MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS

Diversions are used to isolate work areas from flow during the construction of in-stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.

MATERIAL SPECIFICATIONS

Materials for sandbag and stone stream diversions should meet the following requirements:

- *Riprap*: Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
- *Sandbags*: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.).
- *Sheeting*: Sheeting should consist of polyethylene or other materials which are impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):

1. The diversion structure should be installed from upstream to downstream.
2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
4. Sediment-laden water from the construction area should be pumped to a dewatering basin.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATERWAY CONSTRUCTION GUIDELINES, REVISED NOVEMBER 2000*

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MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18-inch (0.45 meters) overlap.
6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA.
8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATERWAY CONSTRUCTION GUIDELINES, REVISED NOVEMBER 2000*

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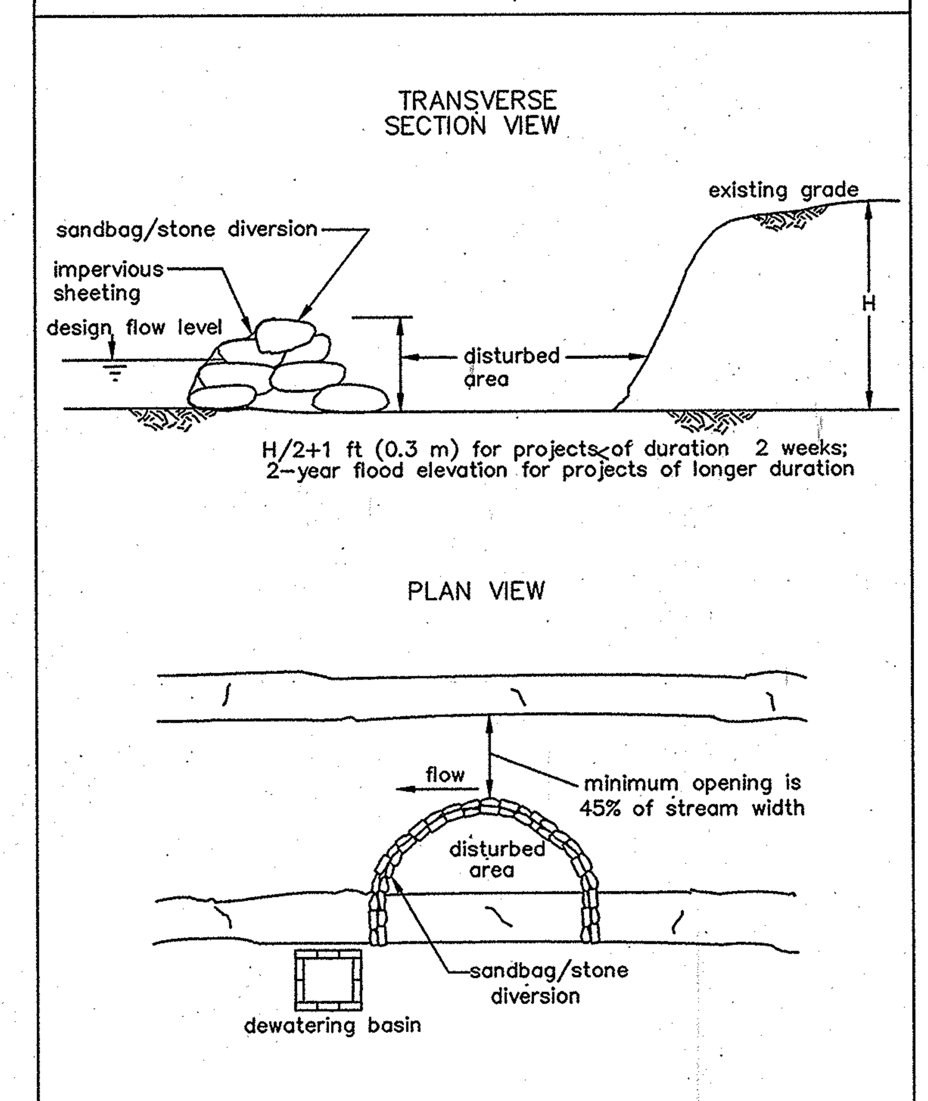
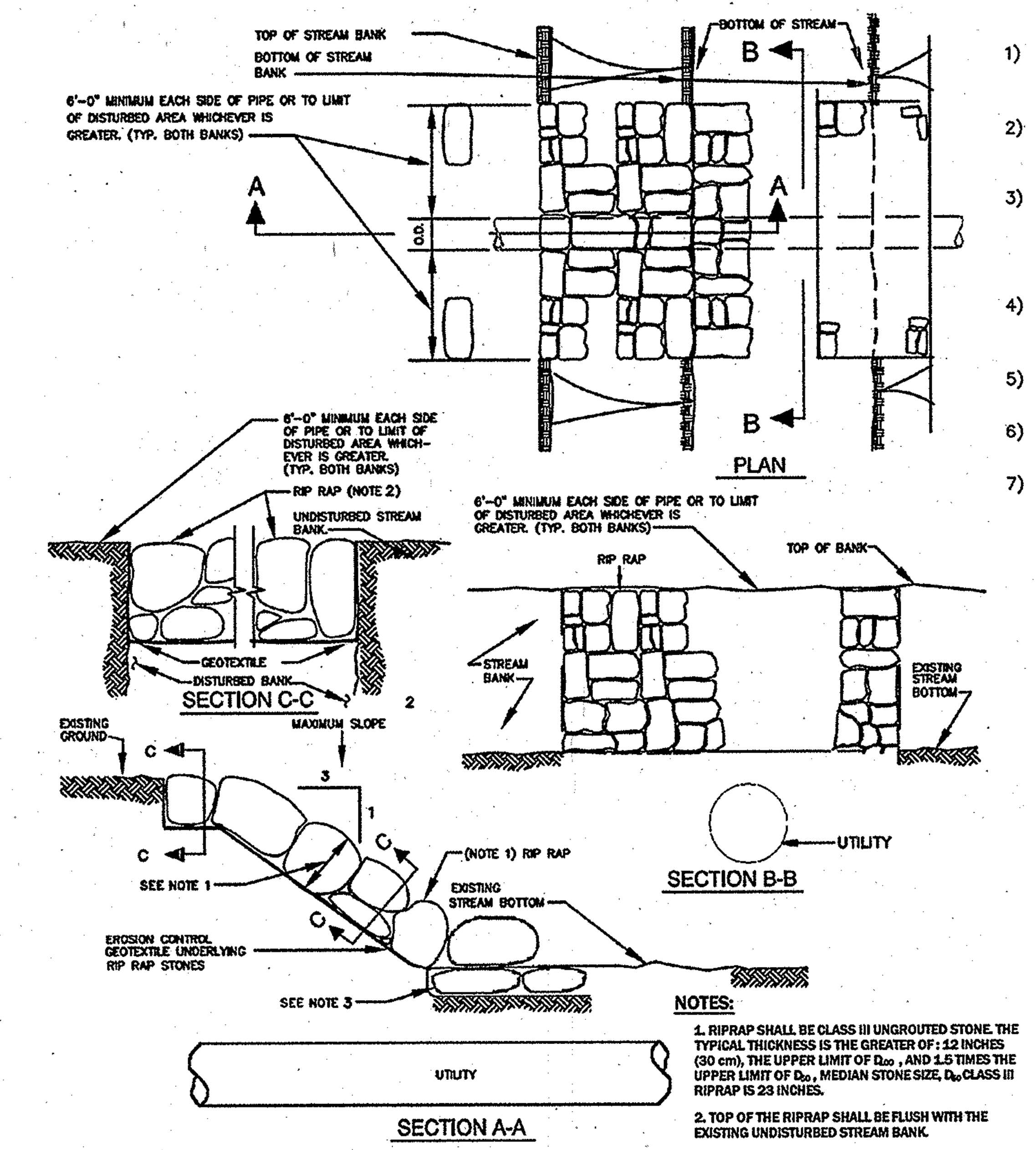
Maryland's Guidelines To Waterway Construction

DETAIL 1.5: SANDBAG/STONE DIVERSION



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.5 – 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



NOTES:

