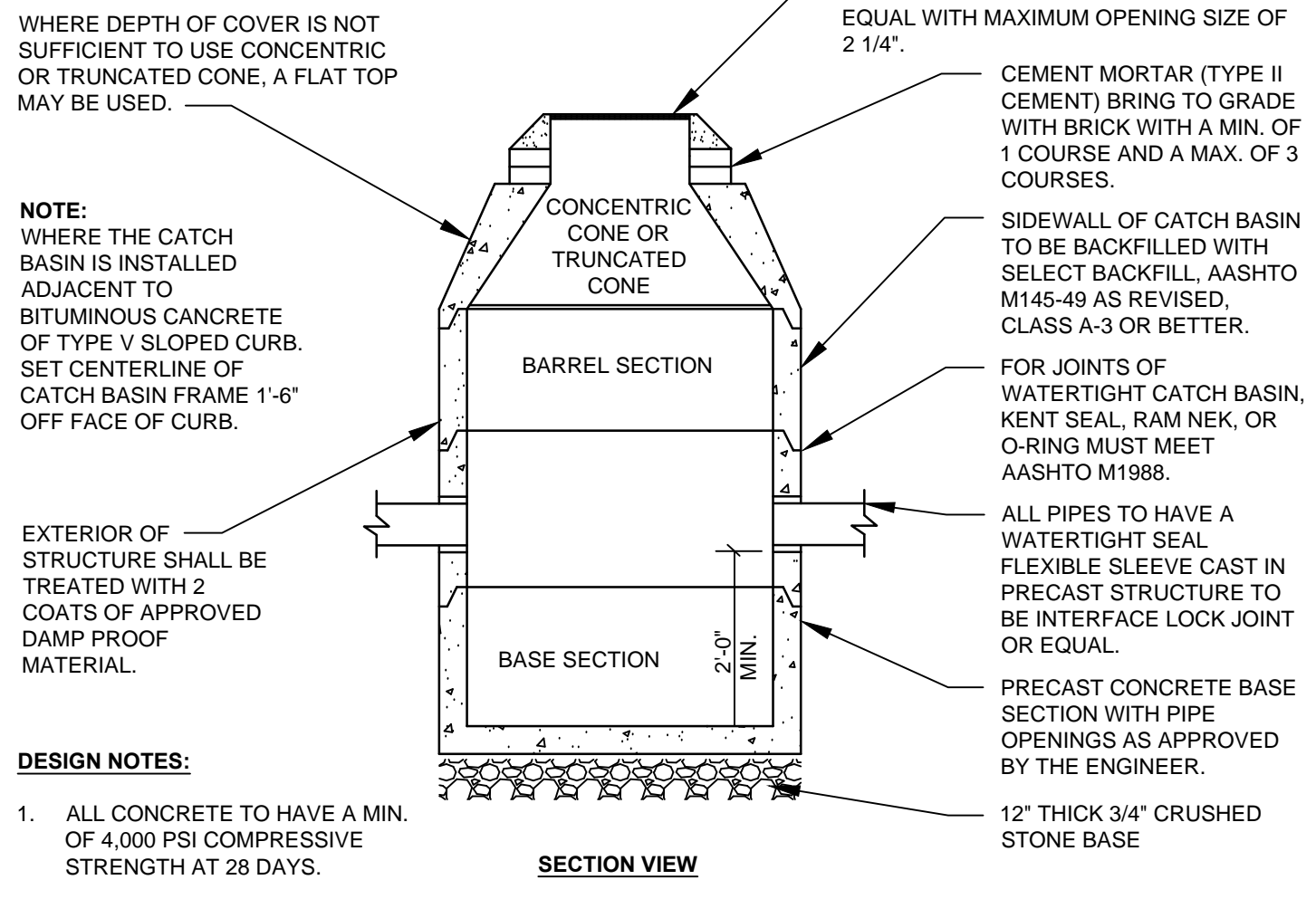
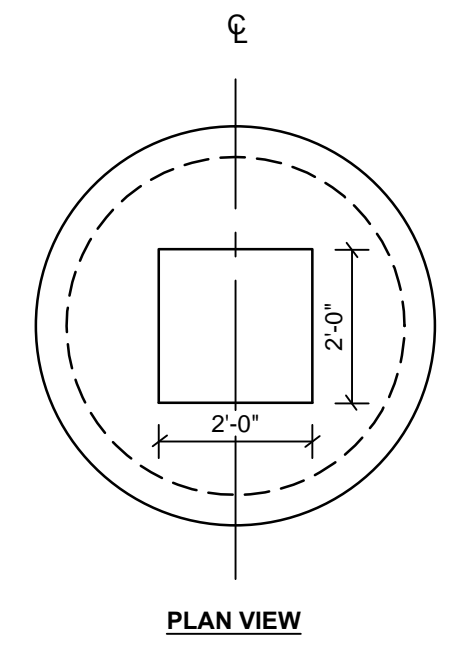


