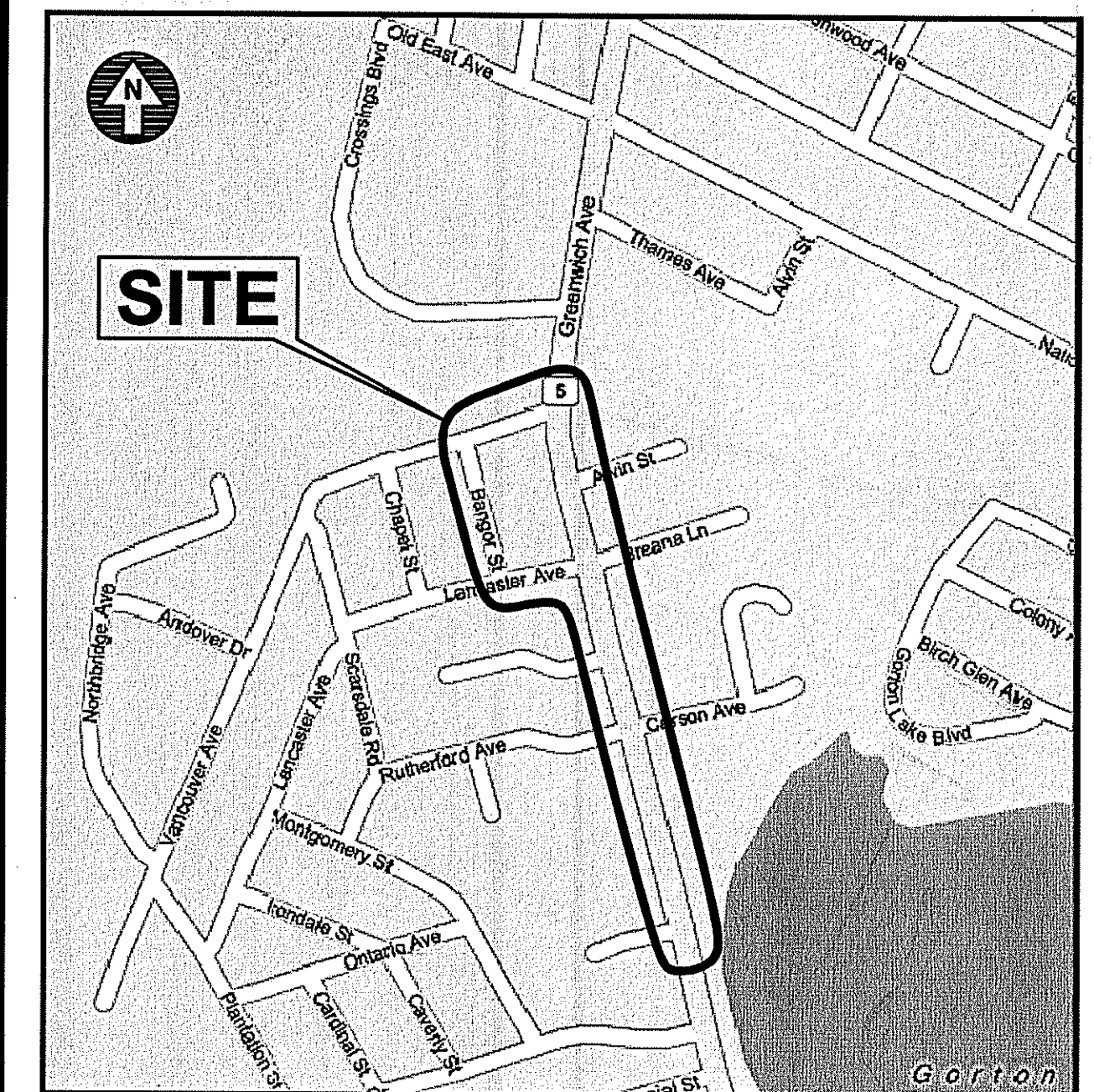


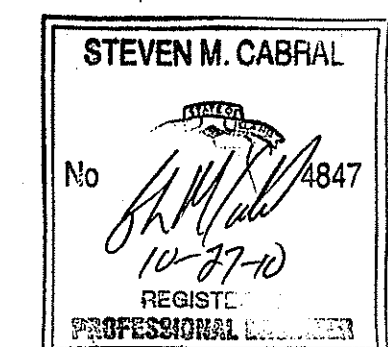
SITE PLANS FOR DRAINAGE IMPROVEMENTS TO BANGOR STREET WARWICK, RHODE ISLAND



LOCATION MAP
NOT TO SCALE

INDEX OF DRAWINGS

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C9	MISCELLANEOUS DETAILS No. 1
C10	MISCELLANEOUS DETAILS No. 2
C11	MISCELLANEOUS DETAILS No. 3
C12	MISCELLANEOUS DETAILS No. 4



ENGINEERS:



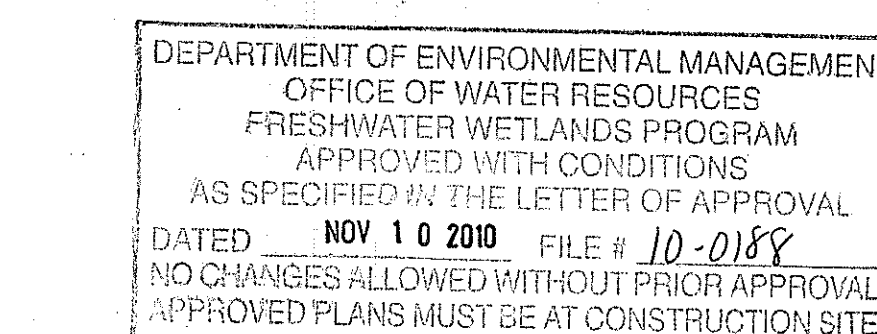
- Civil
- Transportation
- Environmental
- Site Planning
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Phone: (401) 738-5660 | Fax: (401) 738-8157

Email: cel@crossmaneng.com

AUGUST 2010
SHEET 1 of 13



Charles A. Harker

PREPARED FOR:

DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND 02889

BIDDING NOTE:

THE PLANS ARE BEING PROVIDED FOR BID PURPOSES.
MODIFICATIONS TO THE PLANS MAY OCCUR DURING
THE PERMIT REVIEW PROCESS.

ISSUED FOR BIDDING

REVISIONS:

NO.:	DATE:	DESCRIPTION:
1	09/10/10	ADDENDUM NO. 2
2	10/21/10	RIDOT/RIDEM COMMENTS
3	10/27/10	RIDEM COMMENTS

RECEIVED
OCT 29 2010

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 AND 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 AND DETAILS. 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
- RHODE ISLAND STANDARDS REFERENCED ARE ACCORDING TO THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS "RHODE ISLAND STANDARD DETAILS" DATED JULY 31, 2009, 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 AND 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.
- EXTREME CAUTION IS NECESSARY TO AVOID DAMAGE TO THE EXISTING GAS LINES WITHIN THE LIMIT OF WORK. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR DAMAGE AND COSTS ASSOCIATED WITH SERVICE DISRUPTION.

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, 2009 EDITION.
- SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH THE R.I.D.O.T. SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.

CONSTRUCTION NOTES

- THE CONTRACTOR IS REQUIRED TO OBTAIN AND REVIEW ALL ENGINEERING DOCUMENTS COMPLETED FOR FINAL DESIGN.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO ANY EXCAVATION AND INSTALLATION OF UTILITIES. 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 THE LOCATIONS (2 MINIMUM) NEW PIPE TO BUILDING CORNERS OR PERMANENT OBJECTS. ALL PIPE BEND/ELBOW LOCATIONS SHALL BE DIMENSIONED.

UTILITY CONTACTS:

WATER:

KENT COUNTY WATER AUTHORITY
1072 MAIN STREET
P.O. BOX 192
WEST WARWICK, RHODE ISLAND
PHONE: 401-821-9300

GAS:

NATIONAL GRID GAS DIVISION
MAPS AND RECORDS RI
40 SYLVAN ROAD
WALTHAM, MASSACHUSETTS
PHONE: 781-907-2969

SEWER:

WARWICK SEWER AUTHORITY
125 ARTHUR W. DEVINE BOULEVARD
WARWICK, RHODE ISLAND
PHONE: 401-468-4700

ELECTRIC:

NATIONAL GRID ELECTRIC DIVISION
DISTRIBUTION FIELD ENGINEERING
280 MELROSE STREET
PROVIDENCE, RHODE ISLAND
PHONE: 401-784-7528

DRAINAGE NOTES:

- CONTRACTOR TO VERIFY THAT ALL STRUCTURES ARE COMPATIBLE WITH FRAME AND GRATE OR FRAME AND COVER.
- SHOP DRAWING AND SPECIFICATIONS FOR ALL DRAINAGE RELATED ITEMS SHALL BE REVIEWED AND APPROVED BY THE ENGINEER, PRIOR TO ORDERING.
- ALL PIPE SHOWN SHALL BE RCP. THE SPECIFIC CLASS IS SHOWN ON THE PLANS.

UTILITY NOTES:

- PRIOR TO ANY UTILITY CONSTRUCTION, THE CONTRACTOR MUST PERFORM ADDITIONAL TESTS TO:
 - CONFIRM THE EXISTING DEPTHS OF UTILITIES AT ALL PROPOSED CONNECTION POINTS AND POTENTIAL CROSSOVER (CONFLICT) POINTS.
 - 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 CITY AND THE ENGINEER. IF NECESSARY, ALTERNATIVES TO MINIMIZE LEDGE REMOVAL AND UTILITY CONFLICTS WILL BE DEVELOPED. NO CONSTRUCTION WILL BE ALLOWED WITHOUT CITY AUTHORIZATION.
- 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.

FLOOD ZONE NOTE:

THE SITE IS LOCATED WITHIN FLOOD ZONE "X", AREAS OF 500-YEAR FLOOD, AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF WARWICK, RHODE ISLAND, KENT COUNTY, PANEL 2 OF 9, COMMUNITY PANEL NO. 445409, 0002 D, MAP REVISED APRIL 16, 1991 AND PANEL 5 OF 9, COMMUNITY PANEL NO. 445409, 0005 E, MAP REVISED JUNE 16, 1992.

LAYOUT NOTE:

PRIOR TO 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.

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 (1) TON PER ACRE. INCORPORATE INTO THE SOIL BY DICING OR OTHER APPROVED METHOD. DISTRIBUTE LIME UNIFORMLY AND WORK INTO TOP 4 INCHES OF TOP SOIL (MINIMUM) AND UNIFORMLY BLEND BY DICING 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: APRIL 1 TO MAY 30
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.
 - OVERSEED WHEN NECESSARY TO PROMOTE GRASS GROWTH.
 - REPLANT AREAS VOID OF TURF ONE SQUARE FOOT OR LARGER.
 - ALL OFF ROAD AREAS DISTURBED BY CONSTRUCTION WILL BE SEEDED.
 - CONTRACTOR IS RESPONSIBLE TO USE APPROPRIATE SLOPE PROTECTION DURING SEEDING TO PROMOTE GRASS GROWTH.

STORMWATER CONVEYANCE SYSTEM - MAINTENANCE OPERATION:

UPON PROJECT COMPLETION, THE CITY SHALL ADHERE TO THE FOLLOWING MAINTENANCE RECOMMENDATIONS.

1. CATCHBASIN, MANHOLES, AND HEADWALL:

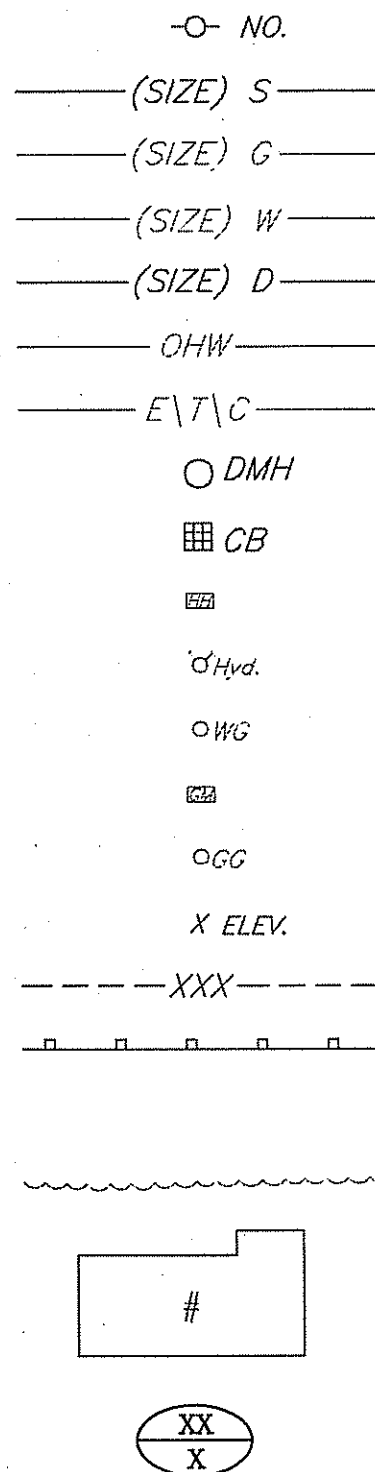
AN INSPECTION SHALL OCCUR ON AN ANNUAL BASIS BY BY QUALIFIED PERSONNEL TO ENSURE PROPER OPERATION. THE INSPECTION SHOULD, AS A MINIMUM, CONCENTRATE ON THE FOLLOWING:

- DAMAGE TO GRATE/COVER
- EVIDENCE OF STANDING WATER
- DEBRIS REMOVAL
- STRUCTURAL ALIGNMENT/INTEGRITY

2. SEDIMENT REMOVAL:

FOLLOWING CONSTRUCTION, SEDIMENT REMOVAL SHALL BE CONDUCTED AS DEEMED NECESSARY BY THE SYSTEM INSPECTIONS. 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.

EXISTING



LEGEND

APPROXIMATE PROPERTY LINE

- CURB
- UTILITY POLE
- SANITARY SEWER
- GAS LINE
- WATER LINE
- DRAIN LINE
- OVERHEAD WIRES
- UNDERGROUND CABLE CONDUITS
- DRAINAGE MANHOLE
- CATCH BASIN
- HAND HOLE
- HYDRANT
- WATER GATE
- GAS METER
- GAS GATE
- SPOT GRADES
- CONTOURS
- GUARDRAIL
- SAW CUT & MATCH
- TREELINE
- BUILDING/STRUCTURE

PROPOSED

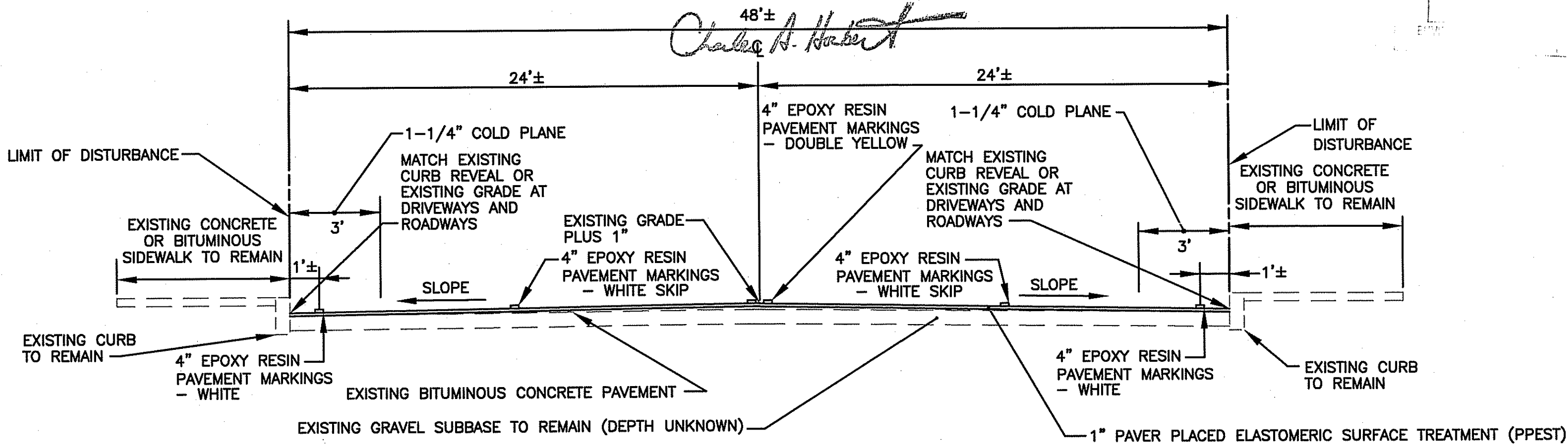


CONSTRUCTION SEQUENCE AND SCHEDULE FOR HEADWALL INSTALLATION:

- INSTALL ALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO ANY SOIL DISTURBANCE.
- CLEAR AND GRUB WORK AREA AS SHOWN ON THE SITE PLANS, WITHIN APPROVED LIMITS OF DISTURBANCE.
- TOP SOIL TO BE STRIPPED AND STOCKPILED OFF-SITE.
- INSTALL DRAINAGE STRUCTURES, DRAINAGE PIPING, RIP-RAP AND HEADWALL.
- ESTABLISH PERMANENT GROUND COVER.
- CLEANING OF ALL EROSION AND SEDIMENT CONTROLS. CLEANING OF DRAINAGE PIPING AND HEADWALL.
- ESTIMATED DURATION OF SOIL EXPOSURE= ONE (1) MONTH.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED NOV 10 2010 FILE # 10-088
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

RECEIVED
OCT 29 2010



TYPICAL SECTION - GREENWICH AVENUE (ROUTE 5)

NOT TO SCALE

NOTES:

- CUT AND MATCH PAVEMENT AT ALL BITUMINOUS DRIVEWAYS, SIDE STREETS AND AT THE PROJECT LIMITS.
- APPLY A TACK COAT IN BETWEEN PAVEMENT COURSES.

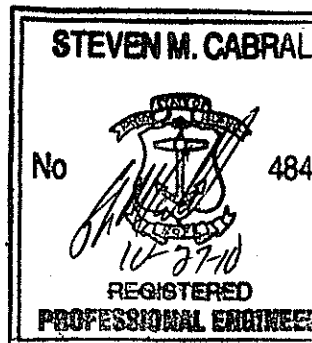


- Civil
- Transportation
- Environmental
- Site Planning
- Land Surveying

CROSSMAN ENGINEERING
[a division of Crossman Corporation]

151 Centerville Road | Warwick, Rhode Island 02886
Phone: (401) 738-5660 | Fax: (401) 738-8157

Email: cel@crossmaneng.com



PROJECT TITLE:

DRAINAGE IMPROVEMENTS
TO
BANGOR STREET

WARWICK, RHODE ISLAND

PREPARED FOR:

DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889

DRAWING TITLE:

GENERAL NOTES and LEGEND

DATE:

AUGUST 2010

SCALE:

NO SCALE

DWG. NAME:

1624.19-C01-NOTES.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10

DRAWING NUMBER

C1

SHEET: 2 OF 13

ISSUED FOR BIDDING

NOTE:

BASE PLANS COMPILED FROM CAD DRAWING FILES PROVIDED BY THE CITY OF WARWICK DEPARTMENT OF PUBLIC WORKS. SUPPLEMENTAL GROUND SURVEY PERFORMED BY CROSSMAN ENGINEERING ALONG PORTIONS OF BANGOR STREET, LANCASTER AVENUE AND GREENWICH AVENUE IN JULY OF 2010.



GRAPHIC SCALE

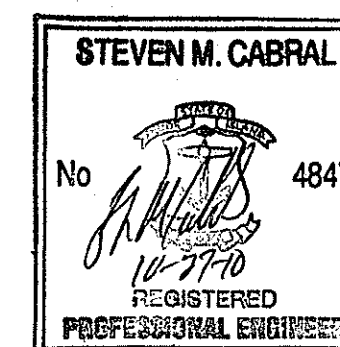
(IN FEET)
1 inch = 40 ft.