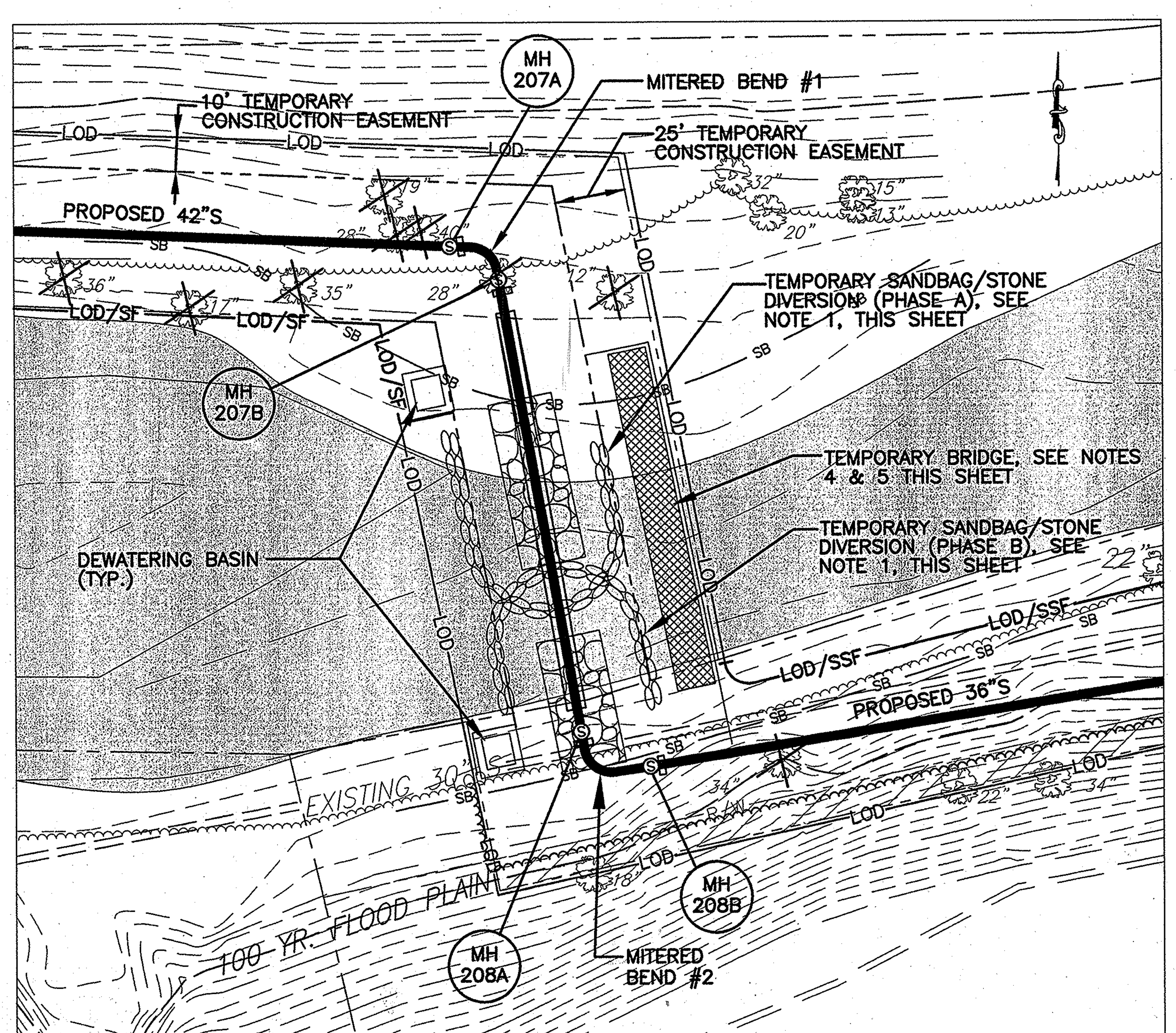
1. RIPRAP SHALL BE CLASS III UNGROUTED STONE. THE TYPICAL THICKNESS IS THE GREATER OF: 12 INCHES (30 cm), THE UPPER LIMIT OF D_{100}, AND 1.5 TIMES THE UPPER LIMIT OF D_{50}, MEDIAN STONE SIZE, D_{50} CLASS III RIPRAP IS 23 INCHES.
2. TOP OF THE RIPRAP SHALL BE FLUSH WITH THE EXISTING UNDISTURBED STREAM BANK.
3. MINIMUM TOE TRENCH DEPTH BELOW CHANNEL INVERT SHALL BE 48" TO PREVENT UNDERMINING DUE TO SCOUR.

