

APPROVED	SEPT. 27, 2012	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
<i>Michael Johnson</i>		APPROACHES AND ENTRANCES RECOMMENDED STANDARDS		9000E

1 APPROACHES AND ENTRANCES
C1029-103 SCALE: N.T.S.

TABLE OF QUANTITIES
RIPRAP AT RCP OUTLETS

DIA. OF ROUND PIPE (IN.)	L (FT.)	CLASS II d ₅₀ = 6"			CLASS III d ₅₀ = 9"			CLASS IV d ₅₀ = 12"		
		GRANULAR FILTER UNDER APRON (CU. YD.)	12" DEPTH RIPRAP (CU. YD.)	18" DEPTH RIPRAP (CU. YD.)	GRANULAR FILTER UNDER APRON (CU. YD.)	12" DEPTH RIPRAP (CU. YD.)	18" DEPTH RIPRAP (CU. YD.)	GRANULAR FILTER UNDER APRON (CU. YD.)	12" DEPTH RIPRAP (CU. YD.)	18" DEPTH RIPRAP (CU. YD.)
12	8	16.9	0.2	3.0	19.6	0.3	4.4	22.6	0.3	5.3
15	8	18.0	0.2	3.2	20.8	0.3	4.8	23.9	0.4	6.4
18	10	22.4	0.3	4.3	23.6	0.4	5.4	29.0	0.5	8.5
21	10	24.1	0.4	4.7	27.4	0.6	7.1	30.9	0.7	9.4
24	12	29.7	0.5	6.2	33.4	0.8	9.2	37.3	1.0	12.3
27	12	31.4	0.6	6.6	35.2	0.9	9.9	39.2	1.2	13.2
30	14	37.4	0.8	8.2	41.6	1.1	12.3	46.0	1.5	16.4
36	16	45.9	1.1	10.5	50.5	1.6	15.8	55.4	2.1	21.1
42	18	52.8	1.2	12.5	57.8	1.7	18.7	63.0	2.3	24.9
48	20	61.1	1.5	14.8	66.3	2.2	22.2	72.0	2.9	29.6