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

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a division of Crossman Corporation

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PROJECT TITLE:

**DRAINAGE IMPROVEMENTS
TO
BANGOR STREET**

WARWICK, RHODE ISLAND

RECEIVED
OCT 29 2010

PREPARED FOR:

**DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889**

DRAWING TITLE:

**EXISTING CONDITIONS
PLAN No. 1**

DATE:

AUGUST 2010

SCALE:

1"=40'

DWG. NAME:

1624.19-C02-EXCN.dwg

REVISIONS

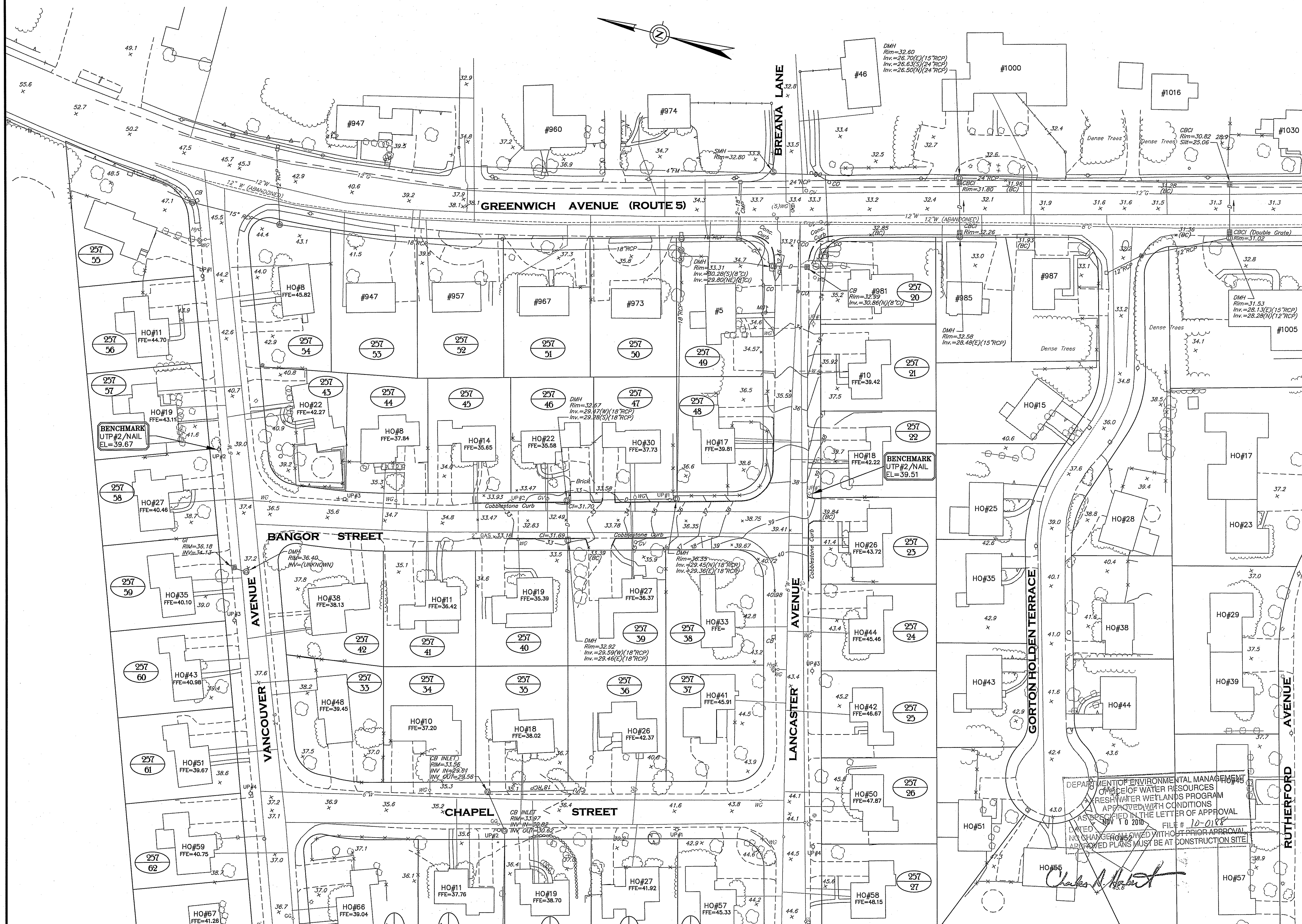
NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10

DRAWING NUMBER

C2

SHEET: 3 OF 13

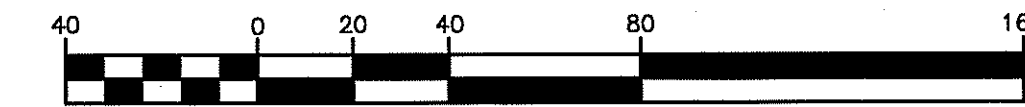
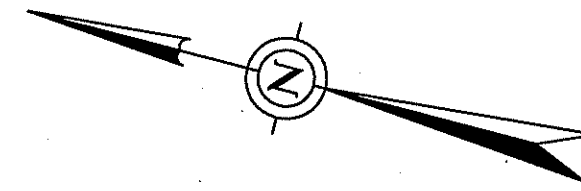
ISSUED FOR BIDDING



MATCH LINE TO EXISTING CONDITIONS PLAN NO. 2

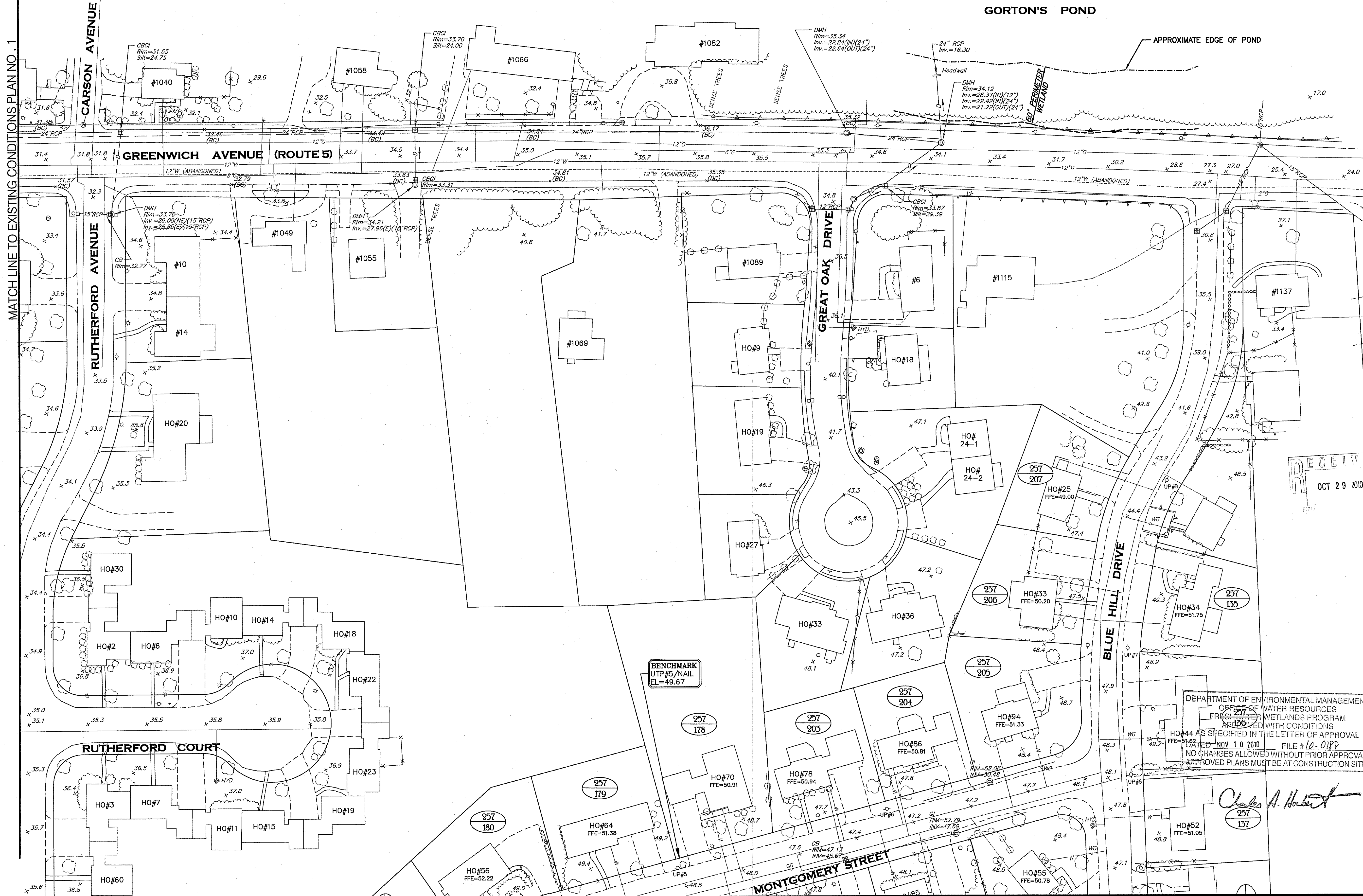
NOTES:

1. BASE PLANS COMPILED FROM CAD DRAWING FILES PROVIDED BY THE CITY OF WARWICK DEPARTMENT OF PUBLIC WORKS. SUPPLEMENTAL GROUND SURVEY PERFORMED BY CROSSMAN ENGINEERING ALONG PORTIONS OF BANGOR STREET, LANCASTER AVENUE AND GREENWICH AVENUE IN JULY OF 2010.



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



MATCH LINE TO EXISTING CONDITIONS PLAN NO. 1

GORTON'S POND

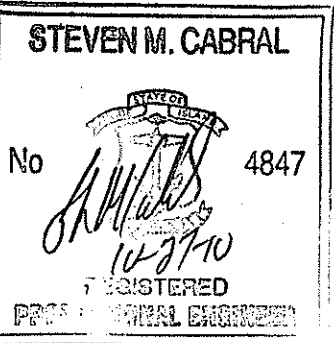
APPROXIMATE EDGE OF POND



- Civil
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- Site Planning
- Land Surveying

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a division of Crossman Corporation |

151 Centerville Road | Warwick, Rhode Island 02886
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PROJECT TITLE:

**DRAINAGE IMPROVEMENTS
TO
BANGOR STREET
WARWICK, RHODE ISLAND**

PREPARED FOR:

**DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889**

DRAWING TITLE:

**EXISTING CONDITIONS
PLAN No. 2**

DATE: AUGUST 2010 SCALE: 1"=40'

DWG. NAME: 1624.19-C02-EXCN.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10

DRAWING NUMBER

C3

SHEET: 4 OF 13

ISSUED FOR BIDDING

RECEIVED
OCT 29 2010

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
NOV 10 2010 FILE # 10-0187
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. Haber

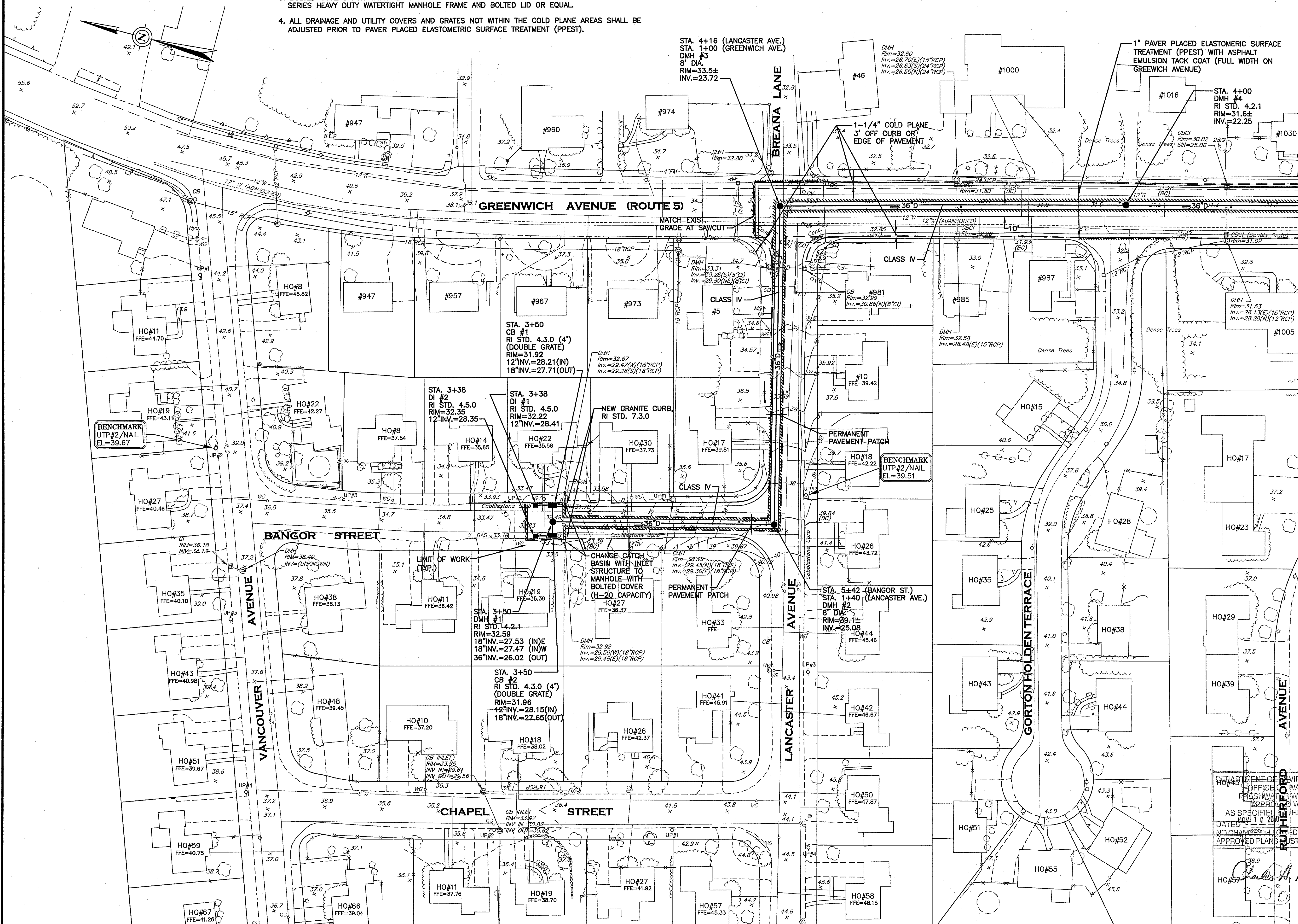
NOTES:

1. ALL INSTALLATION, JOINTS, CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE CURRENT RULES AND REGULATIONS OF THE KENT COUNTY WATER AUTHORITY, ANSI/AWWA C600 STANDARDS, THE DUCTILE IRON PIPE RESEARCH ASSOCIATION'S INSTALLATION MANUAL AND GOVERNMENTAL REQUIREMENTS.
2. ANY CONFLICT WITH THE EXISTING WATER SYSTEM MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO ANY CONSTRUCTION.
3. BOLTED COVERS FOR CATCH BASINS CONVERTED TO MANHOLES SHALL BE NEENAH FOUNDRY R-1915-H SERIES HEAVY DUTY WATERTIGHT MANHOLE FRAME AND BOLTED LID OR EQUAL.
4. ALL DRAINAGE AND UTILITY COVERS AND GRATES NOT WITHIN THE COLD PLANE AREAS SHALL BE ADJUSTED PRIOR TO PAVEMENT PLACED ELASTOMERIC SURFACE TREATMENT (PEEST).



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



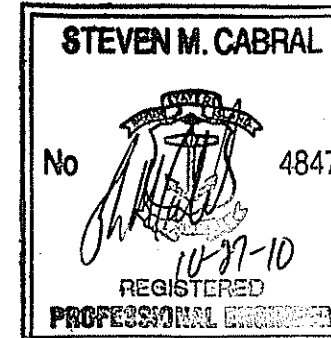
MATCH LINE TO DRAINAGE PLAN NO. 2



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

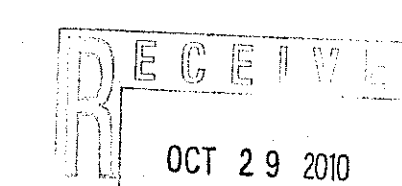
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PROJECT TITLE:

**DRAINAGE IMPROVEMENTS
TO
BANGOR STREET
WARWICK, RHODE ISLAND**



PREPARED FOR:

**DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889**

DRAWING TITLE:

**DRAINAGE AND UTILITY
PLAN No. 1**

DATE:

AUGUST 2010

SCALE:

1"=40'

DWG. NAME:

1624.19-C04-UTILITY.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WATERSHEDS PROGRAM
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED 10/10/2010 FILE # 12-0188
NO CHANGES WILL BE MADE WITHOUT PRIOR APPROVAL
APPROVED PLAN MUST BE AT CONSTRUCTION SITE

DRAWING NUMBER

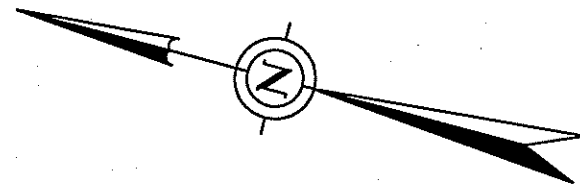
C4

SHEET: 5 OF 13

ISSUED FOR BIDDING

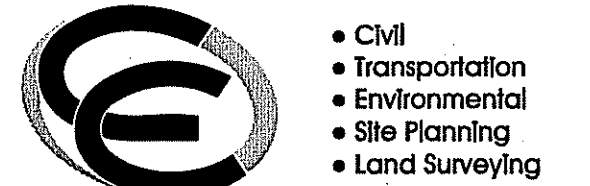
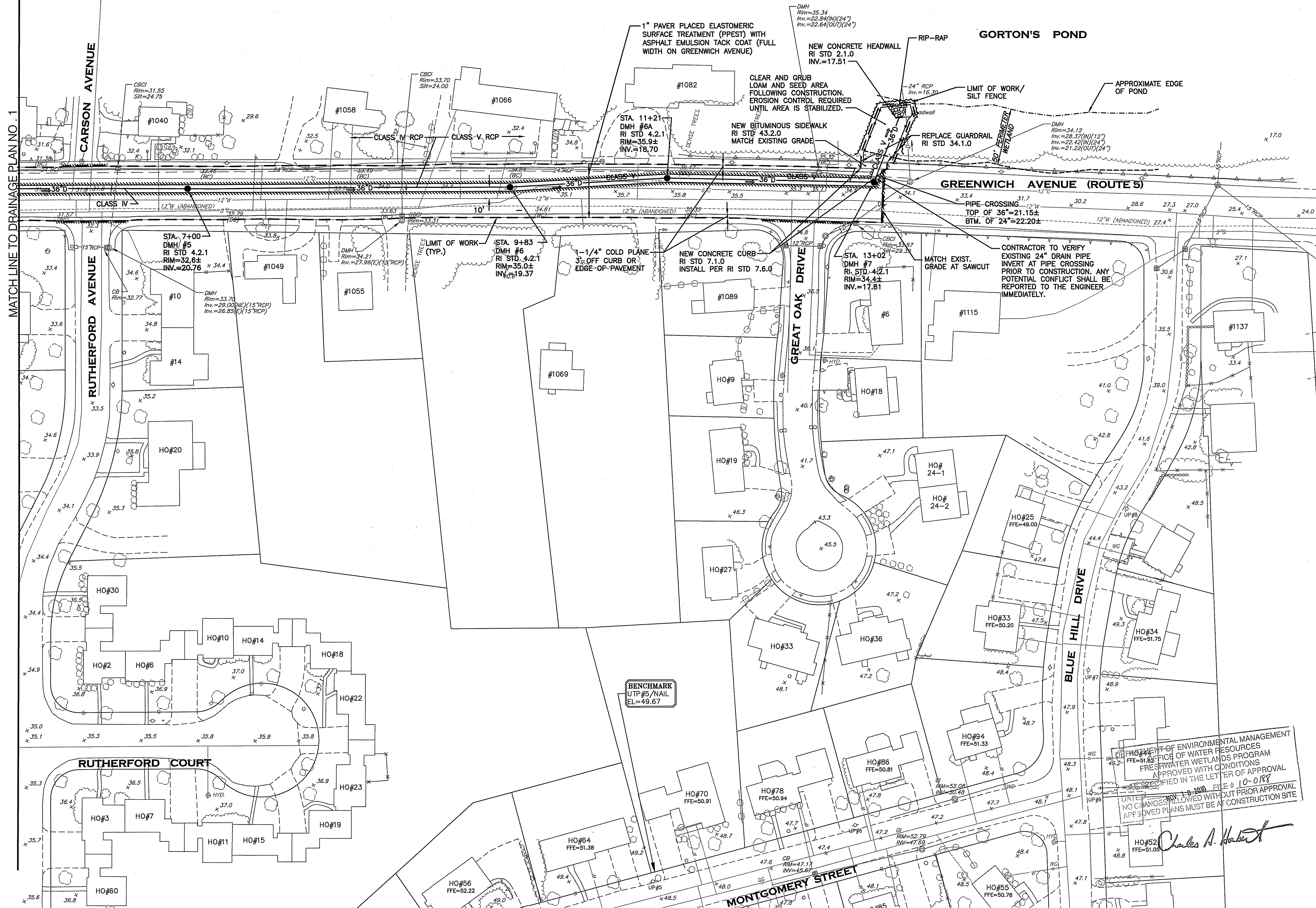
WATER NOTE:

1. ALL INSTALLATION, JOINTS, CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE CURRENT RULES AND REGULATIONS OF THE KENT COUNTY WATER AUTHORITY, ANSI/AWWA C600 STANDARDS, THE DUCTILE IRON PIPE RESEARCH ASSOCIATIONS INSTALLATION MANUAL AND GOVERNMENTAL REQUIREMENTS.
2. ANY CONFLICT WITH THE EXISTING WATER SYSTEM MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO ANY CONSTRUCTION.



GRAPHIC SCALE

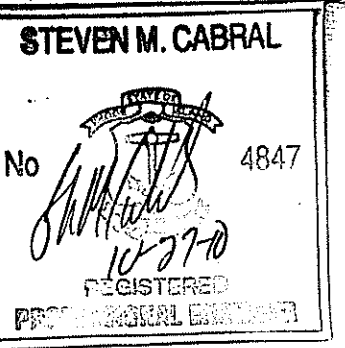
(IN FEET)
1 inch = 40 ft.



