

# DEM SUBMISSION

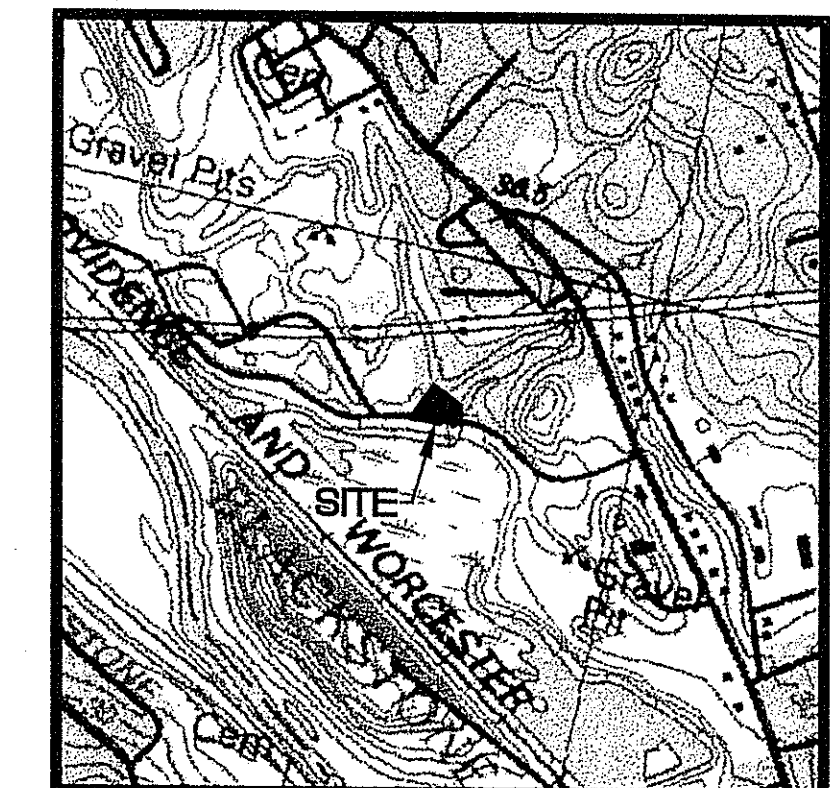
## SINGLE FAMILY RESIDENCE

### *ASSESSOR'S PLAT 15, LOTS 69 and 70*

### *RIVERVIEW DRIVE*

#### CUMBERLAND, RHODE ISLAND

#### MAY 2010



**LOCATION MAP**  
U.S.G.S. PAWTUCKET QUADRANGLE RHODE ISLAND  
SCALE: 1" = 1000'

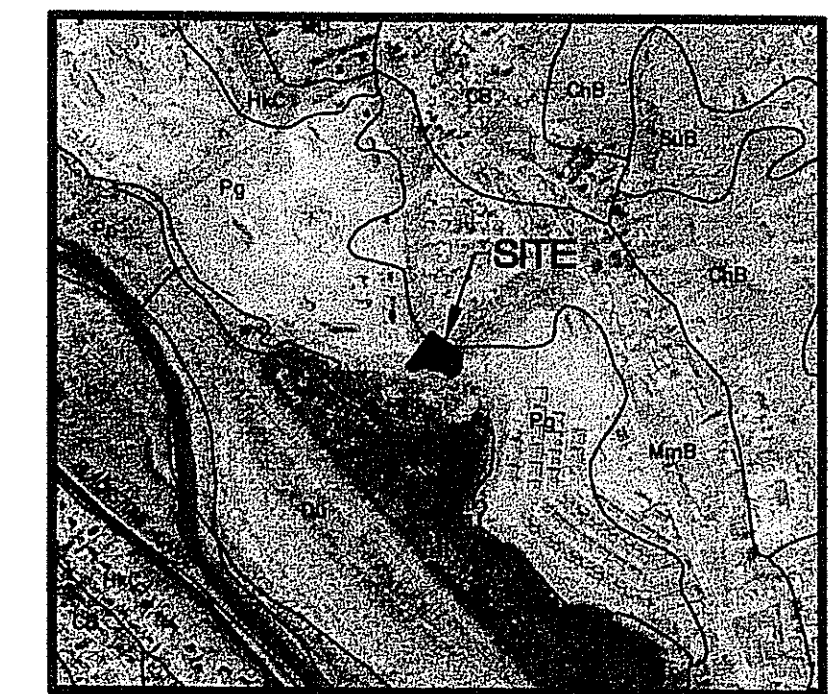
**INDEX:**

SHEET	DESCRIPTION
1	AERIAL PHOTOGRAPH / SITE MAPS
2	SITE PLAN
3	PLAN AND PROFILE (RIVERVIEW DRIVE)
4	NOTES AND DETAILS
5	DETAILS

**LEGEND:**

	PROPERTY LINE
	EXISTING LOT LINE
15/72	ASSESSOR'S PLAT / LOT NUMBER

**OWNER/APPLICANT:**  
BERKELEY REALTY CO.  
573 MENDON ROAD  
SUITE # 1  
CUMBERLAND, RHODE ISLAND  
02864



**SOILS MAP**  
SCALE: 1" = 1000'

**REFERENCE:**  
SOILS PROVIDED BY THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS), FILE: RISOILS.e00

SYMBOL	DESCRIPTION
MmB	MERRIMAC SANDY LOAM, 3 TO 8 PERCENT SLOPES
Pg	PITS, GRAVEL

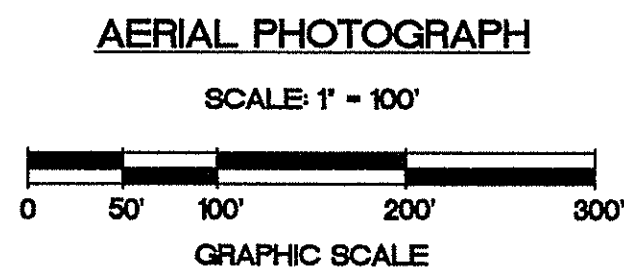
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED DEC. 22, 2010 FILE # 70-0123  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.

OCT 19 2010

*Ernestine D. Wenzel*

**REFERENCE:**  
PANCHROMATIC (BLACK & WHITE) NON-GEOREFERENCED, NON-ORTHORECTIFIED DIGITAL AERIAL PHOTOGRAPH (27\_1286.JP2) FLOWN IN THE SPRING OF 2008 BY KEYSTONE AERIAL SURVEYS AT A MAP SCALE OF 1:12,000. THE IMAGE WAS CONTRACTED BY THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF COMPLIANCE AND INSPECTION. THE IMAGE IS AVAILABLE FROM RIGIS SOLELY IN THE JPEG2000 FORMAT.

**BIBLIOGRAPHIC REFERENCE:**  
RIGIS, 2009. 2008 RIDEEM DIGITAL AERIAL PHOTOGRAPHY. RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS) DATA DISTRIBUTION SYSTEM, URL: [HTTP://WWW.EDC.URI.EDU/RIGIS](http://www.edc.uri.edu/rigis), ENVIRONMENTAL DATA CENTER, UNIVERSITY OF RHODE ISLAND, KINGSTON, RHODE ISLAND (LAST DATE ACCESSED: 16 NOVEMBER 2009).



NO.	DATE	REVISION
1	7/22/09	SHEETS 2, 4 & 5 DEM COMMENTS
2	10/19/10	SHEETS 2 & 3 DEM COMMENTS

JOHN P. CAITO  
No. 099  
PROFESSIONAL ENGINEER

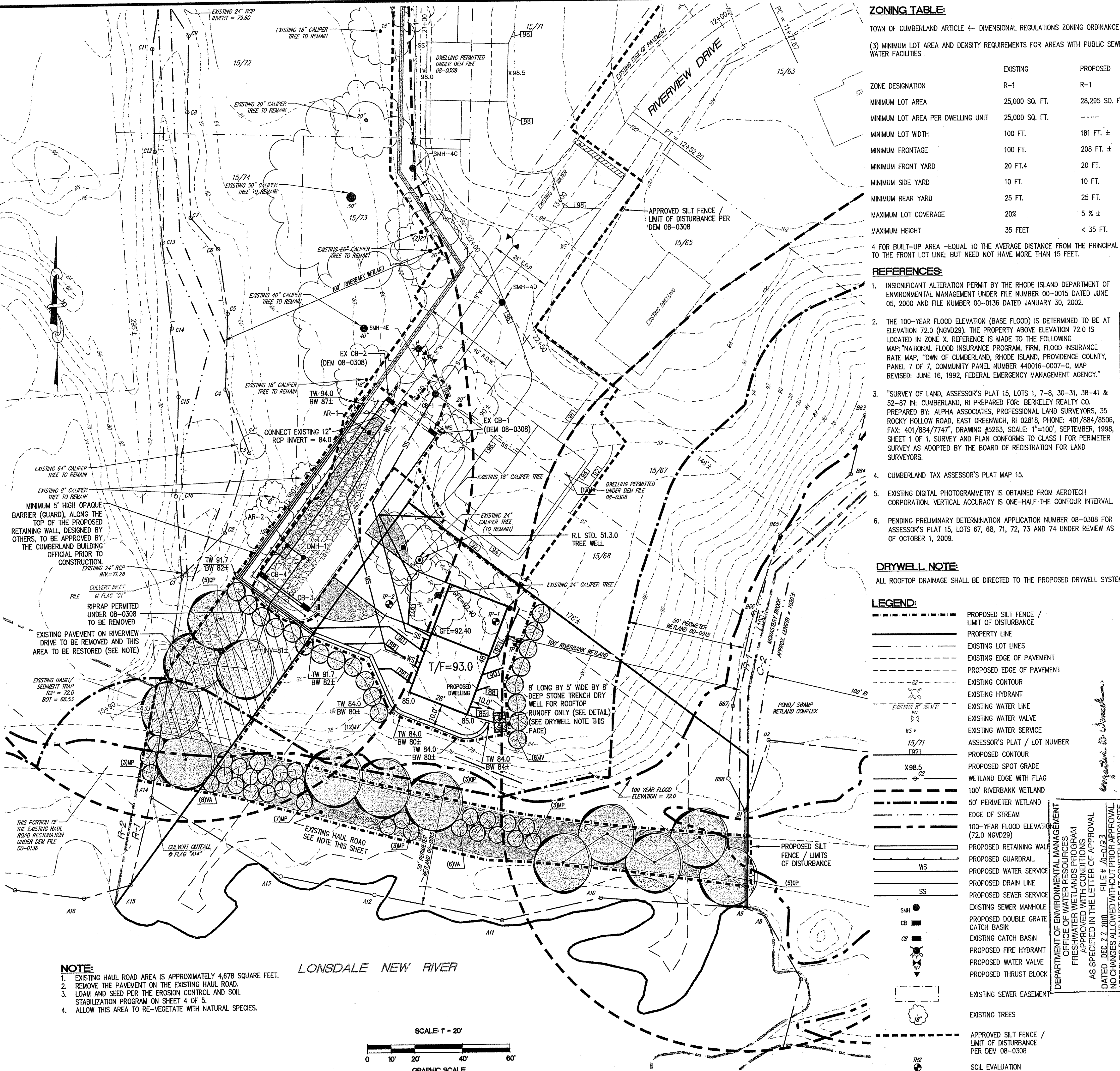
CIVIL ENGINEERS  
LAND PLANNERS  
CORPORATION  
JOHN P. CAITO  
141 JAMES P. MURPHY HIGHWAY  
WEST WARWICK, RHODE ISLAND  
02883-2382  
401-815-8600  
fax: 401-815-8606

PROJECT NO: 144.416  
DATE: MAY 2010  
SCALE: AS NOTED  
DESIGNED BY: S.G.T.  
DRAWN BY: S.G.T.  
CHECKED BY: J.P.C.

AERIAL PHOTOGRAPH / SITE MAPS  
SINGLE FAMILY RESIDENCE  
ASSESSOR'S PLAT 15, LOTS 69 and 70  
RIVERVIEW DRIVE  
CUMBERLAND  
RHODE ISLAND  
PREPARED FOR  
BERKELEY REALTY CO.

DRAWING NUMBER  
**1**  
SHEET 1 OF 5

© 2010 JOHN P. SAITO CORPORATION



### ZONING TABLE:

TOWN OF CUMBERLAND ARTICLE 4- DIMENSIONAL REGULATIONS ZONING ORDINANCE  
(3) MINIMUM LOT AREA AND DENSITY REQUIREMENTS FOR AREAS WITH PUBLIC SEWER AND WATER FACILITIES

ZONE DESIGNATION	EXISTING	PROPOSED
MINIMUM LOT AREA	25,000 SQ. FT.	28,295 SQ. FT. ±
MINIMUM LOT AREA PER DWELLING UNIT	25,000 SQ. FT.	---
MINIMUM LOT WIDTH	100 FT.	181 FT. ±
MINIMUM FRONTAGE	100 FT.	208 FT. ±
MINIMUM FRONT YARD	20 FT.4	20 FT.
MINIMUM SIDE YARD	10 FT.	10 FT.
MINIMUM REAR YARD	25 FT.	25 FT.
MAXIMUM LOT COVERAGE	20%	5 % ±
MAXIMUM HEIGHT	35 FEET	< 35 FT.

4 FOR BUILT-UP AREA - EQUAL TO THE AVERAGE DISTANCE FROM THE PRINCIPAL BUILDINGS TO THE FRONT LOT LINE; BUT NEED NOT HAVE MORE THAN 15 FEET.

### REFERENCES:

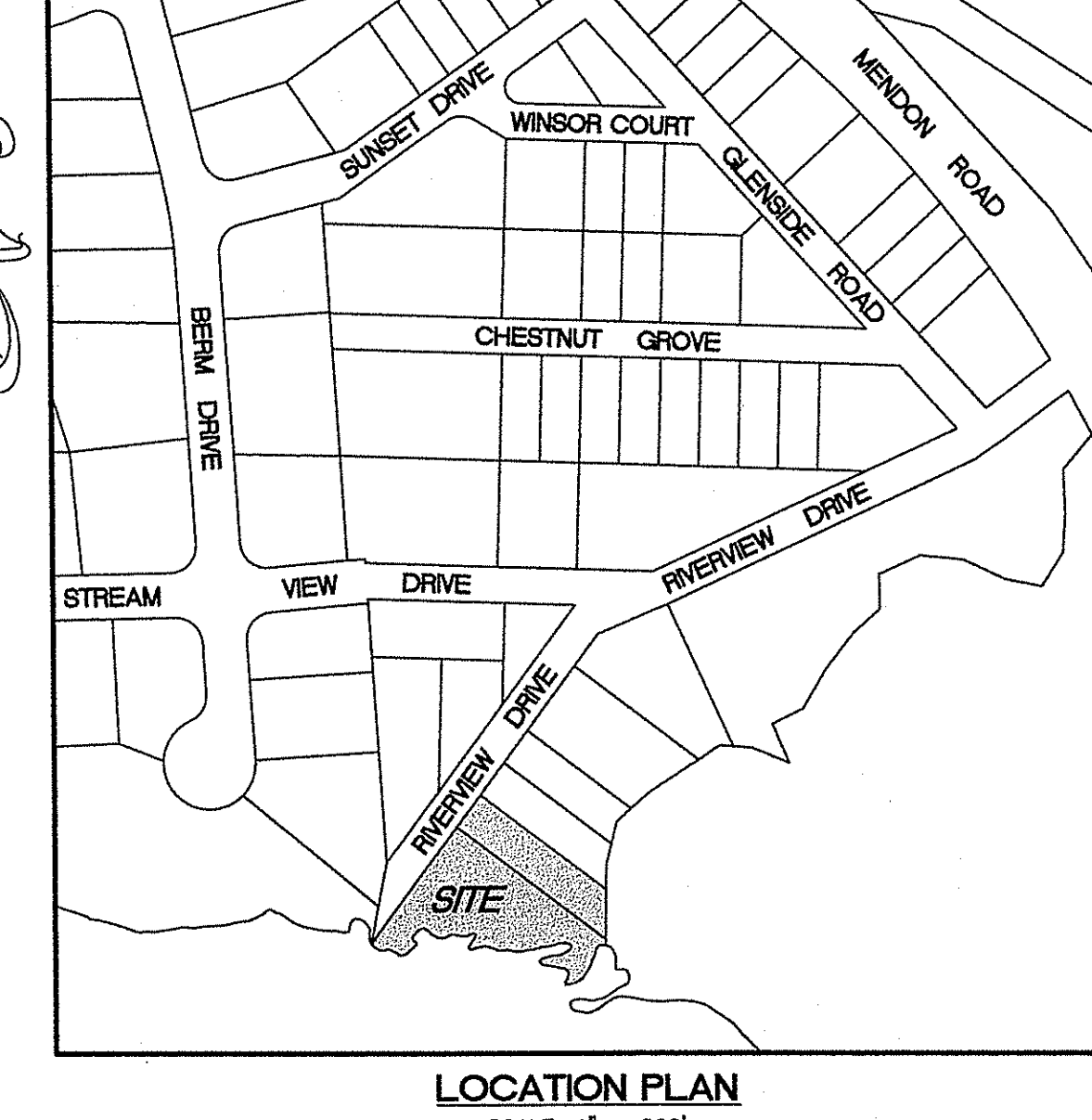
- INSIGNIFICANT ALTERATION PERMIT BY THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT UNDER FILE NUMBER 00-0015 DATED JUNE 05, 2000 AND FILE NUMBER 00-0136 DATED JANUARY 30, 2002.
- THE 100-YEAR FLOOD ELEVATION (BASE FLOOD) IS DETERMINED TO BE AT ELEVATION 72.0 (NGVD29). THE PROPERTY ABOVE ELEVATION 72.0 IS LOCATED IN ZONE X. REFERENCE IS MADE TO THE FOLLOWING MAP: "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, TOWN OF CUMBERLAND, RHODE ISLAND, PROVIDENCE COUNTY, PANEL 7 OF 7, COMMUNITY PANEL NUMBER 440016-0007-C, MAP REVISED: JUNE 16, 1992, FEDERAL EMERGENCY MANAGEMENT AGENCY."
- "SURVEY OF LAND, ASSESSOR'S PLAT 15, LOTS 1, 7-8, 30-31, 38-41 & 52-87 IN: CUMBERLAND, RI PREPARED FOR: BERKELEY REALTY CO. PREPARED BY: ALPHA ASSOCIATES, PROFESSIONAL LAND SURVEYORS, 35 ROCKY HOLLOW ROAD, EAST GREENWICH, RI 02818, PHONE: 401/884/8506, FAX: 401/884/7747, DRAWING #5263, SCALE: 1"=100', SEPTEMBER, 1998, SHEET 1 OF 1. SURVEY AND PLAN CONFORMS TO CLASS I FOR PERIMETER SURVEY AS ADOPTED BY THE BOARD OF REGISTRATION FOR LAND SURVEYORS.
- CUMBERLAND TAX ASSESSOR'S PLAT MAP 15.
- EXISTING DIGITAL PHOTOGRAMMETRY IS OBTAINED FROM AEROTECH CORPORATION. VERTICAL ACCURACY IS ONE-HALF THE CONTOUR INTERVAL.
- PENDING PRELIMINARY DETERMINATION APPLICATION NUMBER 08-0308 FOR ASSESSOR'S PLAT 15, LOTS 67, 68, 71, 72, 73 AND 74 UNDER REVIEW AS OF OCTOBER 1, 2009.

