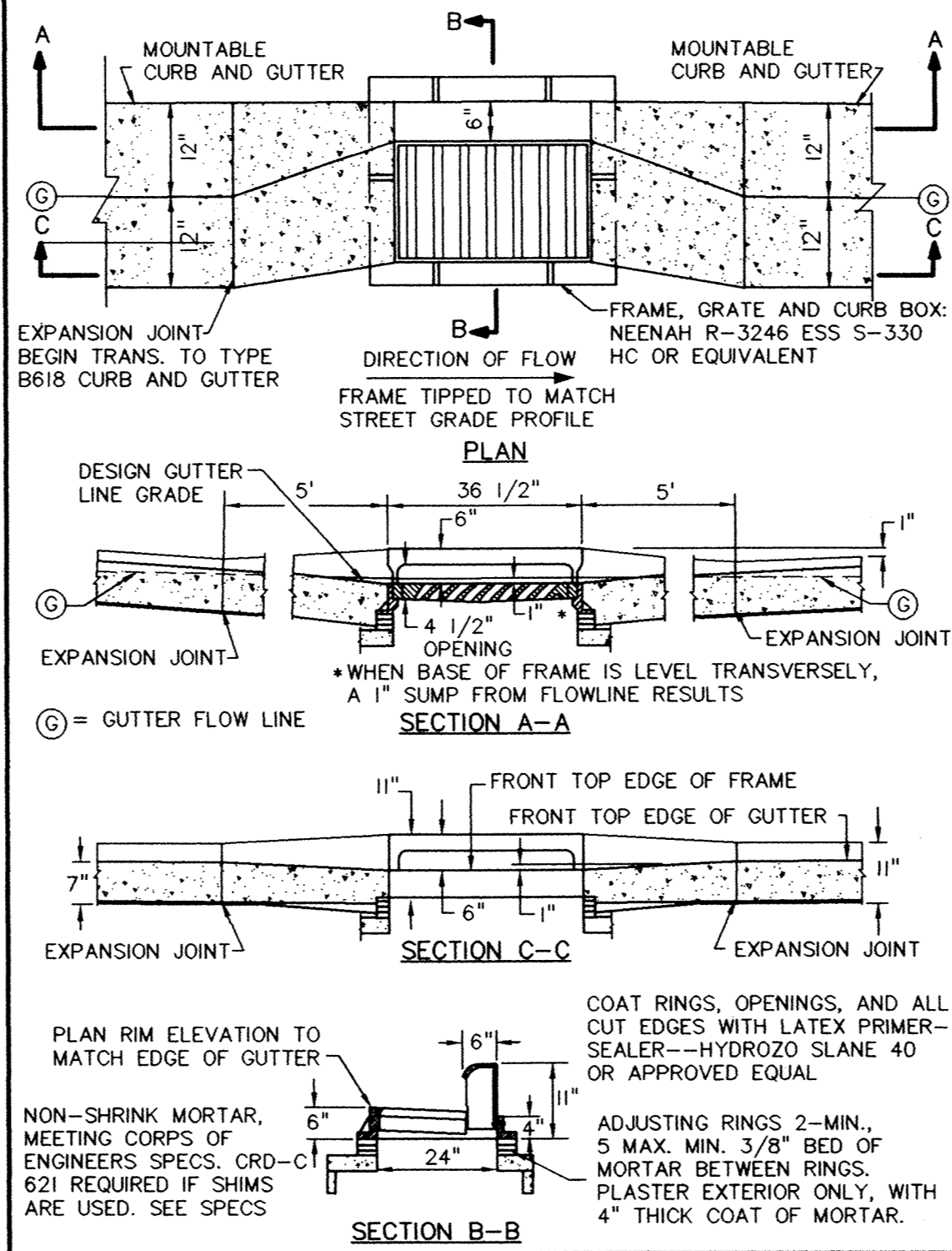


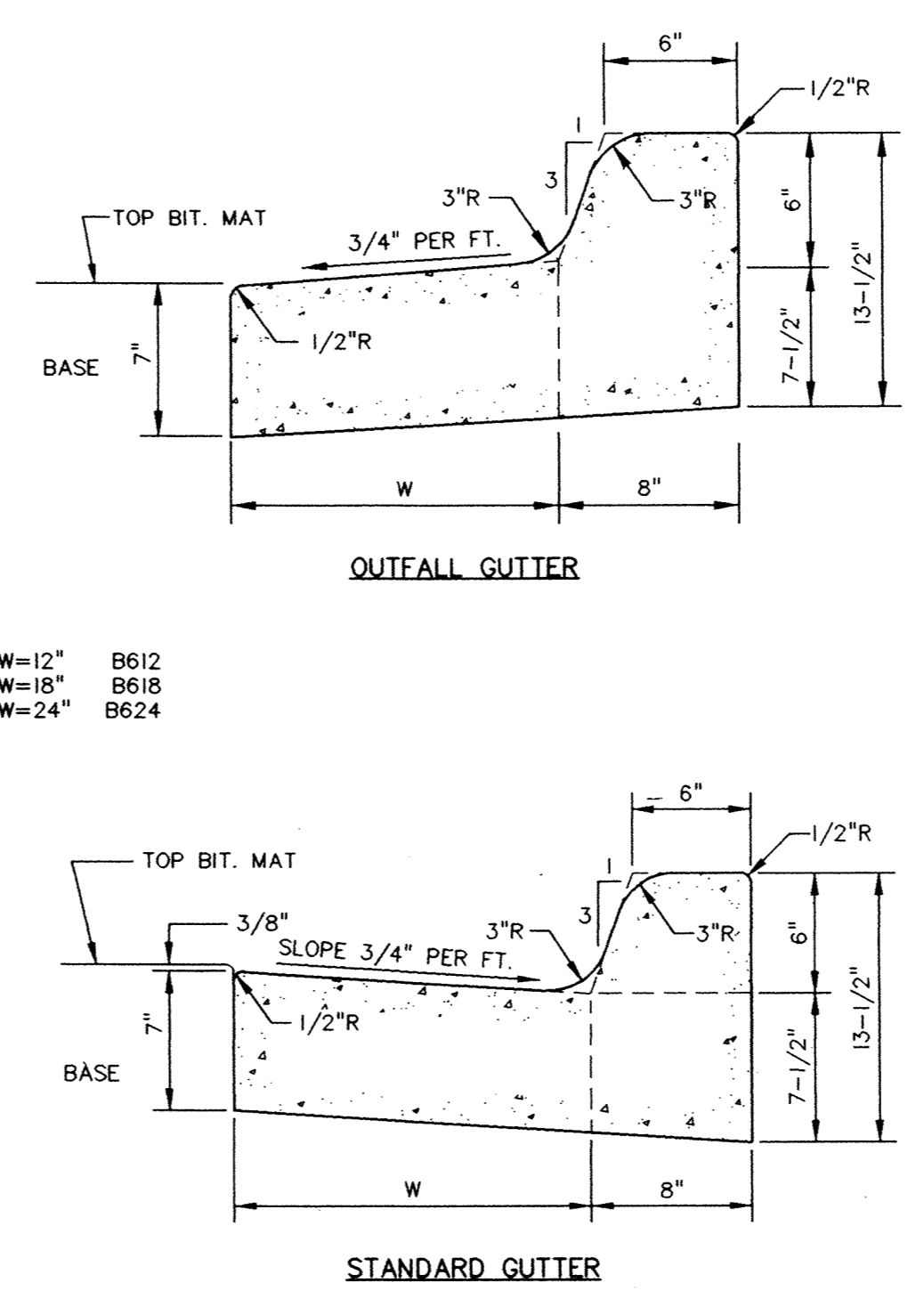
REFERENCE:
CONCRETE PIPE DESIGN MANUAL
PREPARED BY AMERICAN CONCRETE PIPE INSTITUTE

