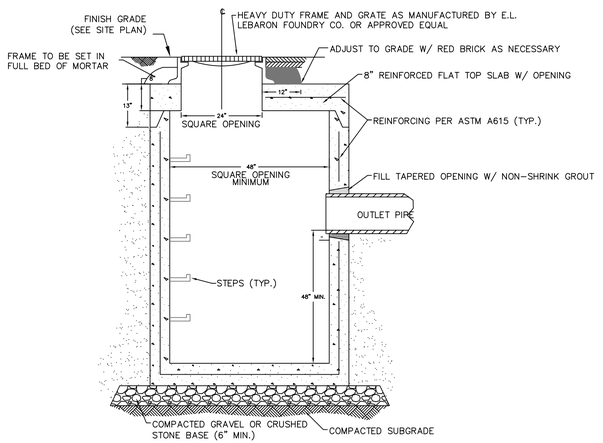
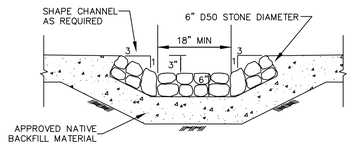


NOTES:
1. STRUCTURE COVER PER DRAINAGE STRUCTURE SCHEDULE.

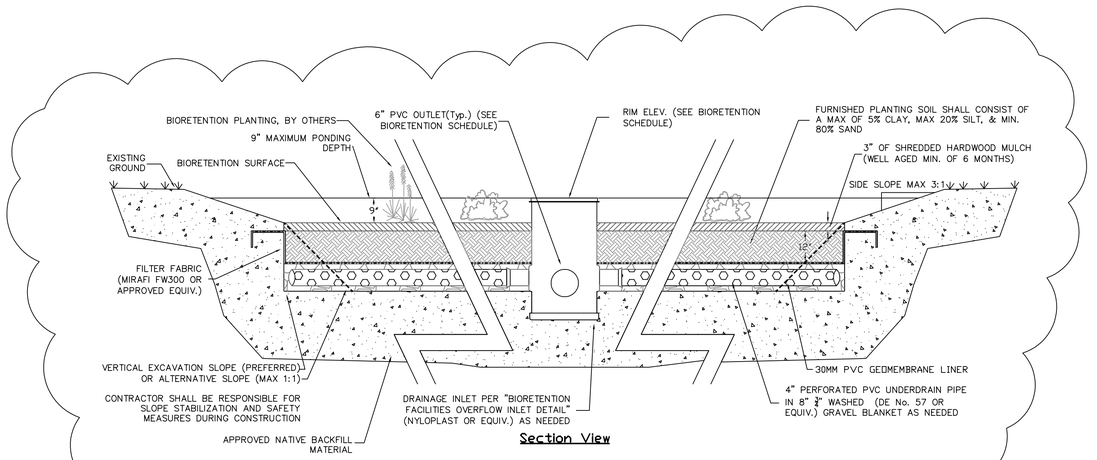
STANDARD PRECAST CONCRETE CATCHBASIN (CB) DETAIL

NOT TO SCALE



TYPICAL BIORETENTION OVERFLOW SPILLWAY

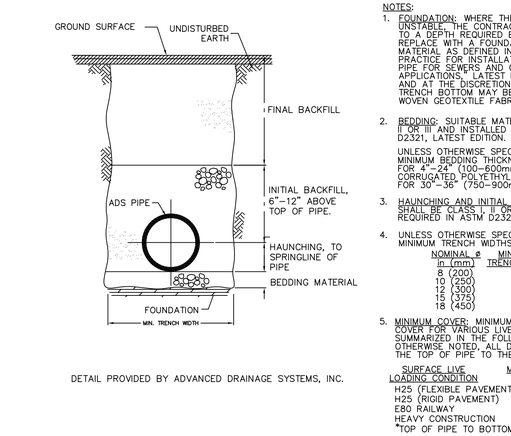
NOT TO SCALE



LINED BIORETENTION DETAIL

NOT TO SCALE

SEE NOTES SHEET FOR BIORETENTION SPECIFICATIONS



DETAIL PROVIDED BY ADVANCED DRAINAGE SYSTEMS, INC.