### DRYWELL NOTE:

ALL ROOFTOP DRAINAGE SHALL BE DIRECTED TO THE PROPOSED DRYWELL SYSTEM

### LEGEND:

- PROPOSED SILT FENCE / LIMIT OF DISTURBANCE
- PROPERTY LINE
- EXISTING LOT LINES
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING CONTOUR
- EXISTING HYDRANT
- EXISTING WATER LINE
- EXISTING WATER VALVE
- EXISTING WATER SERVICE
- ASSESSOR'S PLAT / LOT NUMBER
- PROPOSED CONTOUR
- PROPOSED SPOT GRADE
- WETLAND EDGE WITH FLAG
- 50' PERIMETER WETLAND
- 100' RIVERBANK WETLAND
- EDGE OF STREAM
- 100-YEAR FLOOD ELEVATION (72.0 NGVD29)
- PROPOSED RETAINING WALL
- PROPOSED GUARDRAIL
- PROPOSED WATER SERVICE
- PROPOSED DRAIN LINE
- PROPOSED SEWER SERVICE
- EXISTING SEWER MANHOLE
- PROPOSED DOUBLE GRATE CATCH BASIN
- EXISTING CATCH BASIN
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED THRUST BLOCK
- EXISTING SEWER EASEMENT
- EXISTING TREES
- APPROVED SILT FENCE / LIMIT OF DISTURBANCE PER DEM 08-0308
- SOIL EVALUATION

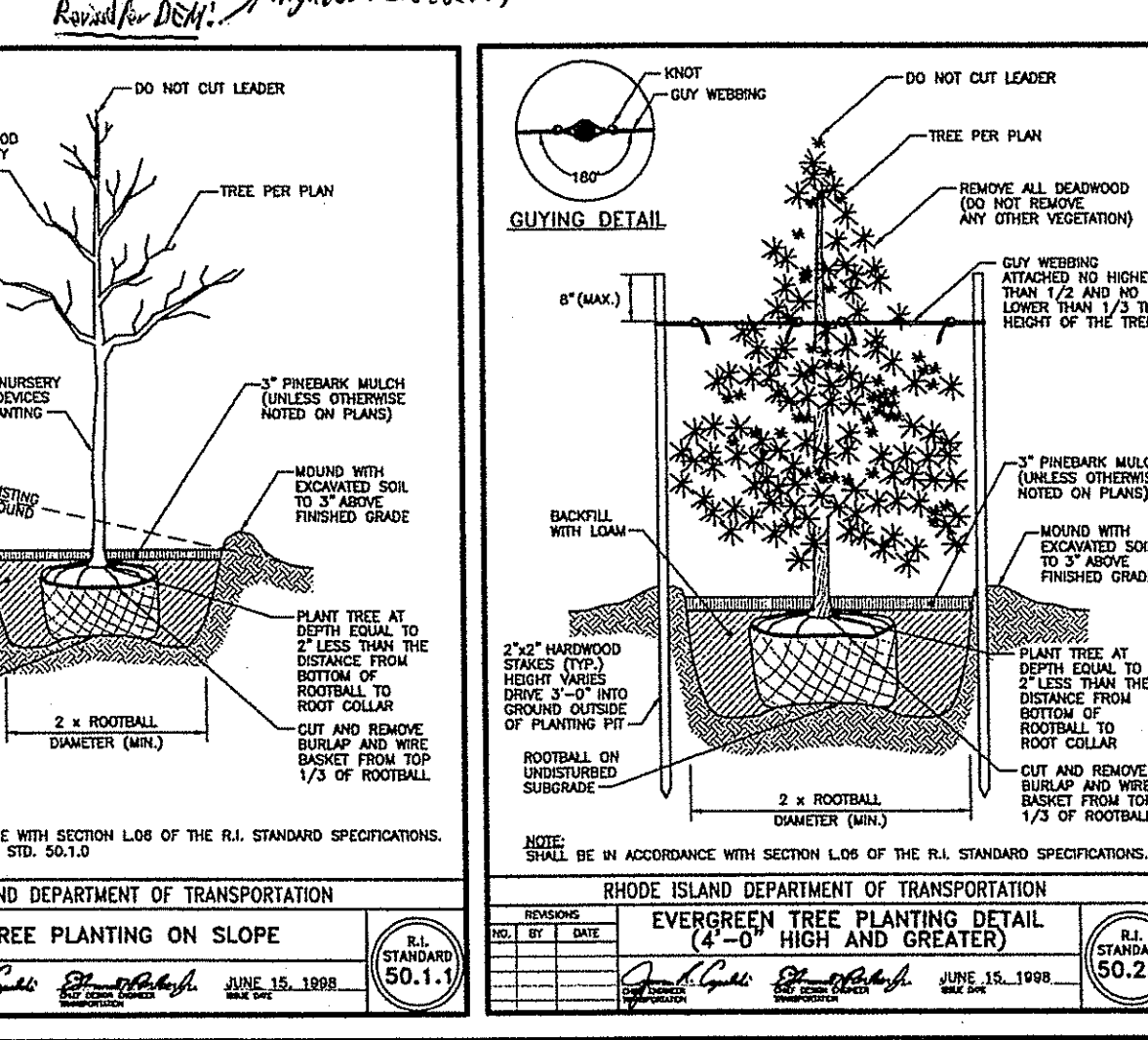


- ### GENERAL LANDSCAPE NOTES:
- THE CONTRACTOR SHALL INSTALL ALL PLANT MATERIAL IN CONFORMANCE WITH THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
  - ALL PLANT MATERIAL SHALL MEET THE AMERICAN NURSERYMAN STANDARDS FOR NURSERY STOCK, LATEST EDITION, AND ITS AMENDMENTS. PLANT ONLY DURING SEASONS NORMAL TO THE PARTICULAR VARIETY. NO SUBSTITUTIONS SHALL BE ACCEPTED WITHOUT PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT.
  - ALL PLANT MATERIAL FURNISHED BY THE CONTRACTOR SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR. IF THE FIRST YEAR ENDS DURING THE DORMANT PERIOD, THE GUARANTEE SHALL EXTEND TO THE START OF THE NEXT LEAFING. DURING THE ONE-YEAR GUARANTEE PERIOD THE CONTRACTOR SHALL EMPLOY ACCEPTED HORTICULTURAL PRACTICES TO KEEP THE PLANTS INSTALLED IN LIVING, HEALTHY CONDITION. FOLLOWING THE ONE-YEAR GUARANTEE PERIOD THE CONTRACTOR SHALL INSPECT ALL PLANT MATERIAL FOR HEALTHY ORNAMENTAL QUALITY. AT THAT TIME SHOULD ANY PLANT MATERIAL BE FOUND IN INADEQUATE HEALTH THE CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE THE PLANT IN KIND AND PROVIDE A ONE-YEAR GUARANTEE FOR THE REPLACEMENT PLANT.
  - INSTALL ALL PLANT MATERIAL AS SHOWN IN DETAILS.
  - STAKE ALL TREES OVER 5' AS SHOWN ON DETAILS. REMOVE STAKES AT THE END OF THE GUARANTEE PERIOD.
  - THE CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS, AND SHALL OBTAIN ALL NECESSARY PERMITS FOR THE PROJECT.
  - ALL NOTES AND DIMENSIONS ARE TYPICAL UNLESS OTHERWISE NOTED. ALL DIMENSIONS ARE SQUARE (PARALLEL OR PERPENDICULAR) UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL NOTIFY THE OWNER/OWNER'S REPRESENTATIVE IMMEDIATELY IN THE EVENT OF ANY DISCREPANCIES FOUND IN THE CONTRACT DOCUMENTS AND/OR IN THE FIELD, OR ON CONDITIONS UNCOVERED IN THE WORK WHICH ARE NOT REFLECTED IN THE PLANS.
  - PROTECTION OF EXISTING PLANTINGS: MAXIMUM EFFORT SHOULD BE MADE TO SAVE TREES OR OTHER PLANT SPECIMENS WHICH ARE LARGE FOR THEIR SPECIES, RARE TO THE AREA, OR OF SPECIAL HORTICULTURAL OR LANDSCAPE VALUE. CONTACT OWNER/LANDSCAPE ARCHITECT BEFORE REMOVING ANY SPECIMEN OF THIS TYPE UNLESS OTHERWISE NOTED ON THE PLANS. NO MATERIAL OR TEMPORARY SOIL DEPOSITS SHALL BE PLACED WITHIN THE Drip LINE OF SHRUBS OR TREES DESIGNATED ON THE LANDSCAPE PLAN TO BE RETAINED. PROTECTIVE BARRIERS ARE TO BE INSTALLED AROUND EACH PLANT AND/OR GROUP OF PLANTS THAT ARE TO REMAIN ON THE SITE. BARRIERS SHALL NOT BE SUPPORTED BY THE PLANTS THEY ARE PROTECTING, BUT SHALL BE SELF-SUPPORTING. THEY SHALL BE OF MINIMUM OF FOUR FEET (4') HIGH AND CONSTRUCTED OF A DURABLE MATERIAL, SUCH AS SNOW OR SILT FENCE, THAT WILL LAST UNTIL CONSTRUCTION IS COMPLETED.
  - THE CONTRACTOR SHALL CAREFULLY PRUNE BRANCHES IN THE WAY OF CONSTRUCTION BY USING ONLY APPROVED METHODS AND TOOLS. THE USE OF AXES FOR TRIMMING OR SPURS FOR TRIMMING WILL NOT BE PERMITTED. ALL TREE AND SHRUB TRIMMING AND THE TRIMMING FOR UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED HORTICULTURAL PRACTICES. ALL TRIMMING SHALL BE PERFORMED BY OR UNDER THE DIRECT SUPERVISION OF A RHODE ISLAND LICENSED ARBORIST. ALL CUTS SHALL BE MADE PARALLEL TO AND AS CLOSE TO THE BRANCH OR STEM COLLAR AS POSSIBLE. ALL CUTS SHALL BE MADE IN A MANNER WHICH PREVENTS DAMAGE TO THE BARK. PRUNING SHALL NOT BEFORM NOR DESTROY THE TYPICAL SHAPE OR SYMMETRY OF THE TREE OR SHRUB. ALL CUTS SHALL BE MADE WITH DISINFECTED, SHARP TOOLS WHICH SHALL BE APPROVED BY THE ENGINEER.
  - ROOT PRUNING MACHINERY TO BE USED SHALL BE A VERMEER C81-24 ROCKWHEEL, THE VERMEER V430A ROOT CUTTER OR AN APPROVED EQUAL. TRENCHER EQUIPMENT SHALL NOT BE PERMITTED. ALL HAND EQUIPMENT MUST BE DISINFECTED, SHARP, AND BE APPROVED BY THE ENGINEER.
  - MECHANICAL ROOT PRUNING SHALL TAKE PLACE 6 TO 12 INCHES FROM THE EDGE OF ANY PROPOSED EXCAVATION, OR AS DESIGNATED ON THE PLANS. THE AREAS TO BE PRUNED PRIOR TO COMMENCEMENT OF THIS ITEM BY THE CONTRACTOR AND THE ENGINEER.
  - THE CUT MADE BY THE SPECIFIED ROOT PRUNING MACHINERY SHALL BE 2 TO 4 INCHES WIDE AND 15 TO 18 INCHES DEEP. THE LENGTH SHALL BE AS DELINEATED ON THE PLANS. PAINT SHALL NOT BE USED ON WOUNDS CAUSED BY PRUNING.

### PLANT LIST

KEY	BOTANICAL NAME	QTY.	SIZE
JV	JUNIPERUS VIRGINIANA COMMON NAME EASTERN RED CEDAR	20	5'-6" B&B
MP	MYRTICA PENNSYLVANICA COMMON NAME NORTHERN BAYBERRY	16	24"-30" CONTAINER
QP	QUERCUS PALustris COMMON NAME PIN OAK	13	1.5"-2" B&B
VA	VACCINIUM CORYMBOSUM COMMON NAME HIGHERBERRY CEDAR	14	24"-30" CONTAINER

*Riverbank Dr. Highbank Bayberry*



NO. DATE REVISION

1 7/22/09 BY: JPS/MLW NOTE

2 10/19/09 BY: JPS/MLW RIDEEN COMMENTS

JOHN P. SAITO  
4398  
401-615-8600  
401-615-8606  
PROFESSIONAL ENGINEER

CIVIL ENGINEERS  
LAND PLANNERS

JOHN P. SAITO CORPORATION  
141 WEST P. MURPHY HIGHWAY  
WEST WARWICK, RHODE ISLAND  
02885-2352  
401-615-8600  
401-615-8606  
FAX: 401-615-8606

PROJECT NO: 144416  
DATE: MAY 2010  
SCALE: 1" = 20'  
DESIGNED BY: S.G.T.  
DRAWN BY: J.P.C.  
CHECKED BY: J.P.C.

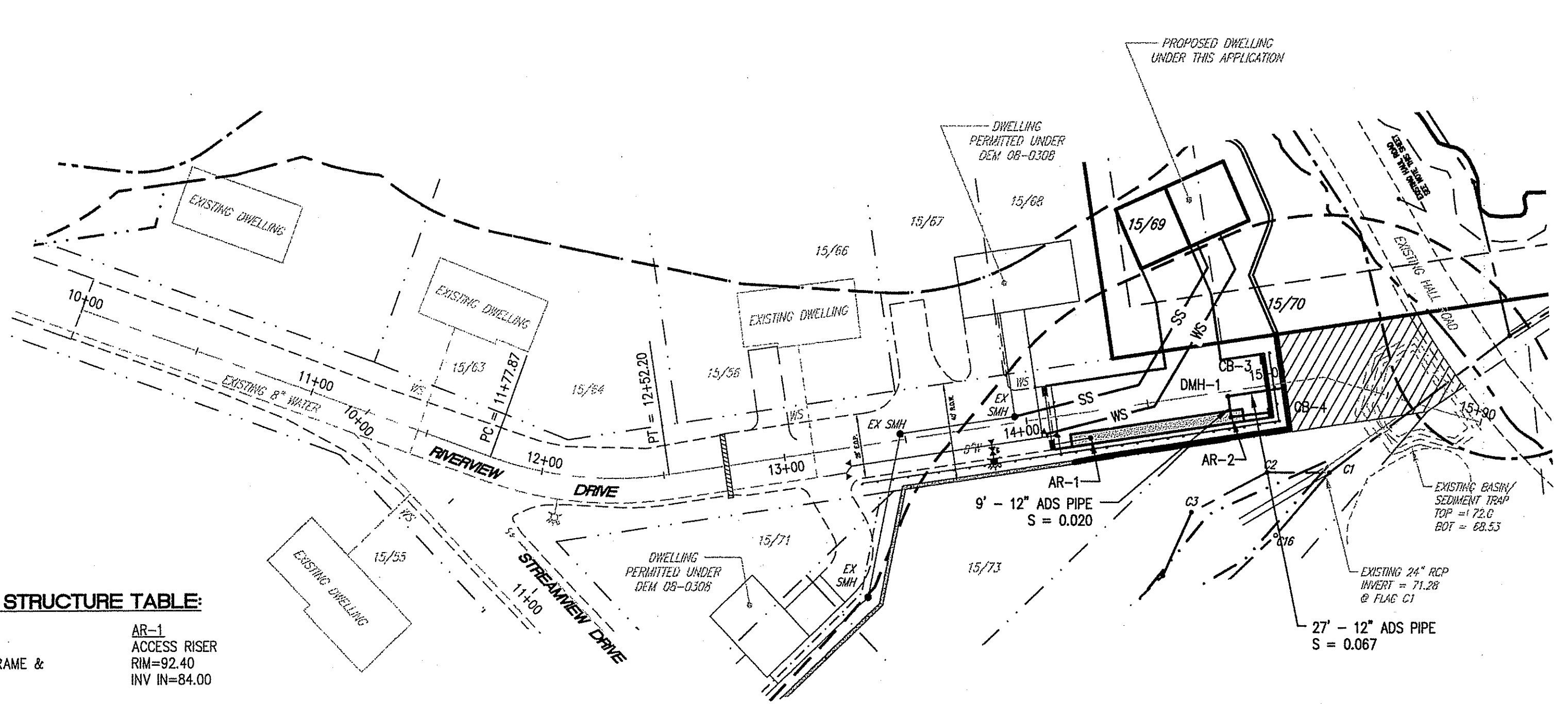
SITE PLAN  
SINGLE FAMILY RESIDENCE  
ASSESSOR'S PLAT 15, LOTS 69 and 70  
RIVERVIEW DRIVE  
PREPARED FOR  
BERKELEY REALTY CO.

