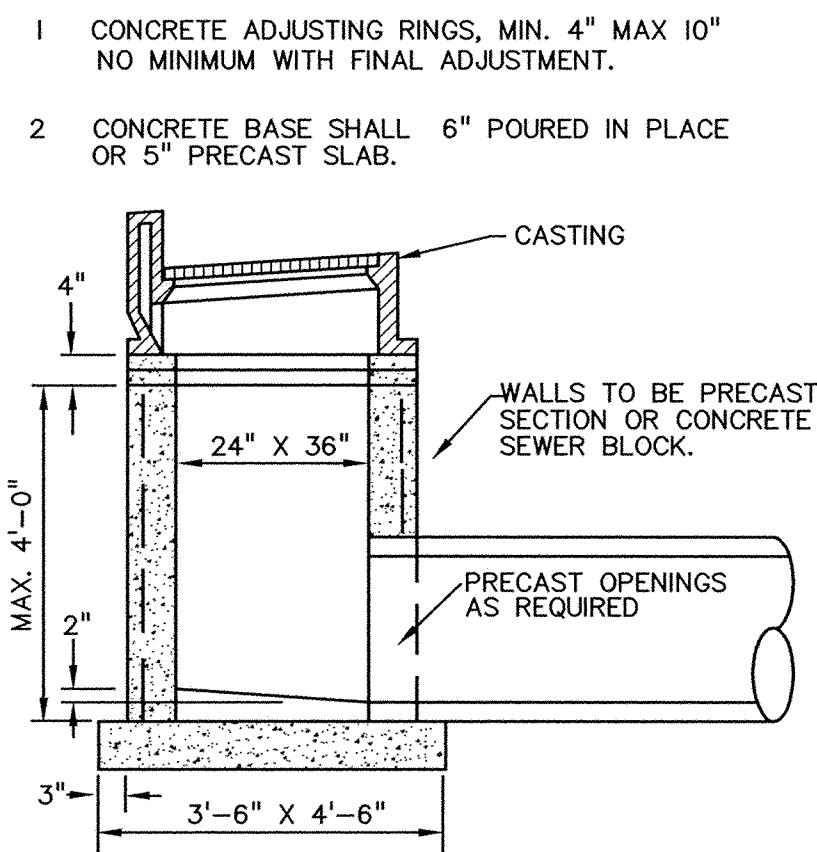
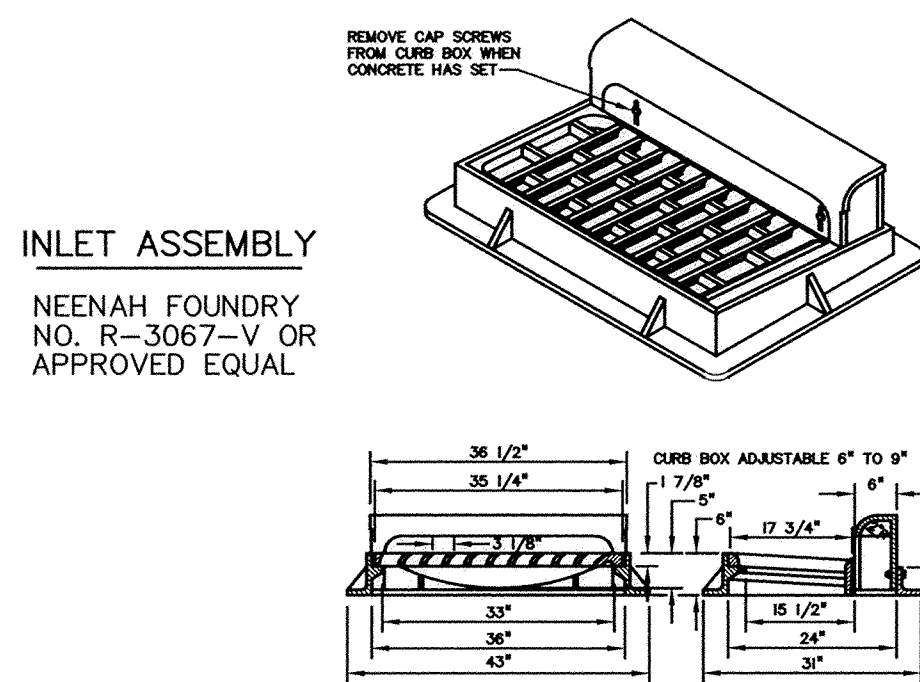