NOTES:
1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I, OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.
2. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
   UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100-600mm) AND 42"-48"(1050-1200mm) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150mm) FOR 30"-36" (750-900mm) CPEP.
3. HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
4. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

NOMINAL ⌀ in (mm)	MIN. RECOMMENDED TRENCH WIDTH, in (mm)
8 (200)	25 (630)
10 (250)	28 (710)
12 (300)	31 (790)
15 (375)	34 (860)
18 (450)	39 (990)

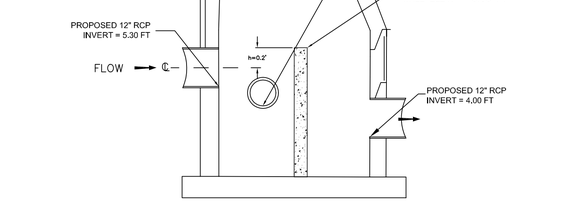
5. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED COVER, in (mm)
H25 (FLEXIBLE PAVEMENT)	12 (300)*
H25 (RIGID PAVEMENT)	12 (300)
E80 RAILWAY	24 (610)
HEAVY CONSTRUCTION	48 (1220)

*TOP OF PIPE TO BOTTOM OF BITUMINOUS PAVEMENT

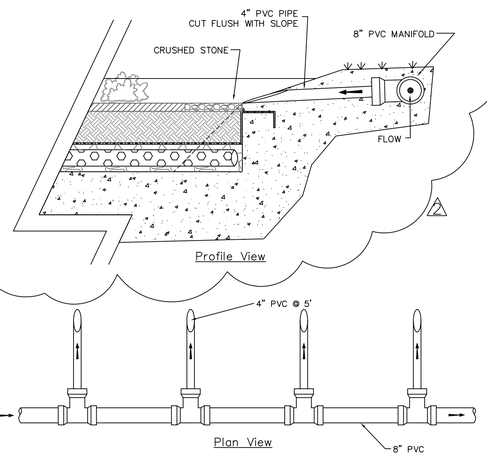
TYPICAL HDPE TRENCH DETAIL

NOT TO SCALE



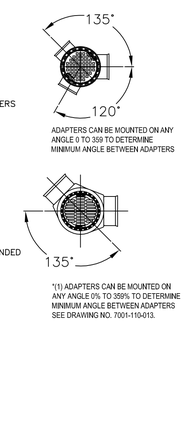
DMH #3 DIVERSION MANHOLE DETAIL

NOT TO SCALE



BIORETENTION MANIFOLD INFLOW TYPE DETAIL

NOT TO SCALE

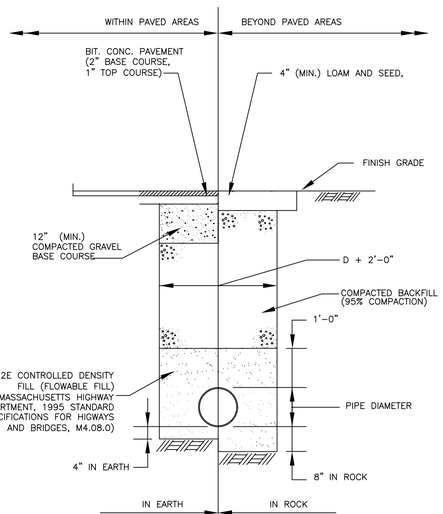


*(1) ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0% TO 359% TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-013.