DRAWING NUMBER  
2  
SHEET 2 OF 5

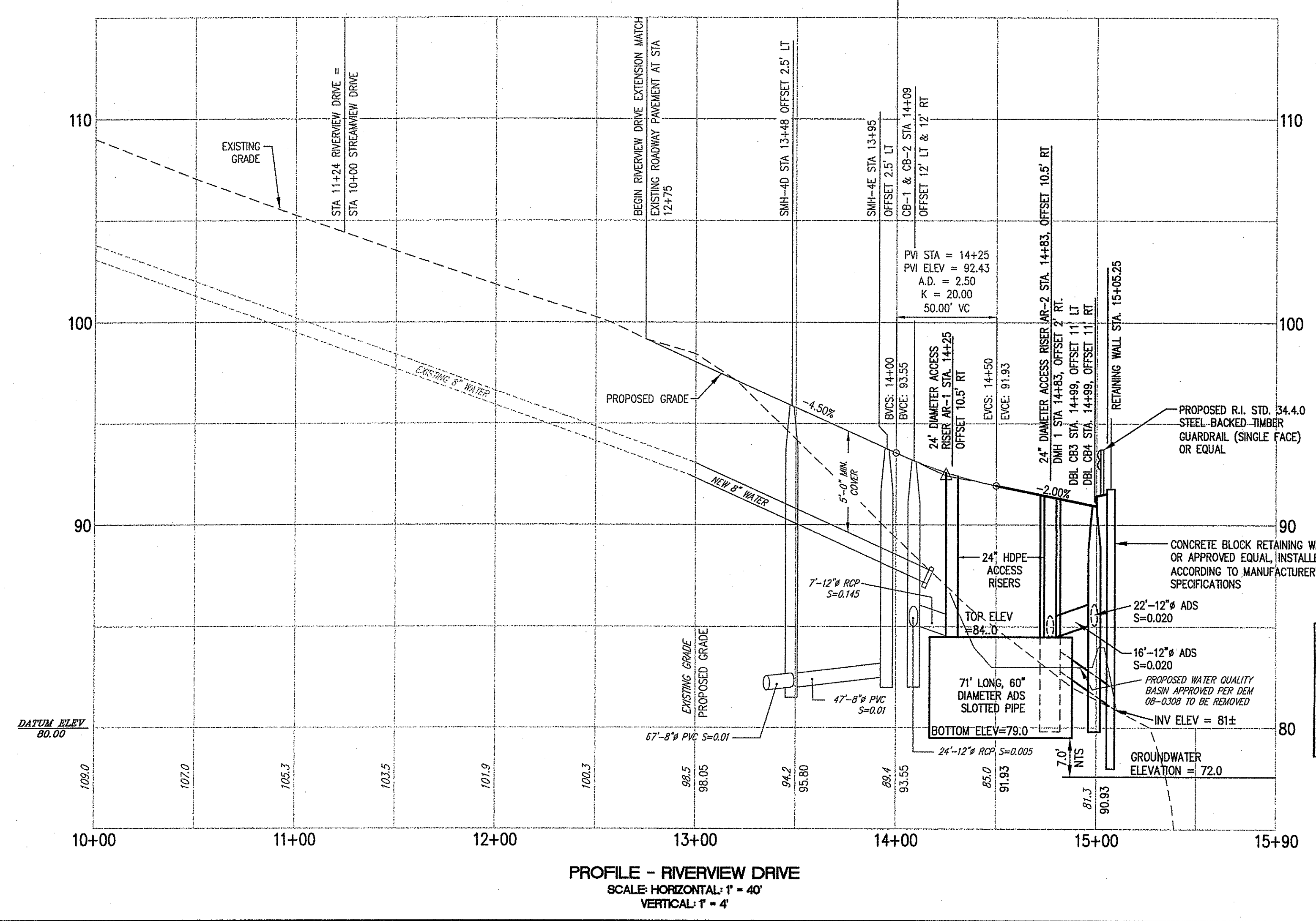
**DRAINAGE STRUCTURE TABLE:**

CB-3 DOUBLE GRATE HIGH CAPACITY FRAME & GRATE RIM=90.90 INV OUT=84.94	AR-1 ACCESS RISER RIM=92.40 INV IN=84.00
CB-4 DOUBLE GRATE HIGH CAPACITY FRAME & GRATE RIM=90.90 INV=84.50	AR-2 ACCESS RISER RIM=91.3 INV IN=84.00

PROPOSED HEADWALL  
INV=81±



**PLAN - RIVERVIEW DRIVE**  
SCALE: 1" = 40'  
GRAPHIC SCALE



**PROFILE - RIVERVIEW DRIVE**  
SCALE HORIZONTAL: 1" = 40'  
VERTICAL: 1" = 4'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED DEC 22 2010 FILE # 10-0123  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.

*Magister D. Wencel*

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

PIPE DIAM.	H-25 SURFACE LIVE LOADING CONDITION	HEAVY CONSTRUCTION (75T AXLE LOAD)*
12" - 48"	12"	48"
54" - 60"	24"	60"

\* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

PIPE DIAM.	COOPER E-60**
UP TO 24"	24"
30"-36"	36"
42"-60"	48"

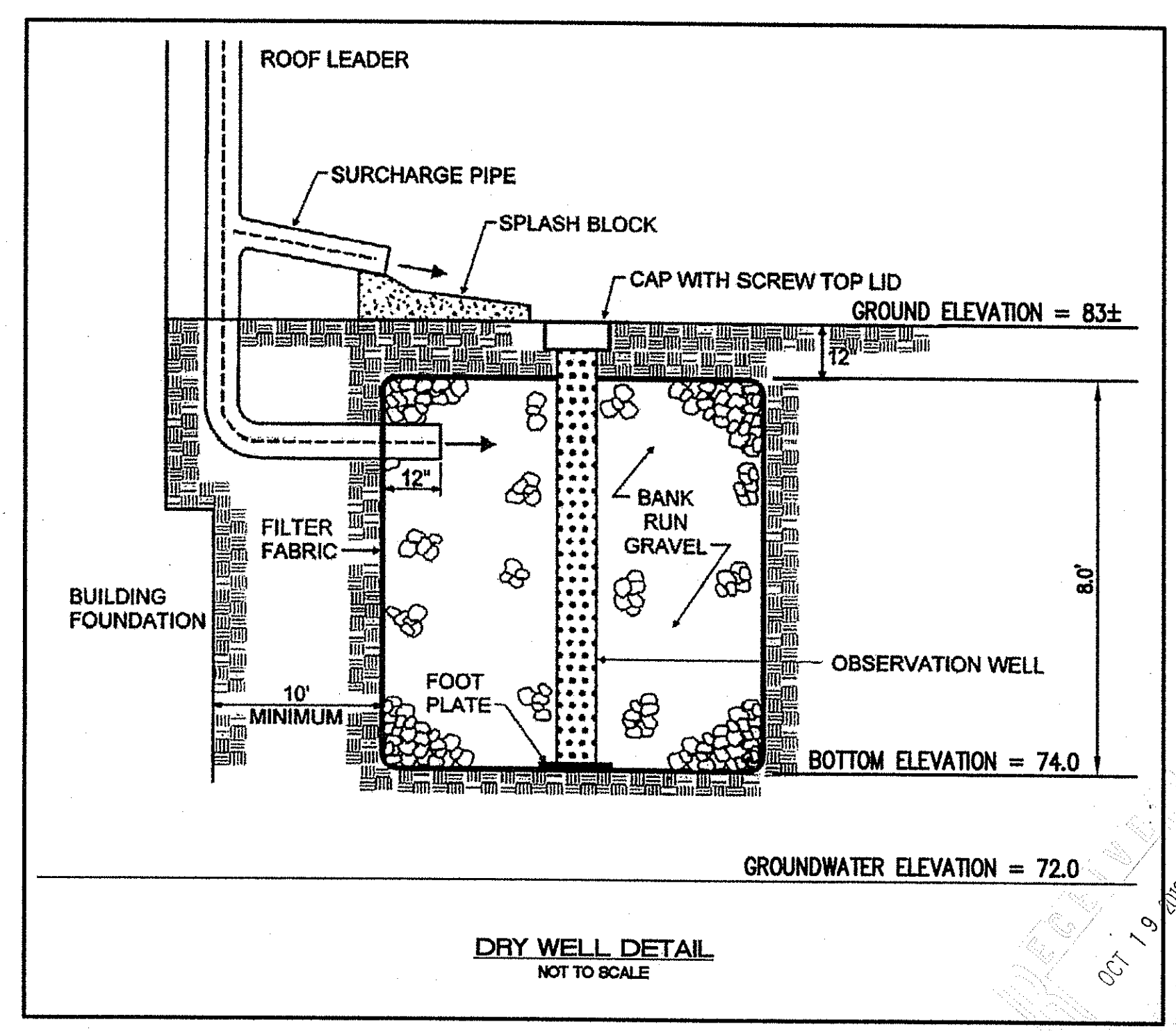
\*\* COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF RAILWAY TIE  
\*\*\* E-80 COVER REQUIREMENTS, ARE ONLY APPLICABLE TO ASTM F 2306 PIPE.

NOTES:  
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.  
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.  
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.  
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER, UNLESS OTHERWISE NOTED BY THE ENGINEER. MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-600mm).  
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER, UNLESS OTHERWISE NOTED BY THE ENGINEER.  
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOoding. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

© 2007 ADS, INC.

REV.	DESCRIPTION	BY	DATE	CHKD
2	ADDED E-80 INFORMATION	TJR	06/20/07	

TYPICAL TRENCH DETAIL  
DRAWING NUMBER: STD-101



**DRY WELL DETAIL**  
NOT TO SCALE

NO.	DATE	REVISION
1	10/19/10	ISSUED COMMENTS

JOHN P. CAITO  
No. 4398  
Professional Engineer

CIVIL ENGINEERS  
LAND PLANNERS

JOHN P. CAITO CORPORATION  
4444 TRUMBAM BLVD  
HILLIARD, OHIO 43026  
TEL: 614-885-4398  
FAX: 614-885-8606

PROJECT NO: 144.416  
DATE: MAY 2010  
SCALE: AS NOTED  
DESIGNED BY: S.G.T.  
DRAWN BY: S.G.T.  
CHECKED BY: J.P.C.

PLAN and PROFILE (RIVERVIEW DRIVE)  
SINGLE FAMILY RESIDENCE  
ASSESSOR'S PLAT 15, LOTS 69 and 70  
RIVERVIEW DRIVE  
RHODE ISLAND  
CUMBERLAND  
BERKELEY REALTY CO.  
PREPARED FOR

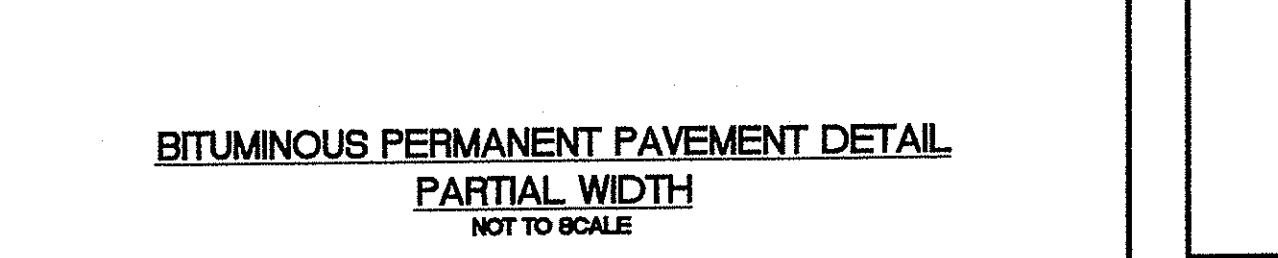
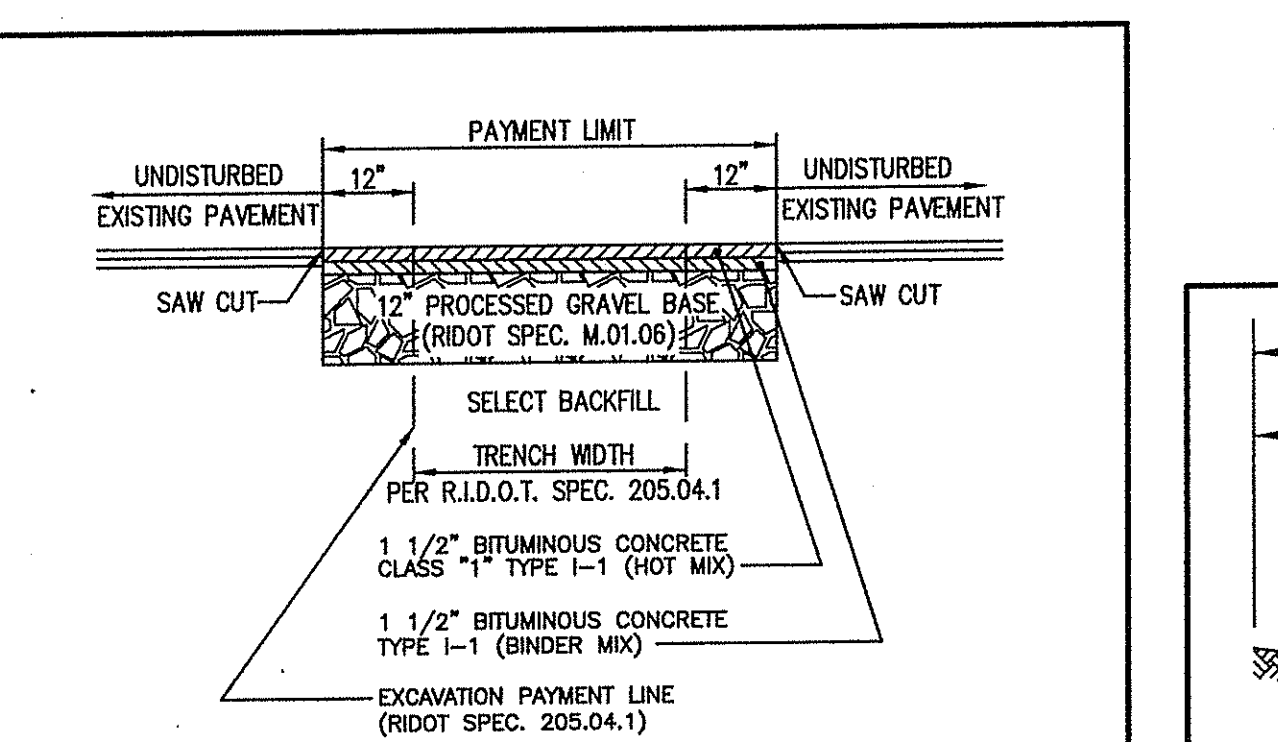
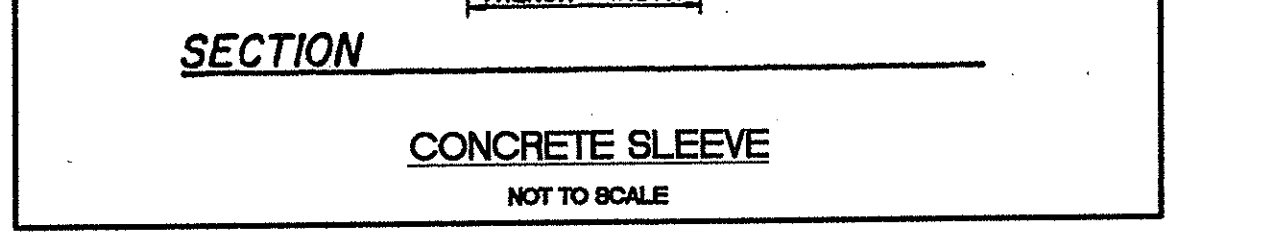
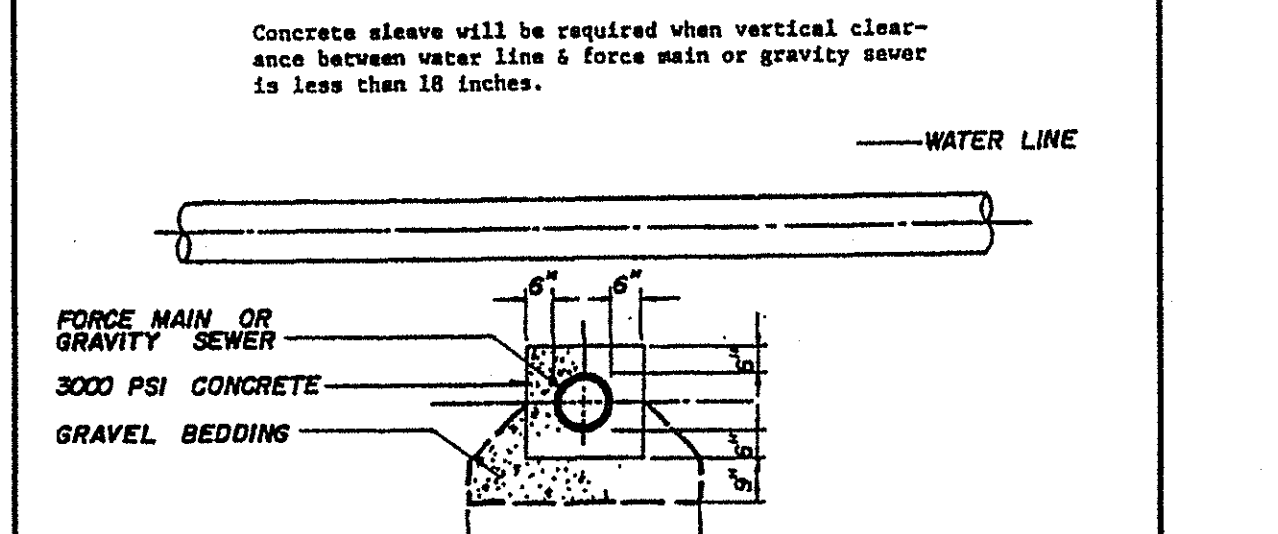
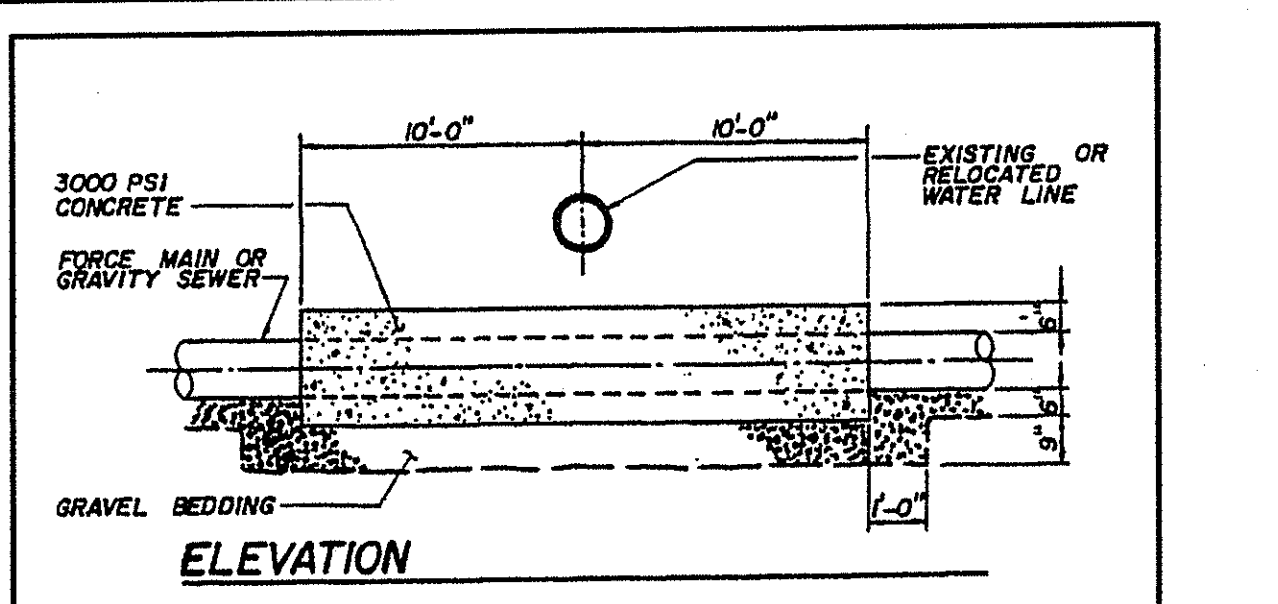
DRAWING NUMBER  
**3**  
SHEET 3 OF 5

A. Lateral placement of sewers and water mains  
Sewers shall be laid at least 10 feet horizontally from any existing or proposed water main. The distance shall be measured edge-to-edge. There is no minimum vertical separation provided the 10 foot horizontal separation is maintained.