DETAIL 1
STREAM BANK PROTECTION AT CROSSING

NO SCALE

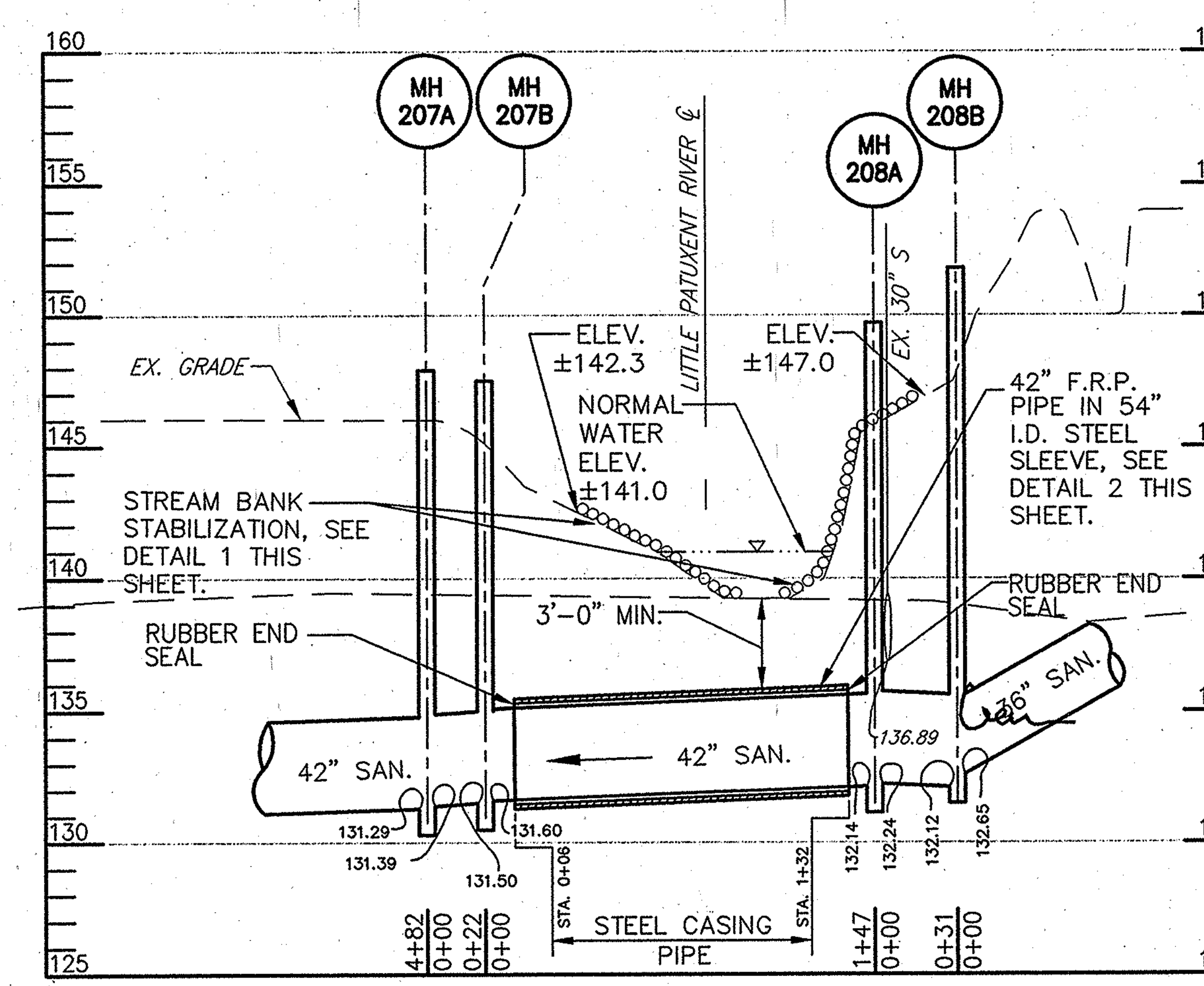
NOTES:

