Design Plans\05-Revision 4\1519-C7-EROS-REV4.dwg, Model, 6/17/2009 7:41:28 AM, 1:200,522



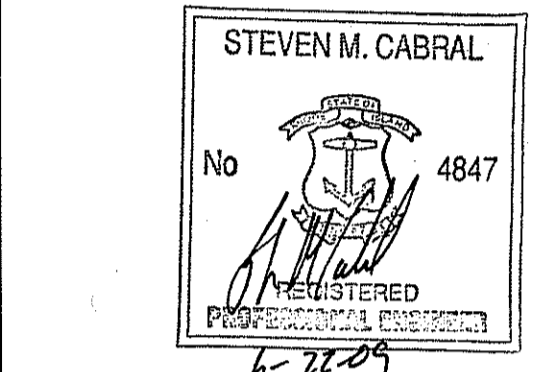
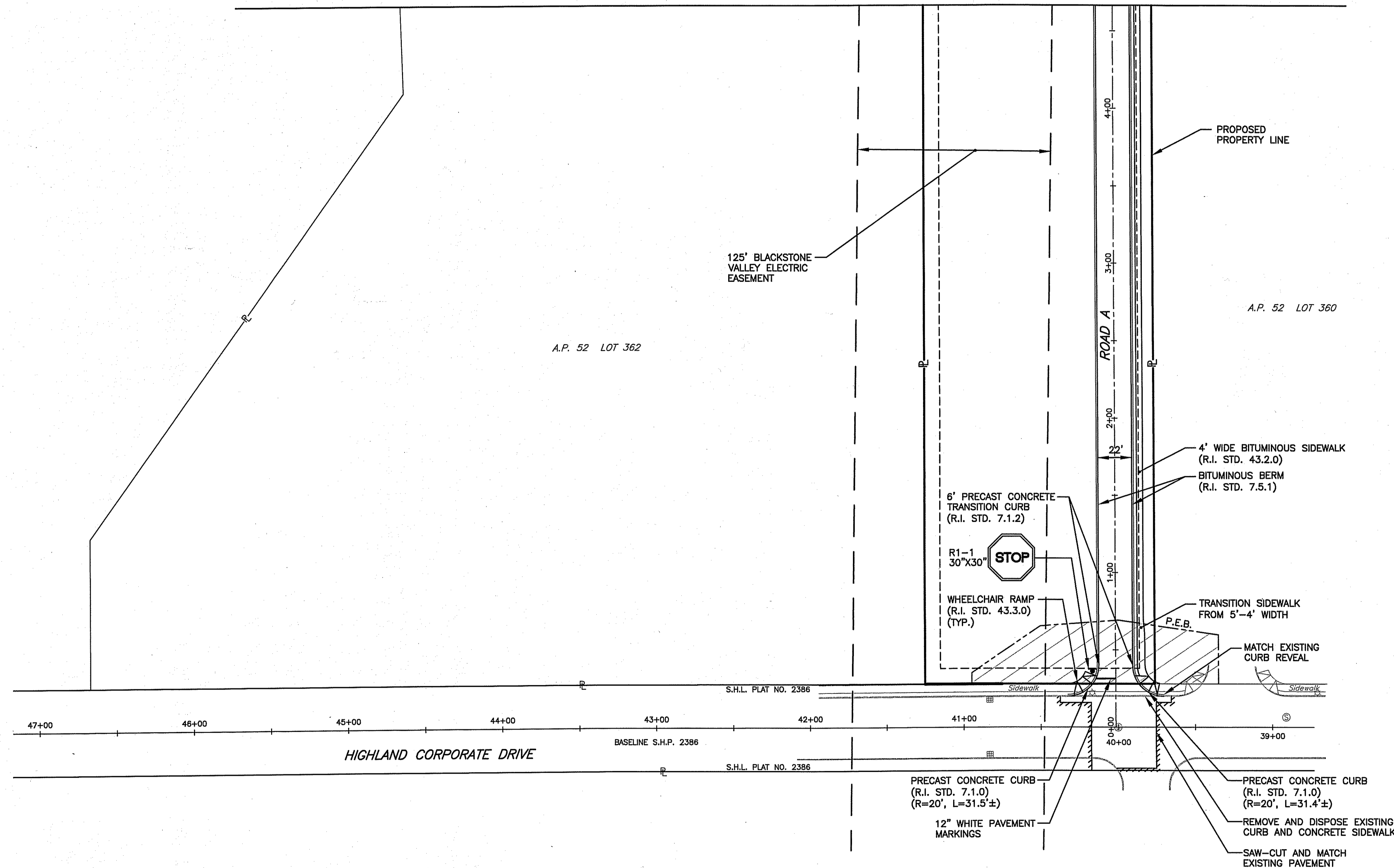
**ZONING STANDARDS**

**DIMENSIONAL REQUIREMENTS:**  
ZONE: I-1 (WITH PUBLIC WATER & SEWER)

	REQUIRED	PROPOSED
MINIMUM LOT AREA:	5,000 S.F.	1,605,715.5 S.F. (36.86 ACRES)
MINIMUM LOT FRONTAGE:	25'	149'± (HIGHLAND CORPORATE DRIVE) 46'± (SCENIC VIEW DRIVE)
MINIMUM LOT WIDTH:	25'	40'±
FRONT YARD SETBACK:	10'	22'±
SIDE YARD SETBACK:	10'	41'±
REAR YARD SETBACK:	10'	30'±
MAXIMUM BUILDING HEIGHT:	75'	75'
TOTAL IMPERVIOUS COVERAGE:	80%	32%

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cel@crossmaneng.com

MATCH LINE TO SITE LAYOUT PLAN - 2



PROJECT TITLE:  
**HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.**

PREPARED FOR:  
**HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND**

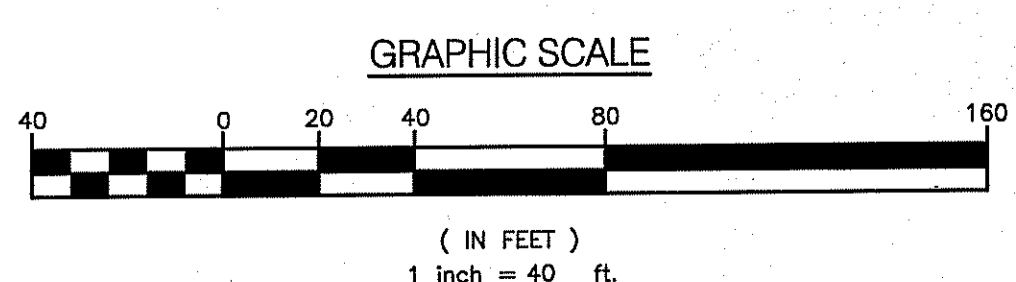
DRAWING TITLE:  
**SITE LAYOUT PLAN - 1**

DATE: **NOVEMBER 2008** SCALE: **1" = 40'**

DWG. NAME: **1519-CB.1-LAYOUT1-REV4.dwg**

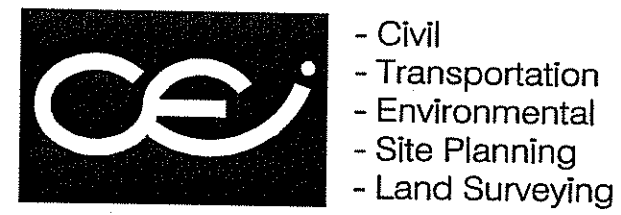
NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED **AUG 03 2009** FILE # **08-0371**  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
*Charles A. Herbert*

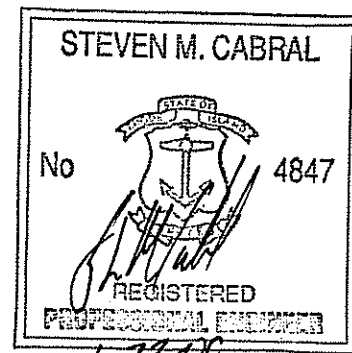


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JUN 23 2009  
**C8.1**  
SHEETS: 12 OF 41  
**FINAL PLAN SUBMISSION**

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 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: cel@crossmaneng.com



PROJECT TITLE:  
**HIGHLAND HILLS**  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:  
**HIGHLAND HILLS LLC**  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**SITE LAYOUT PLAN - 2**

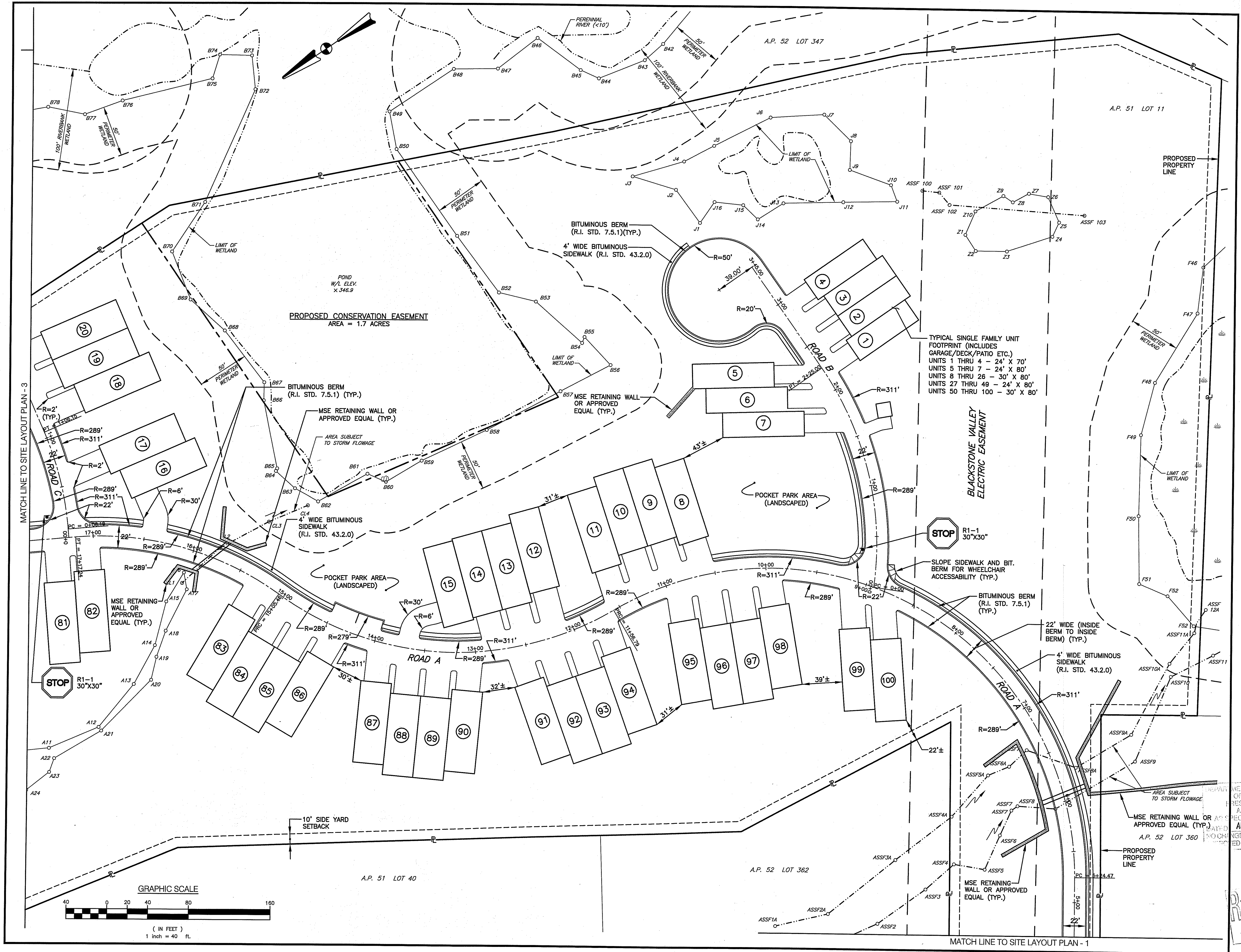
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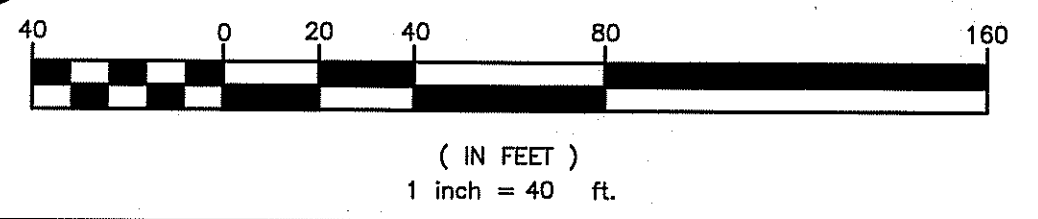
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1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

APPROVED FOR CONSTRUCTION BY:  
 OFFICE OF WATER RESOURCES  
 PERMITTING PROGRAM  
 AUG 03 2009 FILE # 08-0371  
 CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 NO CHANGES TO BE MADE AT CONSTRUCTION SITE

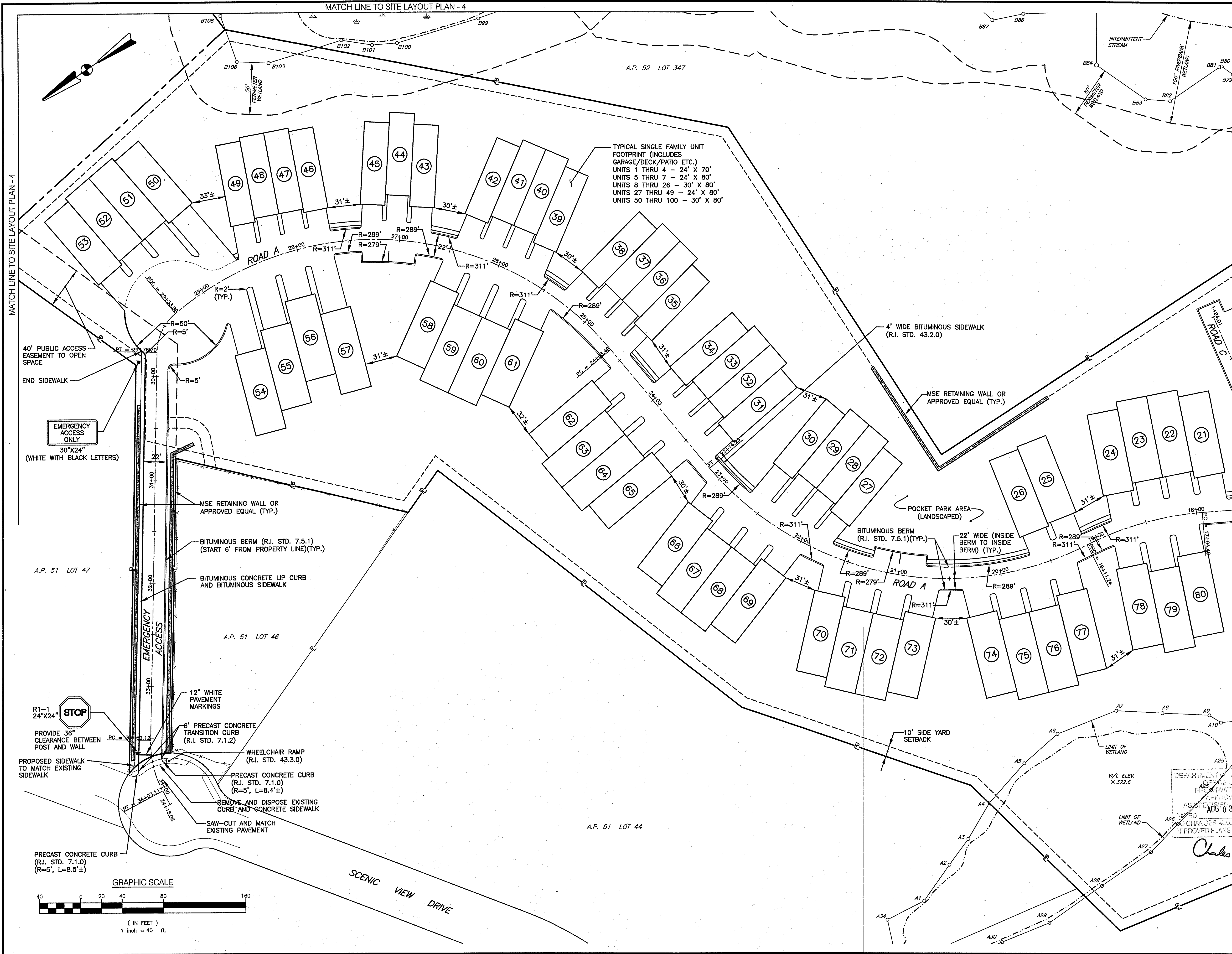
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 JUN 23 2009  
 SHEET: 13 OF 41  
**FINAL PLAN SUBMISSION**



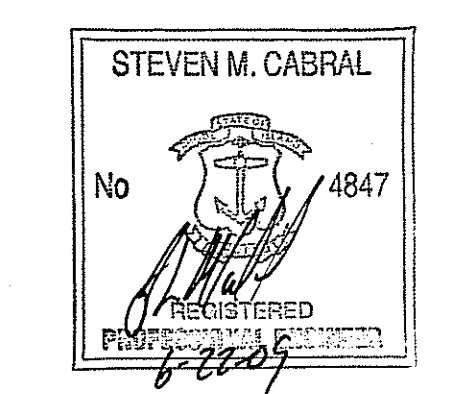
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 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: cel@crossmaneng.com



**PROJECT TITLE:**  
 HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

**PREPARED FOR:**  
 HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

**DRAWING TITLE:**  
 SITE LAYOUT PLAN - 3

**DATE:** NOVEMBER 2008  
**SCALE:** 1" = 40'  
**DWG. NAME:** 1519-CB.3-LAYOUT3-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

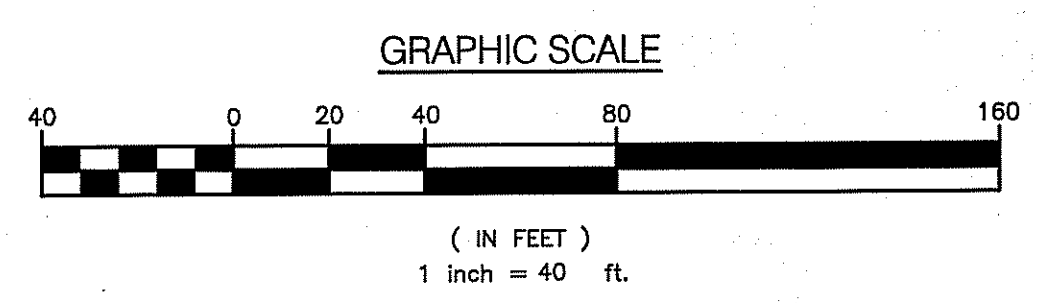
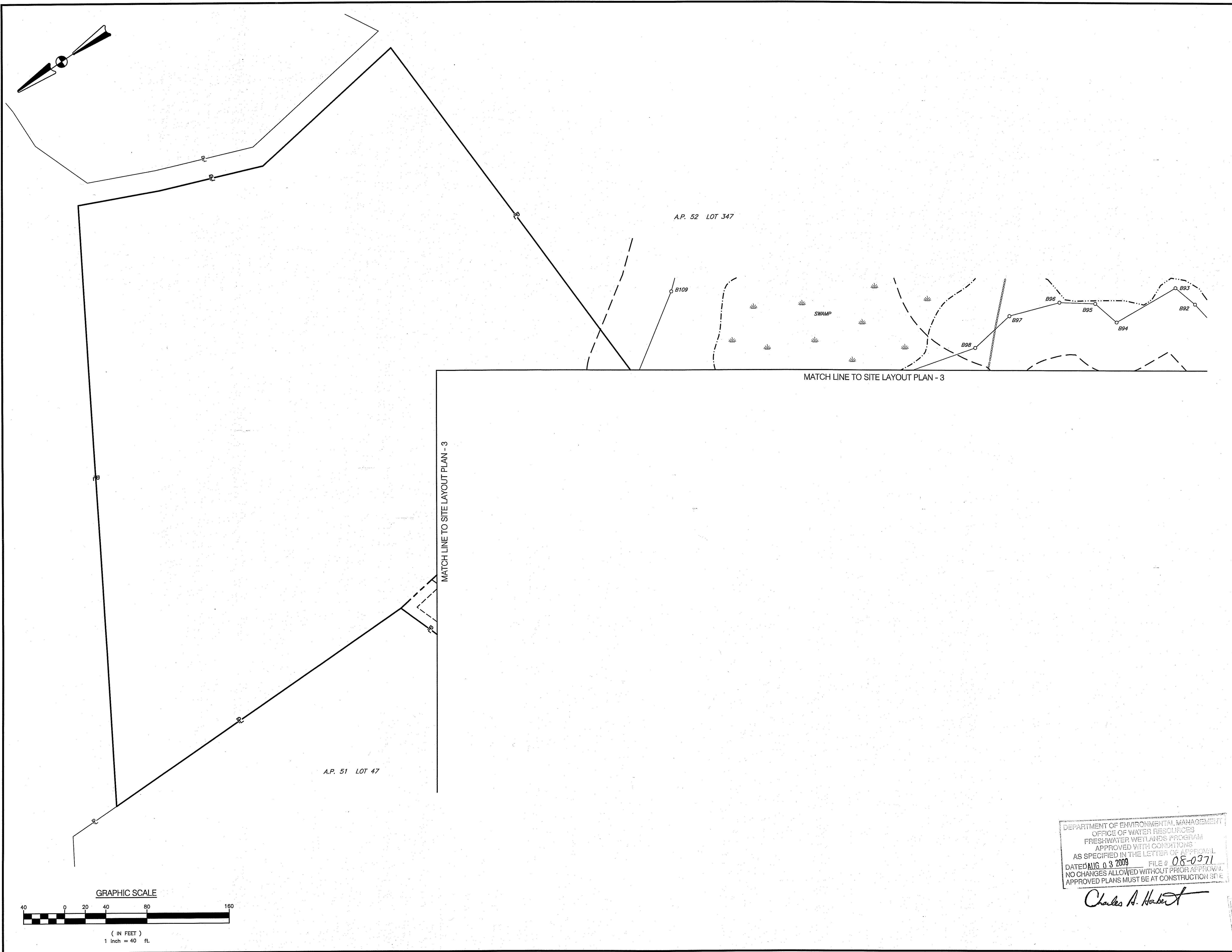
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 225 WEST MAIN STREET, SUITE 100  
 PROVIDENCE, RHODE ISLAND 02903  
 APPROVED FOR CONSTRUCTION  
 AUG 03 2009  
 FILE # 08-0311  
 CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Holbrook*

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**C8.3**  
 JUN 23 2009  
 SHEET: 14 OF 41  
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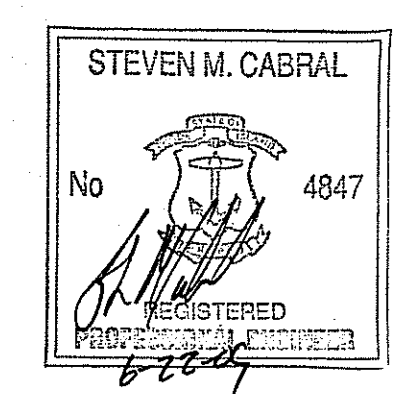
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**ce**  
 - Civil  
 - Transportation  
 - Environmental  
 - Site Planning  
 - Land Surveying

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 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: ce@crosmaneng.com



PROJECT TITLE:

HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO

HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:

SITE LAYOUT PLAN - 4

DATE: NOVEMBER 2008 SCALE: 1" = 40'

DWG. NAME: 1519-C8.4-LAYOUT4-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
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 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 03 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Haber*

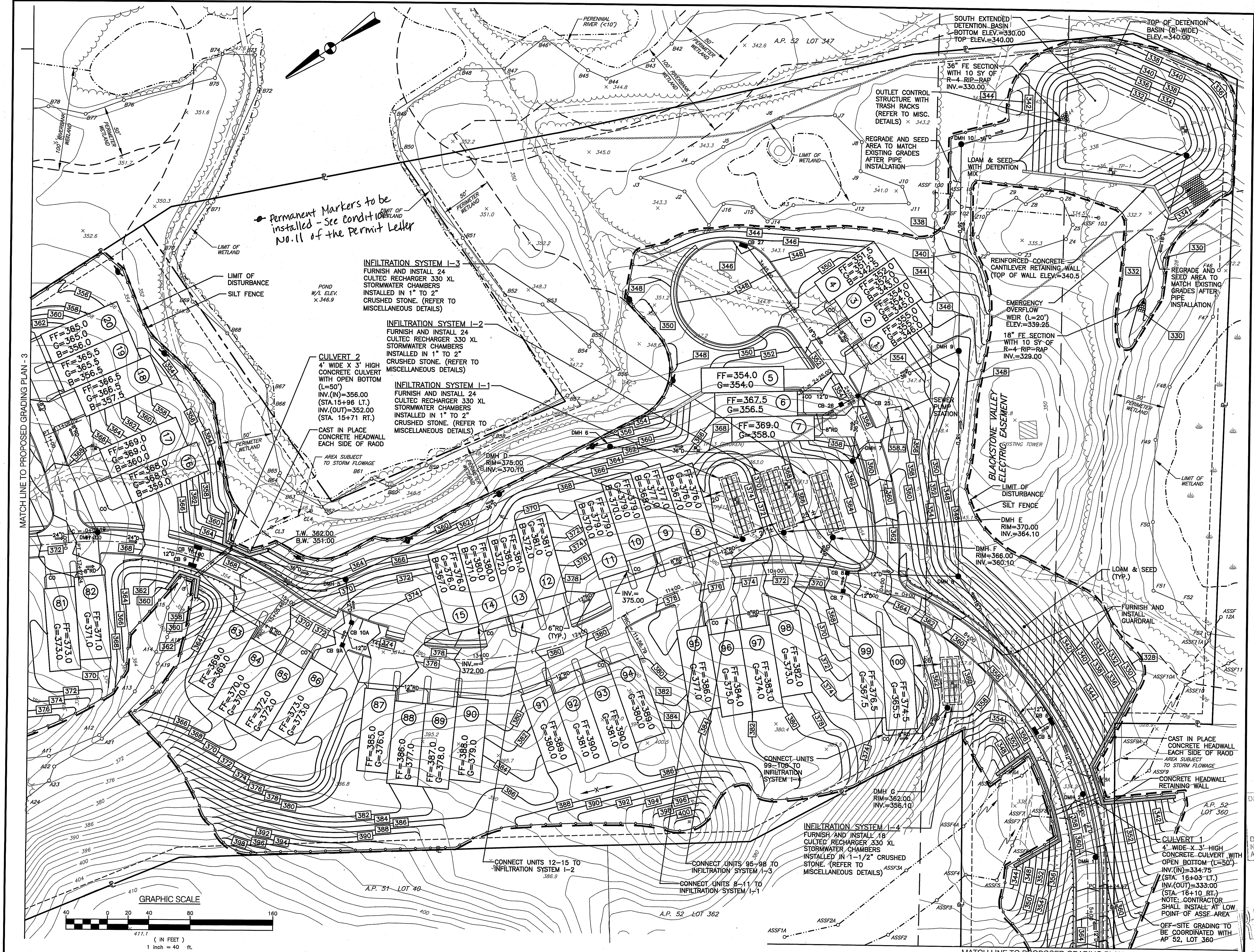
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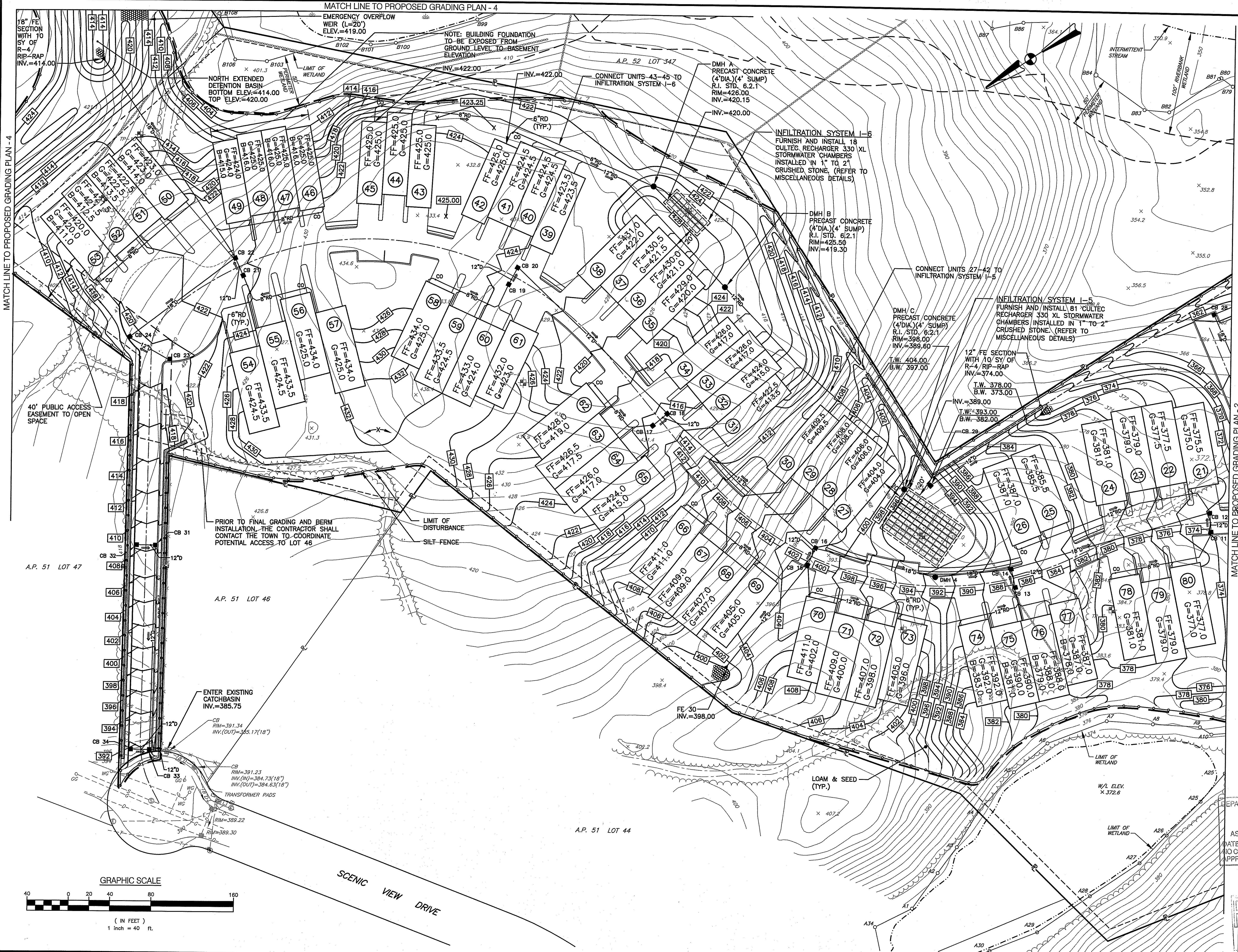
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JUN 23 2009 15 OF 41

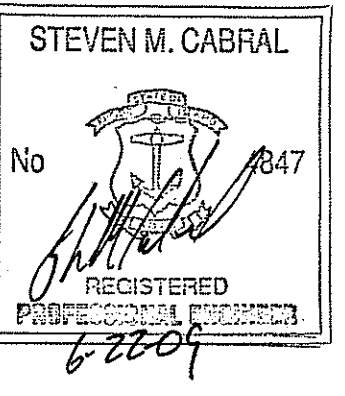
ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FINAL PLAN SUBMISSION







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 Warwick, Rhode Island 02886  
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PROJECT TITLE:  
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 CUMBERLAND, R.I.

PREPARED FOR:  
**HIGHLAND HILLS LLC**  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**PROPOSED GRADING PLAN - 3**

DATE: NOVEMBER 2008 SCALE: 1" = 40'  
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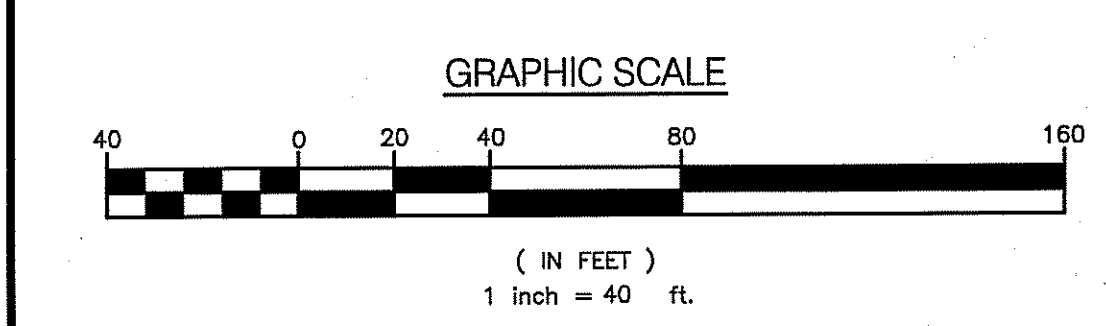
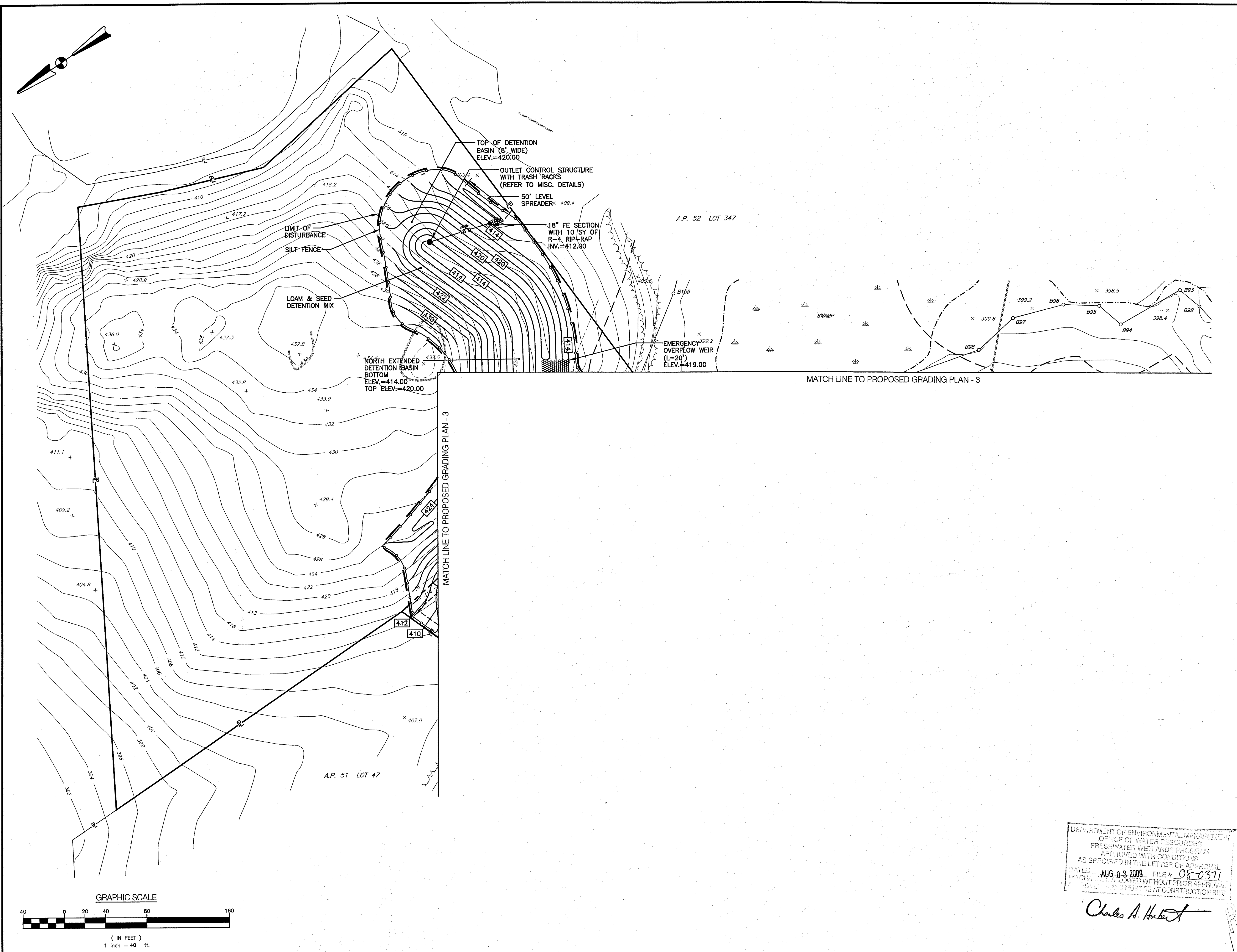
NO.	DATE	REVISION
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2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL PLANNING & DEVELOPMENT  
 OFFICE OF WATER RESOURCES  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATE: AUG 05 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Horner*  
 DRAWING NUMBER

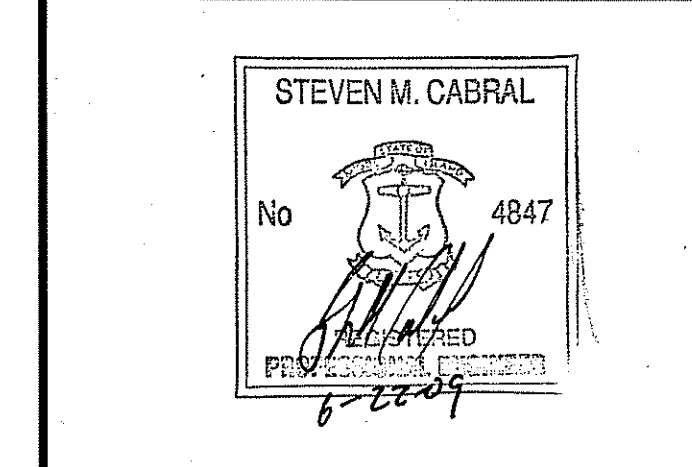
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 SHEET 18 OF 41

FINAL PLAN SUBMISSION



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 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: cel@crossmaneng.com

PROJECT TITLE:  
 HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.



PREPARED FOR:  
 HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
 PROPOSED GRADING  
 PLAN - 4

DATE: NOVEMBER 2008  
 SCALE: 1" = 40'  
 DWG. NAME: 1519-C9.4-GRADE4-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
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 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG-03-2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 TO BE MADE AT CONSTRUCTION SITE

Charles A. Herbert

DRAWING NUMBER: C9.4  
 SHEET: 19 OF 41  
 FINAL PLAN SUBMISSION

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**UTILITY NOTES:**

1. PRIOR TO ANY UTILITY CONSTRUCTION, THE CONTRACTOR MUST PERFORM ADDITIONAL TESTS TO:
  - A. CONFIRM THE EXISTING DEPTHS OF UTILITIES AT ALL PROPOSED CONNECTION POINTS AND POTENTIAL CROSSOVER (CONFLICT) POINTS.
  - B. CONFIRM THE EXTENT OF LEDGE WHICH MAY EXIST IN ALL ANTICIPATED UTILITY TRENCH AREAS. PRIOR TO CONSTRUCTION, THE FINDINGS ARE TO BE REVIEWED BY THE OWNER AND THE ENGINEER. IF NECESSARY, ALTERNATIVES TO MINIMIZE LEDGE REMOVAL AND UTILITY CONFLICTS WILL BE DEVELOPED. NO CONSTRUCTION WILL BE ALLOWED WITHOUT THE OWNERS AUTHORIZATION.
  - C. THE CONTRACTOR SHALL DIG TEST HOLES TO VERIFY THE ELEVATIONS AND PIPE MATERIAL OF THE EXISTING SANITARY SERVICE LATERAL AT THE PROPOSED TIE-IN LOCATION.
2. ANY MODIFICATIONS TO THE PROPOSED UTILITIES TO AVOID CONFLICTS MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. NO EXTRA PAYMENT TO THE CONTRACTOR DUE TO RELOCATIONS WILL BE AUTHORIZED.
3. THE UTILITY PLAN DOES NOT DEPICT THE NECESSARY IRRIGATION PIPING OR ELECTRICAL CONDUIT/WIRING TO SERVICE THE PROPOSED LIGHTING AND SIGNS, WHICH WILL BE PERFORMED BY THE CONTRACTOR FOR NO ADDITIONAL COST. INSTALLATION OF THE IRRIGATION PIPING SHALL HAVE A MINIMUM SEPARATION DISTANCE OF 10' TO ANY SEWER SYSTEM COMPONENT.
4. AS APPROPRIATE EXISTING UTILITIES/IMPROVEMENTS/STRUCTURES ARE TO BE REMOVED AND DISPOSED BY THE CONTRACTOR.
5. THE CONTRACTOR MUST LOCATE THE EXISTING WATER MAIN TO OBTAIN THE PROPER OUTSIDE DIAMETER TO SIZE THE SLEEVE.
6. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL UTILITY PIPE SIZES INCLUDING WATER, SEWER AND GAS ARE VERIFIED BY THE ARCHITECT PRIOR TO ORDERING PIPE OR RELATED MATERIAL.
7. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT HYDRANT DRAWINGS TO CUMBERLAND FIRE MARSHALL FOR APPROVAL.
8. GAS SERVICE TO UNITS SHALL HAVE SHUT OFFS IN THE STREET.
9. PROPOSED UTILITY PIPE SIZE WITHIN ROADWAY ARE IDENTIFIED BELOW:
 

<b>ELECTRIC</b>	- (2) 4" PVC CONDUITS
<b>TELEPHONE</b>	- (2) 4" PVC CONDUITS
<b>CABLE</b>	- (2) 4" PVC CONDUITS

**NOTES:**

  - ELECTRIC CONDUITS TO BE ENCASED IN CONCRETE - FULL LENGTH.
  - TELEPHONE AND CABLE CONDUITS TO BE ENCASED IN CONCRETE UNDER PAVEMENT (OR OVERHEAD VIA UTILITY POLES)

**WATER** - ALL MAINS 8" DI OR APPROVED EQUAL

**SEWER** - 8" PVC GRAVITY LINE WITH MANHOLES TO PUMP STATION  
- SEWAGE PUMP STATION  
- FORCE MAIN

**GAS** - AS DESIGNED BY NATIONAL GRID

**DRAINAGE** - AS SHOWN ON PLANS.
10. UTILITY COMPANY LIST:
 

WATER	- CUMBERLAND WATER DEPARTMENT
SEWER	- CUMBERLAND SEWER DEPARTMENT
NATURAL GAS	- NATIONAL GRID - GAS DIVISION.
ELECTRIC	- NATIONAL GRID - ELECTRIC DIVISION
TELEPHONE	- COX COMMUNICATIONS
CABLE TV	- COX COMMUNICATIONS
11. THE "UTILITY PLAN" DOES NOT REPRESENT THE SITE ELECTRIC/TELEPHONE/COMMUNICATION SYSTEM DESIGNS.
12. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL BY ENGINEER PRIOR TO ORDERING ANY MATERIAL.

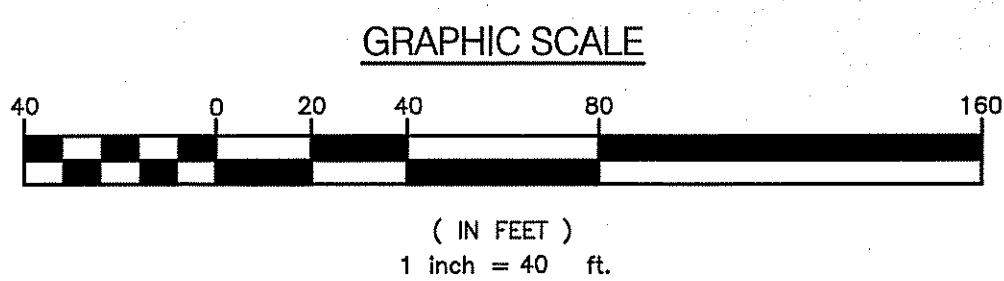
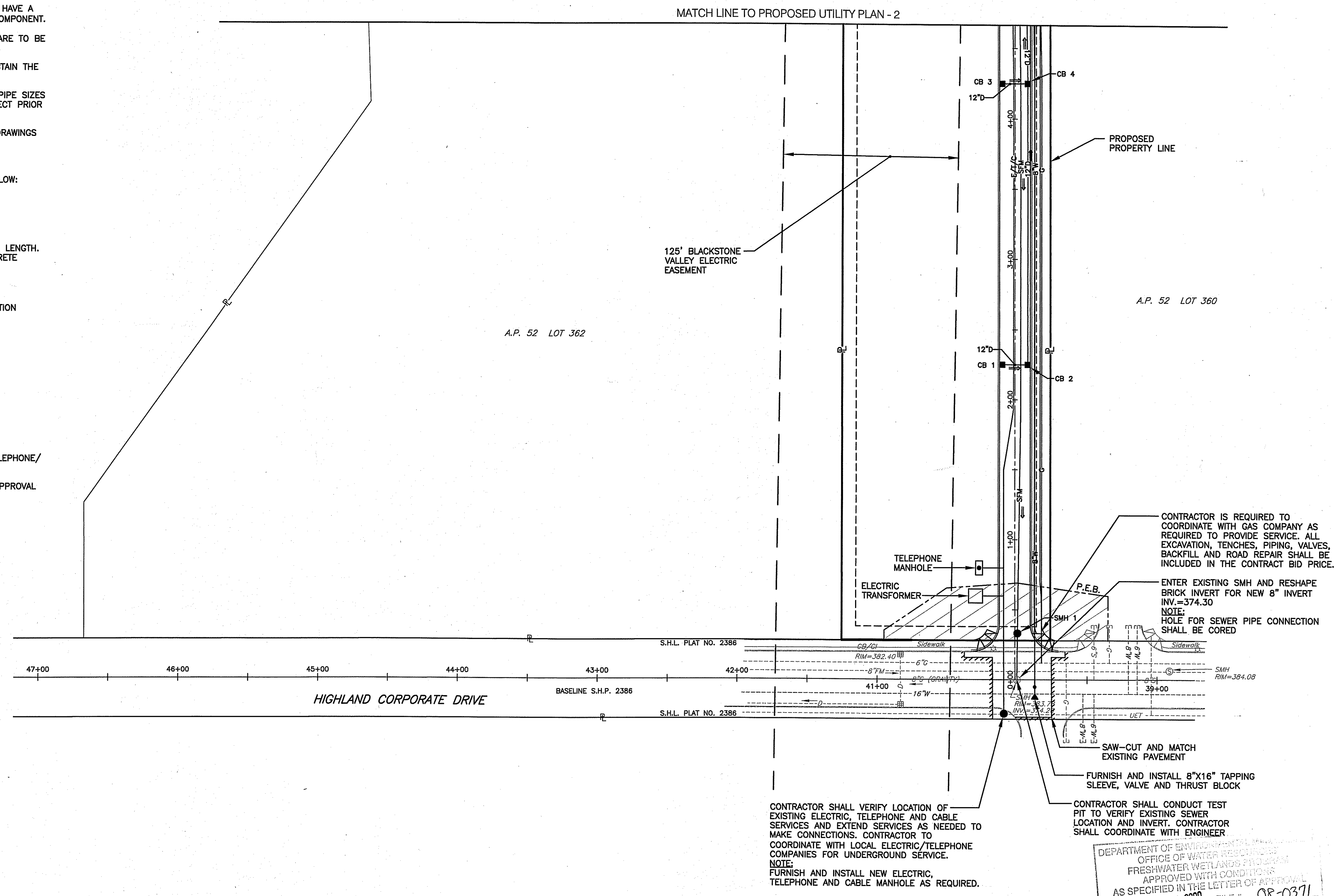
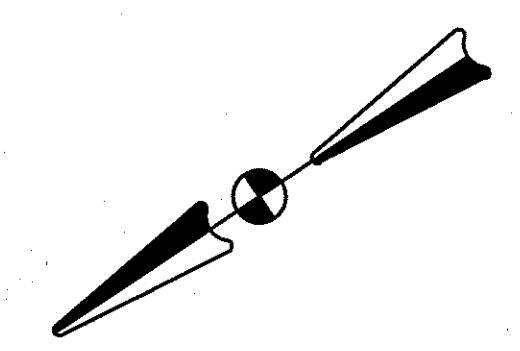
SEWER STRUCTURE SCHEDULE				
NUMBER	FRAME & GRATE *	RIM	INVERT (IN)	INVERT (OUT)
SMH 1	LT102	383.77	377.50	376.80

\* LEBARON FOUNDARY INC.  
\* ALL SANITARY SEWER STRUCTURES SHALL BE PRECAST CONCRETE (4' DIA)



- Civil  
- Transportation  
- Environmental  
- Site Planning  
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**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-6660 - Fax: (401) 738-8157  
Email: cel@crossmaneng.com



STEVEN M. CABRAL  
No. 4847  
REGISTERED PROFESSIONAL ENGINEER  
6-22-09

PROJECT TITLE:  
**HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.**

PREPARED FOR:  
**HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND**

DRAWING TITLE:  
**PROPOSED UTILITY  
PLAN - 1**

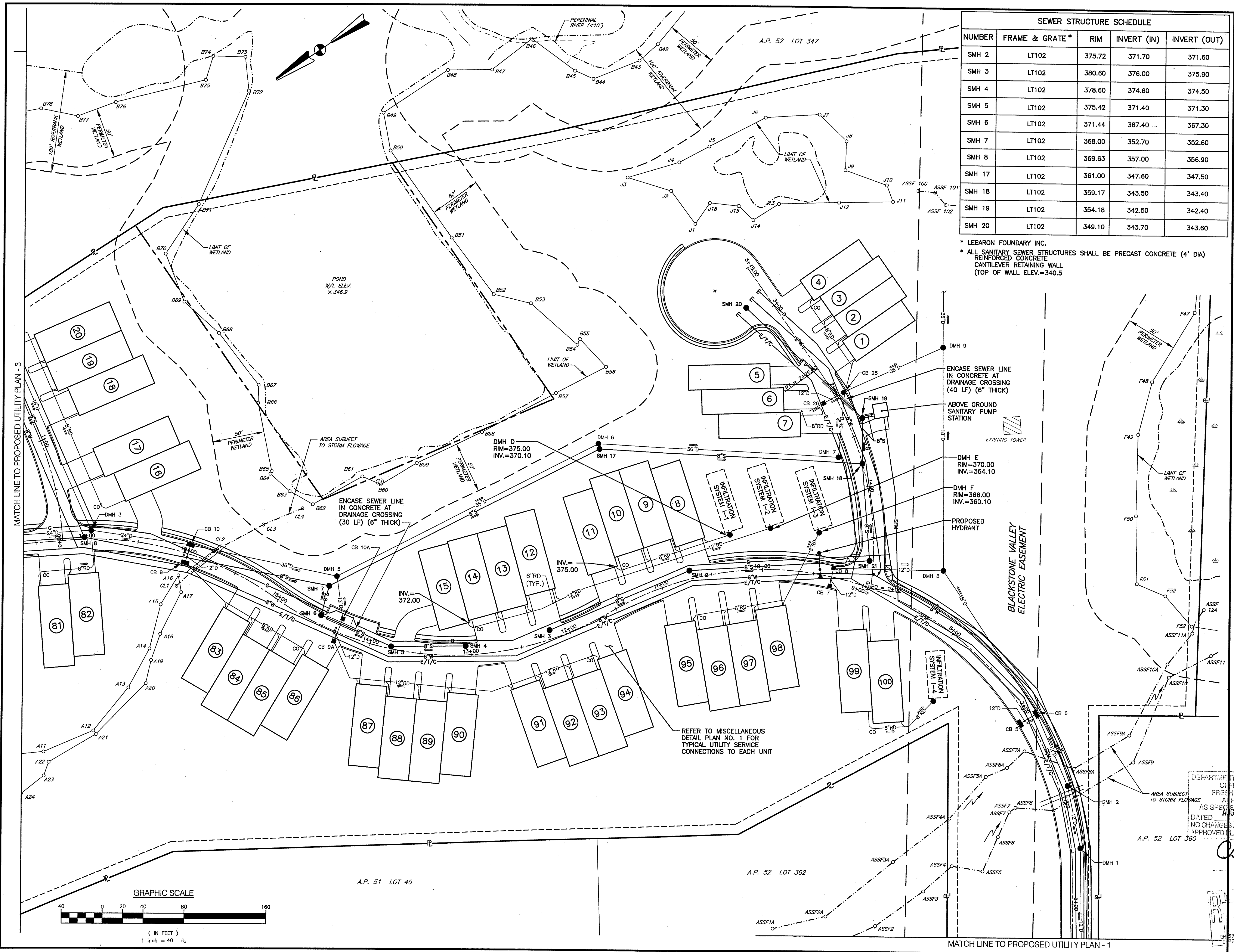
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DWG. NAME: 1519-C10.1-UTILITY1-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED AUG. 03 2009 FILE # 08-0371  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. Habel

DRAWING NUMBER: 10.1  
JUN 23 2009  
SHEET 20 OF 41  
FINAL PLAN SUBMISSION

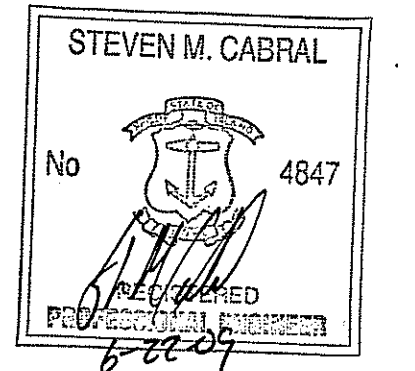


SEWER STRUCTURE SCHEDULE				
NUMBER	FRAME & GRATE *	RIM	INVERT (IN)	INVERT (OUT)
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SMH 3	LT102	380.80	376.00	375.90
SMH 4	LT102	378.80	374.60	374.50
SMH 5	LT102	375.42	371.40	371.30
SMH 6	LT102	371.44	367.40	367.30
SMH 7	LT102	368.00	352.70	352.60
SMH 8	LT102	369.63	357.00	356.90
SMH 17	LT102	361.00	347.60	347.50
SMH 18	LT102	359.17	343.50	343.40
SMH 19	LT102	354.18	342.50	342.40
SMH 20	LT102	349.10	343.70	343.60

\* LEBARON FOUNDARY INC.  
 \* ALL SANITARY SEWER STRUCTURES SHALL BE PRECAST CONCRETE (4' DIA) REINFORCED CONCRETE CANTILEVER RETAINING WALL (TOP OF WALL ELEV.=340.5)

**CE** - Civil  
 - Transportation  
 - Environmental  
 - Site Planning  
 - Land Surveying

**CROSSMAN ENGINEERING, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: ce@crosmaneng.com



PROJECT TITLE:  
**HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO**

HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:  
**HIGHLAND HILLS LLC**  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**PROPOSED UTILITY  
 PLAN - 2**