- The sewer and water main are laid in separate trenches, or
  - The sewer and water main may be installed in the same trench with the water main placed on a bench of undisturbed earth, and
  - In either case, the crown of the sewer shall be at least 18 inches below the invert of the water main.
- In situations where it is impossible to obtain proper horizontal and vertical separation as stipulated above, the following protection shall be provided:
- Encasement of the sewer pipe in concrete (min. 6 inch thickness) or a carrier pipe for at least 10 feet either side of the area not complying with the minimum horizontal and vertical separation, or
  - Design and construction of the sewer equal to water main pipe (cement-lined ductile iron or other AWWA-approved material for potable water conveyance), and pressure tested in accordance with AWWA specifications.

B. Sewers crossing water mains  
Sewers crossing over water mains should be avoided, but if conditions warrant this situation, then adequate structural support shall be provided for the sewer to maintain line and grade. Sewers crossing under water mains shall be laid to provide a minimum vertical separation of 18 inches between the invert of the water main and the crown of the sewer. Relocation of an existing water main may be necessary to achieve this vertical separation. Relocated water main shall be constructed of an AWWA-approved material for potable water conveyance and designed for the required water service pressure for a distance of 10 feet on each side of the crossing, measured perpendicular to the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints.

- Where conditions prevent an 18 inch vertical separation from being maintained, the following methods shall be specified:
- The sewer shall be designed and constructed equal to water main pipe (cement-lined ductile iron pipe, PVC or other AWWA-approved material for potable water conveyance) for a distance of 10 feet on each side of the crossing, measured perpendicular to the water main and pressure tested in accordance with AWWA specifications, or
  - Either the water main or the sewer may be encased in concrete (min. 6 inch thickness) or a carrier pipe for a distance of 10 feet on each side of the crossing, measured perpendicular to the water main. The carrier pipe shall be designed and constructed of materials which are satisfactory to the Division, or
  - Any other methods, if supported by data from the design engineer, which ensure adequate watertightness and are satisfactory to the Division.



NOTE: 12" GRAVEL BASE & PERMANENT PAVEMENT SHALL BE EXTENDED TO ALL AREAS EXCAVATED OUTSIDE THE PAYMENT LIMIT LINE AT NO ADDITIONAL EXPENSE TO THE OWNER.

**GENERAL NOTES:**

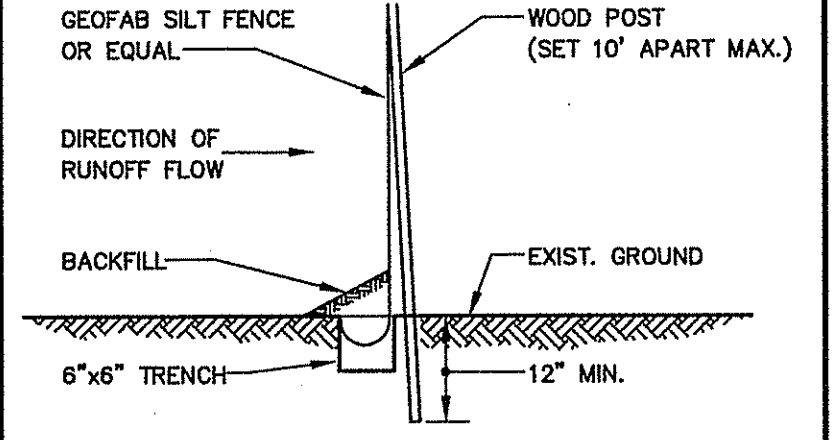
- THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. THE 2004 REVISION OF THE STANDARD SPECIFICATIONS MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION DIVISION OF PUBLIC WORKS. IN ADDITION, THE TOWN OF CUMBERLAND STANDARD SPECIFICATIONS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO.
- ALL REQUIRED SITE IMPROVEMENTS SHALL BE INSPECTED BY THE TOWN ENGINEER TO ENSURE SATISFACTORY COMPLETION. IN NO CASE SHALL THE INSTALLATION OF ANY IMPROVEMENTS BE STARTED UNTIL WRITTEN NOTIFICATION IS GIVEN TO THE TOWN ENGINEER. AT LEAST A 24-HOUR NOTICE SHALL BE GIVEN TO THE TOWN ENGINEER PRIOR TO ANY SUCH START OF CONSTRUCTION. A FINAL INSPECTION OF ALL SITE IMPROVEMENTS, UTILITIES AND GRADING WILL BE MADE TO DETERMINE WHETHER THE WORK IS SATISFACTORY AND IN SUBSTANTIAL AGREEMENT WITH THE APPROVED FINAL CONSTRUCTION DRAWINGS AND THE TOWN SPECIFICATIONS.
- LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. ANY DAMAGE TO EXISTING UTILITIES AS SHOWN OR NOT SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE BORNE BY THE CONTRACTOR. NO EXCAVATION SHALL BE DONE UNTIL ALL INVOLVED UTILITY COMPANIES ARE NOTIFIED 48-HOURS IN ADVANCE. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 48 WORKING HOURS, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION AND/OR BLASTING WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION AND/OR BLASTING WORK MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
- IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN ANY AND ALL PERMITS REQUIRED BY THE STATE OF RHODE ISLAND, FEDERAL GOVERNMENT, AND THE TOWN OF CUMBERLAND AND THE NARRAGANSETT BAY COMMISSION PRIOR TO COMMENCING ANY WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SOIL EROSION AND SEDIMENT CONTROL ORDINANCE.
- ALL STORM DRAIN PIPING SHALL BE REINFORCED CONCRETE PIPE, CLASS III, WITH ALL EXTERIOR JOINTS MORTARED.
- THE INSTALLATION OF THE SANITARY SEWER SHALL CONFORM TO THE CONSTRUCTION DETAILS AND REQUIREMENTS OF THE TOWN OF CUMBERLAND DEPARTMENT OF PUBLIC WORKS. "DEPARTMENT OF ENVIRONMENTAL MANAGEMENT DIVISION OF WATER RESOURCES (DWR) ALSO SEE THE SEWER LINE / WATER MAIN SEPARATION POLICY FOR DESIGN OF SANITARY SEWERS".
- WATER MAIN AND SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE POLICES AND PRACTICES OF THE CUMBERLAND WATER DEPARTMENT, AND MUST BE INSPECTED BY SUCH DEPARTMENT PERSONNEL AS DIRECTED BY THE SUPERINTENDENT.
- THE ENTIRE PROPERTY IS LOCATED WITHIN "ZONE X" AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN AS IDENTIFIED ON BELOW:  
"NATIONAL FLOOD INSURANCE PROGRAM: FIRM, FLOOD INSURANCE RATE MAP: TOWN OF CUMBERLAND, RHODE ISLAND, PROVIDENCE COUNTY, PANEL 7 OF 7; COMMUNITY PANEL NUMBER 440016-0007C; MAP REVISED JUNE 16, 1992; FEDERAL EMERGENCY MANAGEMENT AGENCY".
- ALL MATERIAL FOR FILL SHALL BE CLEAN AND FREE OF MATTER WHICH COULD POLLUTE ANY DOWN STREAM WATERCOURSE.
- VERTICAL DATUM: MEAN SEA LEVEL (NGVD 29).
- STATE REGULATED FRESH WATER WETLANDS VERIFIED BY THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT UNDER APPLICATION 03-0015.
- FILL MATERIAL SHALL BE COMPACTED IN ONE FOOT (MAXIMUM) LIFTS TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D-1557 (MODIFIED PROCTOR TEST).
- ALL WORK SHALL CONFORM TO THE TOWN OF CUMBERLAND, THE CUMBERLAND WATER DEPARTMENT AND THE CUMBERLAND DEPARTMENT OF PUBLIC WORKS.
- DUST CONTROL IN THE FORM OF CALCIUM CHLORIDE SHALL BE APPLIED AS CONDITIONS WARRANT OR AS DIRECTED BY THE TOWN OF CUMBERLAND BUILDING OFFICIAL.
- WORK SHOWN ON THE PLANS FOR WHICH THERE ARE NO PARTICULAR DETAILS OR SPECIFICATIONS DOES NOT RELIEVE THE CONTRACTOR FROM FINISHING 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 AS NECESSARY TO COMPLETE THE PROJECT. ANY CHANGES TO THE PROJECT OR THE INSTALLATION OF AN ITEM OF WHICH NO PARTICULAR DETAIL OR SPECIFICATION WAS PROVIDED MUST BE REVIEWED BY AND ACCEPTABLE TO THE ENGINEER.
- SANITARY SEWER P.V.C. PIPE FITTINGS SHALL MEET ASTM SPECIFICATION D-3034-30R-35.

**EROSION CONTROL AND SOIL STABILIZATION PROGRAM:**

- UNDISTURBED SLOPES SHALL NOT BE LEFT EXPOSED FOR EXCESSIVE PERIODS OF TIME, SUCH AS THE INACTIVE WINTER SEASONS.
  - TEMPORARY TREATMENTS SHALL CONSIST OF A HAY, STRAW, FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING (BURRAP, JUTE, FIBERGLASS NETTING, EXCELOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
  - HAY OR STRAW APPLICATIONS SHOULD BE IN THE AMOUNT OF 2000 LBS/ACRE.
  - ALL HAY BALES OR TEMPORARY PROTECTION SHALL REMAIN IN-PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
  - THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH RHODE ISLAND STANDARD SPECIFICATION M.20.01.
  - THE SEED MIX SHALL BE INOCULATED WITHIN 24-HOURS BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
  - THE CONTRACTOR MUST REPAIR AND/OR RE-SEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR, AND SHALL DO SO AT NO ADDITIONAL EXPENSE.
  - THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH AS INDICATED IN THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, 1989, CHAPTER FOUR, SECTIONS A AND B, AS AMENDED.
  - STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
  - STOCKPILES OF TOPSOIL AND EARTH MATERIALS SHALL NOT BE LOCATE NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN THIRTY PERCENT (30%), SHALL ALSO BE SEED AND/OR STABILIZED AND SHALL BE COMPLETELY ENCLOSED WITH STAKE HAY BALES AND/OR SILT FENCE. (SEE DETAIL).
  - ON BOTH STEEP AND LOW SLOPES, CONSIDERATION SHOULD BE GIVEN TO "CRIMPING" OR "TRACKING" TO TACK DOWN MULCH APPLICATIONS.
  - TREES TO BE RETAINED SHALL BE FENCED OR ROPED OFF TO PROTECT THEM FROM CONSTRUCTION EQUIPMENT.
  - ALL PROPOSED PLANTINGS MUST BE ACCOMPLISHED AS EARLY AS POSSIBLE UPON COMPLETION OF GRADING AND CONSTRUCTION, AND AT LEAST PRIOR TO ANY ON-SITE OCCUPANCY.
  - ALL PROPOSED PLANTINGS MUST BE MAINTAINED BY THE CONTRACTOR TO ENSURE SURVIVAL.
  - SHOULD ANY OR ALL OF THE PROPOSED PLANTS FAIL TO SURVIVE AT LEAST ONE (1) FULL GROWING SEASON FROM THE TIME THEY HAVE BEEN PLANTED, THE OWNER SHALL BE FULLY RESPONSIBLE FOR REPLACING AND MAINTAINING THE SAME PLANT SPECIES FOR ONE (1) ADDITIONAL GROWING SEASON.
  - TEMPORARY SEEDING MUST BE DONE WITHIN ONE (1) MONTH AFTER DISTURBANCE.
  - ALL DISTURBED AREAS MUST BE PERMANENTLY SEED OR PLANTED BEFORE OCTOBER 15TH, IF NOT THEY MUST BE TEMPORARILY SEED.
  - TEMPORARY SEEDING MUST BE DONE WITHIN ONE (1) MONTH AFTER DISTURBANCE.
  - ALL DISTURBED AREAS MUST BE PERMANENTLY SEED OR PLANTED BEFORE OCTOBER 15TH, IF NOT THEY MUST BE TEMPORARILY SEED.
  - THE CONTRACTOR SHOULD INITIATE APPROPRIATE VEGETATIVE PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN 21 DAYS.
  - ADDITIONAL HAY BALES OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER, OWNER, TOWN REPRESENTATIVES OR R.I.D.E.M.
  - THE DESIGN MIX UTILIZED IN ALL DISTURBED AREAS TO BE SEED SHALL BE COMPRISED OF THE FOLLOWING:
- | TYPE               | % BY WEIGHT |
|--------------------|-------------|
| CREeping RED FESUe | 70          |
| ASTORIA BENTGRASS  | 5           |
| BIRDFOOT TREFOR    | 15          |
| PERENNIAL RYEGRASS | 10          |
- APPLICATION RATE 100 LBS/ACRE  
LIMING AND FERTILIZING AS REQUIRED TO COMPLEMENT OR UPGRADE EXISTING CONDITIONS.

**STORM DRAINAGE SYSTEM MAINTENANCE PLAN:**

- THE FOLLOWING LIST OF MAINTENANCE TASKS AND FREQUENCIES MUST BE ADOPTED IN ORDER TO ENSURE A SUCCESSFUL LONG TERM OPERATION OF THE STORM DRAINAGE SYSTEM.
- SEDIMENTS SHALL BE REMOVED FROM STORM DRAINAGE INFRASTRUCTURES (CATCH BASINS, MANHOLES, PIPES, INLETS, OUTLET STRUCTURE) IMMEDIATELY FOLLOWING SITE STABILIZATION AND AFTER THE FIRST WET WEATHER OPERATIONAL PERIOD. THEREAFTER, SEDIMENTS SHALL BE REMOVED FROM STORM DRAINAGE INFRASTRUCTURES EVERY 4 YEARS.
  - ALL EROSION CONTROLS, INCLUDING BUT NOT LIMITED TO, STAKED HAY BALES, SILT FENCE, FIBER MULCH OR PROTECTIVE COVERS SUCH AS MAT OR FIBER LINING (BURRAP, JUTE, FIBERGLASS NETTING, EXCELOR BLANKETS) SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN TWENTY-FOUR (24) HOURS AFTER AN EVENT WHICH GENERATES 0.25 INCHES OF RAIN IN A TWENTY-FOUR (24) PERIOD.
  - ALL DISTURBED AREAS, RIPRAP, GRASSED AREAS AND SIDE SLOPES AND GRASSED AREAS SHALL BE INSPECTED AT LEAST TWICE PER YEAR TO CHECK FOR EROSION PROBLEMS. PROBLEM AREAS SHALL BE REPAIRED AND/OR RE-SEED IMMEDIATELY TO STABILIZE EXPOSED SOILS, THEREBY PREVENTING EROSION AND POTENTIAL CLOGGING OF STORM WATER INFRASTRUCTURES.
  - INSPECTION OF THE STORM DRAINAGE INFRASTRUCTURES (CATCH BASINS, MANHOLES, PIPES, INLETS, OUTLET STRUCTURE) AND EROSION CONTROLS SHALL BE PERFORMED AT LEAST ON AN ANNUAL BASIS, PREFERABLY DURING A STORM EVENT TO INSPECT FOR PROPER FUNCTIONING OF THE FACILITY.
  - INSPECTION OF STORM DRAINAGE INFRASTRUCTURES SHALL OCCUR ON AN ANNUAL BASIS, AT A MINIMUM, TO CHECK FOR DEBRIS REMOVAL, SEDIMENT AND HYDROCARBONS AND STRUCTURAL INTEGRITY OR DAMAGE. SUCH DEFICIENCIES MUST BE CORRECTED IMMEDIATELY. REMOVAL AND DISPOSAL OF ACCUMULATED DEBRIS SHALL BE IN ACCORDANCE WITH STATE AND FEDERAL GUIDELINES. IN THE CASE OF AN OIL AND/OR DILK POLLUTANT RELEASE, THE SYSTEM MUST BE CLEANED IMMEDIATELY FOLLOWING THE SPILL. COSTS INCURRED FOR MAINTENANCE, CLEANING, AND INSPECTIONS ARE THE RESPONSIBILITY OF THE PROPERTY OWNER. IN CERTAIN CASES, THE APPROPRIATE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RDEM) PROGRAM MAY REQUIRE DOCUMENTATION OF MAINTENANCE.
  - ANY INADVERTENT OR DELIBERATE DISCHARGE OF WASTE OIL OR ANY OTHER POLLUTANT TO THE STORM WATER INFRASTRUCTURE SYSTEM REQUIRES IMMEDIATE NOTIFICATION OF THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, OIL POLLUTION CONTROL PROGRAM, AT 222-1360, AS PER OIL POLLUTION CONTROL REGULATIONS, DURING NON-WORKING HOURS, NOTIFICATION OF SPILLS CAN BE MADE TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AT 222-3070, THE 24-HOUR EMERGENCY RESPONSE PHONE NUMBER.
  - REPAIR OR REPLACEMENT OF ANY PORTION OF STORM DRAINAGE INFRASTRUCTURES (RIPRAP, CATCH BASINS, MANHOLES, PIPES, INLETS, OUTLET STRUCTURE) AND EROSION CONTROLS, INCLUDING BUT NOT LIMITED TO, STAKED HAY BALES, SILT FENCE, FIBER MULCH OR PROTECTIVE COVERS SUCH AS MAT OR FIBER LINING (BURRAP, JUTE, FIBERGLASS NETTING, EXCELOR BLANKETS) SHALL BE DONE WITHIN THIRTY (30) DAYS OF DEFICIENCY REPORTS. IF AN EMERGENCY SITUATION IS IMMINENT THEN REPAIR/REPLACEMENT SHALL BE DONE IMMEDIATELY TO AVOID FAILURE OR DANGER TO NEARBY RESIDENTS.
  - ALL STORM WATER CONTROL MEASURES, DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION, INCLUDING UN-STABILIZED SOIL, STOCKPILES, DISCHARGE LOCATIONS AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE, MUST BE INSPECTED BY OR UNDER THE SUPERVISION OF THE PERMITTEE AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN TWENTY-FOUR (24) HOURS AFTER AN EVENT WHICH GENERATES 0.25 INCHES OF RAIN IN A TWENTY-FOUR (24) PERIOD. SUCH AREAS SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE WATERS OF THE STATE OR A SEPARATE STORM SEWER SYSTEM. ALL BMPs (BEST MANAGEMENT PRACTICES) SHALL BE MAINTAINED TO PREVENT UNCONTROLLED RELEASES OF MEASURABLE AMOUNTS OF SEDIMENT OR SEDIMENT-LADEN WATER FROM TRAVELING BEYOND THE LIMITS OF DISTURBANCE. IF AN INSPECTION REVEALS A DISCHARGE OF SEDIMENT TO THE WATERS OF THE STATE OR A SEPARATE STORM SEWER SYSTEM, THE PERMITTEE MUST NOTIFY THE OFFICE OF THE NATURE OF THE DISCHARGE, THE MEASURES TAKEN TO CLEAN UP THE DISCHARGE, AND THE MEASURES TAKEN TO PREVENT FUTURE RELEASES. BASED ON THE RESULTS OF SITE INSPECTIONS, THE STORM WATER POLLUTION PREVENTION PLAN SHALL BE REVISED TO CONFORM TO THE APPROVED CONSTRUCTION PLANS, AS APPROPRIATE, BUT IN NO CASE LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING AN INSPECTION THAT FINDS A DEFICIENCY.
  - THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROLS AND STORM DRAINAGE INFRASTRUCTURES, INCLUDING BUT NOT LIMITED TO, STAKED HAY BALES, SILT FENCE, FIBER MULCH OR PROTECTIVE COVERS SUCH AS MAT OR FIBER LINING (BURRAP, JUTE, FIBERGLASS NETTING, EXCELOR BLANKETS), CATCH BASINS, MANHOLES, PIPES, INLETS, FLARED END SECTIONS, RIPRAP, OUTLET STRUCTURE DURING CONSTRUCTION AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE IMPROVEMENTS UPON COMPLETION OF CONSTRUCTION.
  - THE MAINTENANCE OF THE STORM WATER INFRASTRUCTURE (CATCH BASINS, DRAIN MANHOLES, UNDERGROUND WATER QUALITY TREATMENT SYSTEM AND PIPING) WITHIN THE RIGHT-OF-WAY OF RIVERVIEW DRIVE SHALL BE THE RESPONSIBILITY OF THE TOWN OF CUMBERLAND.
  - THIS STORM DRAINAGE MAINTENANCE PLAN SHALL NOT RELEASE THE CONTRACTOR FROM ANY OTHER ENVIRONMENTAL STATUTES OR REGULATIONS.