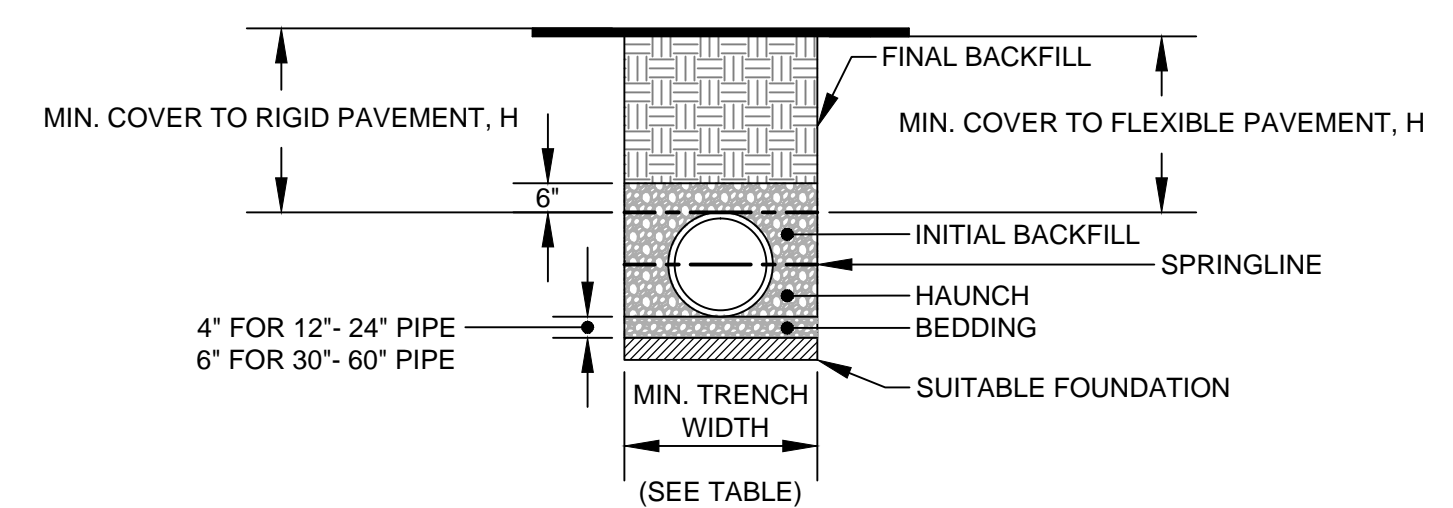
NOTE: PIPE CONNECTIONS SHALL BE WATERTIGHT FLEXIBLE BOOT CONNECTORS PROVIDES LEAKPROOF CONNECTION

PRECAST CONCRETE MANHOLE
NOT TO SCALE



- DESIGN NOTES:**
- ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
 - DESIGN LOAD FOR H-20 WHEEL LOAD.
 - CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
 - REINFORCE TO 0.12 IN SQ./LF..

TYPICAL CATCH BASIN
NOT TO SCALE



- NOTES:**
- 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.
 - MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
 - 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.
 - 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-900mm).
 - 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. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
 - 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 FLOATION. 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.
 - INSULATION: RIGID INSULATION SHALL BE PROVIDED FOR PIPES WITH LESS THAN 4" OF COVER IN ACCORDANCE WITH THE FOLLOWING TABLE:

RECOMMENDED MINIMUM TRENCH WIDTHS

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"

MINIMUM RECOMMENDED COVER BASED ON VEHICLE LIVE LOADING CONDITIONS

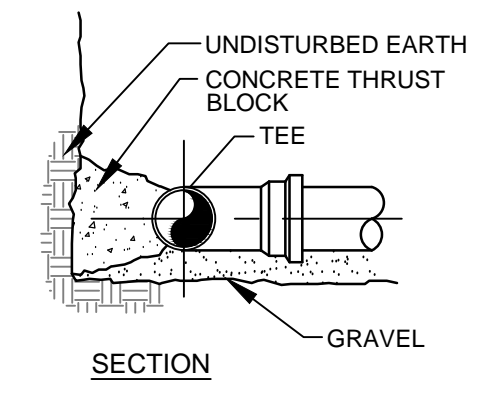
PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