SURMOUNTABLE CASTING

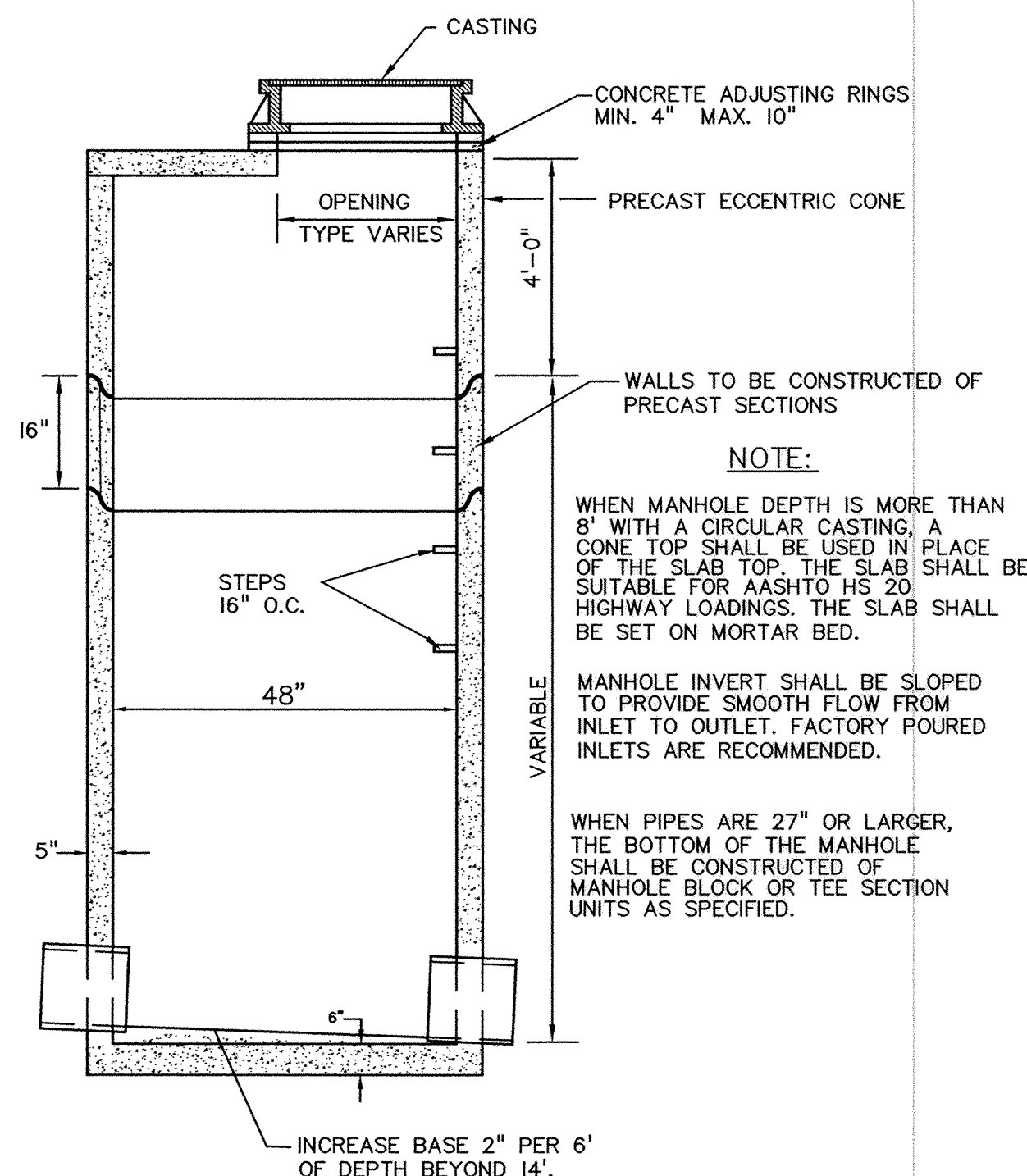


CATCHBASIN - RECTANGULAR - 24" X 36"