DATE: **NOVEMBER 2008** SCALE: **1" = 40'**  
 DWG. NAME: **1519-C10.2-UTILITY2-REV4.dwg**

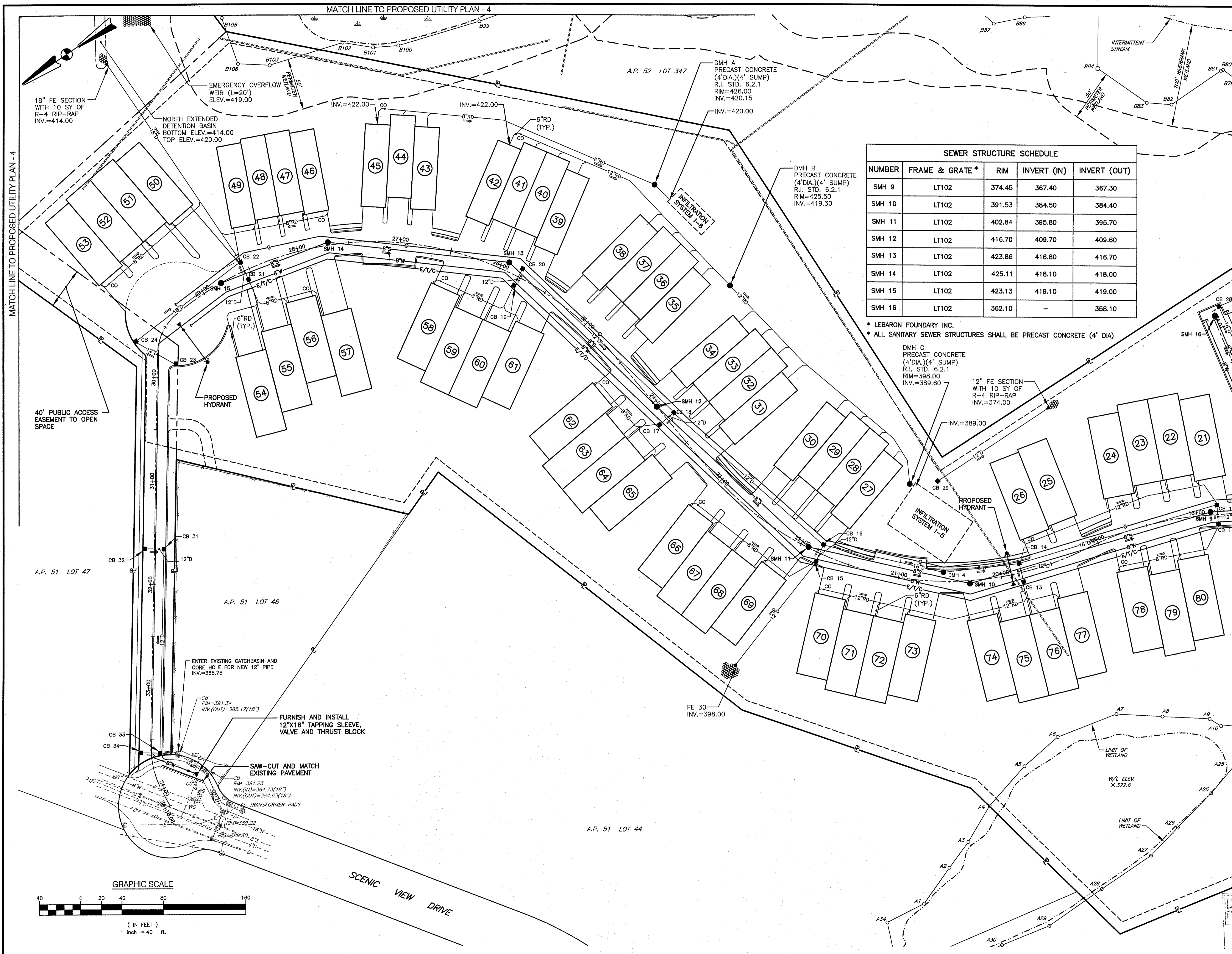
NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF FRESHWATER RESOURCES  
 AS SPECIFIED IN THE PROPOSED LETTER OF APPROVAL  
 DATED 06/03/2009 FILE # **08-0371**  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED AT CONSTRUCTION SITE

*Charles A. H. [Signature]*

DRAWING NUMBER  
**C10.2**  
 JUN 23 2009 SHEET: **21** OF: **41**  
**FINAL PLAN SUBMISSION**

S:\1519 - Highland Hills-Cumberland\Current\CAD Drawings\1519-C10.2-UTILITY2-REV4.dwg, Model, 6/18/2009 7:50:23 AM, 1:40



SEWER STRUCTURE SCHEDULE				
NUMBER	FRAME & GRATE *	RIM	INVERT (IN)	INVERT (OUT)
SMH 9	LT102	374.45	367.40	367.30
SMH 10	LT102	391.53	384.50	384.40
SMH 11	LT102	402.84	395.80	395.70
SMH 12	LT102	416.70	409.70	409.60
SMH 13	LT102	423.86	416.80	416.70
SMH 14	LT102	425.11	418.10	418.00
SMH 15	LT102	423.13	419.10	419.00
SMH 16	LT102	362.10	-	358.10

\* LEBARON FOUNDARY INC.  
 \* ALL SANITARY SEWER STRUCTURES SHALL BE PRECAST CONCRETE (4' DIA)

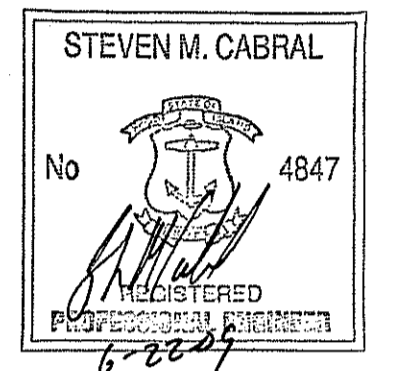
DMH A  
 PRECAST CONCRETE  
 (4'DIA)(4' SUMP)  
 R.I. STD. 6.2.1  
 RIM=426.00  
 INV.=420.15

DMH B  
 PRECAST CONCRETE  
 (4'DIA)(4' SUMP)  
 R.I. STD. 6.2.1  
 RIM=425.50  
 INV.=419.30

DMH C  
 PRECAST CONCRETE  
 (4'DIA)(4' SUMP)  
 R.I. STD. 6.2.1  
 RIM=398.00  
 INV.=389.80

**CROSSMAN ENGINEERING, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: ce@crosmaneng.com

- Civil  
 - Transportation  
 - Environmental  
 - Site Planning  
 - Land Surveying



PROJECT TITLE:  
**HIGHLAND HILLS  
 PLAT MAP 51 LOT 11  
 AND PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO**

HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:  
**HIGHLAND HILLS LLC**  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**PROPOSED UTILITY  
 PLAN - 3**

DATE:  
 NOVEMBER 2008

SCALE:  
 1" = 40'

DWG. NAME:  
 1519-C10.3-UTILITY3-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

APPROVED FOR CONSTRUCTION:

DATE: JUN 09 2009 FILE # 08-0311

NO CHANGES WITHOUT PRIOR APPROVAL

APPROVED:

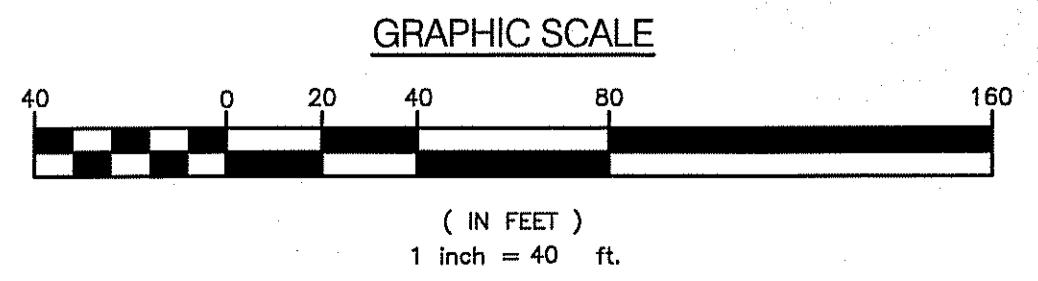
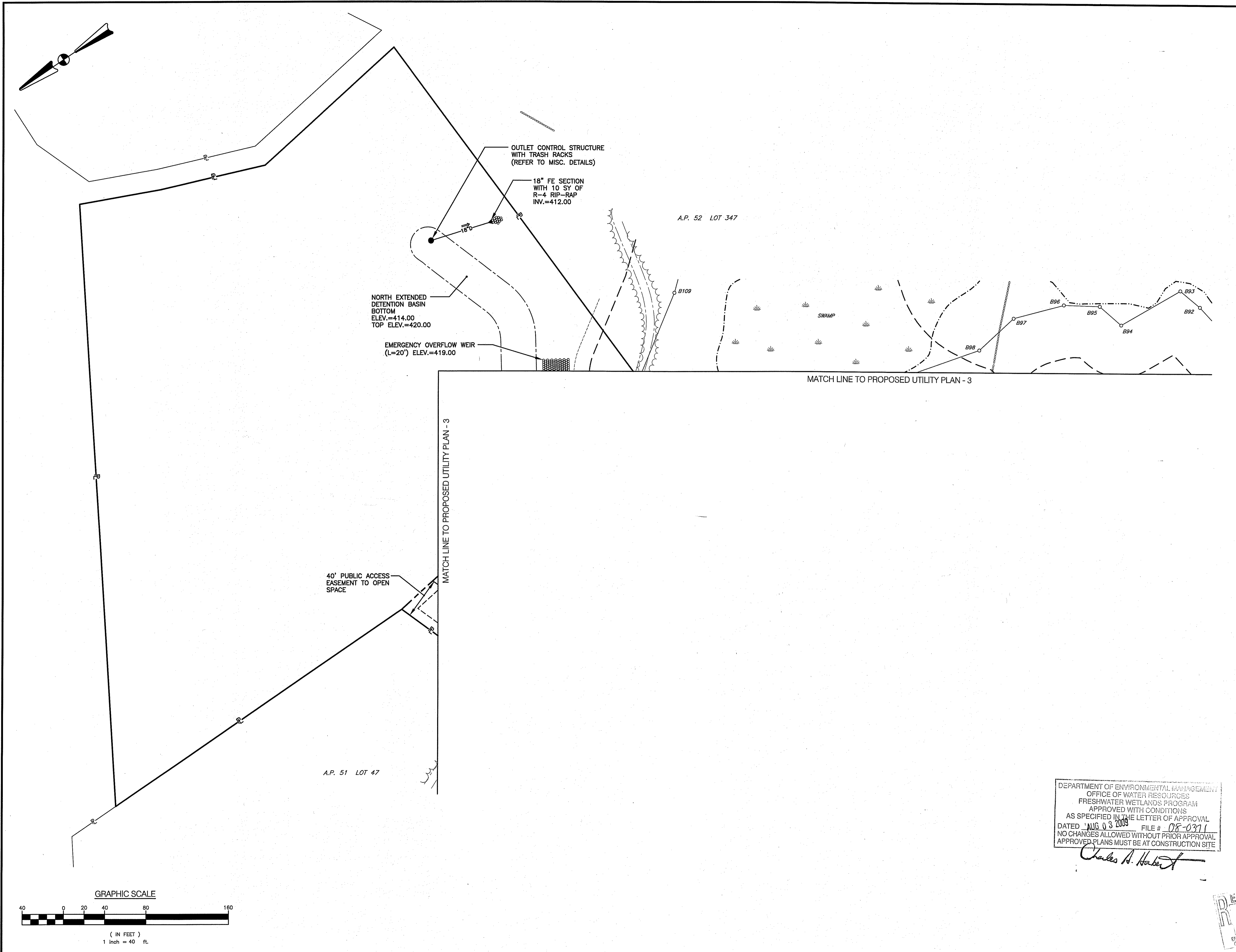
DRAWING NUMBER  
**C10.3**

JUN 23 2009

SHEET: 22 OF 41

FINAL PLAN SUBMISSION

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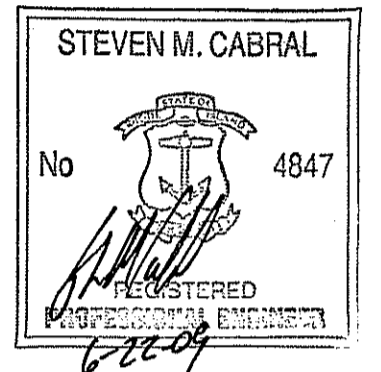


DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 03 2009 FILE # 08-0311  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Haber*

**CE**  
 - Civil  
 - Transportation  
 - Environmental  
 - Site Planning  
 - Land Surveying

**CROSSMAN ENGINEERING, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-6157  
 Email: ce@crosmaneng.com



PROJECT TITLE:

HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO

HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**PROPOSED UTILITY PLAN - 4**

DATE: NOVEMBER 2008 SCALE: 1" = 40'

DWG. NAME:  
 1519-C10.4-UTILITY4-REV4.dwg

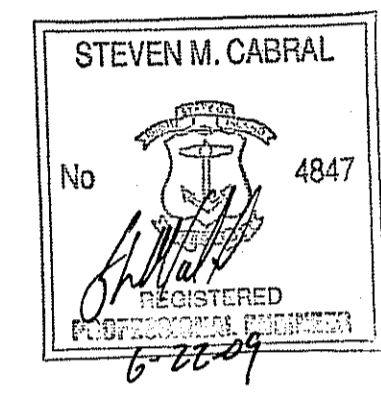
NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DRAWING NUMBER  
**C10.4**

RECEIVED JUN 3 2009 SHEET 23 OF 41

FINAL PLAN SUBMISSION

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PROJECT TITLE:

HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO

HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:

PROFILE PLAN - 1

DATE: NOVEMBER 2008 SCALE: 1" = 40'

DWG. NAME: 1519-C11.1-PROFILE1-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 03 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 ALL APPROVED PLANS MUST BE AT CONSTRUCTION SITE

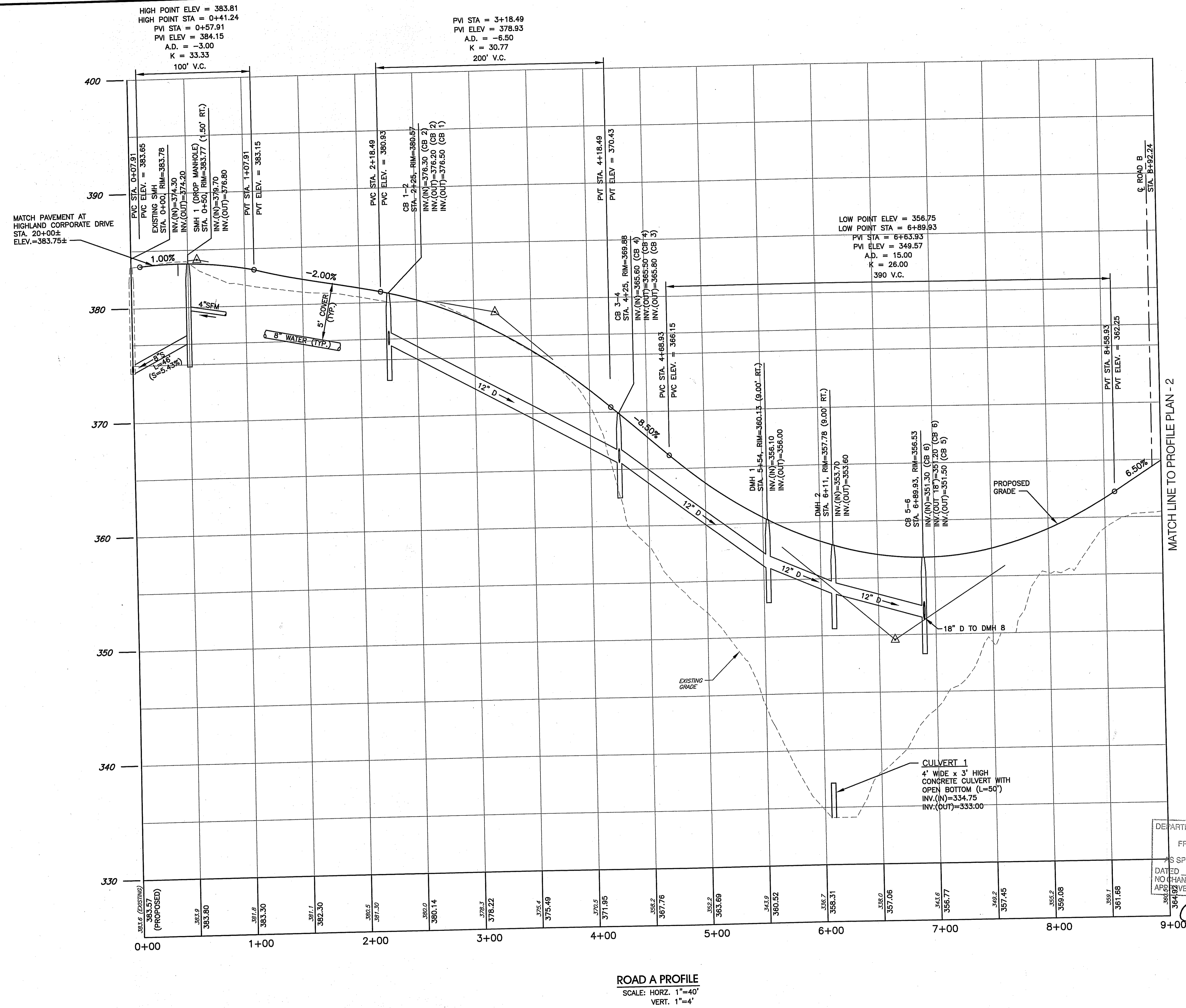
*Charles A. Herbert*

DRAWING NUMBER

**C11.1**

SHEET: 24 OF 41

FINAL PLAN SUBMISSION

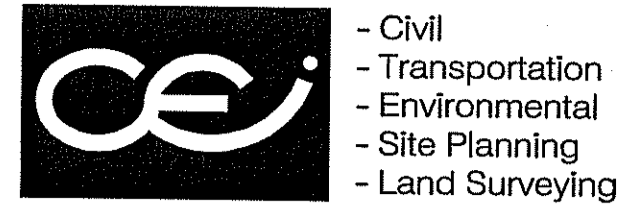


**ROAD A PROFILE**  
 SCALE: HORIZ. 1"=40'  
 VERT. 1"=4'

RECEIVED  
 JUN 23 2009  
 ENVIRONMENTAL SERVICES  
 DIVISION OF WATER RESOURCES

I:\1519 - Highland Hills\Cumberland\Cumnet\VCAD Dwg\02-Design Plans\04 Prelim-Final Design Plans\05 Revision 4\1519-C11.1-PROFILE1-REV4.dwg, Model, 6/17/2008 8:03:14 AM, 1:40



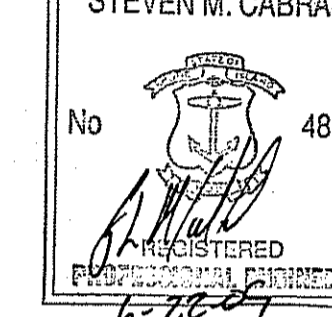


- Civil  
- Transportation  
- Environmental  
- Site Planning  
- Land Surveying

**CROSSMAN ENGINEERING, INC.**

151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: ce@crosmaneng.com

STEVEN M. CABRAL



PROJECT TITLE:  
  
HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:  
  
HIGHLAND HILLS LLC  
  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

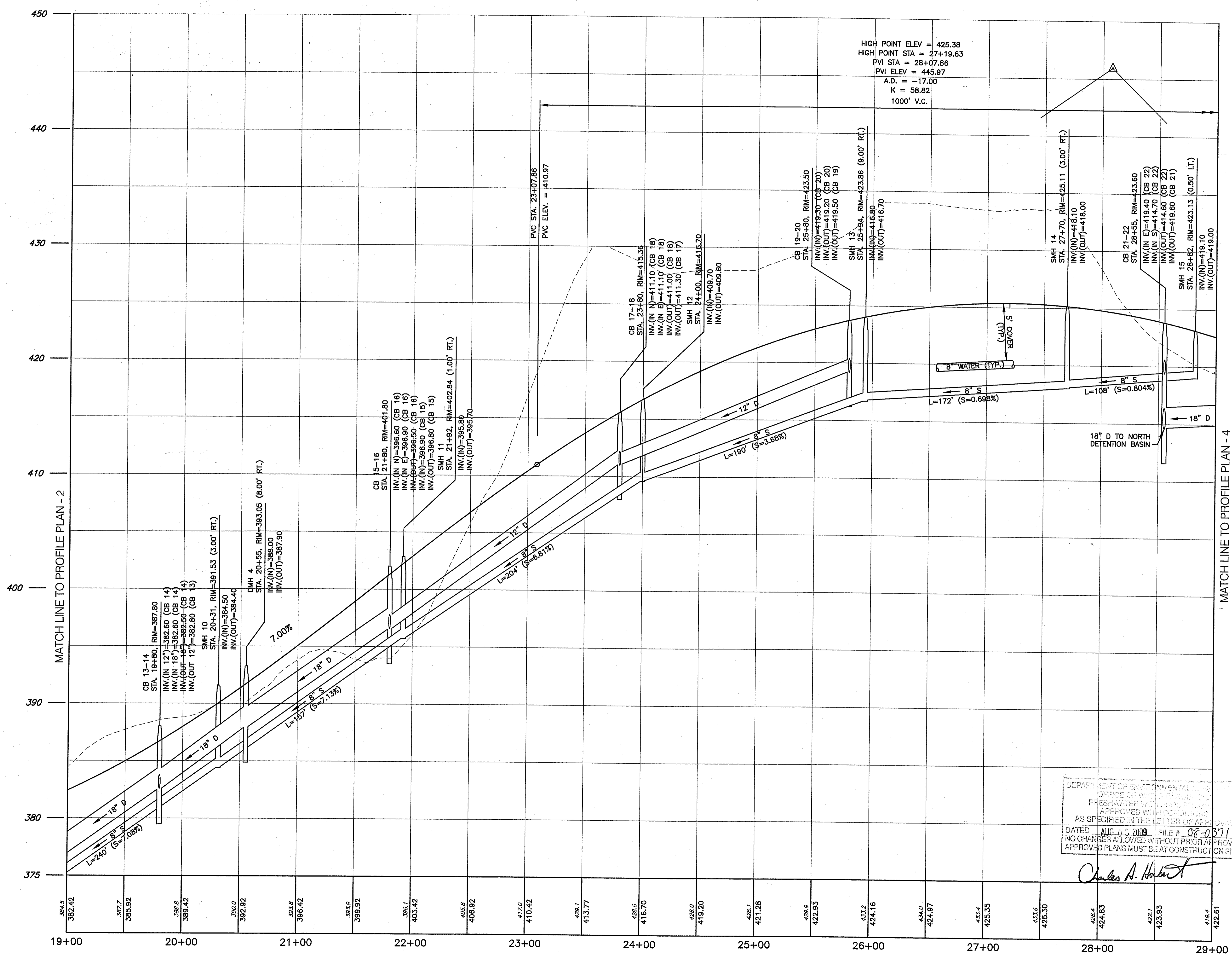
DRAWING TITLE:  
**PROFILE PLAN - 3**

DATE: NOVEMBER 2008 SCALE: 1" = 40'  
DWG. NAME: 1519-C11.3-PROFILE3-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WATER USES DIVISION  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED AUG 15 2009 FILE # 08-0371  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Herbert*

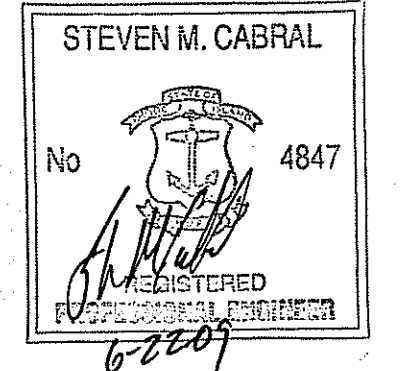


**ROAD A PROFILE**  
SCALE: HORIZ. 1"=40'  
VERT. 1"=4'

MATCH LINE TO PROFILE PLAN - 4

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DRAWING NUMBER  
**C11.3**  
SHEET: 26 OF 41  
FINAL PLAN SUBMISSION



PROJECT TITLE:

HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:

**PROFILE PLAN - 4**

DATE: NOVEMBER 2008 SCALE: 1" = 40'

DWG. NAME: 1519-C11.4-PROFILE4-REV4.dwg

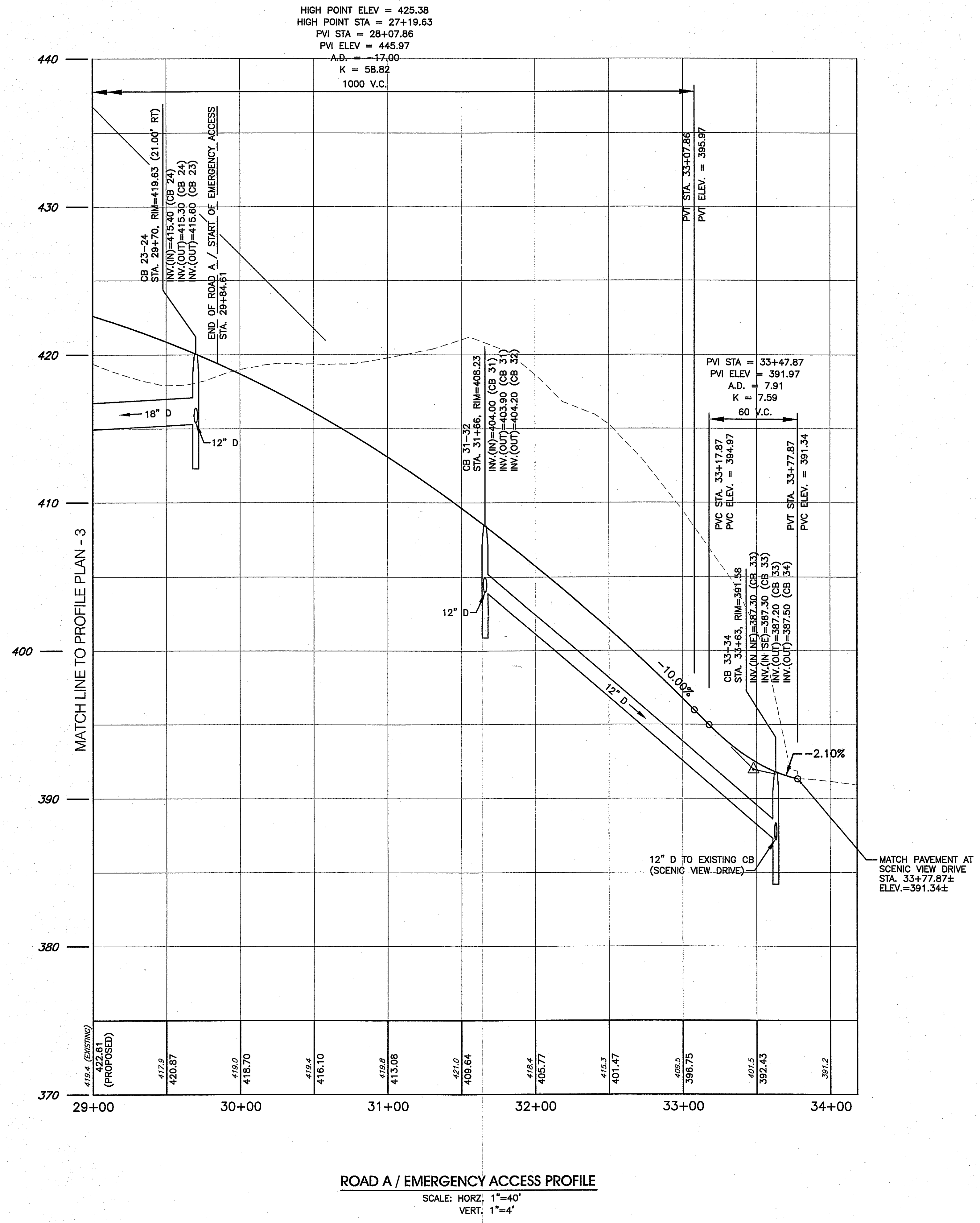
NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DRAWING NUMBER

**C11.4**

SHEET: 27 OF 41

FINAL PLAN SUBMISSION

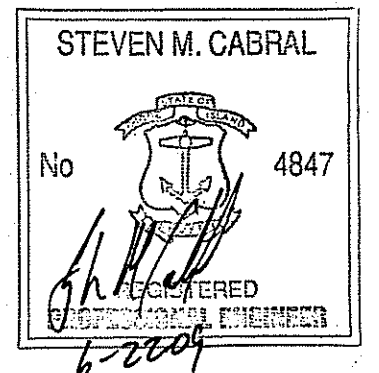


APPROVED FOR CONSTRUCTION  
 AS SPECIFIED IN THE LETTER OF  
 DATED AUG 02 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Herbert*



**CROSSMAN ENGINEERING, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-8157  
 Email: cei@crossmaneng.com



PROJECT TITLE:  
**HIGHLAND HILLS**  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

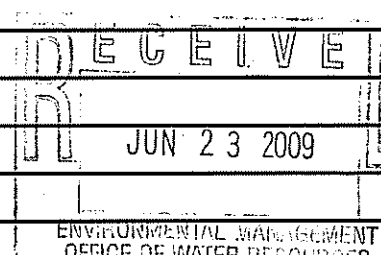
PREPARED FOR:  
**HIGHLAND HILLS LLC**  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**PROFILE PLAN - 5**

DATE: **NOVEMBER 2008** SCALE: **1" = 40'**

DWG. NAME:  
**1519-C11.5-PROFILE5-REV4.dwg**

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	05/15/09	R.I.D.E.M. COMMENT

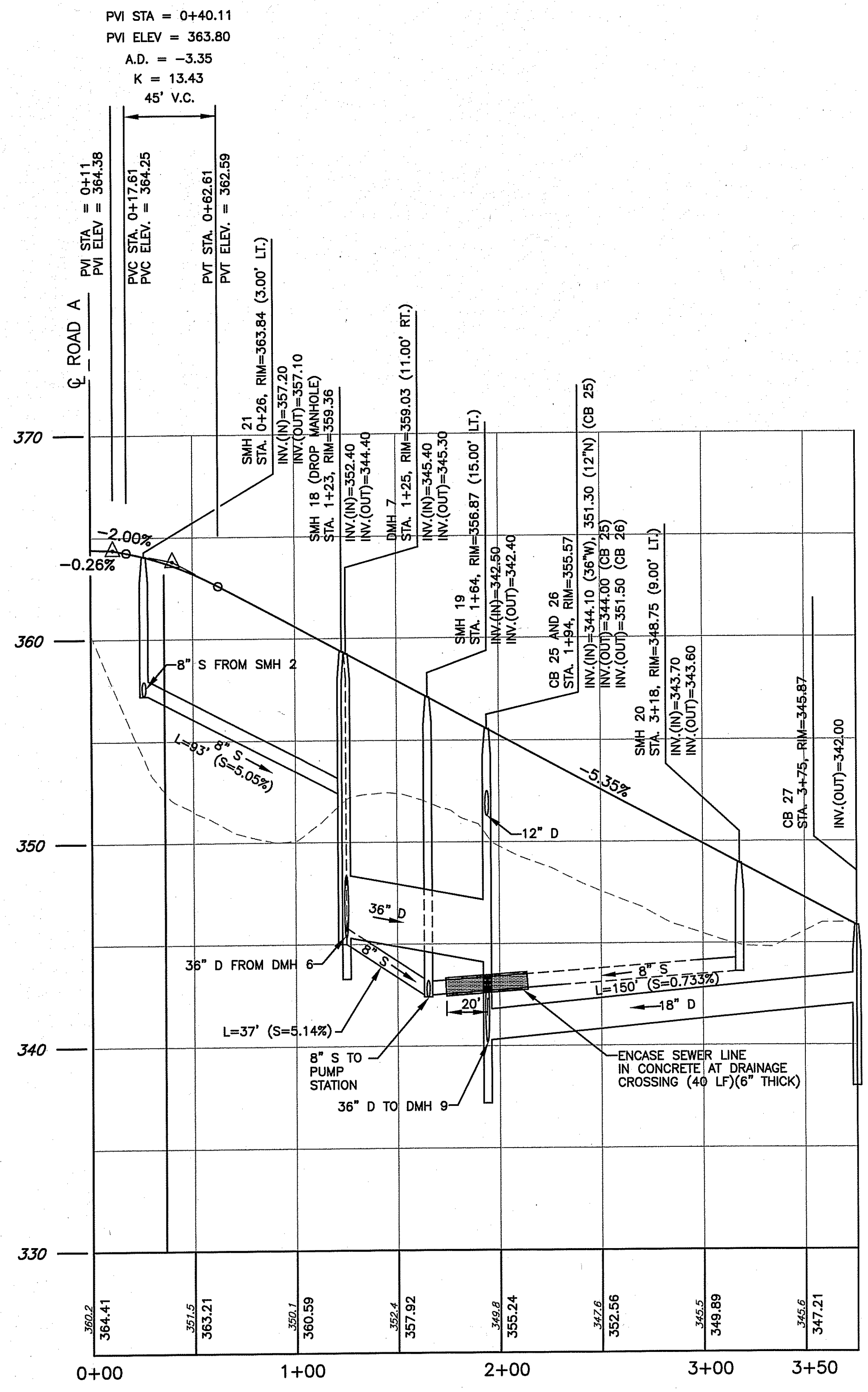


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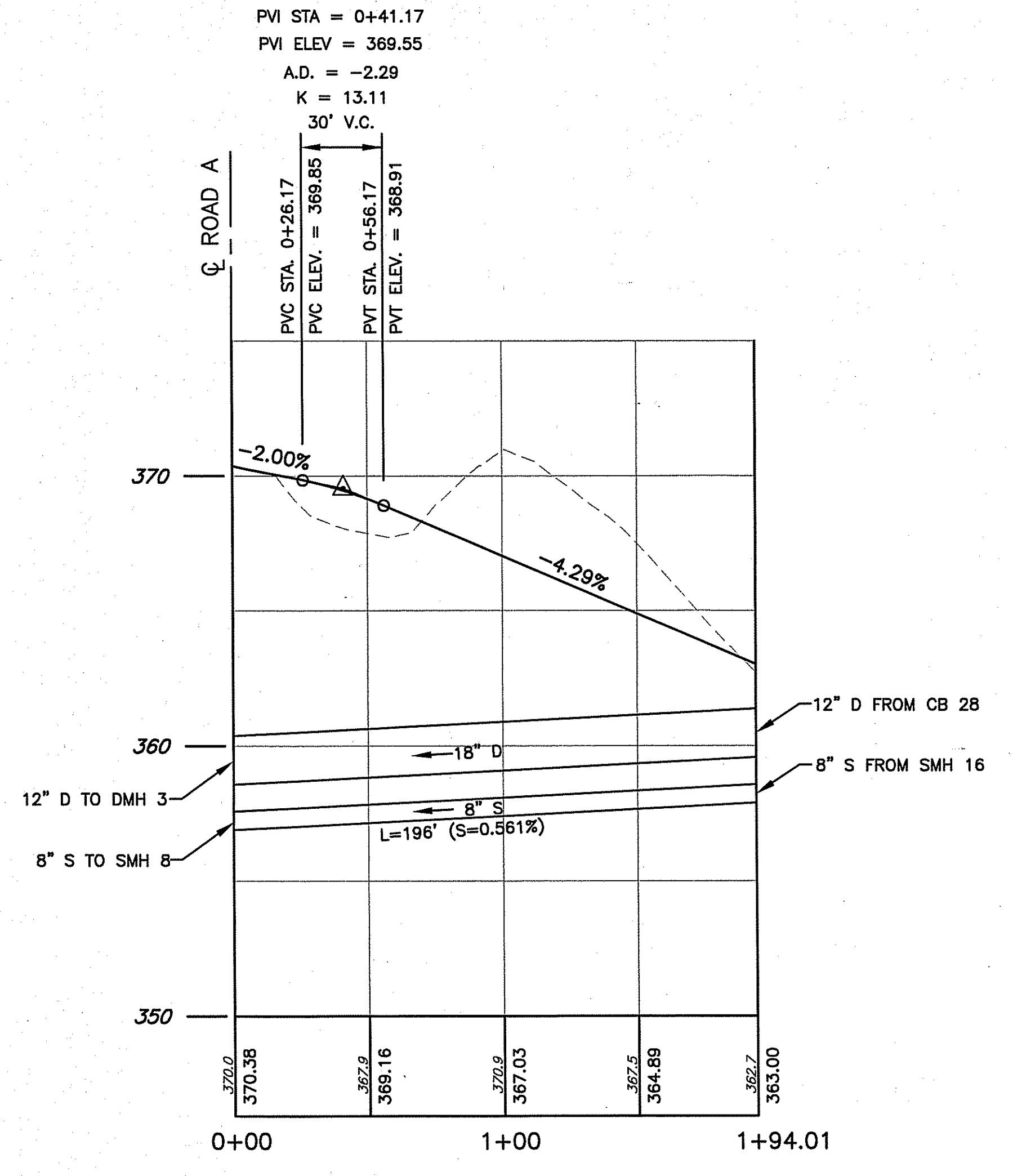
**C11.5**

SHEET: **28** OF **41**

FINAL PLAN SUBMISSION



**ROAD B PROFILE**  
 SCALE: HORZ. 1"=40'  
 VERT. 1"=4'

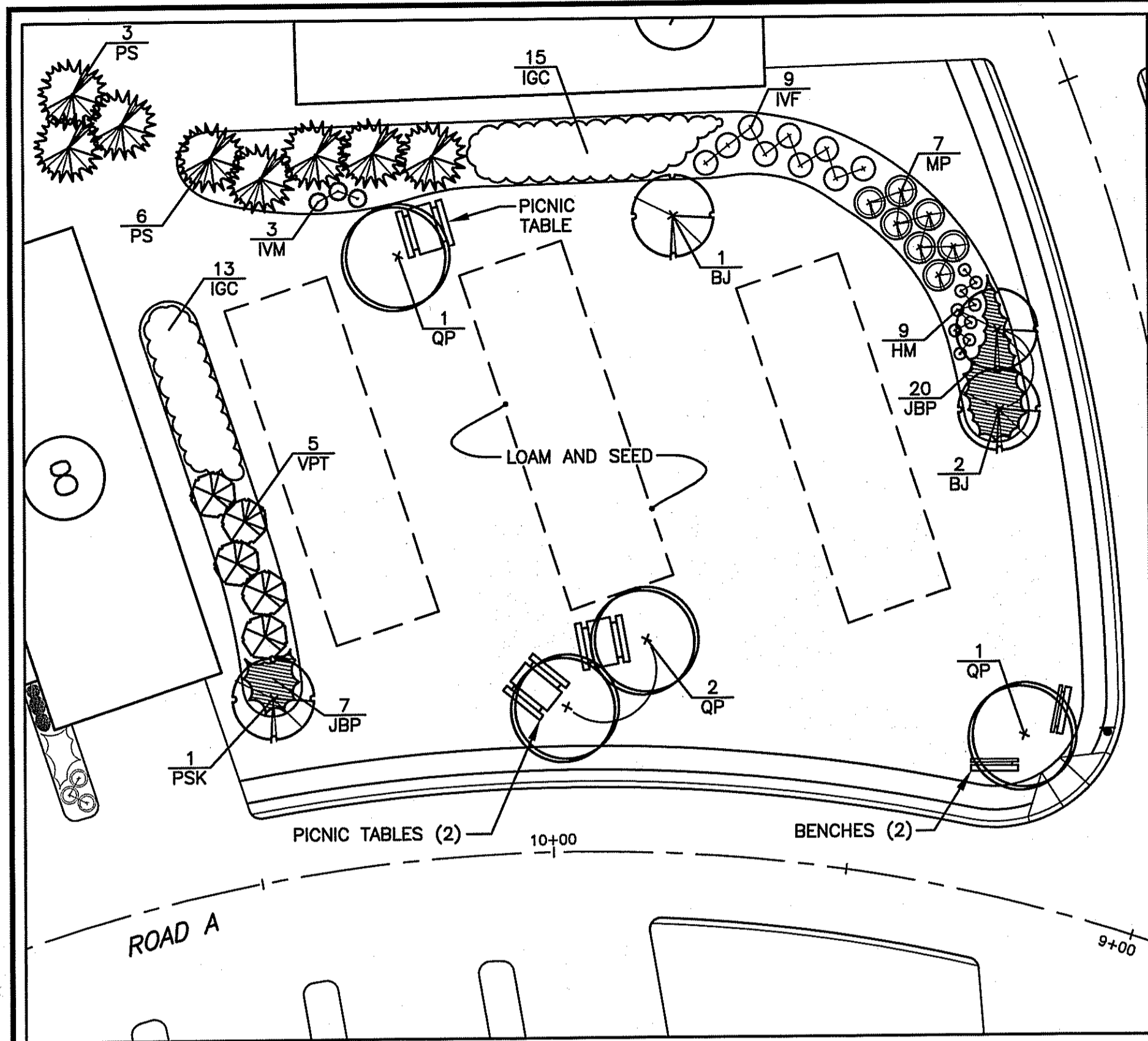


**ROAD C PROFILE**  
 SCALE: HORZ. 1"=40'  
 VERT. 1"=4'

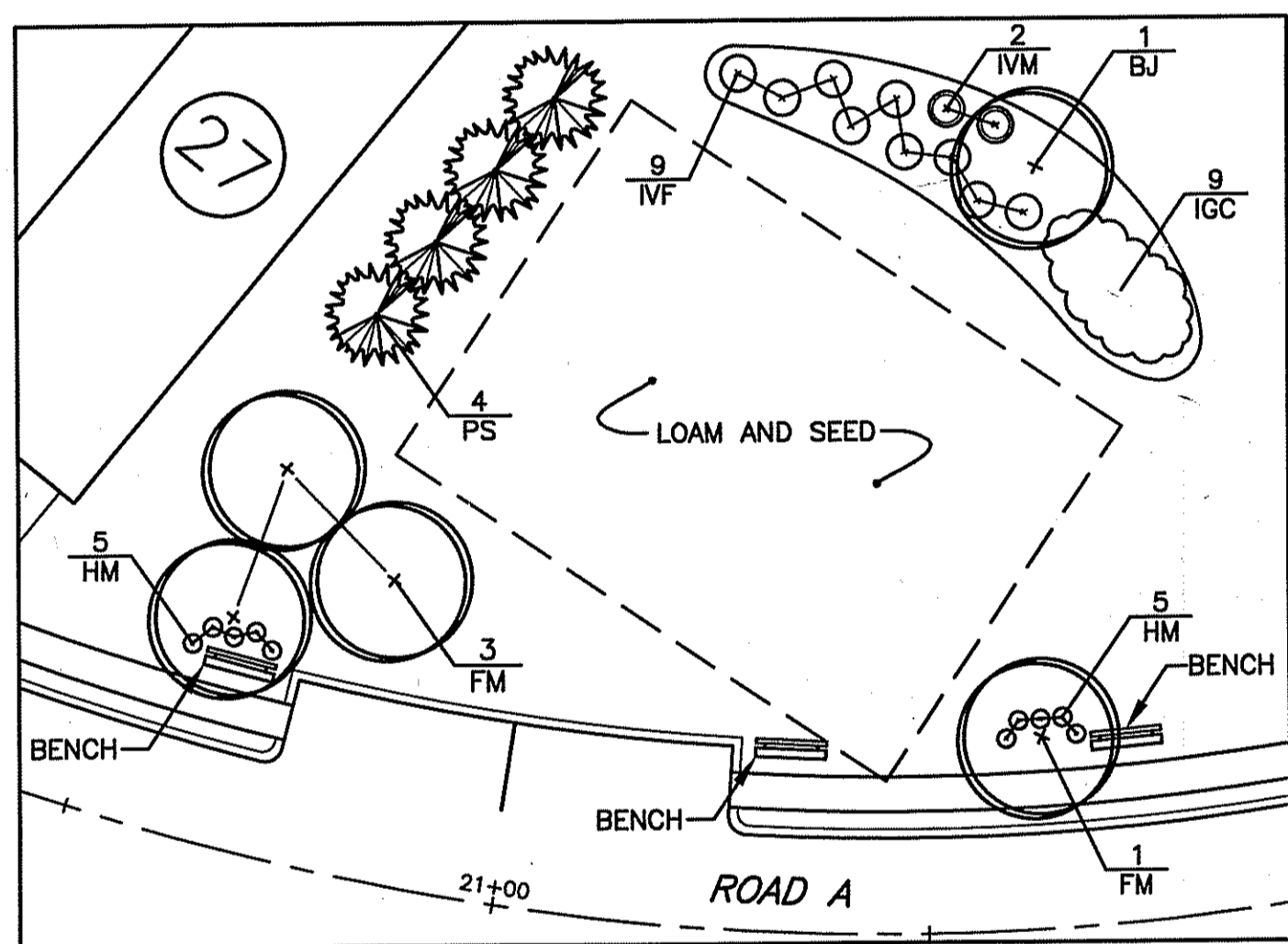
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WATER RESOURCES  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED **AUG 03 2009** FILE # **08-0371**  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Herbert*

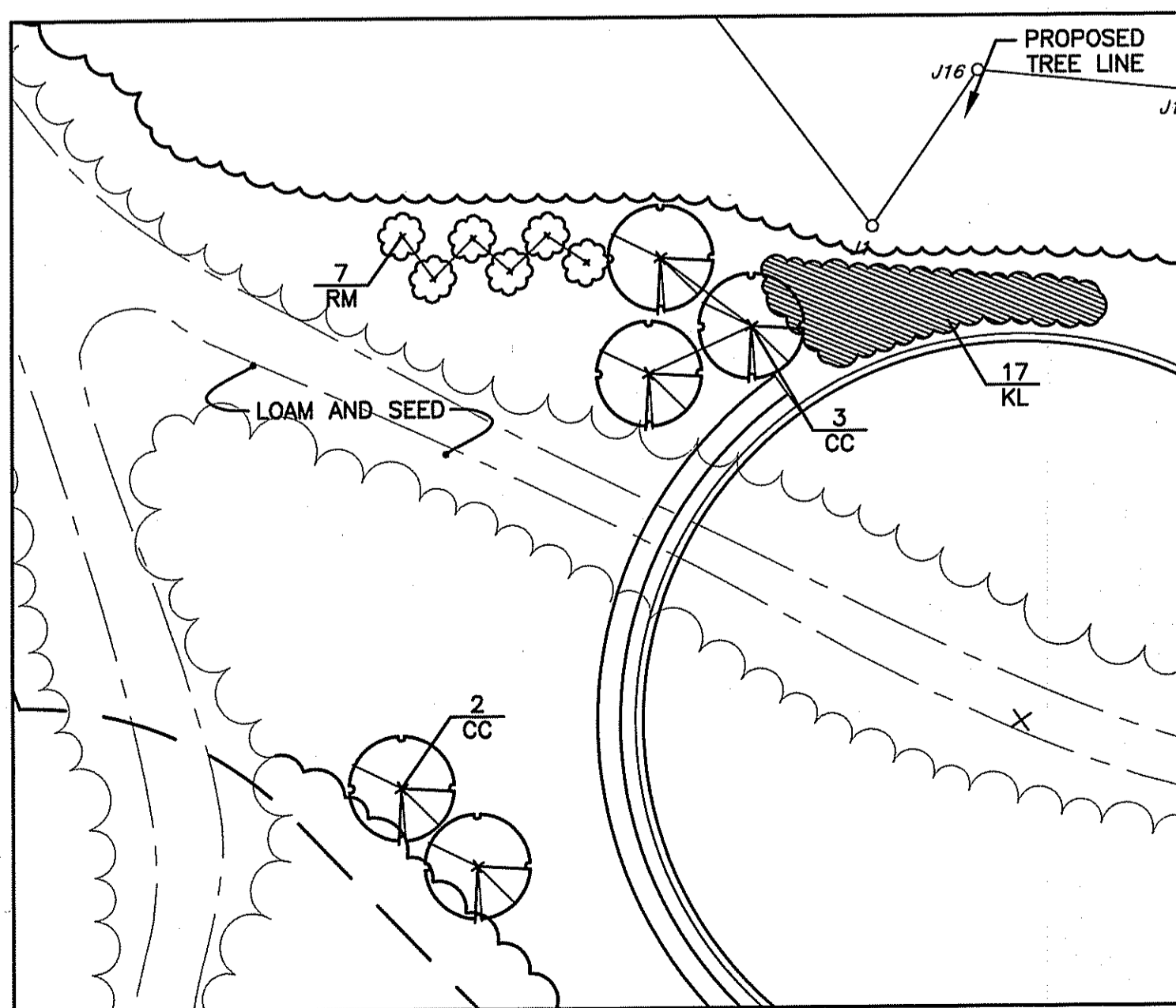
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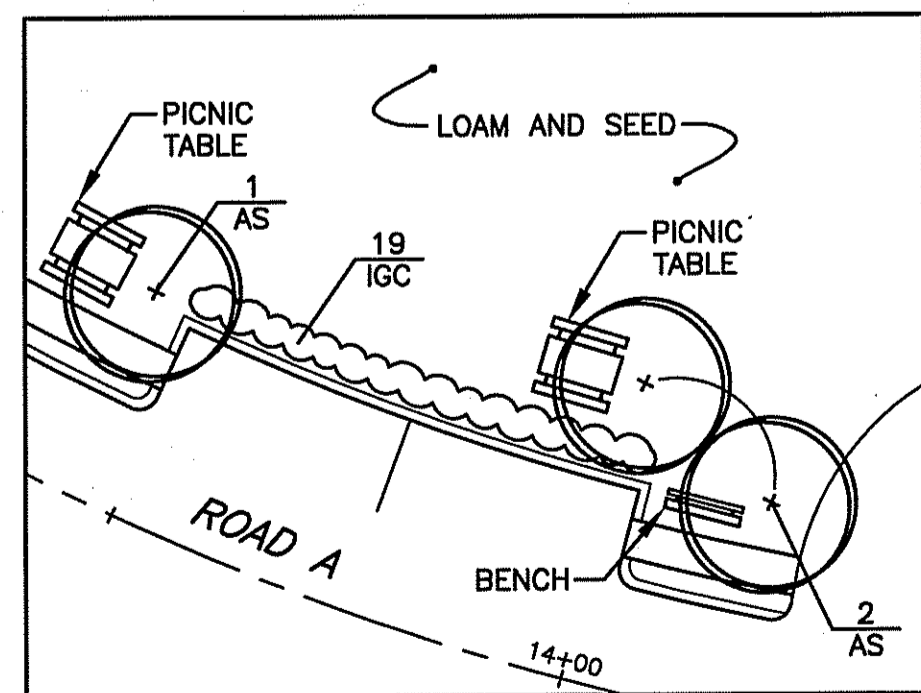
LANDSCAPE PLANTING DETAIL  
POCKET PARK (ROAD A - STA. 10+00 RT.)



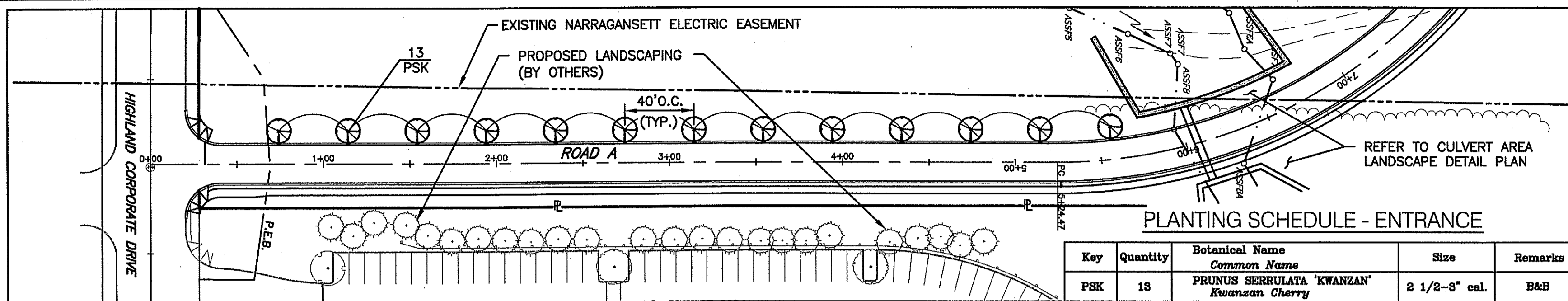
LANDSCAPE PLANTING DETAIL  
POCKET PARK (ROAD A - STA. 20+50 RT.)



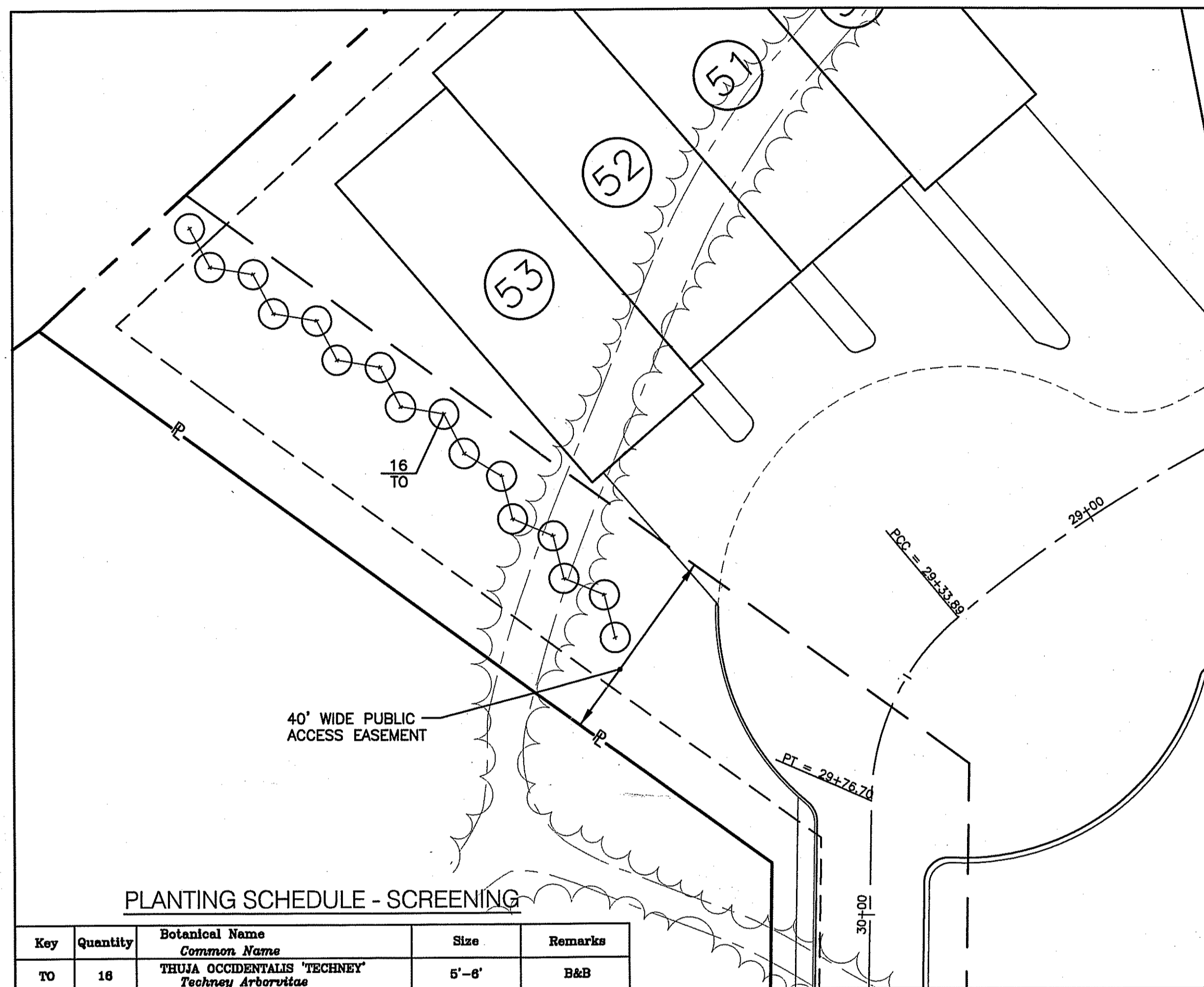
LANDSCAPE PLANTING DETAIL  
POCKET PARK (ROAD B - CUL-DE-SAC)



LANDSCAPE PLANTING DETAIL  
POCKET PARK (ROAD A - STA. 14+50 FT.)