- INSTALLATION SEQUENCING:**
- DIG TRENCH 6" DEEP.
  - SET FENCE POST 1/2 APART MAX. AT SLIGHT ANGLE TOWARD RUNOFF DIRECTION.
  - ATTACH GEOFAB TO POST.
  - LOWER 6" OF GEOFAB IN TRENCH CURLED TOWARD RUNOFF DIRECTION & BACKFILL.
  - FENCE TO BE INSTALLED AS INDICATED ON THE SITE PLAN OR AS DIRECTED BY THE ENGINEER.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED DEC 22 2010 FILE # 10-0123  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.

**NOTICE TO UTILITY CONTRACTOR:**

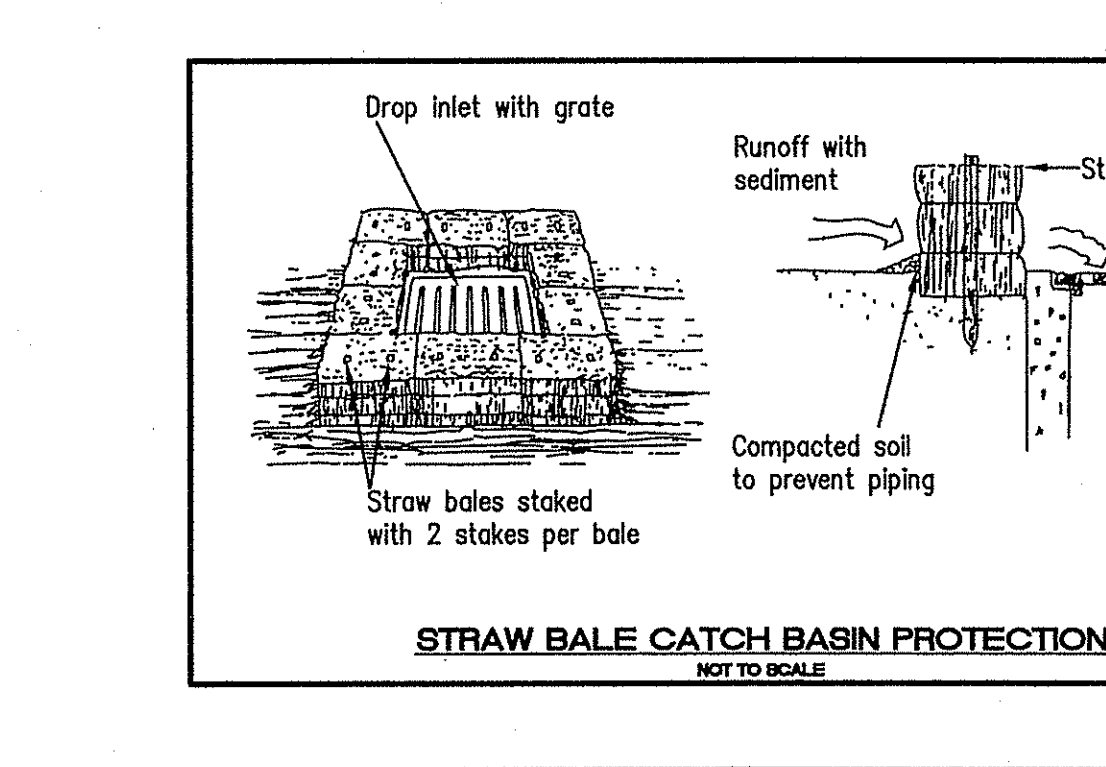
- THE FOLLOWING PROCEDURES SHALL BE STRICTLY ADHERED TO AFTER THE INSTALLATION OF WATER MAINS, SERVICES OR AS DIRECTED BY THE CUMBERLAND WATER DEPARTMENT.
- FLUSHING, FILLING, TESTING OF WATER MAINS:**
- THE CONTRACTOR SHALL UTILIZE A BY-PASS PIPING SYSTEM FOR FLUSHING, FILLING, TESTING AND CHLORINATION OF VARIOUS SIZED WATER MAINS. THE BY-PASS PIPING SHALL CONSIST OF CORPORATION STOPS OR VALVES ON THE SUPPLY LINE AND THE MAIN TO BE FILLED. TWO (2) OR MORE CHECK VALVES SHALL BE INSTALLED IN THE BY-PASS PIPE TO INSURE THAT NO WATER IS ALLOWED TO RETURN TO THE SUPPLY LINE.
  - FIRE HYDRANTS MAY BE UTILIZED IF PROPERLY FLUSHED AND THE ABOVE BY-PASS PIPING INSTALLED.
  - LINE VALVES SHALL NOT BE UTILIZED TO FILL, FLUSH, TEST OR CHLORINATE WATER MAINS.
  - MAINS SHALL BE PRESSURE TESTED TO 1.5 TIMES SYSTEM WORKING PRESSURE, AND SHALL BE REQUIRED TO HOLD FOR AT LEAST 2 HOURS.
  - WATER MAINS AND SERVICES SHALL BE THOROUGHLY FLUSHED. A TURBIDITY READING OF BELOW (5) FIVE SHALL BE MONITORED BY THE WATER DEPARTMENT CHEMIST BEFORE FLUSHING IS DISCONTINUED AND CHLORINATION MAY BEGIN. FLUSHING SHALL BE AT RATE SUFFICIENT TO CREATE A WATER VELOCITY OF AT LEAST 2.5 FEET PER SECOND THROUGH THE PIPE.
- CHLORINATION OF WATER MAINS AND SERVICES:**
- ALL MAINS AND APPURTENANCES SHALL BE CHLORINATED IN ACCORDANCE WITH PROVISIONS OF THE AMERICAN WATER WORKS ASSOCIATION STANDARD 9001-81, OR LATEST REVISION THEREOF, AND AS FOLLOWS:
- A CORPORATION STOP SHALL BE PROVIDED AT A LOCATION FOR FEEDING OF THE LIQUID CHLORINE SOLUTION, AND AT LOCATIONS DESIGNATED BY THE WATER DEPARTMENT. COPPER TUBING SHALL BE USED FOR ALL CHLORINATION AND SAMPLING PIPES. CHLORINE SHALL BE FED IN A LIQUID SOLUTION, MADE FROM CRYSTALLINE SODIUM HYPOCHLORITE.
  - THE INITIAL CHLORINE CONCENTRATION IN THE PIPE SHALL BE AT LEAST 25 MG/L WHEN TESTED BY THE WATER DEPARTMENT. THE TREATED WATER WILL REMAIN IN THE WATER MAIN FOR AT LEAST TWENTY-FOUR (24) HOURS. AFTER THE TWENTY-FOUR HOUR RETENTION PERIOD THE CHLORINE CONCENTRATION IN THE PIPE SHALL BE NO LESS THAN 10 MG/L WHEN TESTED BY THE WATER DEPARTMENT. IF AFTER THE APPLICATION RETENTION PERIOD, THE CHLORINE CONCENTRATION IS AT LEAST 10 MG/L, THE HEAVILY CHLORINATED WATER SHALL BE FLUSHED FROM THE MAIN UNTIL THE CHLORINE CONCENTRATION IN THE WATER LEAVING THE MAIN WHEN TESTED IS NO HIGHER THAN 1 MG/L, AND THE TURBIDITY IS LESS THAN 1.0. IF THE CHLORINE CONCENTRATION WHEN TESTED IS LESS THAN 10 MG/L, STEP (B) SHALL BE REPEATED.
  - BACTERIOLOGICAL TESTING SHALL BE DONE BY THE WATER DEPARTMENT CHEMIST AFTER THE FINAL FLUSHING AND BEFORE THE WATER MAIN IS PUT INTO SERVICE. THE SAMPLES OR SAMPLES SHALL BE COLLECTED IMMEDIATELY AFTER FINAL FLUSHING AND AGAIN, IF NECESSARY, AT LEAST TWENTY-FOUR (24) HOURS AFTER FINAL FLUSHING. THESE SAMPLES USUALLY REQUIRE A FORTY-EIGHT (48) HOUR PERIOD TO INSURE THAT NO COLOURFORM ORGANISMS EXIST. IF THE TESTING IS POSITIVE, THE PROCEDURE SHALL BE REPEATED. NO WATER MAIN SHALL BE PUT INTO SERVICE WITHOUT THE PERMISSION OF THE TOWN OF CUMBERLAND PUBLIC WORKS ENGINEER.
  - UNDER CERTAIN CONDITIONS EMERGENCY TYPE CHLORINATION MAY BE CONDUCTED WITH THE APPROVAL OF THE WATER DEPARTMENT SUPERVISOR.
  - CHLORINATION OF VALVES, FITTINGS AND SHORT LENGTHS OF MAIN SHALL BE THOROUGHLY DISINFECTED BY CONTACT SWABING AND /OR BRUSHING WITH A HIGH STRENGTH SODIUM OR CALCIUM HYPOCHLORITE SOLUTION IN THE CONCENTRATION OF 500 MILLIGRAMS OF AVAILABLE CHLORINE PER LITER OF WATER.
- THE FOLLOWING TEST PROCEDURES SHALL BE STRICTLY ADHERED TO AFTER THE INSTALLATION OF SANITARY SEWERS AND MANHOLES OR AS DIRECTED BY THE CUMBERLAND PUBLIC WORKS DEPARTMENT.

**LEAKAGE TESTS FOR NON-PRESSURE PVC SEWER PIPE**

- A. LEAKAGE TESTS WILL BE REQUIRED FOR ALL SEWERS AND MANHOLES.
- LEAKAGE INTO OR FROM THE SEWERS AND STRUCTURES WILL BE DETERMINED RESPECTIVELY BY INFILTRATION TESTS OR BY EXFILTRATION TESTS AS SPECIFIED HEREIN OR AS DIRECTED.
  - THE MAXIMUM ALLOWABLE AMOUNT OF INFILTRATION INTO SEWERS OR EXFILTRATION FROM THE SEWERS AS DETERMINED RESPECTIVELY BY THE TESTS, INCLUDING MANHOLES, SHALL BE AT THE RATE OF NOT GREATER THAN 100 GALLONS PER INCH OF PIPE DIAMETER PER MILE OF PIPE PER 24 HOURS. (INCLUDING MANHOLES) AND THERE SHALL BE NO GUSHING OR SPURRING STREAMS OF WATER INTO OR FROM THE SEWERS AND MANHOLES.
  - WHERE THE GROUND WATER LEVEL CAN BE MAINTAINED AT A HEIGHT OF NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE FOR THE FULL LENGTH OF THE SECTION OF THE SEWER BEING TESTED FOR LEAKAGE, THE LEAKAGE INTO THE SEWERS AND MANHOLES SHALL BE DETERMINED AS SPECIFIED UNDER "INFILTRATION TESTS".
  - WHERE GROUND WATER CANNOT BE MAINTAINED AT A LEVEL OF NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE FOR FULL LENGTH OF THE SECTION OF SEWER PIPE BEING TESTED, THE LEAKAGE FROM THE SEWERS AND MANHOLES SHALL BE DETERMINED AS SPECIFIED UNDER "EXFILTRATION TESTS".
  - LEAKAGE TESTS SHALL BE PERFORMED ON SUCH SUBDIVIDED SECTIONS OF THE PIPELINE AND FOR THE PERIODS, WHICH IN THE OPINION OF THE OWNER WILL PROVIDE AN ACCURATE MEASUREMENT OF TOTAL LEAKAGE.
  - THE CONTRACTOR SHALL DO ALL THE WORK, PROVIDE ALL NECESSARY WERS OR SUCH OTHER MEASURING DEVICES AS REQUIRED, DO ALL PUMPING AND FURNISH ALL EQUIPMENT NECESSARY FOR THE PROPER PERFORMANCE OF LEAKAGE TESTS, AT NO ADDITIONAL COST TO THE OWNER.
- B. INFILTRATION TESTS**
- THESE TESTS SHALL BE CONDUCTED AT SUCH TIME AS THE GROUND WATER LEVEL IS AT A HEIGHT OF NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE FOR THE FULL LENGTH OF THE SECTION OF SEWER BEING TESTED.
  - THE GROUND WATER LEAKAGE INTO THE PIPES WILL BE MEASURED BY THE OWNER AT SUCH POINT OR POINTS AS HE MAY DIRECT.
  - THE CONTRACTOR SHALL CONSTRUCT SUCH WEIRS OR OTHER MEANS OF MEASUREMENT AS SHALL BE REQUIRED AND SHALL DO SUCH PUMPING AS SHALL BE NECESSARY TO ENABLE THE TESTS TO BE MADE SATISFACTORY.

**VACUUM TESTING OF SEWER MANHOLES**

- A. INSTALL VACUUM TESTER AND INFLATE COMPRESSION BAND TO EFFECT A SEAL BETWEEN THE VACUUM BASE AND THE MANHOLE. CONNECT VACUUM PUMP TO THE OUTLET PART WITH THE VALVE OPEN, DRAW A VACUUM OF 10 INCHES OF MERCURY (HG), AND CLOSE THE VALVE. THE MANHOLE SHALL PASS THE TEST IF THE VACUUM REMAINS AT 10 INCHES OF MERCURY OR DROPS TO 9 INCHES OF MERCURY IN A TIME GREATER THAN 60 SECONDS FOR A 48-INCH DIAMETER MANHOLE, TIME GREATER THAN 75 SECONDS FOR 60-INCH DIAMETER MANHOLE AND TIME GREATER THAN 90 SECONDS FOR 72-INCH DIAMETER MANHOLE. IF THE MANHOLE FAILS THE INITIAL TEST, THE CONTRACTOR SHALL MAKE PROPER REPAIRS OR REPLACE THE MANHOLE AND RE-TEST AT NO ADDITIONAL COMPENSATION.