COVER OVER PIPE INSULATION THICKNESS

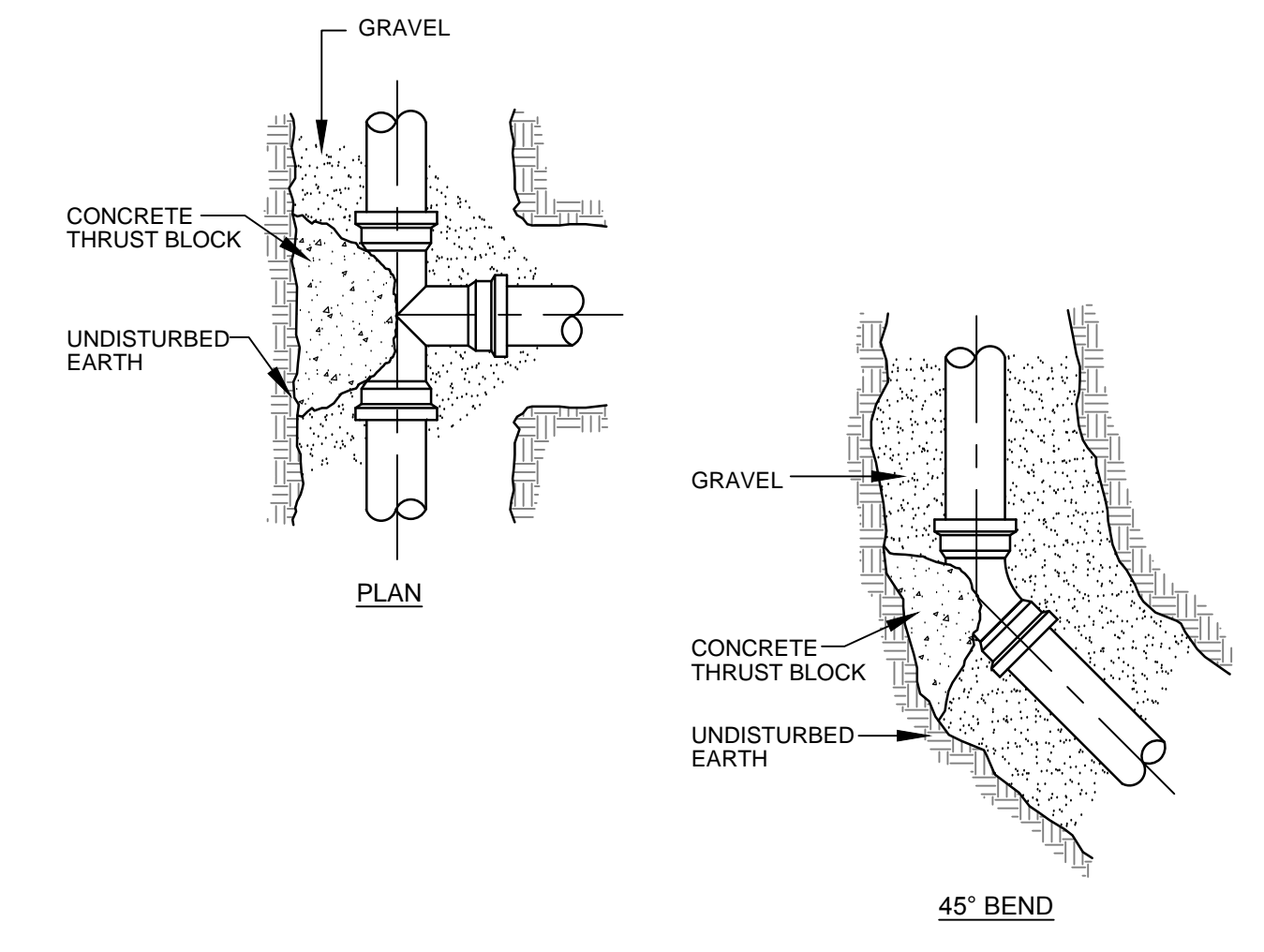
COVER OVER PIPE	INSULATION THICKNESS
12" - 24"	3"
24" - 36"	2"
36" - 48"	1"
48"+	NONE