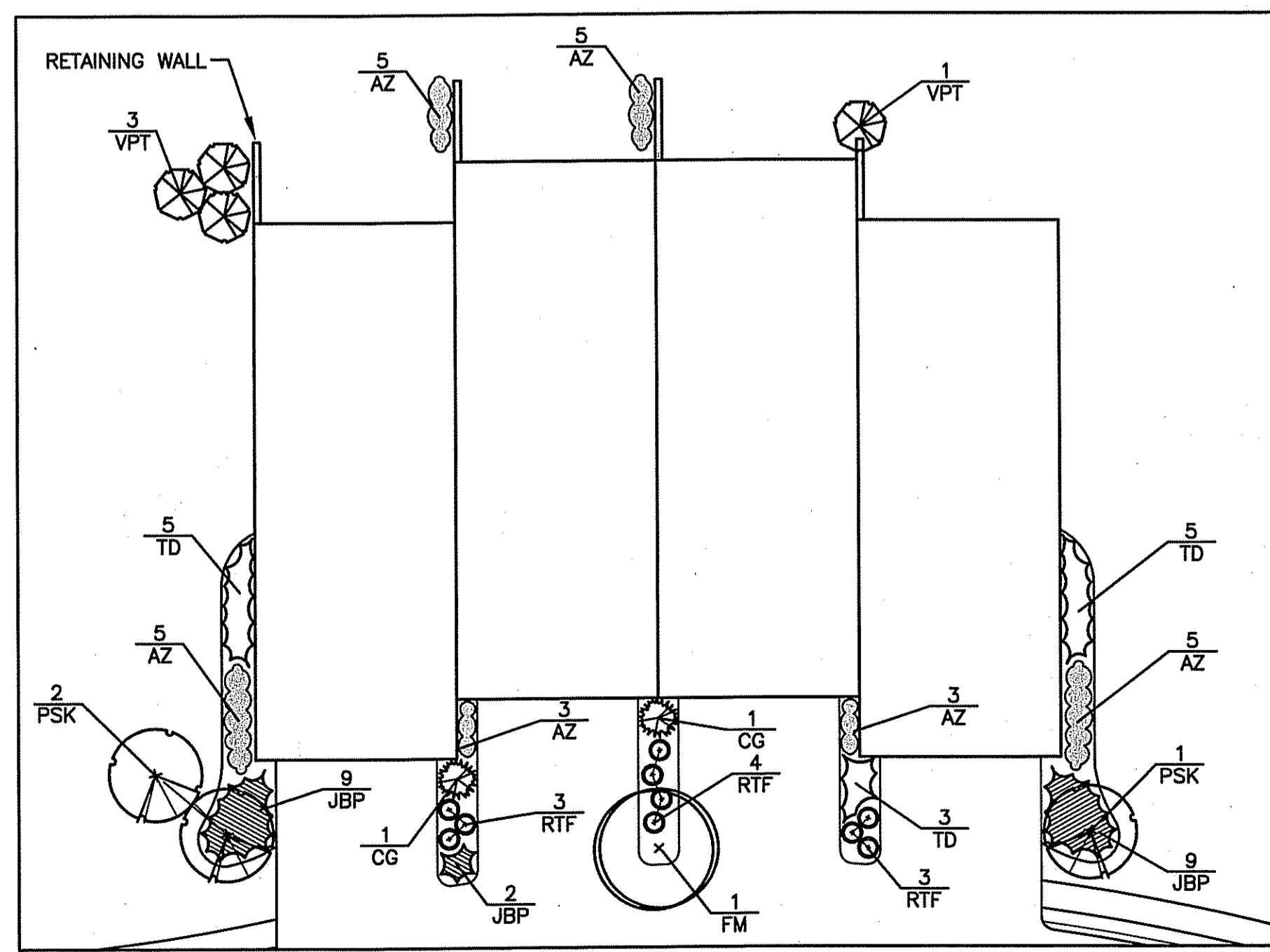
LANDSCAPE PLANTING DETAIL  
ENTRANCE ROADWAY



PLANTING SCHEDULE - SCREENING

Key	Quantity	Botanical Name Common Name	Size	Remarks
TO	18	THUJA OCCIDENTALIS 'TECHNEY' Teehney Arborvitae	5'-8'	B&B

ACCESS EASEMENT SCREENING DETAIL



LANDSCAPE PLANTING DETAIL  
TYPICAL BUILDING

PLANTING SCHEDULE - ENTRANCE

Key	Quantity	Botanical Name Common Name	Size	Remarks
PSK	18	PRUNUS SERRULATA 'KWANZAN' Kwanzan Cherry	2 1/2-3" cal.	B&B

PLANTING SCHEDULE - POCKET PARK

TREES				
Key	Quantity	Botanical Name Common Name	Size	Remarks
AS	3	ACER SACCHARUM Sugar Maple	2 1/2-3" cal.	B&B
BJ	4	BETULA JAQUEMONTI Himalayan Birch	8'-10' Ht.	B&B
CC	5	CERCIS CANADENSIS Eastern Redbud	8'-10' Ht.	B&B
FM	4	FRAXINUS L. 'MARSHALL'S SEEDLESS' Marshall's Seedless Ash	2 1/2-3" cal.	B&B
PS	18	PINUS STROBUS White Pine	8'-10' Ht.	B&B
PSK	1	PRUNUS SERRULATA 'KWANZAN' Kwanzan Cherry	2 1/2-3" cal.	B&B
QP	4	QUERCUS PALUSTRIS Pin Oak	2 1/2-3" cal.	B&B

SHRUBS				
Key	Quantity	Botanical Name Common Name	Size	Remarks
HM	19	HYDRANGEA MACROPHYLLA 'NIKKO BLUE' Blue Hydrangea	24-30"	CONT.
IGC	66	ILEX GLABRA 'COMPACTA' Compact Inkberry	18-24"	CONT.
IVF	18	ILEX VERTICILLATA FEMALE Winterberry	24-30"	CONT.
IYM	5	ILEX VERTICILLATA MALE Winterberry	5 gal.	CONT.
KL	17	KALMIA LATIFOLIA Mountain Laurel	24-30"	CONT.
MP	7	MYRICA PENNSYLVANICA Bayberry	24-30"	CONT.
RM	7	RHODODENDRON MAXIMUM Rosebay Rhododendron	24-30"	CONT.
VPT	5	VIBURNUM P. T. 'SHASTA' Shasta Mayflower Viburnum	3-4'	B&B

GROUNDCOVERS				
Key	Quantity	Botanical Name Common Name	Size	Remarks
JBP	27	JUNIPERUS 'BLUE PACIFIC' Blue Shore Juniper	2 gal.	CONT.

PLANTING SCHEDULE - TYPICAL BUILDING

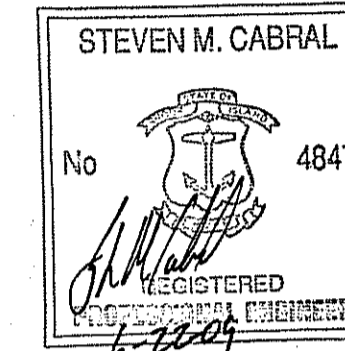
TREES				
Key	Quantity	Botanical Name Common Name	Size	Remarks
FM	1	FRAXINUS L. 'MARSHALL'S SEEDLESS' Marshall's Seedless Ash	2 1/2-3" cal.	B&B
PSK	3	PRUNUS SERRULATA 'KWANZAN' Kwanzan Cherry	2 1/2-3" cal.	B&B

SHRUBS				
Key	Quantity	Botanical Name Common Name	Size	Remarks
AZ	26	AZALEA VARIETIES Evergreen Azalea	18-24"	CONT.
CG	2	CHAMAECYPARI'S O. 'GRACIUS COMPACTA' Compact Hinoki Cypress	4-5' Ht.	B&B
RTF	10	ROSA 'THE FAIRY' Fairy Pink Shrub Rose	2 gal.	CONT.
TD	13	TAXUS M. 'DENSIFORMIS' Dense Spreading Yew	18-24"	CONT.
VPT	4	VIBURNUM P. T. 'SHASTA' Shasta Mayflower Viburnum	3-4'	B&B

GROUNDCOVERS				
Key	Quantity	Botanical Name Common Name	Size	Remarks
JBP	20	JUNIPERUS 'BLUE PACIFIC' Blue Shore Juniper	2 gal.	CONT.

NOTE:  
LANDSCAPE PLANTINGS MAY VARY DEPENDING ON THE NUMBER OF UNITS PER BUILDING AND/OR AS BUILDING FOOTPRINT IS MODIFIED BY ARCHITECT (DOOR LOCATION, PATIO OR DECK, ETC...)

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: ce@crosmaneng.com



PROJECT TITLE:

HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:

LANDSCAPE PLAN

DATE: NOVEMBER 2008 SCALE: 1"=20'

DWG. NAME: 1519-C12.1-LAND1-REV4.dwg

NO.	DATE	REVISION
1	12/12/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

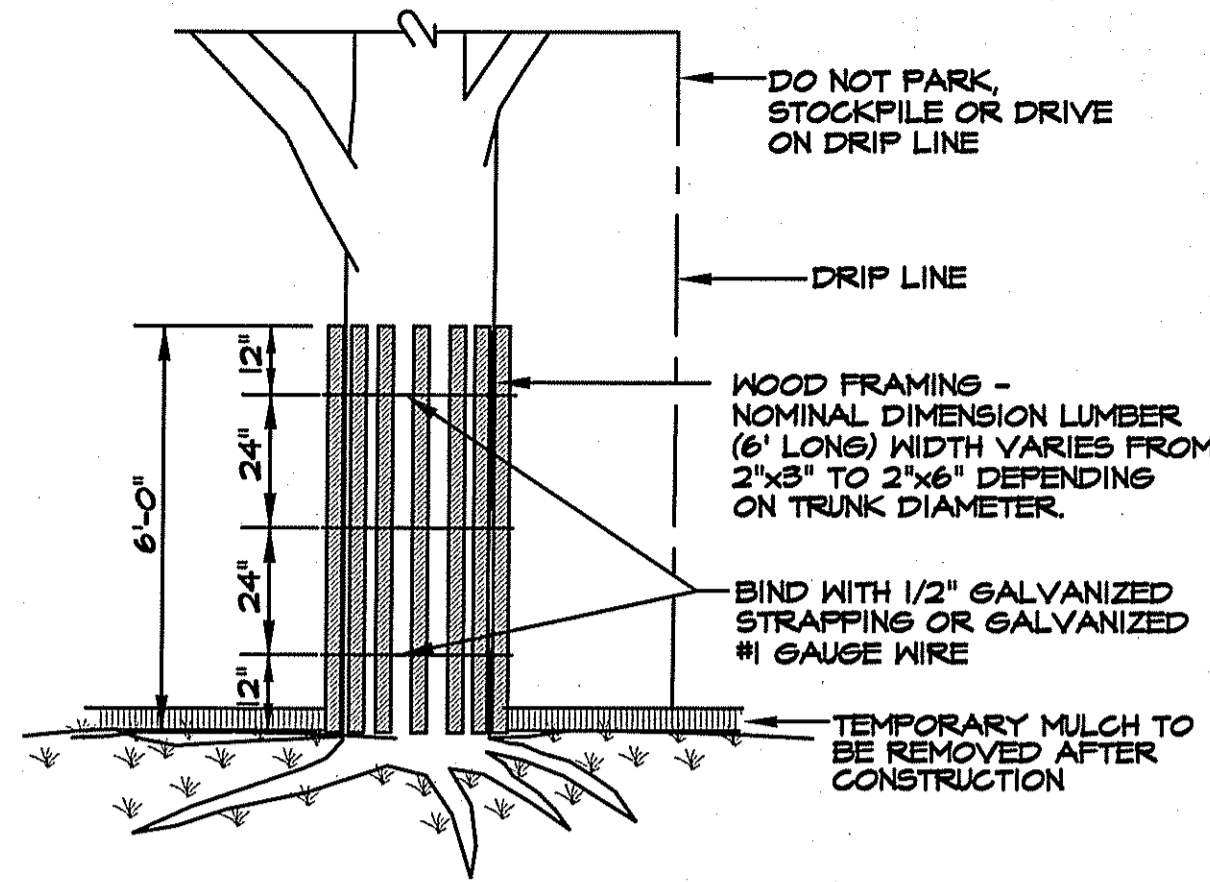
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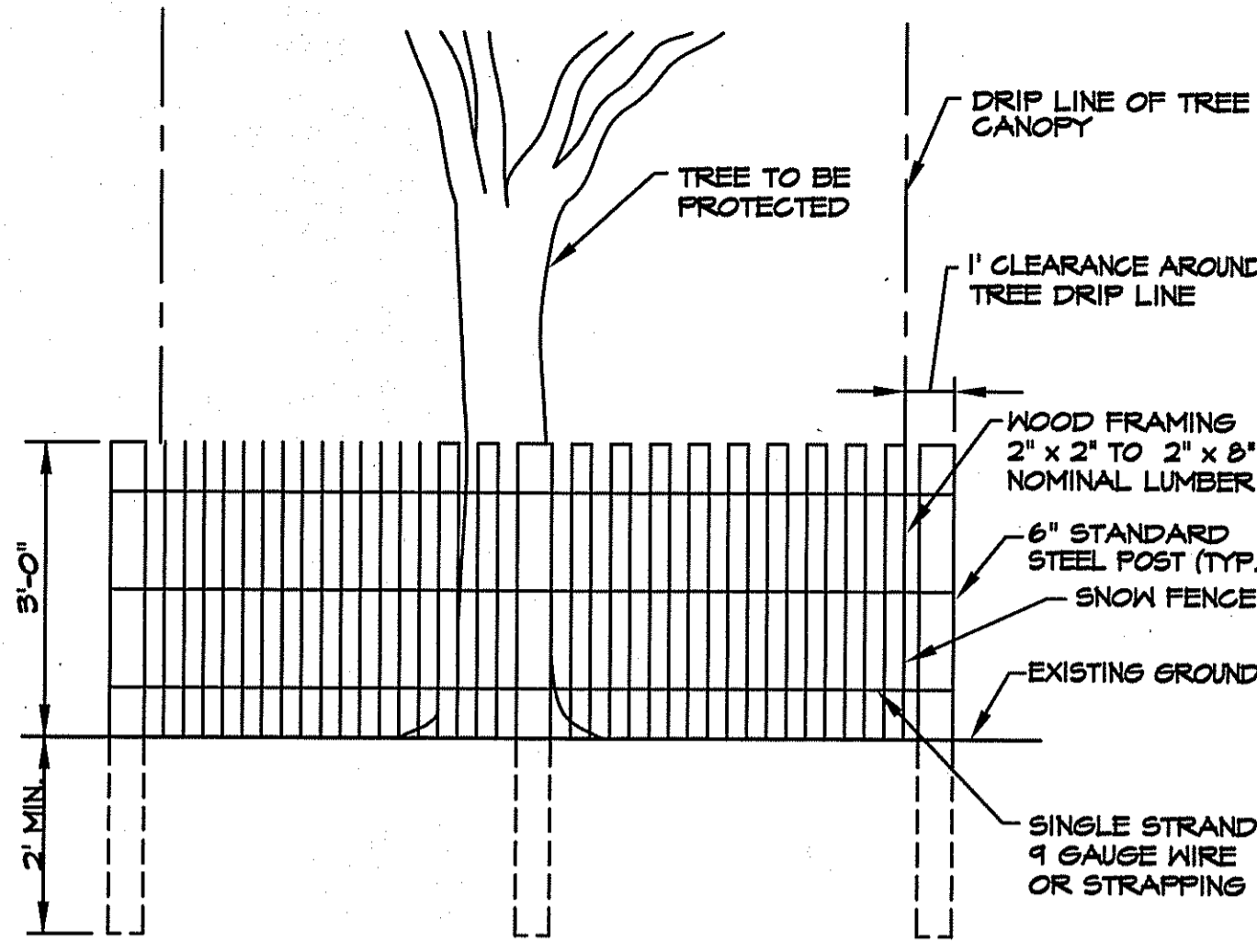
SHEET: 29 OF 41

FINAL PLAN SUBMISSION

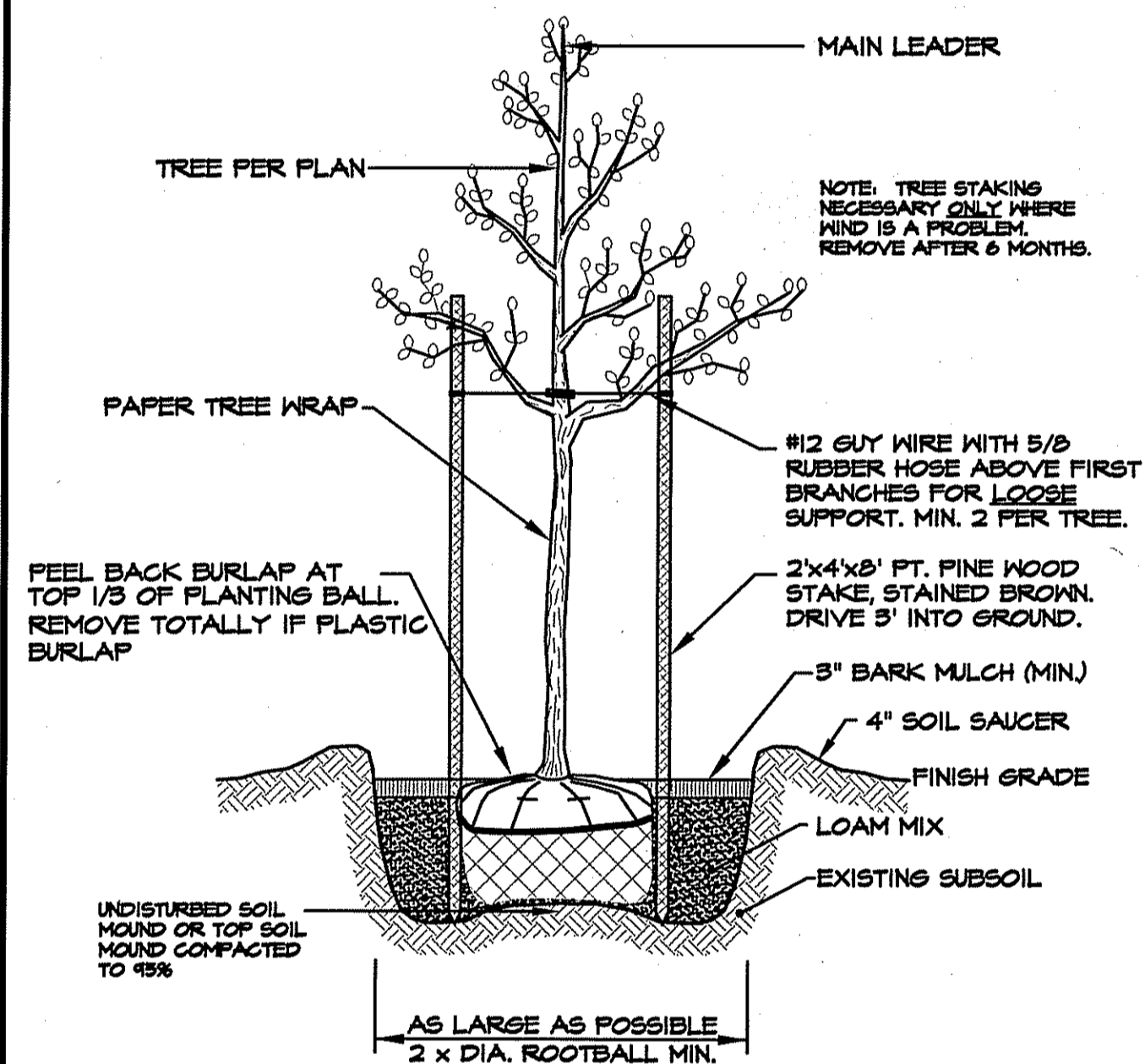
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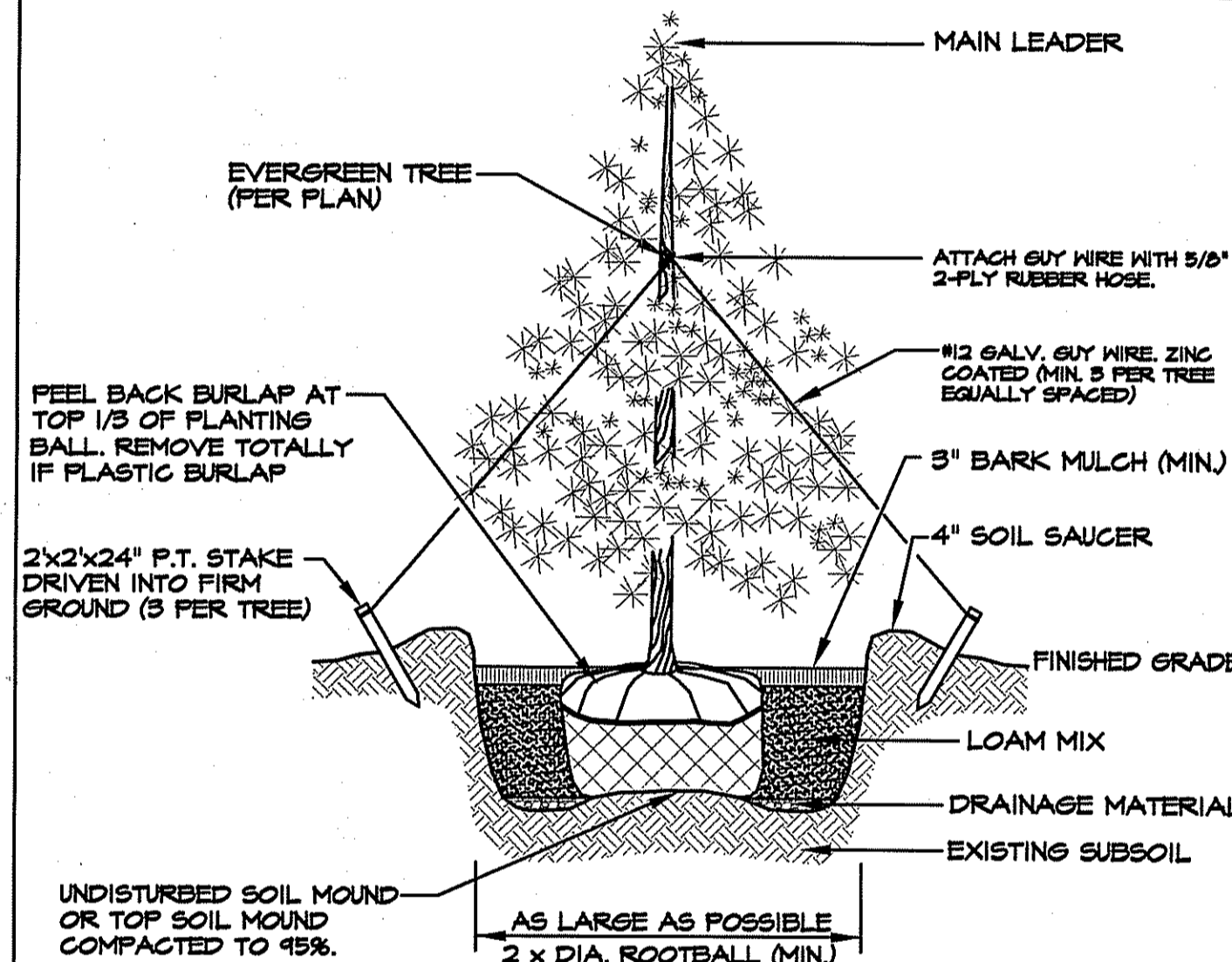
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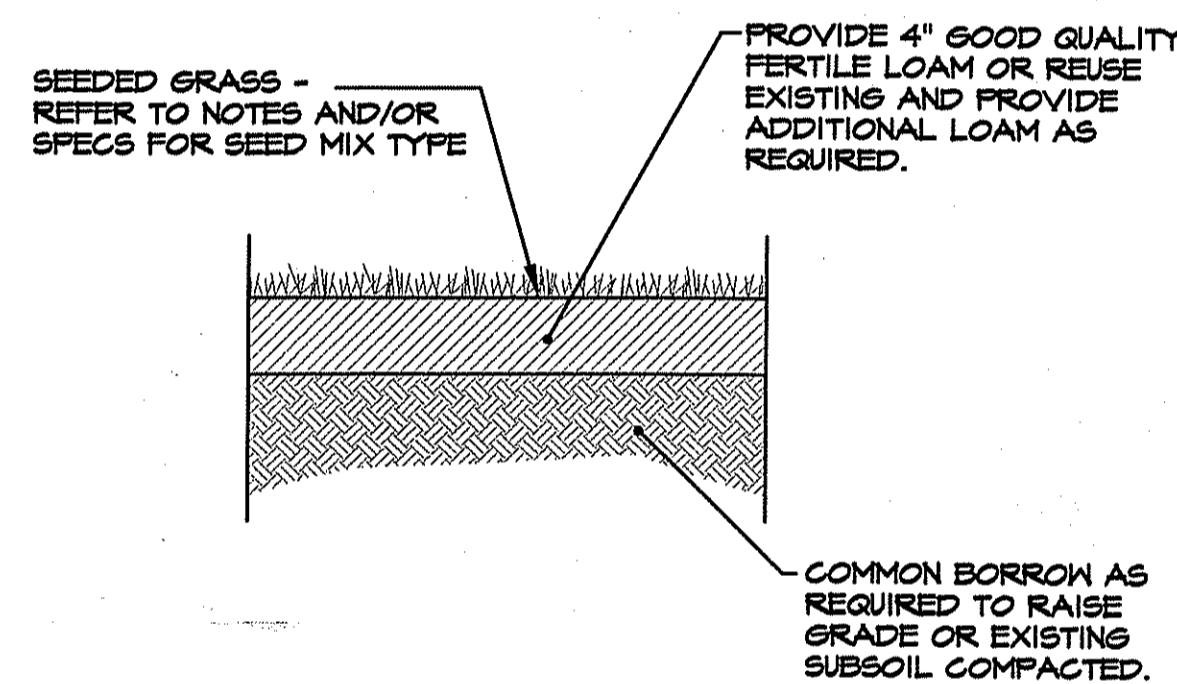
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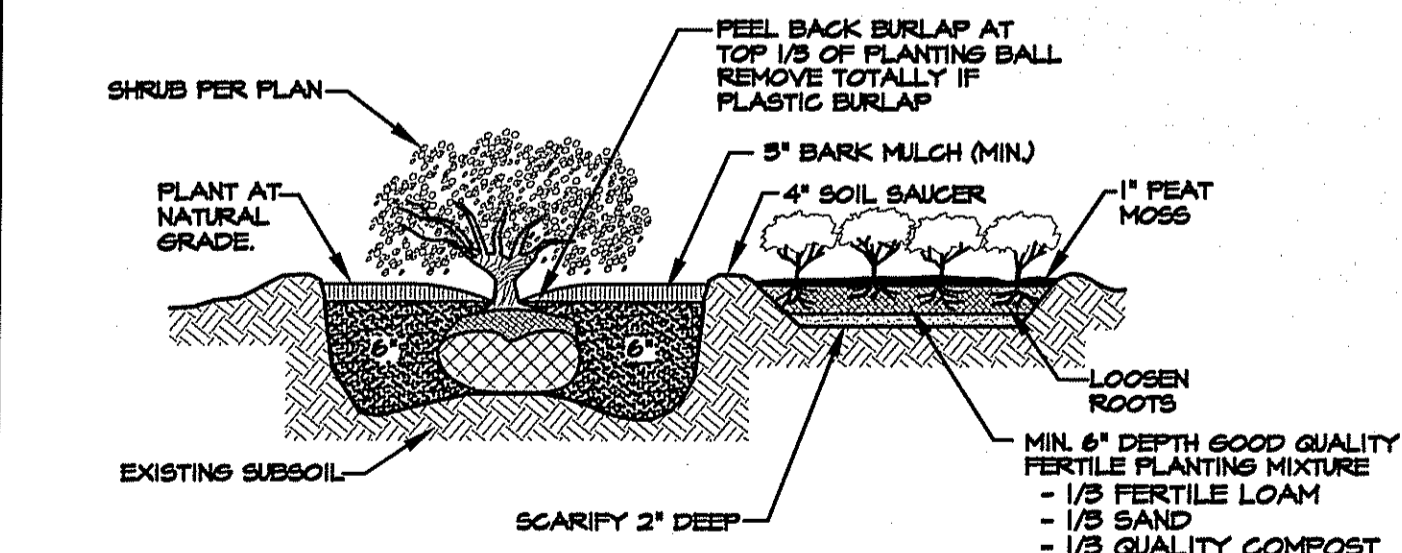
**DECIDUOUS TREE PLANTING DETAIL**  
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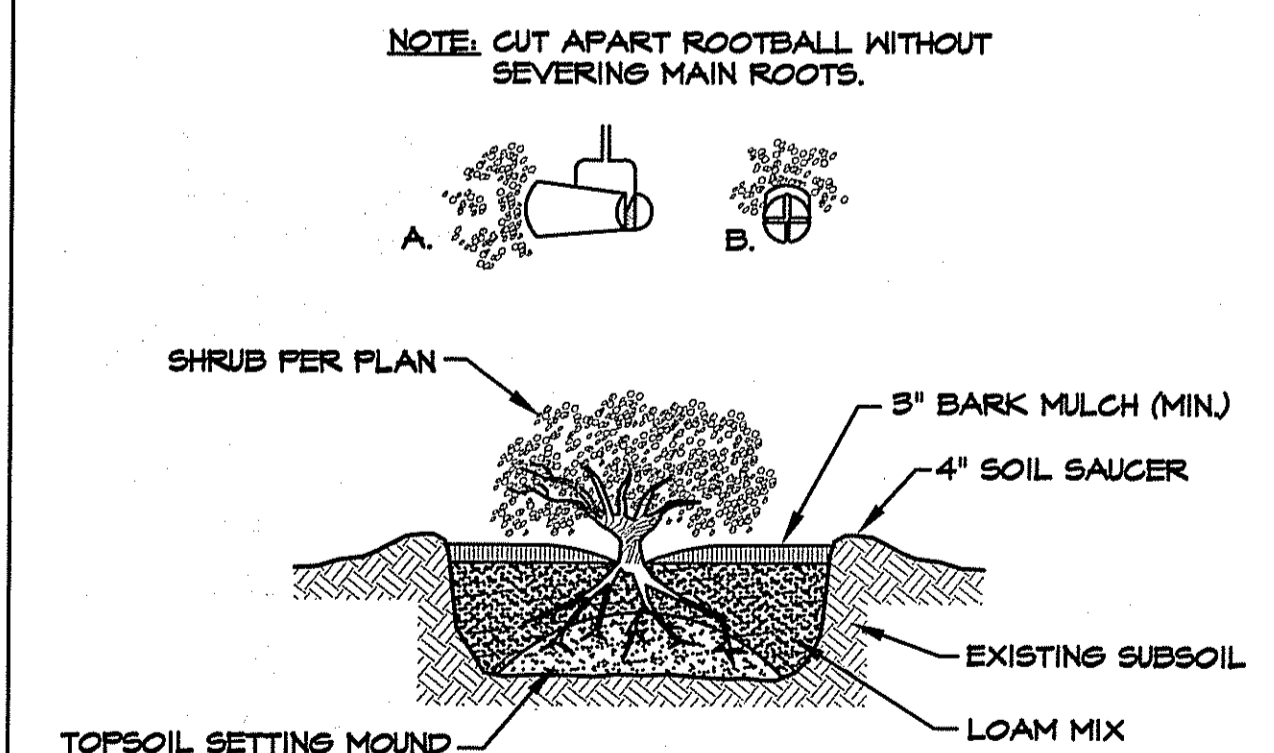
**EVERGREEN TREE PLANTING DETAIL**  
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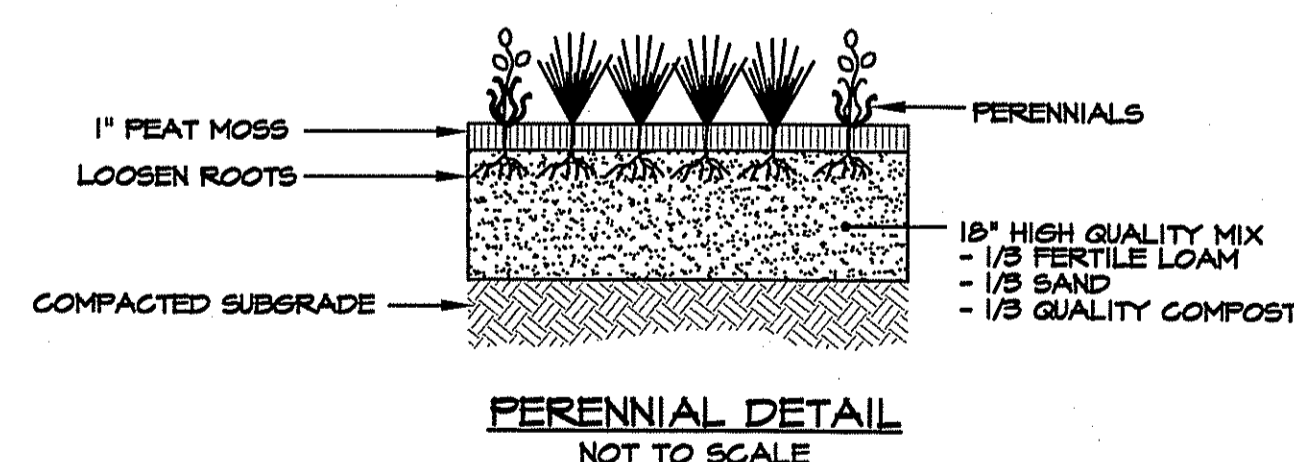
**LOAM-SEED DETAIL**  
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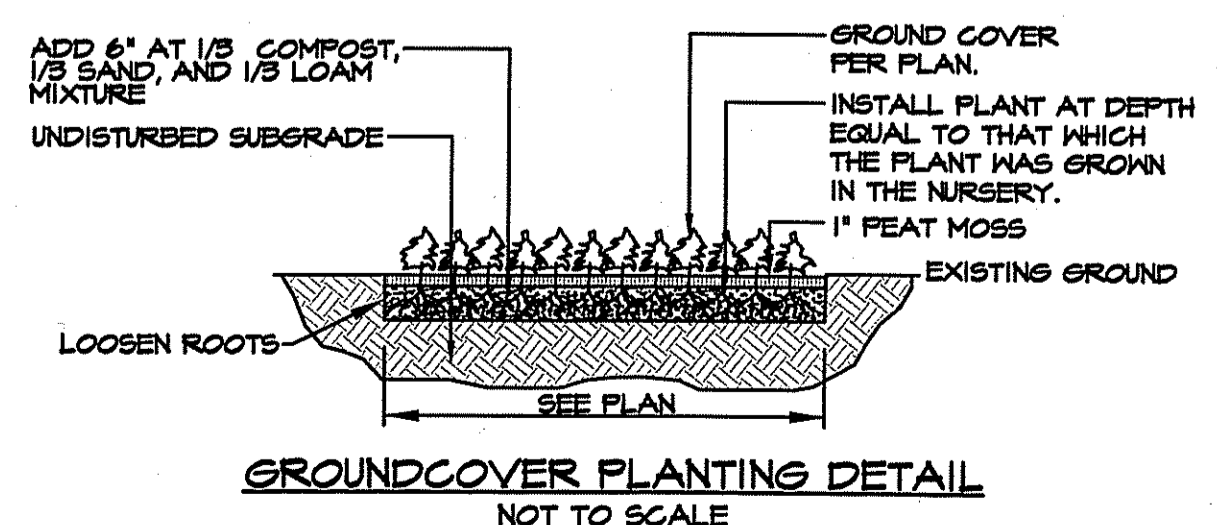
**SHRUB AND GROUND COVER PLANTING DETAIL**  
NOT TO SCALE



**CONTAINER GROWN PLANTING DETAIL**  
NOT TO SCALE



**PERENNIAL DETAIL**  
NOT TO SCALE



**GROUND COVER PLANTING DETAIL**  
NOT TO SCALE

**SEEDING NOTES**

- LOAM SHALL BE SPREAD TO A MINIMUM DEPTH OF 4" OVER ALL AREAS DESIGNATED ON PLANS.
- SHAPE AND SMOOTH THE SURFACE TO THE LINES AND GRADES AS SHOWN ON PLANS.
- FERTILIZE WITH 10-10-10 OR EQUIVALENT ANALYSIS. AT LEAST 40% OF THE FERTILIZER NITROGEN SHALL BE IN A SLOW RELEASE FORM. INCORPORATE THE FERTILIZER INTO THE TOP 3 TO 4 INCHES OF THE PLANTING SOIL. APPLY AT THE RATE OF 8 POUNDS PER 1,000 SQUARE FEET AT SEEDING.
- LIME: SPREAD EVENLY AND WORK INTO THE SOIL DURING PREPARATION OF SEED BED AT THE RATE OF ONE TON PER ACRE. INCORPORATE INTO THE SOIL BY DIGGING OR OTHER APPROVED METHOD. DISTRIBUTE LIME UNIFORMLY AND WORK INTO TOP 4 INCHES OF TOP SOIL (MINIMUM) AND UNIFORMLY BLEND BY DIGGING OR ROTOTILLING.
- APPLICATION OF SEED:
  - RATE OF APPLICATION OF SEED SHALL BE 8 POUNDS PER 1,000 SQUARE FEET OR AS INDICATED ON PLANS.
  - SEEDING SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS, AND ONLY DURING THE FOLLOWING DATES:
    - SPRING SEEDING: MARCH 15 TO MAY 31
    - FALL SEEDING: AUGUST 15 TO OCTOBER 15
  - THE CONTRACTOR SHALL KEEP ALL SEEDED AREAS WATERED AND IN GOOD CONDITION, RESEEDING IF AND WHEN NECESSARY FOR AN 8 WEEK PERIOD OR UNTIL A GOOD, HEALTHY, UNIFORM GROWTH IS ESTABLISHED OVER THE ENTIRE AREA. THE CONTRACTOR SHALL ALSO MAINTAIN THESE AREAS IN AN APPROVED CONDITION UNTIL PROVISIONAL ACCEPTANCE.
  - DURING THIS PERIOD, WATER TURF AS NECESSARY TO MAINTAIN AN ADEQUATE SUPPLY OF MOISTURE WITHIN THE ROOT ZONE - THE EQUIVALENT OF ONE INCH OF ABSORBED WATER PER WEEK THAT IS DELIVERED AT WEEKLY INTERVALS IN THE FORM OF NATURAL RAIN OR IS AUGMENTED AS REQUIRED BY PERIODIC WATERING IS REQUIRED FOR A PERIOD OF ONE (1) YEAR.
  - OVERSEED WHEN NECESSARY TO PROMOTE GRASS GROWTH.
  - REPLANT AREAS VOID OF TURF ONE SQUARE FOOT OR LARGER.
- SEED:
  - SEED ALL AREAS DESIGNATED ON PLAN AS WELL AS ALL DISTURBED EXISTING AREAS WITH THE FOLLOWING SEED MIX.

**SEED MIX #1**  
(SLOPES, MEADOWS AND GENERAL RESTORATION AREA)

TYPE	% BY WEIGHT
CREeping RED FESCUE	70
ASTORIA BENTGRASS	5
BIRDFOOT TREFLOIL	15
PERENNIAL RYE GRASS	10

APPLICATION RATE = 200 lbs. / ACRE

**SEED MIX #2**  
(MOVED AREAS)

TYPE	% BY WEIGHT
NASSAU KENT BLUE	60
JAMESTOWN CHEMNINGS FESCUE	20
PALMER PERENNIAL RYE GRASS	20

APPLICATION RATE = 200 lbs. / ACRE

**SEED MIX #3**  
(DETENTION AREAS)

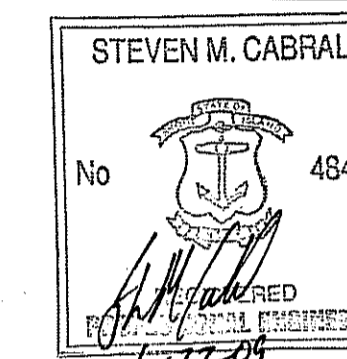
TYPE	% BY WEIGHT
TALL FESCUE	32
RED FESCUE	24
PERENNIAL RYE GRASS	18
WILD FLOWER MIX	15
RED CANARY GRASS	7
REDTOP	4

APPLICATION RATE = 200 lbs. / ACRE

**LANDSCAPE CONSTRUCTION NOTES:**

- LANDSCAPE CONTRACTOR MUST CONTACT THE LANDSCAPE ARCHITECT TWO (2) WEEKS PRIOR TO STARTING WORK.
- CONSTRUCTION CONTRACTOR MUST CONTACT THE LANDSCAPE ARCHITECT ONE (1) WEEK PRIOR TO FINE GRADING.
- FURNISH AND INSTALL ALL PLANTS SHOWN ON THE DRAWINGS SPECIFIED HEREIN, AND IN THE QUANTITIES LISTED ON THE PLANT SCHEDULE. NO SUBSTITUTIONS WILL BE PERMITTED, UNLESS APPROVED BY THE LANDSCAPE ARCHITECT. SEE GENERAL NOTE B SHEET L11.
- LOAM TO BE GOOD QUALITY, FERTILE, FREE OF WEEDS, STICKS, STONES OVER 3/4", AND ROOTS. SPREAD TO A MINIMUM OF 4" OVER ALL PLANTED AREAS AND 12" IN ALL AREAS DESIGNATED FOR PERENNIAL PLANTS.
- NURSERY STOCK SHALL MEET THE STANDARDS OF THE AMERICAN NURSERYMEN AND LANDSCAPE ASSOCIATION AS TO GRADING AND QUALITY.
- ONLY NURSERY-GROWN PLANTS, GROWN IN ACCORDANCE WITH ACCEPTED HORTICULTURAL PRACTICES, AND GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS, WILL BE ACCEPTED.
- SET PLANTS PLUMB AND AT A LEVEL THAT AFTER SETTLEMENT THEY BEAR THE SAME RELATION TO THE SURROUNDING GROUND AS THEY BORE TO THE GROUND FROM WHICH THEY WERE DUG. SETTLE BACKFILL MATERIAL FOR PLANTS, THOROUGHLY AND PROPERLY BY FIRING OR TAMPING. FORM SAUCERS, CAPABLE OF HOLDING WATER ABOUT INDIVIDUAL PLANTS, BY PLACING RIDGES OF PLANTING SOIL AROUND EACH.
- STAKE ALL TREES OVER 5 FEET AS SHOWN ON PLANS. REMOVE STAKES AT THE END OF THE GUARANTEE PERIOD.
- WATERING: WATER ALL PLANTS WITHIN 48 HOURS AFTER PLANTING. IF CONDITIONS WARRANT, AND AS MANY TIMES THEREAFTER TO SUSTAIN HEALTHY CONDITIONS. SATURATE THE SOIL AROUND EACH PLANT THOROUGHLY AT EACH WATERING, WHICH EVER IS REQUIRED BY SITE CONDITIONS, FOR A PERIOD OF ONE (1) YEAR FROM INSTALLATION.
- PRUNING: PRUNE PLANTS, AS DIRECTED BY THE OWNER, AT THE PROJECT SITE BEFORE OR IMMEDIATELY AFTER PLANTING IN ACCORDANCE WITH THE BEST HORTICULTURAL PRACTICE. CUT BROKEN, DEAD OR INJURED BRANCHES IMMEDIATELY ABOVE THE STEM COLLAR ON THE TRUNK OR LIMB. PRUNE ALL BROKEN ROOTS ON THE PLANT SIDE OF THE BREAK. PAINT CUTS OVER 3/4" IN DIAMETER WITH TREE WOUND PAINT. PRUNING SHALL NOT DEFORM OR OTHERWISE DESTROY THE TYPICAL SHAPE OR SYMMETRY OF THE PLANT, AND SHALL NOT REDUCE THE HEIGHT BY MORE THAN ONE-THIRD. DO NOT CUT BACK THE LEADER OF THE PLANT UNLESS DIRECTED BY THE LANDSCAPE ARCHITECT.
- FERTILIZING: FERTILIZE SHRUB BEDS WITH 10-6-4 FERTILIZER BROADCAST AT A RATE OF THREE POUNDS PER 100 SQUARE FEET OF SURFACE AREA. APPLY THE FERTILIZER UNIFORMLY TO THE SURFACE BEDS AND WORK INTO THE UPPER TWO INCHES OF SOIL. FERTILIZE INDIVIDUAL TREES AT A RATE OF ONE AGRIFORM FELLER PER INCH OF TRUNK DIAMETER (FOLLOW MANUFACTURER'S WRITTEN INSTRUCTIONS). APPLY A SECOND APPLICATION OF FERTILIZER TO ALL PLANT ITEMS AT THE SAME SPECIFIED RATES OVER THE MULCH AT THE END OF AN EIGHT WEEK PERIOD.
- MULCHING: WITHIN A 12 HOUR PERIOD AFTER PLANTING, COVER ALL PLANTED AREAS WITH 3" DARK BROWN SHREDDED HARDWOOD BARK MULCH. MULCH SHOULD BE PULLED ONE INCH AWAY FROM PLANT TRUNK OR STEM, AND NOT ALLOWED TO REST DIRECTLY AGAINST THE TRUNK OR STEM. NO RED MULCH WILL BE ACCEPTED.
- GUARANTEE: ALL PLANTS FURNISHED BY THE CONTRACTOR SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER PRELIMINARY INSPECTION AND SHALL BE ALIVE AND IN SATISFACTORY GROWTH AT THE END OF THE GUARANTEE PERIOD. ALL DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED AT ONCE BY THE CONTRACTOR, FREE OF CHARGE.
- ALL TREES ARE TO HAVE ONE MAIN LEADER.

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cel@crossmaneng.com



PROJECT TITLE:

HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT 1-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**LANDSCAPE DETAIL PLAN**

DATE: NOVEMBER 2008  
SCALE: AS SHOWN

DWG. NAME:  
1519-C12.2-LAND2-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

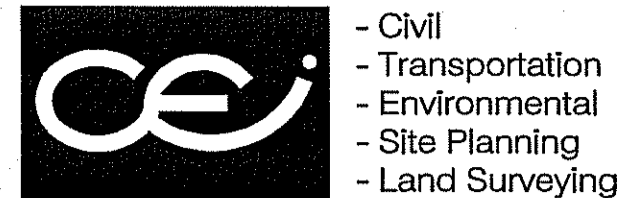
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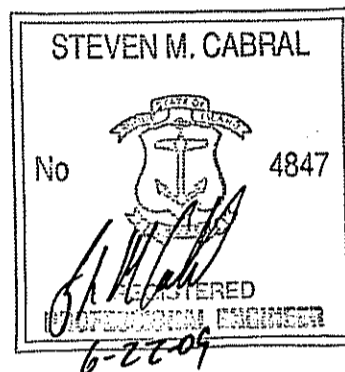
SHEET: 30 OF 41

FINAL PLAN SUBMISSION



**CROSSMAN ENGINEERING, INC.**  
 151 Centerville Road  
 Warwick, Rhode Island 02886  
 Phone: (401) 738-5660 - Fax: (401) 738-6157  
 Email: ce1@crossmaneng.com

**THE GIFFORD DESIGN GROUP, Inc.**  
 LANDSCAPE ARCHITECTURE  
 ENVIRONMENTAL PLANNING  
 4055 MENDON ROAD, CUMBERLAND, RHODE ISLAND 02854  
 PHONE (401) 671-6388 FAX (401) 671-6468



PROJECT TITLE:

HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO

HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:  
**HIGHLAND HILLS LLC**  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**CULVERT AREA LANDSCAPE  
 DETAIL PLAN**

DATE: NOVEMBER 2008 SCALE: AS SHOWN

DWG. NAME:  
 1519-C12.3-LAND3-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

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 ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES

Charles A. Harte

DRAWING NUMBER

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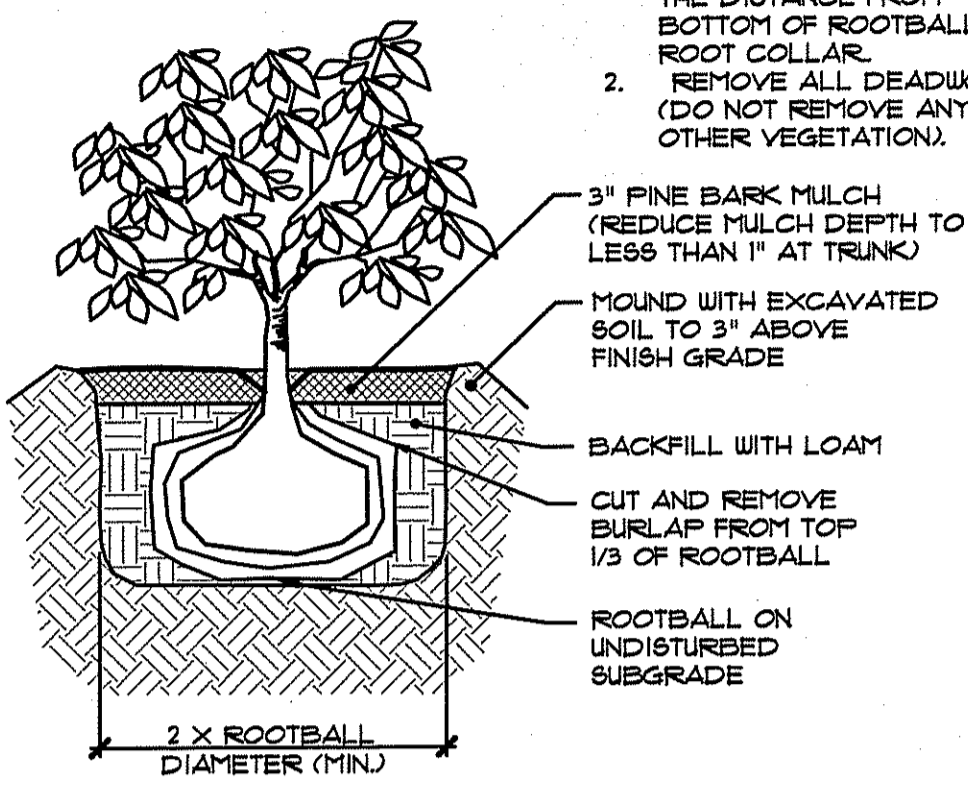
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FINAL PLAN SUBMISSION

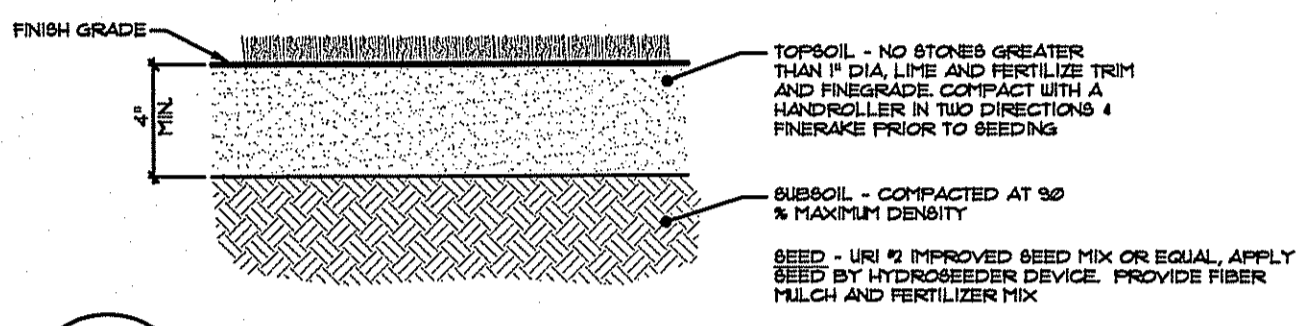
**PLANT SCHEDULE:**

Key	Botanical Name/ Common Name	Size	Qty	Comment
IG'S	ILEX GLABRA 'Shamrock' Shamrock Inkberry	18"-24"	15	B4B
IVF	ILEX VERTICILLATA - Female Winterberry	* 3 (3 Gal.)	18	Container
IVM	ILEX VERTICILLATA - Male Winterberry	* 3 (3 Gal.)	3	Container
KL	KALMIA LATIFOLIA Mountain Laurel	24"-30"	12	B4B
RT	RHODODENDRON MAXIMUM Rosebay Rhododendron	24"-30"	12	B4B

- NOTES:**
- PLANT SHRUB AT DEPTH EQUAL TO 2" LESS THAN THE DISTANCE FROM BOTTOM OF ROOTBALL TO ROOT COLLAR.
  - REMOVE ALL DEADWOOD (DO NOT REMOVE ANY OTHER VEGETATION).