**REVISION**

NO.	DATE	DESCRIPTION
1	7/12/10	STORM DRAINAGE SYSTEM MAINTENANCE NOTE 1

JOHN P. CATTO  
Professional Engineer  
No. 4936  
R.I. License No. 4936

CIVIL ENGINEERS  
LAND PLANNERS  
CORPORATION  
141 JAMES P. MURPHY HIGHWAY  
WEST WARWICK, RHODE ISLAND  
02893-8282  
401-615-8600  
401-615-8606  
FAX: 401-615-8606

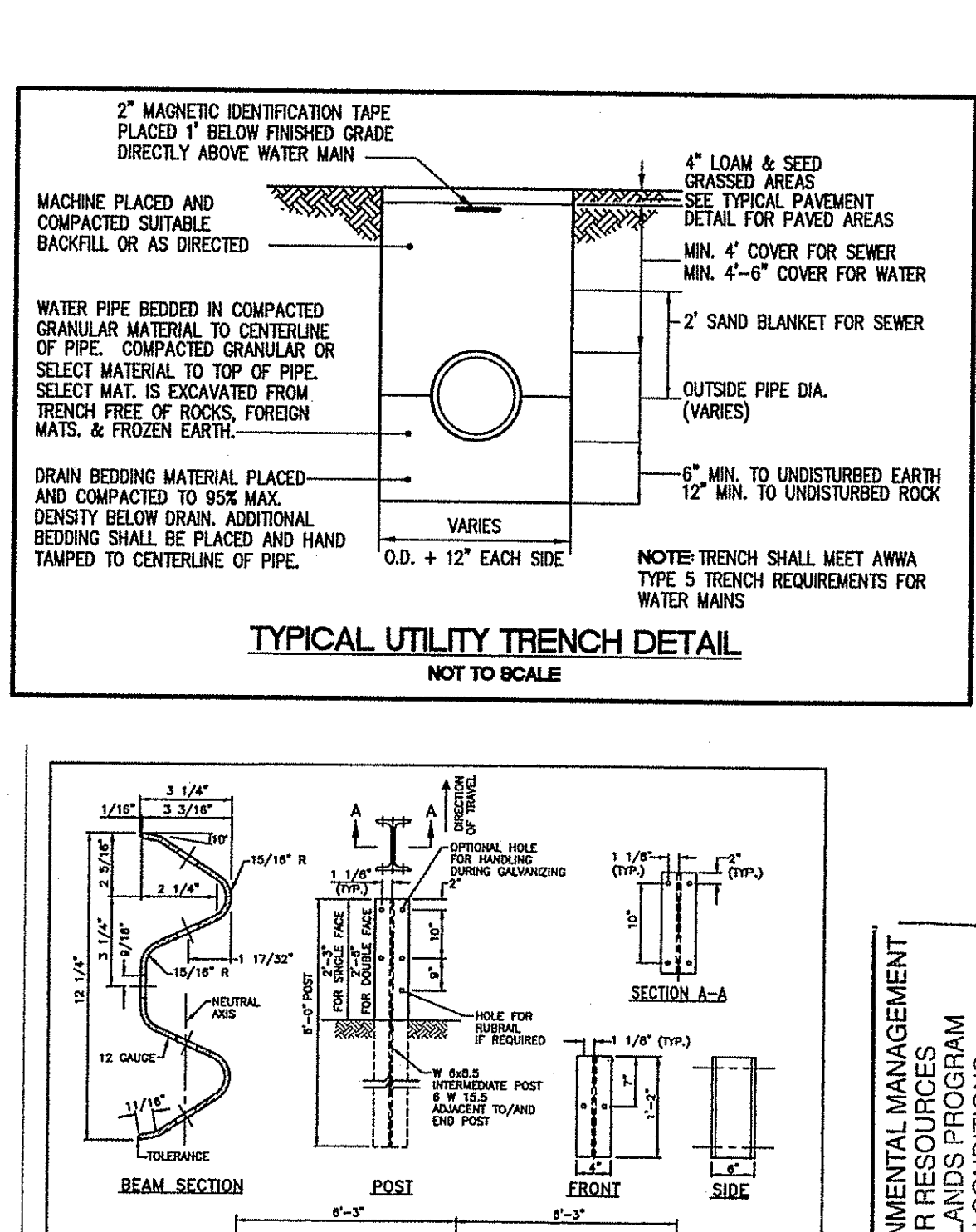
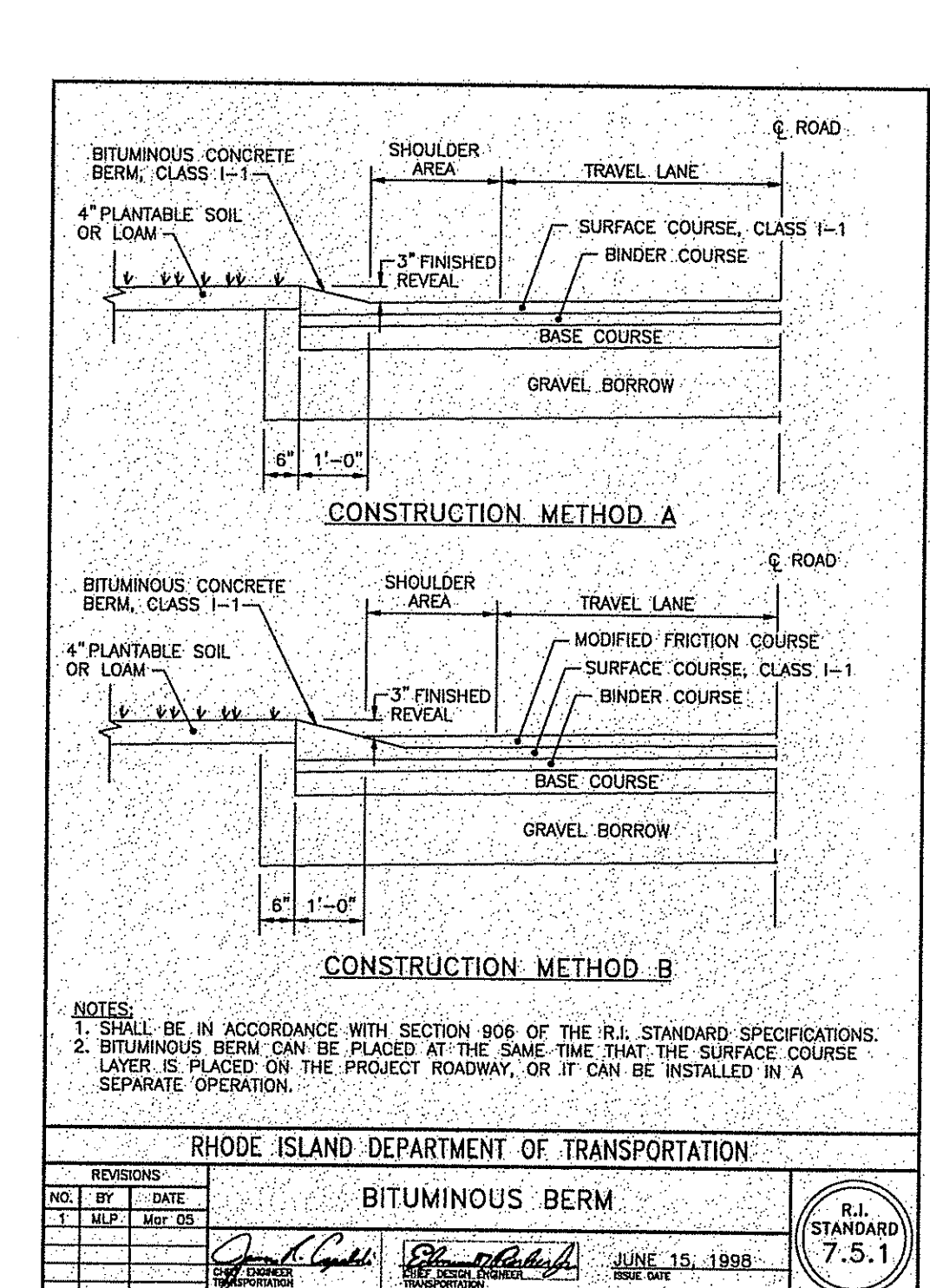
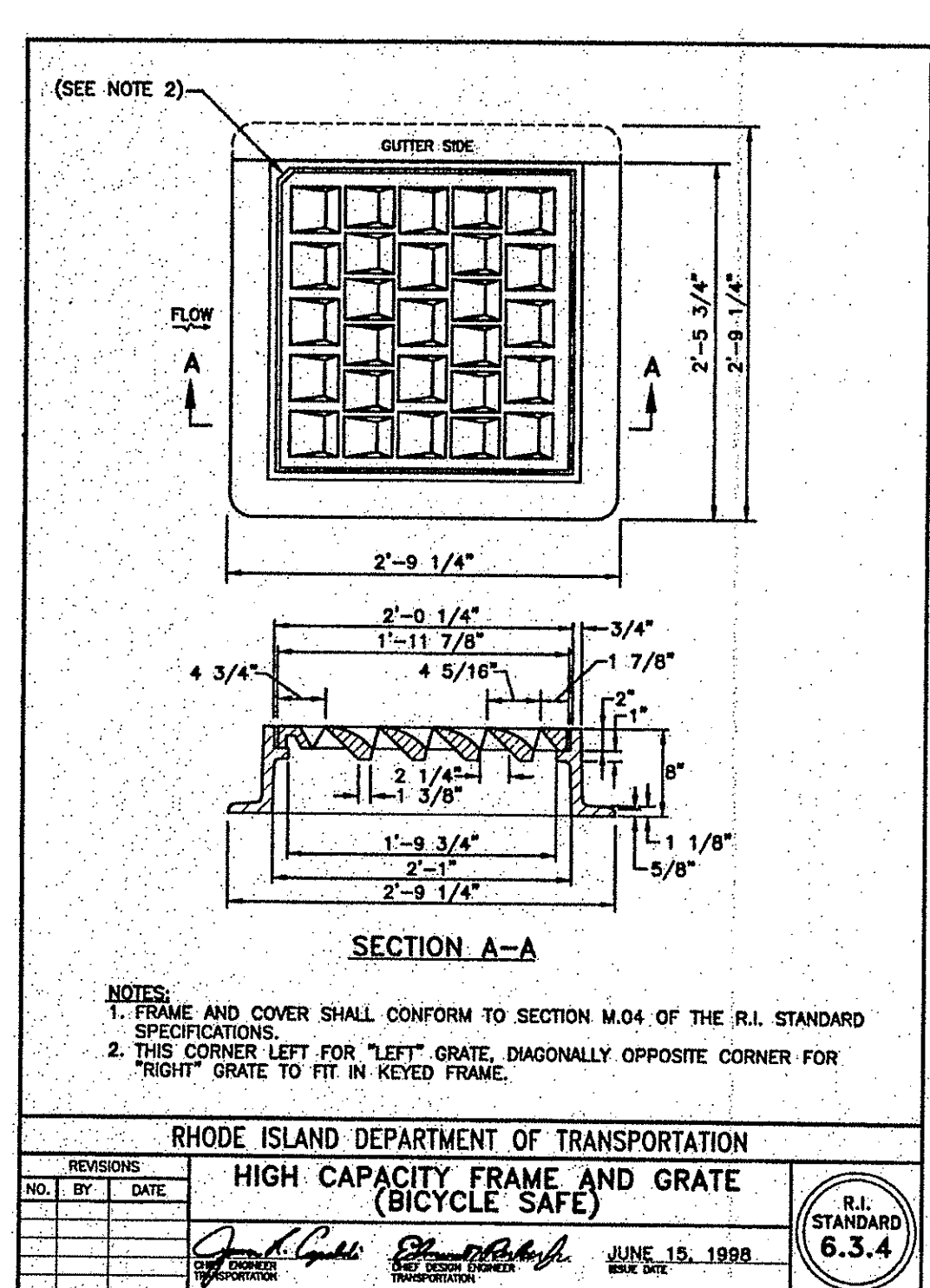
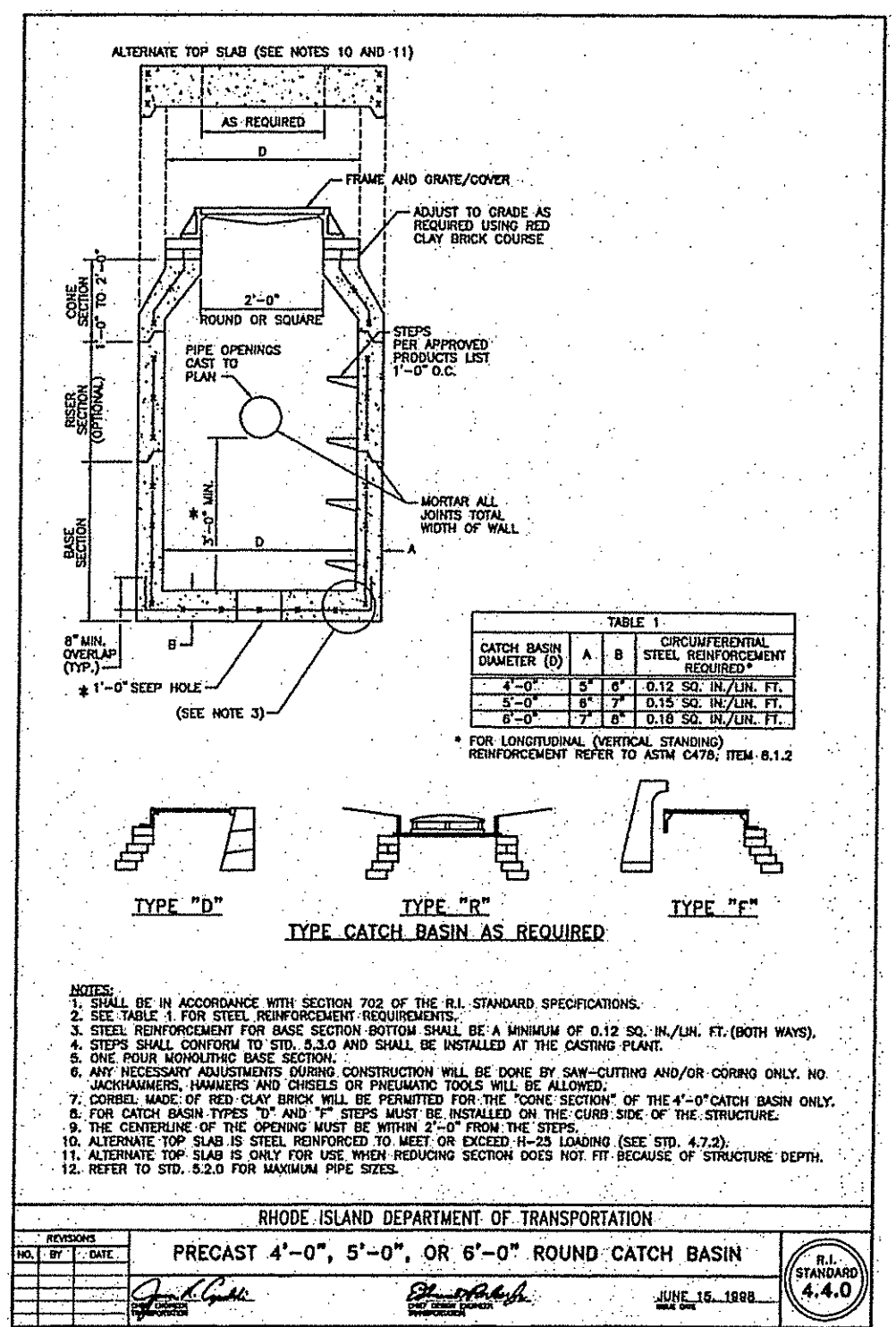
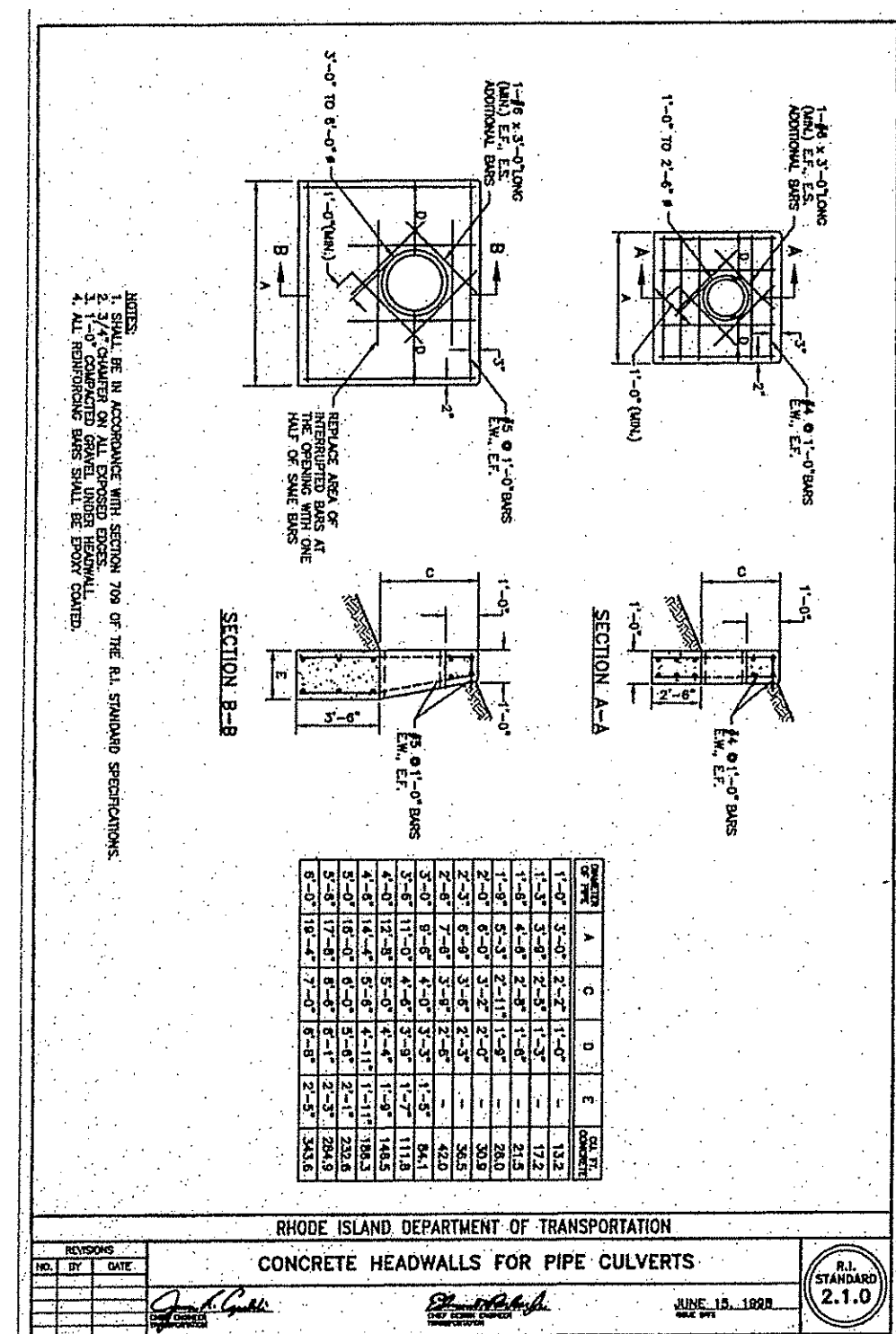
PROJECT NO: 144.418  
DATE: MAY 2010  
SCALE: AS NOTED  
DESIGNED BY: S.G.T.  
DRAWN BY: S.G.T.  
CHECKED BY: J.P.C.