1) STREAM CROSSING SHALL BE INSTALLED IN ACCORDANCE WITH MGCW STANDARD 1.5. PHASE A WILL OCCUR FROM STATION 0+00 (MH207B) TO STATION 0+67. PHASE B WILL OCCUR FROM STATION 0+67 TO STATION 1+37 (MH–208A).
2) ALL MEASURES NECESSARY FOR INSTALLATION OF THE SEWER MAIN ACROSS THE STREAMS SHALL BE REMOVED ONLY UPON STREAM STABILIZATION AND APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.
3) CONTRACTOR TO PUMP THE WATER FROM THE DISTURBED AREA FOR EACH STREAM CROSSING VIA PUMPS AND HOSES TO THE DEWATERING BASIN IN ORDER THAT WORK MAY PROCEED IN THE DRY. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE PUMPS AND HOSES WITH THE CAPACITIES NEEDED TO KEEP THE WORK AREA DRY DURING CONSTRUCTION, WITHOUT ADDITIONAL EXPENSE TO THE COUNTY.
4) CONTRACTOR TO PROVIDE A TEMPORARY BRIDGE FOR CROSSING THE STREAM DURING CONSTRUCTION. BRIDGE TO BE RATED FOR HS20 LOADING AND SPAN TO COVER RIVER WIDTH AT CROSSING. PARTIAL OR FULL FILLING IN OF RIVER SHALL NOT BE ALLOWED.
5) THE BRIDGE WOULD BE SUBJECT TO THE APPROVAL OF THE HOWARD SOIL CONSERVATION DISTRICT, MARYLAND DEPT. OF THE ENVIRONMENT AND THE USCOE PRIOR TO INSTALLATION.
6) IN-STREAM WORK SHALL NOT BE CONDUCTED BETWEEN MARCH 1ST AND JUNE 15TH INCLUSIVE, DURING ANY YEAR.
7) STONE FOR STREAM RESTORATION SHALL BE DARK OR GRAY IN COLOR, SO AS TO MATCH EXISTING NATIVE STONE. WHITE (TEXAS QUARRY) STONE SHALL NOT BE ACCEPTABLE FOR STREAM RESTORATION.