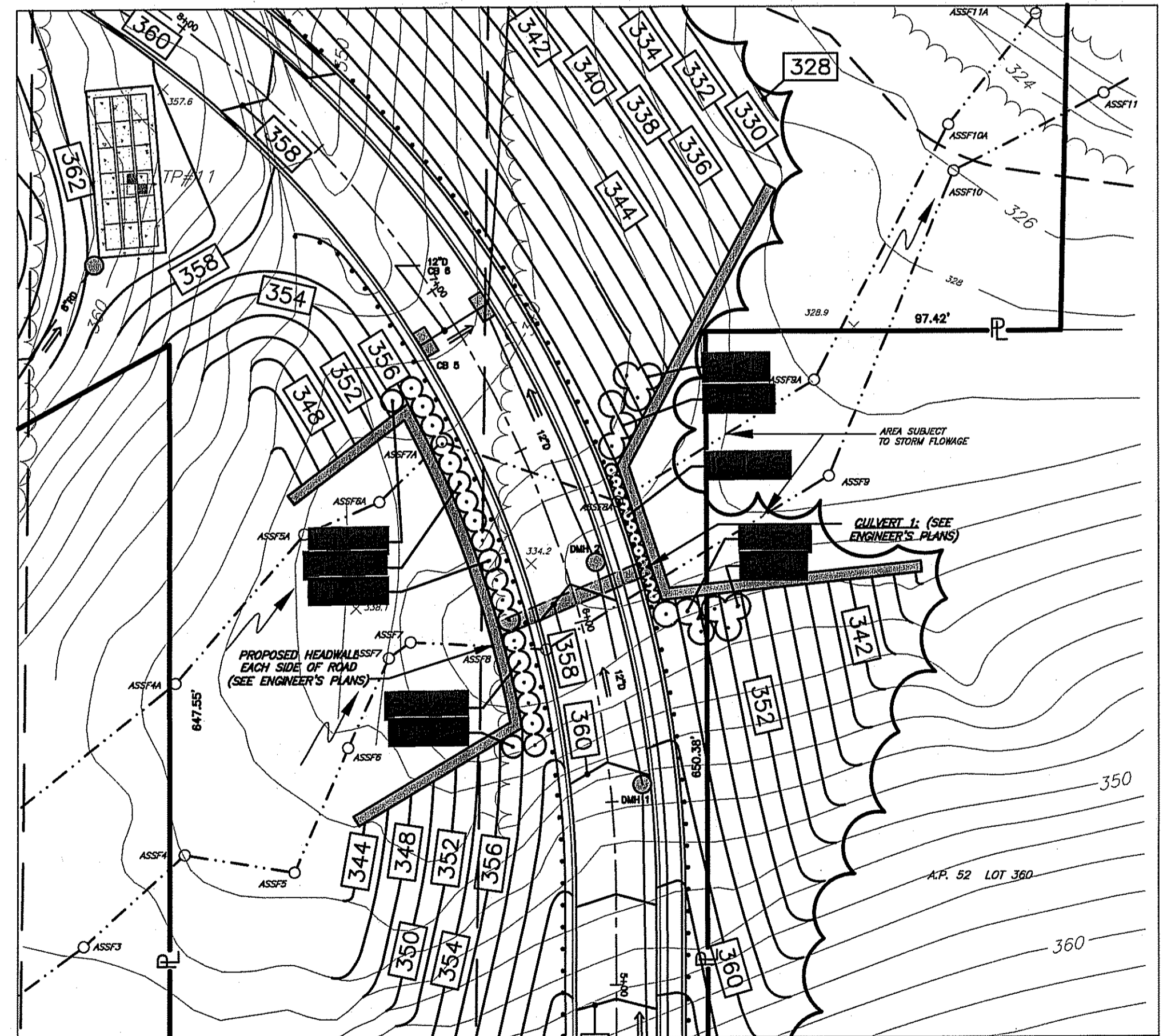
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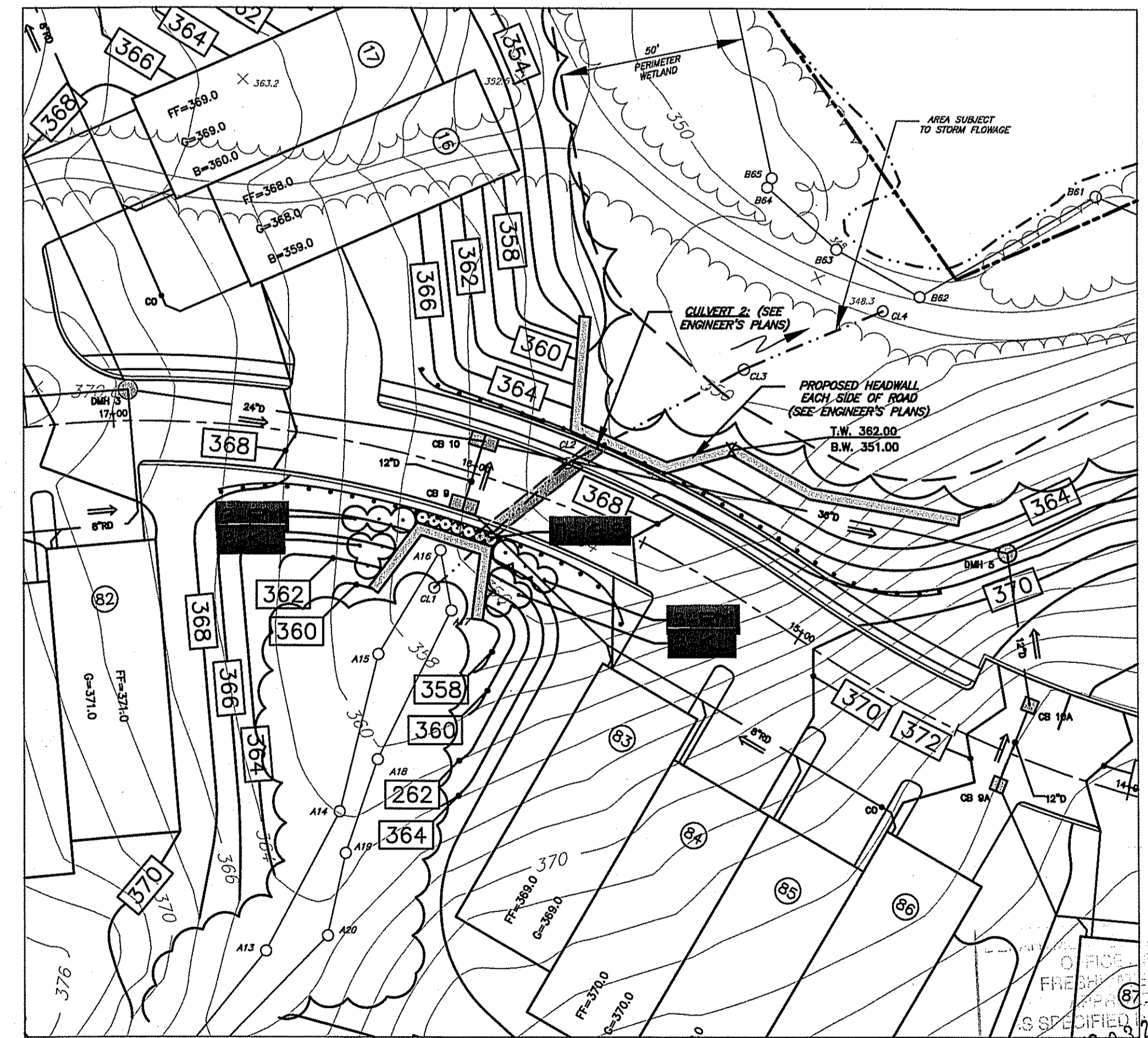
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**LANDSCAPE NOTES:**

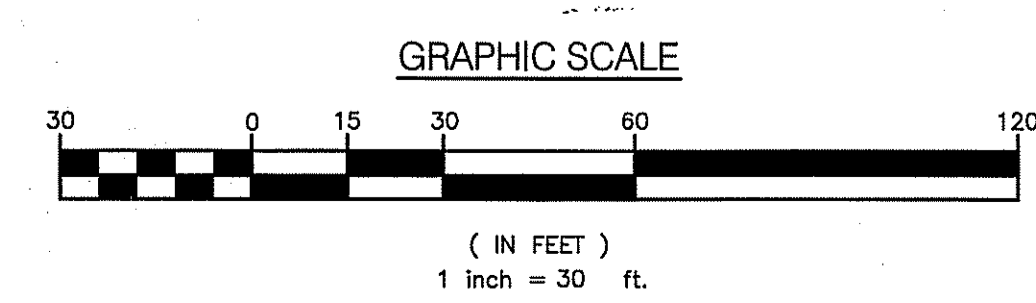
- GUARANTEE THAT, UPON COMPLETION AND FINAL ACCEPTANCE, LANDSCAPE PLANTINGS CONFORM TO REQUIREMENTS OF CONTRACT DOCUMENTS. PROVIDE A WARRANTY FOR TREE PLANTINGS FOR A MINIMUM OF ONE (1) YEAR, INCLUDING ONE (1) CONTINUOUS GROWING SEASON. COMMENCE WARRANTY ON DATE IDENTIFIED IN THE 'CERTIFICATE OF FINAL COMPLETION'. REPLACEMENTS, PLANTS OF SAME SIZE AND SPECIES AS SPECIFIED, PLANTED IN THE NEXT GROWING SEASON, WITH NEW WARRANTY AND EXTENDED MAINTENANCE SERVICE COMMENCING ON THE DATE OF REPLACEMENT.
- PLANT MATERIALS SHALL BE OF SIZE AND CALIPER REQUIRED AND CONFORM TO THE REQUIREMENTS DESCRIBED IN THE LATEST EDITION OF AMERICAN STANDARD FOR NURSERY STOCK, PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
- PLANTS OF OTHER KINDS THAN THOSE NAMED IN THE PLANT SCHEDULE SHALL NOT BE ACCEPTED WITHOUT APPROVAL. REPLACEMENT PLANTS LARGER IN SIZE THAN EXISTING MAY BE USED IF APPROVED BY THE A/E, PROVIDED USE OF LARGER PLANTS DOES NOT INCREASE CONTRACT PRICE.
- A PROFESSIONAL HORTICULTURIST/NURSERYMAN SHALL BE CONSULTED TO DETERMINE THE PROPER TIME TO MOVE AND INSTALL PLANT MATERIAL SO THAT STRESS TO THE PLANT IS MINIMIZED. PLANTING OF DECIDUOUS MATERIAL MAY BE CONTINUED DURING WINTER MONTHS PROVIDED THERE IS NO FROST IN THE GROUND AND FROST-FREE TOPSOIL. PLANTING MIXTURES ARE USED.
- UNLESS OTHERWISE APPROVED BY THE A/E, ALL PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES AND SHALL HAVE BEEN GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS.
- SET PLANTS PLUMB AND AT SUCH A LEVEL THAT AFTER SETTLEMENT THEY BEAR THE SAME RELATION TO THE SURROUNDING GROUND AS THEY BORE TO THE GROUND FROM WHICH THEY WERE DUG. SETTLE BACKFILL MATERIAL FOR PLANTS THOROUGHLY & PROPERLY, BY FIRING OR TAMPING. ACCOMPANY BACKFILLING WITH THOROUGH WATERING UNLESS OTHERWISE APPROVED. FORM SAUCER CAPABLE OF HOLDING WATER AROUND INDIVIDUAL PLANTS.
- FERTILIZE SHRUB BEDS WITH 10-6-4 FERTILIZER AT THE RATE OF 3 POUNDS PER 100 SQUARE FEET OF SURFACE AREA, BROAD CAST. APPLY THE FERTILIZER UNIFORMLY TO THE SURFACE BEDS AND WORK INTO THE UPPER TWO (2) INCHES OF SOIL. FERTILIZE INDIVIDUAL TREES AT THE RATE OF ONE (1) AGRIFORM PELLETT PER INCH OF TREE DIAMETER (FOLLOW MANUFACTURER'S WRITTEN INSTRUCTIONS). APPLY A SECOND APPLICATION OF FERTILIZER TO ALL PLANT ITEMS AT THE SAME SPECIFIED RATES OVER THE MULCH AT THE END OF AN EIGHT WEEK PERIOD.
- CONTAINER GROWN MATERIALS: REMOVE PLANT FROM CONTAINER AND "BUTTERFLY" ROOT BALL OR OTHERWISE SPREAD OUT ROOTS ON SETTING MOUND. BACKFILL SHALL BE SIFTED THROUGH THEM AND SOLIDLY FIRMED.
- AFTER PLANTING PRUNE ONLY BROKEN OR DEFORMED BRANCHES AND IN SUCH MANNER AS TO PRESERVE NATURAL CHARACTER OF PLANT.
- MULCH SHALL BE APPLIED A MINIMUM OF THREE (3) INCHES IN DEPTH IN ALL PLANTING BEDS, AS INDICATED ON THE DRAWINGS.
- THE PLANTS SHALL BE WATERED IMMEDIATELY FOLLOWING PLANTING, PREFERABLY WHEN TWO THIRDS OF THE BACKFILL HAS BEEN PLACED & ALL AIR POCKETS ARE REMOVED AND THE PLANT PROPERLY SET. ADDITIONAL WATERING SHALL BE MADE AT LEAST ONCE EVERY THREE (3) WEEKS UNLESS OTHERWISE DIRECTED UNTIL FINAL ACCEPTANCE OF THE PLANT MATERIAL.
- INSTALL "UTE MESH" EROSION CONTROL FABRIC WHERE FINAL GRADES ARE GREATER THAN 3:1 (33%) PER MANUFACTURER'S INSTRUCTIONS.
- UNLESS OTHERWISE SPECIFIED, CONTRACTOR TO LOAM AND SEED ALL DISTURBED AREAS.
- SEEDING NOTE: USE UNIVERSITY OF RHODE ISLAND NO. 2 IMPROVED SEED MIX OR EQUAL.
- LANDSCAPE ESTABLISHMENT AND MAINTENANCE NOTE: CONTRACTOR SHALL ENSURE THAT ALL LAWN AREAS AND PLANTINGS ARE FULLY ESTABLISHED AND ACCEPTABLE TO THE OWNER'S REPRESENTATIVE PRIOR TO RELINQUISHING THEIR RESPONSIBILITIES FOR MAINTENANCE OF THESE AREAS.



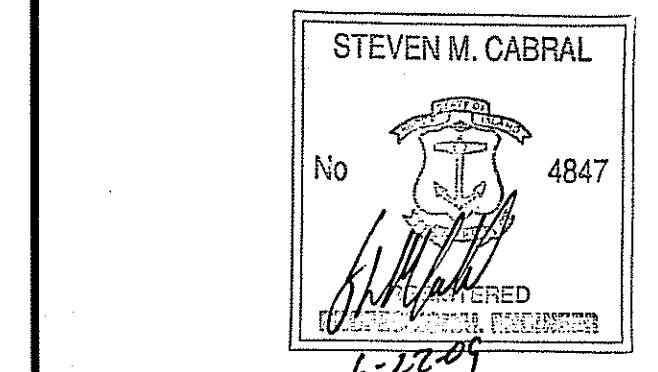
**CULVERT 1 PLANTING**



**CULVERT 2 PLANTING**



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PROJECT TITLE:

HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

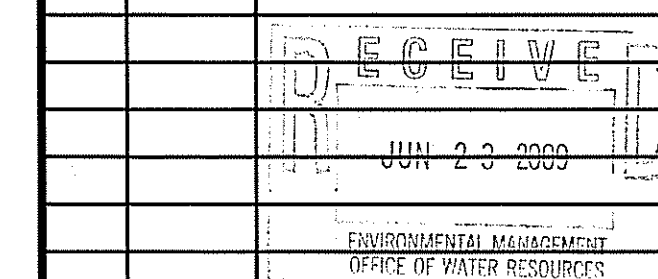
PREPARED FOR:  
 HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:  
 MISCELLANEOUS DETAILS - 1

DATE: NOVEMBER 2008 SCALE: AS NOTED

DWG. NAME: 1519-C13.1-DET1-REV4.dwg

NO.	DATE	REVISION
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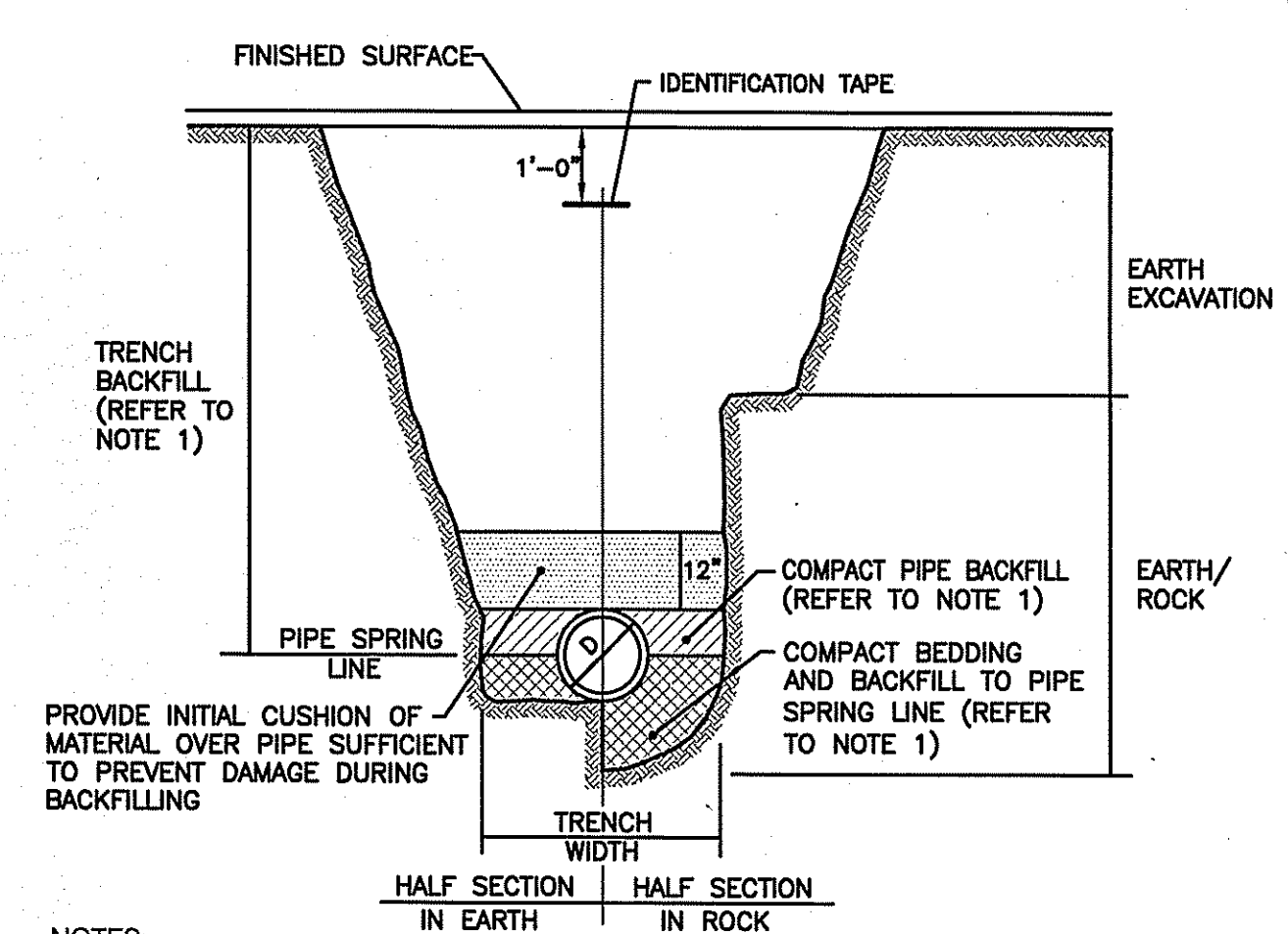


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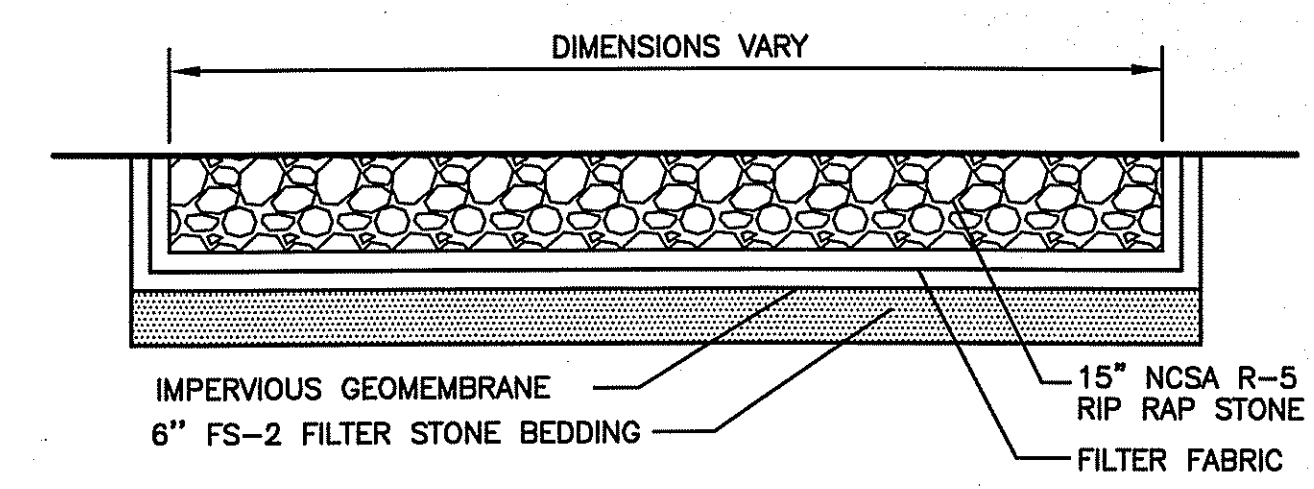
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FINAL PLAN SUBMISSION

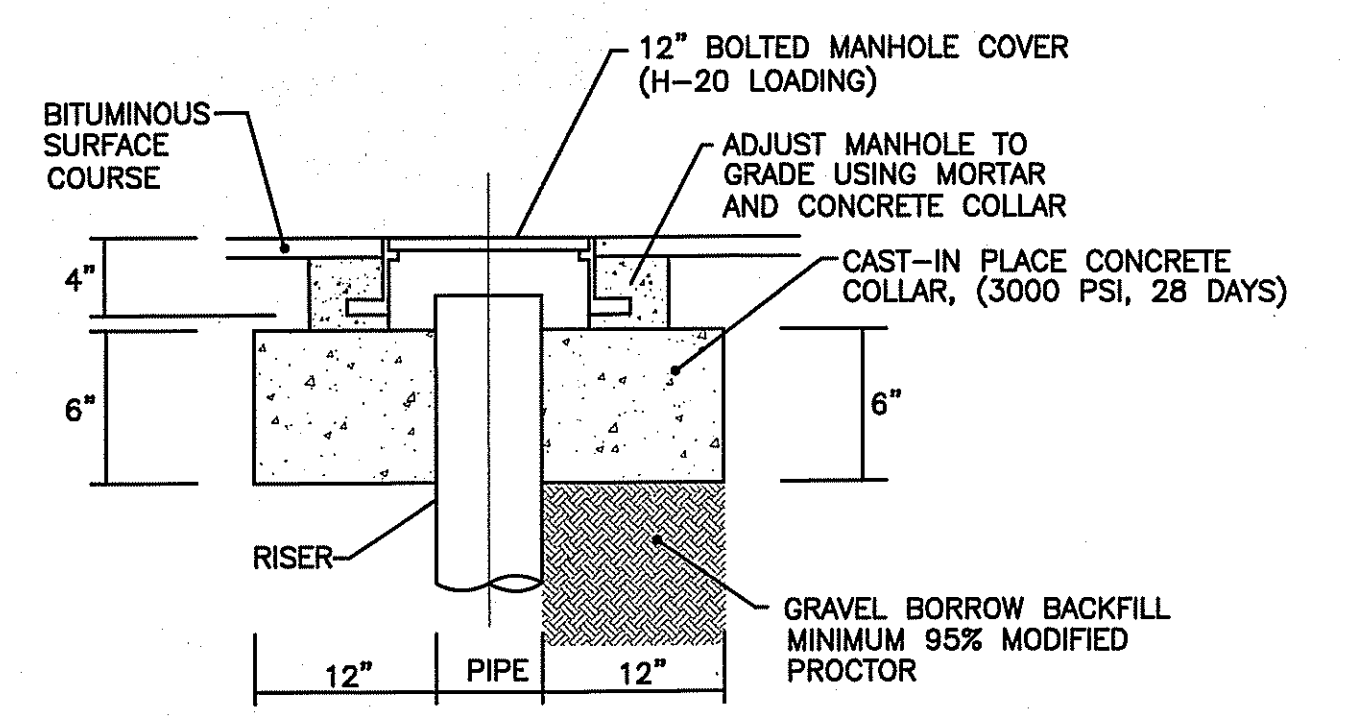


NOTES:  
 1. PIPE BEDDING AND BACKFILL TO SPRING LINE SHALL CONSIST OF CRUSHED STONE-3/4" MINUS. PIPE BACKFILL SHALL CONSIST OF CRUSHED STONE (WRAPPED IN FILTER FABRIC) OR GRAVEL (3" MINUS, WITH SIEVE ANALYSIS APPROVED BY ENGINEER), OR OTHER APPROVED MATERIAL. TRENCH BACKFILL SHALL CONSIST OF SUITABLE EXCAVATED MATERIAL OR OTHER APPROVED MATERIAL. ALL BEDDING/BACKFILL TO BE COMPACTED TO 95% DRY DENSITY, MODIFIED PROCTOR METHOD.  
 2. ALL TRENCH EXCAVATION AND ANY SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES AND OSHA REGULATIONS.  
 3. MINIMUM TRENCH WIDTH SHALL BE OUTSIDE DIAMETER OF PIPE AT BELL PLUS 12". MAXIMUM TRENCH WIDTH SHALL BE OUTSIDE DIAMETER OF PIPE AT BELL PLUS 24".

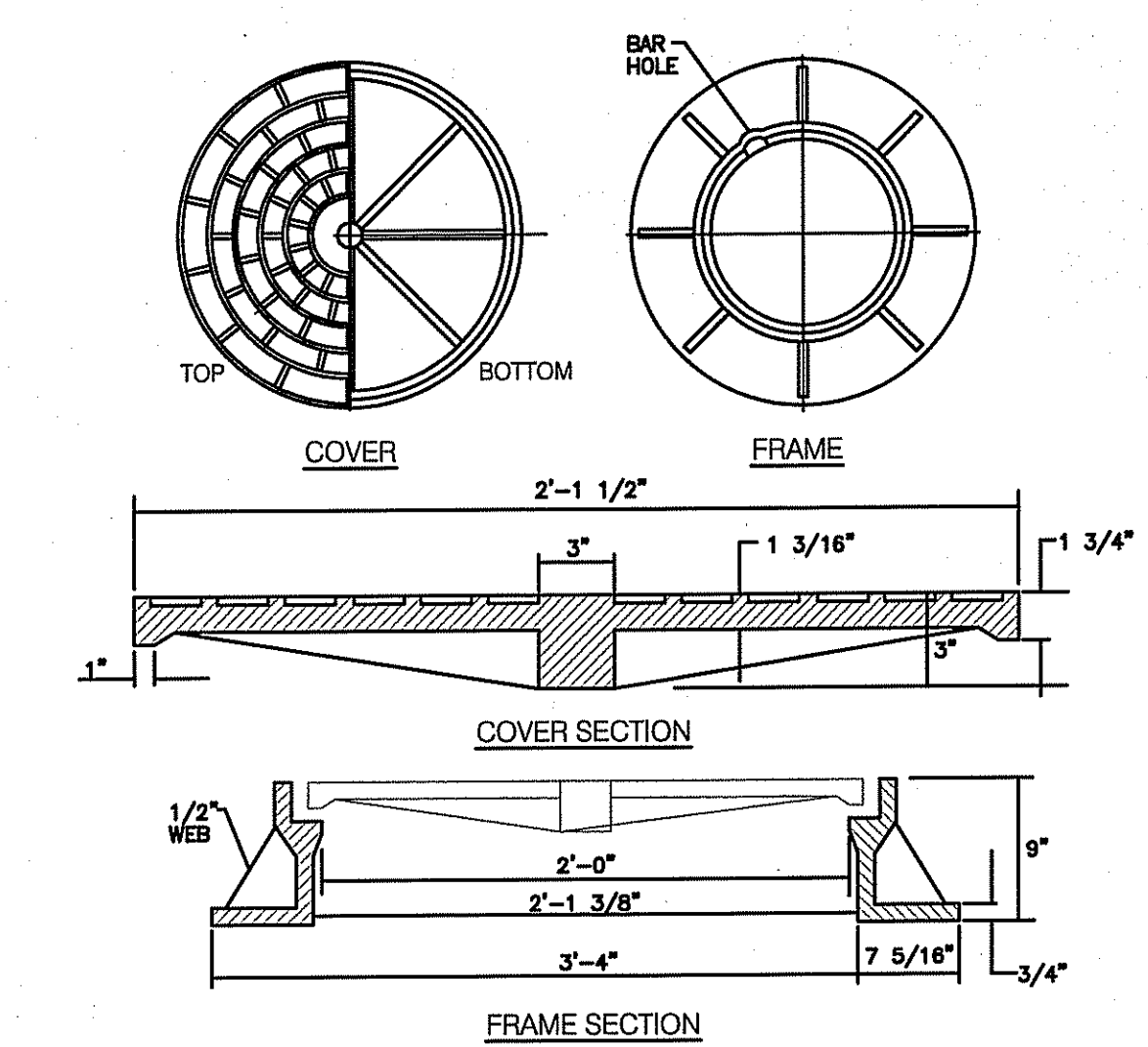
TRENCH DETAIL  
 NOT TO SCALE



TYPICAL SECTION RIP RAP OUTLET PROTECTION  
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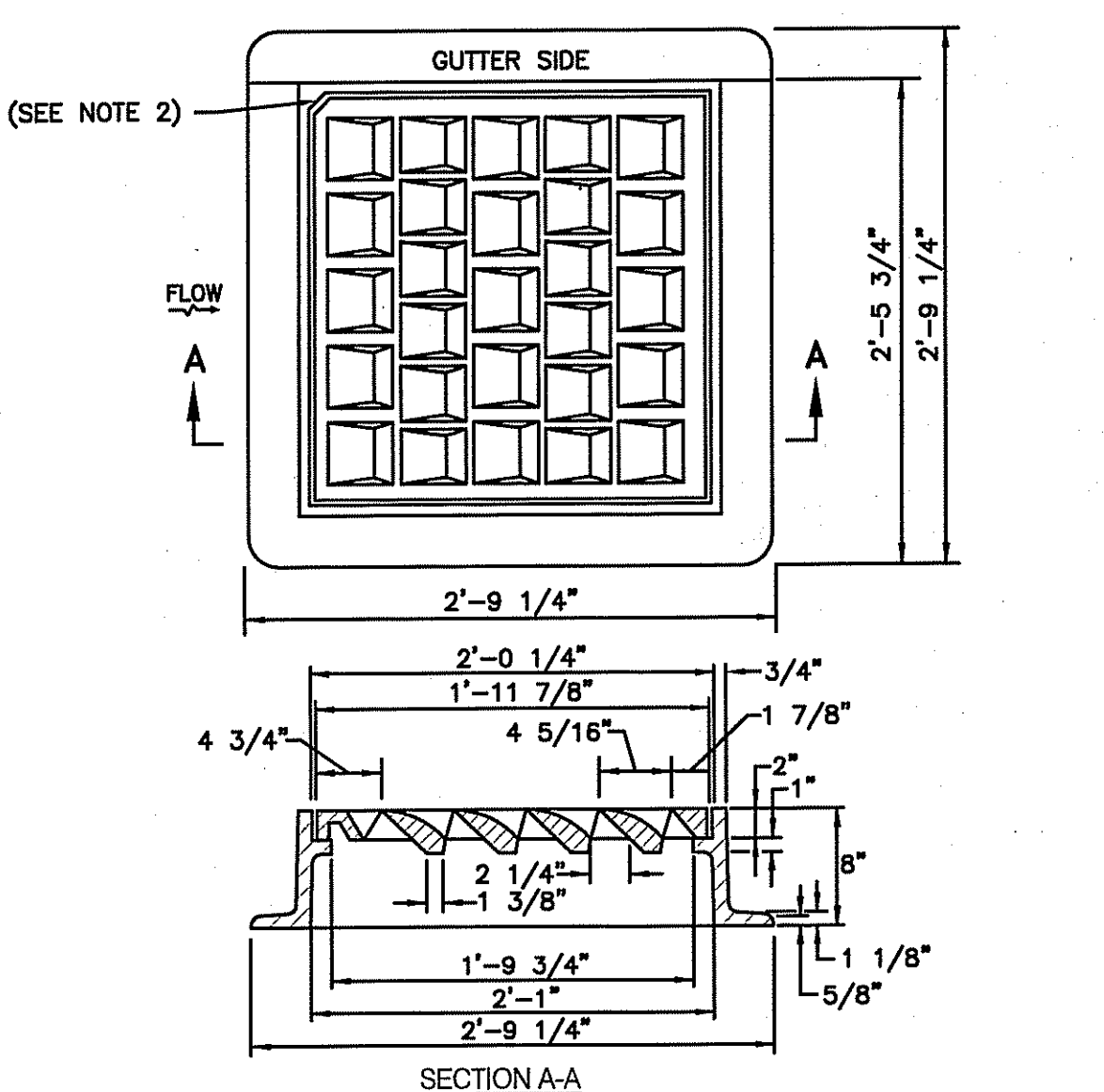


STORM DRAIN CLEAN-OUT DETAIL  
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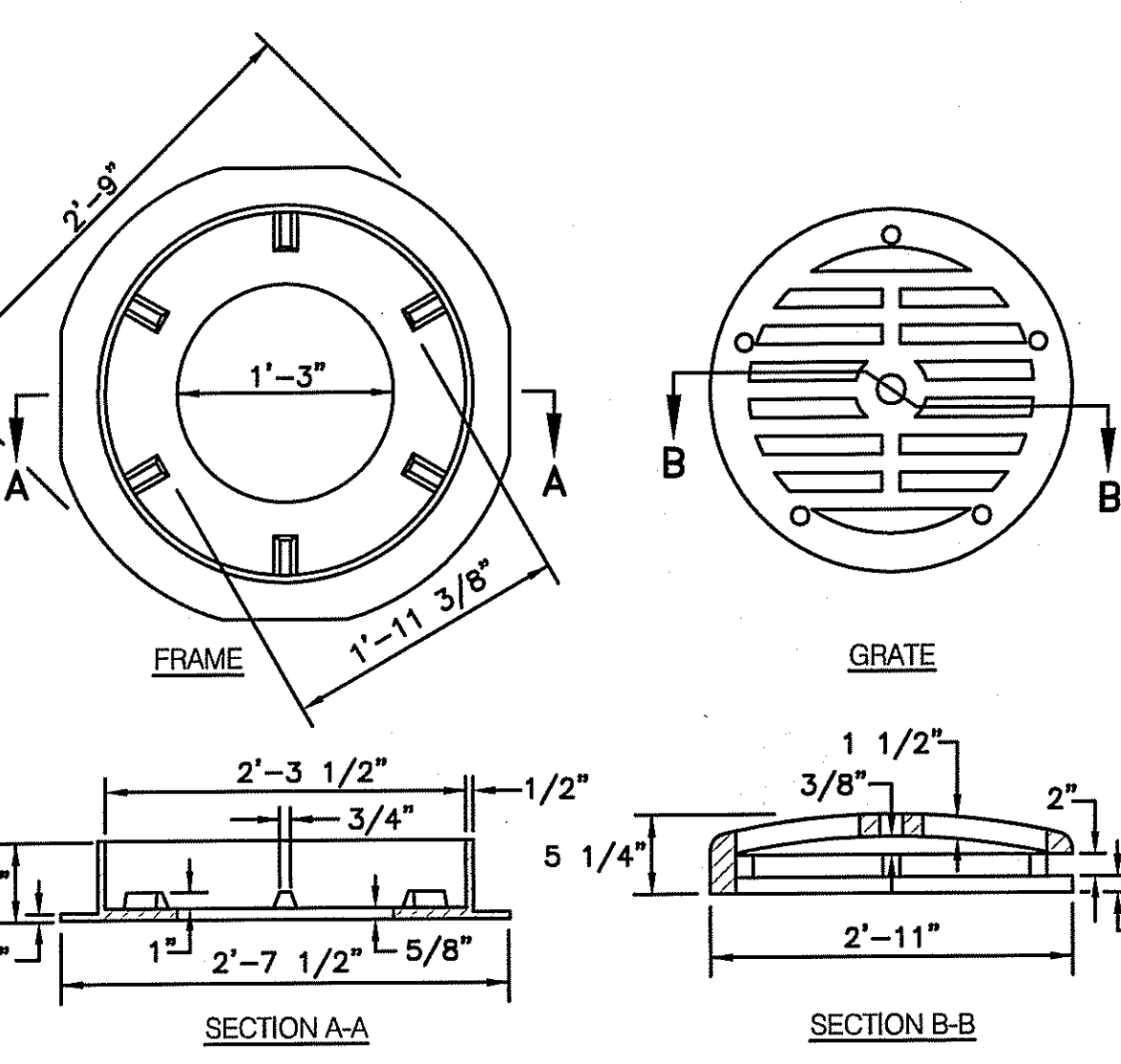
NOTES:  
 1. FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARDS.  
 2. FRAME AND COVER SEATS MUST HAVE MACHINE FINISH.

R.I. STANDARD 6.2.1  
 ROUND MANHOLE FRAME AND COVER (HEAVY DUTY)  
 NOT TO SCALE



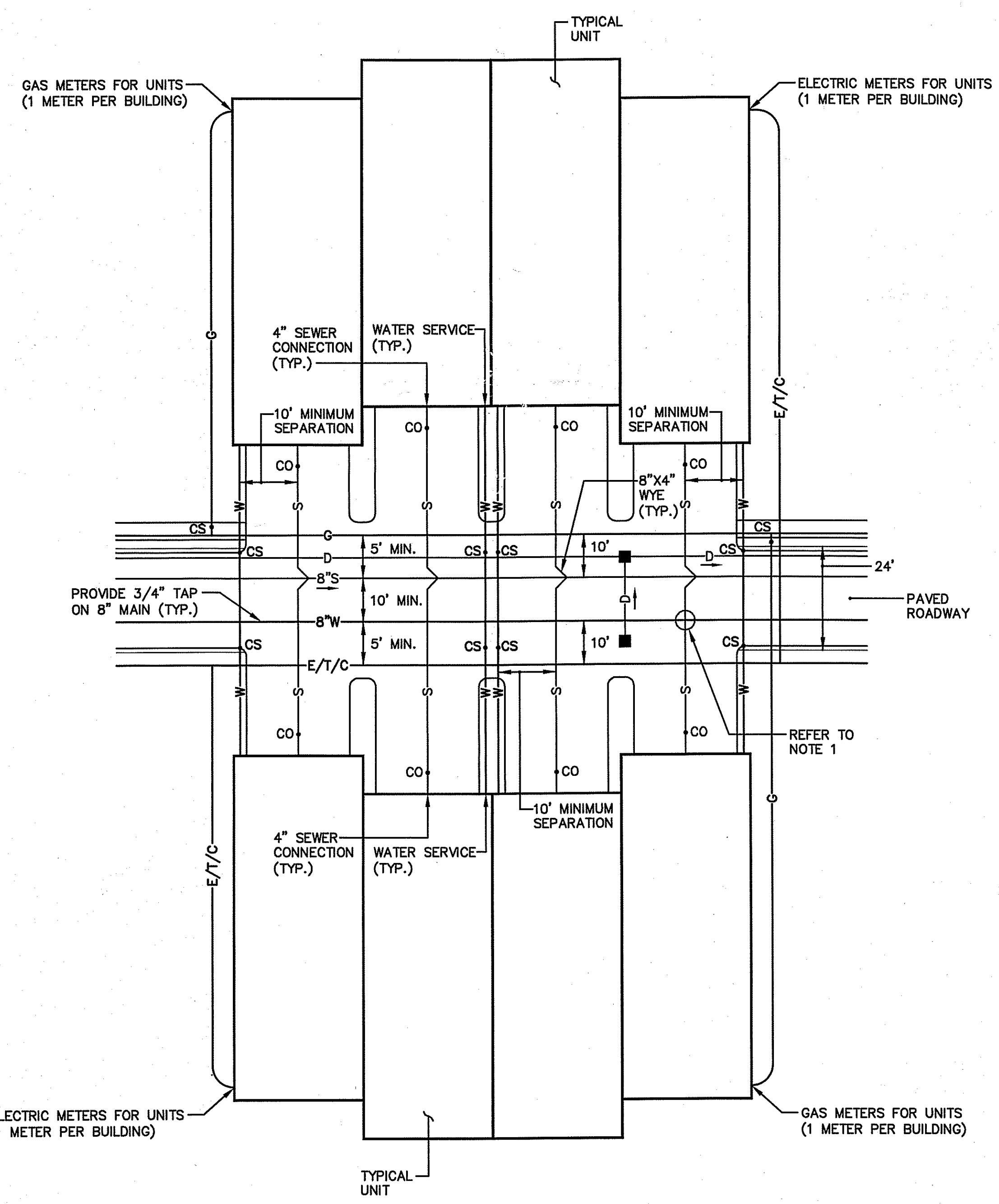
NOTES:  
 1. FRAME AND COVER SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. THIS CORNER LEFT FOR "LEFT" GRATE, DIAGONALLY OPPOSITE CORNER FOR "RIGHT" GRATE TO FIT IN KEYED FRAME.

R.I. STD., 6.3.4  
 HIGH CAPACITY FRAME AND GRATE (BICYCLE SAFE)  
 NOT TO SCALE



NOTE:  
 FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.

R.I. STD., 6.4.0  
 ROUND FRAME AND GRATE  
 NOT TO SCALE



TYPICAL UTILITY CONNECTION TO BUILDING UNITS  
 SCALE: 1" = 20'

NOTES:  
 1. IN LOCATIONS WHERE SEWER SERVICE LATERAL (4" PVC) IS LOCATED LESS THAN 10' (HORIZONTAL) FROM DRAINAGE STRUCTURES, CONTRACTOR SHALL VERIFY A VERTICAL SEPARATION OF 18" PIPE TO PIPE OR PIPE TO STRUCTURE IS MAINTAINED.  
 2. FINAL LOCATIONS FOR UNDERGROUND ELECTRIC, TELEPHONE AND CABLE CONDUITS SHALL BE VERIFIED BY UTILITY COMPANIES.  
 3. ELECTRIC CONDUITS WITHIN PAVEMENT AREAS SHALL BE ENCASED IN CONCRETE, FULL LENGTH.  
 4. TELEPHONE AND CABLE CONDUITS TO BE ENCASED IN CONCRETE UNDER PAVEMENT.  
 5. PRIOR TO CONSTRUCTION, THE ARCHITECT SHALL VERIFY THE SIZE AND LOCATION OF ALL UTILITY SERVICES FOR EACH UNIT.

LEGEND

- CS WATER/GAS CURB STOP VALVE
- CO CLEAN OUT
- WG WATER GATE VALVE
- W— WATER SERVICE
- S— 4" SDR 35 SEWER LATERAL
- D— GAS MAIN/GAS SERVICE
- G— DRAINAGE LINE
- E/T/C— UNDERGROUND ELECTRIC/TELEPHONE/CABLE CONDUITS
- CATCH BASIN

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 03 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. Herbert

S:\1519 - Highland Hills-Cumberland\Current\ACAD Dwg\02-Design Plans\05 Revision 4\1519-C13.1-DET1-REV4.dwg, Model, 6/17/2009 8:16:21 AM, 1:20:05Z

ALTERNATE TOP SLAB (SEE NOTES 10 AND 11)

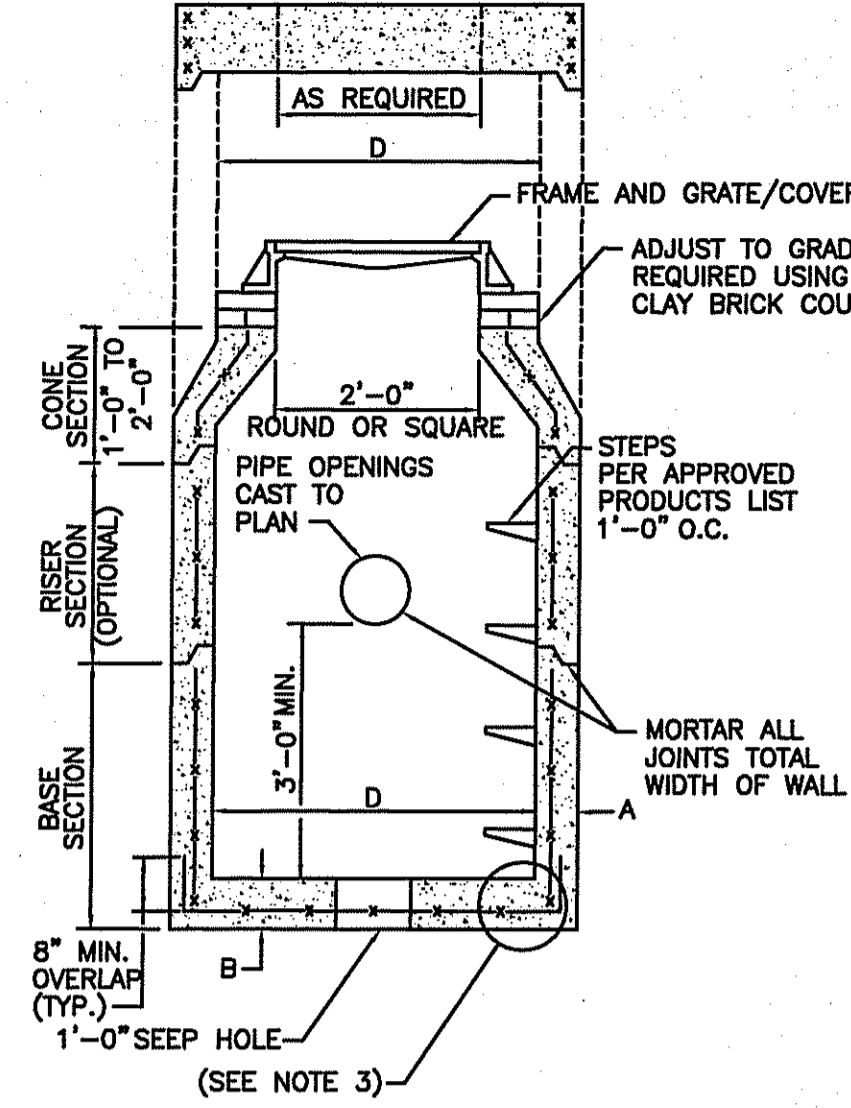
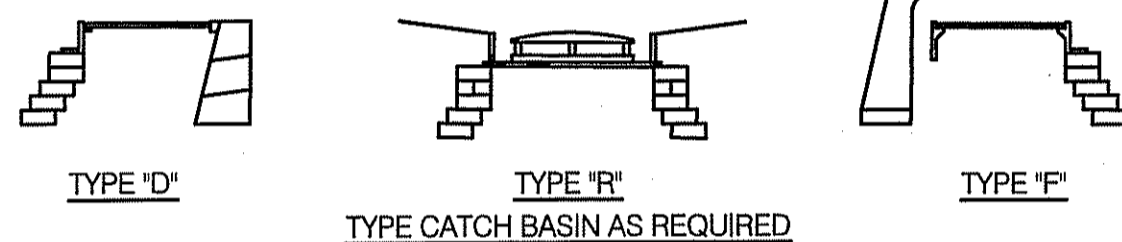


TABLE 1

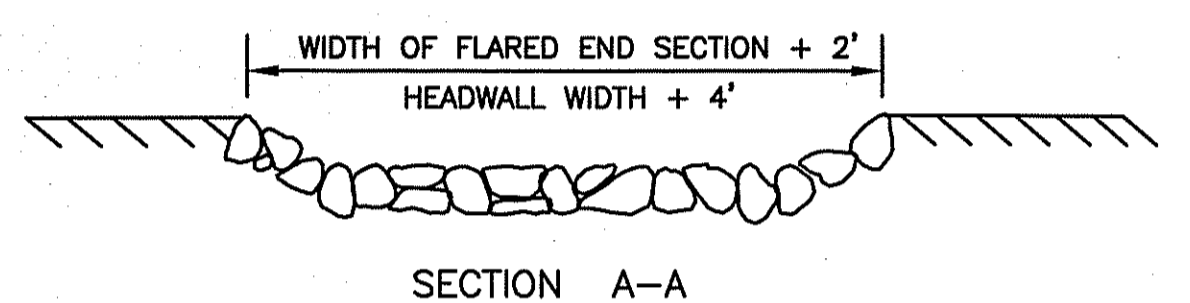
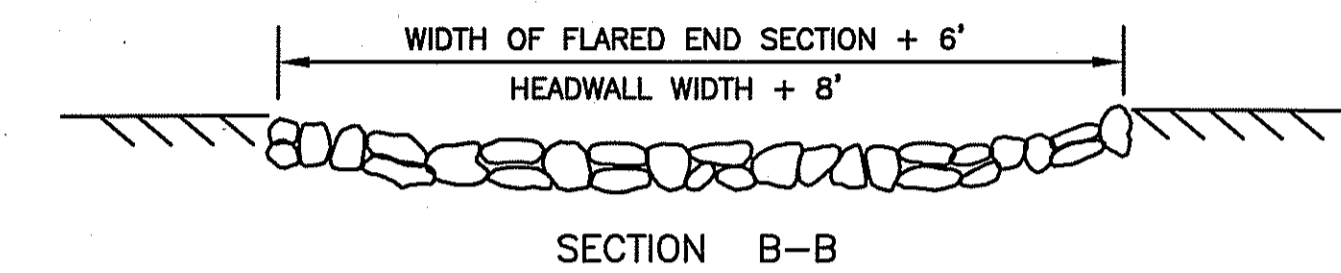
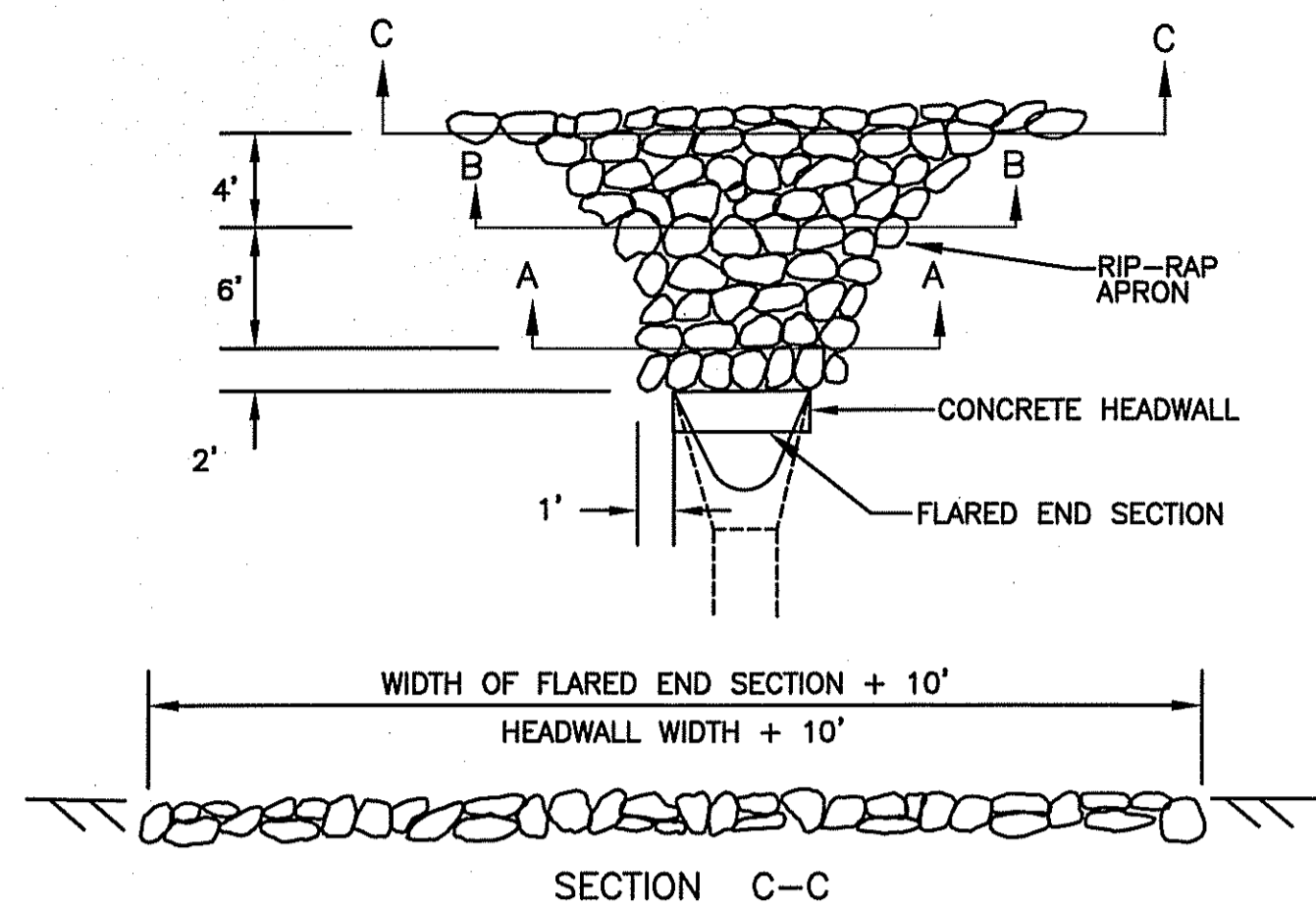
CATCH BASIN DIAMETER (D)	CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED*	
	A	B
4'-0"	5"	6"
5'-0"	6"	7"
6'-0"	7"	8"

\* FOR LONGITUDINAL (VERTICAL STANDING) REINFORCEMENT REFER TO ASTM C478, ITEM 8.1.2



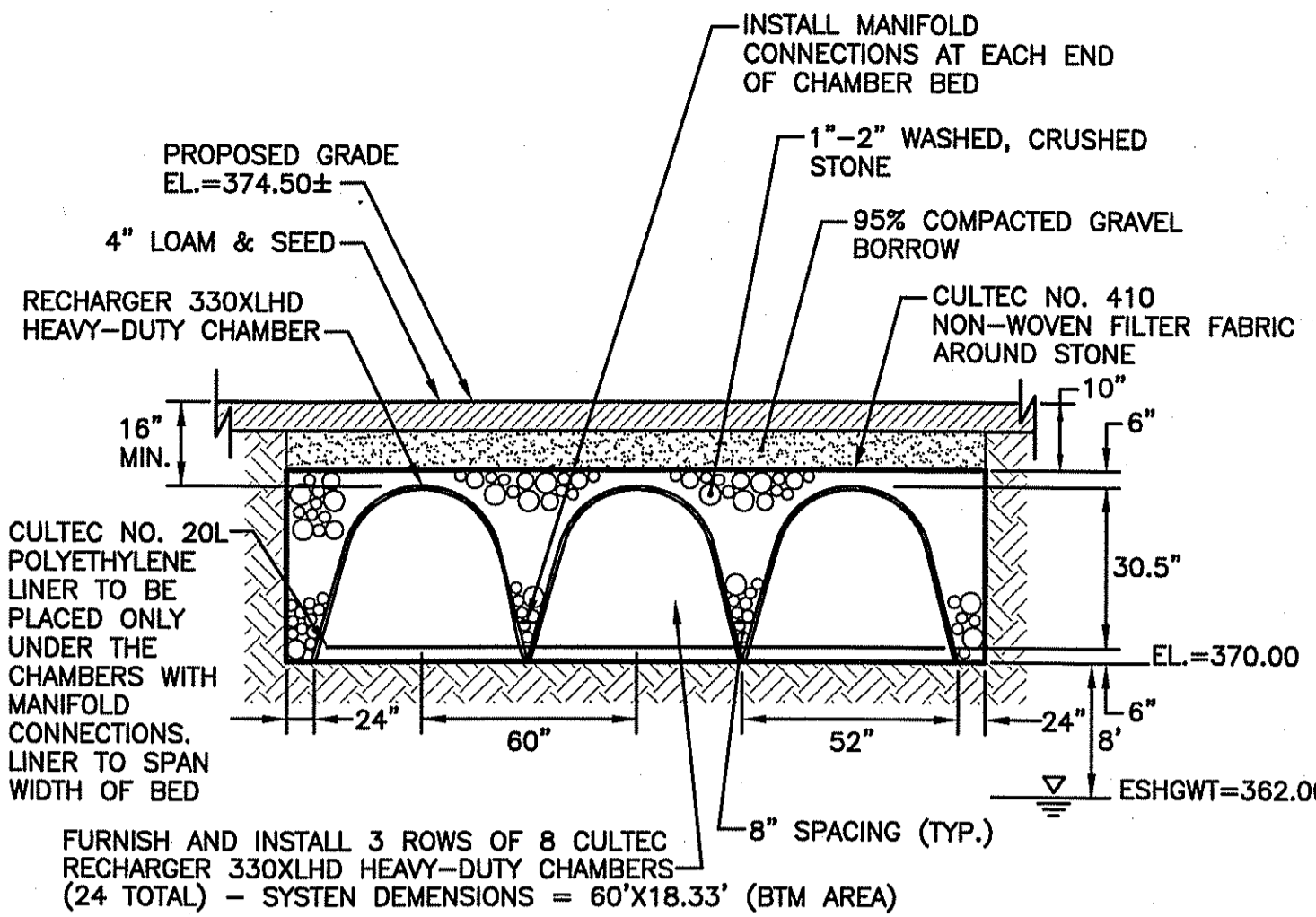
- NOTES:
- SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  - SEE TABLE 1 FOR STEEL REINFORCEMENT REQUIREMENTS.
  - STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
  - STEPS SHALL CONFORM TO STD. 5.3.0 AND SHALL BE INSTALLED AT THE CASTING PLANT.
  - ONE FOUR MONOLITHIC BASE SECTION.
  - ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
  - FOR CATCH BASIN TYPES "D" AND "F" STEPS MUST BE INSTALLED ON THE CURB SIDE OF THE STRUCTURE.
  - THE CENTERLINE OF THE OPENING MUST BE WITHIN 2'-0" FROM THE STEPS.
  - ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 4.7.2).
  - ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  - REFER TO STD. 5.2.0 FOR MAXIMUM PIPE SIZES.