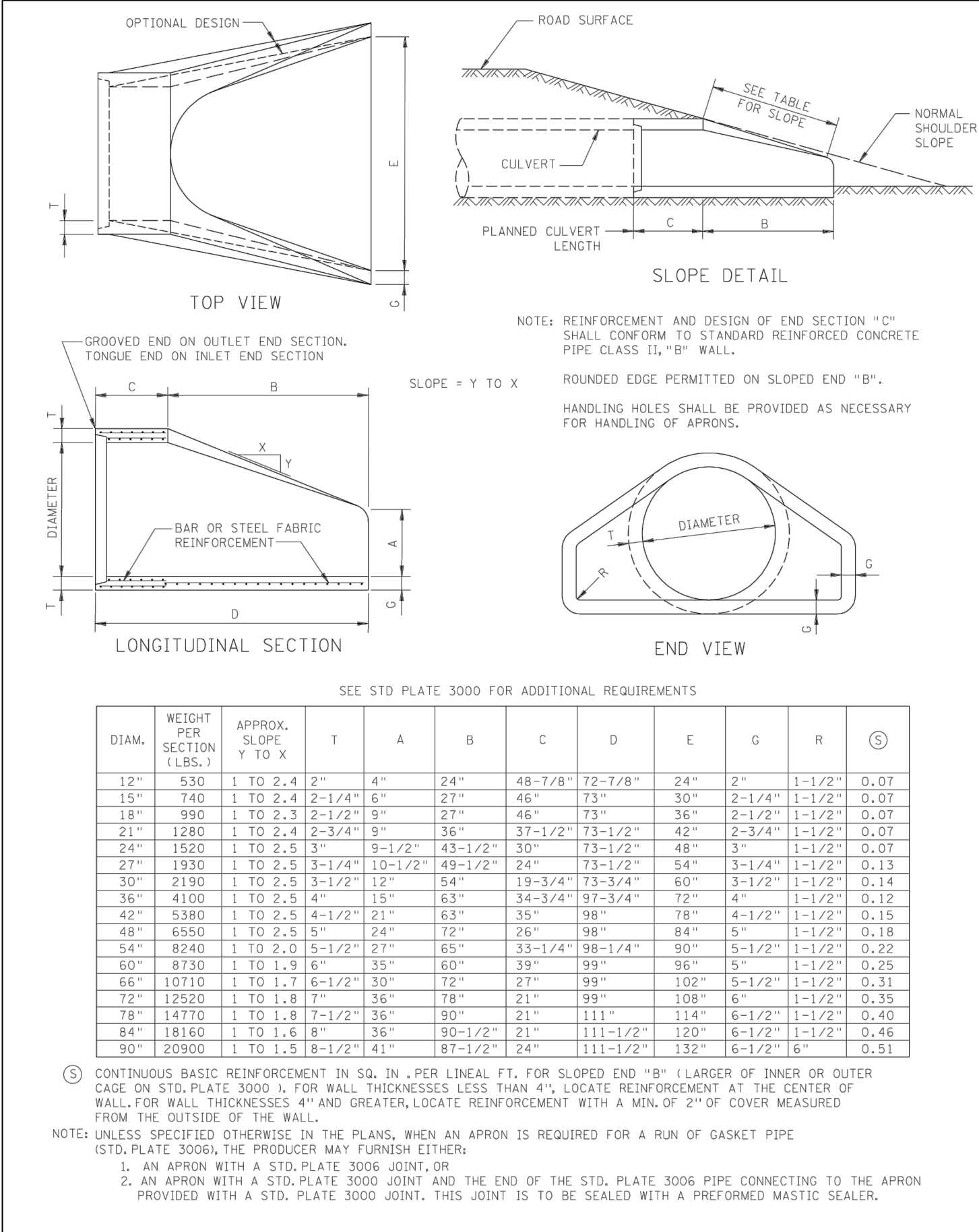
TABLE OF QUANTITIES
RIPRAP AT RCP-A OUTLETS

SPAN OF PIPE (IN.)	L (FT.)	CLASS II d ₅₀ = 6"			CLASS III d ₅₀ = 9"			CLASS IV d ₅₀ = 12"		
		GRANULAR FILTER UNDER APRON (CU. YD.)	12" DEPTH RIPRAP (CU. YD.)	18" DEPTH RIPRAP (CU. YD.)	GRANULAR FILTER UNDER APRON (CU. YD.)	12" DEPTH RIPRAP (CU. YD.)	18" DEPTH RIPRAP (CU. YD.)	GRANULAR FILTER UNDER APRON (CU. YD.)	12" DEPTH RIPRAP (CU. YD.)	18" DEPTH RIPRAP (CU. YD.)
22	10	22.4	0.3	4.1	25.6	0.4	5.1	29.0	0.5	6.1
24	12	29.5	0.5	5.7	33.2	0.7	8.5	37.1	0.9	11.3
36	14	37.3	0.8	7.5	41.5	1.1	11.2	45.8	1.5	14.9
43	16	45.3	1.1	9.5	50.5	1.6	14.3	55.3	2.1	19.0
51	18	52.5	1.2	11.3	57.5	1.7	16.9	62.7	2.3	22.5
58	20	59.9	1.3	13.2	65.2	1.9	19.8	70.7	2.5	26.4

NOTES:
 1. REQUIREMENTS FOR GEOTEXTILE TYPE, RIPRAP SIZE AND THICKNESS WILL BE DESIGNATED IN THE PLANS.
 2. PIPE SIZES LARGER THAN THOSE SHOWN REQUIRE A SPECIAL DESIGN.
 3. FOR PIPES GREATER THAN OR EQUAL TO 30", USE 1.5".
 4. GEOTEXTILE FILTER, SPEC. 3733, SHALL COVER THE BOTTOM AND SIDES OF THE AREA EXCAVATED FOR THE RIPRAP, GRANULAR FILTER MATERIALS.
 5. DIMENSION E IS GIVEN ON STANDARD PLATES 3100 AND 3110.
 6. GRANULAR FILTER, SPEC. 3603, MAY BE USED AS A CUSHION LAYER. PLACE FILTER PER SPEC. 3511. THE CUSHION LAYER IS INCIDENTAL.
 7. GRANULAR FILTER OR RIPRAP, SPEC. 3603, TO EXTEND UNDER ENTIRE OPEN PORTION OF PIPE APRON. DEPTH OF MATERIAL UNDER APRON SHALL MATCH RIPRAP DEPTH. WHEN USING RIPRAP INCREASE RIPRAP QUANTITY ACCORDINGLY AND PLACE A 3" LAYER OF 1.5" CRUSHED ROCK UNDER THE APRON TO AID IN GRADING FOR APRON PLACEMENT. CRUSHED ROCK IS INCIDENTAL.