TYPICAL TRENCH DETAIL
NOT TO SCALE

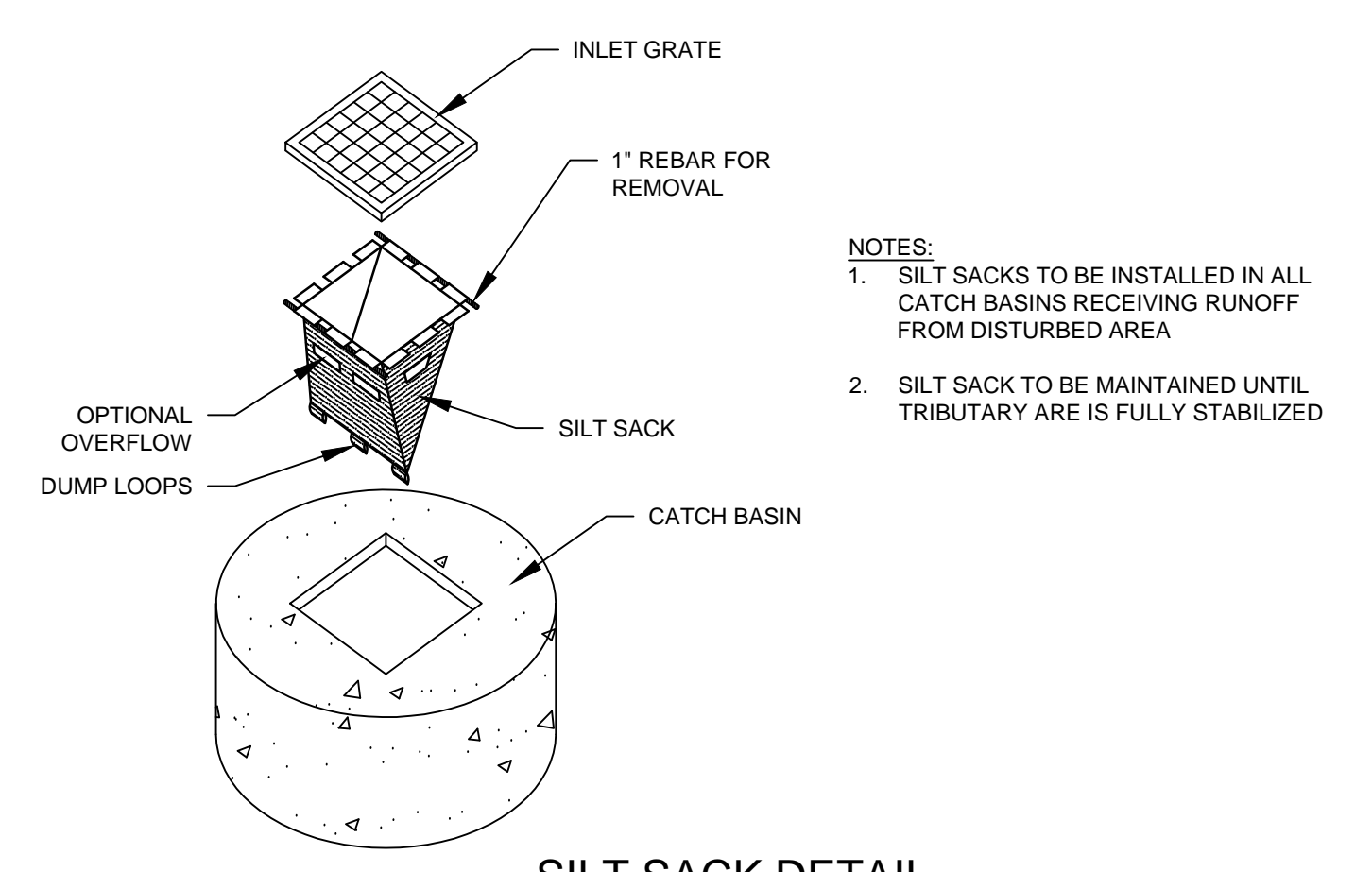


CONCRETE THRUST BLOCK SIZE REQUIREMENTS

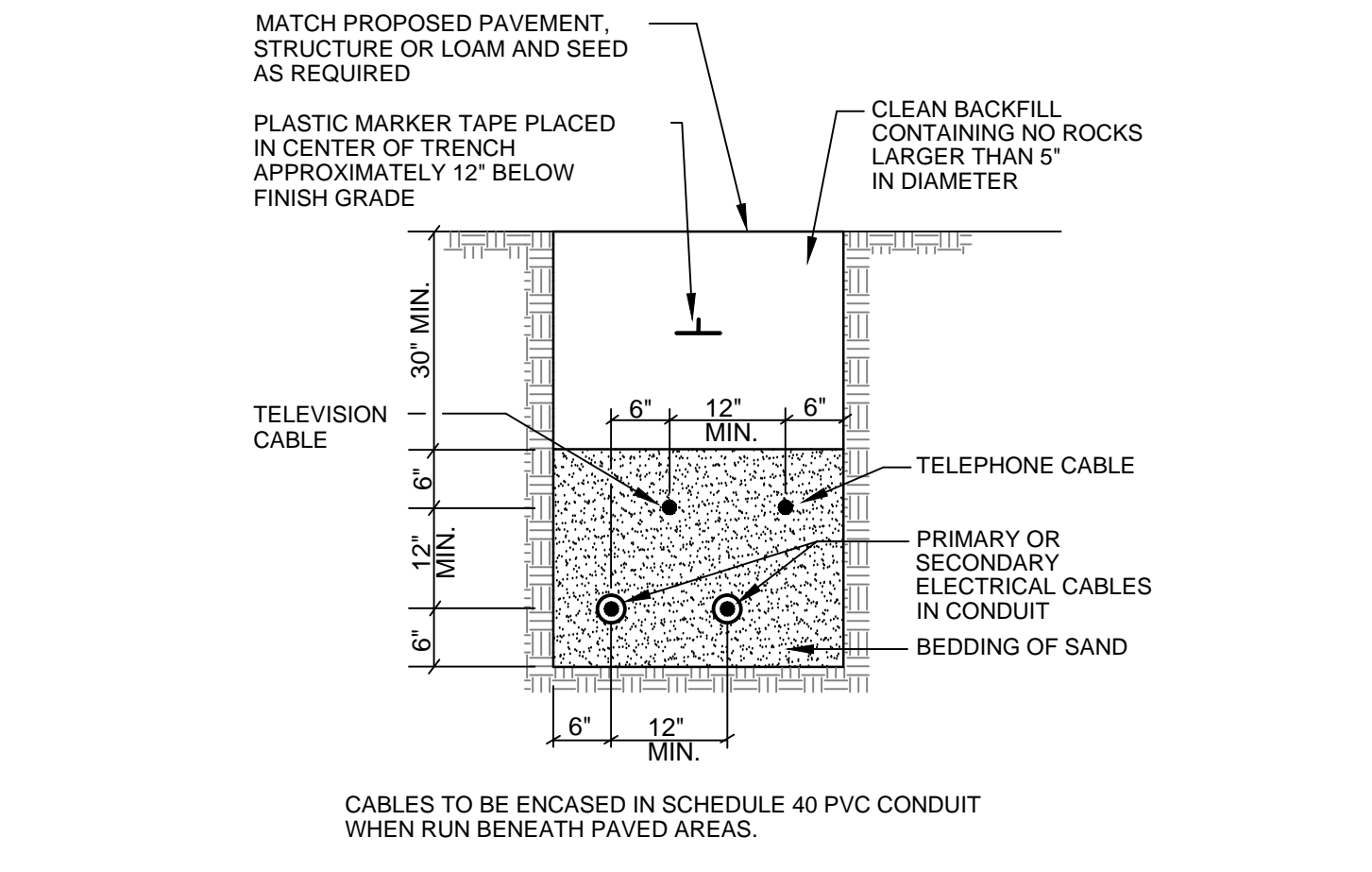
FITTINGS	SQ. FT. OF BEARING ON UNDISTURBED SOIL		
	90° BENDS	45° BENDS	TEES AND PLUGS
PIPE SIZE			
6"	4.0	2.0	3.0
8"	8.0	4.0	6.0
12"	15	10	10