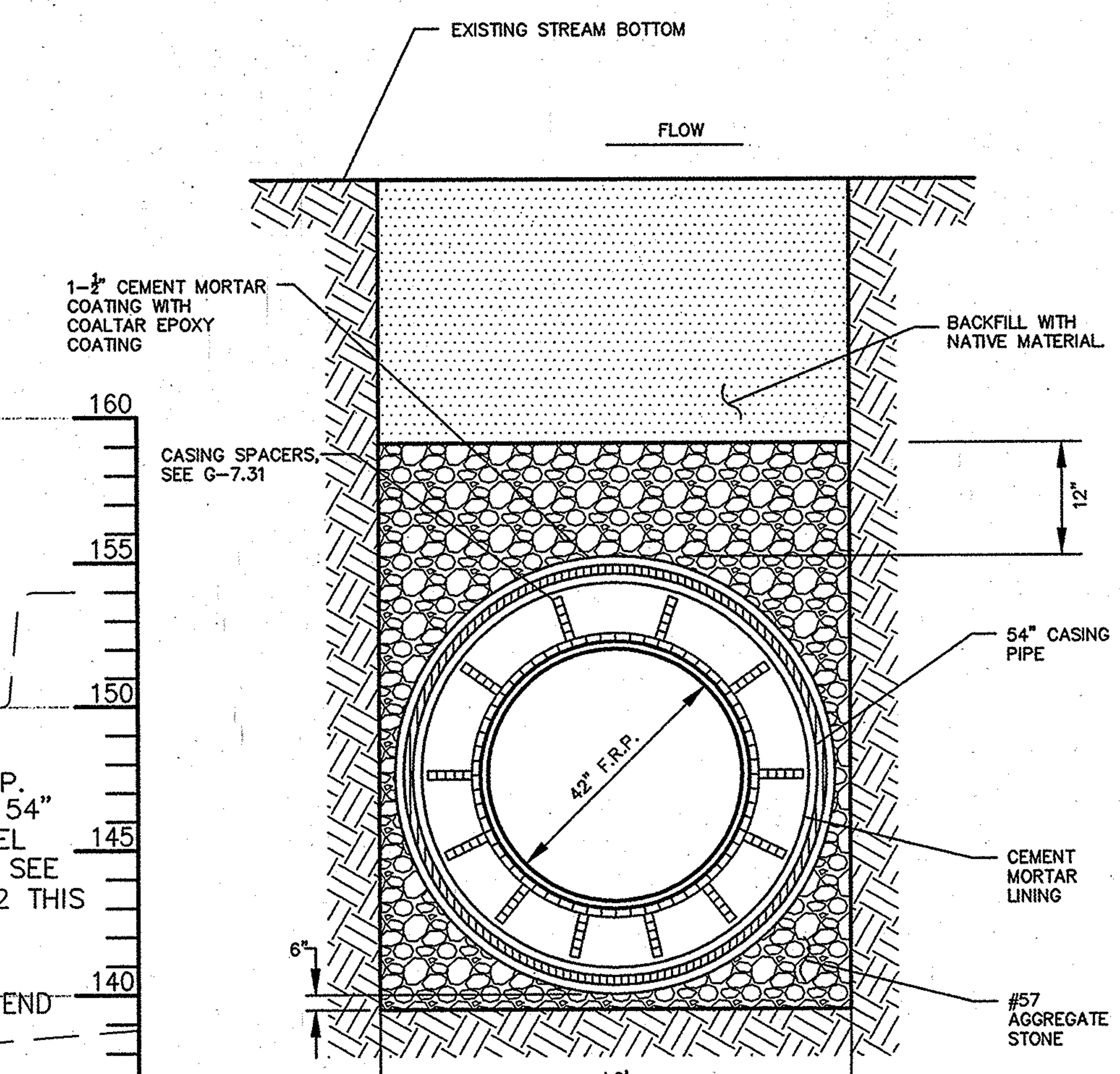
STREAM CROSSING DETAIL

1"=30'



PROFILE – STREAM CROSSING MH 207A TO MH 208B

SCALE: 1"=50' HORIZ
1"=5' VERT.



NOTES:

1. STEEL CASING PIPE TO BE 54" I.D. x ½" THICK WITH CEMENT MORTAR LINING ON INSIDE.
2. 42" F.R.P. AND 54" STEEL PIPE SHALL BE INSTALLED USING THE OPEN CUT METHOD.
3. CASING SPACERS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
4. CONTRACTOR SHALL PREVENT FLOTATION OF CARRIER PIPE DURING INSTALLATION.
5. CONTRACTOR TO SEAL ENDS OF STEEL CASING W/ RUBBER END SEALS AS PER HOCO DETAIL G–7.31.
6. STEEL CASING PIPE SHALL CONFORM TO ASTM A1011, ASTM A1018 AND ASTM A139 GRADE B (36,000).
7. CEMENT MORTAR LINING SHALL CONFORM TO AWWA C200.

DETAIL 2
SECTION STREAM CROSSING

SCALE: NO SCALE

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER ____________ DATE

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

ENGINEER ____________ DATE

This plan is approved for soil erosion and sediment control by the Howard Soil Conservation

HOWARD SOIL CONSERVATION DISTRICT ____________ DATE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/16/08	CHIEF, BUREAU OF ENGINEERING	DATE 12/12/08
CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

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STATE OF MARYLAND — FRANK H. DONALDSON — NO. 8146 REGISTERED PROFESSIONAL ENGINEER — 8/8/11

DES: C.H.				
DRN: B.K.B.				
CHK: G.C.L.				12/10
DECEMBER, 2008	BY	NO.	REVISION	DATE

STREAM CROSSING PLAN & DETAILS

600' SCALE MAP 47 | BLOCK 10, 16, 17, & 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S–6175
CONTRACT NO. 20–4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 15 OF 27

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