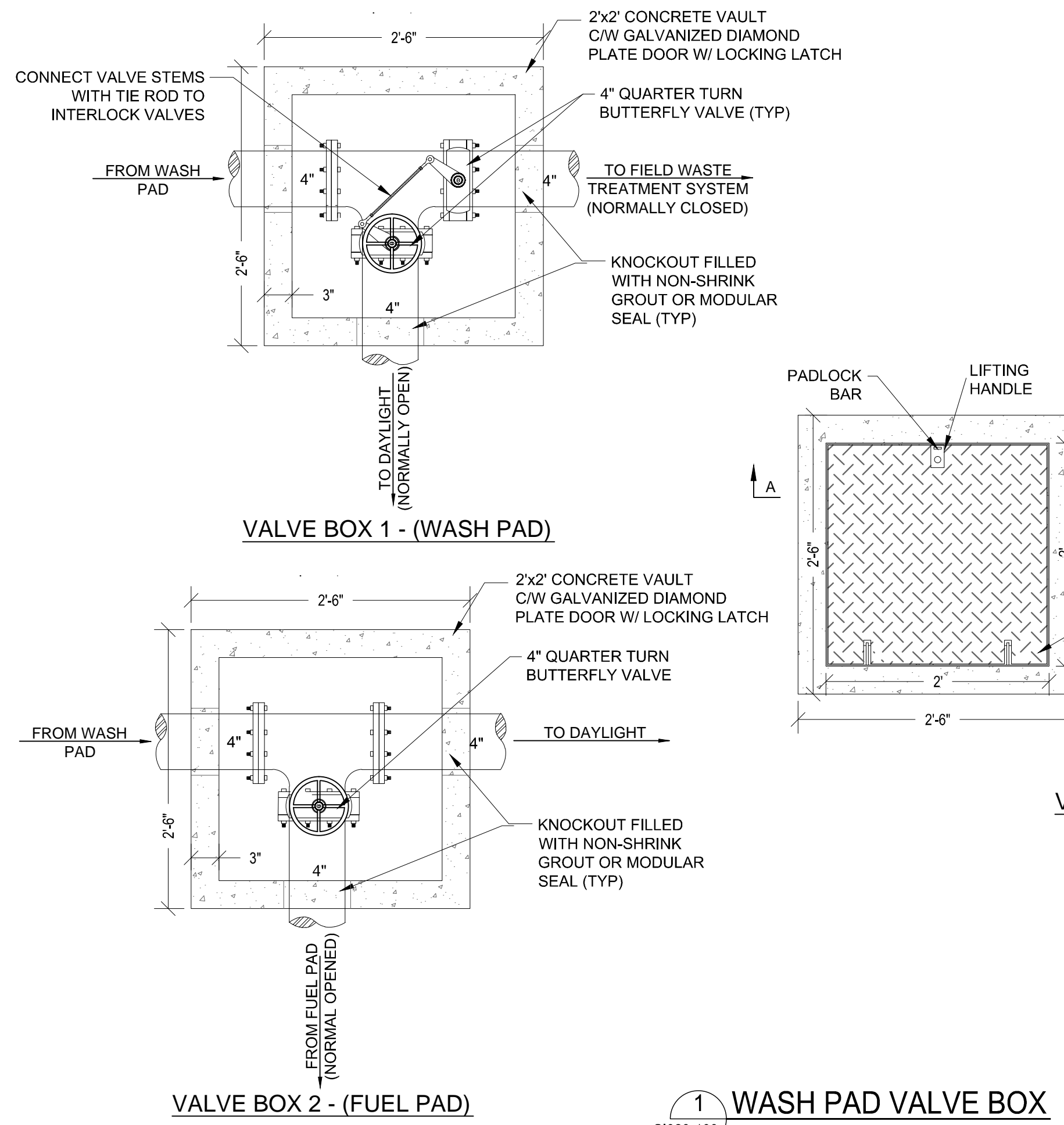
APPROVED	DECEMBER 9, 2013	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
<i>Christopher Ly</i>		RIPRAP AT RCP OUTLETS		3133D