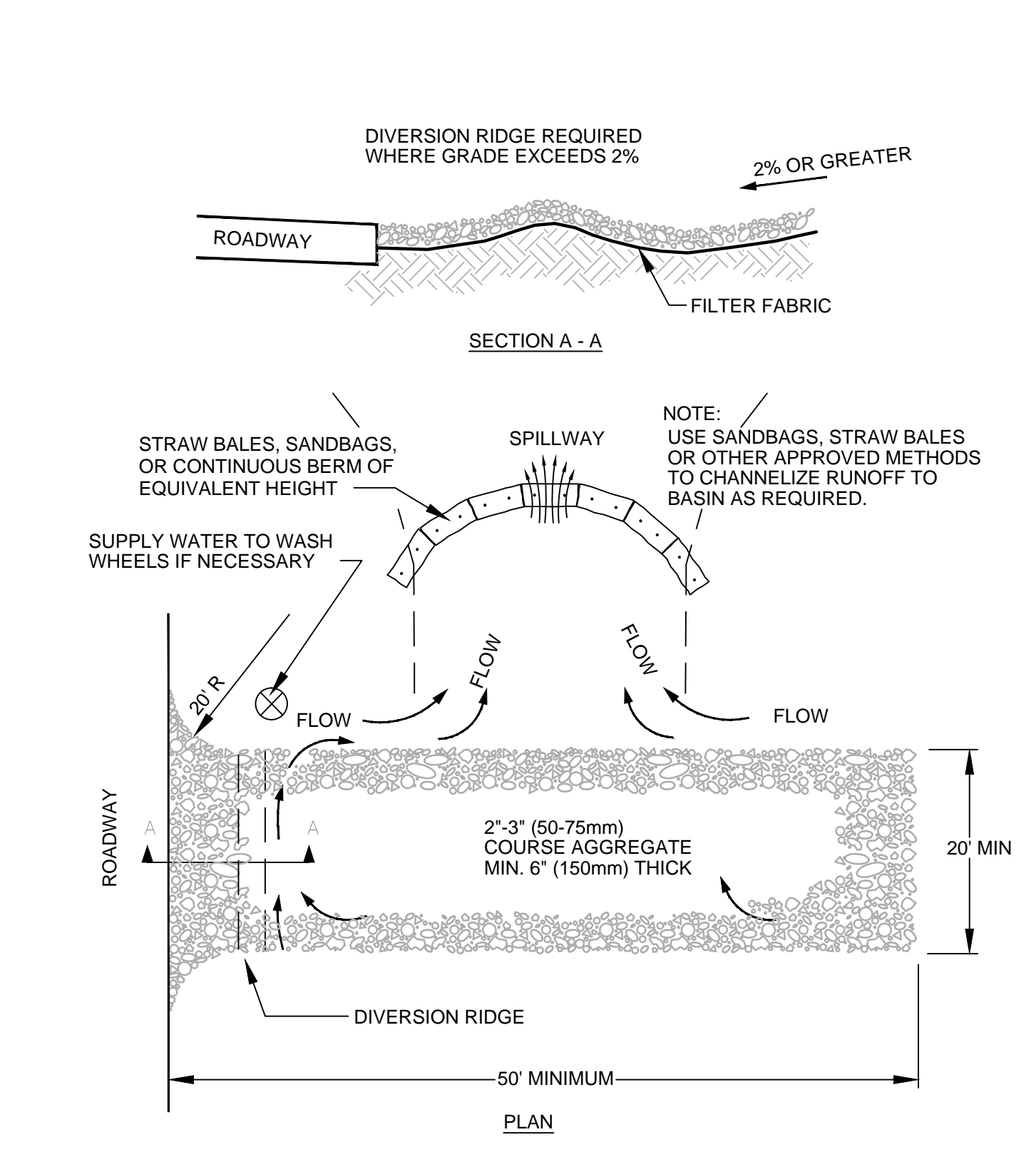
TEE & BEND DETAIL
NOT TO SCALE



SILT SACK DETAIL
NOT TO SCALE

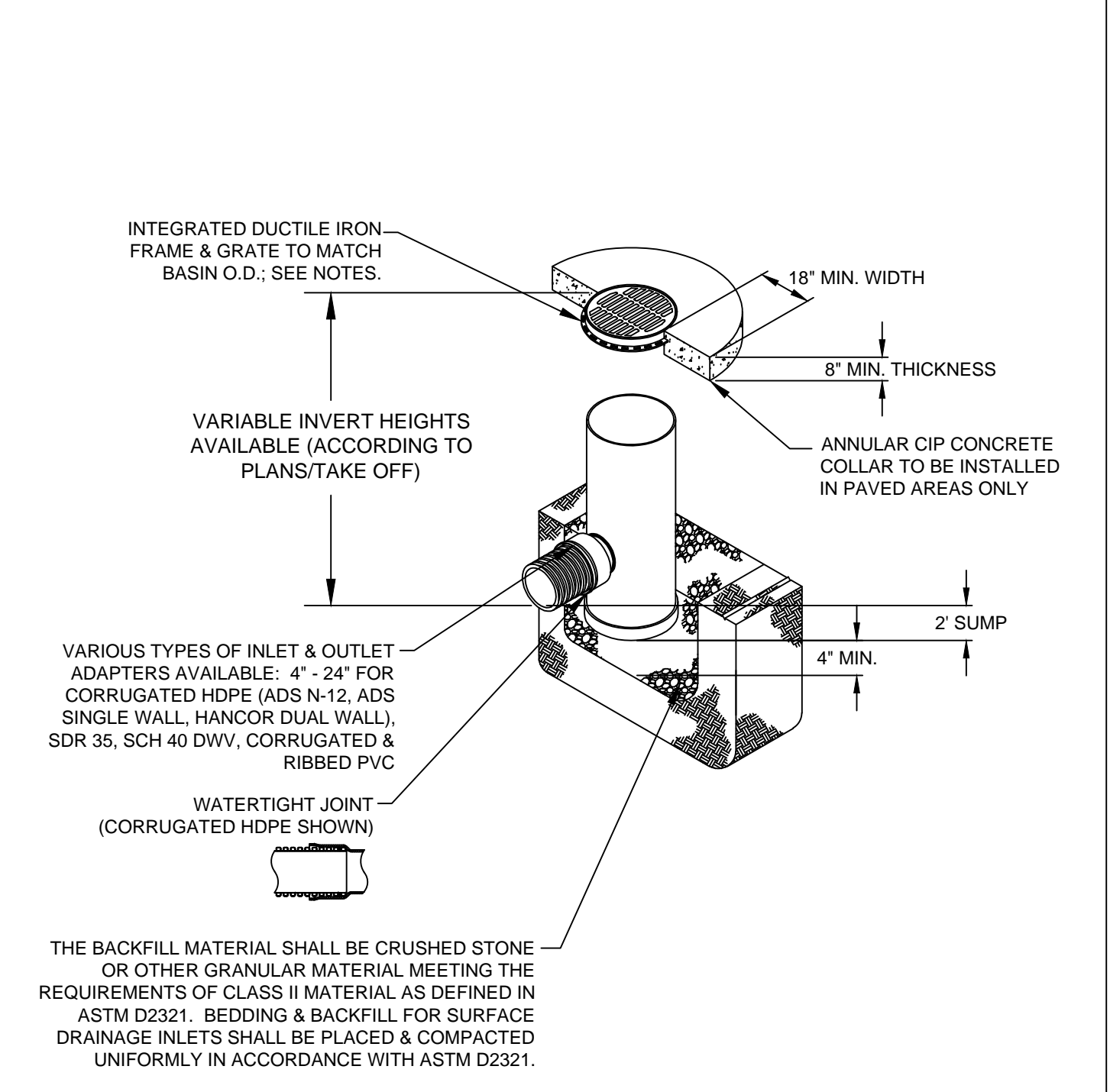


TYPICAL UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