CROSSMAN ENGINEERING
a division of Crossman Corporation

151 Centerville Road | Warwick, Rhode Island 02886
Phone: (401) 738-5660 | Fax: (401) 738-8157

Email: cel@crossmaneng.com



PROJECT TITLE:

**DRAINAGE IMPROVEMENTS
TO
BANGOR STREET
WARWICK, RHODE ISLAND**

RECEIVED
OCT 29 2010

PREPARED FOR:

**DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889**

DRAWING TITLE:

**DRAINAGE AND UTILITY
PLAN No. 2**

DATE:

AUGUST 2010

SCALE:

1"=40'

DWG. NAME:

1624.19-C04-UTILITY.dwg

REVISIONS

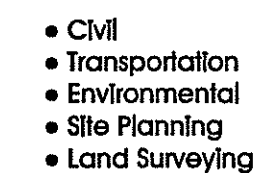
NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10

DRAWING NUMBER

C5

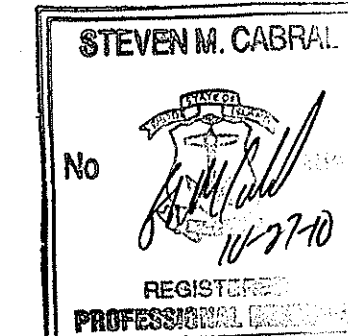
SHEET: 6 OF 13

ISSUED FOR BIDDING



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DRAINAGE IMPROVEMENTS
TO
BANGOR STREET
WARWICK, RHODE ISLAND

OCT 29 2010

DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889

PROFILE PLAN No.1

SCALE:
AS SHOWN

DWG. NAME:
1624.19-C06-PROFILE1.dwg

[illegible]

C6

SHEET: 7 OF: 13

ISSUED FOR BIDDING



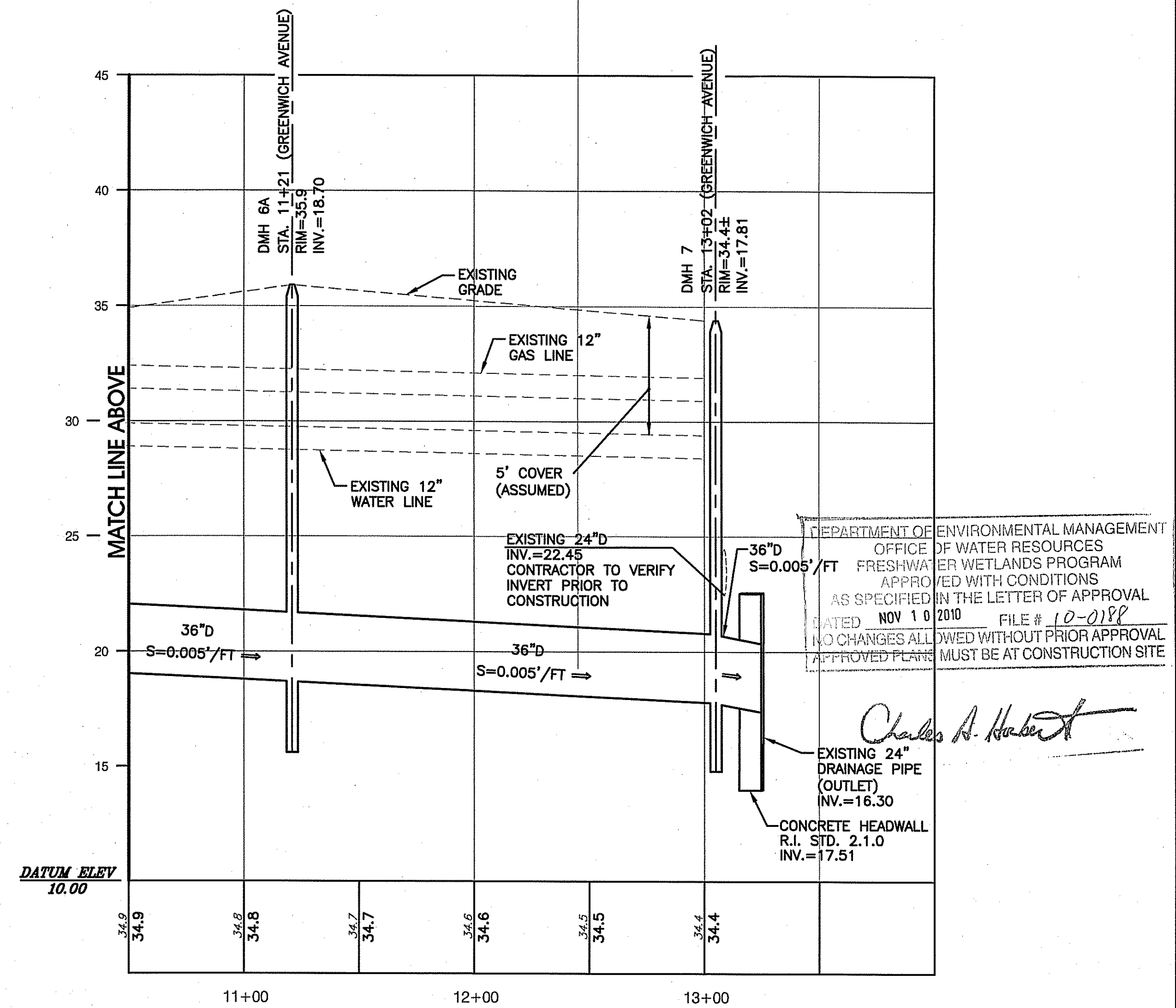
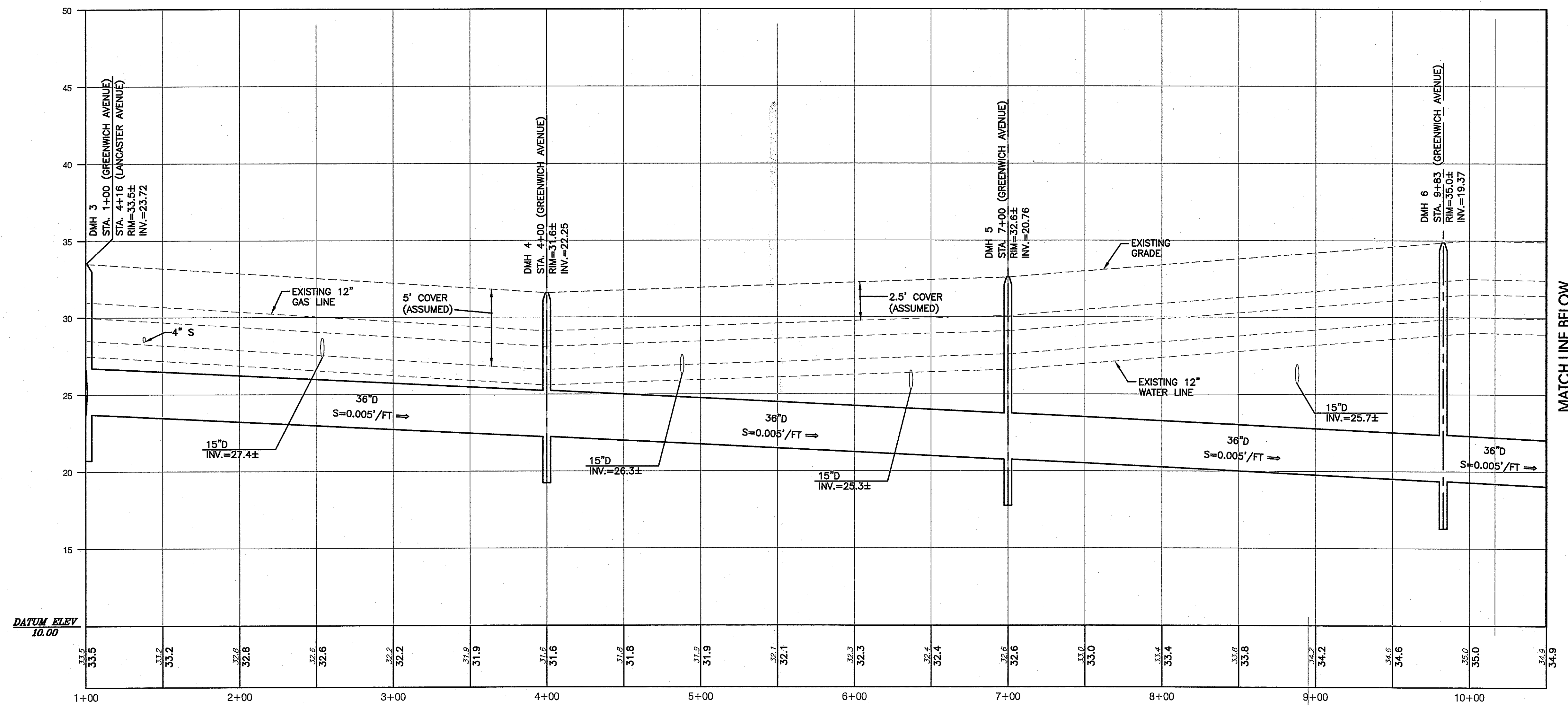
SCALE: HORZ. 1"=40'
VERT. 1"=4'



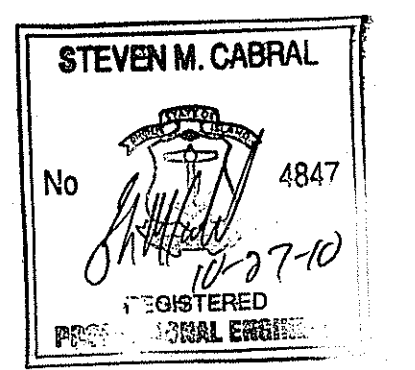
SCALE: HORIZ. 1"=40'
VERT. 1"=4'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED NOV 10 2010 FILE # 10-0187
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

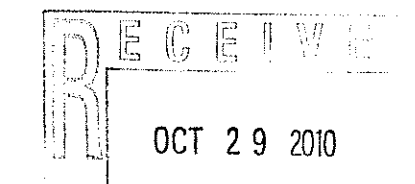
Charles A. Horbey



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PROJECT TITLE:
 DRAINAGE IMPROVEMENTS
 TO
 BANGOR STREET
 WARWICK, RHODE ISLAND



PREPARED FOR:
 DAVID PICOZZI
 PUBLIC WORKS DIRECTOR
 CITY OF WARWICK
 925 SANDY LANE
 WARWICK, RHODE ISLAND
 02889

DRAWING TITLE:
 PROFILE PLAN No. 2

DATE: AUGUST 2010
SCALE: AS SHOWN

DWG. NAME: 1624.19-C07-PROFILE2.dwg

REVISIONS		
NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10

DRAWING NUMBER:
C7
 SHEET: 8 OF 13
 ISSUED FOR BIDDING

GENERAL EROSION CONTROL NOTES:

1. EROSION CONTROLS SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, MAINTAINED ON A REGULAR BASIS, AND SHALL BE PLACED TO PREVENT SEDIMENTATION ONTO ADJACENT PROPERTY, FROM ENTERING THE EXISTING ROADWAY SYSTEM, OR REGULATED CRMC BUFFER ZONE.
2. 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.
3. THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1 - OCTOBER 15.
4. ALL TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED AND POTENTIAL SEDIMENTATION SOURCES ARE REMOVED.
5. 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.
6. AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESEDED, RESEED, OR OTHERWISE RESTORED AT THE CONTRACTOR'S EXPENSE.
7. STOCKPILES SHALL HAVE NO SLOPE STEEPER THAN 3:1 AND SHALL BE SURROUNDED BY STAKED HAY BALES, SILT FENCING, SAND BAGS OR COVERED WITH POLY TARP.
8. STOCKPILES EXPOSED FOR EXCESSIVE PERIODS (ONE MONTH) SHALL RECEIVE TEMPORARY TREATMENT CONSISTING OF HAY, STRAW, FIBER MATTING OR COVERED WITH POLY TARPS.
9. ALL CATCH BASINS RECEIVING RUNOFF FROM DISTURBED AREAS SHALL BE PROTECTED BY STAKED HAYBALES, SAND BAGS OR WRAP THE GRATES WITH FILTER FABRIC.
10. DURING CONSTRUCTION STOCKPILE LOCATIONS MAY VARY.
11. ALL LANDSCAPED AND SEEDING AREAS SHALL BE APPROPRIATELY WATERED AFTER INSTALLATION. THE CONTRACTOR IS REQUIRED TO INSTALL APPROPRIATE MULCHING METHODS TO AVOID POSSIBLE EROSION DURING THESE WATERING PERIODS.
12. 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 R.I. STANDARD SPECIFICATION M.20.
13. THE SEED MIX SHALL BE INOCULATED WITHIN 24 HOURS, BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
14. THE DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING:
PERMANENT SEEDING MIXTURES:
A. - UPLAND AREA:
MIXTURE % BY WT. SEEDING DATES
RED FESCUE 70 APRIL 1 - MAY 30
KENTUCKY BLUEGRASS 15 AUG. 15 - OCT. 15
COLONIAL BENTGRASS 5
PERENNIAL RYEGRASS 10
TOTAL 100% / AC.
15. STABILIZATION OF DISTURBED AREAS SHALL BE ACHIEVED WITHIN 15 DAYS OF FINAL GRADING.
16. STOCKPILES OF TOPSOILS SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 30% AND STOCKPILES SHALL ALSO BE SEEDING AND OR STABILIZED.
17. ALL TYPES OF WASTE GENERATED FROM THE SITE SHALL BE DISPOSED OF IN A MANNER CONSISTANT WITH STATE LAW AND/OR REGULATIONS.
18. THE CONTRACTOR IS REQUIRED TO NOTIFY LOCAL AUTHORITIES INCLUDING THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF WASTE MANAGEMENT AND THE WARWICK FIRE DEPARTMENT OF ANY HAZARDOUS MATERIAL SPILL. CLEAN-UP METHODS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS.

TEMPORARY MULCH MATERIALS AND APPLICATION RATES

(REF. R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK)

MULCHES	PER ACRE	RATES	PER 1000 FT	NOTES
STRAW OR HAY	2 TONS	90 LBS		FREE FROM WEEDS AND COARSE MATTER. MUST BE ANCHORED, SPREAD WITH MULCH BLOWER OR BY HAND.
WOOD FIBER	1500-2000 LBS	37-50 LBS		FIBERS 4 MM OR LONGER, SHOULD BE DERIVED FROM PURE, WHOLE, NATURAL WOOD. DO NOT USE ALONE IN WINTER OR DURING HOT, DRY WEATHER. APPLY AS SLURRY.
CORN STALKS	4-6 TONS	185-275 LBS		CUT OR SHREDDED IN 4-6 INCH LENGTHS. AIR-DRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER OR BY HAND.
WOOD CHIPS	4-6 TONS	185-275 LBS		FREE OF COARSE MATTER. AIR-DRIED. TREAT WITH 12 LBS NITROGEN PER TON. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER OR BY HAND.
BARK CHIPS SHREDDED BARK	50-70 YD ³	1-2 YD ³		FREE OF COARSE MATTER. AIR-DRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER OR BY HAND.
RECYCLED ASPHALT	2" LAYER			FOR USE WITHIN PAVED AREAS. THE RECYCLED ASPHALT CAN REMAIN AND BE INCORPORATED INTO THE GRAVEL BORROW SUBBASE OF THE FINAL BITUMINOUS PAVEMENT PATCH IF IT MEETS THE GRADATION REQUIREMENTS OF R.I. DEPT. OF TRANSPORTATION STANDARD SPECIFICATION M.01.02.2 FOR RECLAIMED AND PROCESSED MATERIAL.

TEMPORARY SEEDING GUIDE AND APPLICATION RATES

ALL HAYBALES, SILT FENCES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND IS ESTABLISHED. IF NEEDED, TEMPORARY SEEDING CAN HELP TO MINIMIZE EROSION. A TEMPORARY SEEDING GUIDE MUST BE INCLUDED AS A REFERENCE. THE FOLLOWING SPECIES ARE RECOMMENDED:

SPECIES	LBS./AC.	LBS./1,000 SQ.FT.	SEEDING DATE
ANNUAL RYEGRASS	40-60	1.0-1.5	3/1-6/1
PERENNIAL RYEGRASS	40-60	1.0-1.5	3/1-6/1
SUDAN GRASS	30-40	0.7-1.0	5/15-8/15
MILLET	30-40	0.7-1.0	5/15-8/15
WINTER RYE	120	3.0	4/15-6/15
OATS	66-120	0.5-5.0	3/1-6/15
WEEDING COVERGRASS	5-20	0.5-5.0	5/1-7/1

SITE DATA:

1. TOTAL AREA OF DISTURBANCE= 1.74± ACRES.
2. THE PROJECT WILL NOT INCREASE THE AREA OF IMPERVIOUS SURFACES ON THE SITE, AND WILL NOT INCREASE THE STORMWATER RUNOFF FROM THE SITE.
3. ALL NEW BITUMINOUS PAVEMENT WILL BE WITHIN EXISTING BITUMINOUS PAVEMENT LIMITS. THERE IS NO ADDITIONAL PAVEMENT OR IMPERVIOUS AREAS PROPOSED.
4. NO NEW STORMWATER SOURCES ARE ANTICIPATED TO ENTER THE PROPOSED DRAINAGE SYSTEM.
5. THERE ARE NO KNOWN SEPTIC SYSTEMS LOCATED WITHIN 25 FEET OF THE PROPOSED DRAINAGE SYSTEM.
6. ALL EXCESS MATERIAL FROM THE PROJECT SHALL BE DISPOSED OUT OF R.I.D.E.M. JURISDICTION.

INSPECTION/MAINTENANCE NOTES:

1. PRIOR TO COMMENCING CLEARING AND GRUBBING OPERATIONS, SILT FENCING SHALL BE PLACED SO AS TO PREVENT SEDIMENT FROM ENTERING EXISTING ROADWAY DRAINAGE SYSTEM, ADJUTING PROPERTIES, OR WETLANDS.
2. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING THE ROADWAY DRAINAGE SYSTEM, ADJUTING PROPERTIES, OR WETLANDS.
3. ALL DISTURBED AREAS WHICH BECOME SUBJECT TO EROSION TENDENCIES WHETHER THEY BE NEWLY FILLED OR EXCAVATED SHALL RECEIVE SLOPE PROTECTION - SUCH AS RIP-RAP.
4. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING PERIODS OF RAINFALL.
5. 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.
6. ADDITIONAL EROSION CONTROLS SUCH AS SILT FENCING, HAY BALES OR SAND BAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY R.I.D.E.M., THE CITY, OR ENGINEER.
7. THE "R.I. 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.
8. 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.
9. THE CONTRACTOR SHALL REMOVE SEDIMENT DEPOSITS ON ALL HAYBALES AND SILT FENCE WHEN DEPOSITS ARE AT ONE-HALF THE HEIGHT OF THE BARRIER.
10. DENUEDED SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON.
11. ALL DISTURBED SLOPES EITHER NEWLY CREATED OR EXPOSED PRIOR TO OCTOBER 15, SHALL BE SEEDING OR PROTECTED BY THAT DATE FOR ANY WORK COMPLETED DURING EACH CONSTRUCTION YEAR.
12. HAYBALES AND SILT FENCES MUST BE MAINTAINED AND REMAIN IN PLACE UNTIL SUCH A TIME THAT DESIRABLE STAND OF GRASS OR GROUND COVER HAS BEEN ESTABLISHED AND THE PROJECT RECEIVES A FAVORABLE APPROVAL FOR FINAL ACCEPTANCE FROM THE ENGINEER.
13. DURING CONSTRUCTION, THE OPERATOR AND CONTRACTOR ARE REQUIRED TO INSPECT ALL EROSION CONTROLS ON THE SITE 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) HOUR PERIOD AND/OR AFTER A SIGNIFICANT AMOUNT OF RUNOFF.