2 RIP-RAP OUTLET
C1029-103 SCALE: N.T.S.

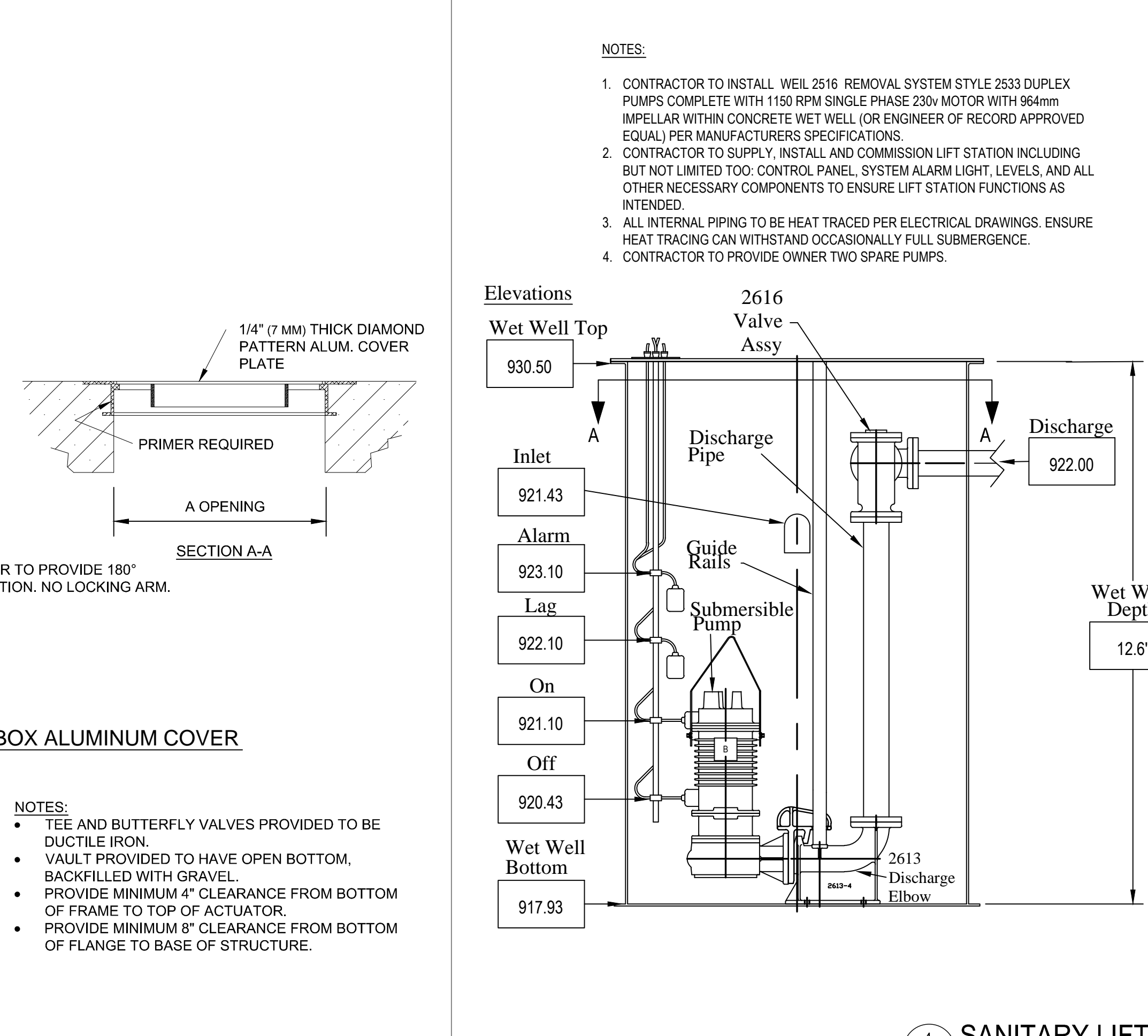


APPROVED	MAY 8, 1985	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
<i>R.H. Sullivan</i>		CONCRETE APRON FOR REINFORCED CONCRETE PIPE		3100G