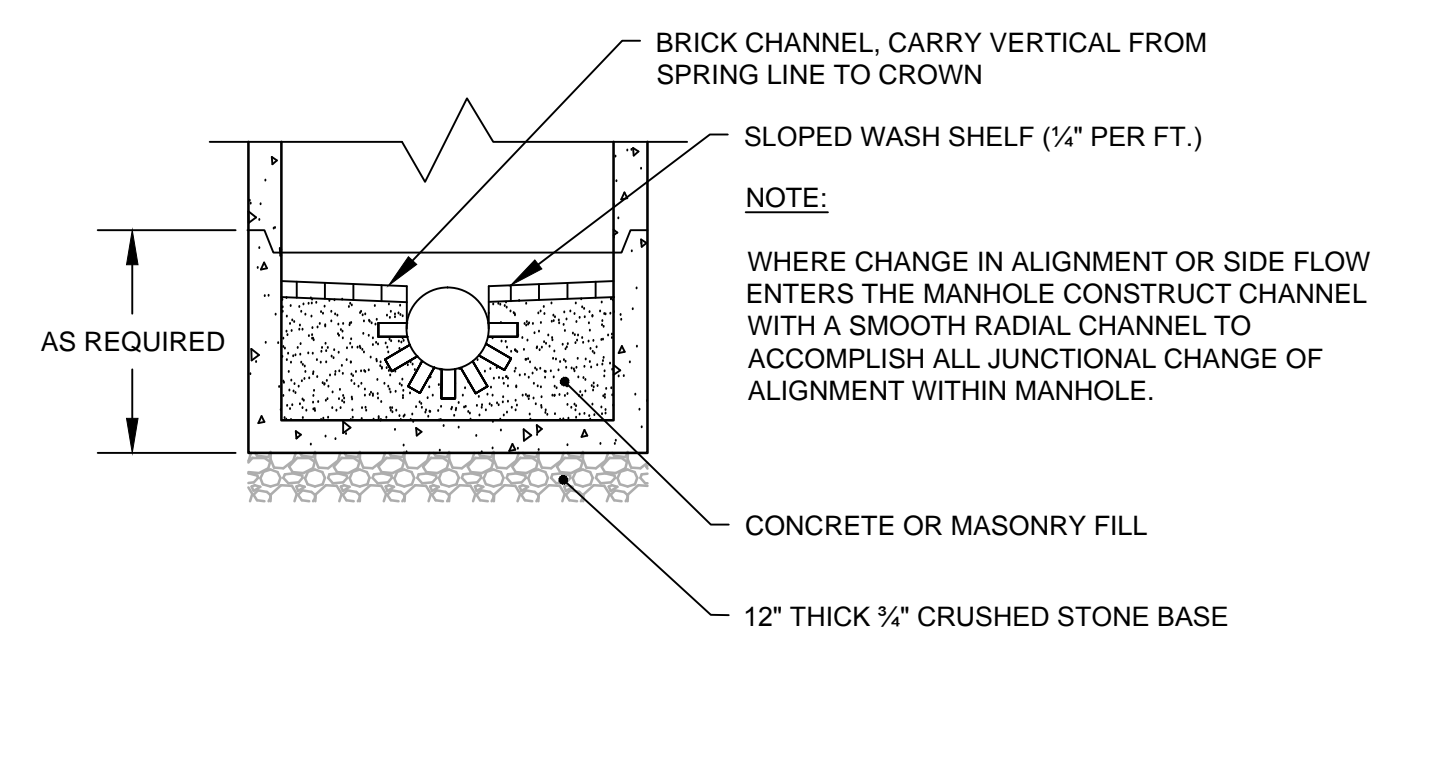
- NOTES:**
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 - WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 - WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