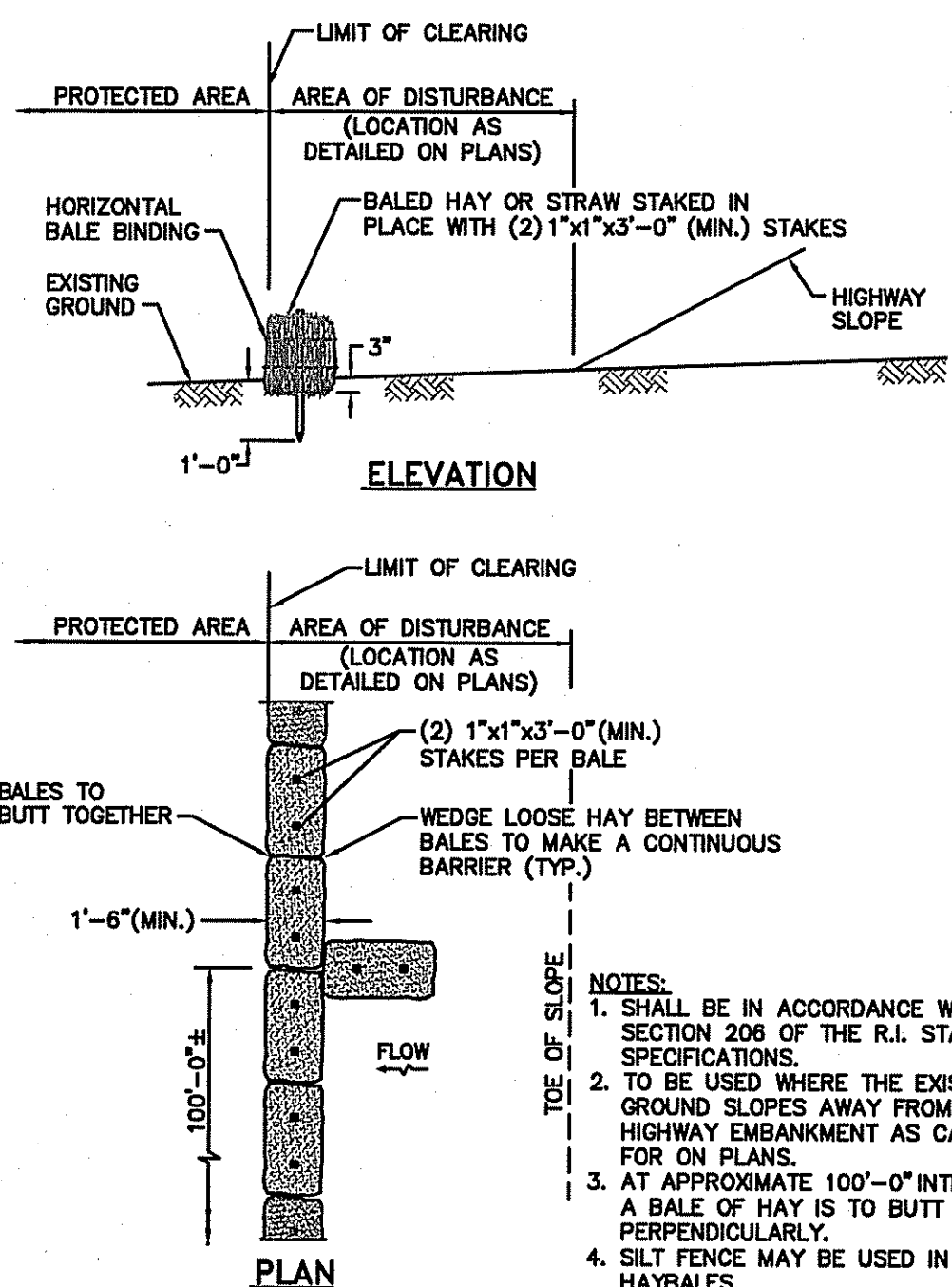
BASED ON THE RESULTS OF THE INSPECTIONS, IF THE SITE DESCRIPTION AND POLLUTION PREVENTION MEASURES IDENTIFIED IN THIS PLAN SET MUST BE REVISED, SUCH MODIFICATIONS MUST BE ACCOMPLISHED AND IMPLEMENTED WITHIN SEVEN (7) CALENDAR DAYS OF THE INSPECTION.
A REPORT SUMMARIZING THE SCOPE OF INSPECTION, NAME(S), AND TITLES OF PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP), AND ACTIONS TAKEN AS A RESULT OF THE INSPECTION MUST BE RETAINED AS PART OF THE SWPPP FOR AT LEAST FIVE (5) YEARS FROM THE DATE THAT THE SITE HAS UNDERGONE FINAL STABILIZATION. SUCH REPORTS MUST IDENTIFY ANY INCIDENTS OF NONCOMPLIANCE WHERE A REPORT DOES NOT IDENTIFY ANY INCIDENTS OF NONCOMPLIANCE, THE REPORT MUST CONTAIN A CERTIFICATION THAT THE SITE IS IN COMPLIANCE WITH THE SWPPP AND THE PERMIT. THE REPORT MUST BE SIGNED USING THE FOLLOWING STATEMENT:
"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER THE DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED, BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS".

DUST CONTROL NOTES:

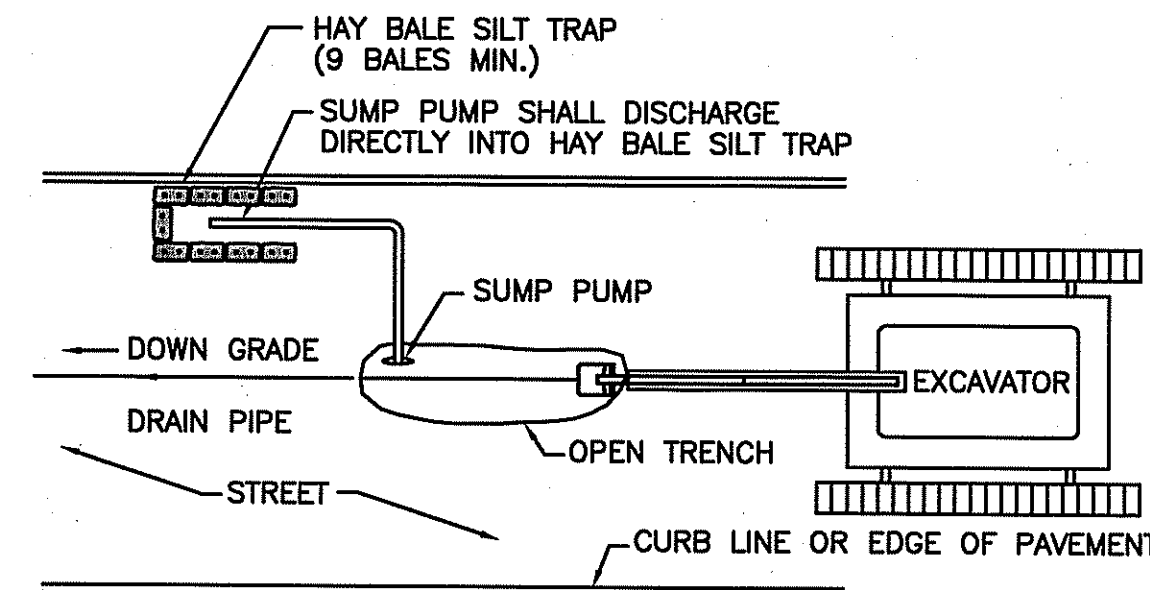
ON AN AS-NEEDED BASIS OR AS DIRECTED BY THE CITY, THE CONTRACTOR SHALL UTILIZE ONE OF THE FOLLOWING METHODS (AS RECOMMENDED BY THE "R.I. EROSION AND SEDIMENT CONTROL HANDBOOK") TO CONTROL DUST:

- A. WATER THE EXPOSED SOIL SURFACE SHOULD BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.
- B. 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.



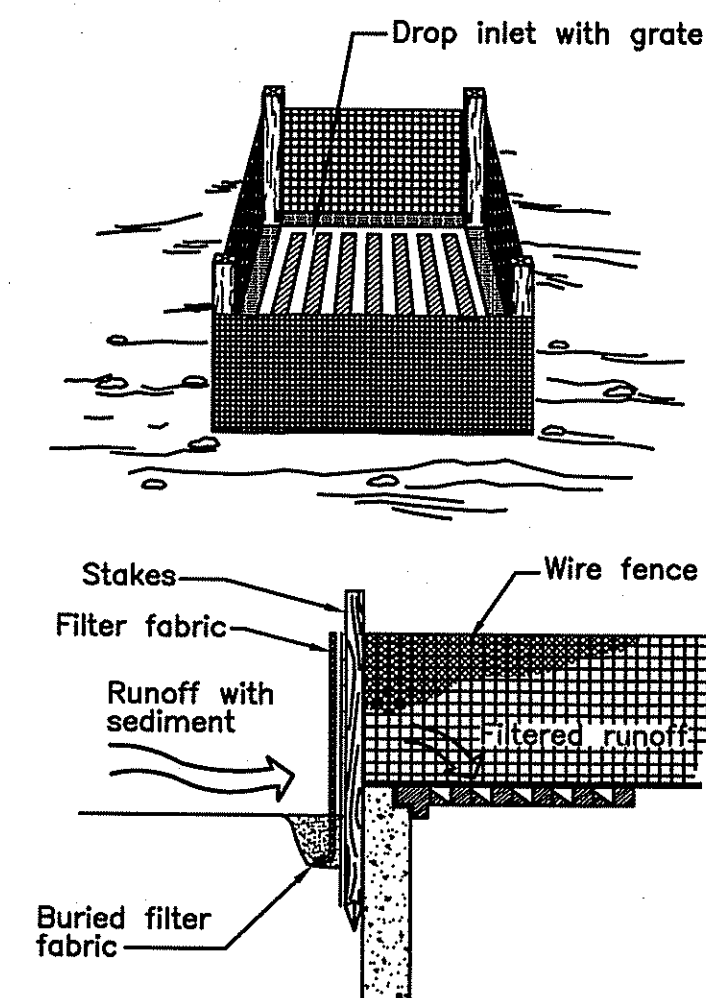
BALED HAY EROSION CHECK
NOT TO SCALE



NOTES:

1. HAY BALE SILT TRAPS SHALL BE INSTALLED AND MAINTAINED AT THE DISCHARGE OF ALL SUMP PUMPS USED FOR DEWATERING OF TRENCHES.
2. SILT TRAPS SHALL BE MAINTAINED AND CLEANED AS OFTEN AS NECESSARY TO EFFECTIVELY CONTAIN SILT.
3. SILT REMOVED FROM SILT TRAP MAY BE MIXED WITH MATERIAL EXCAVATED FROM TRENCH AND USED AS BACKFILL.

DETAIL OF HAY BALE SILT TRAP
NOT TO SCALE

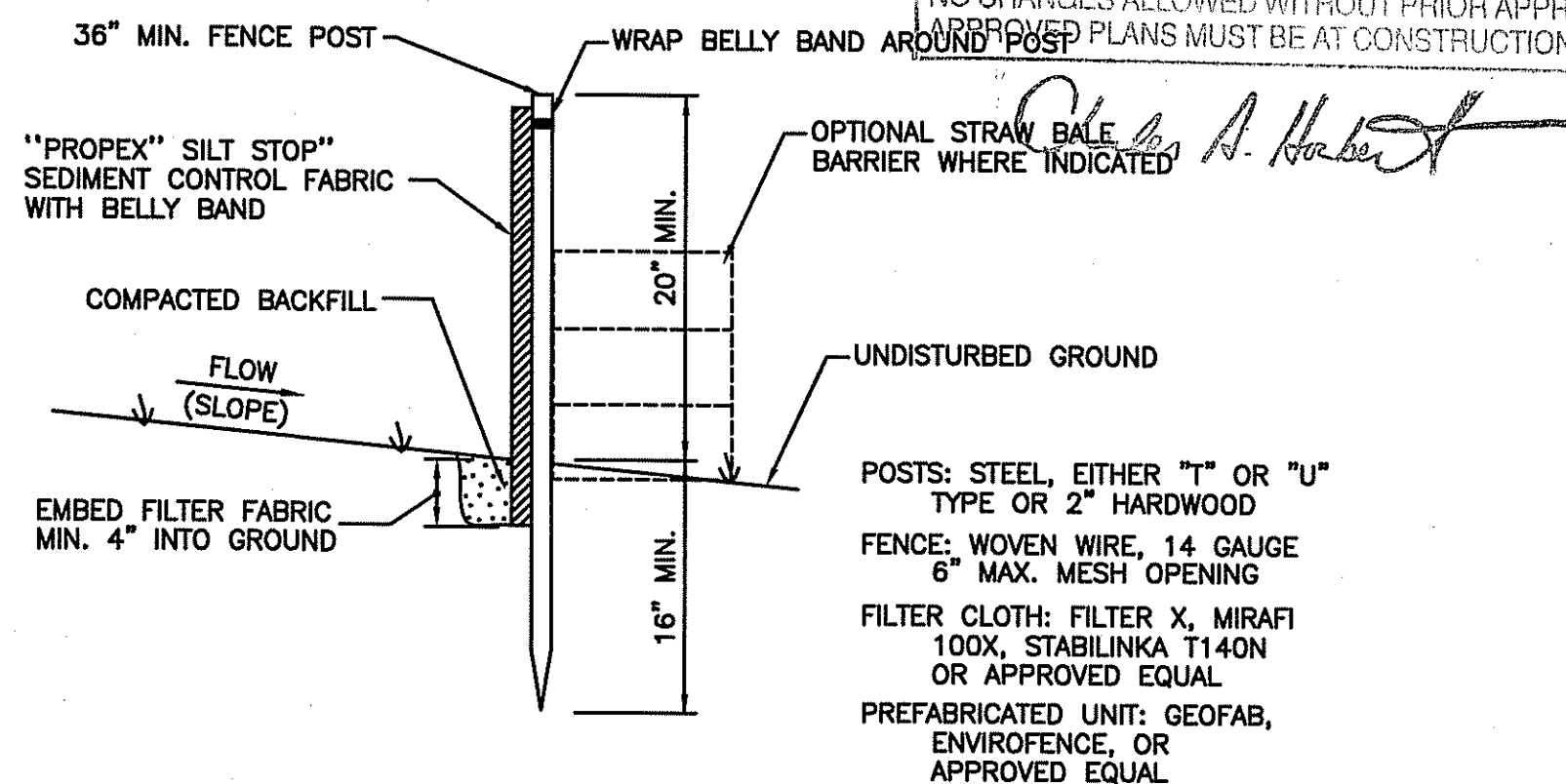


* FILTER PROTECTION IS REQUIRED AT ALL DRAINAGE STRUCTURES.

FIGURE 5-10 * FILTER FABRIC DROP INLET PROTECTION
R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK

NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
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CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE OR DEPTH OF ACCUMULATED SEDIMENT REACHES 6".
5. BALED HAY EROSION CHECK MAY BE USED IN LIEU OF SILT FENCE.

SILT FENCE DETAIL
NOT TO SCALE



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

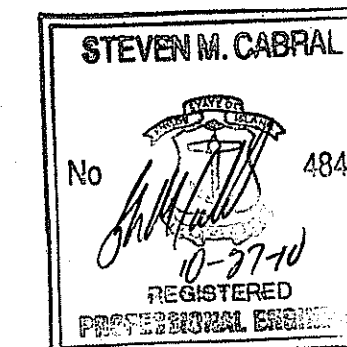
CROSSMAN ENGINEERING

a division of Crossman Corporation |

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DRAINAGE IMPROVEMENTS

TO

BANGOR STREET

WARWICK, RHODE ISLAND

RECEIVED
OCT 29 2010

PREPARED FOR:

DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889

DRAWING TITLE:

SOIL EROSION and SEDIMENT CONTROL PLAN

DATE: AUGUST 2010 SCALE: AS SHOWN

DWG. NAME: 1624.19-09-EROSION.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10

DRAWING NUMBER

C8

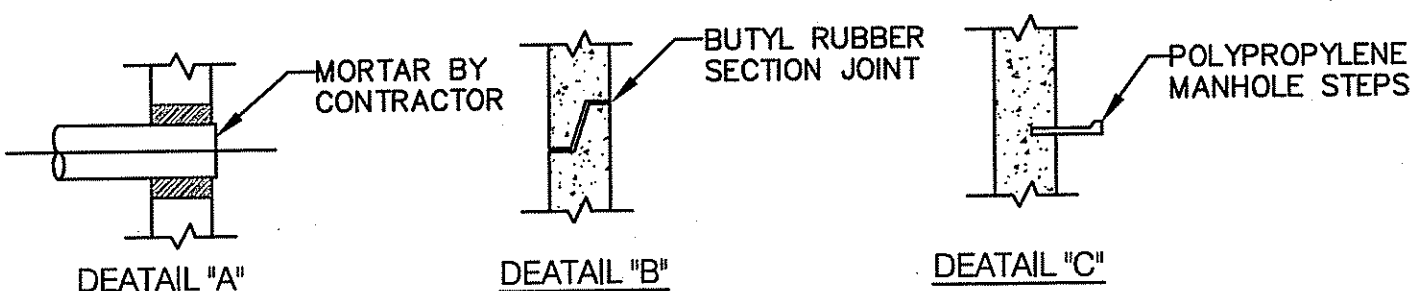
SHEET: 9 OF: 13

ISSUED FOR BIDDING

MANHOLE STEP DETAIL
NOT TO SCALE

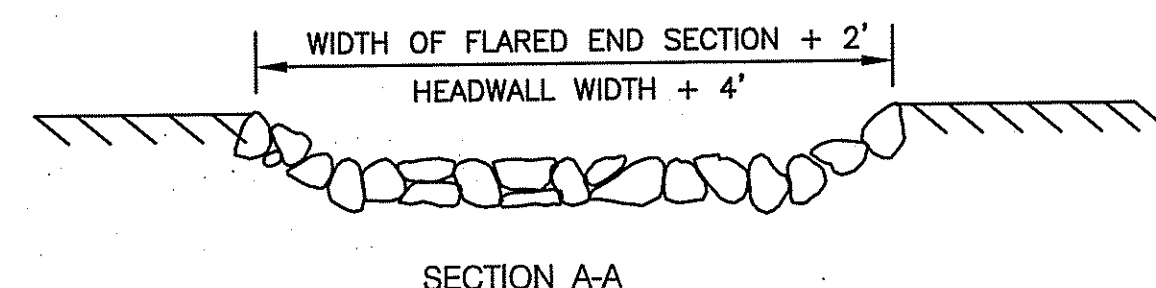
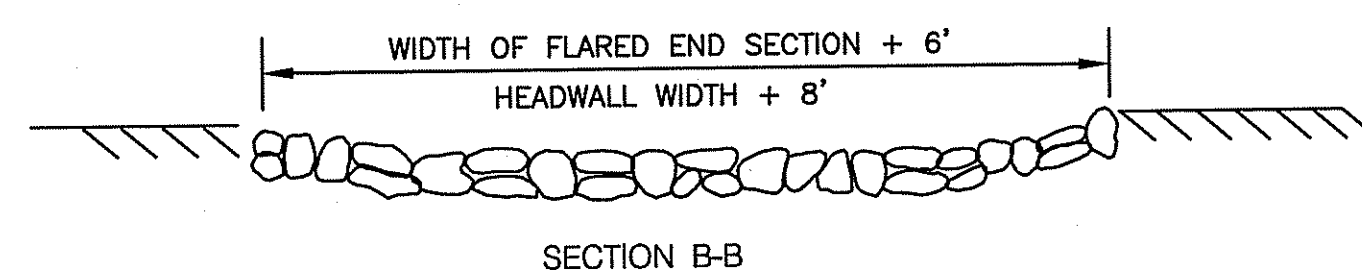
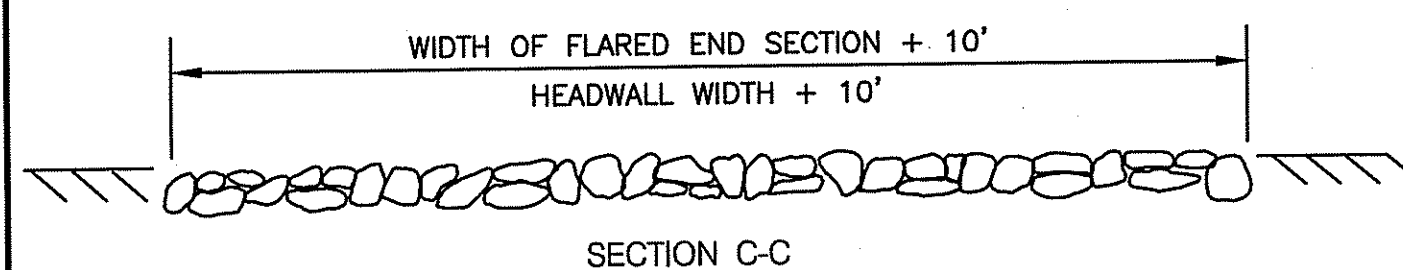
TYPICAL SECTION RIP-RAP OUTLET PROTECTION
NOT TO SCALE

LOAM-SEED DETAIL
NOT TO SCALE



- NOTES:
1. MANUFACTURED TO MEET OR EXCEED ASTM C-478 AND AASHTO M 199 SPECS.
 2. REINFORCED STEEL CONFIRMS TO LATEST ASTM A 185 SPECS. 0.24 SQ. IN./LINEAL FT. AND 0.24 SQ. IN. (BOTH WAYS) BASE BOTTOM.
 3. CONCRETE=4000 PSI MINIMUM. CEMENT PER ASTM C-478(6.1).
 4. MANHOLE STEPS=POLYPROPYLENE COATED GRADE 60 REINFORCING BAR, PER ASTM C-478 AND O.S.H.A.(STD 1-1.9).
 5. BUTYL RUBBER JOINT SEALANT PER ASTM C-990 AND FED SS-S-210A.
 6. WATER PROOFING PER CONTRACT SPEC. AS REQUIRED.
 7. STEEL REINFORCEMENT TO MEET OR EXCEED H-20 LOADING.
 8. ONE POUR MONOLITHIC BASE SECTION.
 9. MANHOLE TO BE SITUATE-RAY PRECAST MODEL OR EQUAL.

8' DIAMETER PRE-CAST CONCRETE MANHOLE DETAIL
NOT TO SCALE



NOTES:

- NOTES:
1. UNLESS OTHERWISE SPECIFIED, PLACED RIP-RAP SHALL BE USED.
 2. DIMENSIONS MAY BE MODIFIED BY ENGINEER TO MEET FIELD CONDITIONS.
 3. SEE TYPICAL SECTION DETAIL.