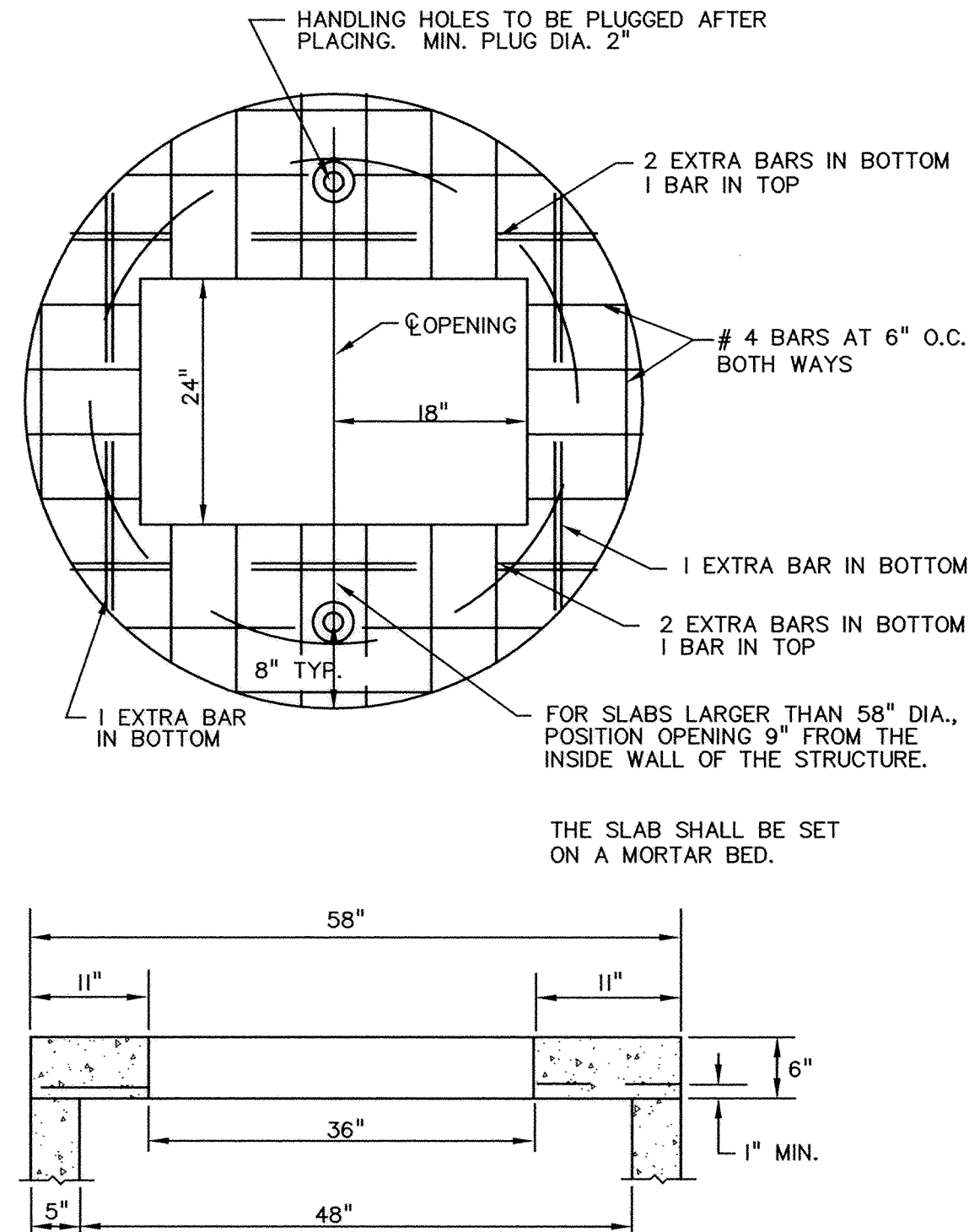
ALL STORM CASTINGS SHALL BE NEENAH R-3067-V OR EQUAL UNLESS OTHERWISE NOTED

STANDARD INLET CASTING