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

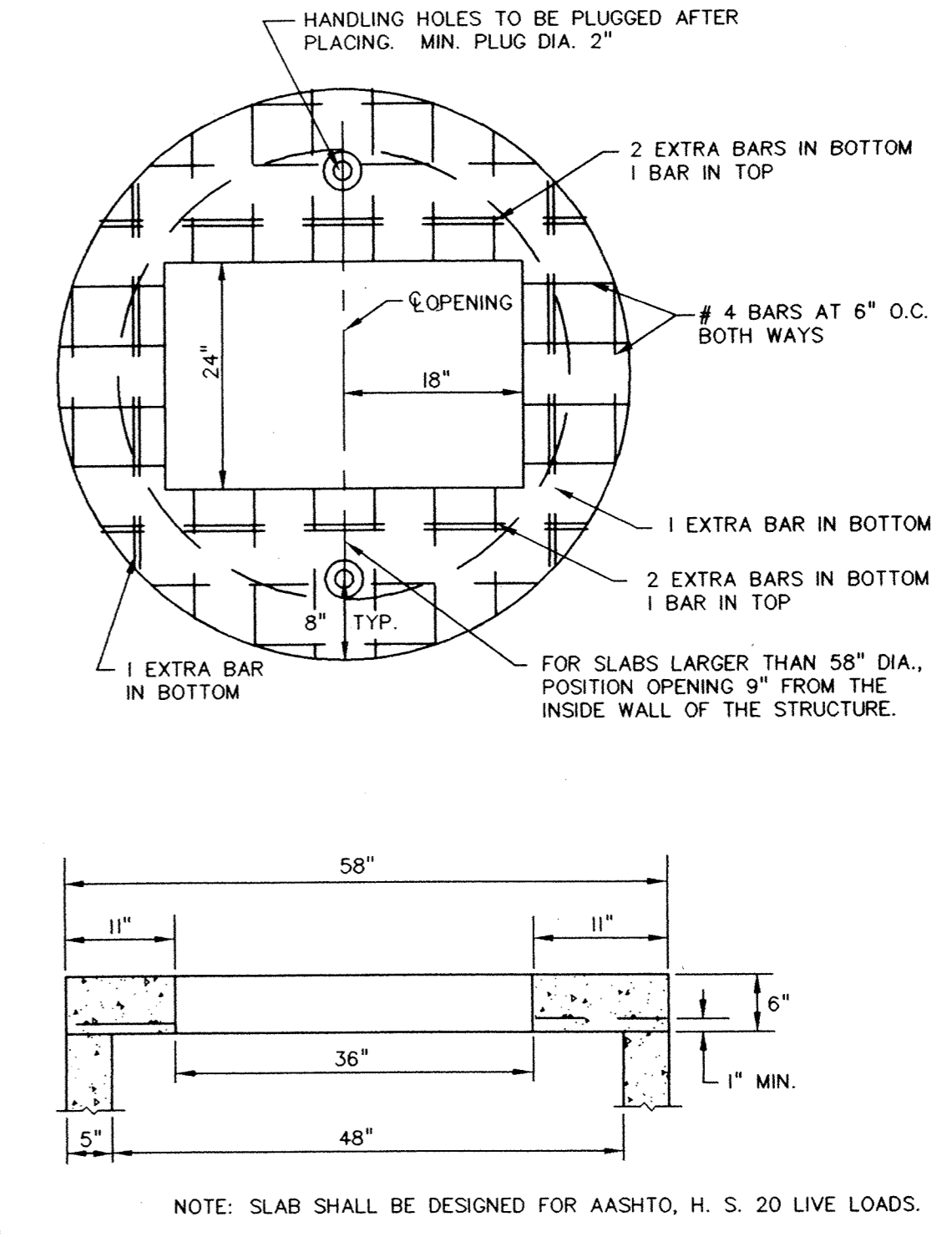
CLASS C CONCRETE PIPE BEDDING (S-10)



CATCH BASIN FRAME/MOUNTABLE CURB & GUTTER (R-SP-01)



"B" TYPE CONCRETE CURB & GUTTER (R-08)