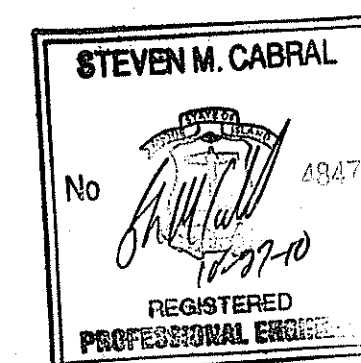
TYPICAL LAYOUT OF RIP-RAP OUTLET
PROTECTION AT FLARED END SECTIONS
and CONCRETE HEADWALLS
NOT TO SCALE

BITUMINOUS WEDGE DETAIL
NOT TO SCALE

GRADE ADJUSTMENT DETAIL
NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Charles A. Horton



PROJECT TITLE:

DRAINAGE IMPROVEMENTS TO BANGOR STREET

WARWICK, RHODE ISLAND

DECLASS

OCT 29 2010

PREPARED FOR:

DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889

DRAWING TITLE:

MISCELLANEOUS DETAILS
PLAN No. 1

DATE:	SCALE:
AUGUST 2010	AS SHOWN

DWG. NAME:
1624.19-C10-DET2.dwg

REVISIONS

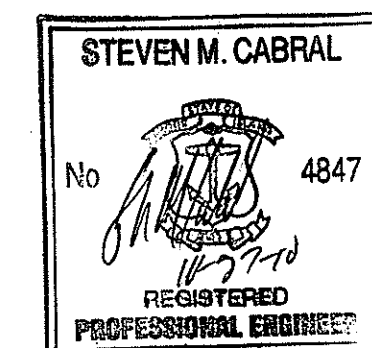
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	DRAWING NUMBER
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C9

SHEET: 10 OF: 13

ISSUED FOR BIDDING



PROJECT TITLE:

DRAINAGE IMPROVEMENTS
 TO
 BANGOR STREET
 WARWICK, RHODE ISLAND

RECEIVED
 OCT 29 2010

PREPARED FOR:

DAVID PICOZZI
 PUBLIC WORKS DIRECTOR
 CITY OF WARWICK
 925 SANDY LANE
 WARWICK, RHODE ISLAND
 02889

DRAWING TITLE:

MISCELLANEOUS DETAILS
 PLAN No. 2

DATE: AUGUST 2010
 SCALE: AS SHOWN

DWG. NAME:
 1624.19-C10-DET2.dwg

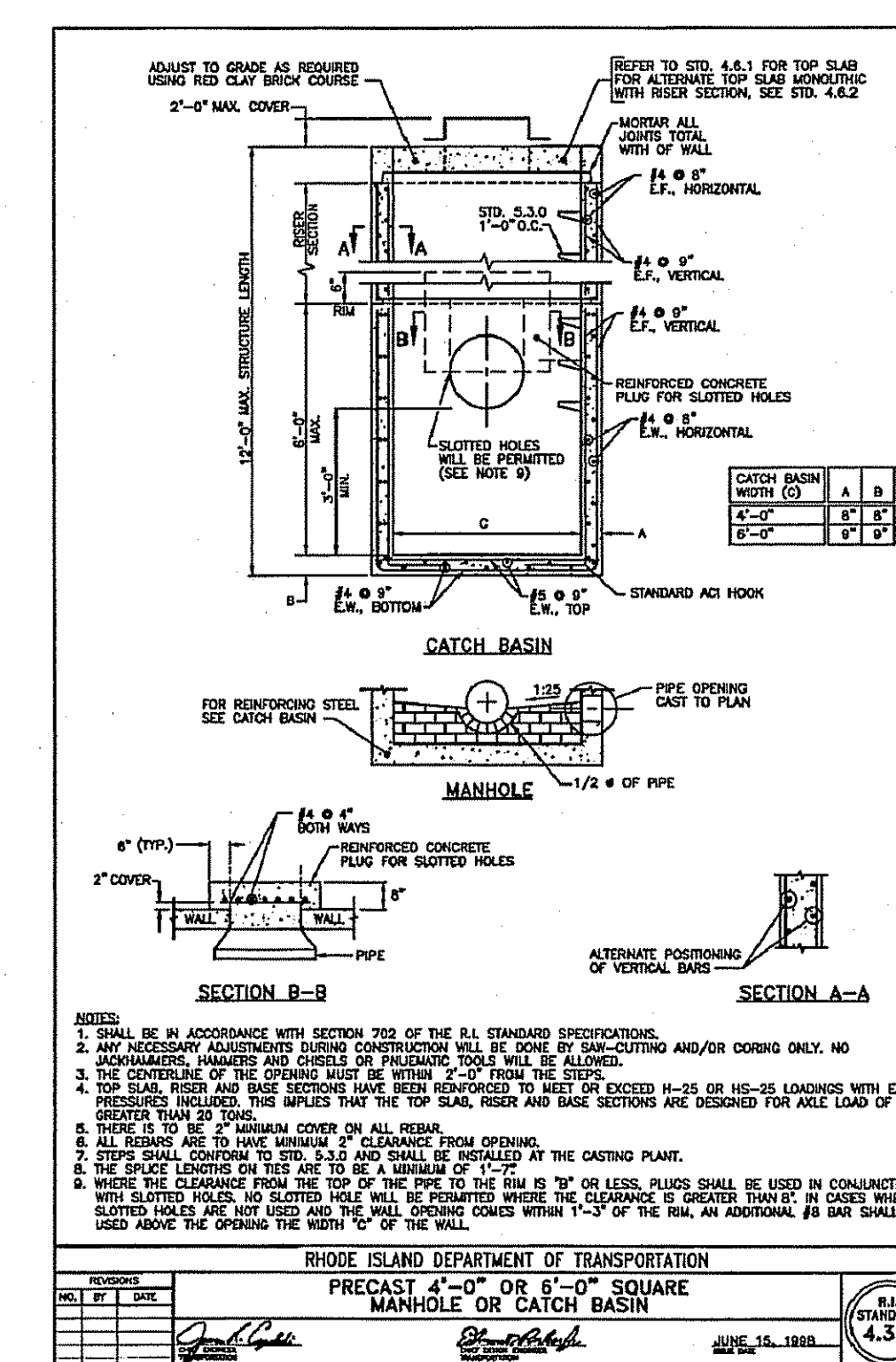
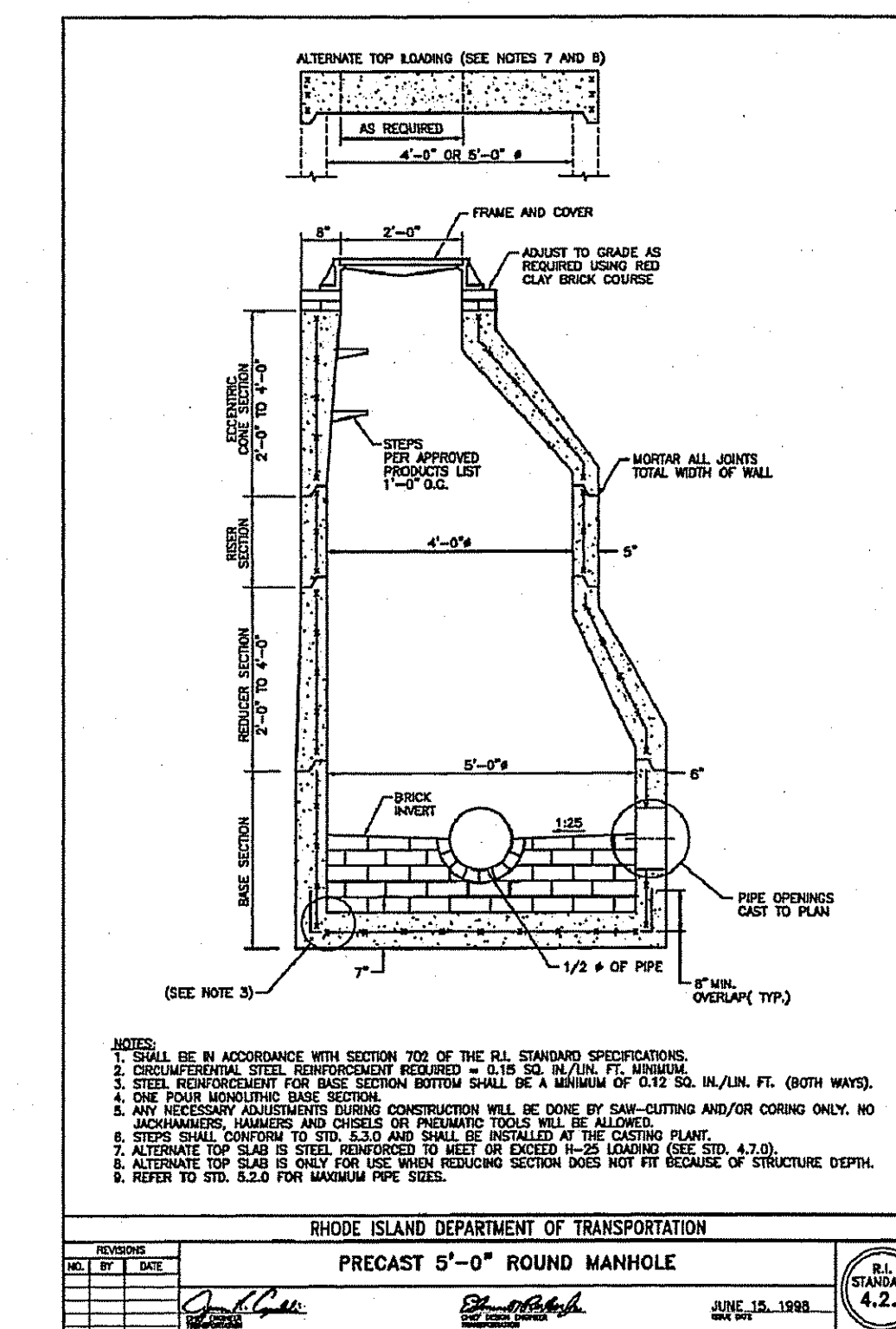
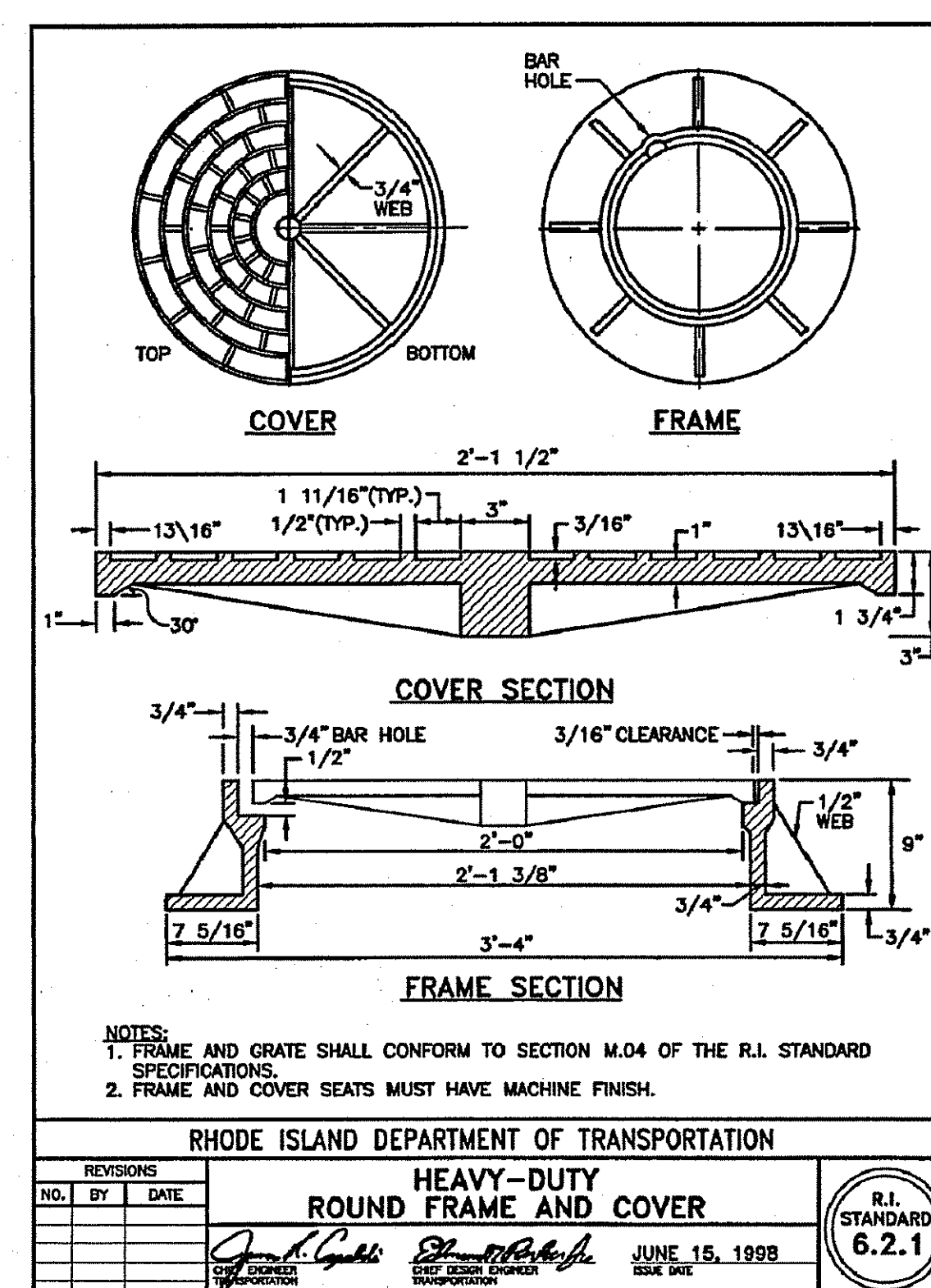
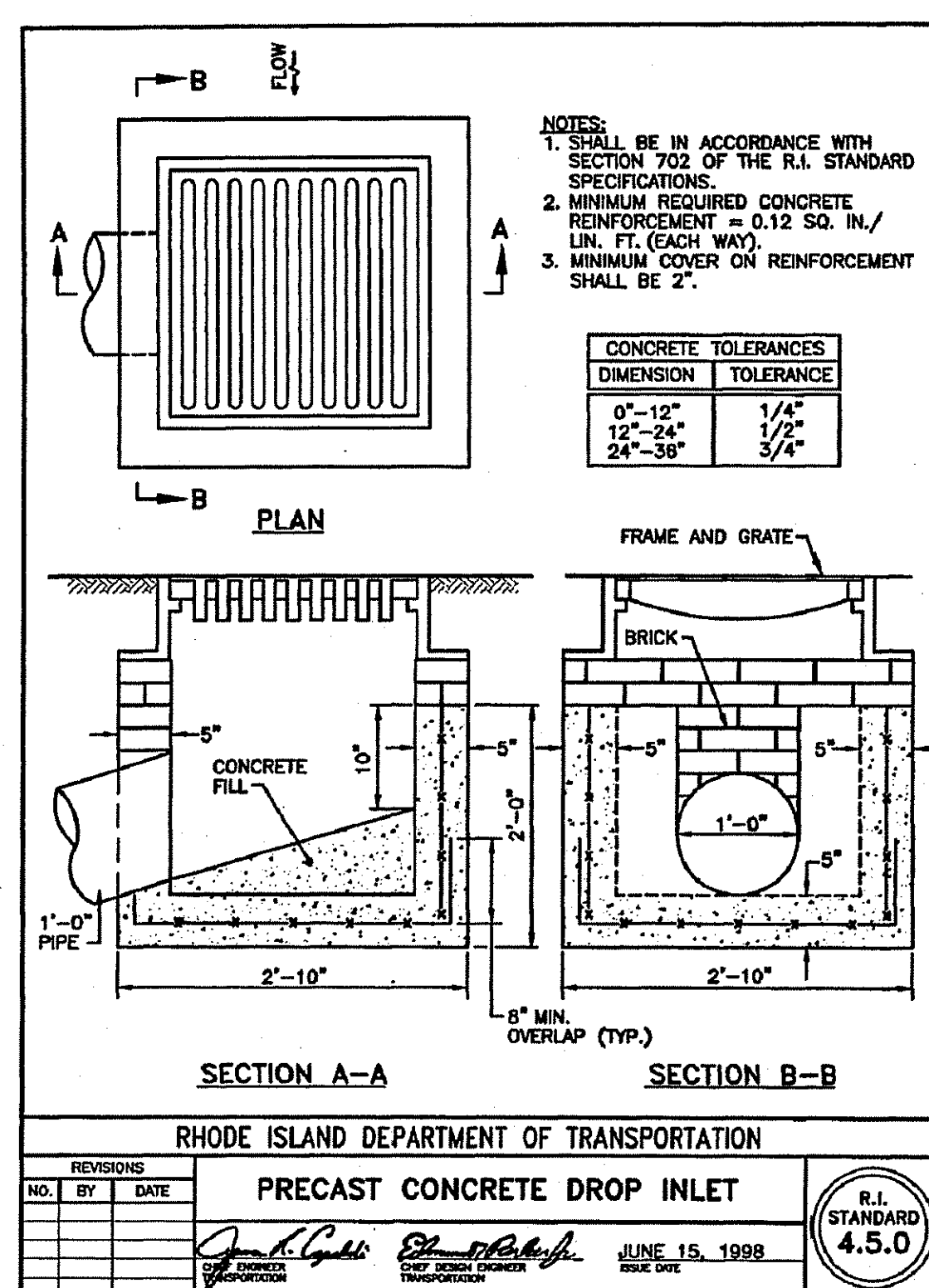
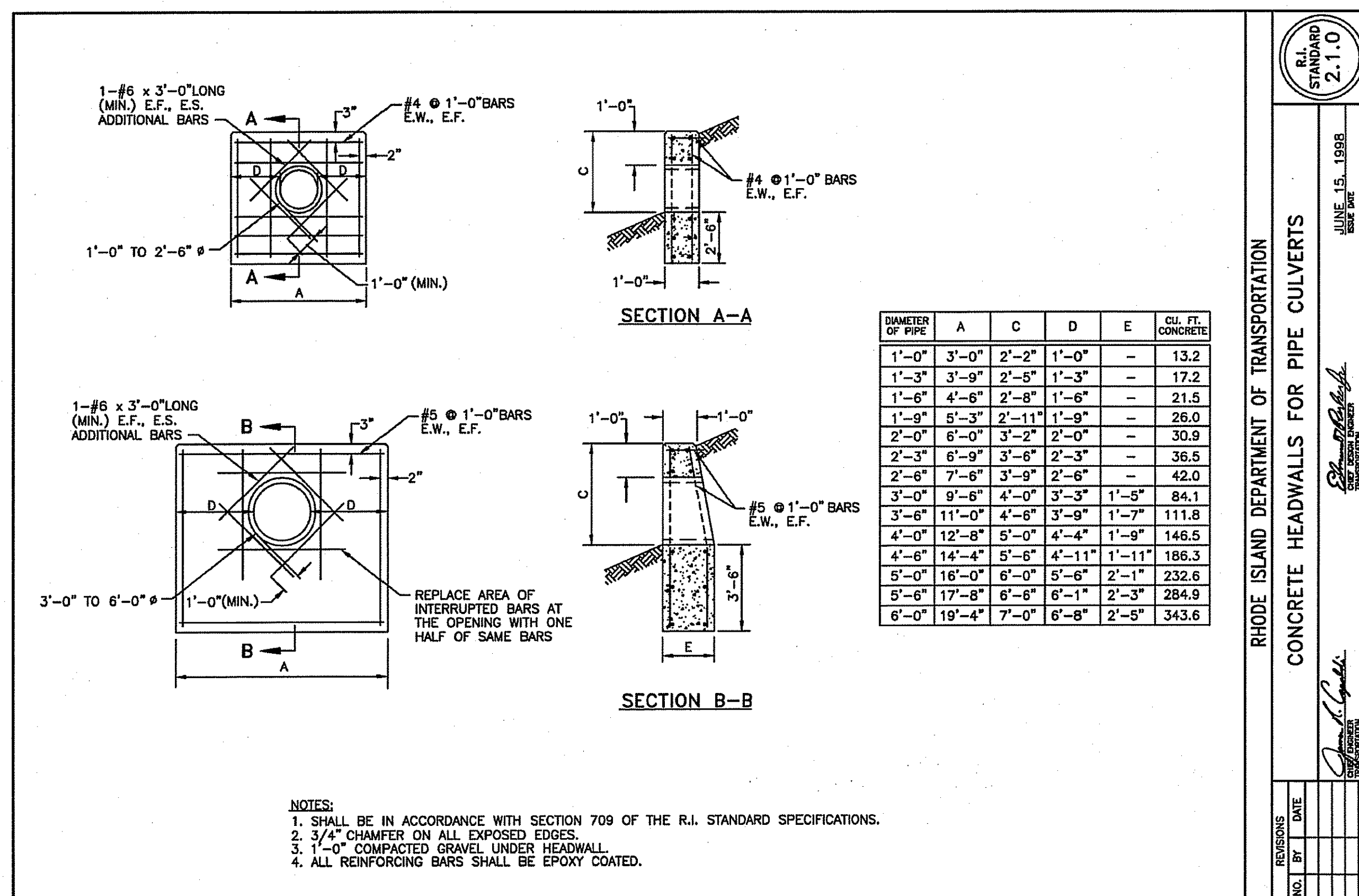
REVISIONS	NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2		09/10/10
2	RIDOT/RIDEM COMMENTS		10/21/10
3	RIDEM COMMENTS		10/27/10