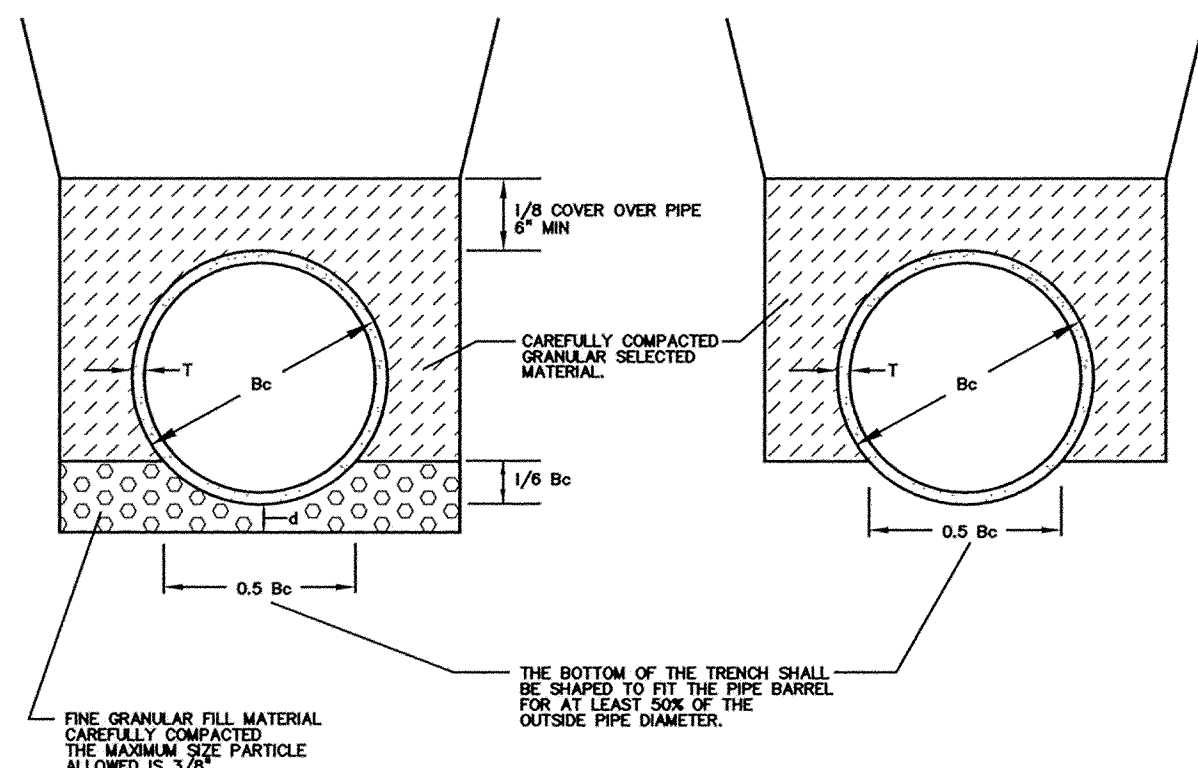
NOTE:

STANDARD MANHOLE FOR STORM SEWER



H.S. 20 DESIGN MANHOLE SLAB-TOP - RECTANGULAR

PIPE SIZE		d
<	30"	3"
30"	60"	4"
>	60"	6"