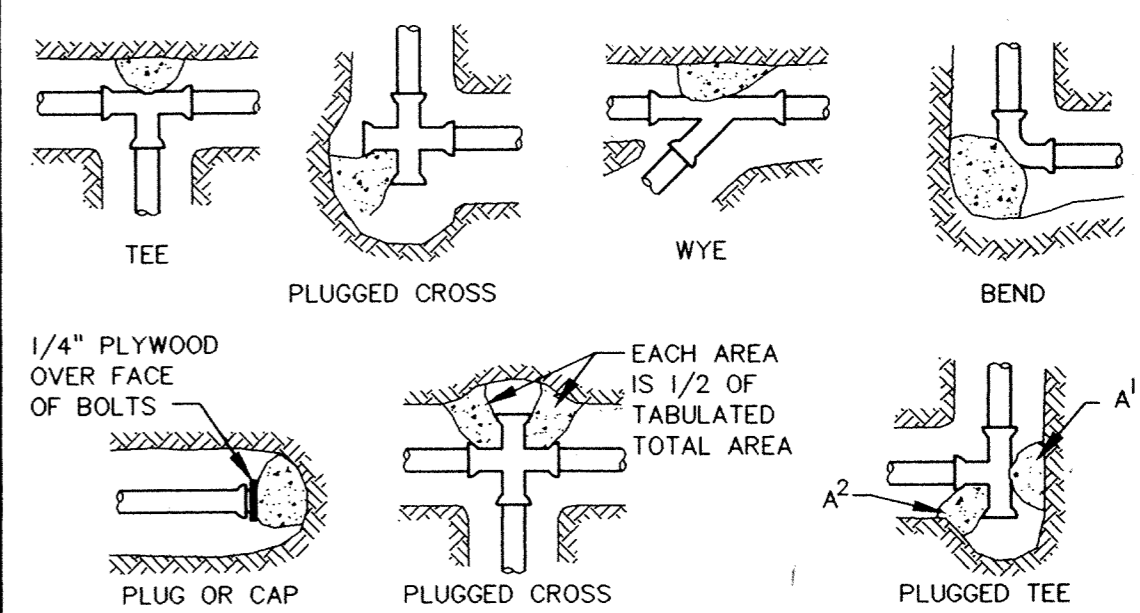


STANDARD RECTANGULAR MANHOLE SLAB TOP (D-05)

RECORD DRAWINGS

PRIME CONTRACTOR/UTILITIES: C.W. HOULE, INC.
CURB & GUTTER: HALVORSON CURB CO.
STREETS: BAUERLY BROS., INC.

INSPECTION: RALPH BADER, HOWARD H. GREEN CO.
SURVEY: JOHN OLIVER & ASSOCIATES, INC.
EARTHWORK: DENNIS FEHN EXCAVATING, INC.
RECORD DRAWINGS: BRYAN CLICHE, JOA
CONSTRUCTED: 1996



NOMINAL FITTING SIZE (INCHES)	TEE, WYE, PLUG OR CAP	90° BEND, PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22 1/2° BEND	11 1/4° BEND
			A ¹	A ²			
4	1.0	1.4	1.9	1.4	1.0	---	---
6	2.1	3.0	4.3	3.0	1.6	1.0	---
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	8.4	11.8	8.4	4.6	2.6	1.2
12	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	48.0	68.0	48.0	26.2	13.6	6.8

- NOTES:**
- CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
 - KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.
 - IF NOT SHOWN ON PLANS, REQUIRED BEARING AREAS AT FITTING SHALL BE AS INDICATED ABOVE, ADJUSTED IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING STRESS(ES).
 - BEARING AREAS AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS AND BLOCKING DETAILS SHOWN IN THIS STANDARD DETAIL.
 - ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 P.S.I. AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION: BEARING AREA = (TEST PRESSURE/150) x (2000/SOIL BEARING STRESS) x (TABLE VALUE).

THRUST BLOCKING DETAIL

REV. NO.	DATE	DESCRIPTION
1	05/14/96	EXPANDED PHASE 1 REVISIONS
2	06/25/96	GENERAL REVISIONS, CITY COMMENTS
3	11/14/97	RECORDED PLANS

DATE: 04/30/96
DESIGN BY: JR
DRAWN BY: BC
CHECKED BY: JB
DWG FILE: 15-LWDET.
TEXT FILE: NONE
FILE NO.: 7024.10-03

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signed: *[Signature]* Reg. No. 19800
Date: 04/30/96

John Oliver & Associates, Inc.
Civil Engineering, Land Surveying, Land Planning
560 Dodge Avenue
Elk River, Minnesota
(612)441-2072 (FAX)441-5665

**LAFAYETTE WOODS
ELK RIVER, MN
WINDSOR DEVELOPMENT L.L.P.
DETAILS**

SHEET NO. 15 OF 15