DRAWING NUMBER

C10

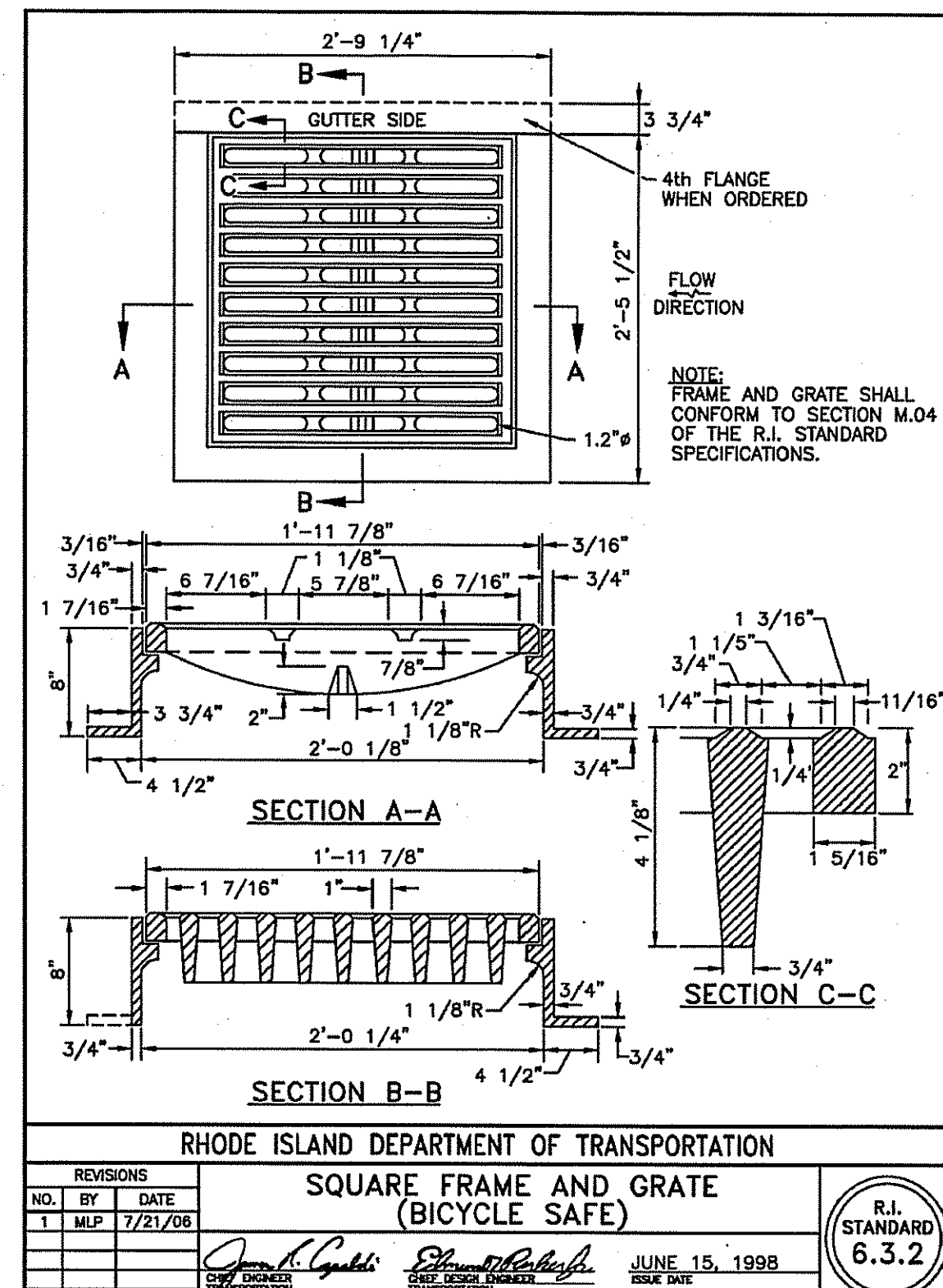
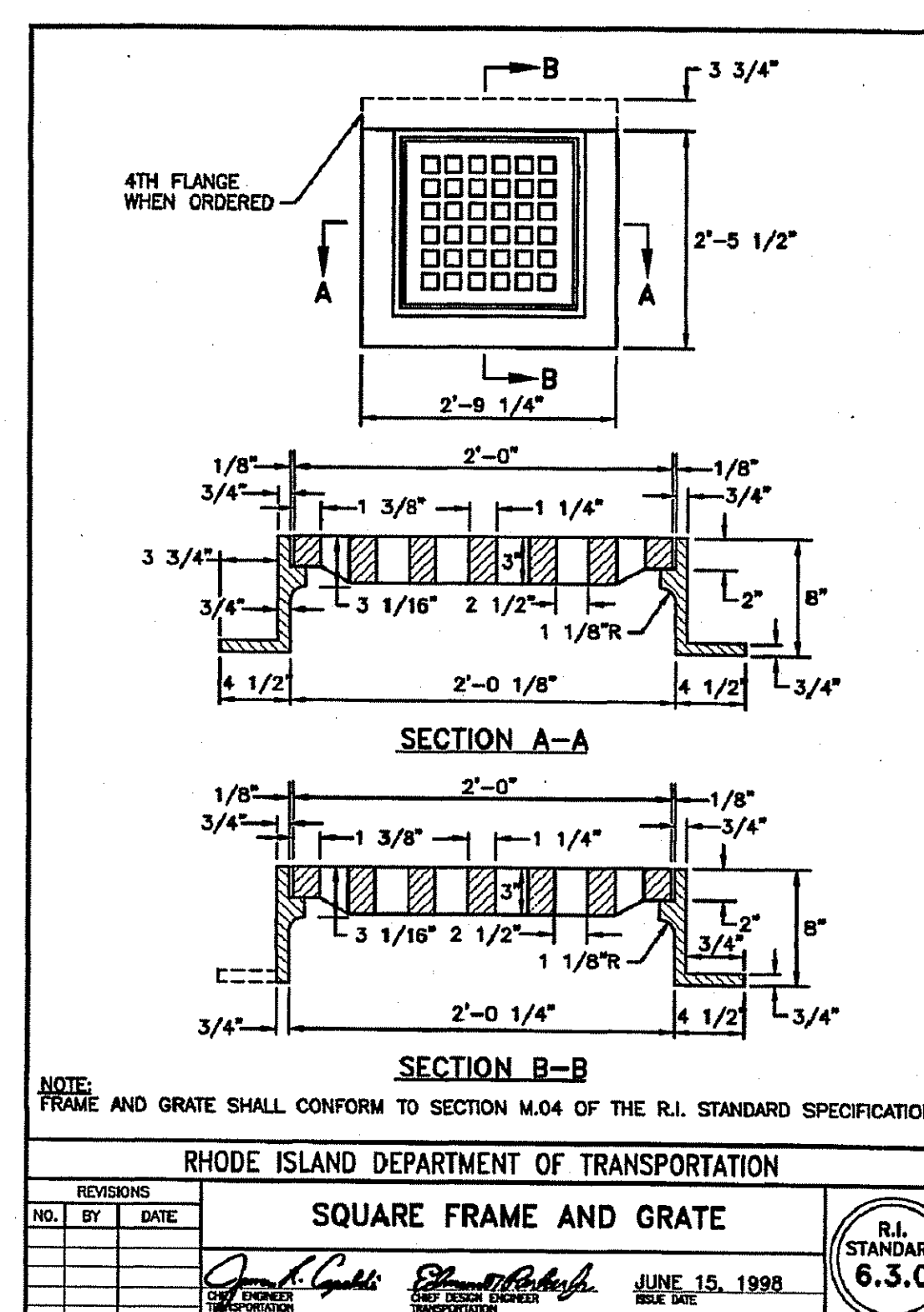
SHEET: 11 OF 13

ISSUED FOR BIDDING



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED NOV 10 2010 FILE # 12-0187
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

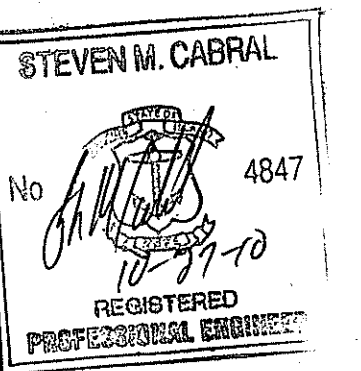
Charles A. Hubert





CROSSMAN ENGINEERING
a division of Crossman Corporation

151 Centerville Road | Warwick, Rhode Island 02886
Phone: (401) 738-6660 | Fax: (401) 738-8157
Email: cel@crossmaneng.com



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DRAINAGE IMPROVEMENTS
TO
BANGOR STREET
WARWICK, RHODE ISLAND

OCT 29 2010

PREPARED FOR:

DAVID PICOZZI
PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889

DRAWING TITLE:

MISCELLANEOUS DETAILS
PLAN No. 3

DATE:

AUGUST 2010

SCALE:

AS NOTED

DWG. NAME:

1624.19-C11-DET3.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10

DRAWING NUMBER

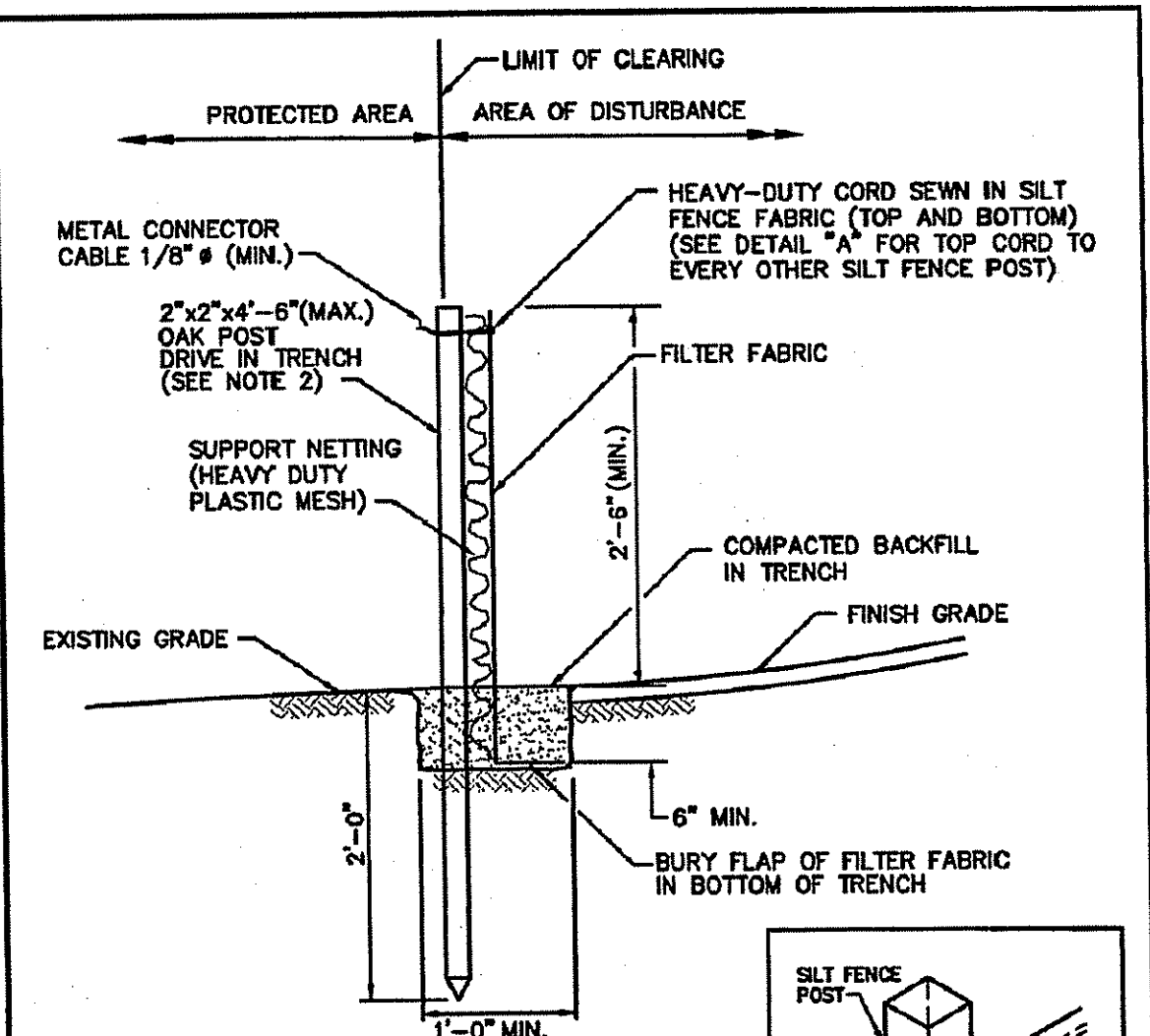
C11

SHEET: 12 OF 13

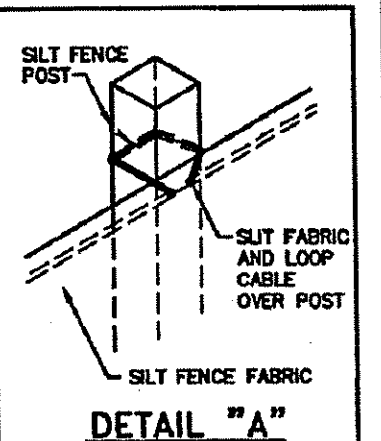
ISSUED FOR BIDDING

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED NOV 10 2010 FILE # 10-0188
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. Herbert



- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
 2. 2"x2"x4'-6" (MAX.) OAK POSTS FOR SILT FENCE SHALL 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.
 3. 1"x1"x4'-6" (MIN.) POSTS PERMITTED FOR PRE-FABRICATED SILT FENCE.
 4. SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

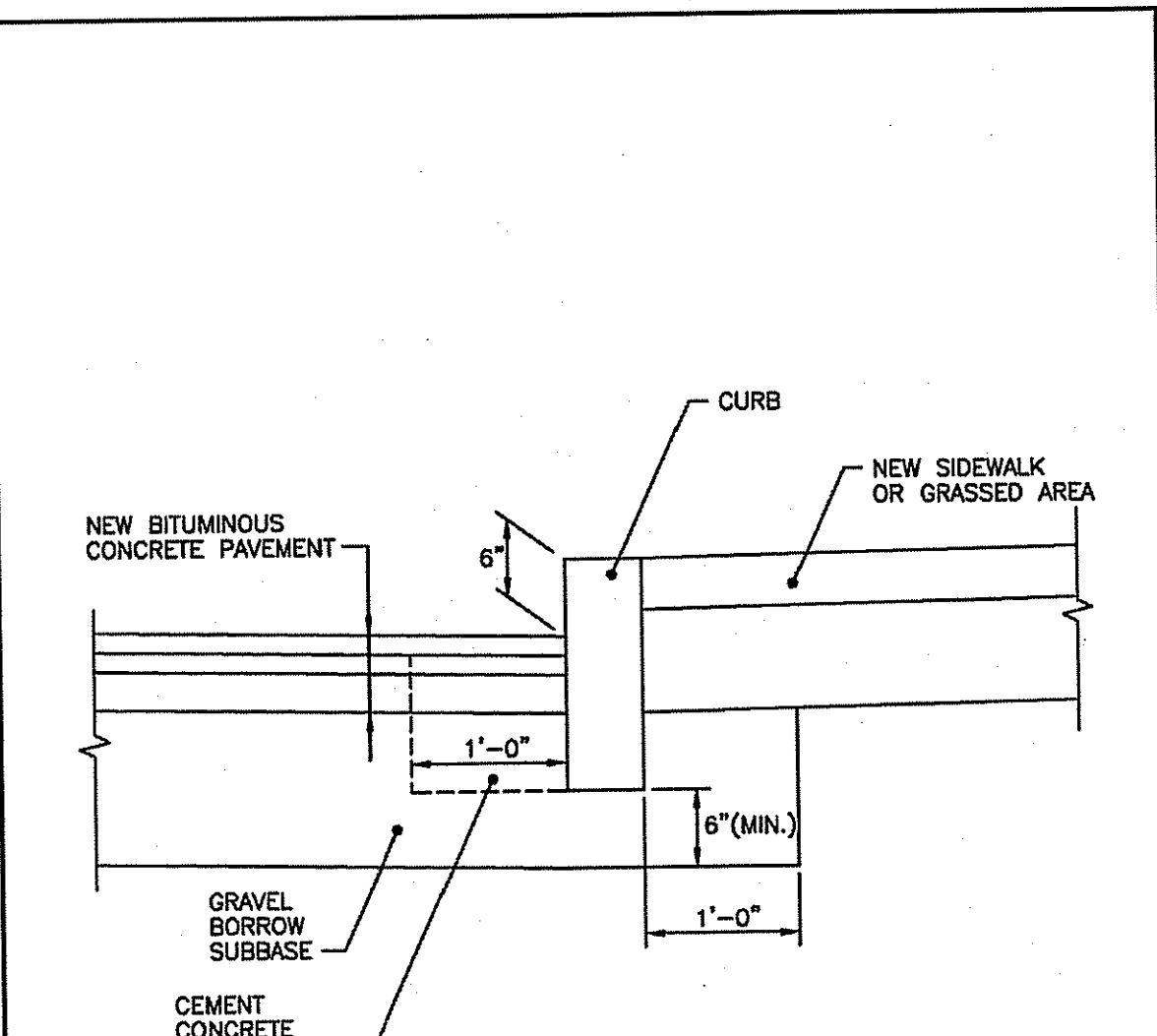


RHODE ISLAND DEPARTMENT OF TRANSPORTATION

SILT FENCE DETAIL

REVISIONS
NO. BY DATE
1 M.P. Mar 05

JUNE 15, 1998
JUNE 15, 1998



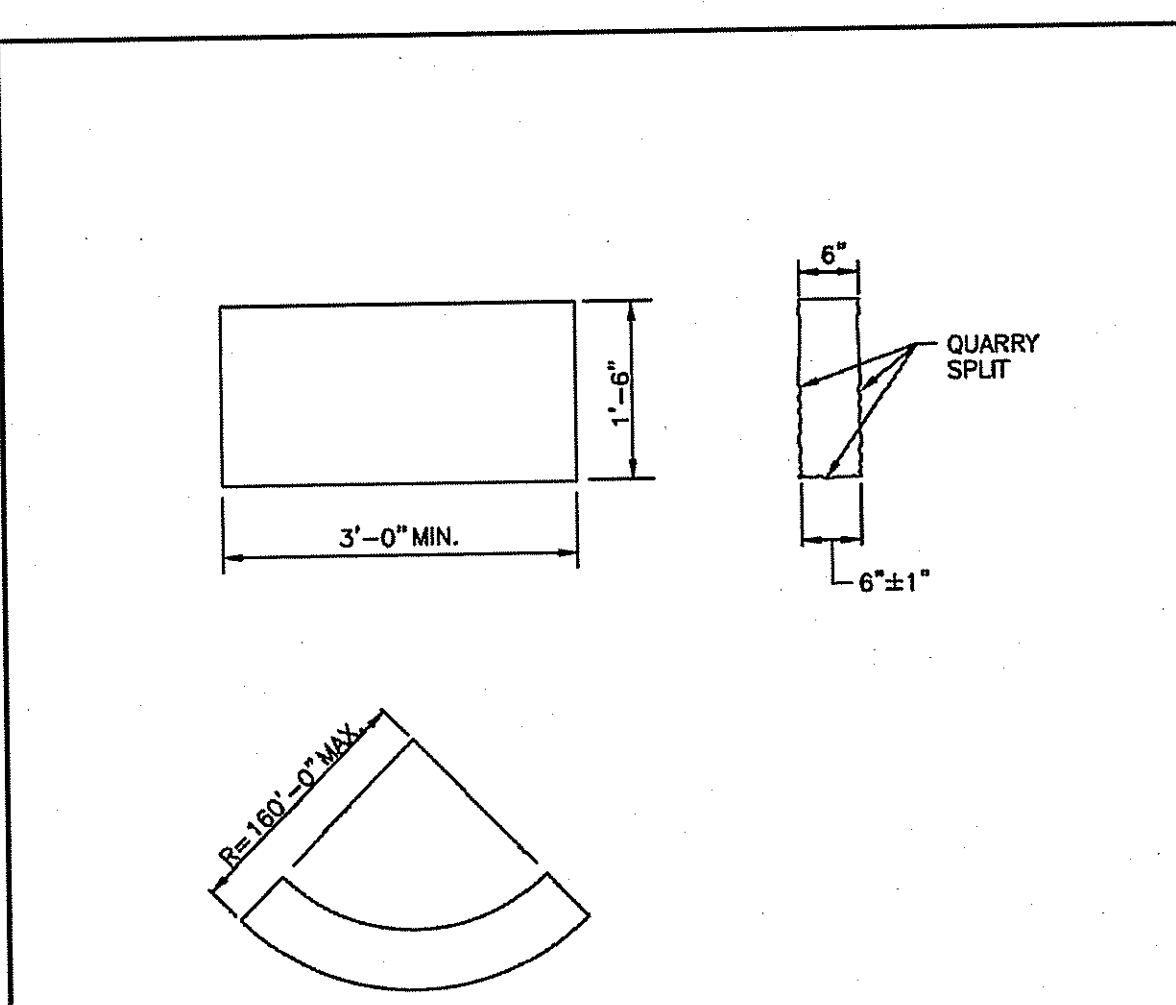
- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
 2. CEMENT CONCRETE SHALL BE USED ONLY WHEN THE CURB IS SET AFTER THE BASE AND/OR BINDER COURSES ARE IN PLACE. OTHERWISE THE CEMENT CONCRETE WILL BE ELIMINATED AND THE GRAVEL BROUGHT UP TO BOTTOM OF THE BASE COURSE.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