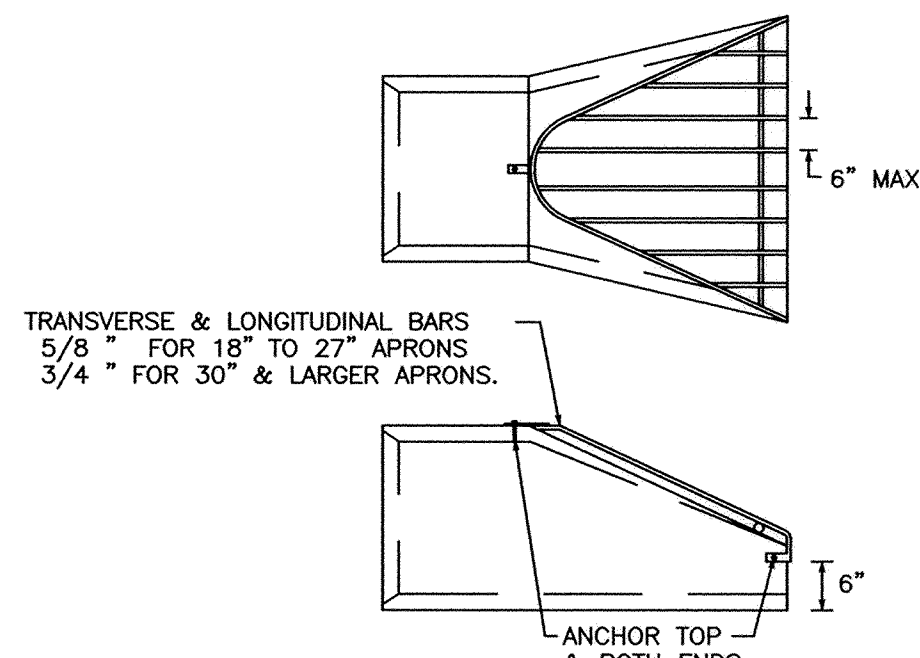
	OVER EXCAVATED TRENCH CONDITION		STD TRENCH CONDITION
--	---------------------------------	--	----------------------

REFERENCE:
CONCRETE PIPE DESIGN MANUAL
PREPARED BY AMERICAN CONCRETE PIPE INSTITUTE

NOTE:
FOR ROCK OR OTHER INCOMPRESSIBLE MATERIALS, THE TRENCH SHOULD BE OVEREXCAVATED A MINIMUM OF 6" AND REFILLED WITH GRANULAR MATERIAL.