R.I. STANDARD 4.4.0  
PRECAST 4'-0", 5'-0", OR 6'-0" ROUND CATCH BASIN  
NOT TO SCALE



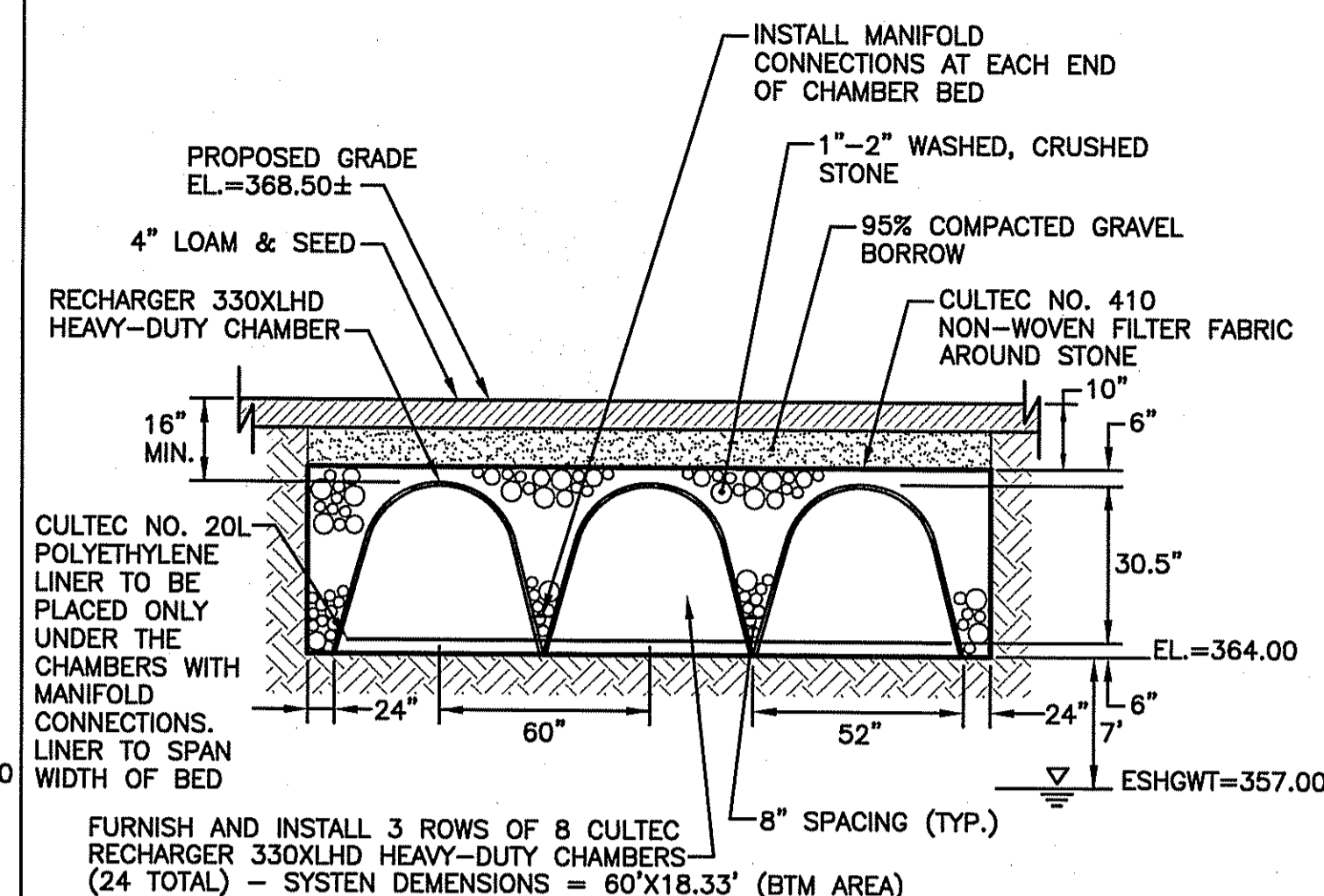
- NOTES:
- UNLESS OTHERWISE SPECIFIED, DUMPED RIP-RAP SHALL BE USED.
  - DIMENSIONS MAY BE MODIFIED BY ENGINEER TO MEET FIELD CONDITIONS.
  - SEE "TYPICAL SECTION RIP RAP OUTLET PROTECTION" DETAIL FOR CONSTRUCTION MATERIAL SPECIFICATIONS.

TYPICAL LAYOUT OF RIP RAP OUTLET PROTECTION AT FLARED END SECTIONS AND CONCRETE HEADWALLS  
NOT TO SCALE



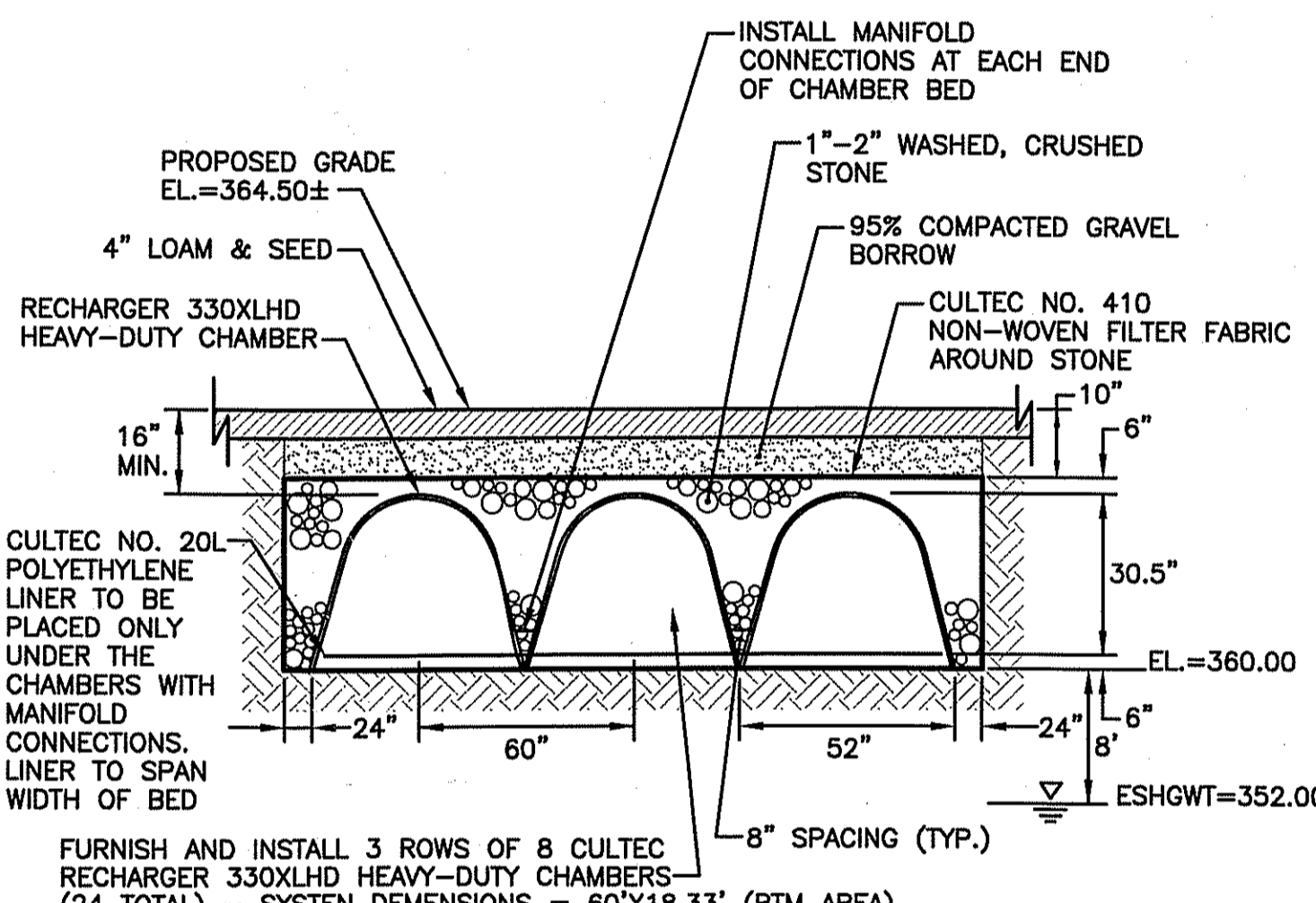
NOTE:  
INSTALLATION SHALL BE IN ACCORDANCE WITH "STORMWATER MANAGEMENT INSTALLATION INSTRUCTIONS FOR: RECHARGER MODEL 330XLHD", PREPARED BY CULTEC, INC., 878 FEDERAL ROAD, P.O. BOX 280, BROOKFIELD, CT 06804, PHONE: 203-775-4416, FAX: 203-775-1462, WEBSITE: WWW.CULTEC.COM.

INFILTRATION SYSTEM I-1 DETAIL  
NOT TO SCALE



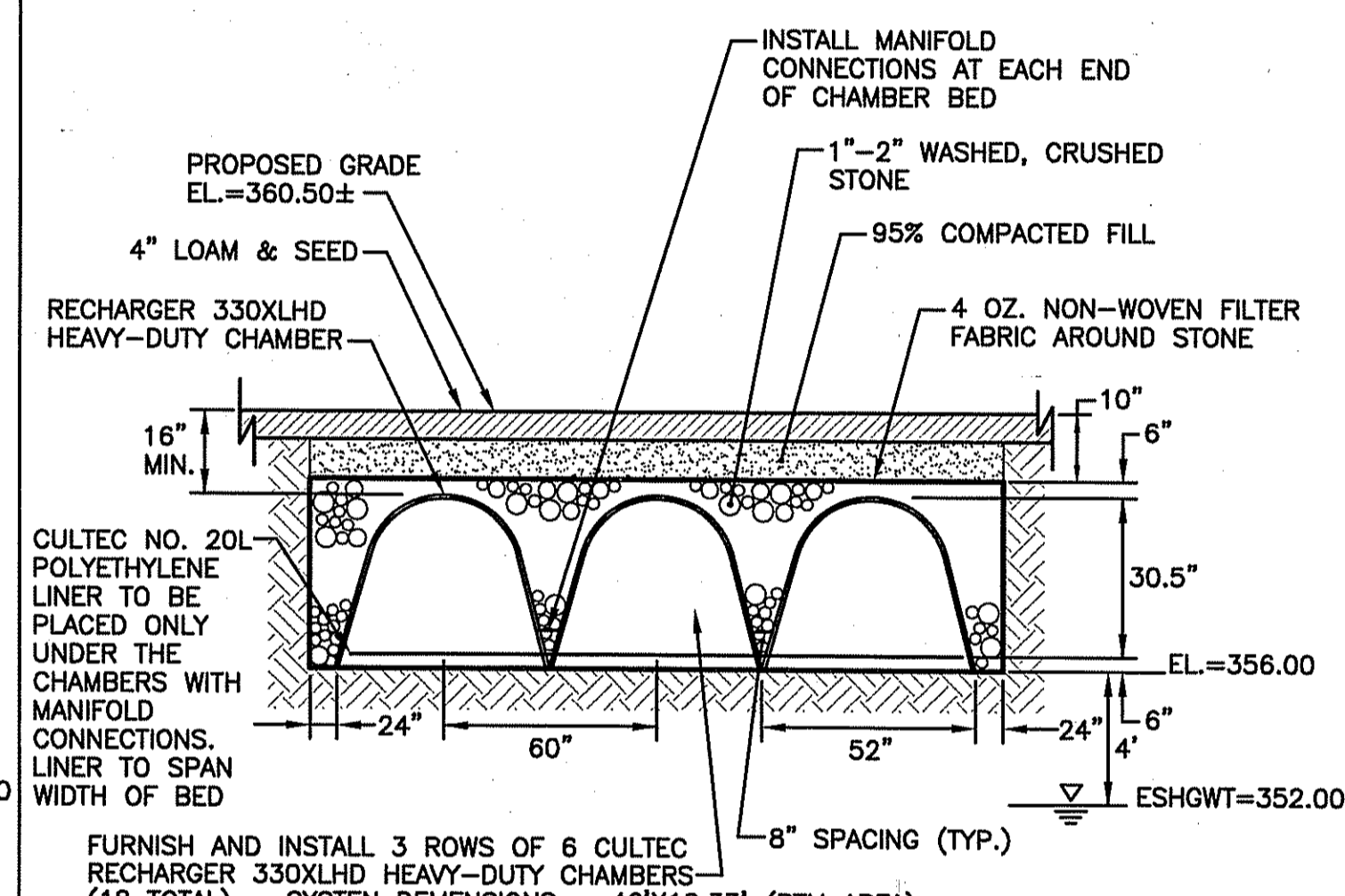
NOTE:  
INSTALLATION SHALL BE IN ACCORDANCE WITH "STORMWATER MANAGEMENT INSTALLATION INSTRUCTIONS FOR: RECHARGER MODEL 330XLHD", PREPARED BY CULTEC, INC., 878 FEDERAL ROAD, P.O. BOX 280, BROOKFIELD, CT 06804, PHONE: 203-775-4416, FAX: 203-775-1462, WEBSITE: WWW.CULTEC.COM.

INFILTRATION SYSTEM I-2 DETAIL  
NOT TO SCALE



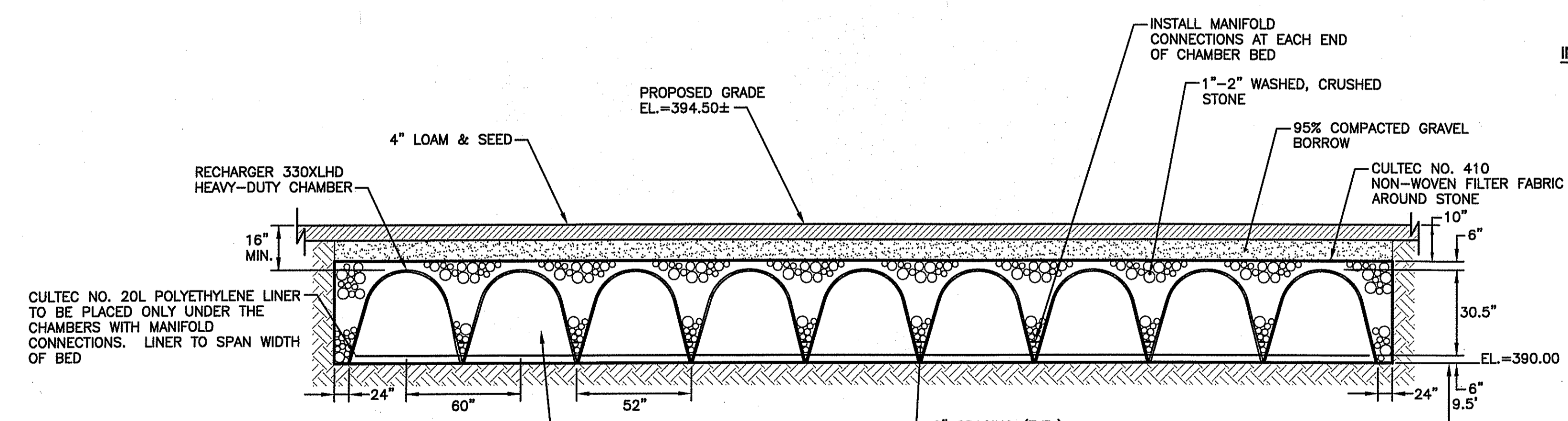
NOTE:  
INSTALLATION SHALL BE IN ACCORDANCE WITH "STORMWATER MANAGEMENT INSTALLATION INSTRUCTIONS FOR: RECHARGER MODEL 330XLHD", PREPARED BY CULTEC, INC., 878 FEDERAL ROAD, P.O. BOX 280, BROOKFIELD, CT 06804, PHONE: 203-775-4416, FAX: 203-775-1462, WEBSITE: WWW.CULTEC.COM.

INFILTRATION SYSTEM I-3 DETAIL  
NOT TO SCALE



NOTE:  
INSTALLATION SHALL BE IN ACCORDANCE WITH "STORMWATER MANAGEMENT INSTALLATION INSTRUCTIONS FOR: RECHARGER MODEL 330XLHD", PREPARED BY CULTEC, INC., 878 FEDERAL ROAD, P.O. BOX 280, BROOKFIELD, CT 06804, PHONE: 203-775-4416, FAX: 203-775-1462, WEBSITE: WWW.CULTEC.COM.

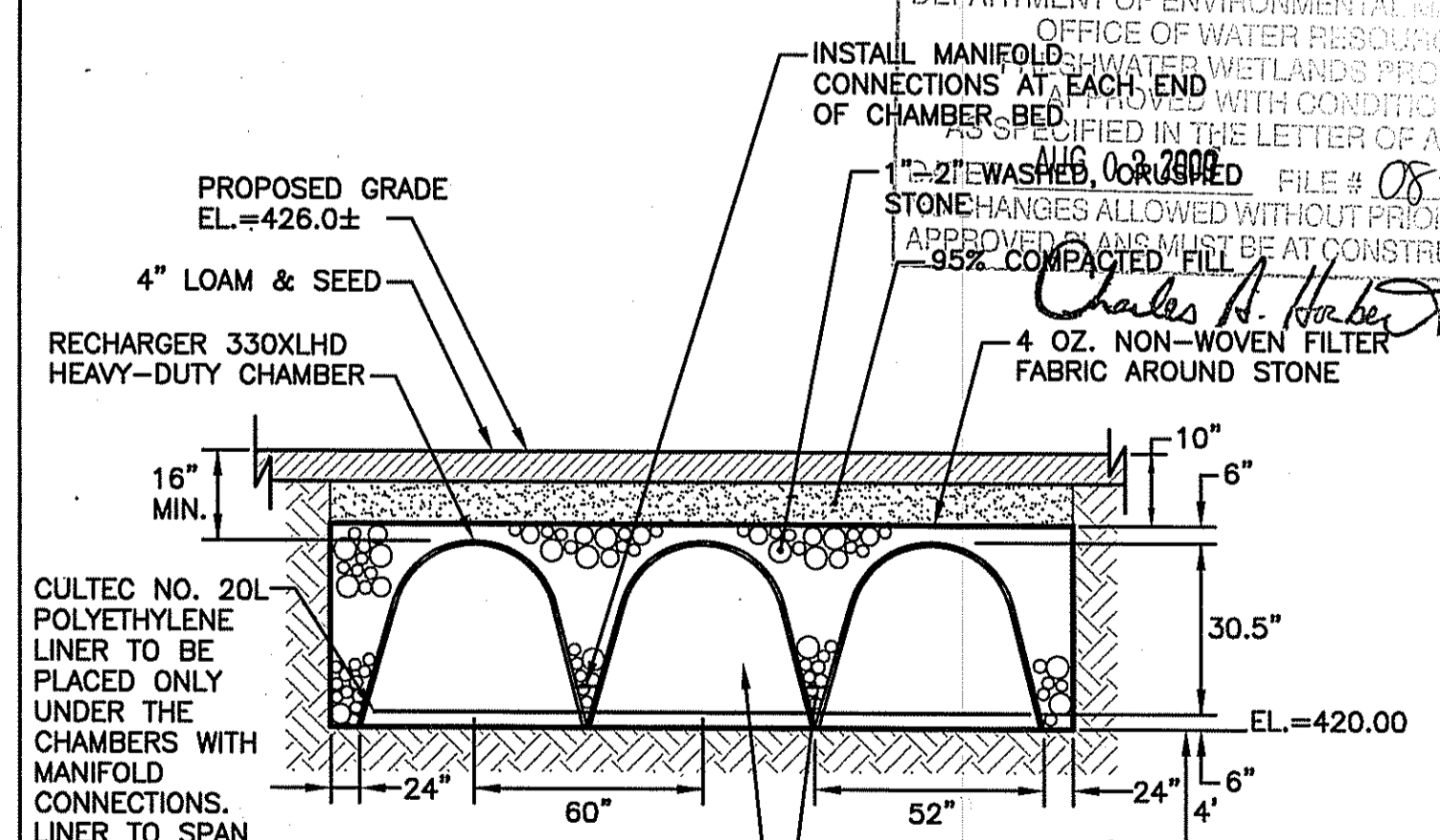
INFILTRATION SYSTEM I-4 DETAIL  
NOT TO SCALE



NOTE:  
INSTALLATION SHALL BE IN ACCORDANCE WITH "STORMWATER MANAGEMENT INSTALLATION INSTRUCTIONS FOR: RECHARGER MODEL 330XLHD", PREPARED BY CULTEC, INC., 878 FEDERAL ROAD, P.O. BOX 280, BROOKFIELD, CT 06804, PHONE: 203-775-4416, FAX: 203-775-1462, WEBSITE: WWW.CULTEC.COM.

INFILTRATION SYSTEM I-5 DETAIL  
NOT TO SCALE

- INFILTRATION SYSTEM NOTES:
- IN AREAS WHERE FILL (BANK RUN GRAVEL) IS REQUIRED UNDER THE SYSTEM, THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE BANK RUN GRAVEL YIELDS A INFILTRATION RATE OF 15 MIN/INCH OR FASTER. THE CONTRACTOR SHALL CONTACT ENGINEER TO CONDUCT INFILTRATION TESTS OF BANK RUN GRAVEL AFTER PLACEMENT TO VERIFY INFILTRATION RATE. TWO INFILTRATION TEST PER EACH SYSTEM SHALL BE CONDUCTED. CONTRACTOR SHALL REPLACE BANK RUN GRAVEL IF INFILTRATION RATE IS SLOWER THAN 15 MIN/INCH AT NO ADDITIONAL COST TO OWNER.
  - THE BANK RUN GRAVEL BELOW THE INFILTRATION SYSTEMS SHALL BE INSTALLED UNDER THE SUPERVISION OF AN ENGINEER TO ENSURE PLACEMENT IS APPROPRIATE FOR STABILITY AND TO ENSURE THAT THE DESIGN INFILTRATION RATE OF 15 MIN/INCH IS MAINTAINED. AFTER PLACEMENT, THE CONTRACTOR SHALL CONTACT ENGINEER TO VERIFY INFILTRATION RATES.



NOTE:  
INSTALLATION SHALL BE IN ACCORDANCE WITH "STORMWATER MANAGEMENT INSTALLATION INSTRUCTIONS FOR: RECHARGER MODEL 330XLHD", PREPARED BY CULTEC, INC., 878 FEDERAL ROAD, P.O. BOX 280, BROOKFIELD, CT 06804, PHONE: 203-775-4416, FAX: 203-775-1462, WEBSITE: WWW.CULTEC.COM.

INFILTRATION SYSTEM I-6 DETAIL  
NOT TO SCALE

STEVEN M. CABRAL  
No. 4847  
Professional Engineer  
State of Rhode Island

PROJECT TITLE:  
  
HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:  
  
HIGHLAND HILLS LLC  
  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**MISCELLANEOUS DETAILS - 2**

DATE: NOVEMBER 2008  
SCALE: AS NOTED

DWG. NAME: 1519-C13.2-DET2-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DRAWING NUMBER  
**C13.2**

SHEET: 33 OF 41

FINAL PLAN SUBMISSION

**SEEDING NOTES**

- LOAM SHALL BE SPREAD TO A MINIMUM DEPTH OF 4" OVER ALL AREAS DESIGNATED ON PLANS.
- SHAPE AND SMOOTH THE SURFACE TO THE LINES AND GRADES AS SHOWN ON PLANS.
- FERTILIZE WITH 10-10-10 OR EQUIVALENT ANALYSIS. AT LEAST 40% OF THE FERTILIZER NITROGEN SHALL BE IN A SLOW RELEASE FORM. INCORPORATE THE FERTILIZER INTO THE TOP 3 TO 4 INCHES OF THE PLANTING SOIL. APPLY AT THE RATE OF 8 POUNDS PER 1,000 SQUARE FEET AT SEEDING.
- LIME: SPREAD EVENLY AND WORK INTO THE SOIL DURING PREPARATION OF SEED BED AT THE RATE OF ONE TON PER ACRE. INCORPORATE INTO THE SOIL BY DIGGING OR OTHER APPROVED METHOD. DISTRIBUTE LIME UNIFORMLY AND WORK INTO TOP 4 INCHES OF TOP SOIL (MINIMUM) AND UNIFORMLY BLEND BY DIGGING OR ROTOTILLING.
- APPLICATION OF SEED:
  - RATE OF APPLICATION OF SEED SHALL BE 8 POUNDS PER 1,000 SQUARE FEET OR AS INDICATED ON PLANS.
  - SEEDING SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS, AND ONLY DURING THE FOLLOWING DATES: SPRING SEEDING: MARCH 15 TO MAY 31  
FALL SEEDING: AUGUST 15 TO OCTOBER 15
  - THE CONTRACTOR SHALL KEEP ALL SEEDED AREAS WATERED AND IN GOOD CONDITION. RESEEDING IF AND WHEN NECESSARY FOR AN 8 WEEK PERIOD OR UNTIL A GOOD, HEALTHY, UNIFORM GROWTH IS ESTABLISHED OVER THE ENTIRE AREA. THE CONTRACTOR SHALL ALSO MAINTAIN THESE AREAS IN AN APPROVED CONDITION UNTIL PROVISIONAL ACCEPTANCE.
  - DURING THIS PERIOD, WATER TURF AS NECESSARY TO MAINTAIN AN ADEQUATE SUPPLY OF MOISTURE WITHIN THE ROOT ZONE - THE EQUIVALENT OF ONE INCH OF ABSORBED WATER PER WEEK THAT IS DELIVERED AT WEEKLY INTERVALS IN THE FORM OF NATURAL RAIN OR IS AUGMENTED AS REQUIRED BY PERIODIC WATERING IS REQUIRED FOR A PERIOD OF ONE (1) YEAR.
  - OVERSEED WHEN NECESSARY TO PROMOTE GRASS GROWTH.
  - REPLANT AREAS VOID OF TURF ONE SQUARE FOOT OR LARGER.
- SEED:
  - SEED ALL AREAS DESIGNATED ON PLAN AS WELL AS ALL DISTURBED EXISTING AREAS WITH THE FOLLOWING SEED MIX:

**SEED MIX #1**

(SLOPES AND GENERAL RESTORATION AREA)

TYPE	% BY WEIGHT
CREeping RED FESCUE	70
ASTORIA BENTGRASS	5
BIRDFOOT TREFOIL	15
PERENNIAL RYE GRASS	10

APPLICATION RATE = 200 lbs. / ACRE

**SEED MIX #2**

(MOWED AREAS)

TYPE	% BY WEIGHT
NASSAU KENT BLUE	60
JAMESTOWN CHEWINGS FESCUE	20
PALMER PERENNIAL RYE GRASS	20

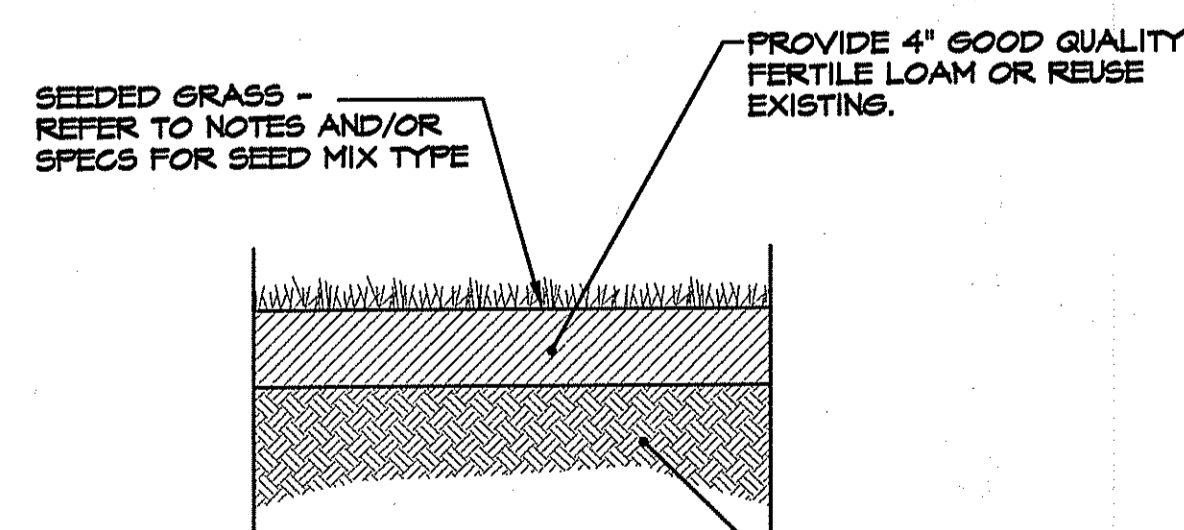
APPLICATION RATE = 200 lbs. / ACRE

**SEED MIX #3**

(DETENTION AREAS)

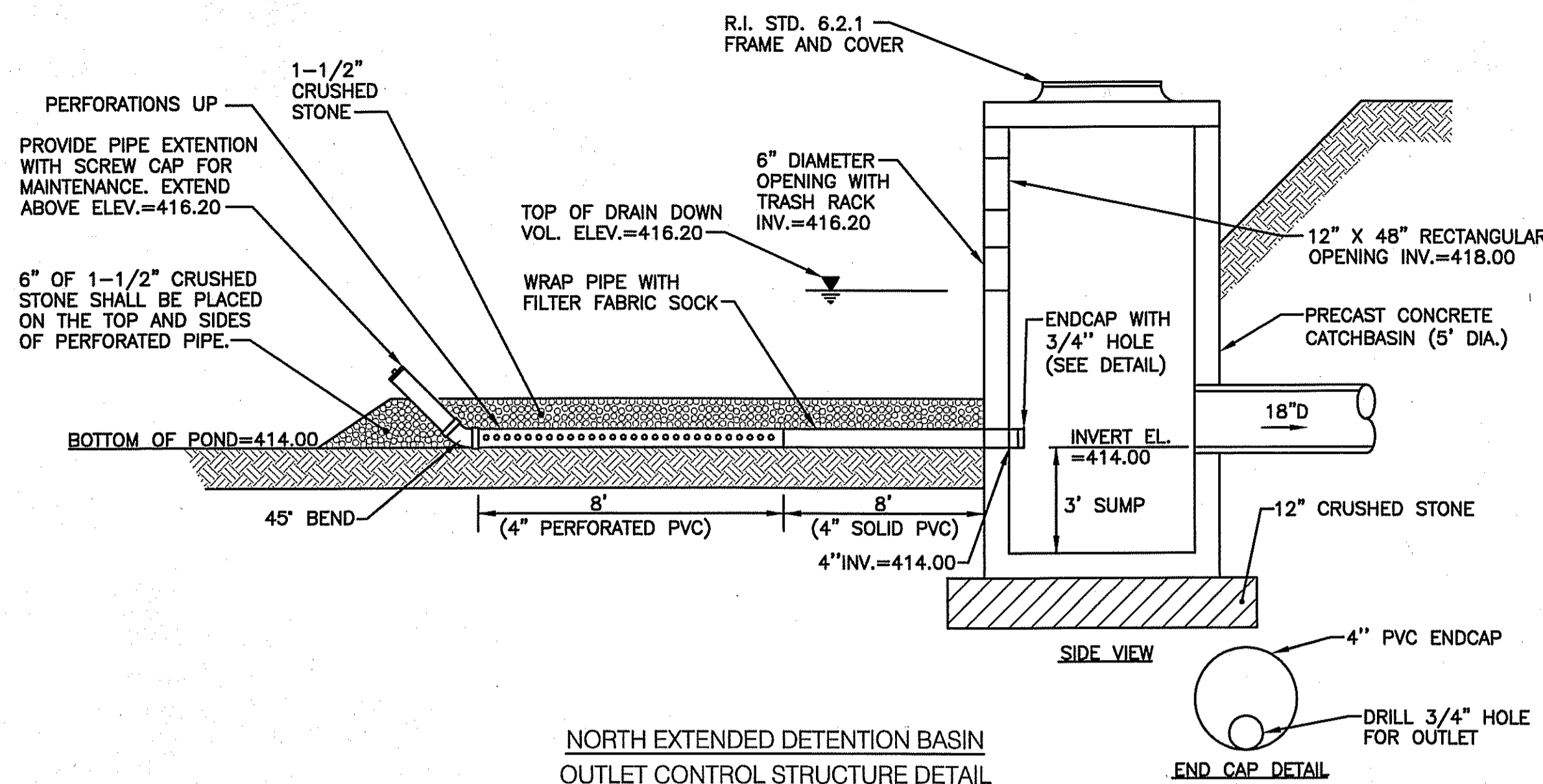
TYPE	% BY WEIGHT
TALL FESCUE	52
RED FESCUE	24
PERENNIAL RYE GRASS	18
WILDFLOWER MIX	15
REED CANARY GRASS	7
REDTOP	4

APPLICATION RATE = 200 lbs. / ACRE

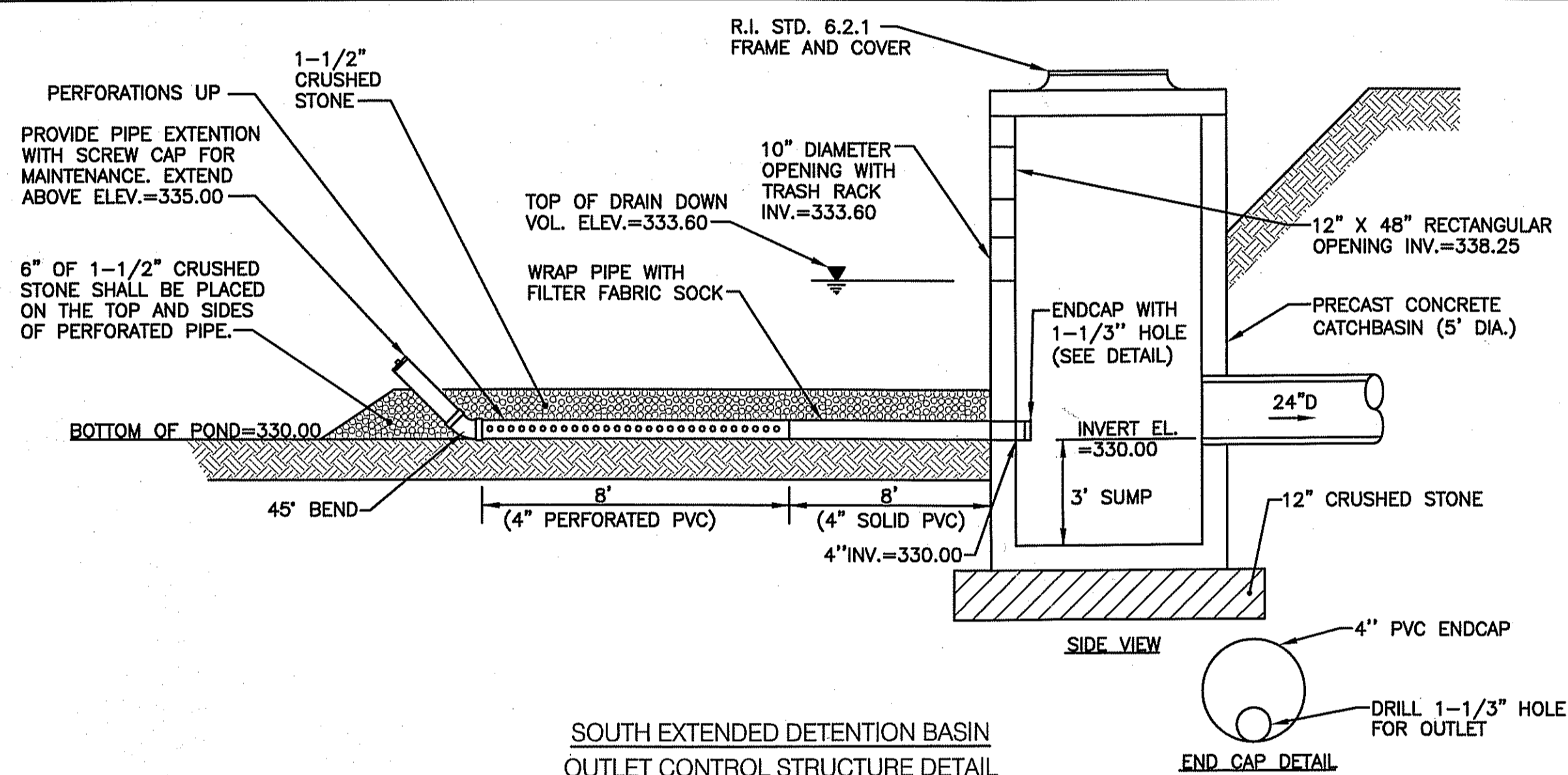


**LOAM-SEED DETAIL**  
NOT TO SCALE

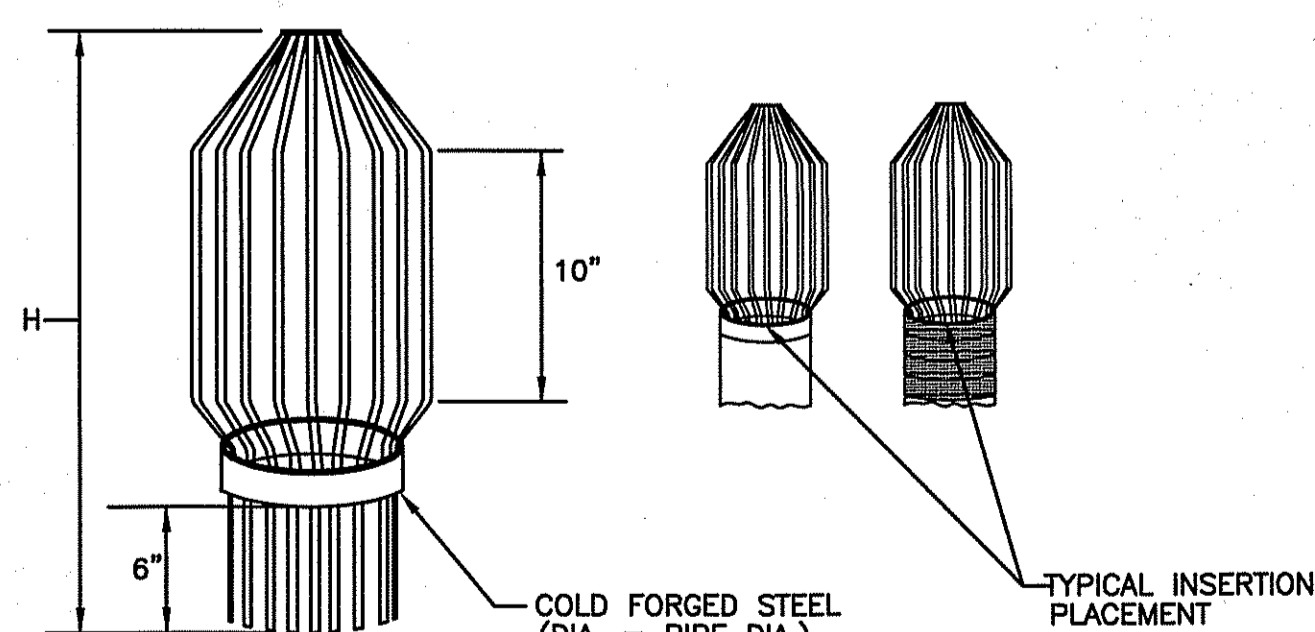
**NOTE:**  
THE CONTRACTOR WILL BE RESPONSIBLE FOR WATERING LAWN DURING THE COURSE OF THE GROWING SEASON FOR A PERIOD OF ONE (1) YEAR.



**NORTH EXTENDED DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL**  
NOT TO SCALE

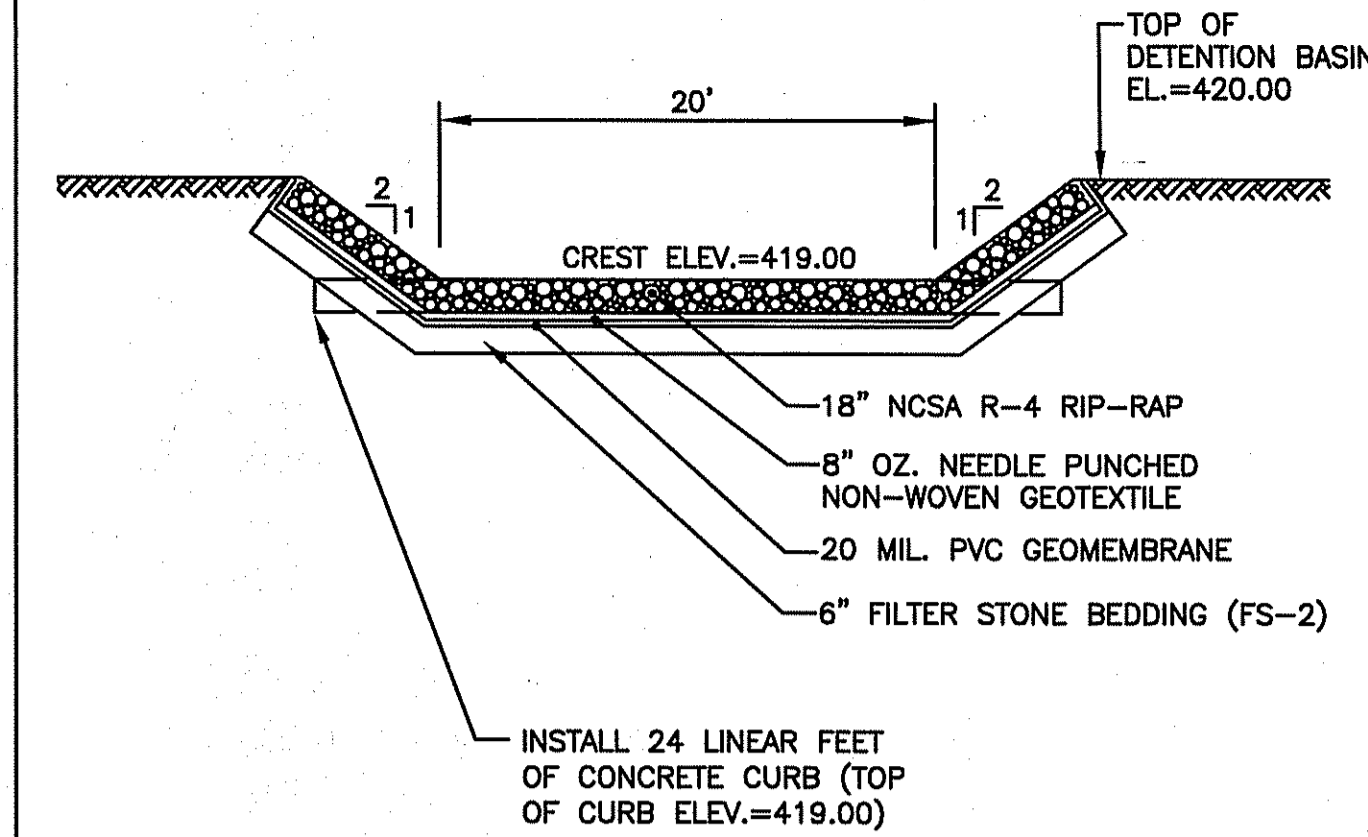


**SOUTH EXTENDED DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL**  
NOT TO SCALE

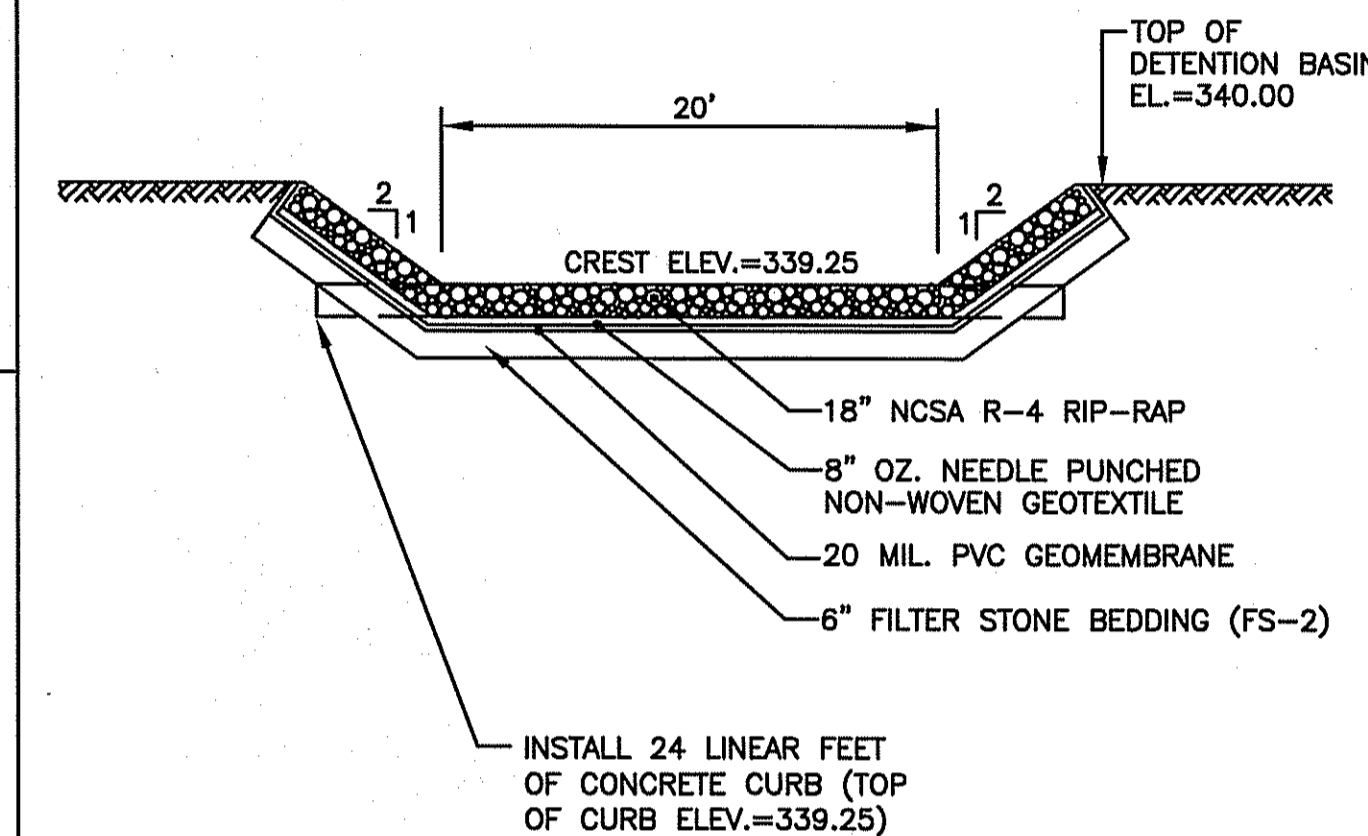


**NOTES:**  
1. THE TRASH RACK IS TO BE CONSTRUCTED OF 1/4\"/>

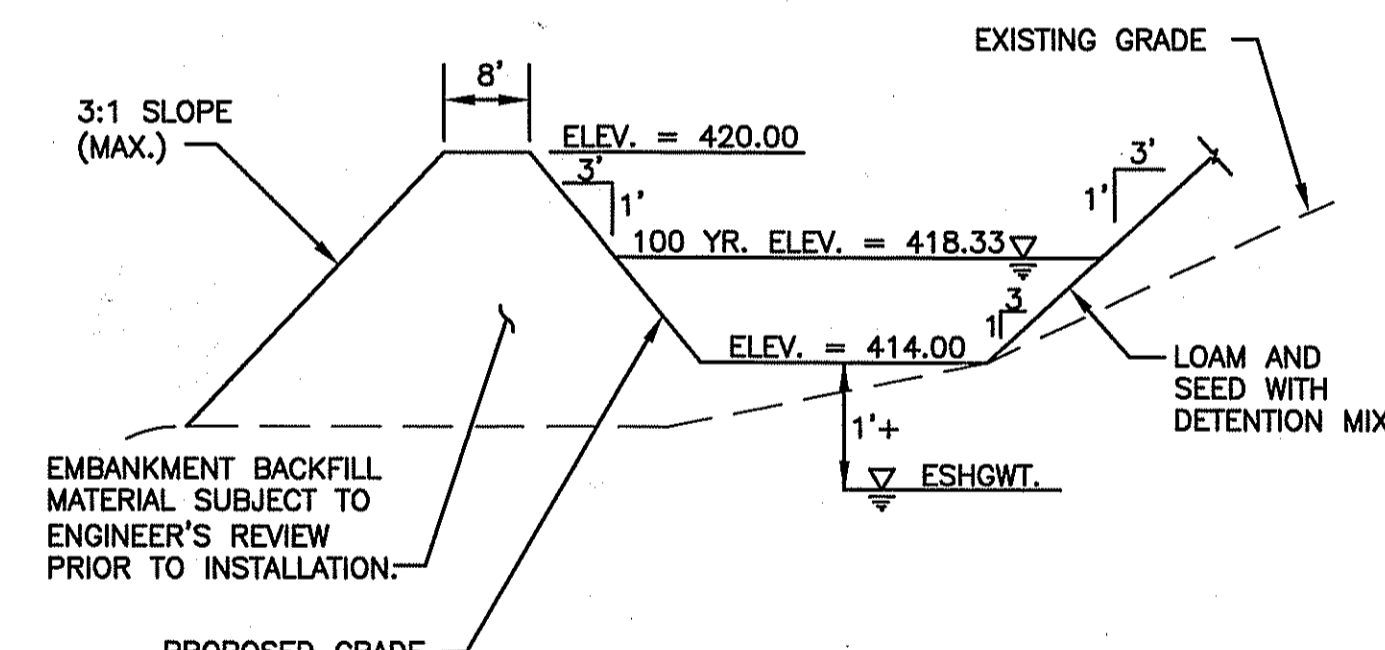
**TRASH RACK DETAIL**  
NOT TO SCALE



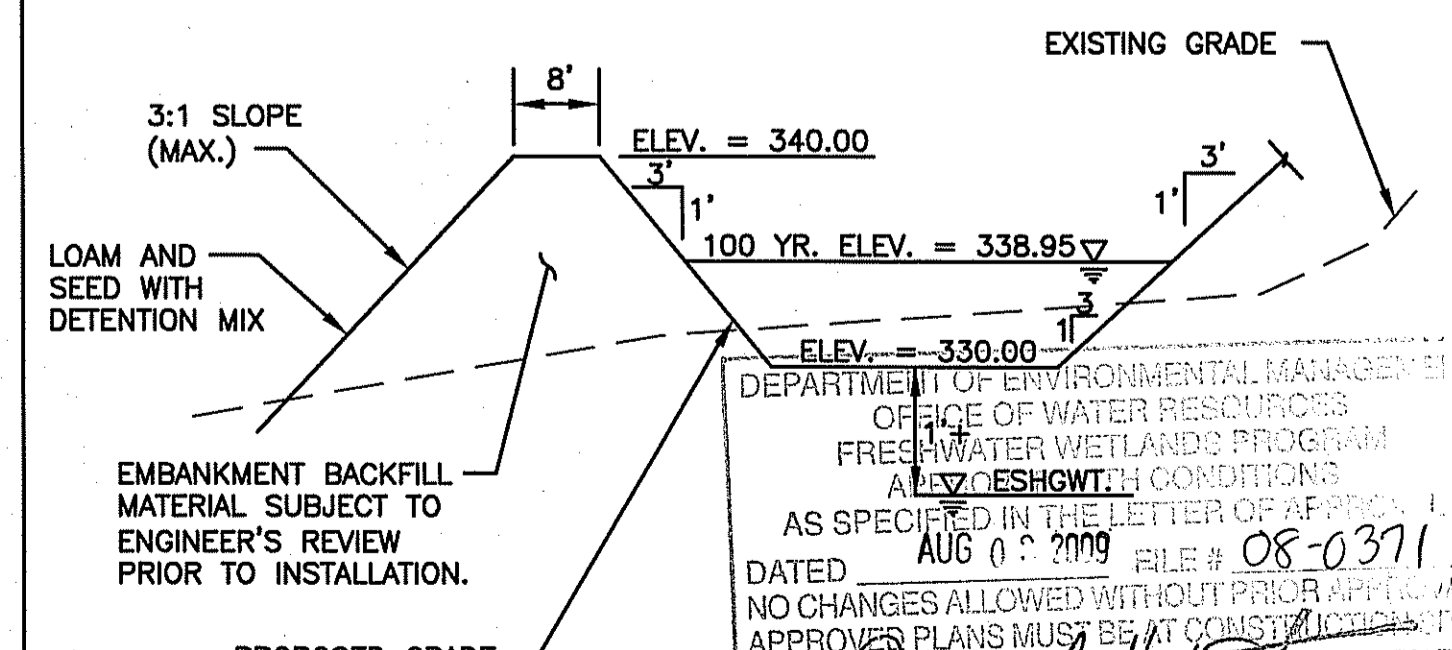
**EMERGENCY OVERFLOW WEIR DETAIL - NORTH BASIN**  
NOT TO SCALE



**EMERGENCY OVERFLOW WEIR DETAIL - SOUTH BASIN**  
NOT TO SCALE

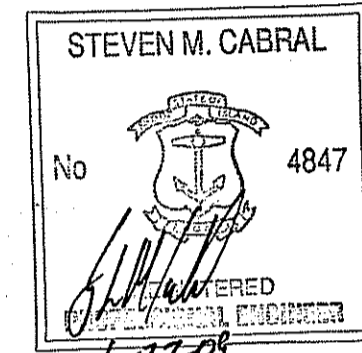


**NORTH EXTENDED DETENTION BASIN DETAIL**  
NOT TO SCALE



**SOUTH EXTENDED DETENTION BASIN DETAIL**  
NOT TO SCALE

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cei@crossmaneng.com



**PROJECT TITLE:**  
HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

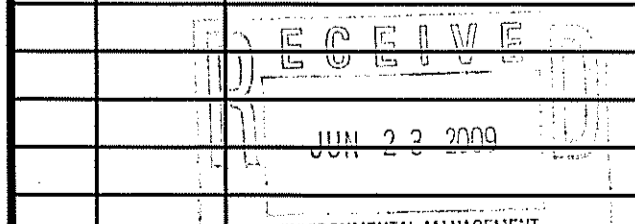
**PREPARED FOR:**  
HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