CURB SETTING DETAIL

REVISIONS
NO. BY DATE
1 M.P. Mar 05

JUNE 15, 1998
JUNE 15, 1998



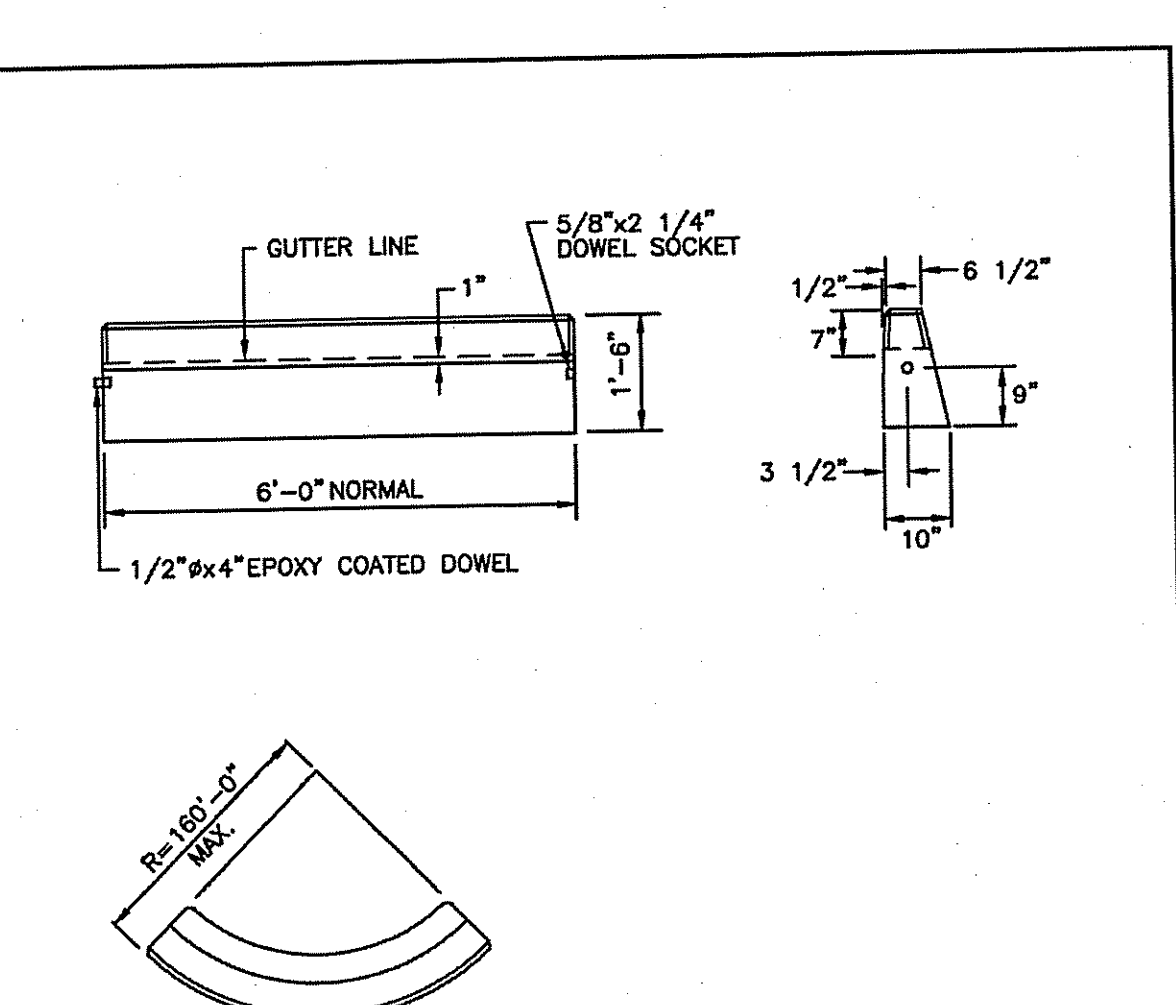
- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
 2. TOP SURFACE TO BE DRESSED BY SAW. REMAINDER TO BE QUARRY SPLIT.
 3. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR PIECES TO BE 3'-0".
 4. CIRCULAR CURB IS REQUIRED ON CURVES WITH RADII OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

GRANITE CURB

REVISIONS
NO. BY DATE
1 M.P. Mar 05

JUNE 15, 1998
JUNE 15, 1998



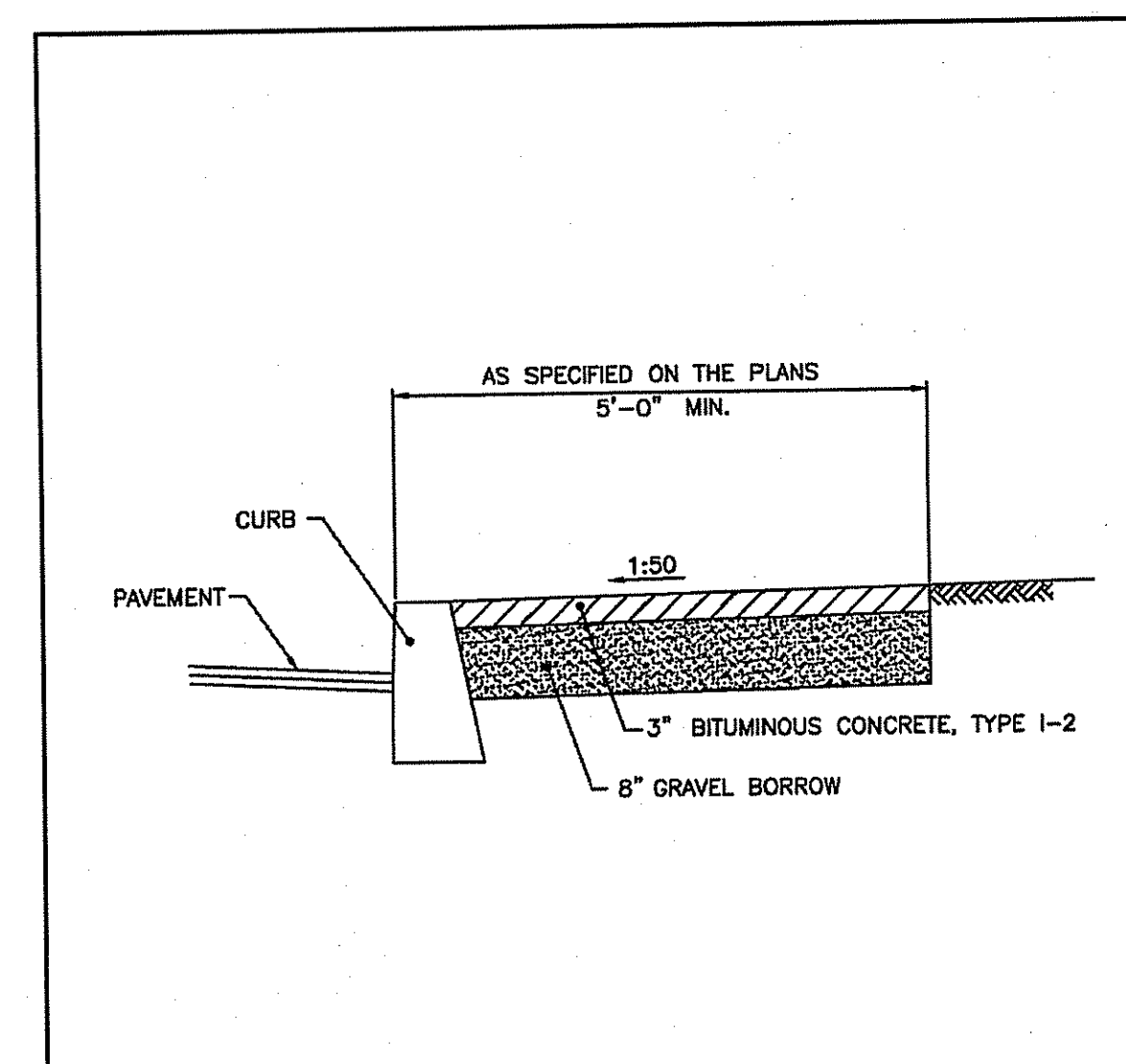
- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
 2. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0".
 3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
 4. CIRCULAR CURB IS REQUIRED ON CURVES WITH RADII OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.
 5. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

PRECAST CONCRETE CURB

REVISIONS
NO. BY DATE
1 M.P. Mar 05

JUNE 15, 1998
JUNE 15, 1998



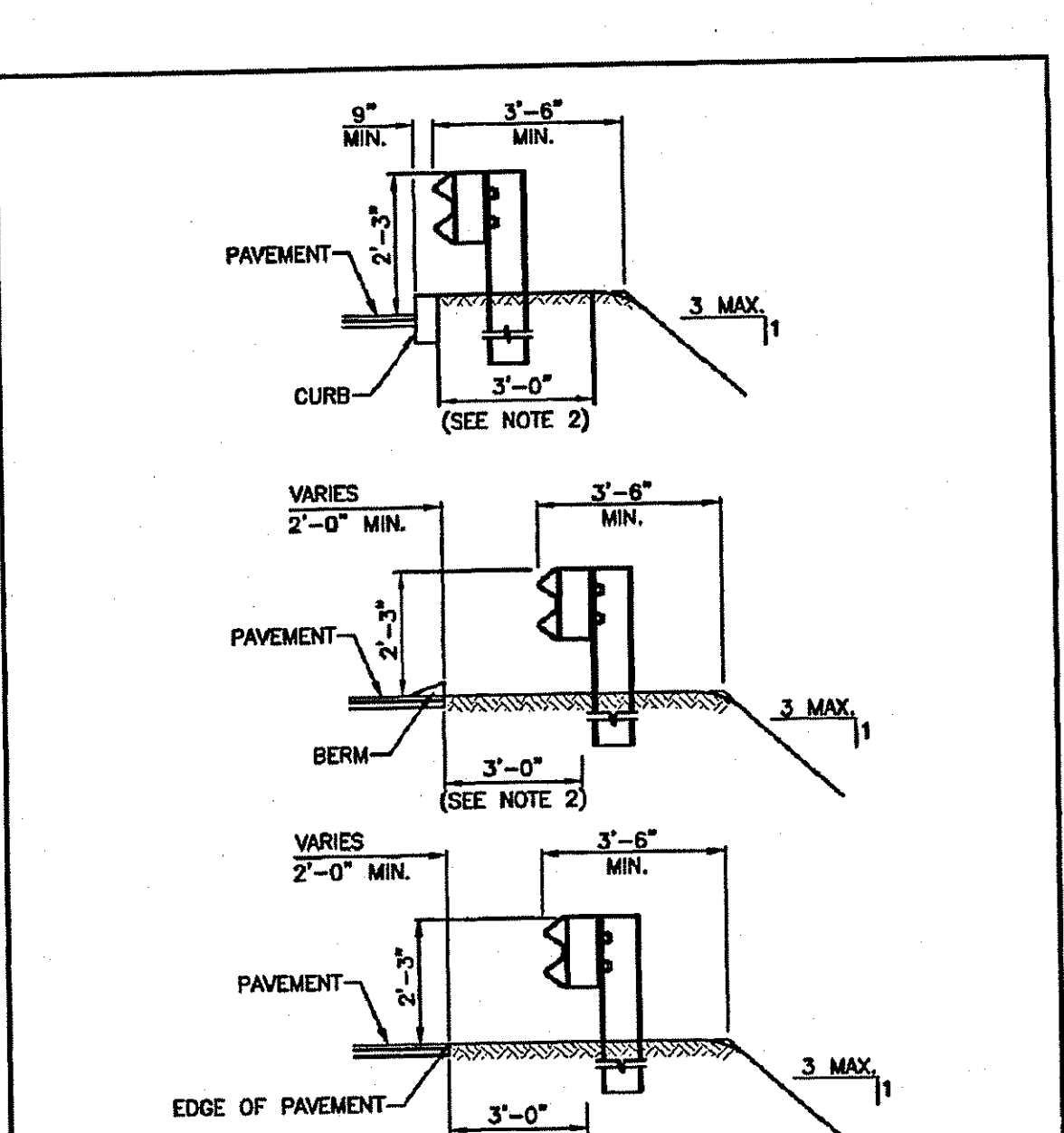
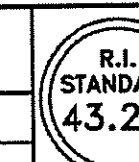
- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
 2. FOR CURB SETTING DETAIL REFERENCE STD. 7.6.0.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

BITUMINOUS CONCRETE SIDEWALK

REVISIONS
NO. BY DATE
1 M.P. 3/17/2005

JUNE 15, 1998
JUNE 15, 1998



- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 901 OF THE R.I. STANDARD SPECIFICATIONS.
 2. TREAT THIS AREA WITH HERSCIDE AFTER THE GUARD RAIL INSTALLATION AS REQUIRED.