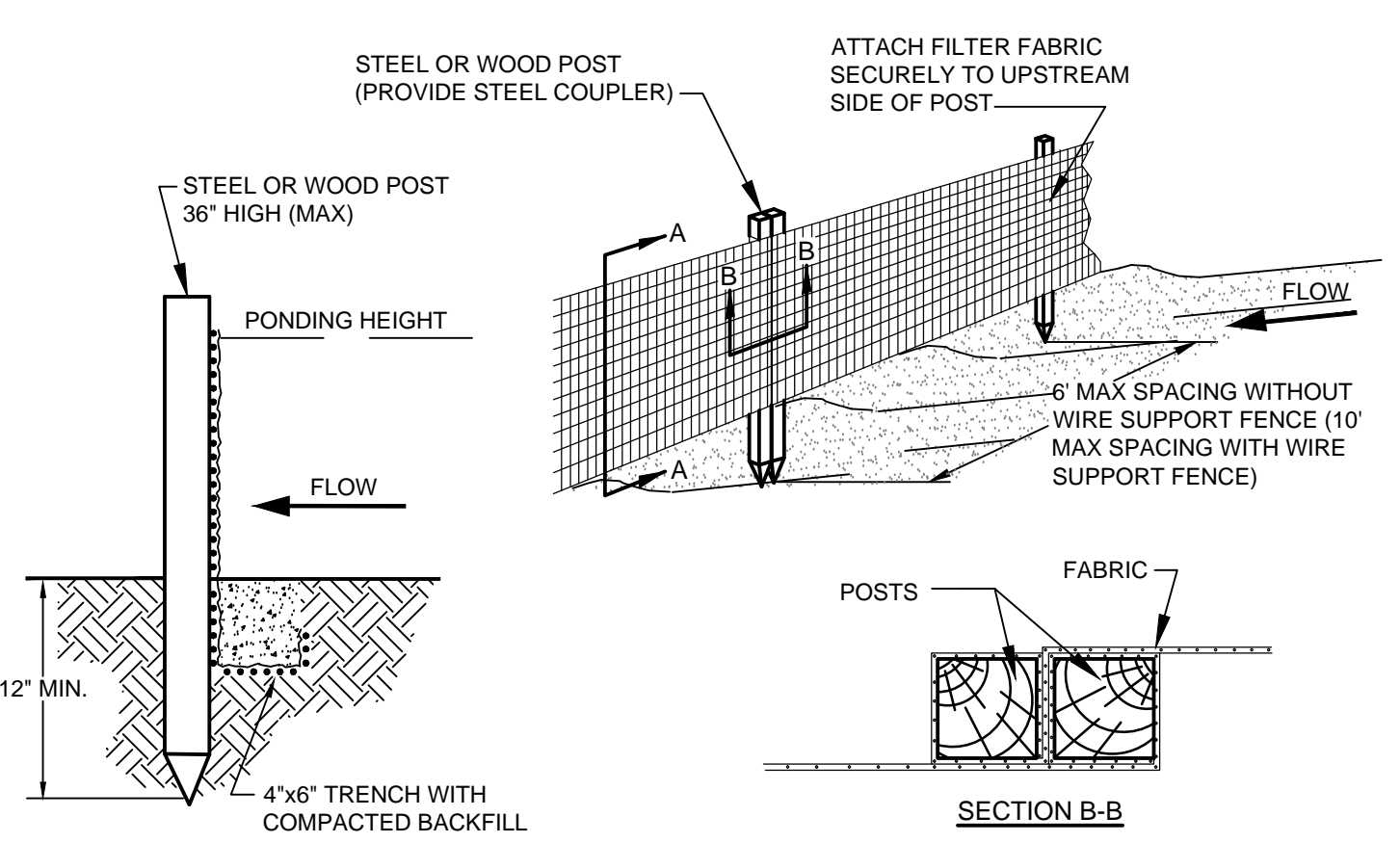


- NOTES:**
- GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOCK DUAL WALL) & SDR 35 PVC.
 - ALL CATCH BASINS SHALL HAVE STANDARD H-20 GRATES.
 - ALL DRAIN MANHOLES SHALL HAVE SOLID COVER.

NYLOPLAST DRAIN BASIN
NOT TO SCALE



MANHOLE CHANNEL INVERT INSTALLATION
NOT TO SCALE



SILT FENCE
NOT TO SCALE



P.E. MICHAEL E. TADEMAWIELAND
DATE: 3/20/2018

NO.	DATE	REVISIONS
1	4-25-2017	MTW APPD
2	8-7-2017	MTW PER STAFF & PEER REVIEW COMMENTS
3	8-29-2017	REMOVED SIDEWALK ON ADJUTING CITY PARCEL
4	9-13-2017	REMOVED PER STAFF COMMENTS
5	1-11-2018	ISSUED FOR BID
6	2-22-2018	REVISED LIGHT POLE LOCATION
7	3-20-2018	REVISED PER CITY OF PORTLAND STAFF COMMENTS

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Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
ONEJOY PLACE
1 JOY PLACE, PORTLAND, MAINE 04102

PREPARED FOR
UTILITY & DRAINAGE DETAILS

DATE: 3/7/2017
SCALE: N.T.S.
DESIGNED: MTW
JOB NO: 1704
FILE: 1704-DETAILS.DWG
SHEET **C-6.1**