**DRAWING TITLE:**  
MISCELLANEOUS DETAILS - 3

**DATE:** NOVEMBER 2008 **SCALE:** AS NOTED

**DWG. NAME:** 1519-C13.3-DET3-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	05/15/09	R.I.D.E.M. COMMENT



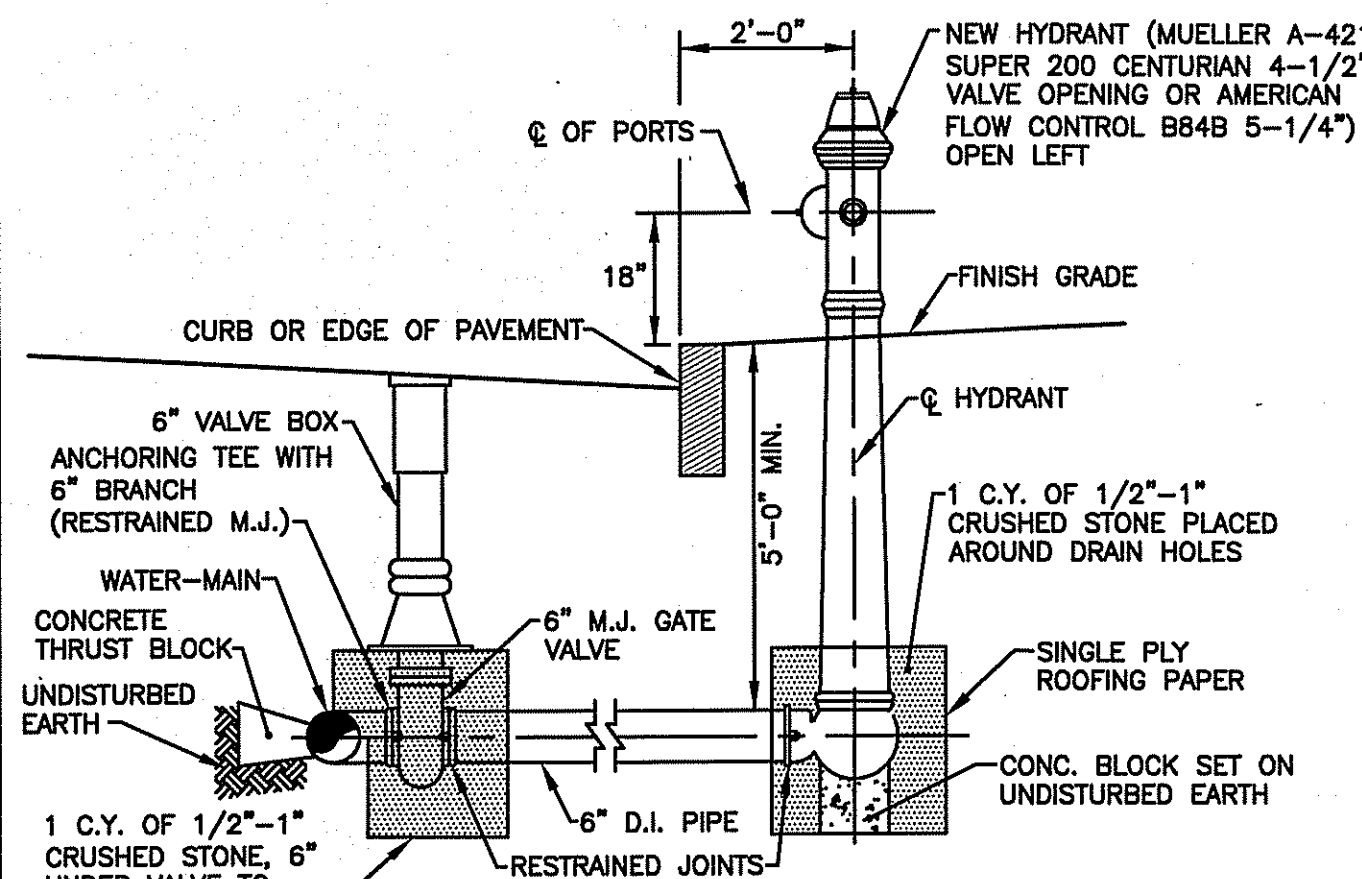
**DRAWING NUMBER:** C13.3

**SHEET:** 34 OF 41

**FINAL PLAN SUBMISSION**

**WATER NOTES:**

- ALL INSTALLATION, JOINTS, CONSTRUCTION METHODS AND MATERIALS SHALL BE ACCORDING TO THE CUMBERLAND WATER DEPARTMENT REQUIREMENTS, AWWA STANDARDS AND GOVERNMENTAL REQUIREMENTS.
- ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT CLASS 350 CEMENT MORTAR LINED COMPACT STYLE (BY AMERICAN MANUFACTURER ONLY). CONTRACTOR HAS OPTION TO USE PVC C900 PIPE AND FITTINGS IN LIEU OF DUCTILE IRON. FITTINGS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C153/A21.53. MECHANICAL JOINTS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C111/A21.11.
- WATER PIPE SHALL BE DOUBLE CEMENT MORTAR LINED DUCTILE IRON PIPE CL52 OR PVC C900 PIPE AND SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C151/A21.51.
- CONSTRUCTION SHALL INCLUDE ALL PIPE, JOINTS, BENDS, TEES, FITTINGS, "MEGA-LUG" RESTRAINED MECHANICAL JOINTS, SERVICE CONNECTIONS AND ALL MISCELLANEOUS ITEMS REQUIRED TO CONSTRUCT THE PROPOSED SYSTEM.
- "MEGA-LUG" RESTRAINED MECHANICAL JOINTS SHALL BE INSTALLED IN LOCATIONS INDICATED AND AT ALL BENDS, FITTINGS, PLUGS, ETC.
- PRESSURE AND LEAKAGE TESTS AND DISINFECTING PIPES SHALL BE PERFORMED BY THE CONTRACTOR IN CONFORMANCE TO AMERICAN WATER WORKS ASSOCIATION (AWWA) RECOMMENDATIONS, CUMBERLAND WATER DEPARTMENT REQUIREMENTS, AND GOVERNMENTAL AGENCIES HAVING JURISDICTION.
- ALL FITTINGS, PIPE, JOINTS, ETC. SHALL BE DESIGNED FOR 1.5 TIMES WORKING PRESSURE BUT NOT LESS THAN 150 PSI.
- WATER PIPE SHALL TYPICALLY BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM SEWER PIPE, AND AT A MINIMUM DEPTH OF COVER EQUAL TO 5' WHERE A NEW WATER MAIN IS LESS THAN 18 INCHES CLEAR DISTANCE ABOVE A SEWER OR WHERE A WATER MAIN PASSES BENEATH A SEWER OR STORM DRAIN, ENCASE THE SEWER OR WATER IN 6" OF CONCRETE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING WATER MAIN. THE USE OF DUCTILE IRON TIGHT JOINT SEWER PIPE IN LIEU OF CONCRETE ENCASEMENT WILL BE CONSIDERED UPON CONTRACTORS SUBMITTAL OF SPECIFICATIONS TO ENGINEERS FOR APPROVAL.
- ALL SYSTEM COMPONENTS AND CONSTRUCTION METHODS, SUCH AS PIPE, RESTRAINED MECHANICAL JOINTS, FITTINGS, CASTINGS, ETC. SHALL BE SUBMITTED TO THE CUMBERLAND WATER DEPARTMENT AND ENGINEER FOR APPROVAL PRIOR TO PURCHASE AND INSTALLATION. THIS SUBMISSION SHALL INCLUDE MANUFACTURER'S LITERATURE, SHOP DRAWINGS, PROPOSED CONSTRUCTION METHODS, ETC.
- WATER LINE TRENCH TO BE AWWA TYPE 5. A METALIZED DETECTABLE IDENTIFICATION TAPE 2" IN WIDTH, BLUE IN COLOR AND PRINTED WITH "CAUTION WATERLINE BURIED BELOW" SHALL BE UTILIZED OVER ALL MAINS. TAPE SHALL BE SET AT APPROXIMATELY 1'-0" BELOW FINISHED GRADE.
- PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL COMPLETE AND SUBMIT THE "CONTRACTOR'S MATERIAL AND TEST CERTIFICATE" FOR UNDERGROUND PIPING TO THE CUMBERLAND WATER DEPARTMENT AND ENGINEER. IN ADDITION, THE CONTRACTOR IS REQUIRED TO SUBMIT THE FOLLOWING ITEMS TO THE ENGINEER FOR THEIR REVIEW AND APPROVAL:
  - TYPE AND MANUFACTURER OF SERVICE BOXES
  - TYPE AND MANUFACTURER OF CORPORATIONS AND CURB STOPS
  - TYPE AND MANUFACTURER OF VALVE BOXES
  - TYPE AND MANUFACTURER OF D.I. MECHANICAL JOINTS AND FITTINGS
  - TYPE AND MANUFACTURER OF TAPPING SLEEVES
  - TYPE AND MANUFACTURER OF DI PIPING
  - TYPE AND MANUFACTURER OF RESILIENT SEALED GATE VALVES
  - TYPE AND MANUFACTURER OF POLYETHYLENE SERVICE LINE
- WHEN THIS PROJECT IS COMPLETE, THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE WATER DEPARTMENT AND ENGINEER TWO SETS OF AS BUILT PLANS (ONE BLUE LINE, ONE REPRODUCIBLE COPY-MYLAR OR SEPIA) WHICH INDICATES:
  - ALL CURB STOPS WITH APPROPRIATE LOCATING MEASUREMENTS - MAIN-TO-CURB AND MEASUREMENTS FROM PERMANENT STRUCTURES.
  - A SCHEDULE OF MATERIALS WHICH INDICATES: AND MEASUREMENTS FROM PERMANENT STRUCTURES.
    - ITEM QUANTITY
    - MANUFACTURER
    - DESCRIPTION
      - INCLUDE SERIAL #'S AS APPLICABLE
      - MATERIAL
      - OPERATION CHARACTERISTICS
- THE CONTRACTOR SHALL VERIFY THE FIRE SERVICE PIPE SIZE REQUIREMENT WITH THE BUILDING ARCHITECT AND PLUMBING/FIRE SPRINKLER CONTRACTOR PRIOR TO ORDERING PIPE, METERS AND BACKFLOW PREVENTORS. COORDINATION WITH THE CUMBERLAND WATER DEPARTMENT IS REQUIRED TO DETERMINE THE EXISTING WATER PRESSURE AVAILABLE.
- ALL VALVES TO BE RESILIENT WEDGE GATE VALVES.
- ALL FITTINGS TO BE RESTRAINED WITH MECHANICAL JOINTS. RESTRAINTS TO BE MEGA-LUG OR EQUAL. ALL DESIGN AND/OR PLACEMENT SHALL BE REVIEWED AND APPROVED BY THE CUMBERLAND WATER DEPARTMENT.
- RESTRAIN ALL PUSH-ON BELL JOINTS WITHIN 20 FEET OF MECHANICAL JOINTS. RESTRAINTS TO BE SERIES 800 COVER-ALL BY EBAA IRON OR EQUAL.

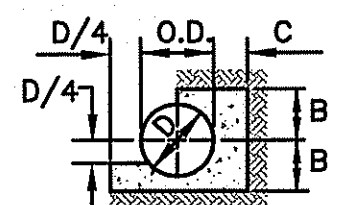
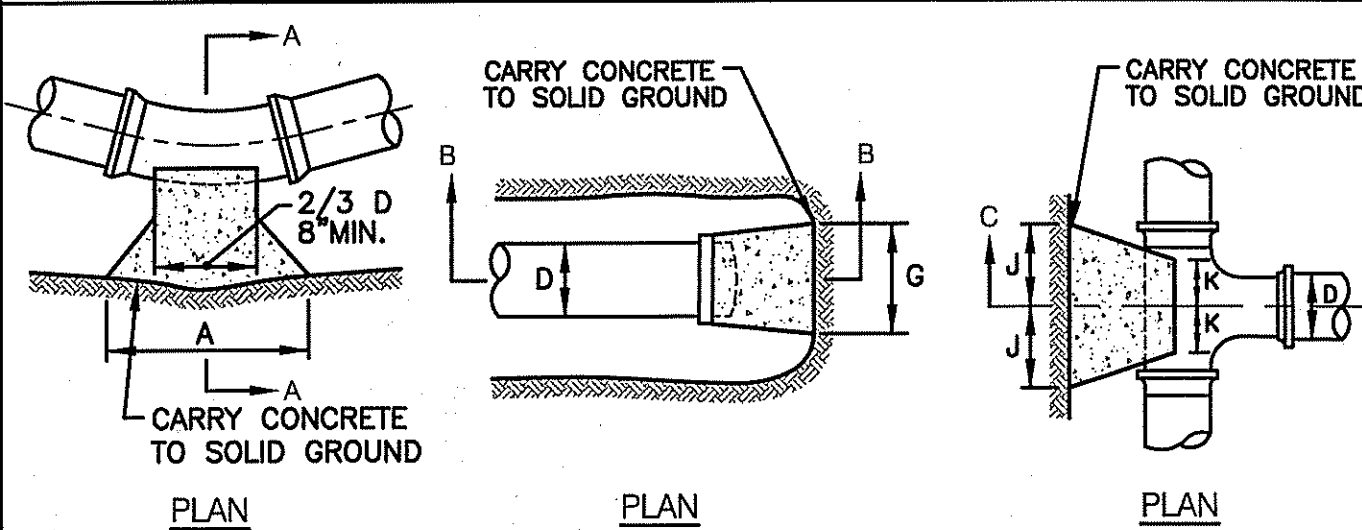


**NOTES:**

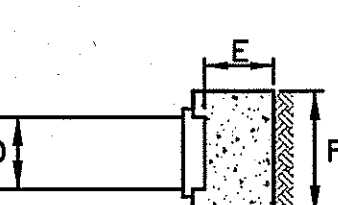
- INSTALLATION SHALL NOT OBSTRUCT SIDEWALK TO PEDESTRIAN OR PHYSICALLY IMPAIRED.
- MECHANICAL JOINT PIPE W/ RESTRAINED JOINTS FOR BRANCHES OVER ONE LENGTH OF PIPE.
- PRIOR TO ORDERING, HYDRANT MUST BE APPROVED BY TOWN WATER DEPT. AND FIRE DISTRICT.

**TYPICAL HYDRANT INSTALLATION**

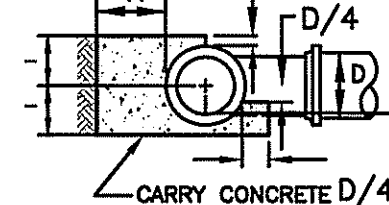
NOT TO SCALE



HORIZONTAL BENDS		
BEND	SIZE	LENGTH
11 1/4"	A	2'-0"
22 1/2"	B	10"
and 45"	C	1'-6"
90°	A	2'-6"
	B	1'-3"
	C	1'-6"



ENC CAP	
SIZE	LENGTH
D	6"
E	1'-6"
F	2'-5"
G	2'-5"



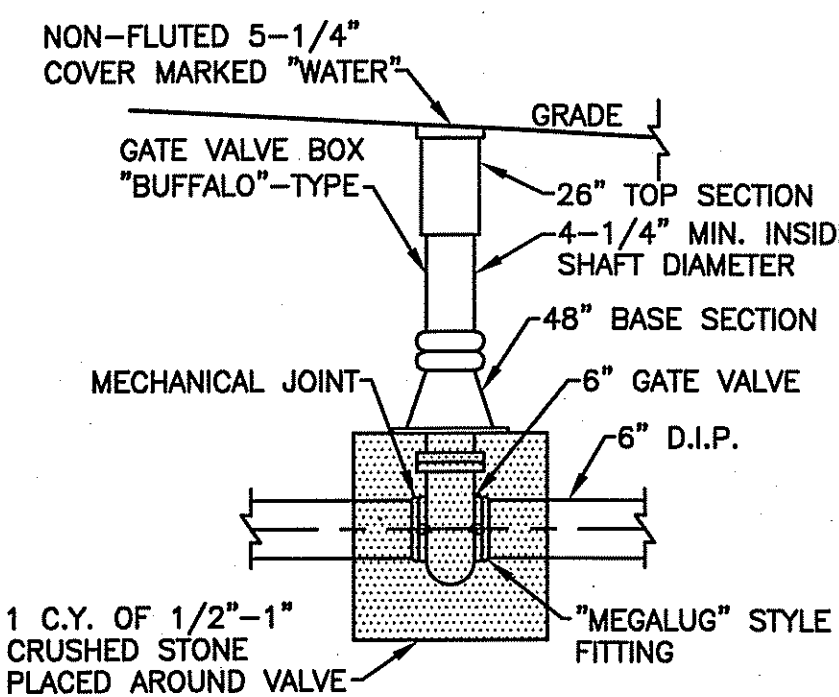
TEE	
SIZE OF BRANCH	LENGTH
H	6"
I	1'-6"
J	1'-3"
K	6"

**CONCRETE THRUST BLOCKS FOR CAPS, TEES AND HORIZONTAL BENDS**

NOT TO SCALE

**THRUST BLOCK NOTES:**

- ALL CONCRETE TO BE CLASS B.
- BUTTRESS DIMENSIONS SHOWN ARE MINIMUM. DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 1500 P.S.F. LATERAL AND STATIC WATER PRESSURE OF 150 P.S.I. WHERE PRESSURE EXCEEDS 150 P.S.I. OR WHERE SOIL BEARING PRESSURE IS LESS THAN 1500 P.S.F. LATERAL, OR SOIL CONDITIONS OR EXCAVATION LIMITS ENCOUNTERED DURING CONSTRUCTION MAKE IT UNFEASIBLE TO PLACE THRUST BLOCKS AGAINST UNDISTURBED EARTH OF THE PROPER BEARING CAPACITY. THE CONTRACTOR SHALL DESIGN, GET APPROVAL OF, AND PLACE SPECIAL REACTION BLOCKS OF SUFFICIENT WEIGHT TO RESIST THE FULL THRUST OF THE LINE UNDER TEST AND OPERATING PRESSURES. THE DESIGN OF SUCH BLOCKS SHALL BE SUBJECT TO THE APPROVAL OF THE QUONSET/DAVISVILLE DEVELOPMENT AND THE ENGINEERS AND SHALL BE SUBMITTED TO THE FIRE DISTRICT BEFORE ACTUAL INSTALLATION TAKES PLACE.
- ALL THRUST BLOCKS SHALL BE CONCRETE 3,000 P.S.I. @ 28 DAYS AND BEARING AGAINST UNDISTURBED EARTH.

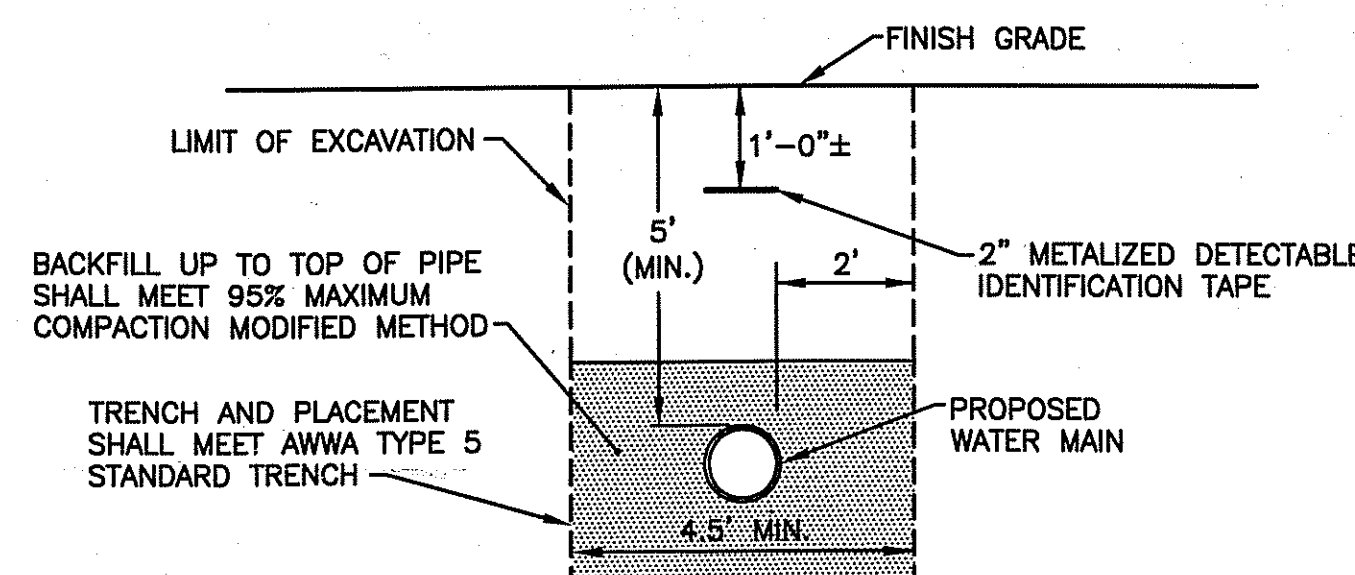


**NOTE:**

WRAP CRUSHED STONE WITH 4 OZ. NON-WOVEN GEOTEXTILE FABRIC BEFORE FILLING EXCAVATION.

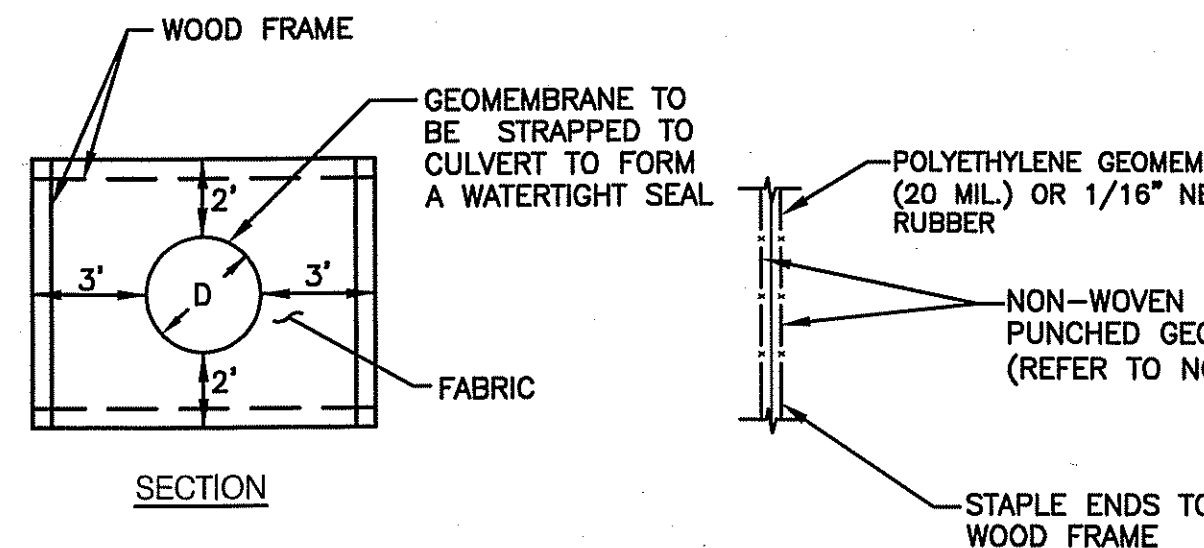
**TYPICAL WATER GATE BOX INSTALLATION**

NOT TO SCALE



**TYPICAL WATER LINE TRENCH DETAIL**

NOT TO SCALE

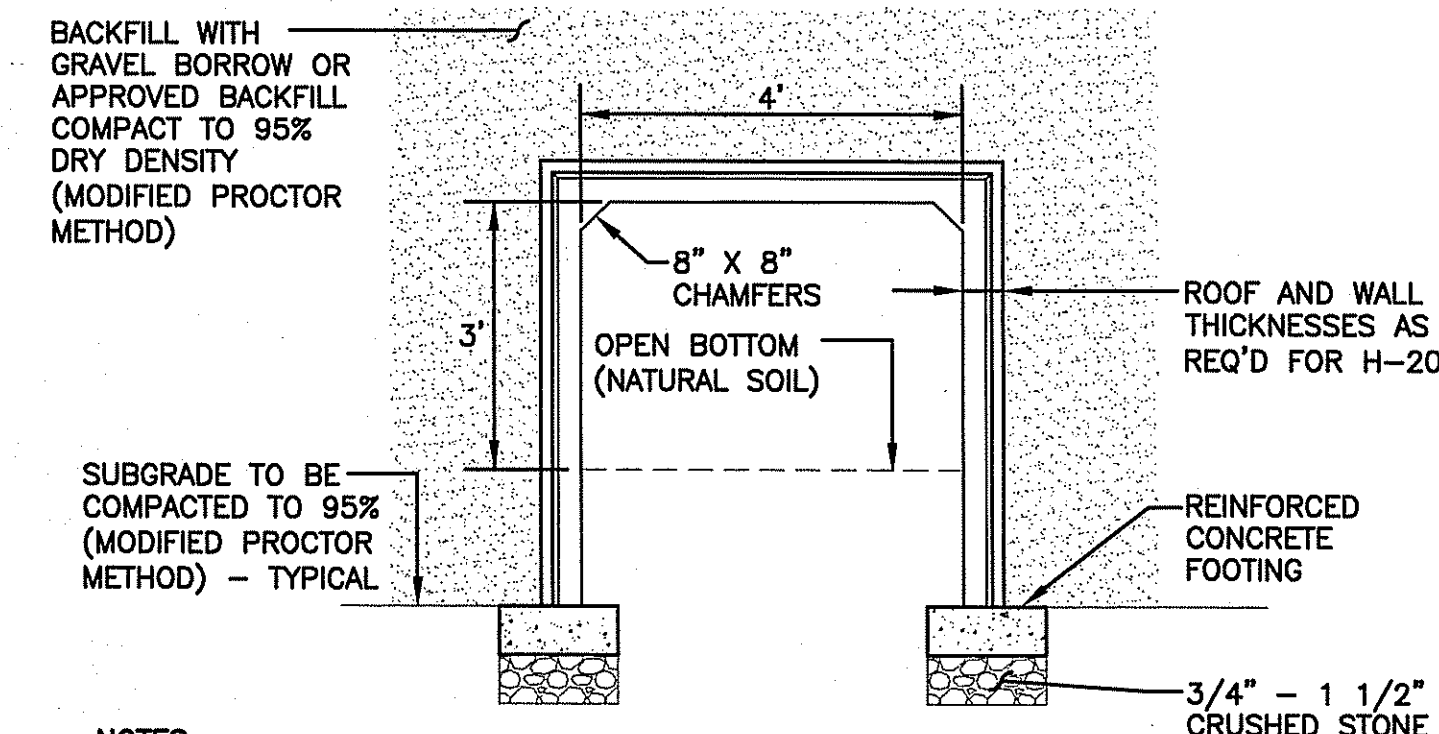


**NOTES:**

- ALL CULVERTS EXITING THE DETENTION POND SHALL HAVE AN "ANTI-SEEP COLLAR" INSTALLED AT THEIR MID LENGTH
- THE STRAP SHALL BE SUBJECT TO ENGINEER'S APPROVAL. THE STRAP MAY BE A POLYPROPYLENE CORD WITH A TENSILE STRENGTH OF 200 POUNDS AND SHALL PROVIDE A PERMANENT, NON-SLIP, TIE.
- THE CONTRACTOR SHALL SUBMIT SPECIFICATION SHEET TO THE ENGINEER OF THE NON-WOVEN NEEDLE PUNCHED GEOTECTILE FOR APPROVAL

**FABRIC DETAIL ANTI-SEEP COLLAR DETAILS**

NOT TO SCALE



**NOTES:**

- CULVERT SHALL BE CAPABLE TO WITHSTAND H-20 LOADING.
- INSTALL CULVERT FOOTING ON 12" DEEP CRUSHED STONE BED (3/4"-1 1/2" CRUSHED STONE)
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS STAMPED BY A R.I. STRUCTURAL P.E. TO DESIGN CULVERT FOR PROPOSED LOADS DUE TO DEPTH OF COVER.
- CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT ENGINEER TO SURVEY STAKE THE LOCATION AND ELEVATIONS PRIOR TO CONSTRUCTION.
- CONCRETE: 5,000 P.S.I. MINIMUM STRENGTH @ 28 DAYS, STRENGTH TO BE VERIFIED BY A R.I. STRUCTURAL P.E.
- STEEL REINFORCING - ASTM A-615, GRADE 60.
- COVER TO STEEL - 1" MINIMUM.
- CULVERT SHALL BE DESIGNED TO MEET ASTM C858 AND ACI 318 WITH AASHTO HS-20 LOADING.
- CONSTRUCTION JOINT-SEALED WITH 1" DIA. BUTYL RUBBER OR EQUIVALENT, HYDRAULIC CEMENT SHALL BE USED AT CULVERT SECTION CONNECTIONS.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS STAMPED BY A R.I. STRUCTURAL P.E. TO DESIGN CULVERT HEADWALL/WINGWALL.

**CULVERT 1 & 2 TYPICAL (4' WIDE X 3' HIGH)**

NOT TO SCALE

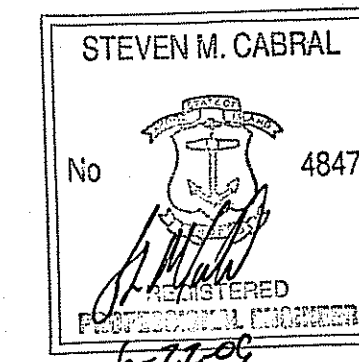
**CULVERT INSTALLATION SEQUENCE OF CONSTRUCTION**

- CONSTRUCTION TO BE CONDUCTED DURING LOW FLOW PERIODS, TYPICALLY JULY THRU SEPTEMBER.
- SOIL EROSION AND SEDIMENT CONTROL SHALL BE INSTALLED WITHIN THE WORK AREA AS SHOWN ON THE PLAN.
- STOCKPILE ALL MATERIAL REQUIRED FOR INSTALLATION ADJACENT TO PROPOSED CULVERT LOCATION PRIOR TO START OF CONSTRUCTION. MATERIAL STOCKPILED SHALL INCLUDE BOX CULVERT, CRUSHED STONE (3/4"-1 1/2"), GRAVEL BORROW AND HYDRAULIC CEMENT. STOCKPILE LOCATION SHALL NOT BE WITHIN THE LIMIT OF DISTURBANCE AREAS BUT NOT WITHIN ASSF LIMITS.
- THE PROPOSED CULVERT LOCATIONS AND GRADES SHALL BE STAKED IN FIELD.
- WEATHER PERMITTING, (DRY WEATHER FORECAST) THE CONTRACTOR SHALL COMMENCE TREE REMOVAL WITHIN THE PROPOSED CULVERT AREA. THE DURATION FOR EXCAVATING, CULVERT INSTALLATION AND BACKFILL SHALL CONTINUE UNTIL COMPLETION AND SHALL TAKE NO LONGER THAN 3 DAYS.
- EXCAVATION SHALL INCLUDE REMOVAL OF ORGANIC MATERIAL UNDER THE NEW CULVERT FOOTINGS. CONTRACTOR IS REQUIRED TO CONTACT THE ENGINEER FOR INSPECTION DURING THIS OPERATION.
- REPLACE REMOVED ORGANIC MATERIAL WITH GRAVEL BORROW COMPACTED TO 95% DRY DENSITY (MODIFIED PROCTOR METHOD) WITH CRUSHED STONE (12" DEPTH BELOW CULVERT FOOTINGS).
- INSTALL CULVERT ON FOOTINGS AND MORTAR JOINTS WITH HYDRAULIC CEMENT.
- CONTRACTOR SHALL USE SANDBAGS AS REQUIRED TO DIRECT STORMWATER INTO NEW CULVERT DURING HEADWALL CONSTRUCTION. NOTE: ALL WORK AND SANDBAGS SHALL BE INSTALLED WITHIN THE LIMITS OF DISTURBANCE AS SHOWN ON THE PLANS.
- CONSTRUCT HEADWALLS AND BACKFILL AS REQUIRED.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED AUG 03 2008 FILE # 08-0371  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Harkin*

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: ce@crossmaneng.com



**PROJECT TITLE:**

HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

**PREPARED FOR:**

HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

**DRAWING TITLE:**

MISCELLANEOUS DETAILS - 4

DATE: NOVEMBER 2008 SCALE: AS NOTED

DWG. NAME: 1519-C13.4-DET4-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

**DRAWING NUMBER**

**C13.4**

SHEET: 35 OF 41

PRELIMINARY PLAN SUBMISSION

**GENERAL SEWER NOTES**

- INSTALLATION OF THE SEWERAGE FACILITIES SHALL BE IN ACCORDANCE WITH THE CUMBERLAND PUBLIC WORKS SPECIFICATIONS & REQUIREMENTS.
- PRIOR TO RECEIVING AUTHORIZATION TO CONSTRUCT, ALL MATERIALS SHALL MEET THE STANDARDS AND RECEIVE THE WRITTEN APPROVAL, BASED ON MANUFACTURER'S DRAWINGS AND OTHER DATA, FROM THE ENGINEER.
- ALL SEWERAGE FACILITIES SHALL MEET TESTING AND CLEANING REQUIREMENTS PRIOR TO ACCEPTANCE.
- AS-BUILT DRAWINGS SHALL BE FURNISHED BY THE CONTRACTOR AS A CONDITION FOR OWNER ACCEPTANCE OF THE NEW SEWERAGE FACILITIES.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS AND MATERIALS, STANDARDS AND SPECIAL DETAILS, AND STANDARD SPECIFICATIONS. ANY WORK NOT MEETING THE APPROVED STANDARDS SHALL BE IMMEDIATELY REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL CONFINE HIS OPERATIONS AND ACTIVITIES FOR CONSTRUCTION WITHIN THE LIMITS OF WORK AS SHOWN ON THE DRAWINGS.
- ALL AREAS DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT NO EXTRA COST TO THE OWNER. ALL GRASSED AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE LOAMED AND SEEDDED.
- LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES AND NOTIFY THE APPROPRIATE UTILITY AUTHORITIES INCLUDING "DIG-SAFE" PRIOR TO STARTING WORK. ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE COST OF REPAIRS SHALL BE BORNE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- RELATION TO WATER LINES:

A. HORIZONTAL SEPARATION: WHENEVER POSSIBLE, SEWERS SHOULD BE LAID AT A MINIMUM OF 10 FEET (3.0 m), HORIZONTALLY, FROM ANY EXISTING OR PROPOSED WATER LINE. SHOULD LOCAL CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET, A SEWER MAY BE LAID CLOSER THAN 10 FEET TO A WATER LINE IF:

- IT IS LAID IN A SEPARATE TRENCH, OR IF
- IT IS LAID IN THE SAME TRENCH WITH THE WATER LINE LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND IF
- IN EITHER CASE THE ELEVATION OF THE TOP (CROWN) OF THE SEWER IS AT LEAST 18 INCHES (46 cm) BELOW THE BOTTOM (INVERT) OF THE WATERLINE.

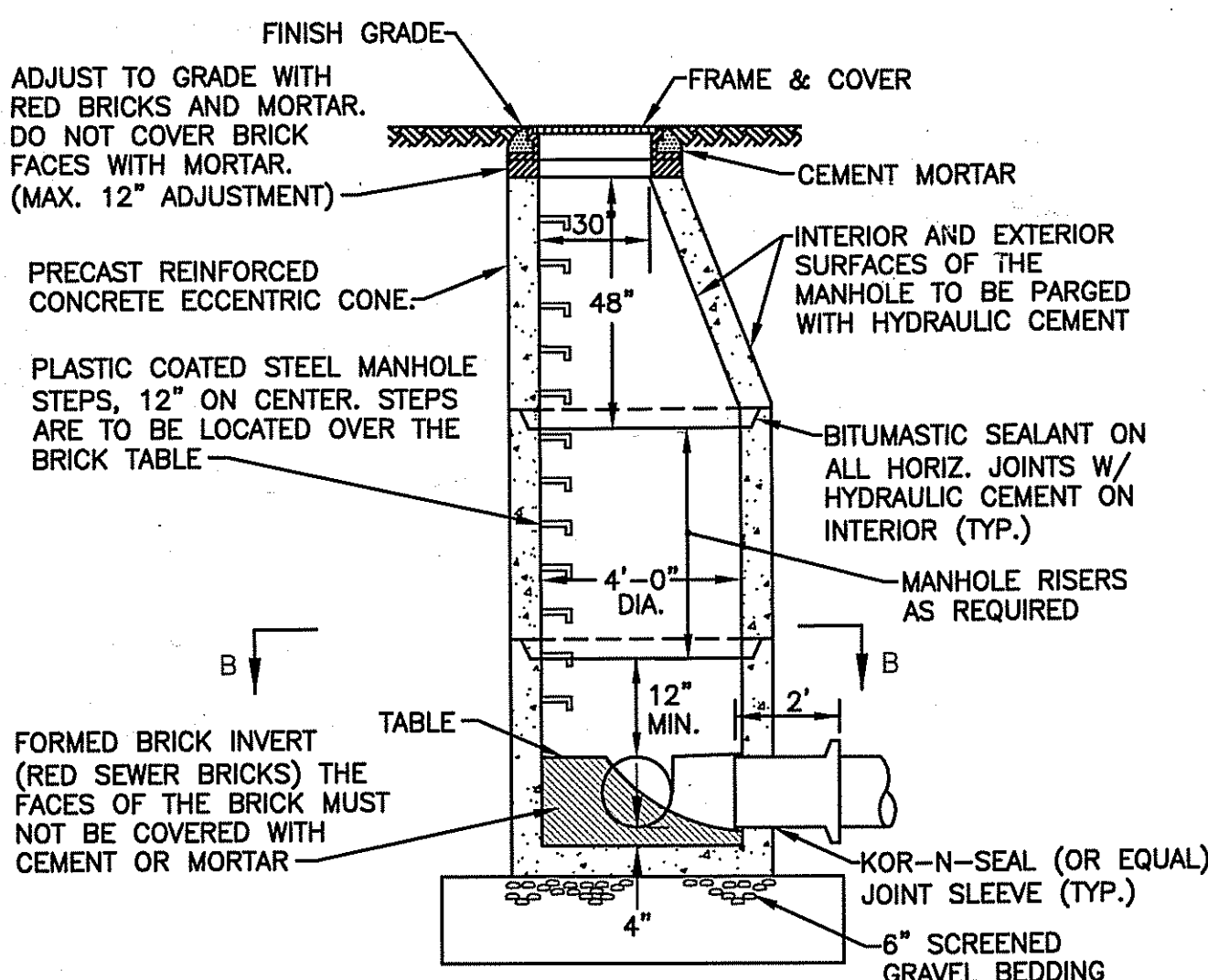
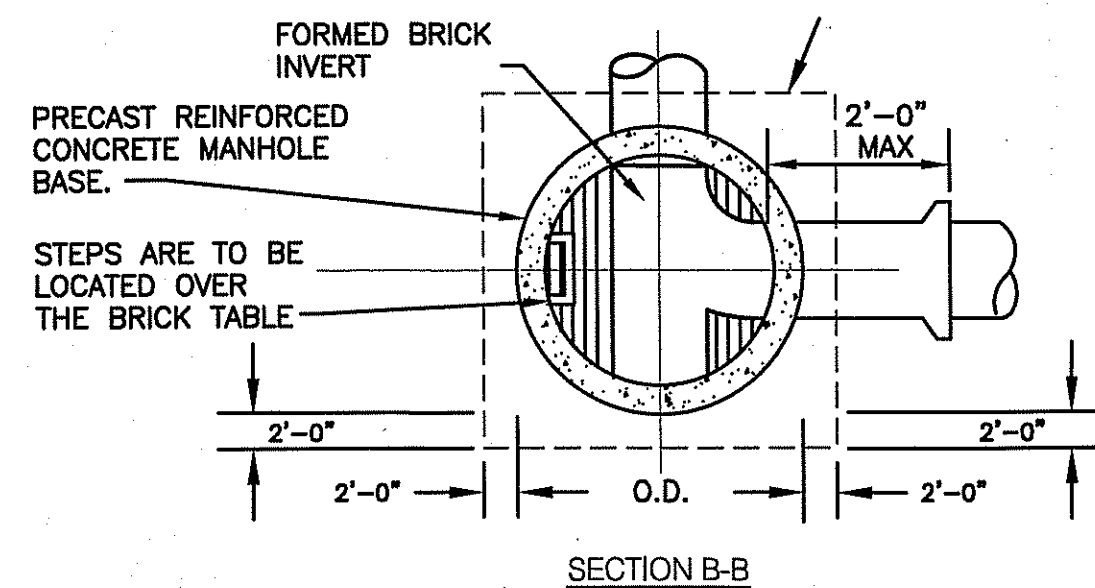
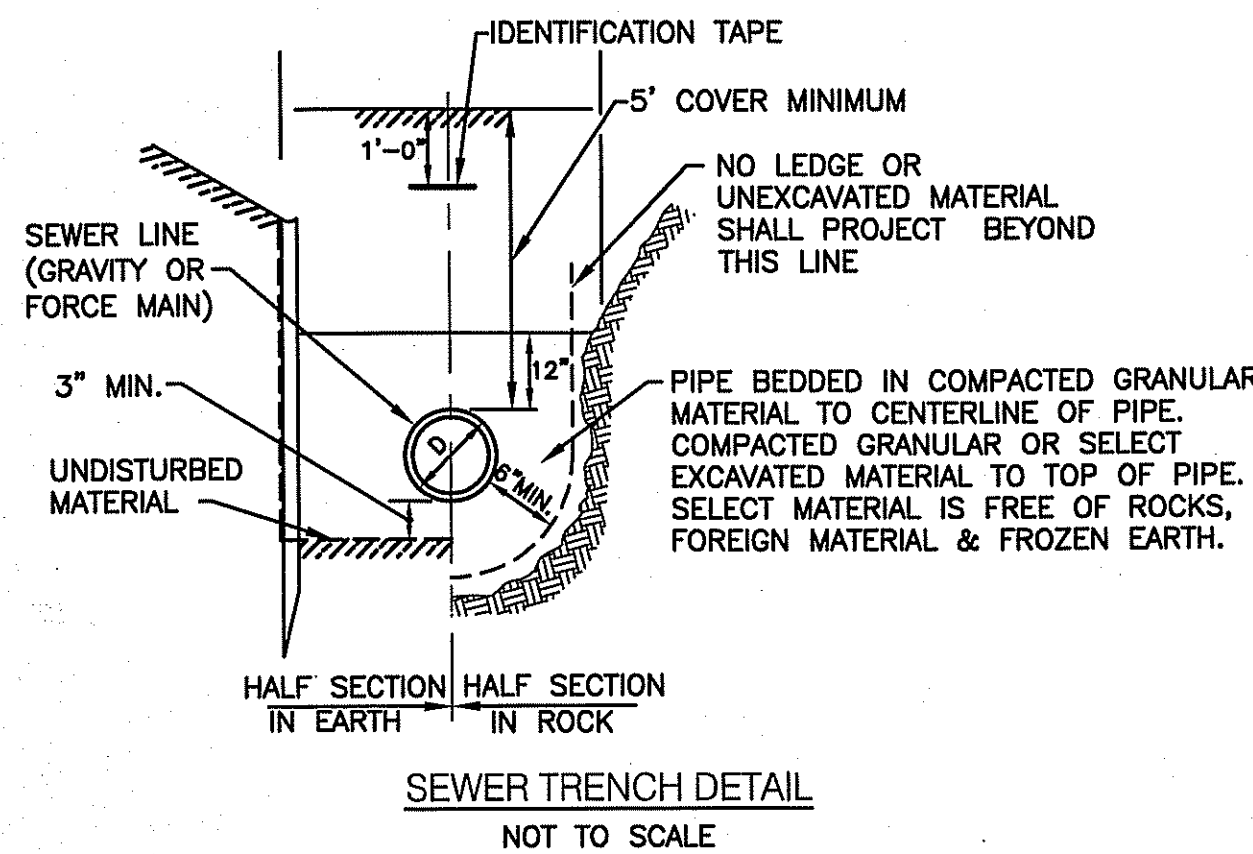
B. VERTICAL SEPARATION: WHENEVER SEWER MUST CROSS UNDER WATER LINES, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SEWER IS AT LEAST 18 INCHES (46 cm) BELOW THE BOTTOM OF THE WATER LINE. WHEN THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THE ABOVE REQUIREMENTS, THE WATER LINE SHALL BE RELOCATED TO PROVIDE THIS SEPARATION OR RECONSTRUCTED WITH MECHANICAL-JOINT PIPE FOR A DISTANCE OF 10 FEET (3.0 m) ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER LINE SHOULD BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE.

C. WHEN IT IS IMPOSSIBLE TO OBTAIN HORIZONTAL AND/OR VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH THE WATER LINE AND SEWER SHALL BE CONSTRUCTED OF MECHANICAL-JOINT CEMENT LINED DUCTILE IRON PIPE OR OTHER EQUIVALENT BASED ON WATER TIGHTNESS AND STRUCTURAL SOUNDNESS. BOTH PIPES SHALL BE PRESSURE TESTED BY AN APPROVED METHOD TO ASSURE WATER TIGHTNESS.

- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEWATERING REQUIRED IN THE SEWER INSTALLATION.
- THE PROPOSED GRAVITY SANITARY SEWER PIPES SHALL BE 6" SDR-35, AS SHOWN ON PLANS.
- THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE ELEVATIONS OF EXISTING SEWER LINES PRIOR TO INSTALLATION.

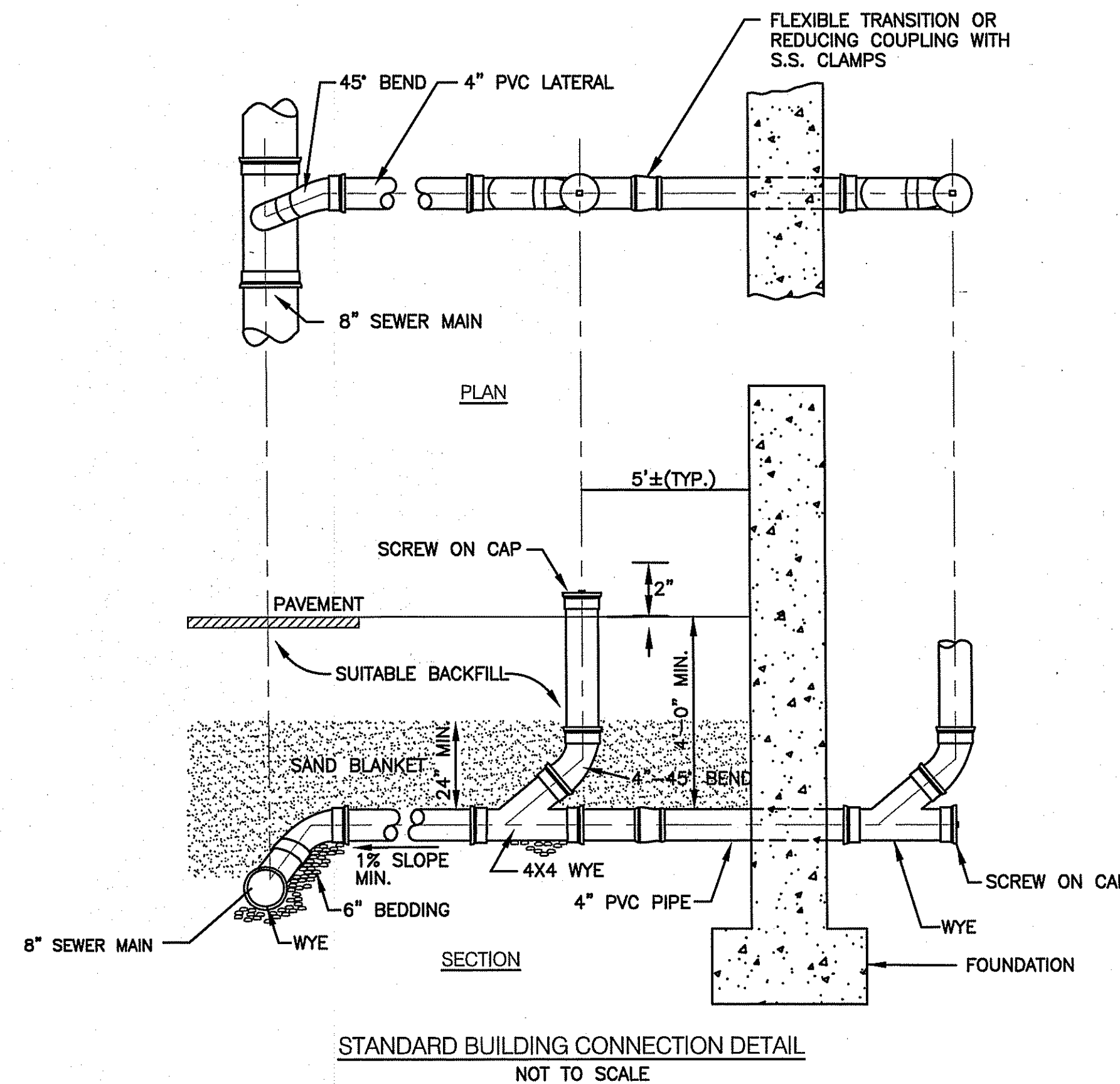
**PUMP SYSTEM NOTES:**

- "PUMP STATION" PUMPS SHALL BE DESIGNED AND DETAILED ON SEPARATE PLANS.
- ALL PLUMBING AND ELECTRICAL WORK AND MATERIALS SHALL CONFORM TO ALL STATE, FEDERAL AND LOCAL CODES.
- FORCE MAIN SHALL BE CL 150 OR 160 PVC OR EQUAL.
- INSTALLATION MUST MEET MANUFACTURER'S RECOMMENDATIONS.
- SYSTEM MUST BE CAPABLE OF PASSING 2" DIA. SOLIDS.
- A HIGH WATER LEVEL ALARM (VISIBLE AND AUDIBLE POWERED BY CIRCUIT SEPARATE FROM THE PUMP POWER SHALL BE LOCATED IN A NORMALLY OCCUPIED AREA.
- THE PUMP CHAMBERS SHALL BE WATERTIGHT, AND ALL UNSUITABLE OR SOFT MATERIAL BELOW THE PUMP CHAMBER SHALL BE REMOVED AND REPLACED WITH GRAVEL BEDDING. A MINIMUM 6" LAYER OF GRAVEL SHALL BE SET LEVEL TO FORM A STABLE BASE.
- STANDBY POWER SUPPLY IS RECOMMENDED. (EMERGENCY GENERATOR OR BACKUP POWER SUPPLY IS RECOMMENDED FOR AUTOMATIC USE DURING POWER OUTAGES). CONTACT OWNER FOR CONFIRMATION OF GENERATOR INSTALLATION.
- PUMP STATION MANUFACTURER MUST PROVIDE BUOYANCY CALCULATIONS TO DETERMINE THE NEED OF ANTI-FLOTATION DEVICES.
- FLOATS FOR PUMP STATION SHALL BE MOUNTED ON A BRACKET INSTALLED UNDER THE ACCESS HATCH.
- ALL SHOP DRAWINGS OF PUMP, PUMP COMPONENTS, FORCE MAIN, CHAMBER AND HATCH SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

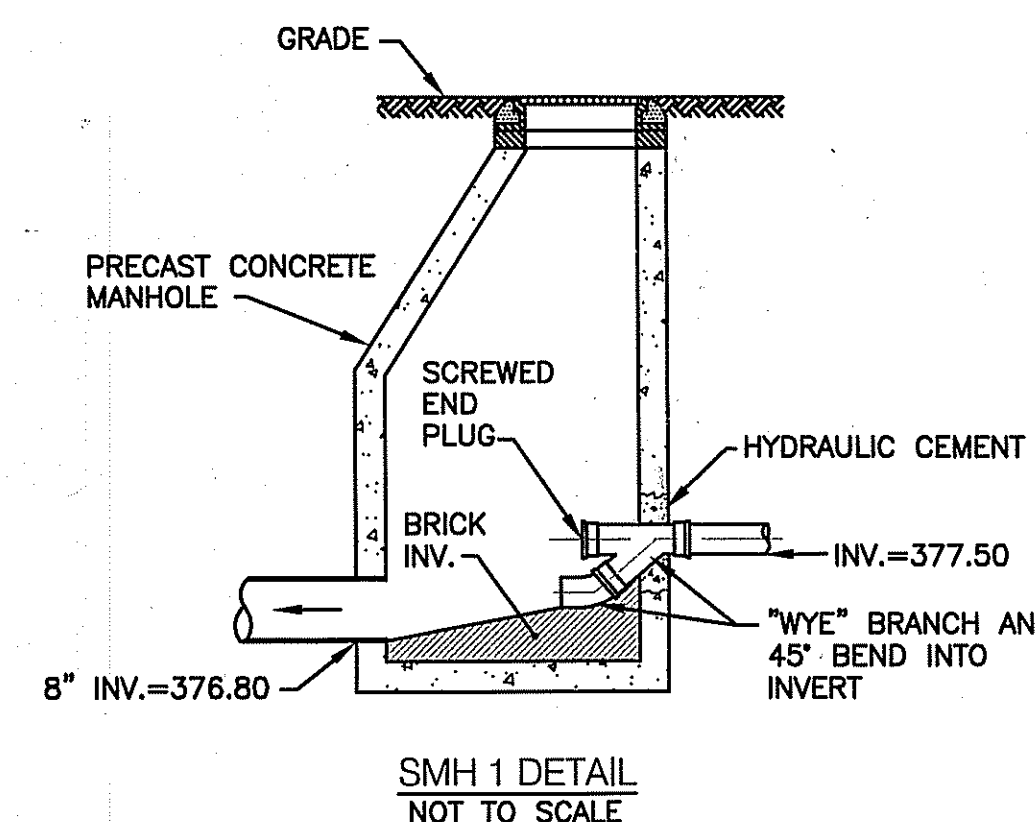


- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  - CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED = 0.12 SQ. IN./L.F. MINIMUM.
  - STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN. / L.F. (BOTH WAYS).
  - ONE POUR MONOLITHIC BASE SECTION.
  - ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
  - STEPS SHALL CONFORM TO STD. 5.3.0 AND SHALL BE INSTALLED AT THE CASTING PLANT.
  - ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 4.7.2).
  - ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  - REFER TO STD. 5.2.0 FOR MAXIMUM PIPE SIZES.
  - ALL JOINTS AND PINHOLES TO BE PLUGGED INSIDE AND OUTSIDE WITH HYDRAULIC CEMENT.