**TEST REPORTS AND CERTIFICATE OF COMPLIANCE**

- IN ADDITION TO OTHER REQUIREMENTS SPECIFIED HEREIN, THE CONTRACTOR SHALL FURNISH TO THE OWNER NOTARIZED TEST REPORTS AND METHODS OF TEST BY AN APPROVED INDEPENDENT TESTING LABORATORY TO SHOW COMPLIANCE OF ALL MATERIALS FURNISHED UNDER THIS SECTION OF THE SPECIFICATIONS WITH ALL THE REQUIREMENTS HEREIN.
- EACH SHIPMENT OF PIPE AND FITTINGS SHALL BE ACCOMPANIED BY THE MANUFACTURER'S NOTARIZED CERTIFICATE OF CONFORMANCE CERTIFYING THAT THE PIPE, PIPE FITTINGS AND ALL OTHER MATERIALS TO BE FURNISHED UNDER THESE ITEMS MEET ALL REQUIREMENTS OF THE SPECIFICATIONS.
- THE CONTRACTOR, AT NO ADDITIONAL EXPENSE TO THE OWNER, SHALL PROVIDE ALL TESTING OF MATERIAL FURNISHED UNDER THIS SECTION OF THE SPECIFICATIONS.

NOTES and DETAILS  
SINGLE FAMILY RESIDENCE  
ASSESSOR'S PLAT 15, LOTS 69 and 70  
RIVERVIEW DRIVE  
BERKELEY REALTY CO.  
DRAWING NUMBER  
**4**  
SHEET 4 OF 5

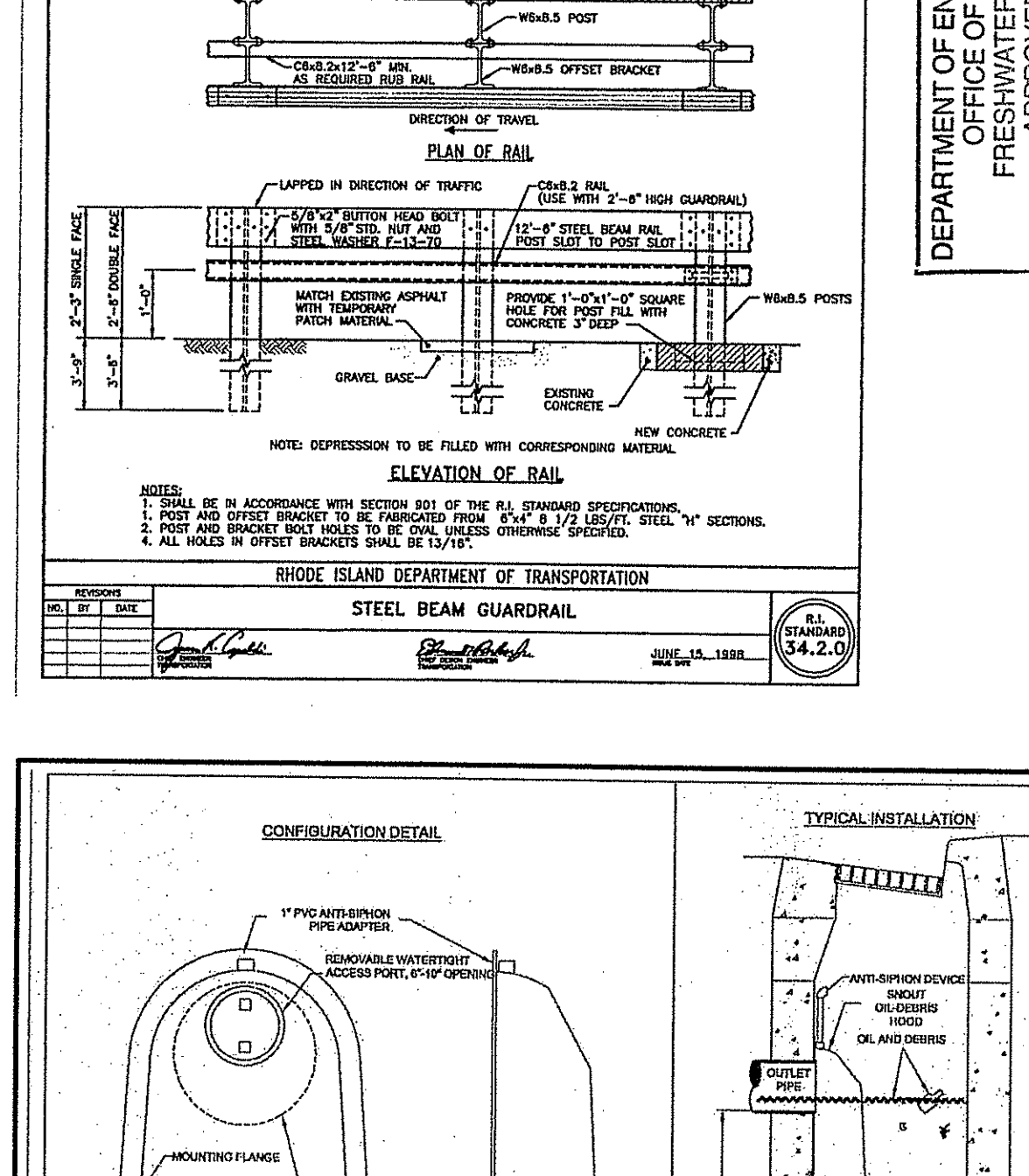
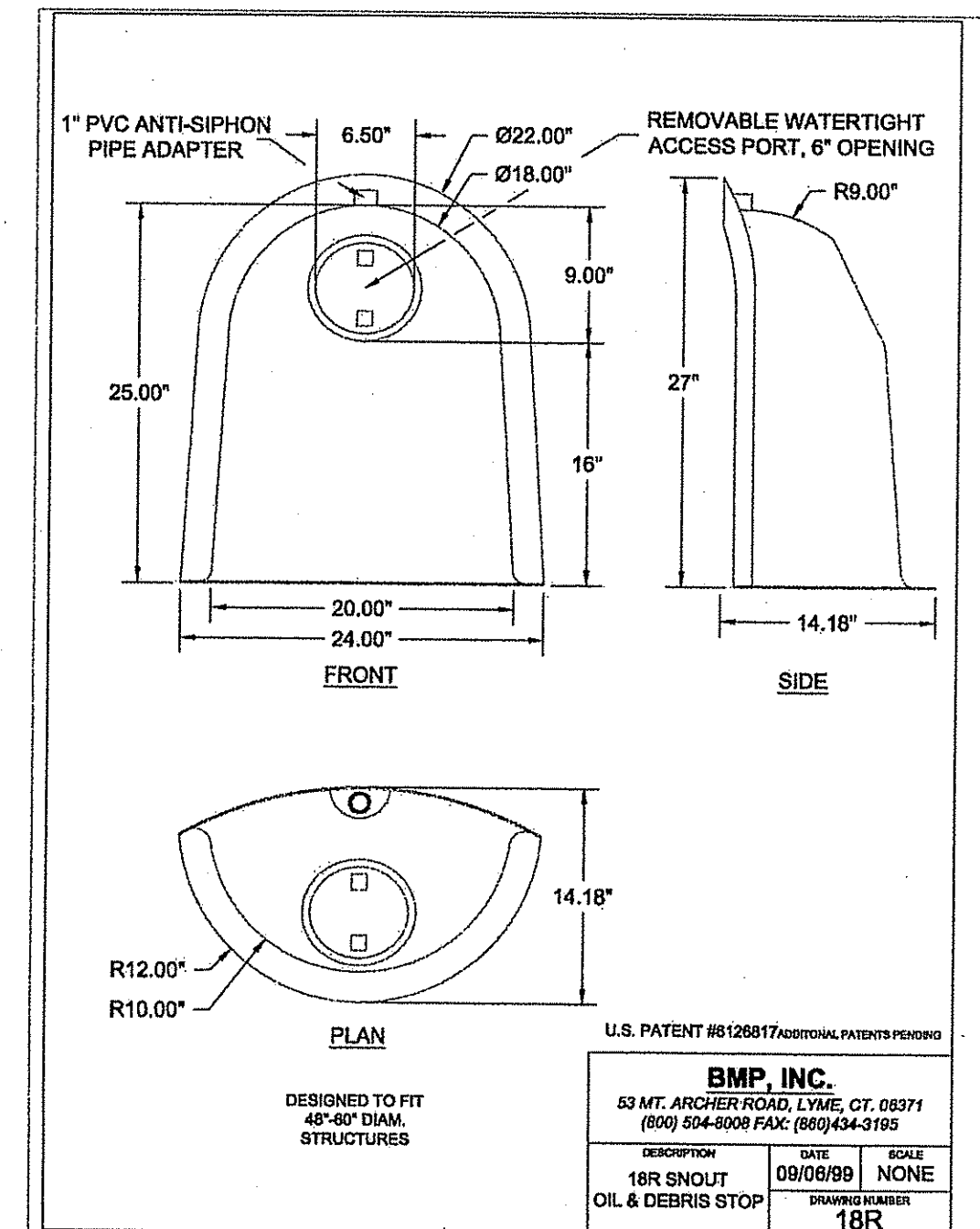
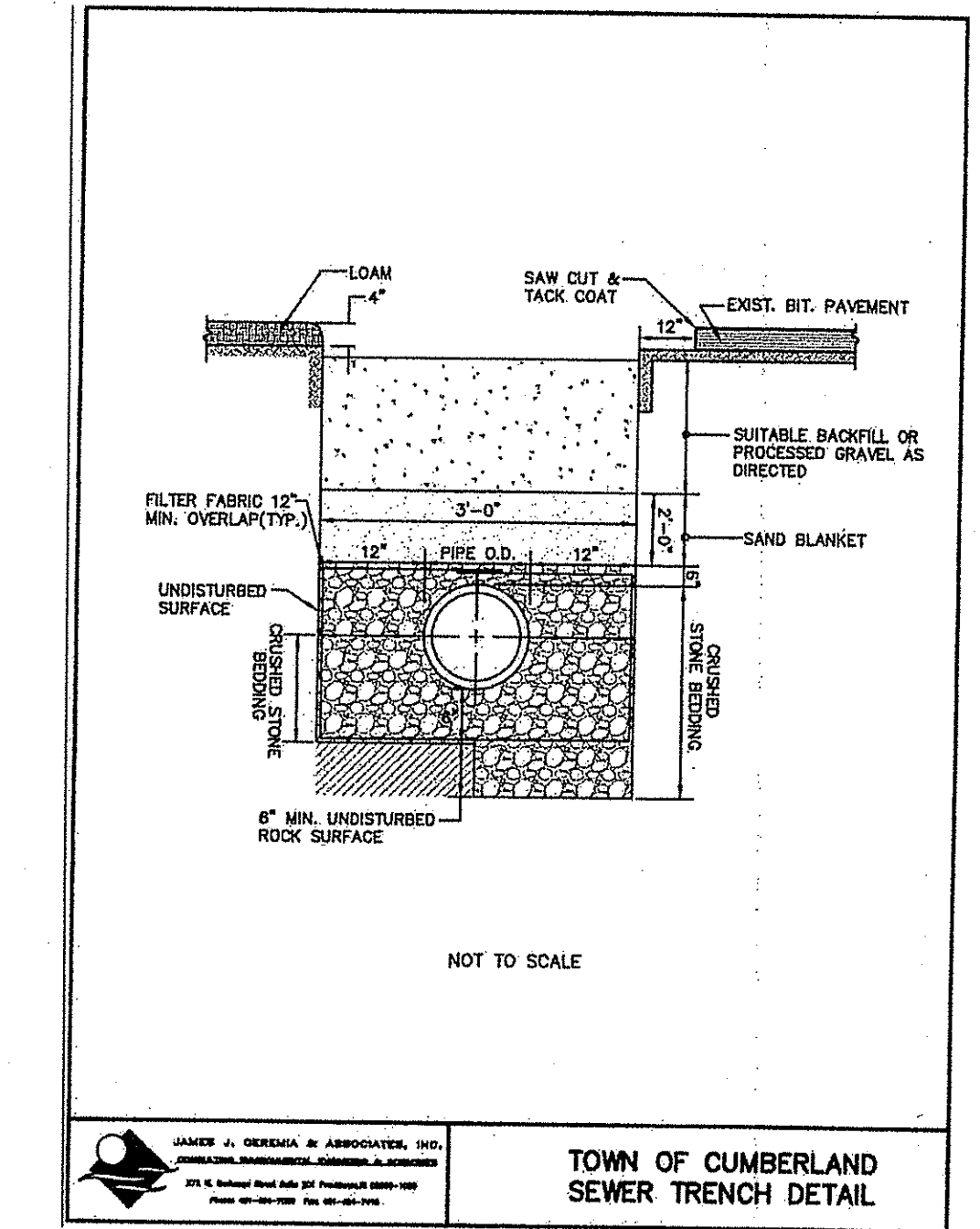
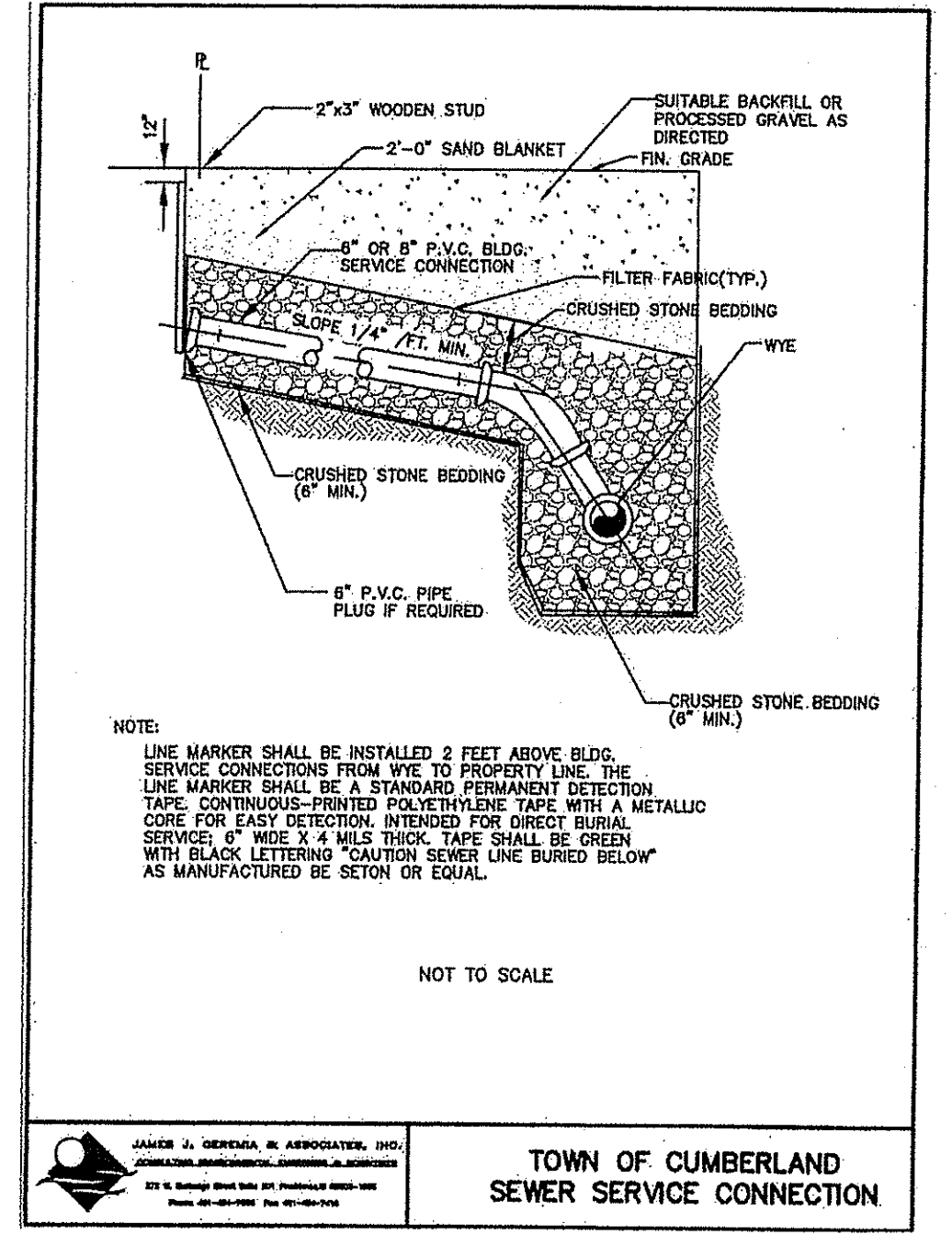
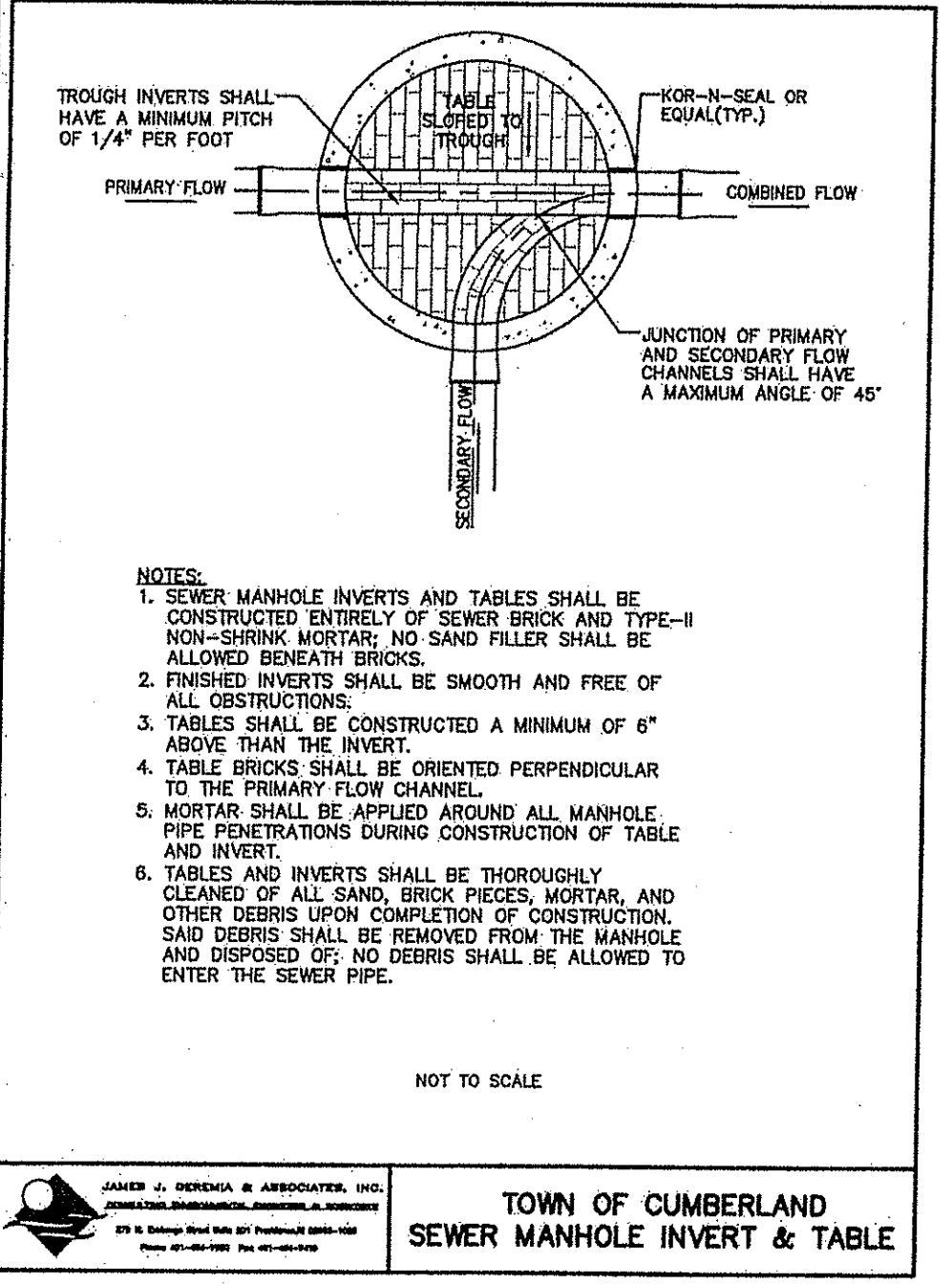
416 APPLICANTS 89\_70\_SHT\_02-05-05-0000\_R1\_07-12-2010.DWG (DISC: P-1000)