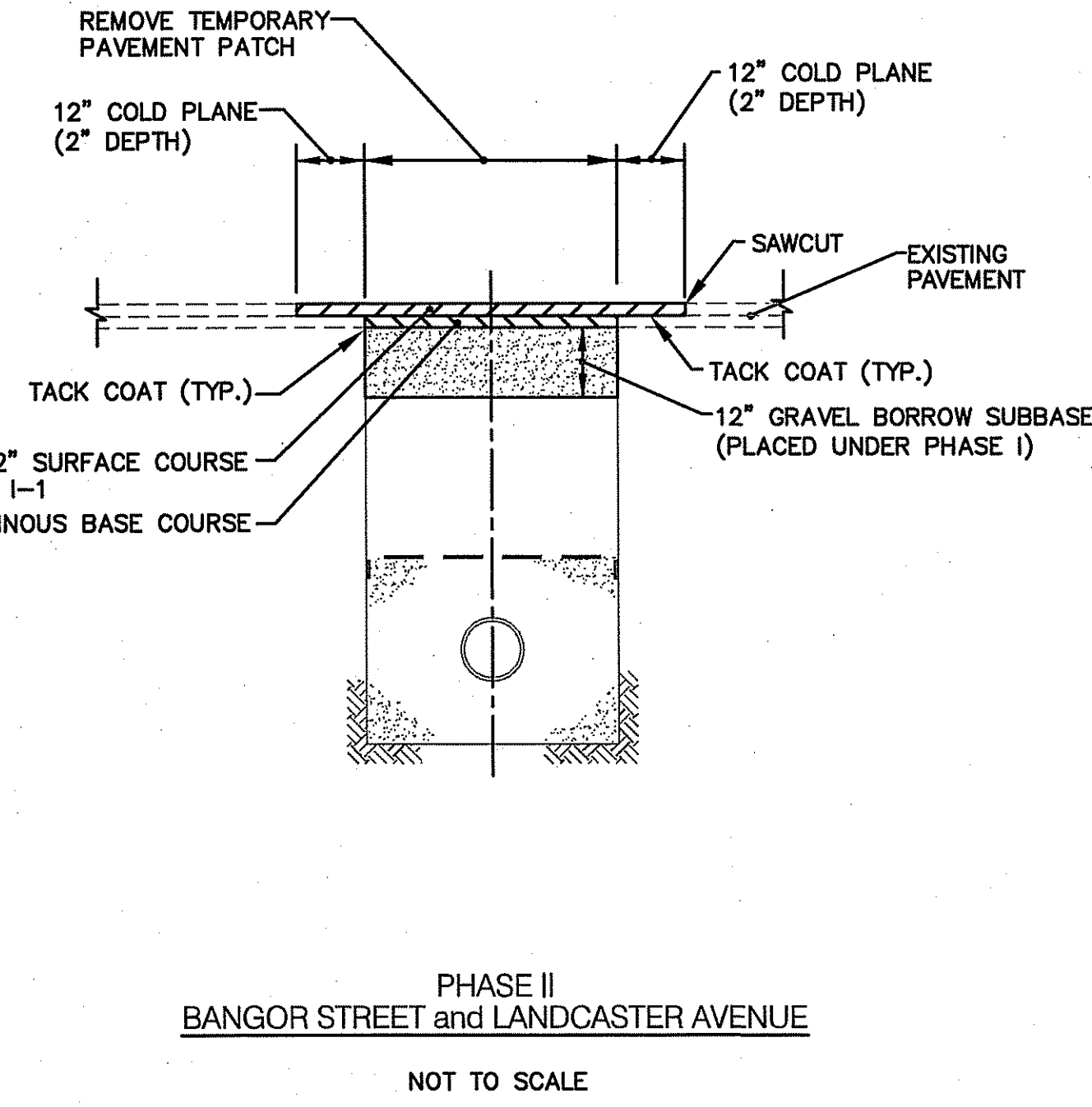
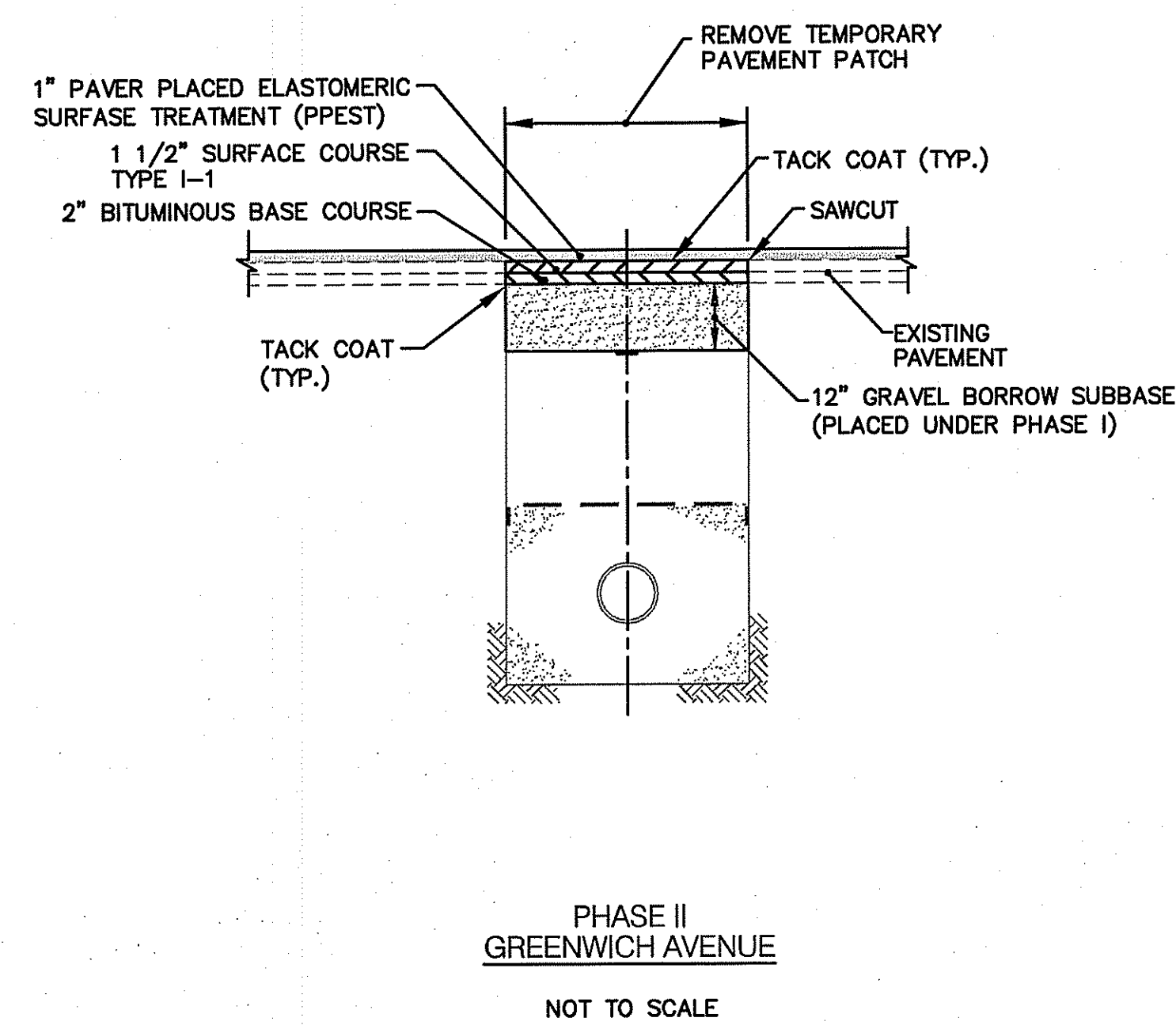
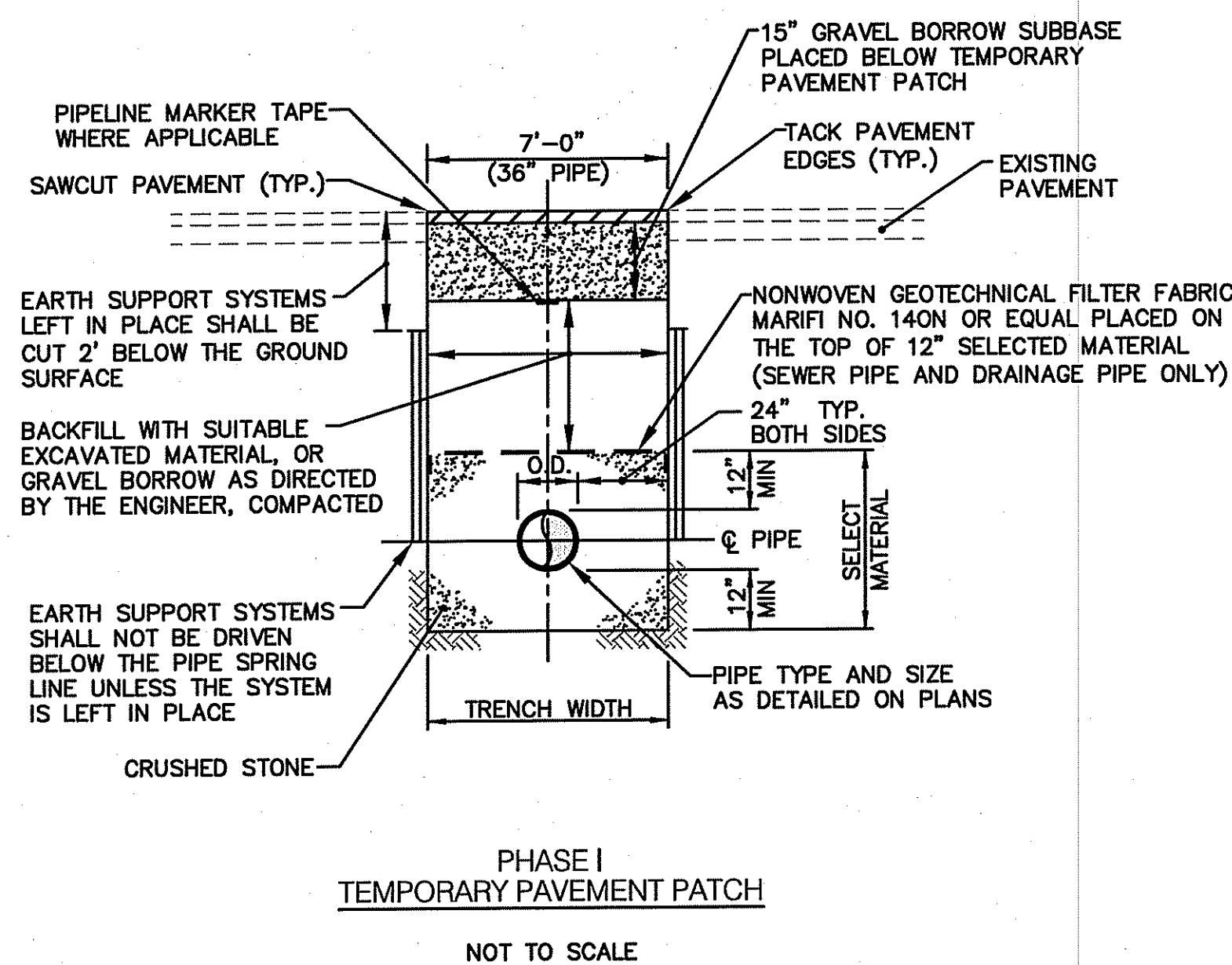
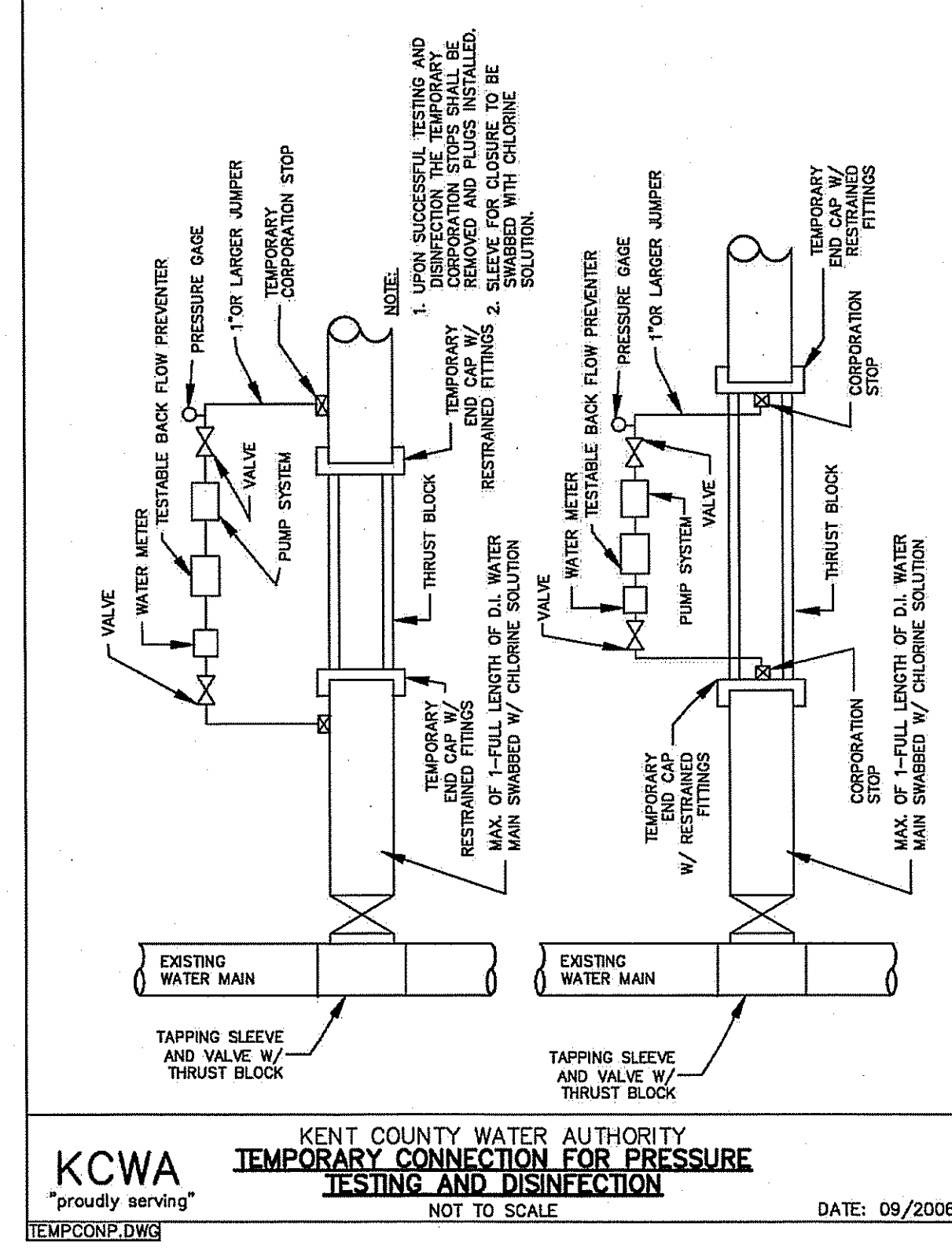
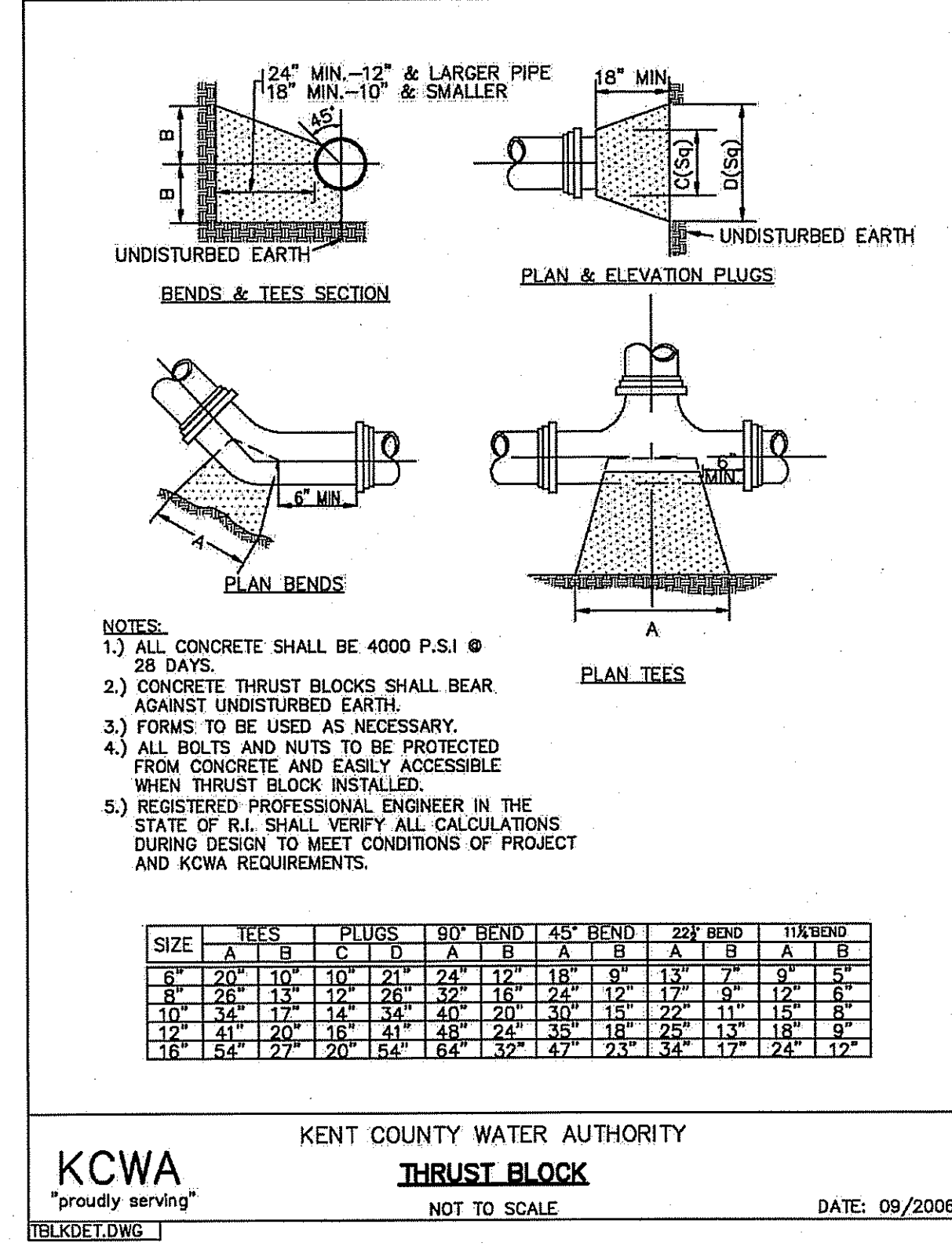
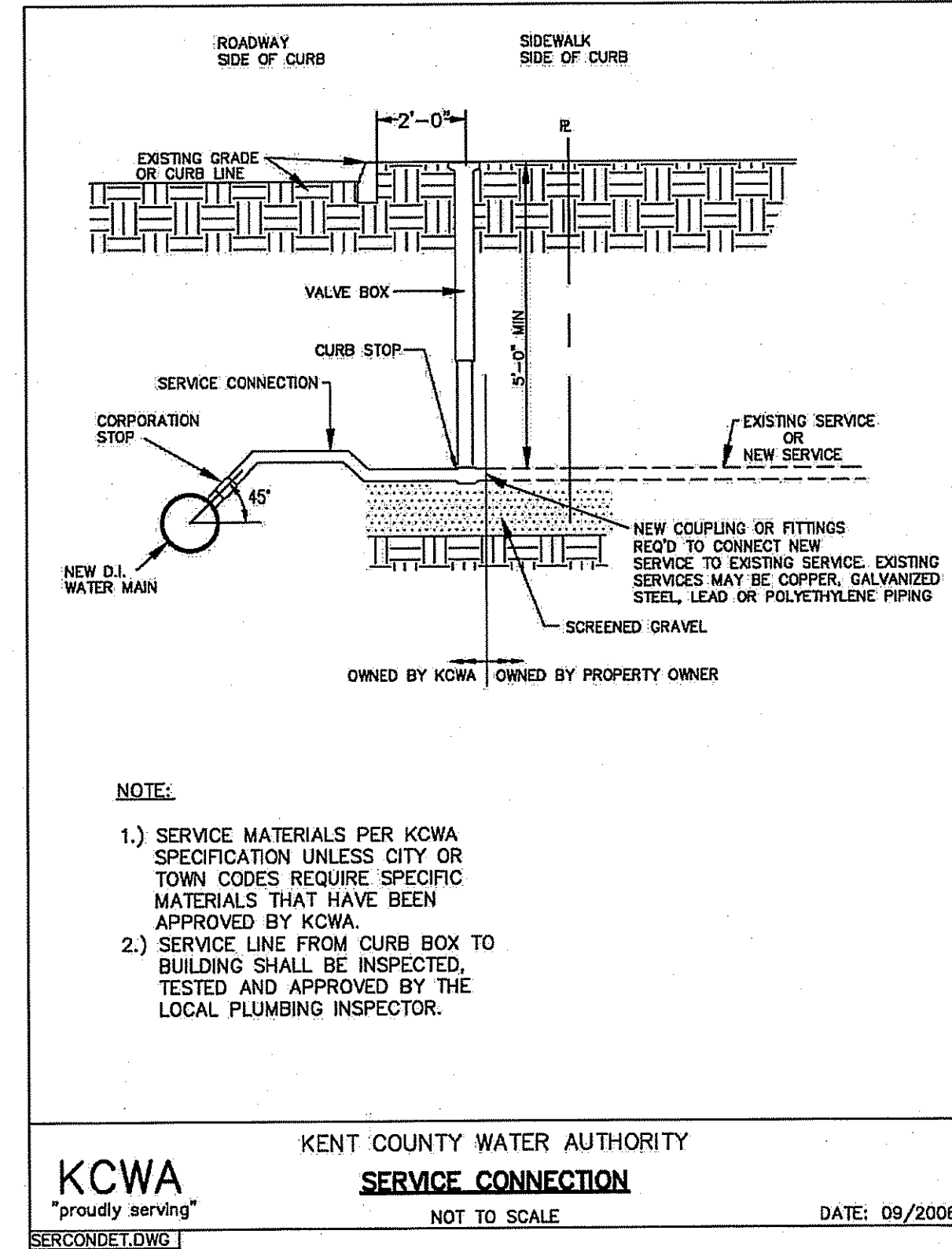
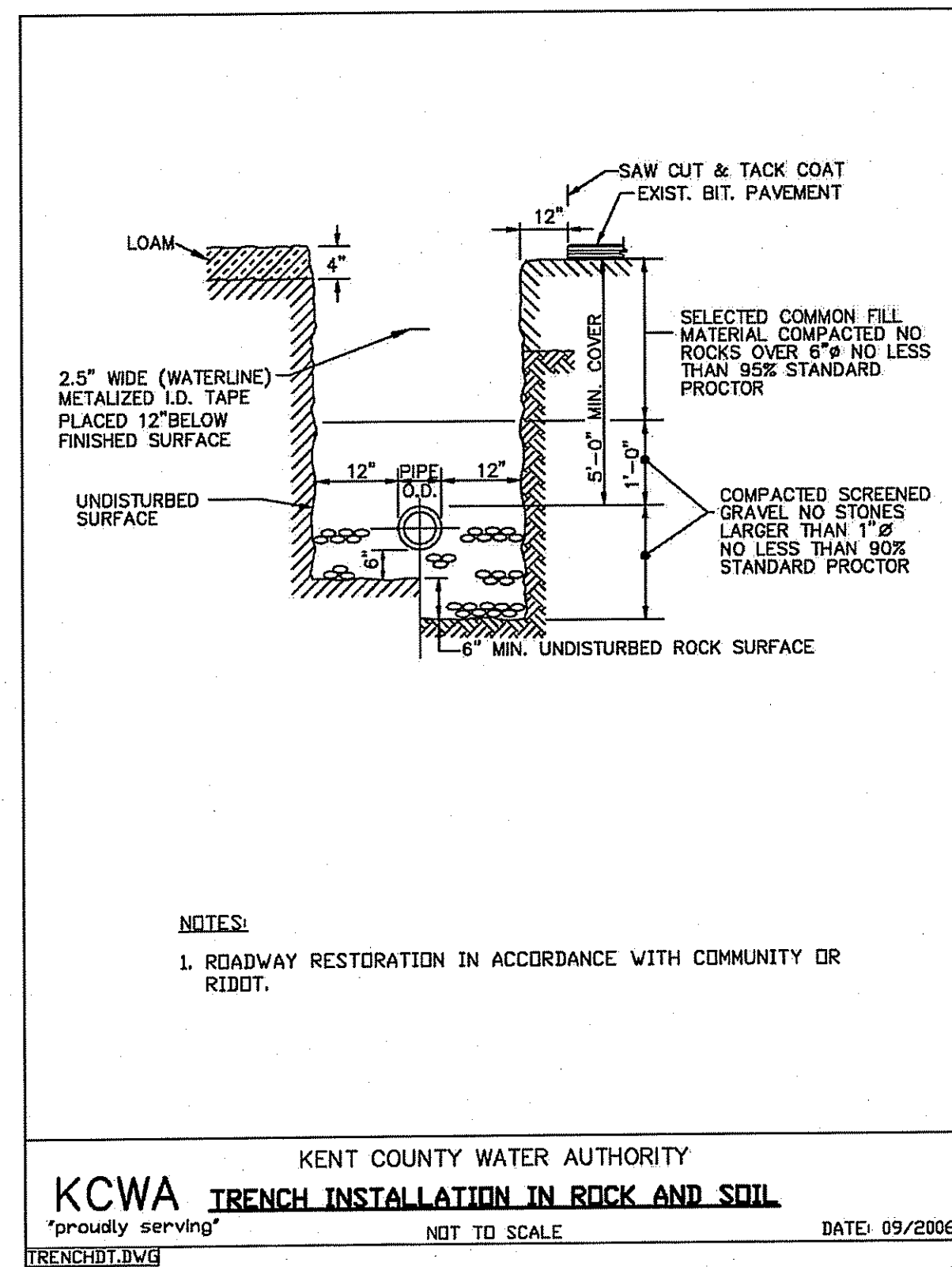
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

TYPICAL GUARDRAIL INSTALLATION

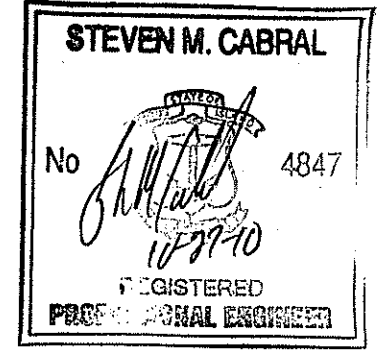
REVISIONS
NO. BY DATE
1 M.P. Mar 05

JUNE 15, 1998
JUNE 15, 1998





- NOTES:**
1. THE HORIZONTAL LIMIT FOR ROCK EXCAVATION IN TRENCHES SHALL BE 27" BEYOND THE O.D. OF THE PIPE. THE VERTICAL LIMIT SHALL BE 6" BELOW THE O.D. OF THE PIPE. CONTRACTOR TO TAKE ALL ROCK QUANTITIES INDEPENDENT OF THE ENGINEER AND CONFIRM THESE QUANTITIES ON A WEEKLY BASIS WITH THE ENGINEER FOR APPROVAL. ALL APPROVED CALCULATIONS AND QUANTITIES SHALL BE SUBMITTED TO THE WARWICK DEPARTMENT OF PUBLIC WORKS WITH MONTHLY PROGRESS PAYMENT FOR REVIEW.
2. CONTRACTOR SHALL ADJUST THE WIDTH OF SAW CUT OF EXISTING PAVEMENT BASED ON ACTUAL EQUIPMENT AND EARTH SUPPORT SYSTEM USED. MAXIMUM WIDTH OF DISTURBANCE SHALL BE WIDTH OF EARTH SUPPORT SYSTEM PLUS 1'-0".
3. THE MINIMUM BURY DEPTH FOR WATER PIPE SHALL BE 5'-0" TO THE PIPE INVERT.
4. BEDDING MATERIAL FOR DRAIN PIPE SHALL BE CRUSHED STONE (SELECT MATERIAL UPON APPROVAL BY CITY).
5. BEDDING MATERIAL FOR WATER PIPE SHALL BE SAND.
6. CONTRACTOR SHALL PROTECT ALL UTILITIES FROM DAMAGE AND IS RESPONSIBLE FOR REPAIR OF ALL UTILITIES DAMAGED OUTSIDE THE LIMIT OF DISTURBANCE.



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PUBLIC WORKS DIRECTOR
CITY OF WARWICK
925 SANDY LANE
WARWICK, RHODE ISLAND
02889

DRAWING TITLE:
MISCELLANEOUS DETAILS
PLAN No. 4

DATE:	SCALE:
AUGUST 2010	AS SHOWN

DWG. NAME: 1624.19-C12-DET4.dwg

NUMBER	REMARKS	DATE
1	ADDENDUM NO. 2	09/10/10
2	RIDOT/RIDEM COMMENTS	10/21/10
3	RIDEM COMMENTS	10/27/10