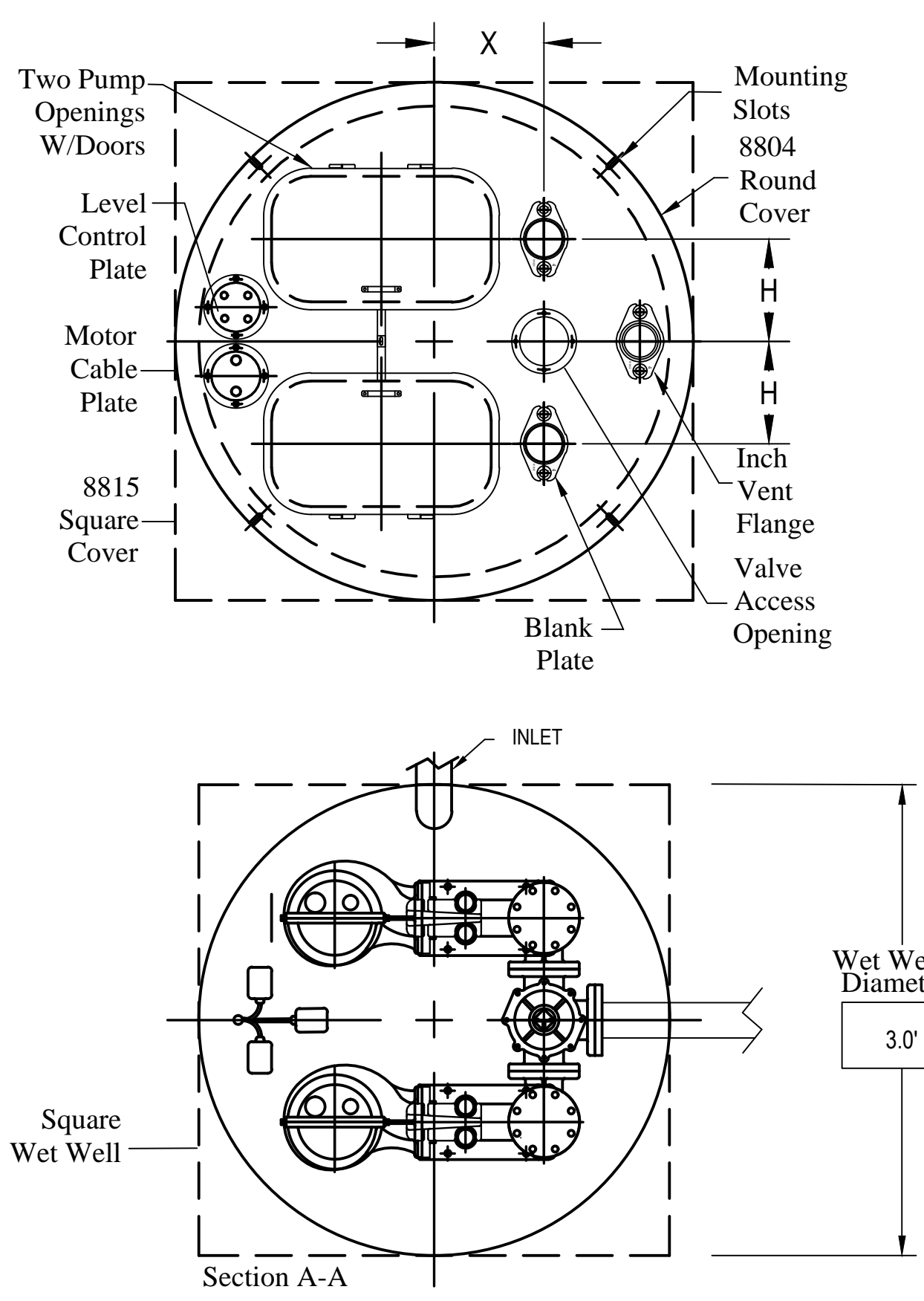
3 CONCRETE APRON
C1029-103 SCALE: N.T.S.



1 WASH PAD VALVE BOX
C1029-103 SCALE: N.T.S.



4 SANITARY LIFT STATION
C1029-103 SCALE: N.T.S.



REVISION NO.	DRAWN BY	DISCIPLINE APPROVED	DATE	ISSUE FOR CONSTRUCTION	TW	CSW
1	DW		08/25/16	ISSUE FOR CONSTRUCTION		
0			06/30/16	ISSUE FOR CONSTRUCTION		
				DRAWING REVISION DESCRIPTION		
				NOTE: ALL CURRENT REVISIONS ARE IDENTIFIED WITH TRIANGLE AND AN ALPHA OR NUMERIC CHARACTER. ONLY PREVIOUS NUMERIC REVISION TRIANGLES WILL REMAIN AND ONLY CURRENT REVISION CLOUDS WILL BE DISPLAYED.		

DR	B. EDWARDS	DATE	06/30/16
DSGN	B. EDWARDS	DATE	06/30/16
CK	J. GOLLINGS	DATE	06/30/16
DL	T. WAINWRIGHT	DATE	06/30/16
PM	G. WAKEFIELD	DATE	06/30/16

JACOBS JOB NO. 17QD22L0

PE OR RA REGISTRATION SEAL
 PROFESSIONAL ENGINEER
 I hereby certify that this plan, specification, or report 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.
 Print Name: RICHARD C. HAUSER
 Signature: *Richard C. Hauser*
 Date: 8/25/16 License # 40110
 JACOBS ENGINEERING GROUP INC

JACOBS
 111 CORNING ROAD, SUITE 200, CARY, NC 27518 - U.S.A.
 Phone: 919.859.5000 FAX: 919.859.5151

CLIENT

 TRAIT DEVELOPMENT
 STATION - SABIN, MN

DRAWING TITLE
 CIVIL
 UTILITY DETAILS

JACOBS DRAWING NUMBER
 17QD22L0-C1029-103

CLIENT DRAWING NUMBER

CAD FILE NO. 17QD22L0-C1029-103.DWG