BIORETENTION FACILITY OVERFLOW INLET

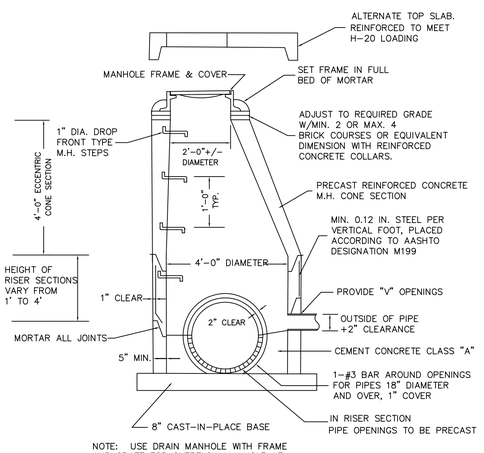
NOT TO SCALE

BY "NYLOPLAST" OR APPROVED EQUIVALENT FOR BIORETENTION AREAS 1 & 3B



TYPICAL PAVEMENT CUT DRAINAGE TRENCH DETAIL

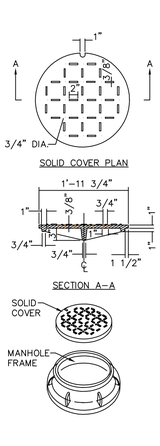
NOT TO SCALE

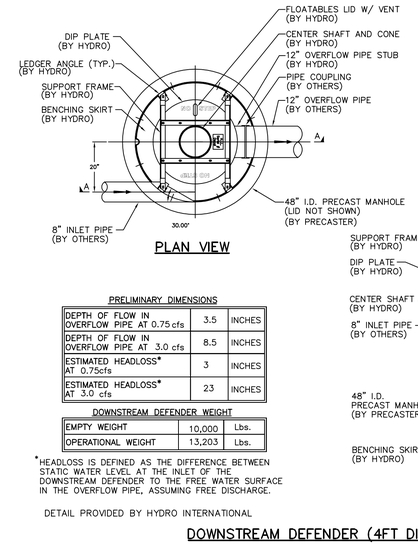


NOTE: USE DRAIN MANHOLE WITH FRAME AND GRATE FOR OVERFLOW MANHOLE AT BIORETENTION 3B-4A (DMH 5)

PRECAST CONCRETE DRAIN MANHOLE

NOT TO SCALE





PLAN VIEW

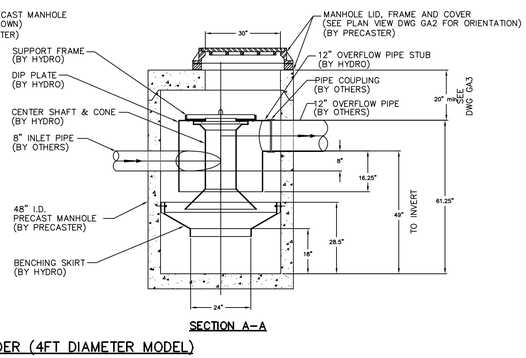
PRELIMINARY DIMENSIONS		
DEPTH OF FLOW IN OVERFLOW PIPE AT 0.75 cfs	3.5	INCHES
DEPTH OF FLOW IN OVERFLOW PIPE AT 3.0 cfs	8.5	INCHES
ESTIMATED HEADLOSS* AT 0.75cfs	3	INCHES
ESTIMATED HEADLOSS* AT 3.0 cfs	23	INCHES

DOWNSTREAM DEFENDER WEIGHT		
EMPTY WEIGHT	10,000	Lbs.
OPERATIONAL WEIGHT	13,203	Lbs.

*HEADLOSS IS DEFINED AS THE DIFFERENCE BETWEEN STATIC WATER LEVEL AT THE INLET OF THE DOWNSTREAM DEFENDER TO THE FREE WATER SURFACE IN THE OVERFLOW PIPE, ASSUMING FREE DISCHARGE.

DETAIL PROVIDED BY HYDRO INTERNATIONAL

NOTES:
1. THIS DRAWING IS A LEDGER SIZE ORIGINAL.
2. DIMENSIONS ARE GENERAL AND INTENDED FOR GUIDANCE ONLY.
3. THE ORIENTATION OF INLET PIPE AND OVERFLOW PIPE CAN BE ADJUSTED TO SITE REQUIREMENTS. SEE SITE PLAN FOR ORIENTATION.
4. INLET PIPE MUST BE TANGENT TO PRECAST MANHOLE I.D. AS SHOWN.
5. OVERFLOW PIPE STUB O.D. MATCHES SDR35 O.D.
6. 304 SS EXPANSION ANCHOR BOLTS TO BE SUPPLIED BY PRECASTER.
7. METRIC DIMENSIONS BASED ON 25.4mm/INCH.



SECTION A-A

DOWNSTREAM DEFENDER (4FT DIAMETER MODEL)

NOT TO SCALE

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Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Checked By: RAC
Drawn By: EW
Designed By: TW
Survey By: DWM
Date: 04/14/05

PLAN TITLE:
DETAILS SHEET 1
ISLAND WHARF
STORMWATER IMPROVEMENTS
MARION, MASSACHUSETTS

Revisions

Rev.	Date	By	Appr.	Description
1	5/13/05	TW	CW	Revisions per Town Comments
2	5/23/05	EW	CW	Revised Bioretention Detail

Prepared For:
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02738
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Project Number:
5022

Sheet Number:
5

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