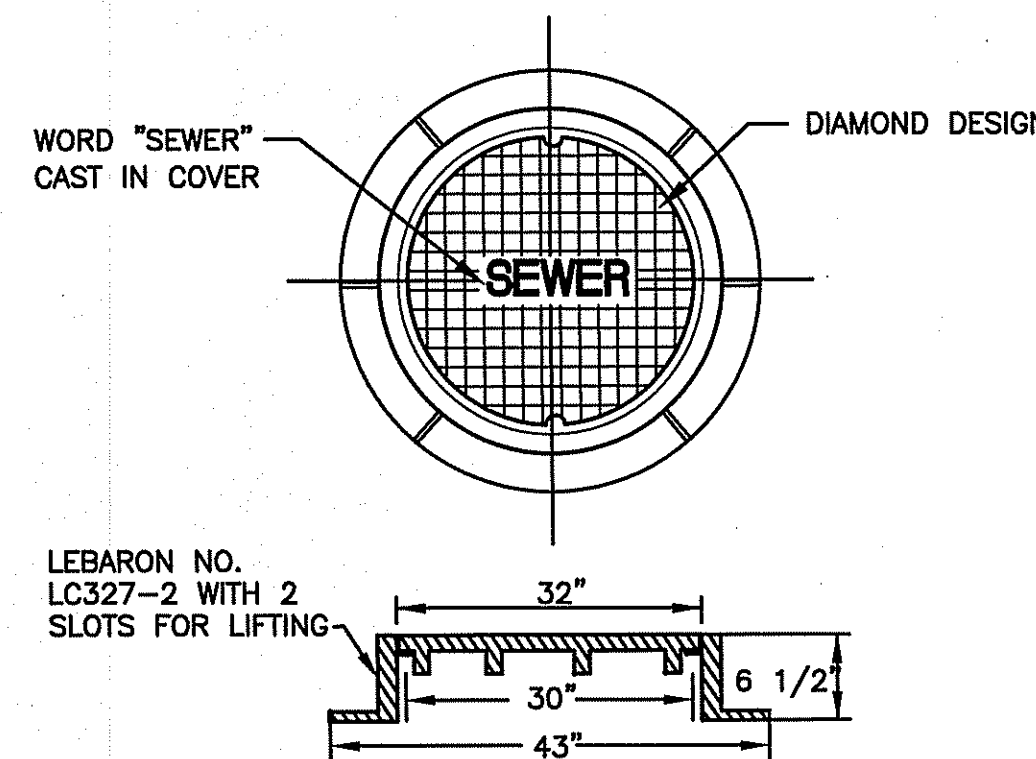
SANITARY MANHOLE DETAIL (SMH1)  
NOT TO SCALE



STANDARD BUILDING CONNECTION DETAIL  
NOT TO SCALE



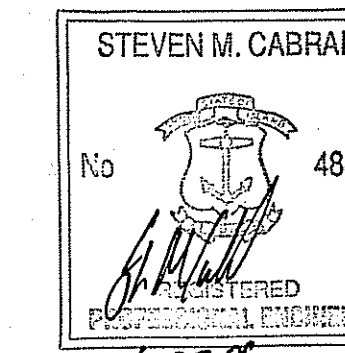
SMH 1 DETAIL  
NOT TO SCALE



- NOTES:**
- FRAME AND GRATE SHALL CONFORM TO SECTION 11.04 OF THE R.I. STANDARD SPECIFICATIONS.
  - FRAME AND COVER SEATS MUST HAVE MACHINE FINISH.
  - THE WORD "SEWER" SHALL BE CAST IN THE COVER.
  - VENTILATION HOLES OF ANY SIZE ARE NOT ALLOWED.
- LEBARON NO. LC327-2 WITH 2 SLOTS FOR LIFTING
- DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATE: 08-03-09  
FILE # 08-0311  
Charles A. Haber

SANITARY MANHOLE FRAME AND COVER DETAIL 3  
NOT TO SCALE

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5860 - Fax: (401) 738-8157  
Email: ce@crosmaneng.com



PROJECT TITLE:

HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:

MISCELLANEOUS DETAILS - 5

DATE: NOVEMBER 2008 SCALE: AS NOTED

DWG. NAME: 1519-C13.5-DET5-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

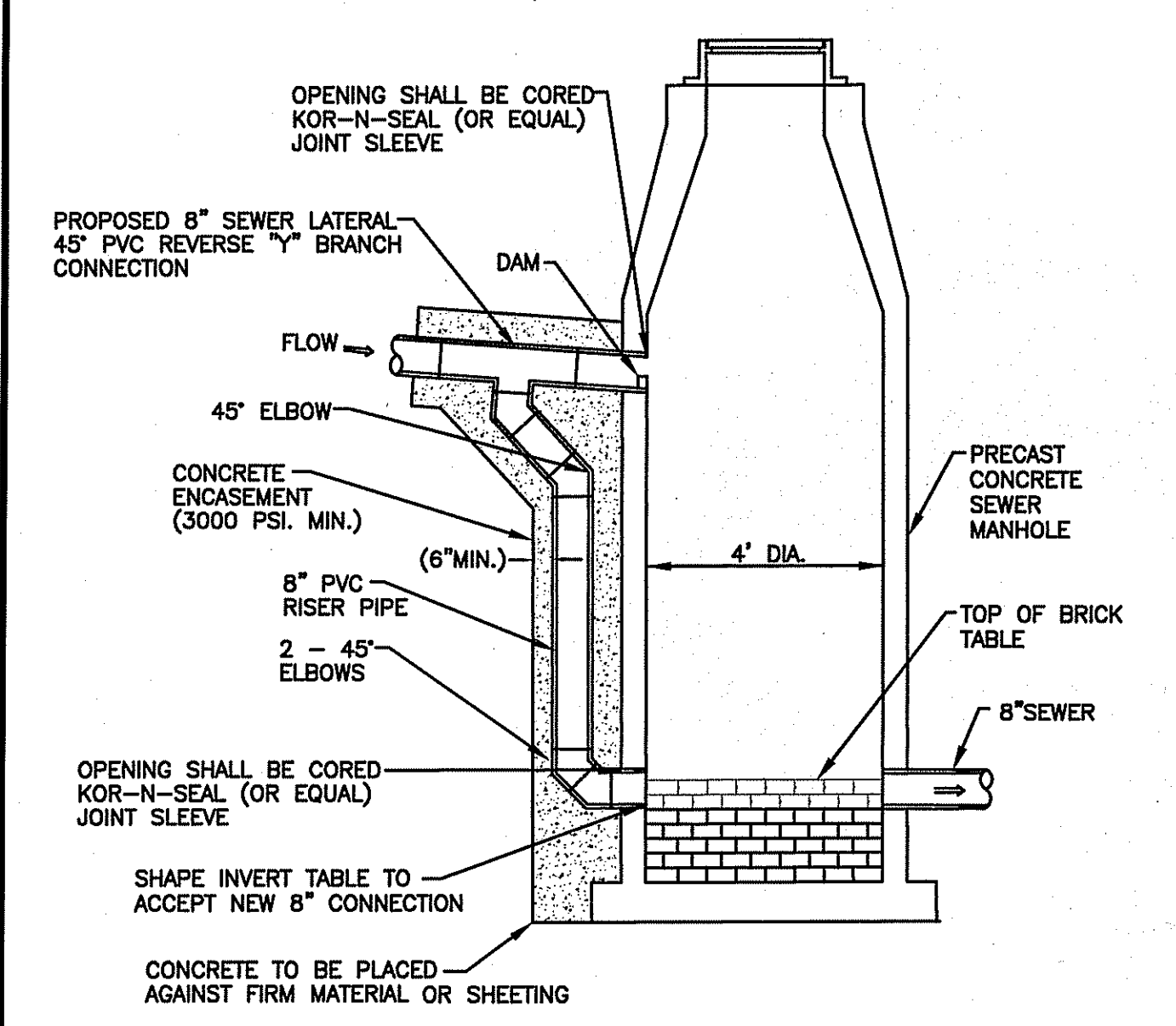
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JUN 23 2009

DRAWING NUMBER

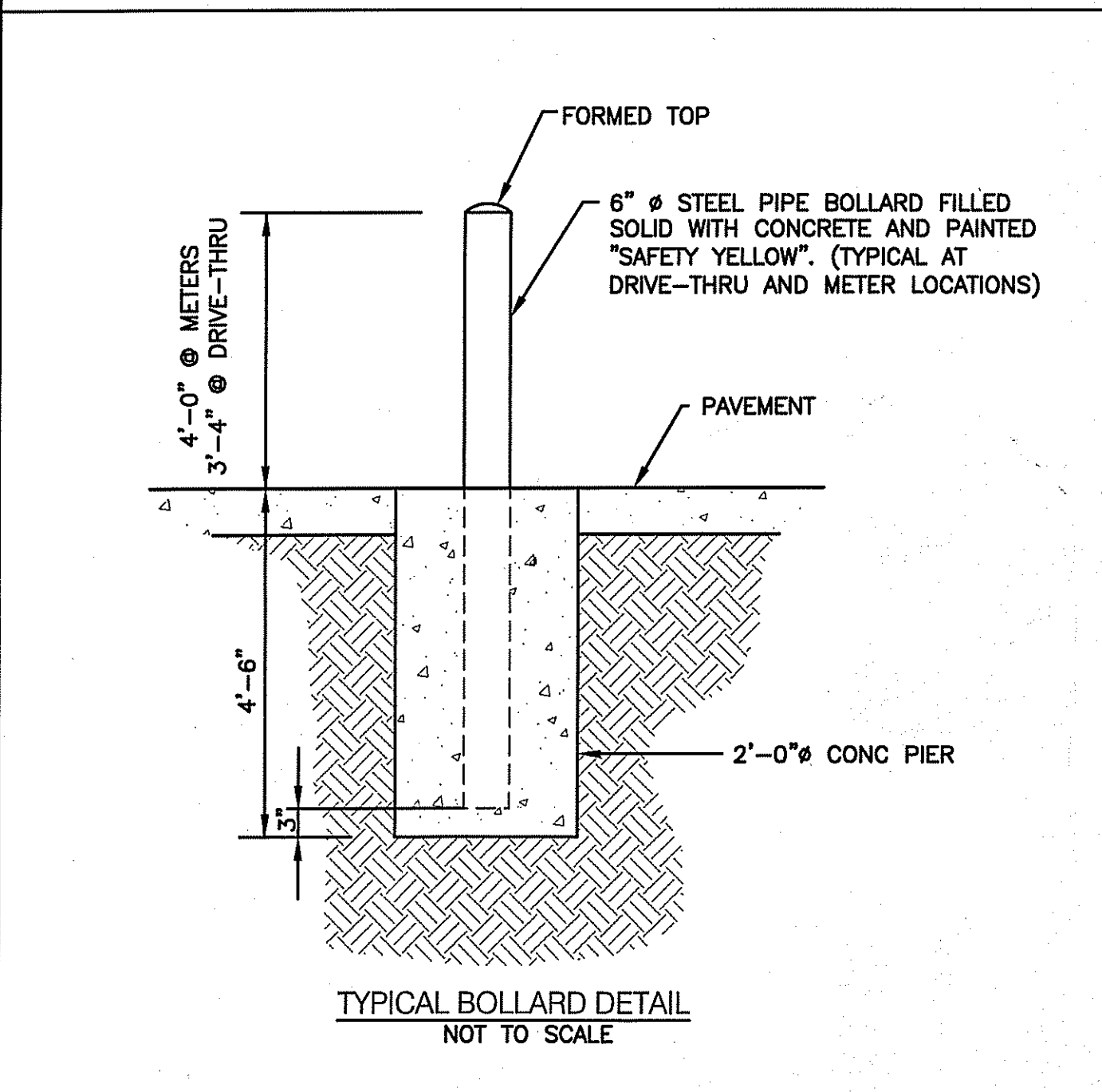
C13.5

SHEET: 36 OF 41

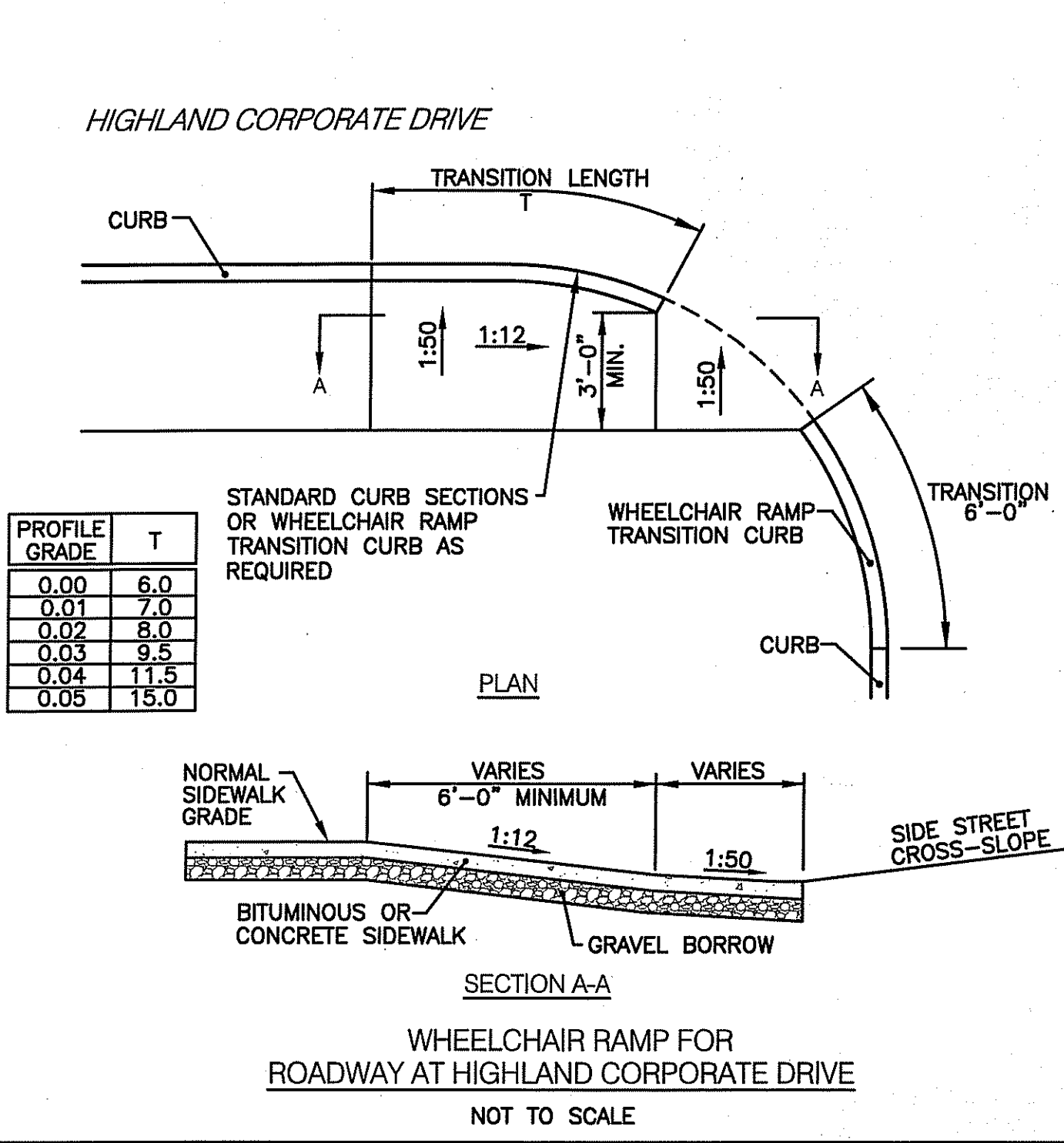
FINAL PLAN SUBMISSION



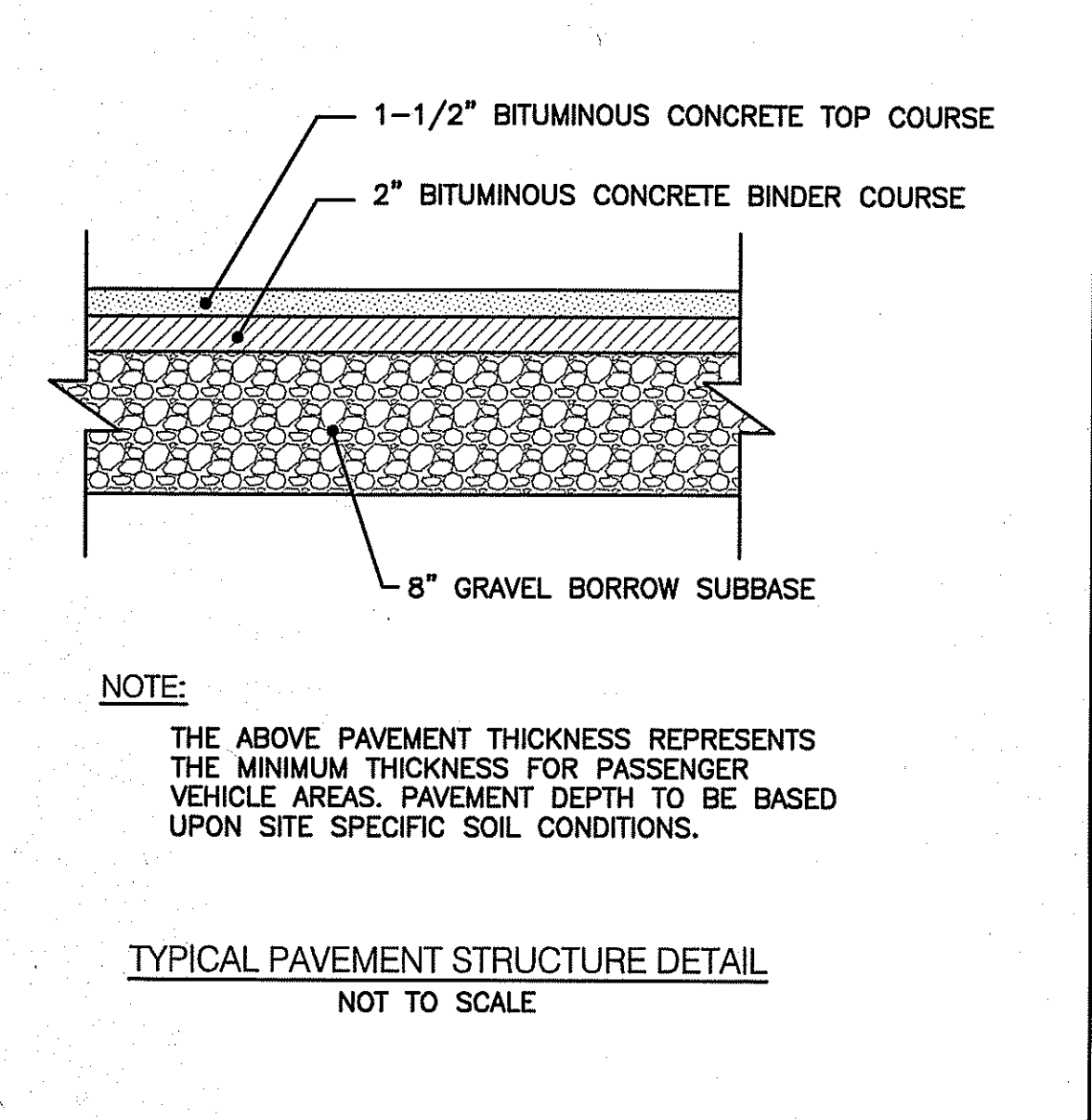
SEWER MANHOLE - DROP MANHOLE  
(OUTSIDE DROP) DETAIL  
NOT TO SCALE



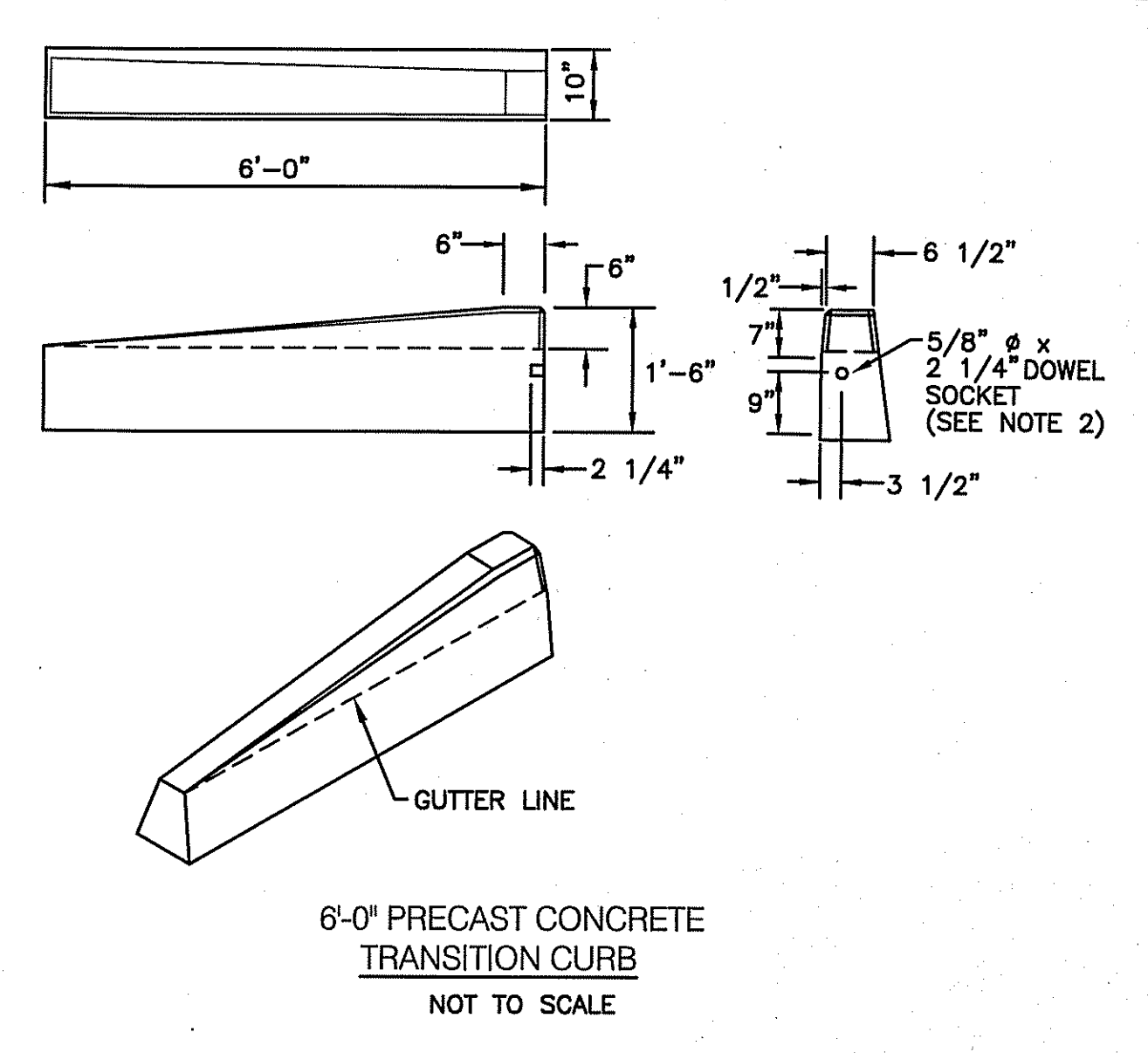
TYPICAL BOLLARD DETAIL  
NOT TO SCALE



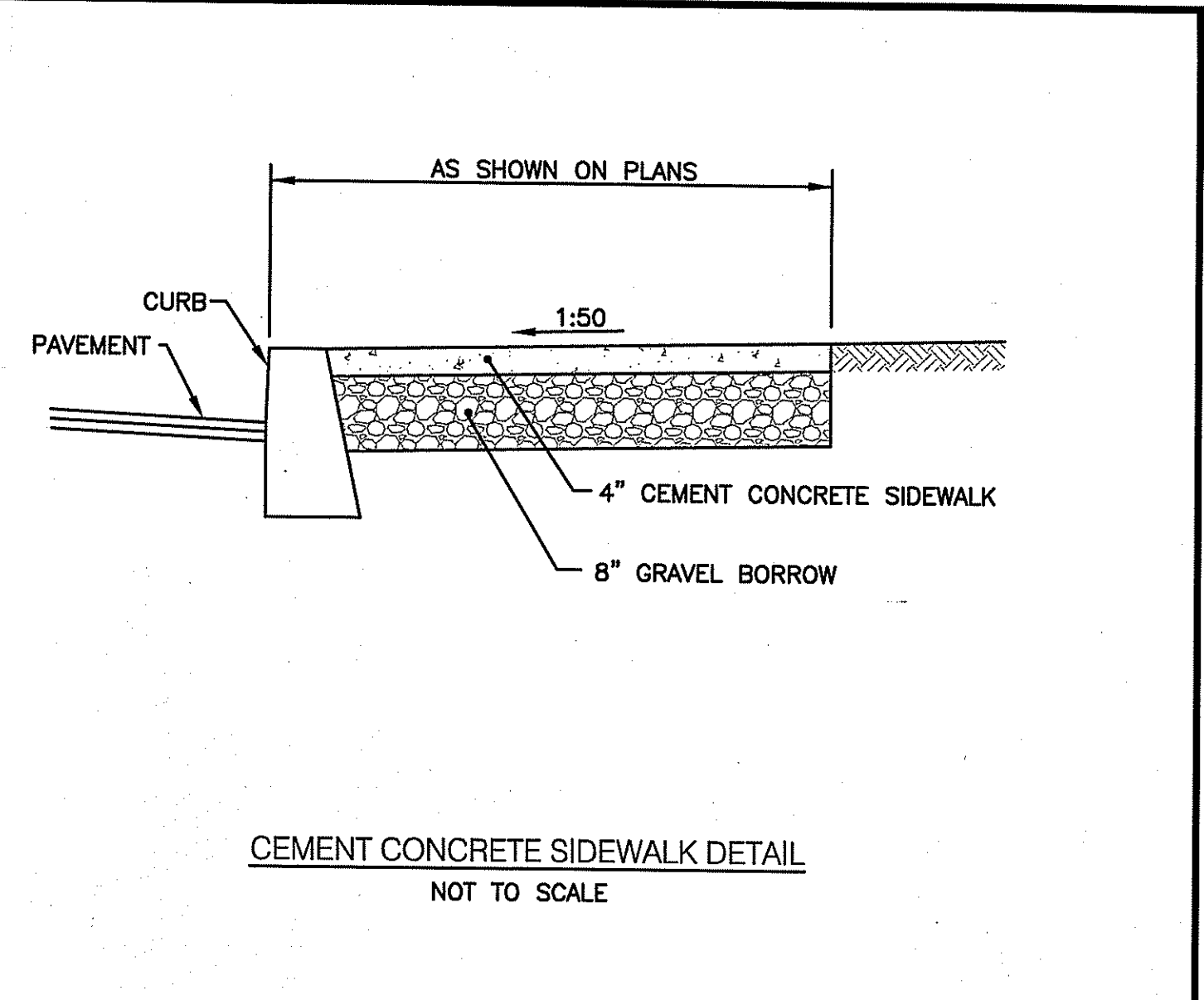
WHEELCHAIR RAMP FOR  
ROADWAY AT HIGHLAND CORPORATE DRIVE  
NOT TO SCALE



TYPICAL PAVEMENT STRUCTURE DETAIL  
NOT TO SCALE



6"-0" PRECAST CONCRETE  
TRANSITION CURB  
NOT TO SCALE



CEMENT CONCRETE SIDEWALK DETAIL  
NOT TO SCALE

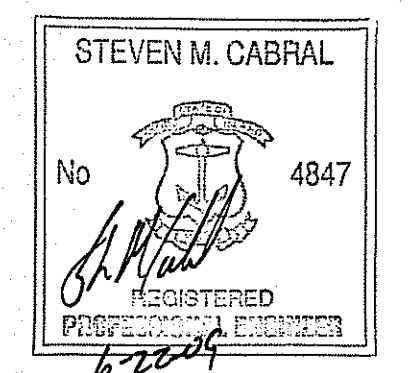
SOIL EVALUATION DATA

SOIL EVALUATIONS WERE CONDUCTED BY CROSSMAN ENGINEERING INC. ON 9/24/08. (TP 1-10) and 12/1/08 (TP 11-15)

TP1	TP2	TP3	TP4	TP6	TP7	TP8	TP9	TP10	TP11	TP12	TP13	TP14	TP15	
(EL=335.0)	(EL=338.0)	(EL=359.0)	(EL=357.0)	(EL=365.5)	(EL=384.5)	(EL=396.0)	(EL=329.0)	(EL=409.5)	(EL=408.5)	(EL=359.0)	(EL=366.0)	(EL=367.0)	(EL=388.0)	(EL=425.0)
3" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 4" DARK YELLOWISH BROWN FINE SANDY LOAM 12" YELLOWISH BROWN VERY FINE SANDY LOAM 32" LIGHT YELLOWISH BROWN VERY FINE SANDY LOAM/SILT LOAM 45" LIGHT YELLOWISH BROWN STONY GRAVELLY LOAMY SAND 134" NO REFUSAL 115" WATER SEEPAGE 86" DESIGN GWT 32"-45" REDOX FEATURES (HANGING IN HORIZON) RIDEM SOIL CATEGORY = 7m	3" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 8" DARK YELLOWISH BROWN FINE SANDY LOAM 18" YELLOWISH BROWN VERY FINE SANDY LOAM 28" LIGHT YELLOWISH BROWN STONY GRAVELLY LOAMY SAND 134" NO REFUSAL NO WATER SEEPAGE 86" DESIGN GWT 32" ISOLATED REDOX FEATURES (AROUND STONES) RIDEM SOIL CATEGORY = 7m	3" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 4" DARK YELLOWISH BROWN FINE SANDY LOAM 13" YELLOWISH BROWN VERY FINE SANDY LOAM 30" LIGHT YELLOWISH BROWN STONY GRAVELLY LOAMY SAND 122" 122" LARGE BOULDERS/POSSIBLE LEDGE NO WATER SEEPAGE 120" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m	3" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 4" DARK YELLOWISH BROWN FINE SANDY LOAM 15" YELLOWISH BROWN VERY FINE SANDY LOAM 30" LIGHT OLIVE BROWN STONY GRAVELLY LOAMY SAND 96" 96" LARGE BOULDERS/POSSIBLE LEDGE NO WATER SEEPAGE 96" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 5" DARK YELLOWISH BROWN VERY FINE SANDY LOAM 17" YELLOWISH BROWN SANDY LOAM/COARSE SANDY LOAM 24" LIGHT YELLOWISH BROWN STONY GRAVELLY LOAMY SAND 56" LIGHT YELLOWISH BROWN STONY GRAVELLY LOAMY SAND 82" 82" LARGE BOULDERS/POSSIBLE LEDGE NO WATER SEEPAGE 82" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 4" DARK YELLOWISH BROWN FINE SANDY LOAM 14" YELLOWISH BROWN VERY FINE SANDY LOAM 26" LIGHT YELLOWISH BROWN STONY GRAVELLY LOAMY SAND 86" 86" LARGE BOULDERS/POSSIBLE LEDGE NO WATER SEEPAGE 86" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 2" DARK YELLOWISH BROWN FINE SANDY LOAM 12" YELLOWISH BROWN VERY FINE SANDY LOAM 28" LIGHT BROWNISH GRAY STONY GRAVELLY LOAMY SAND 110" NO REFUSAL 110" LARGE BOULDERS NO WATER SEEPAGE 110" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 4" DARK YELLOWISH BROWN FINE SANDY LOAM 17" YELLOWISH BROWN VERY FINE SANDY LOAM 40" LIGHT BROWNISH GRAY STONY GRAVELLY LOAMY SAND 120" NO REFUSAL NO WATER SEEPAGE 120" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 3" DARK YELLOWISH BROWN FINE SANDY LOAM 18" YELLOWISH BROWN VERY FINE SANDY LOAM 42" LIGHT BROWNISH GRAY STONY GRAVELLY LOAMY SAND 120" NO REFUSAL NO WATER SEEPAGE 90" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 2" DARK YELLOWISH BROWN FINE SANDY LOAM 14" YELLOWISH BROWN VERY FINE SANDY LOAM 26" LIGHT BROWNISH GRAY STONY GRAVELLY LOAMY SAND 86" 86" LARGE BOULDERS/POSSIBLE LEDGE NO WATER SEEPAGE 86" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 3" DARK YELLOWISH BROWN FINE SANDY LOAM 18" YELLOWISH BROWN VERY FINE SANDY LOAM 36" LIGHT YELLOWISH BROWN STONY GRAVELLY LOAMY SAND 120" NO REFUSAL NO WATER SEEPAGE 110" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m ACTUAL PERC. RATE= 5MPI (FIELD MEASURED)	3" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 4" DARK YELLOWISH BROWN FINE SANDY LOAM 20" YELLOWISH BROWN VERY FINE SANDY LOAM 48" LIGHT YELLOWISH BROWN STONY GRAVELLY LOAMY SAND 120" NO REFUSAL NO WATER SEEPAGE 110" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m ACTUAL PERC. RATE= 5MPI (FIELD MEASURED)	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 4" DARK YELLOWISH BROWN FINE SANDY LOAM 15" YELLOWISH BROWN VERY FINE SANDY LOAM 30" LIGHT BROWNISH GRAY STONY GRAVELLY LOAMY SAND 110" LEDGE NO WATER SEEPAGE 120" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m ACTUAL PERC. RATE= 10MPI (FIELD MEASURED)	2" ORGANIC LITTER 0" DARK BROWN FINE SANDY LOAM 3" DARK YELLOWISH BROWN FINE SANDY LOAM 14" YELLOWISH BROWN VERY FINE SANDY LOAM 32" LIGHT BROWNISH GRAY STONY GRAVELLY LOAMY SAND 120" NO REFUSAL NO WATER SEEPAGE 120" DESIGN GWT NO REDOX FEATURES RIDEM SOIL CATEGORY = 7m ACTUAL PERC. RATE= 5MPI (FIELD MEASURED)	

**CEI**  
- Civil  
- Transportation  
- Environmental  
- Site Planning  
- Land Surveying

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cei@crossmaneng.com



PROJECT TITLE:  
**HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO**  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

PREPARED FOR:  
**HIGHLAND HILLS LLC**  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**MISCELLANEOUS DETAILS - 6**

DATE: NOVEMBER 2008  
SCALE: AS NOTED

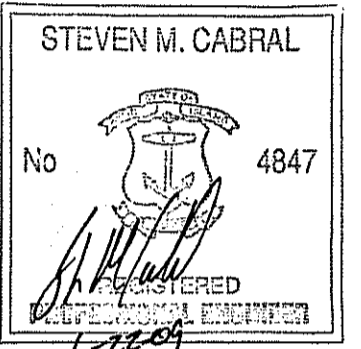
DWG. NAME: 1519-C13.6-DET6-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT
5	08/03/09	08-0371

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF PERMITS  
AS SPONSORED BY  
DATED AUG 04 2009  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. ...  
REGISTERED PROFESSIONAL ENGINEER  
JUN 23 2009  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES

DRAWING NUMBER  
**C13.6**  
SHEET: 37 OF 41  
FINAL PLAN SUBMISSION



PROJECT TITLE:  
**HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO**  
 HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:  
**HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND**

DRAWING TITLE:  
**INFILTRATION SYSTEM  
 CROSS SECTIONS - 1**

DATE: NOVEMBER 2008 SCALE: AS SHOWN

DWG. NAME: 1519-C14.1-SECT1-REV4.dwg

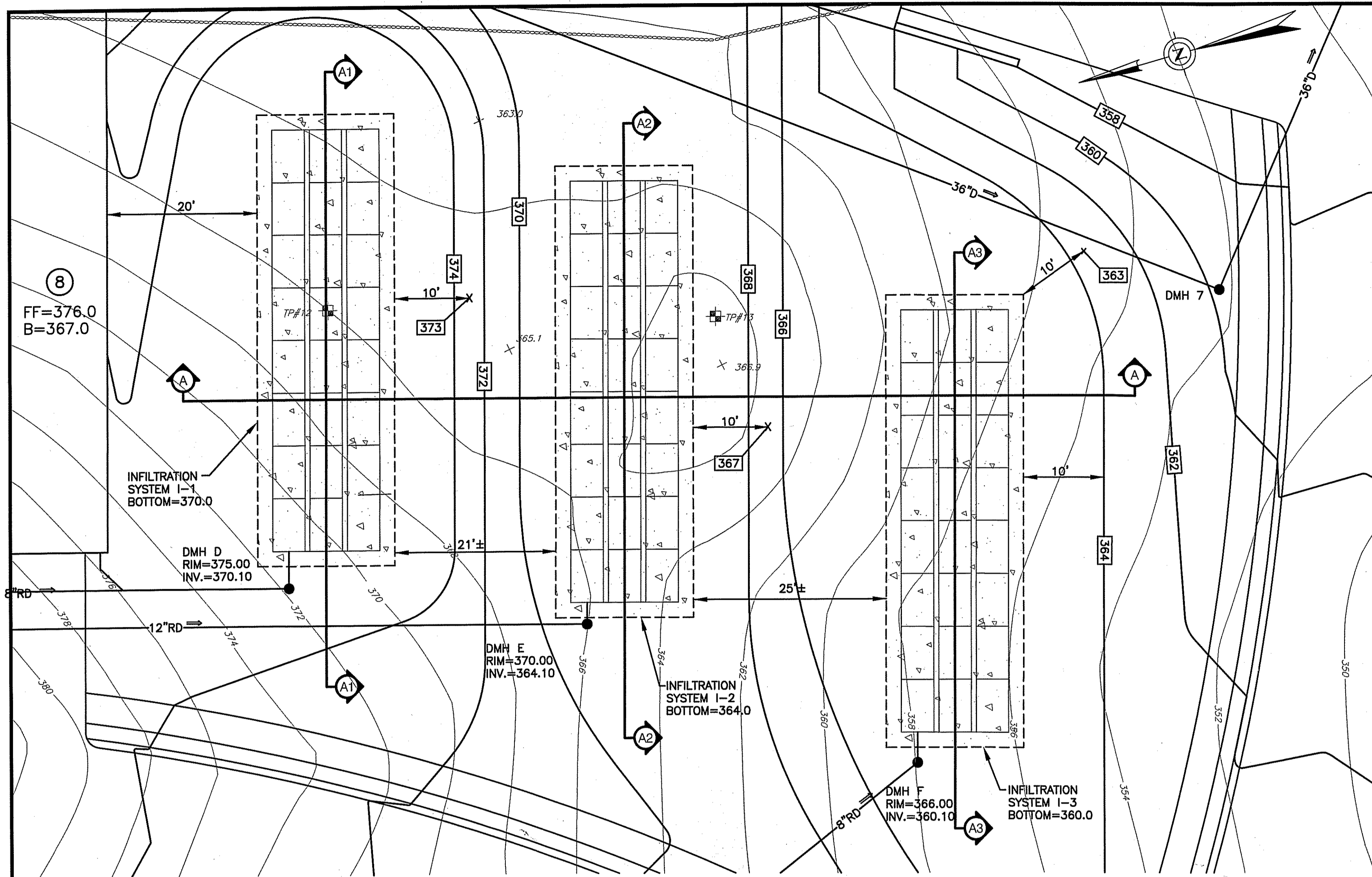
NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DRAWING NUMBER

**C14.1**

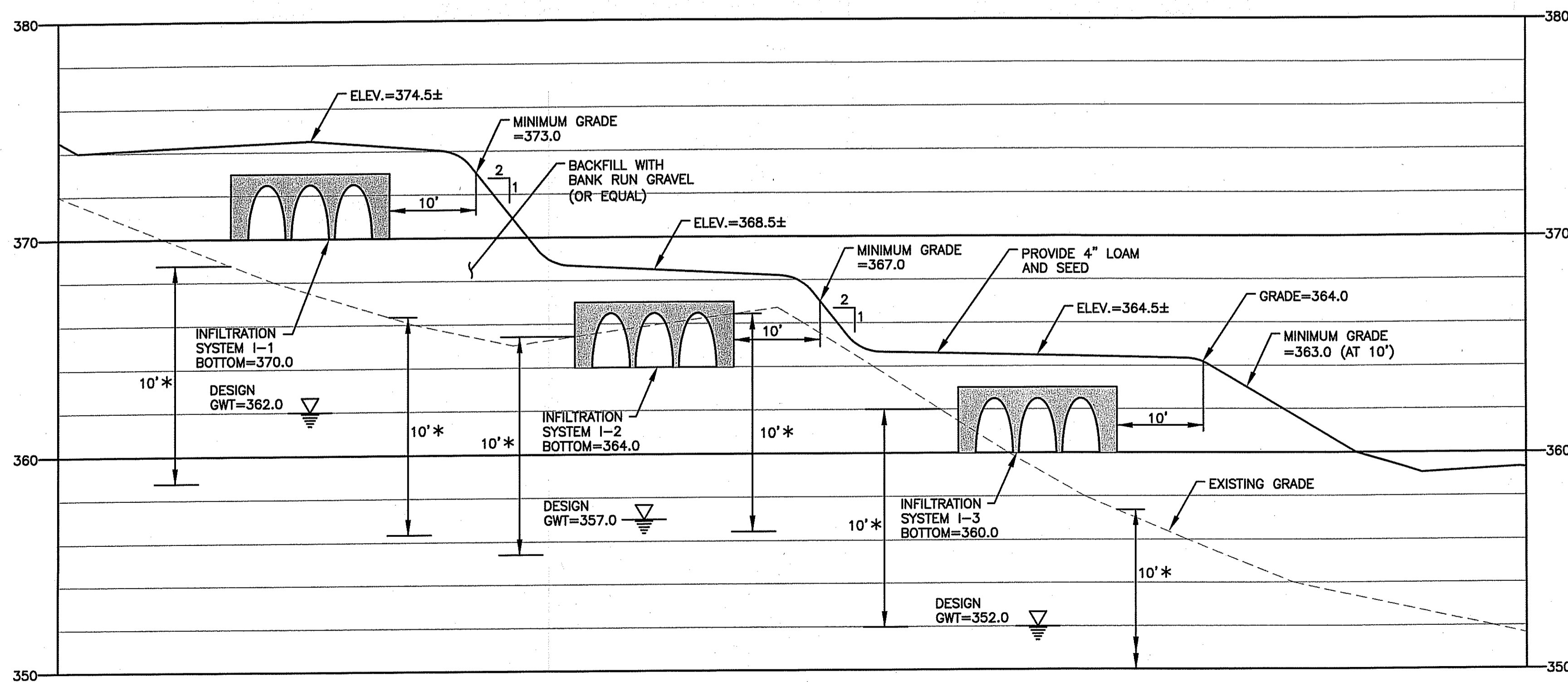
SHEET: 38 OF 41

FINAL PLAN SUBMISSION

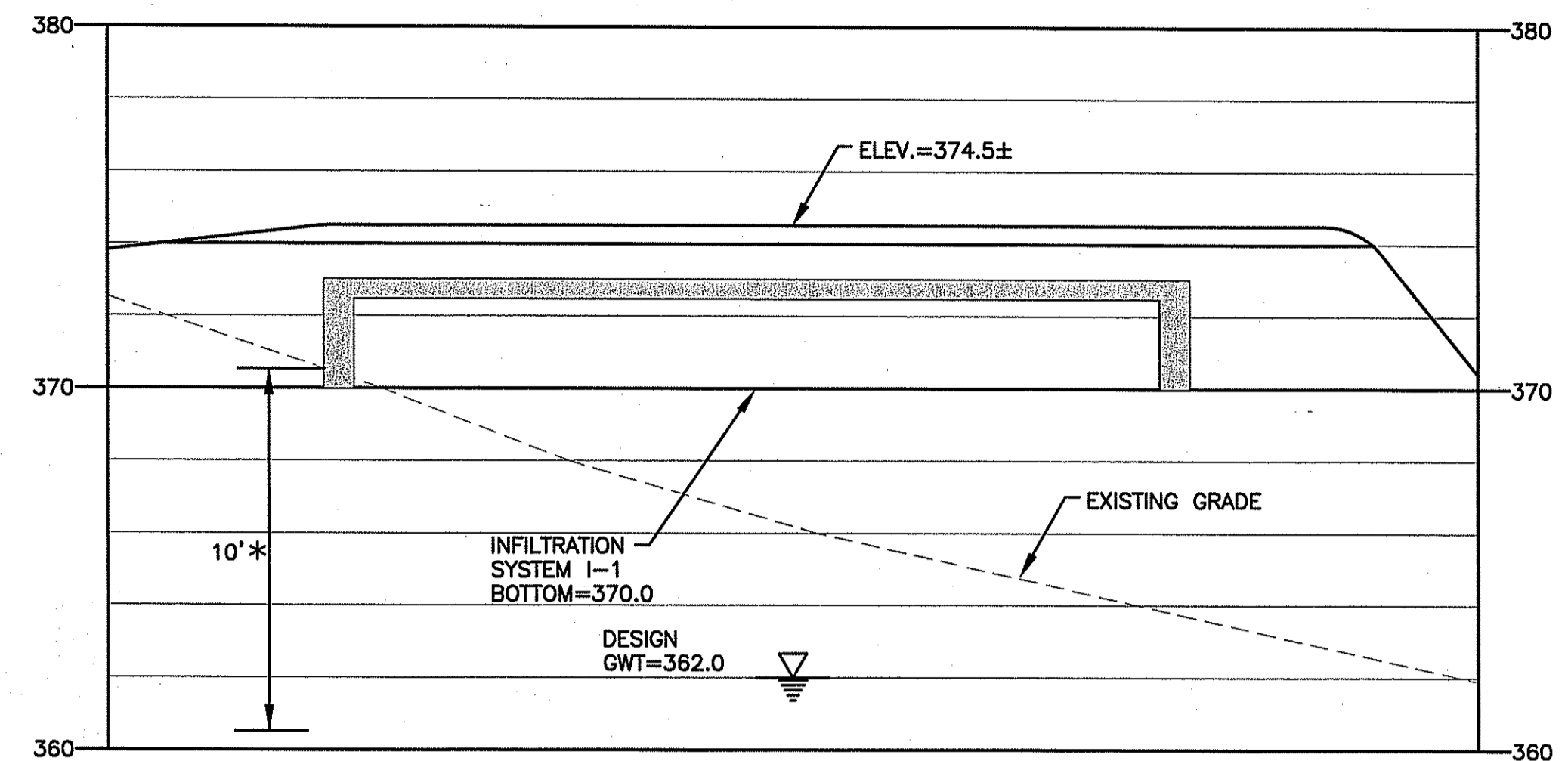


NOTE:  
 REFER TO MISCELLANEOUS DETAILS  
 PLAN 2 FOR SPECIFIC MATERIAL  
 AND DETAIL OF INFILTRATION SYSTEM

**SITE PLAN (I-1, I-2 and I-3)**  
 SCALE: 1"=10'

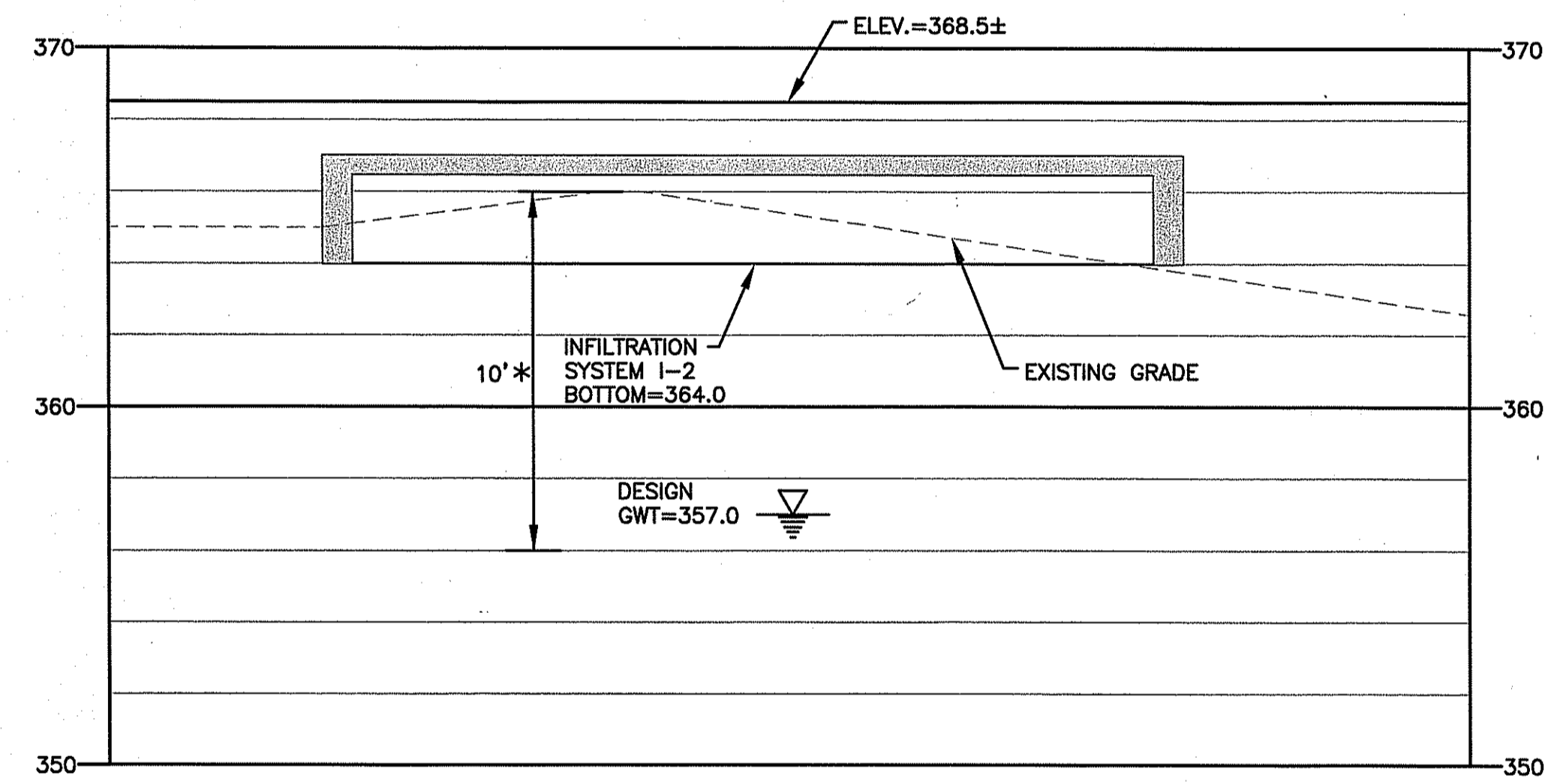


**SECTION AA**  
 SCALE: VERT:1"=10'  
 HORZ:1"=4'



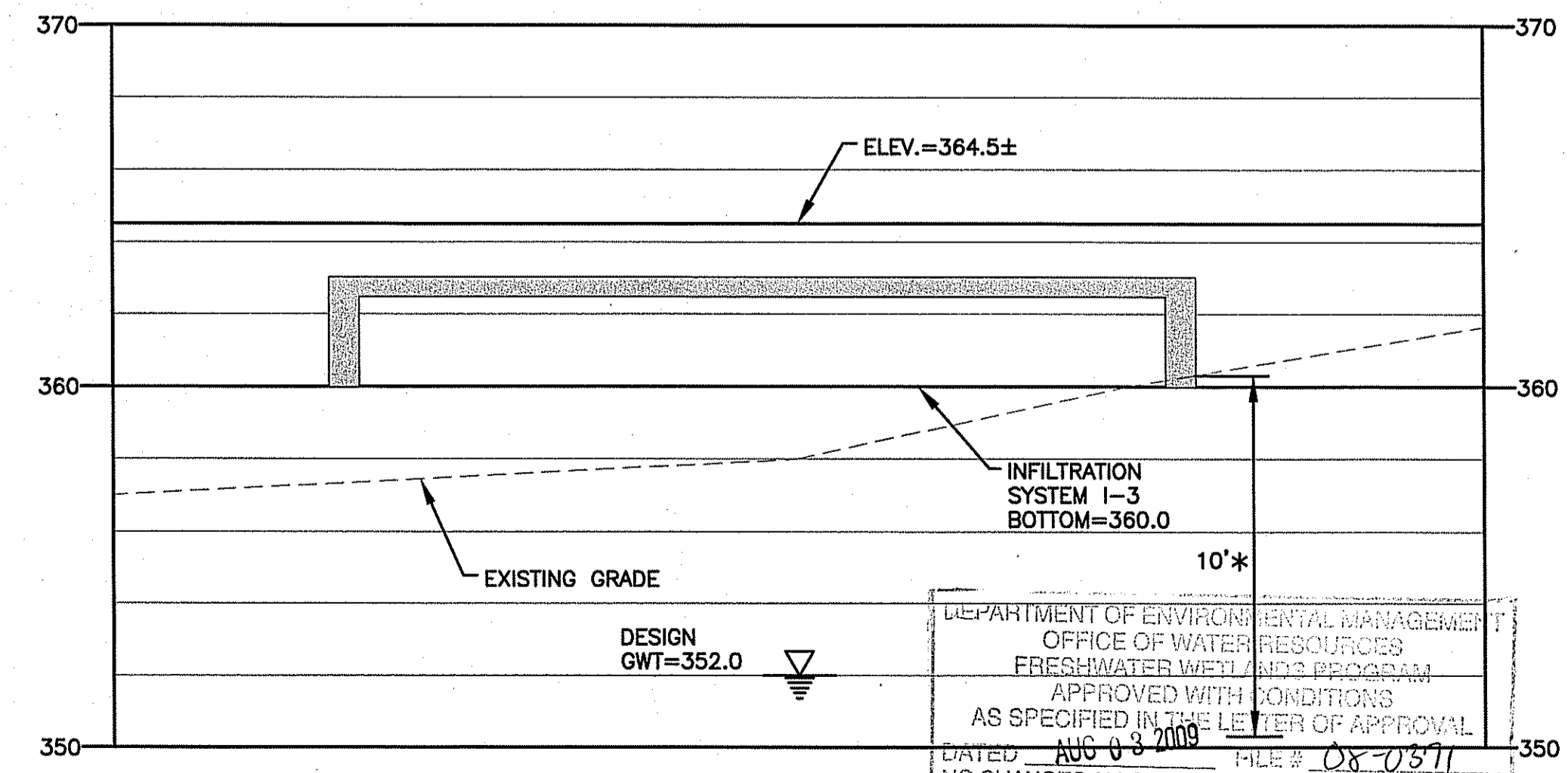
\* NOTE (I-1):  
 AS WITNESSED FROM TP-12, THE SEASONAL  
 HIGH GROUNDWATER TABLE IS ESTIMATED TO  
 BE AT AN ELEVATION OF 10 FEET BELOW  
 EXISTING GRADE.

**SECTION A1**  
 SCALE: VERT:1"=10'  
 HORZ:1"=4'



\* NOTE (I-2):  
 AS WITNESSED FROM TP-13, THE SEASONAL  
 HIGH GROUNDWATER TABLE IS ESTIMATED TO  
 BE AT AN ELEVATION OF 10 FEET BELOW  
 EXISTING GRADE.

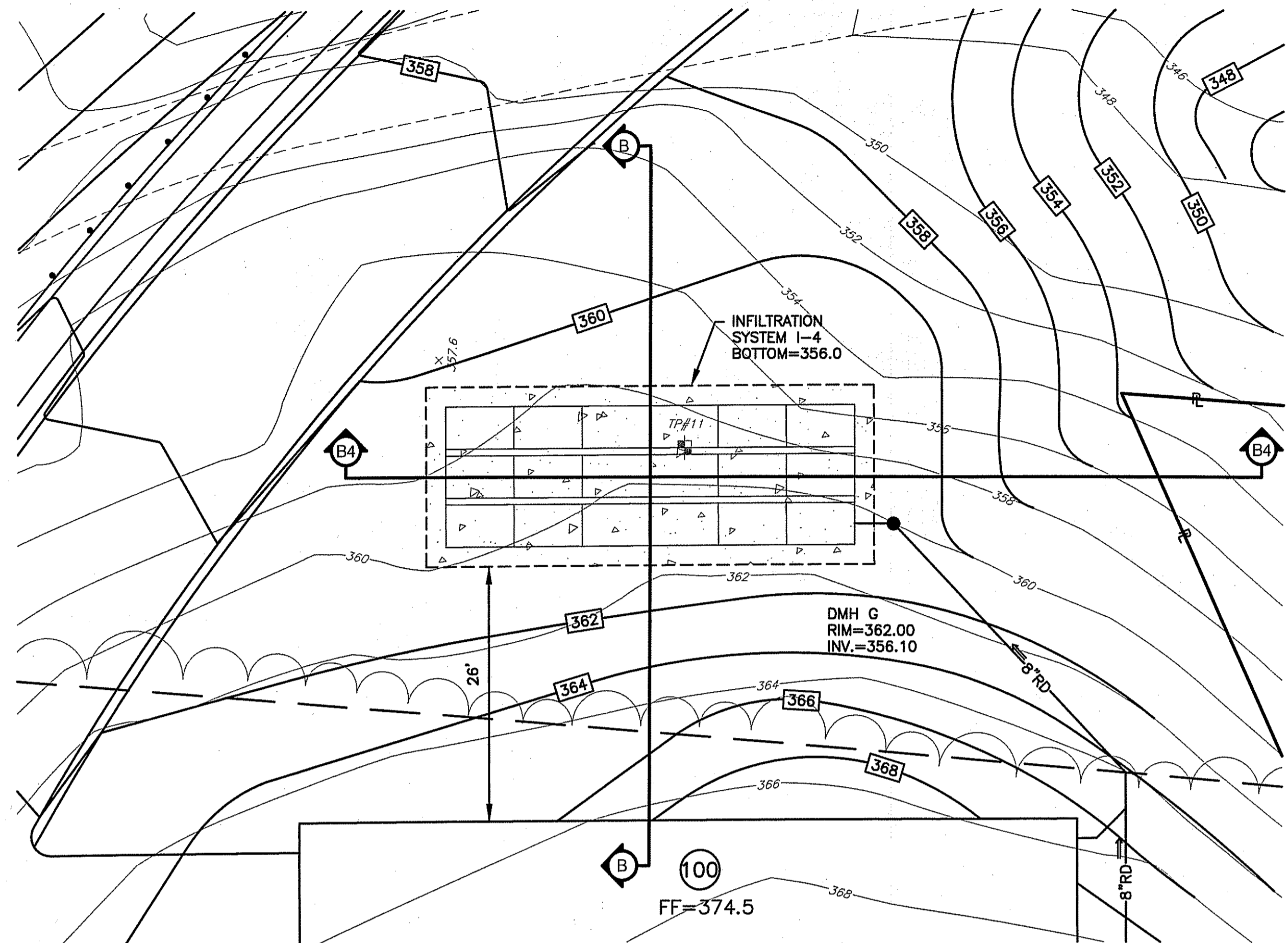
**SECTION A2**  
 SCALE: VERT:1"=10'  
 HORZ:1"=4'



\* NOTE (I-3):  
 AS WITNESSED FROM TP-13, THE SEASONAL  
 HIGH GROUNDWATER TABLE IS ESTIMATED TO  
 BE AT AN ELEVATION OF 10 FEET BELOW  
 EXISTING GRADE.