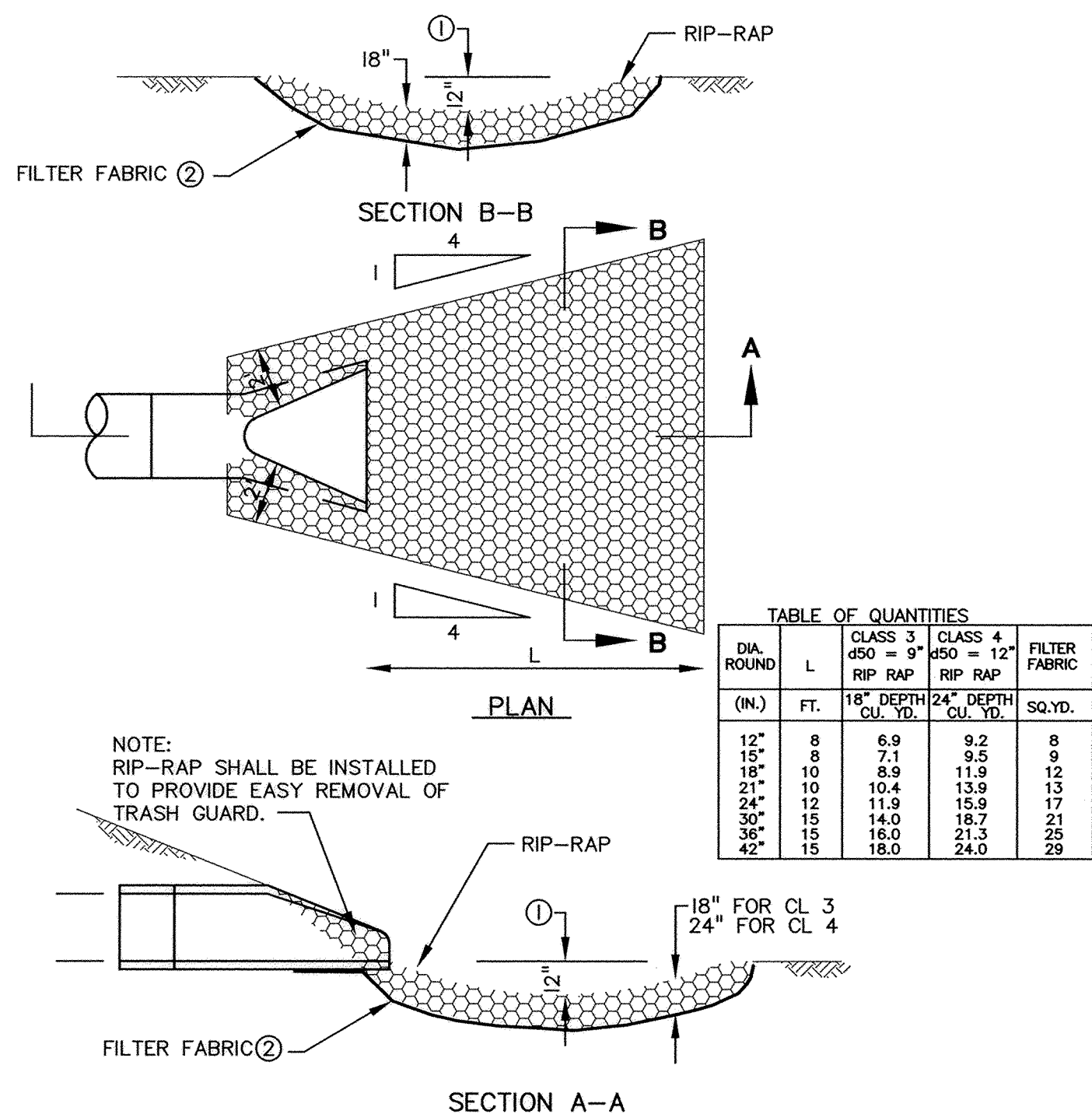
CLASS C PIPE BEDDING

DUAL WALL PIPE BEDDING



NOTE:

TRASH GUARD FOR END SECTION



DIA. ROUND	L	CLASS 3 d50 = 9"	CLASS 4 d50 = 12"	FILTER FABRIC
(IN.)	FT.	RIP RAP 18" DEPTH CU. YD.	RIP RAP 24" DEPTH CU. YD.	SQ. YD.
12"	8	6.9	9.2	8
15"	8	7.1	9.5	9
18"	10	8.9	11.9	12
21"	10	10.4	13.9	13
24"	12	11.9	15.9	17
30"	15	14.0	18.7	21
36"	15	16.0	21.3	25
42"	15	18.0	24.0	29

NOTE:
PIPE SIZES LARGER THAN THOSE SHOWN REQUIRE A SPECIAL DESIGN.

① FOR PIPES GREATER THAN OR EQUAL TO 30". USE 1.5'

② GEOTEXTILE FABRIC, MnDOT SPEC. 3733, SHALL COVER THE AREA OF THE RIPRAP AND EXTEND UNDER THE CULVERT APRON 3 FT.

RIP-RAP INSTALLATION

**BOGART, PEDERSON
& ASSOCIATES, INC.**

Signed: Chk Ott
CHRISTOPHER OTTERNESS
Date: 6-8-05 Reg. No. 41961

WEST OAKS
CITY OF ELK RIVER, MN.
WEST OAKS OF ELK RIVER, LLC
SANITARY SEWER, WATERMAIN,
STORM SEWER & STREET PLAN
DETAILS

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