NO. DATE REVISION  
1 1/17/10 4'-0" CATCHBASIN SLUMP DETAILS  
18R AND 18RRS/ DETAILS NOTES

JOHN P. CANTO  
PROFESSIONAL ENGINEER  
No. 4398

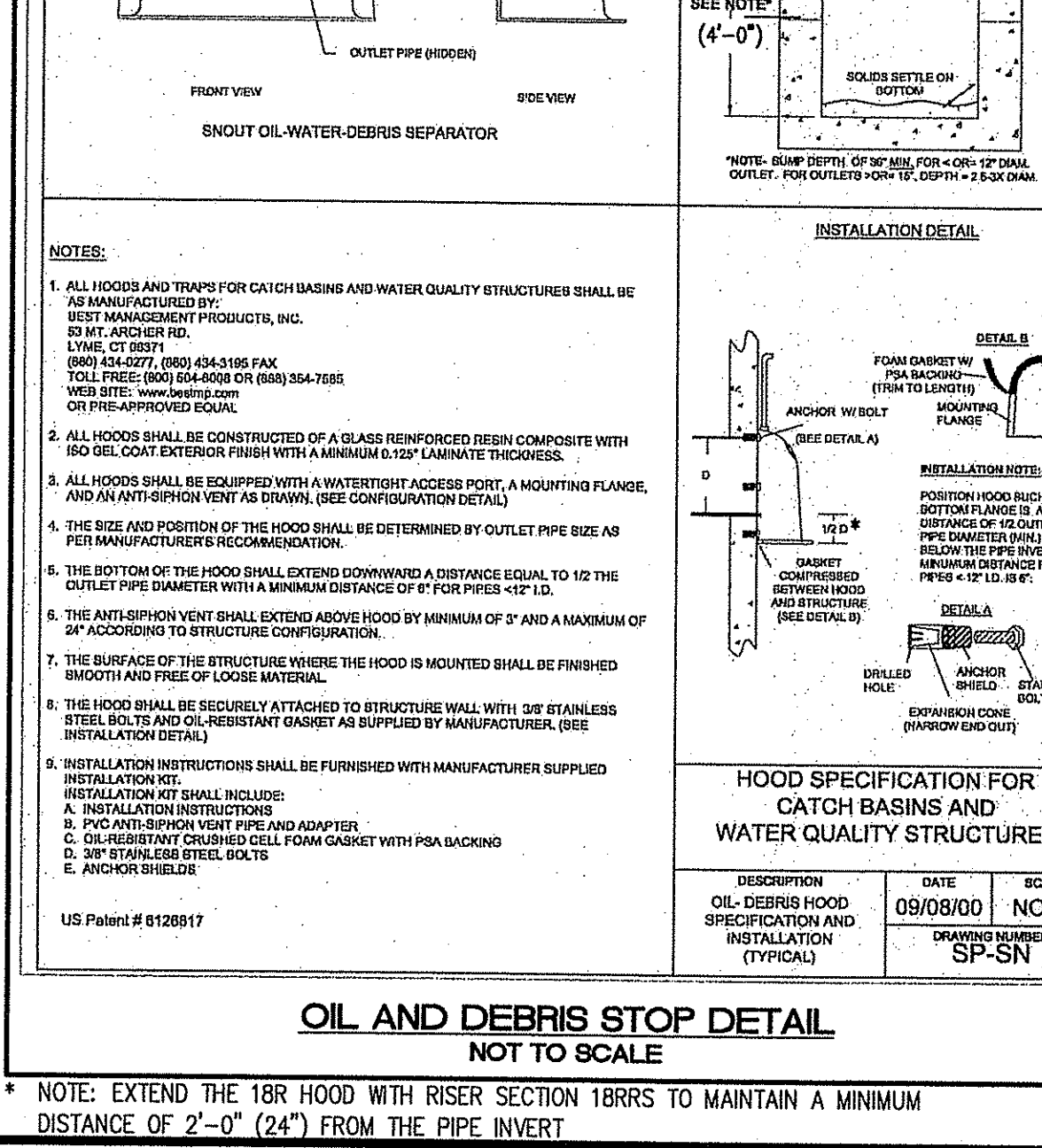
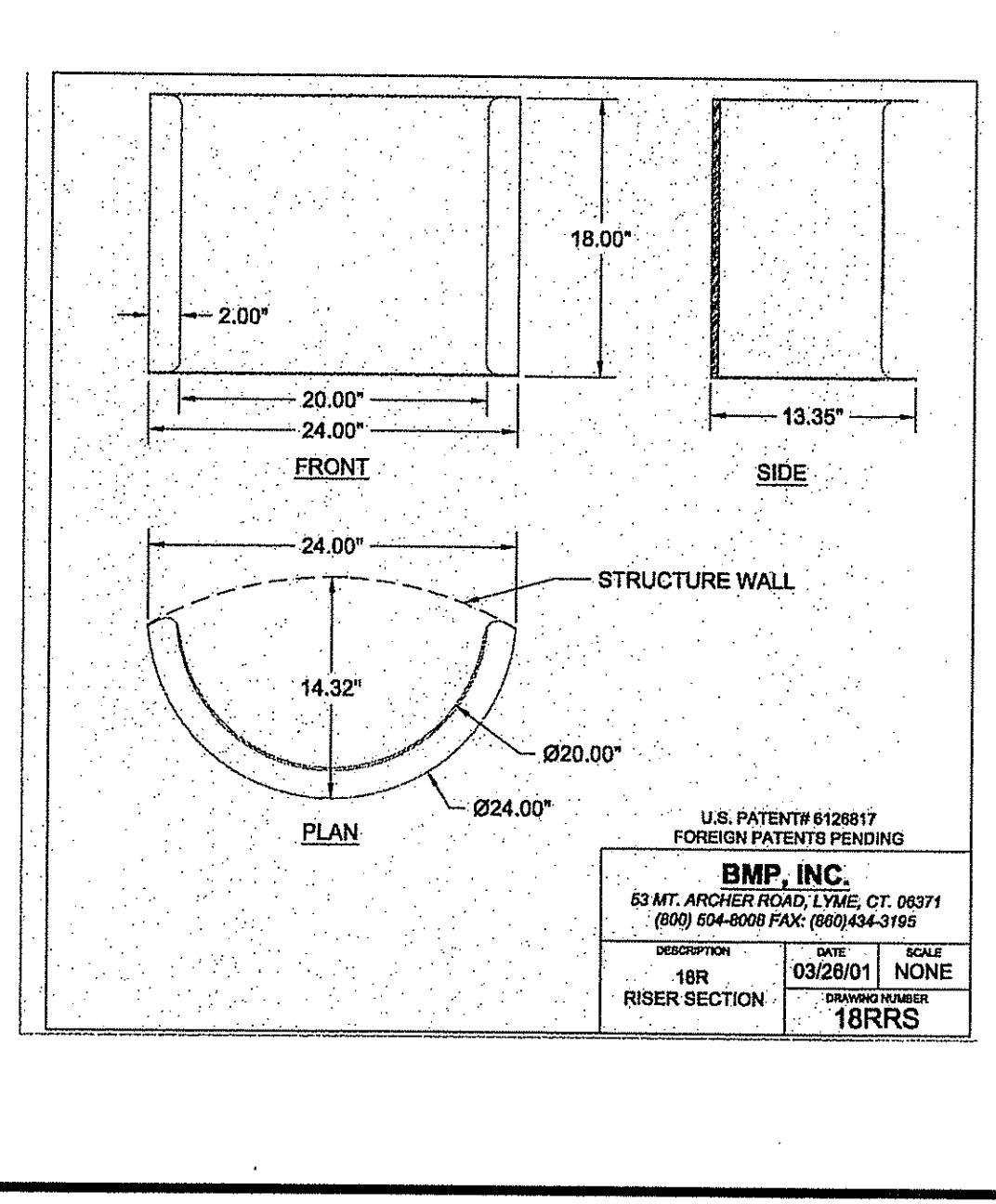
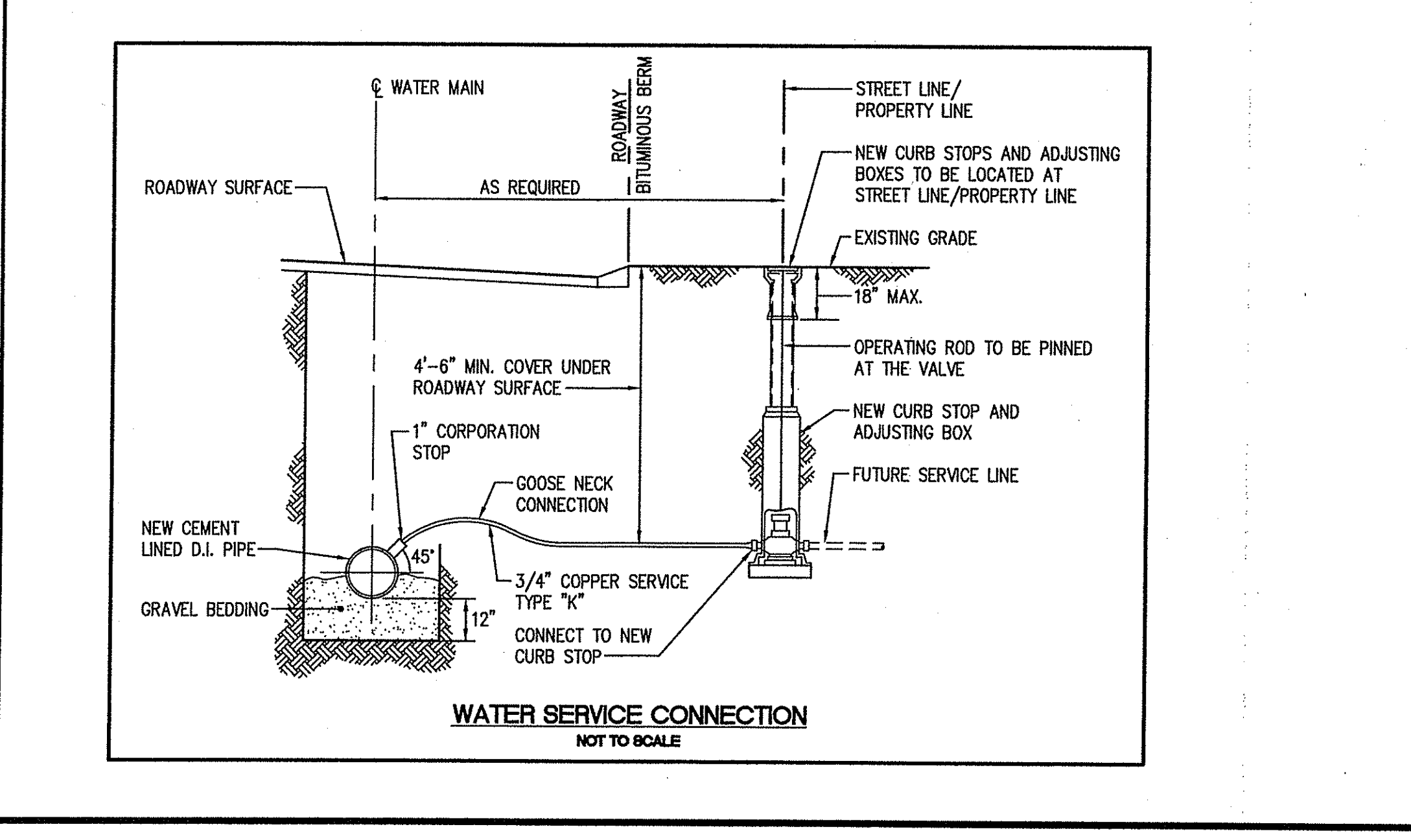
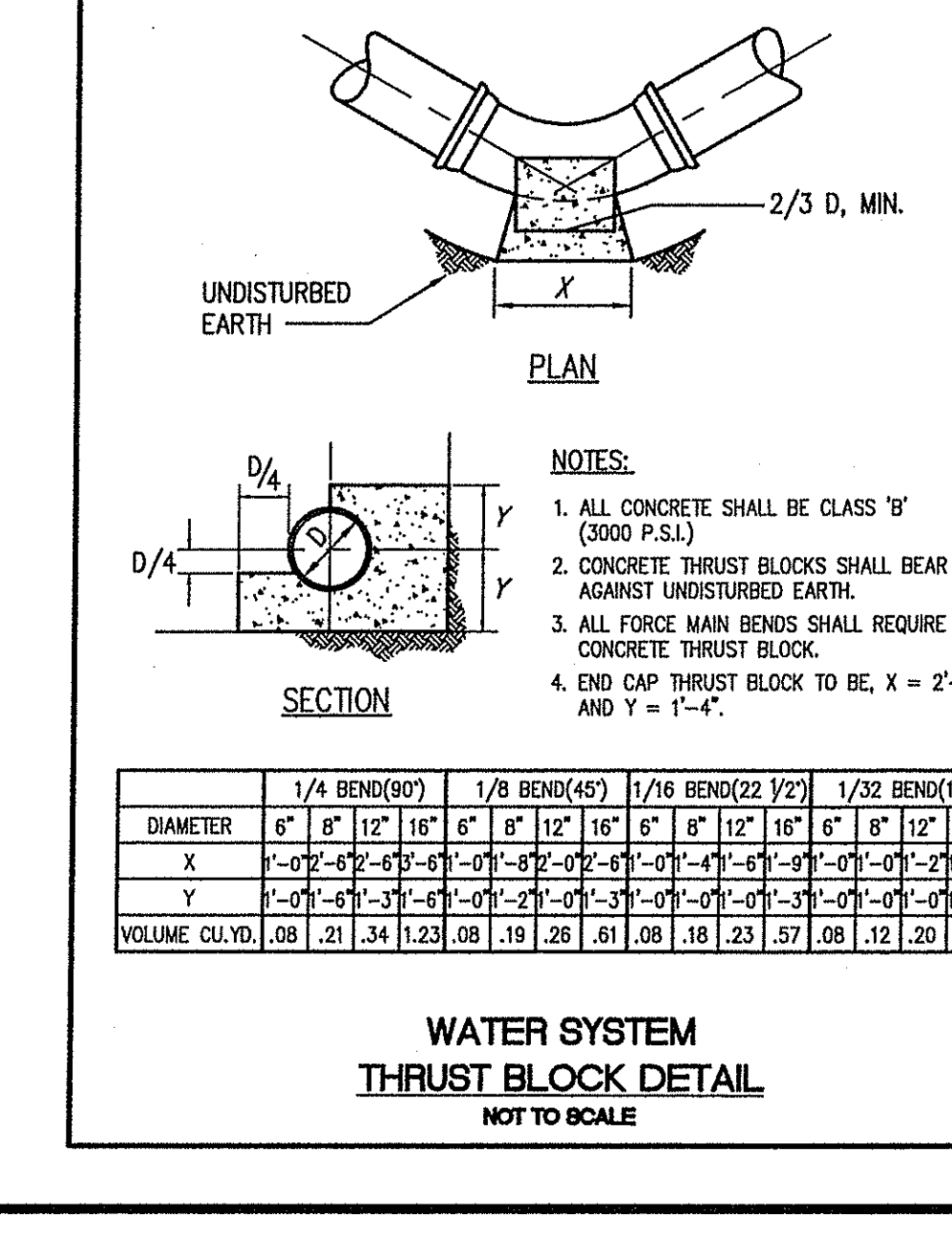
JOHN P. CANTO  
PROFESSIONAL ENGINEER  
No. 4398



PROJECT NO: 144416  
DATE: MAY 2010  
SCALE: AS NOTED  
DRAWN BY: S.G.T.  
CHECKED BY: J.P.C.

DETAILED FOR  
SINGLE FAMILY RESIDENCE  
ASSESSOR'S PLAT 15, LOTS 69 and 70  
RIVERVIEW DRIVE

PREPARED FOR  
BERKELEY REALTY CO.



PROJECT NO: 144416  
DATE: MAY 2010  
SCALE: AS NOTED  
DRAWN BY: S.G.T.  
CHECKED BY: J.P.C.

DETAILED FOR  
SINGLE FAMILY RESIDENCE  
ASSESSOR'S PLAT 15, LOTS 69 and 70  
RIVERVIEW DRIVE

PREPARED FOR  
BERKELEY REALTY CO.

DRAWING NUMBER  
**5**

SHEET 5 OF 5