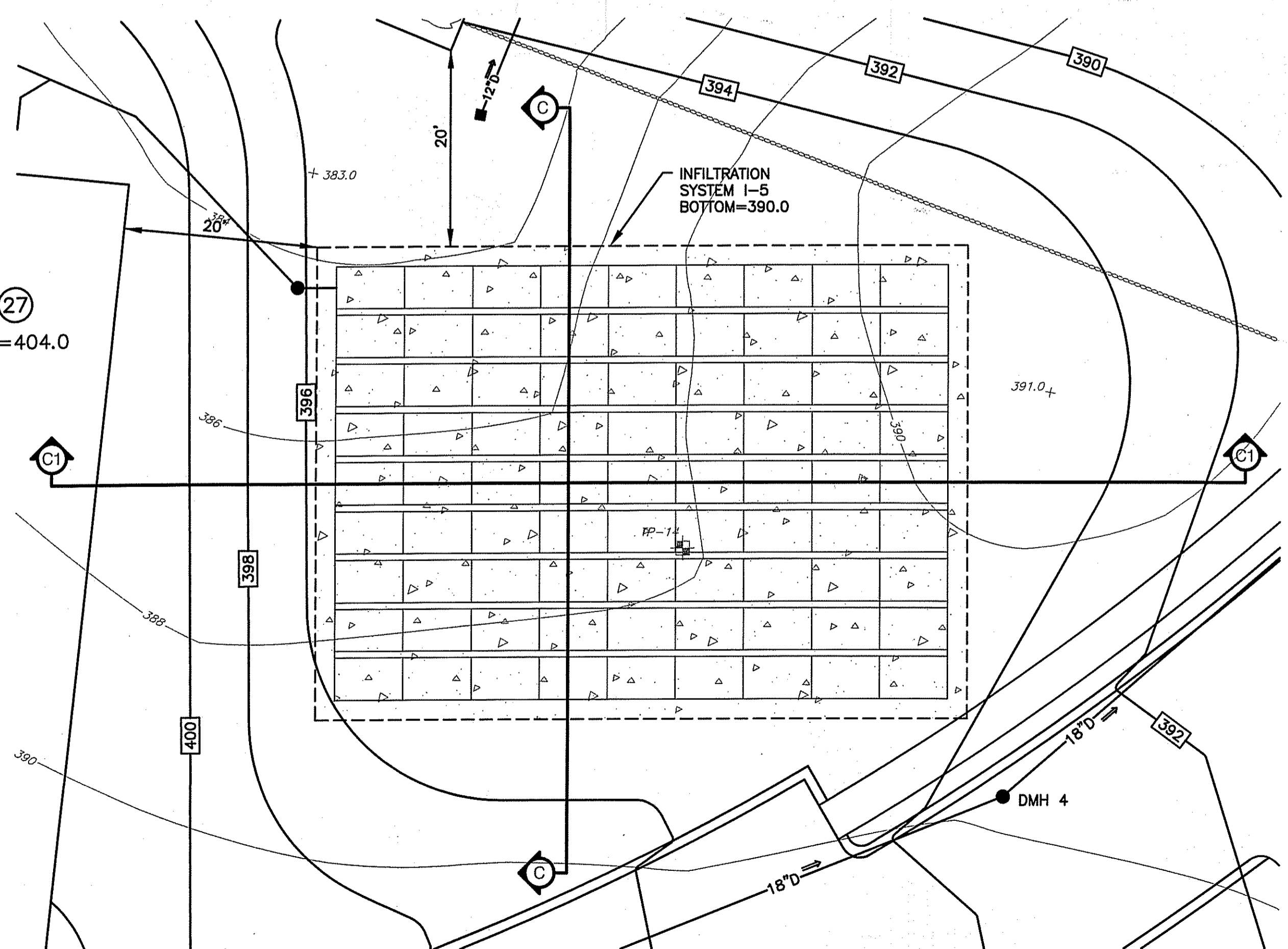
**SECTION A3**  
 SCALE: VERT:1"=10'  
 HORZ:1"=4'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 08 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
 Charles A. Harber



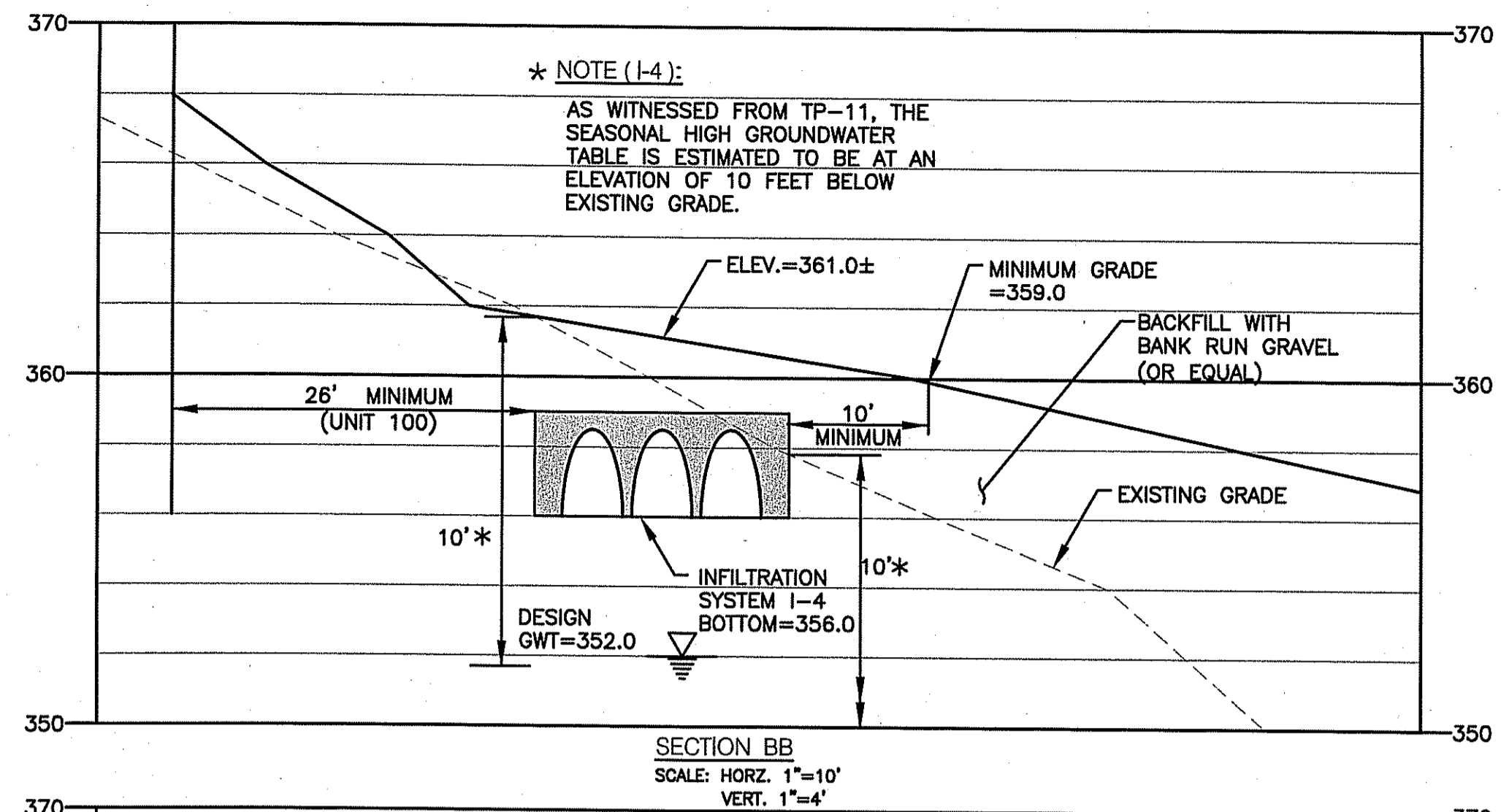
NOTE:  
REFER TO MISCELLANEOUS DETAILS  
PLAN 2 FOR SPECIFIC MATERIAL  
AND DETAIL OF INFILTRATION SYSTEM

SITE PLAN (I-4)  
SCALE: 1"=10'

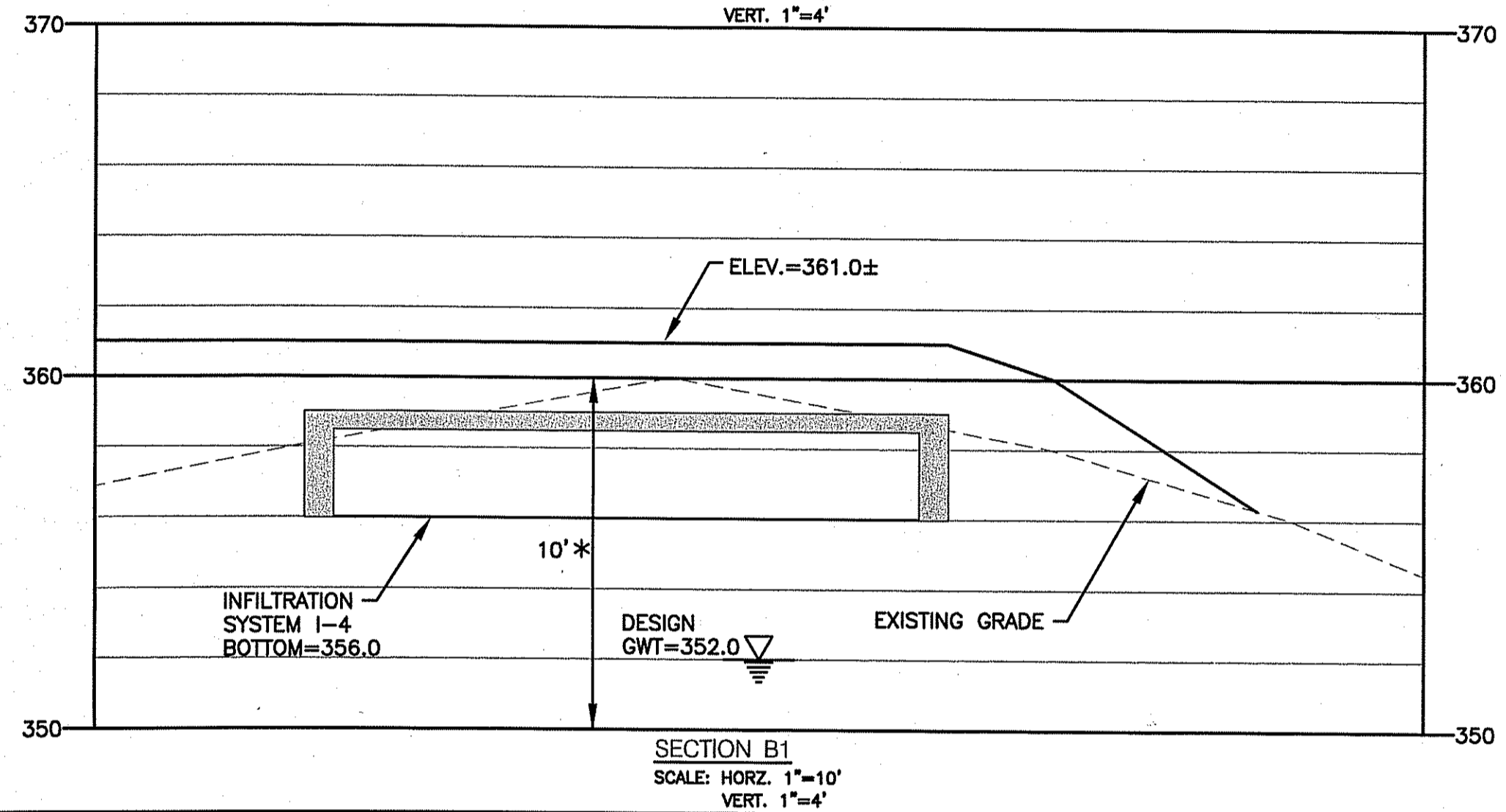


NOTE:  
REFER TO MISCELLANEOUS DETAILS  
PLAN 2 FOR SPECIFIC MATERIAL  
AND DETAIL OF INFILTRATION SYSTEM

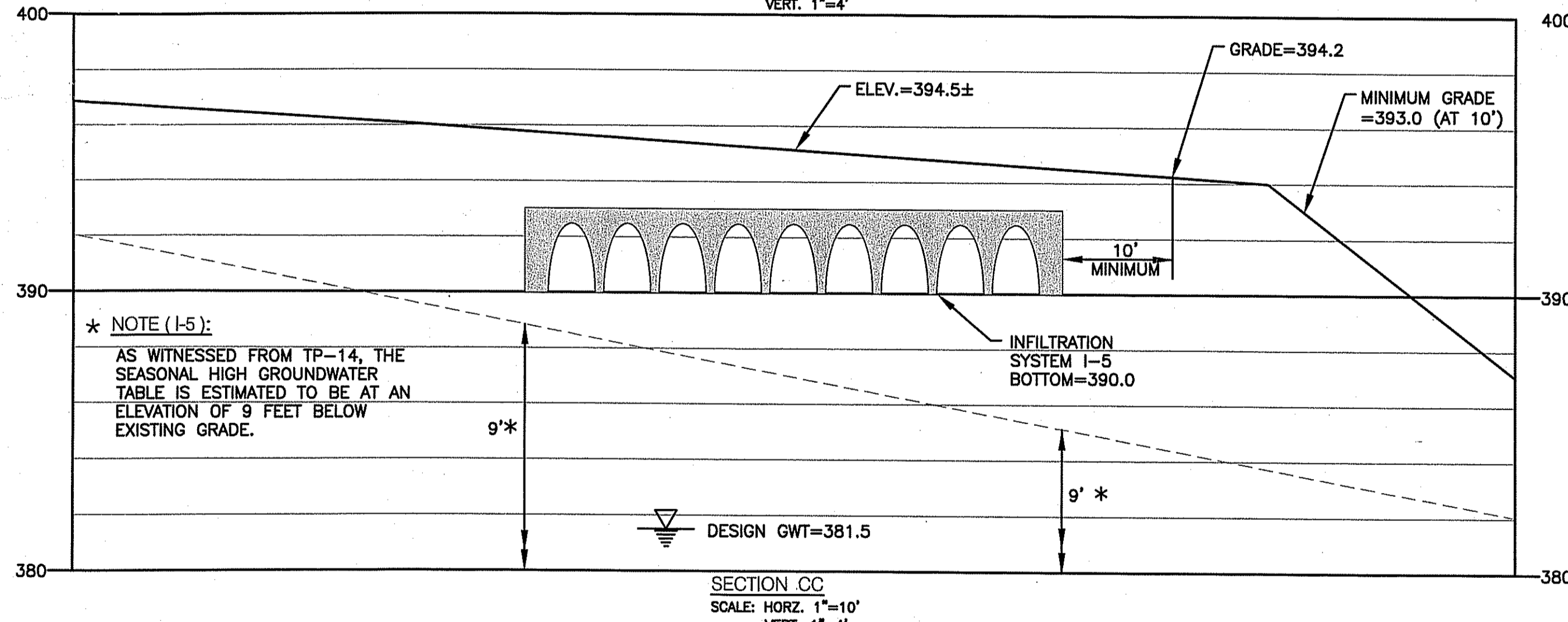
SITE PLAN (I-5)  
SCALE: 1"=10'



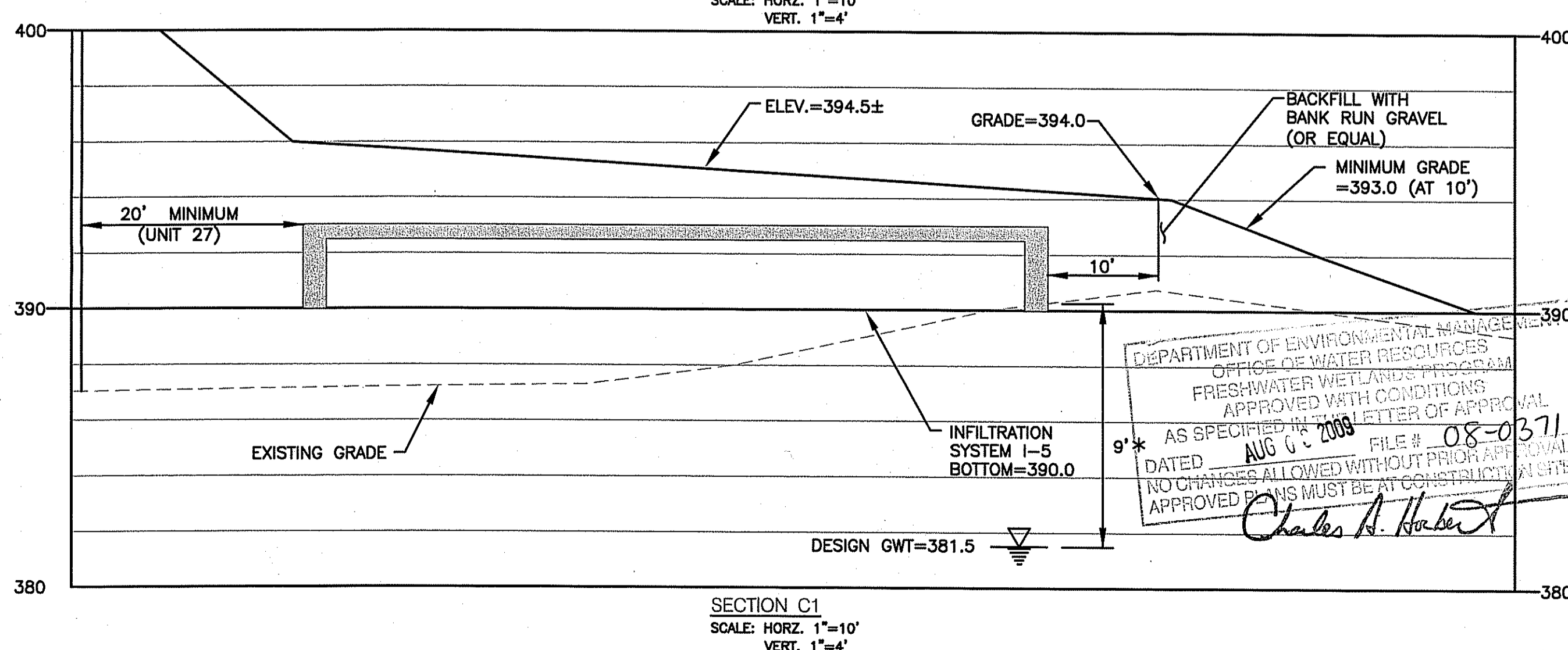
SECTION BB  
SCALE: HORZ. 1"=10'  
VERT. 1"=4'



SECTION B1  
SCALE: HORZ. 1"=10'  
VERT. 1"=4'

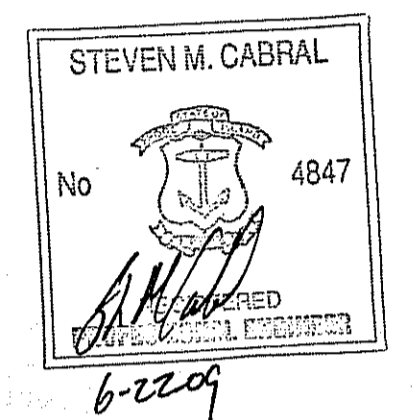


SECTION CC  
SCALE: HORZ. 1"=10'  
VERT. 1"=4'



SECTION C1  
SCALE: HORZ. 1"=10'  
VERT. 1"=4'

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
Warwick, Rhode Island 02886  
Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cei@crossmaneng.com



PROJECT TITLE:  
  
HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.

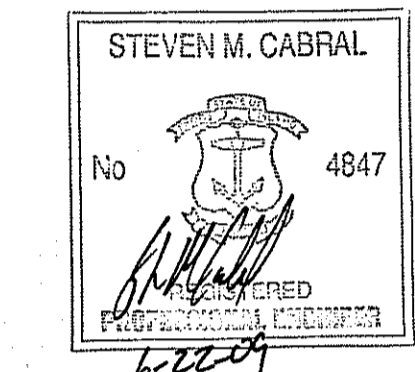
PREPARED FOR:  
  
HIGHLAND HILLS LLC  
  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND

DRAWING TITLE:  
**INFILTRATION SYSTEM  
CROSS SECTIONS - 2**

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	08/15/09	R.I.D.E.M. COMMENT

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
APPROVED IN THE LETTER OF APPROVAL  
FILE # 08-0371  
DATED AUG 6, 2008  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED BY Charles A. [Signature]

DRAWING NUMBER  
**C14.2**  
SHEET: 39 OF 41  
FINAL PLAN SUBMISSION



PROJECT TITLE:

HIGHLAND HILLS  
 PLAT MAP 51 LOT 11 &  
 PORTION OF PLAT 52 LOT 360  
 ZONING DISTRICT I-1/PDO

HIGHLAND CORPORATE DRIVE  
 CUMBERLAND, R.I.

PREPARED FOR:

HIGHLAND HILLS LLC  
 177 OLD RIVER ROAD  
 LINCOLN, RHODE ISLAND

DRAWING TITLE:

INFILTRATION SYSTEM  
 CROSS SECTIONS - 3

DATE: NOVEMBER 2008 SCALE: AS SHOWN

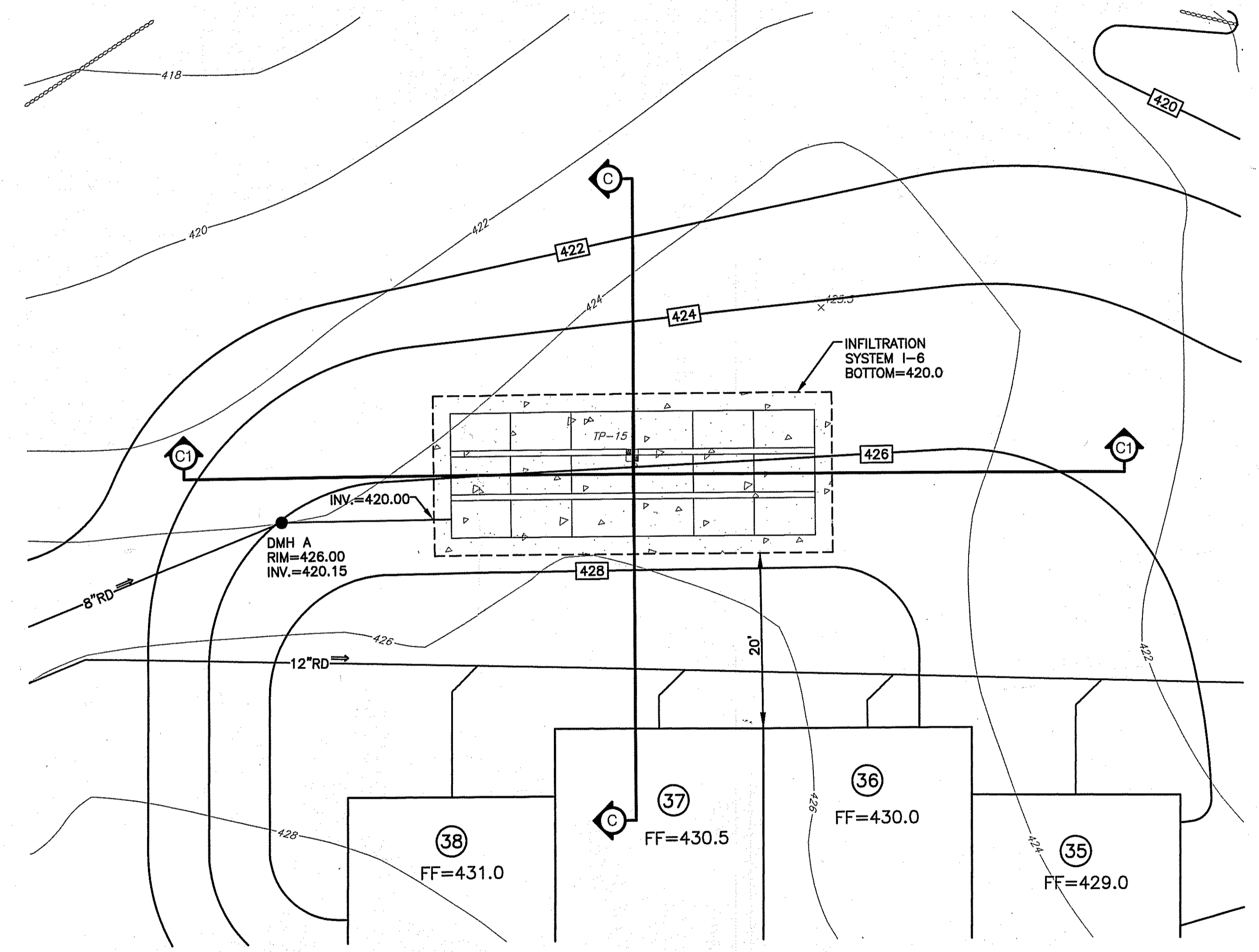
DWG. NAME: 1519-C14.3-SECT3-REV4.dwg

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

RECEIVED  
 JUN 23 2009  
 DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES

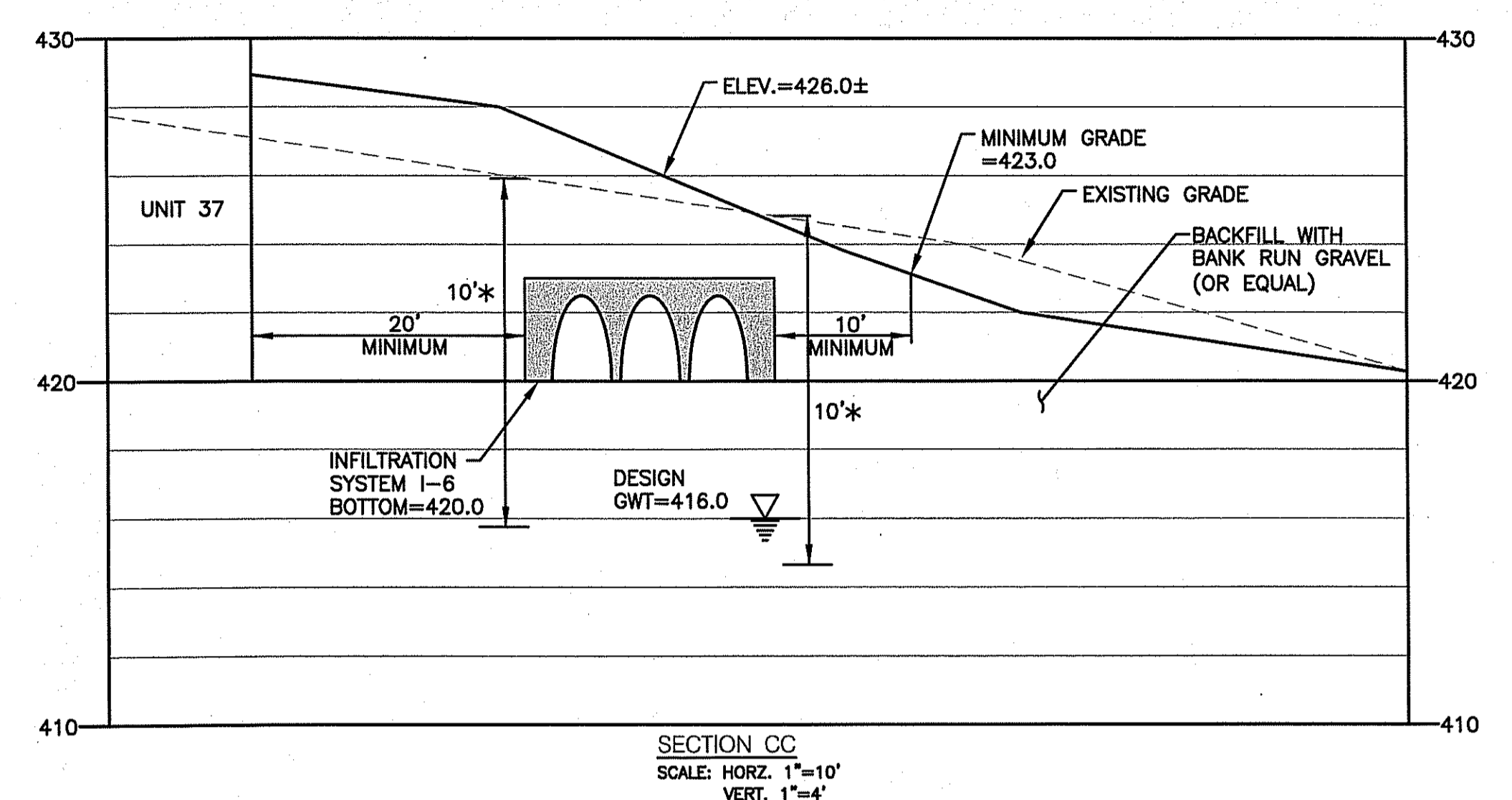
DRAWING NUMBER: **C14.3**  
 SHEET: 40 OF 41

FINAL PLAN SUBMISSION

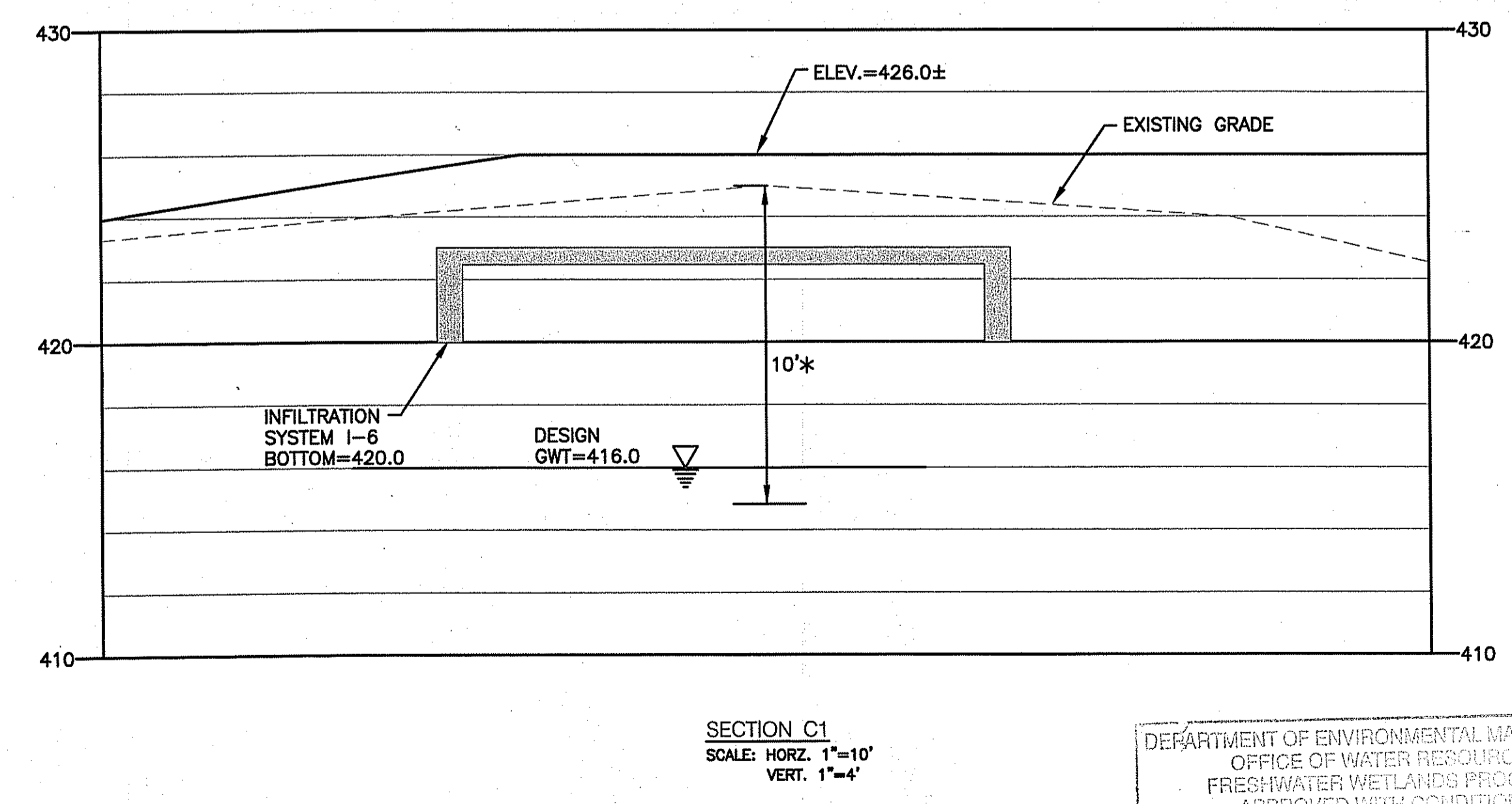


NOTE:  
 REFER TO MISCELLANEOUS DETAILS  
 PLAN 2 FOR SPECIFIC MATERIAL  
 AND DETAIL OF INFILTRATION SYSTEM

SITE PLAN (I-6)  
 SCALE: 1"=10'



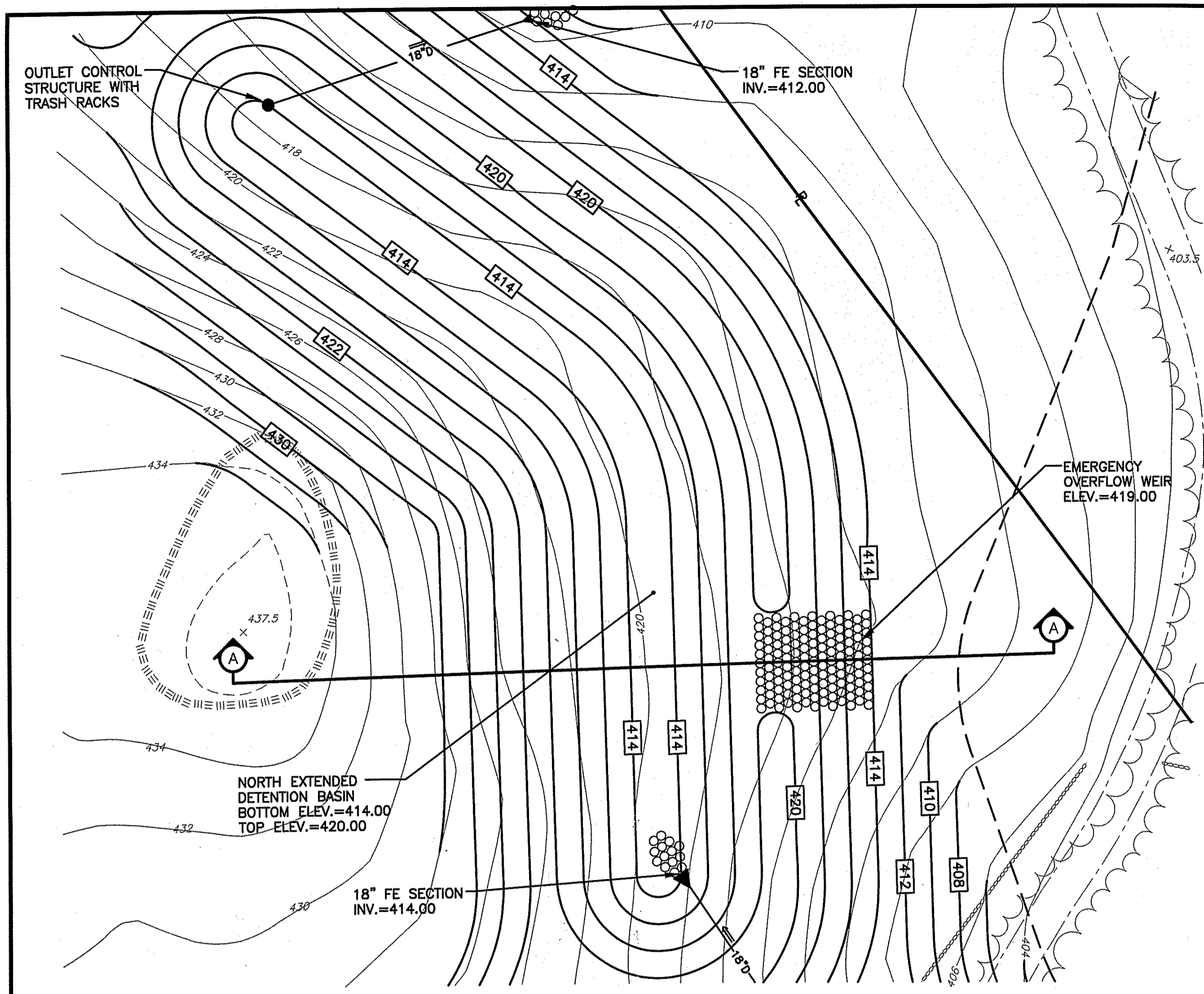
\* NOTE (I-6):  
 AS WITNESSED FROM TP-15, THE SEASONAL HIGH  
 GROUNDWATER TABLE IS ESTIMATED TO BE AT AN  
 ELEVATION OF 10 FEET BELOW EXISTING GRADE.



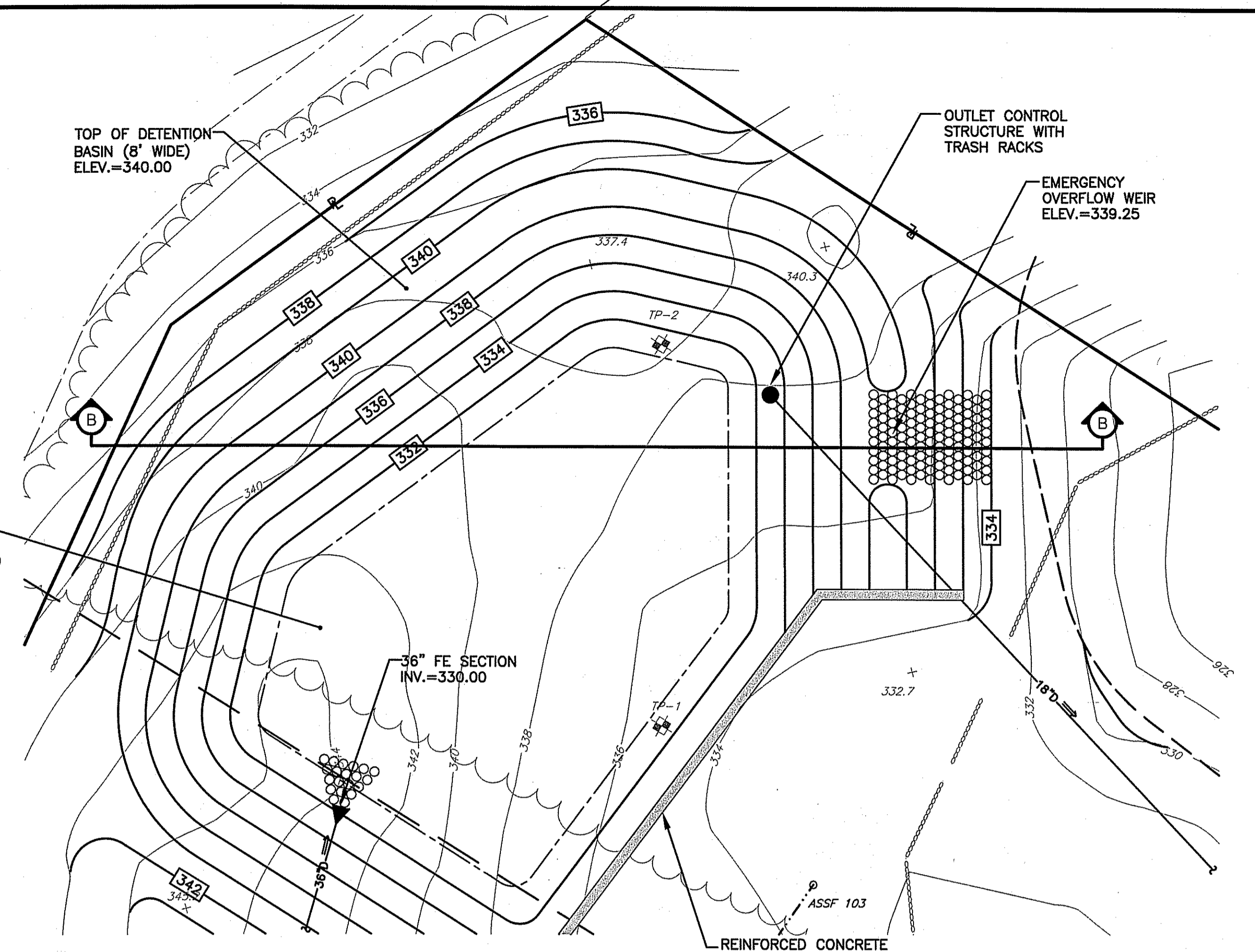
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED AUG 03 2009 FILE # 08-0371  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. Horner

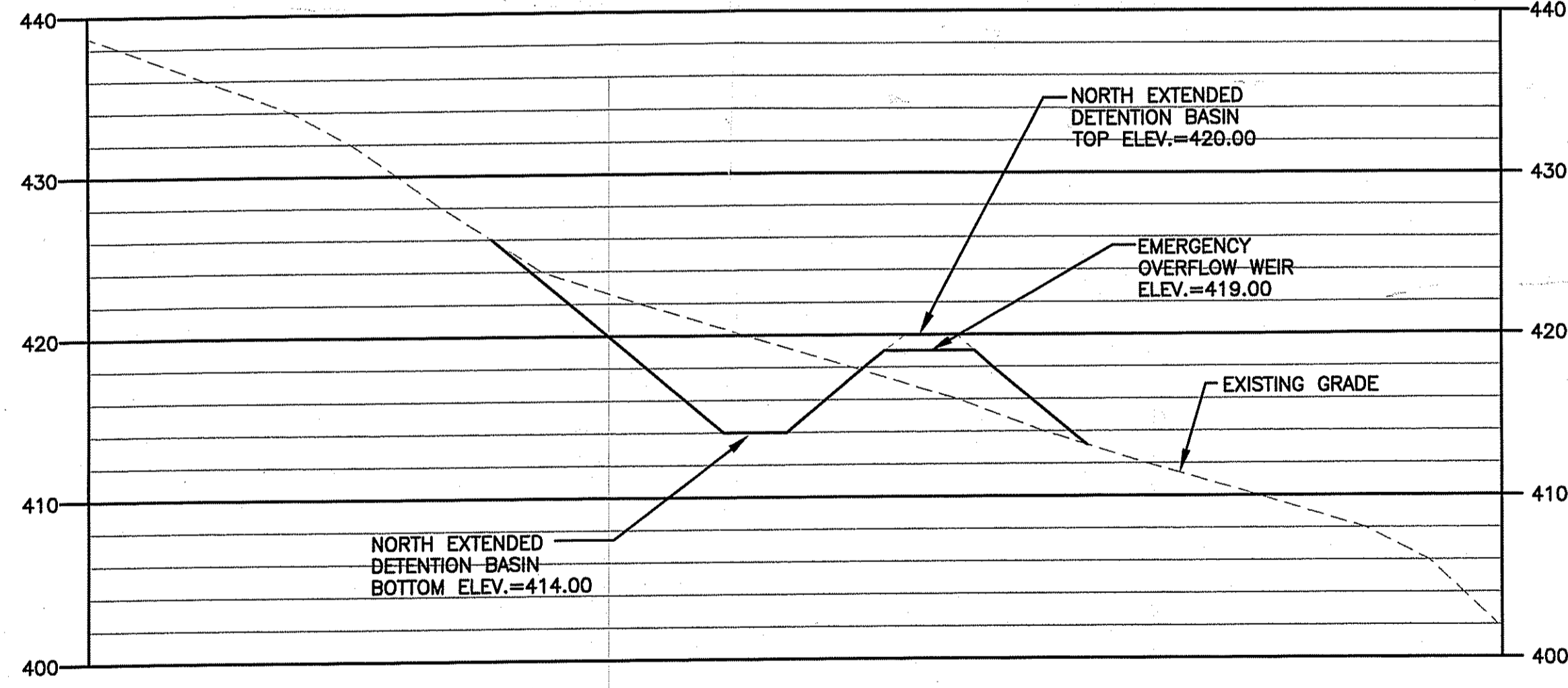
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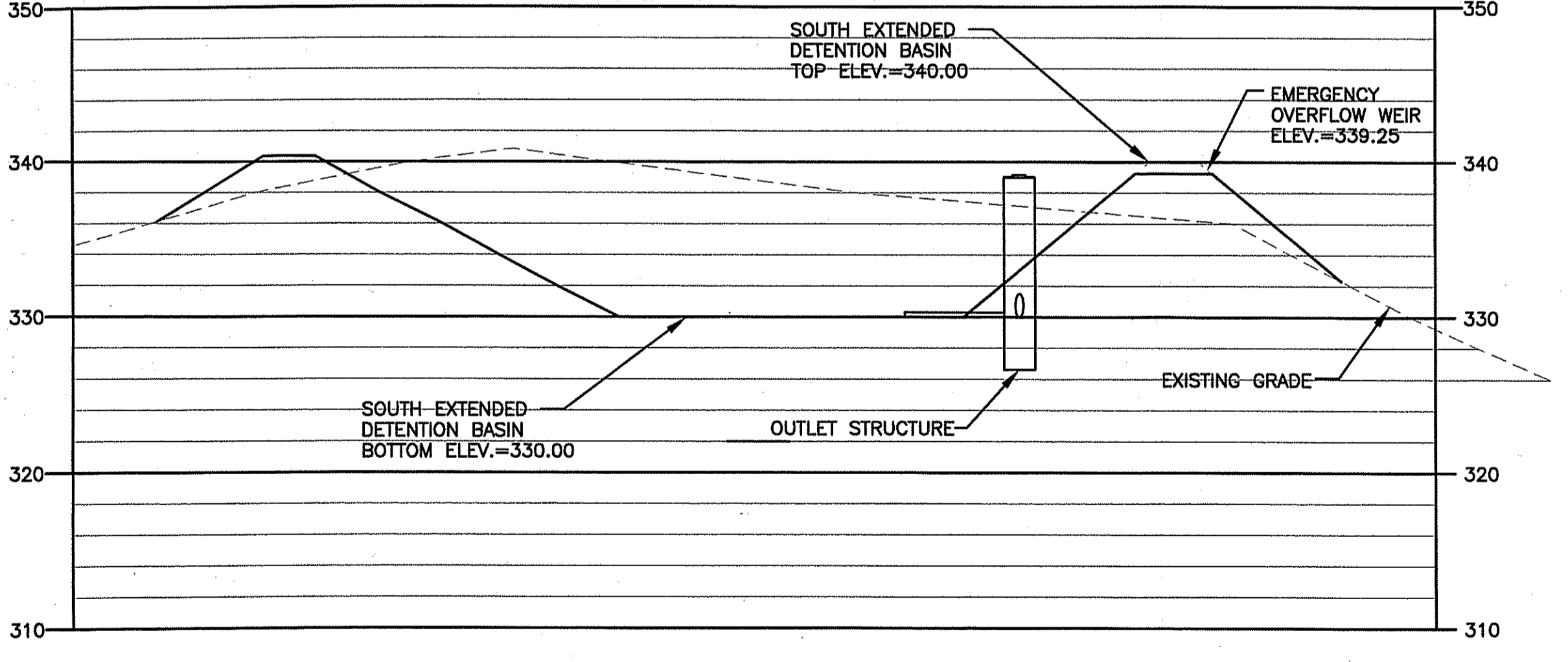
NORTH DETENTION BASIN PLAN VIEW  
SCALE: 1"=20'



SOUTH DETENTION BASIN PLAN VIEW  
SCALE: 1"=20'



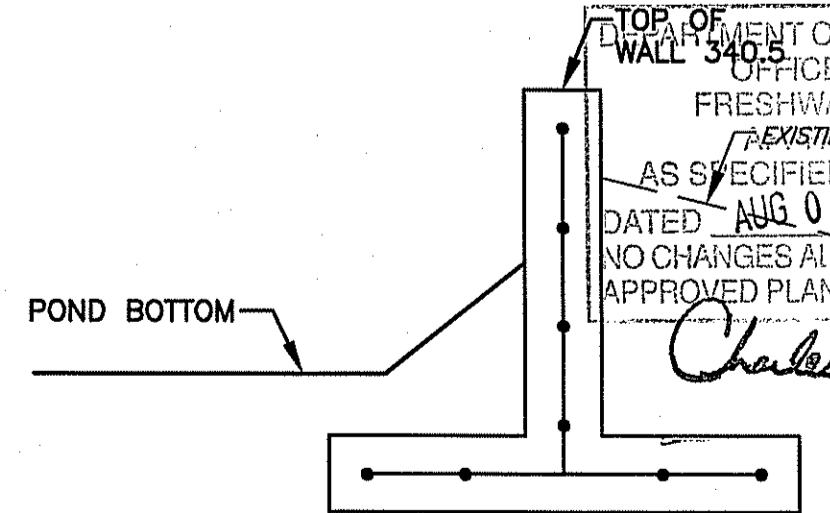
NORTH EXTENDED BASIN SECTION A  
SCALE: HORZ. 1"=20'  
VERT. 1"=8'



SOUTH DETENTION BASIN SECTION B  
SCALE: HORZ. 1"=20'  
VERT. 1"=8'

**EMBANKMENT NOTES:**

1. THE DETENTION BASIN EMBANKMENTS ARE TO BE CONSTRUCTED WITH APPROVED COMMON BORROW. NO SOIL/ROCK GRATER THAN 2" SHALL BE UTILIZED. COMMON BORROW SHALL MEET OR EXCEED AN IN-PLACE DENSITY OF 100 lb./cf. ALL MATERIAL SHALL BE PLACED IN 8 TO 12 INCH LIFTS AND COMPACTED TO 95% MAXIMUM DENSITY. FILL MATERIAL WILL NOT CONTAIN FROZEN MATERIALS OR BE PLACED ON FROZEN SURFACES. COMMON BORROW SHALL MEET SPECIFICATION SECTION 202.20 IN THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION.
2. UPON COMPLETION OF CLEARING AND GRUBBING OPERATIONS, THE EMBANKMENT AREAS ARE TO BE EXCAVATED, IF ANY ORGANIC OR UNSUITABLE MATERIAL IS ENCOUNTERED. CONTRACTOR TO CONTACT ENGINEER FOR REVIEW OF EXCAVATION AREA. THE DEPTH OF EXCAVATION WILL BE DETERMINED BY THE ENGINEER BASED UPON THE LOCAL CONDITIONS. NO FILL MATERIAL SHALL BE PLACED UNTIL THE FOUNDATION PREPARATION HAS BEEN COMPLETED. ALL WATER SHALL BE REMOVED FROM THE FOUNDATION PRIOR TO PLACING THE EMBANKMENT. ALL MATERIAL SHALL BE PLACED IN 8 TO 12 INCH LIFTS AND COMPACTED TO 95% MAXIMUM DENSITY. FILL MATERIAL WILL NOT CONTAIN FROZEN MATERIAL OR BE PLACED ON FROZEN SURFACES.
3. THE FILL MATERIAL MUST BE SPREAD IN UNIFORM LAYERS AND CONTAIN MOISTURE WITHIN THE SPECIFIED RANGE IN ORDER TO ACHIEVE THE REQUIRED COMPACTION. EACH LAYER IS TO BE COMPACTED PRIOR TO LAYING AN ADDITIONAL LAYER. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER HIS SELECTED METHOD OF COMPACTION, COMPACTION EQUIPMENT AND THE SEQUENCE OF OPERATIONS NECESSARY TO OBTAIN THE REQUIRED DENSITY. THE WATER CONTENT AT COMPACTION SHOULD BE IN THE RANGE BETWEEN ON PERCENTAGE POINT BELOW AND TWO PERCENTAGE POINTS ABOVE STANDARD AASHTO OPTIMUM WATER CONTENT. THE MATERIAL SHALL BE PROCESSED TO A UNIFORM WATER CONTENT BY ADDING WATER TO THE MATERIAL IN ADVANCE OF THE FILL PLACEMENT.
4. BACKFILL MATERIAL AROUND STRUCTURES AND PIPE IS TO BE PLACED TO PREVENT THE MOVEMENT OF WATER. THE MOISTURE CONTENT MUST BE MAINTAINED IN THE SAME RANGE AS IN THE EMBANKMENT. THE BACKFILL MUST BE PLACED IN LAYERS LESS THAN 4 INCHES IN THICKNESS AND DISTRIBUTED UNIFORMLY AROUND THE STRUCTURE/PIPE. ALL COMPACTION WILL BE TO 95% MAXIMUM DENSITY AND REQUIRES HAND TAMPERS OR SMALL POWER EQUIPMENT. WHERE FILL IS PLACED AGAINST WALLS, THE CONTRACTOR MUST ENSURE THAT NO DAMAGE TO THE STRUCTURE OCCURS.
5. EMBANKMENT DAMAGE COMMONLY RESULTS FROM IMPROPER CONSTRUCTION OF CONDUIT AND STRUCTURAL BACKFILL WITHIN THE EMBANKMENT BECAUSE SEEPAGE WILL OCCUR WITH IMPROPER BACKFILL AND COMPACTION. THEREFORE, STRUCTURES AND PIPES ARE TO BE CONSTRUCTED AS THE EMBANKMENT CONSTRUCTION RISES TO THE RESPECTIVE PIPE OR STRUCTURE. THIS WILL PREVENT THE DISTURBANCE OF A CONSTRUCTED EMBANKMENT MATERIAL. PIPES FROM THE OUTLET STRUCTURE TO THE OUTFALL SHALL HAVE AN ANTI-SEEP COLLAR.



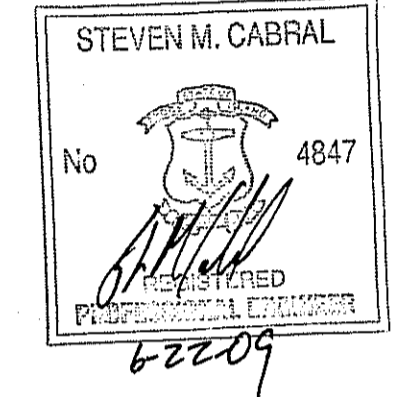
**RETAINING WALL NOTES:**

1. WALLS TO BE DESIGNED AND CERTIFIED BY A RI PROFESSIONAL ENGINEER (STRUCTURAL) PRIOR TO INSTALLATION.
2. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION METHODS, STRUCTURAL REQUIREMENTS AND DETAILS ASSOCIATED WITH ALL PROPOSED ONSITE RETAINING WALLS.

SCHEMATIC DETAIL  
NOT TO SCALE

**CROSSMAN ENGINEERING, INC.**  
151 Centerville Road  
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Phone: (401) 738-5660 - Fax: (401) 738-8157  
Email: cel@crossmaneng.com

- Civil  
- Transportation  
- Environmental  
- Site Planning  
- Land Surveying



PROJECT TITLE:  
**HIGHLAND HILLS  
PLAT MAP 51 LOT 11 &  
PORTION OF PLAT 52 LOT 360  
ZONING DISTRICT I-1/PDO  
HIGHLAND CORPORATE DRIVE  
CUMBERLAND, R.I.**

PREPARED FOR:  
**HIGHLAND HILLS LLC  
177 OLD RIVER ROAD  
LINCOLN, RHODE ISLAND**

**DRAWING TITLE:  
DETENTION BASIN  
BERM SECTIONS**

DATE: **NOVEMBER 2008** SCALE: **AS SHOWN**

DWG. NAME: **1519-C15.1-BERM-REV4.dwg**

NO.	DATE	REVISION
1	12/26/08	PRELIMINARY PLAN SUBMISSION
2	02/02/09	FINAL PLAN COMMENTS
3	04/30/09	R.I.D.E.M. COMMENTS
4	06/15/09	R.I.D.E.M. COMMENT

DRAWING NUMBER  
**C15.1**  
SHEET: **41** OF: **41**  
FINAL PLAN SUBMISSION

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