PLAN SYMBOLS

STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
PRESENT RIGHT-OF-WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE (Except Land Lines)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY
RIVER OR CREEK
DRY RUN
DRAINAGE DITCH
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
RAILROAD SNOW FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER
SPRINGS
MARSH
TIMBER
ORCHARD
BRUSH
NURSERY
CATCH BASIN
FIRE HYDRANT
CATTLE GUARD
OVERPASS (HIGHWAY OVER)
UNDERPASS (HIGHWAY UNDER)
BRIDGE
BUILDING (ONE STORY FRAME)
F – FRAME C – CONCRETE
S – STONE T – TILE
B – BRICK ST – STUCCO
IRON PIPE OR ROD
MONUMENT (STONE, CONCRETE, OR METAL)
WOODEN HUB
GRAVEL PIT
SAND PIT
BORROW PIT
ROCK QUARRY
SLOPE EASEMENT

UTILITIES SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE AND POWER ON POWER POLE
ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (TELEPHONE CABLE TERMINAL)
GAS MAIN
WATER MAIN
CONDUIT
TELEPHONE CABLE IN CONDUIT
ELECTRICAL CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRICAL MANHOLE
BURIED TELEPHONE CABLE
BURIED ELECTRICAL CABLE
AERIAL TELEPHONE CABLE
SEWER (SANITARY OR SEWER)
SEWER MANHOLE

EROSION CONTROL SYMBOLS

TEMPORARY SILT FENCE
RIP RAP DITCH CHECKS

SCALES

PLAN ..... 0 50'
PROFILE ..... 0 50' HORIZ. 0 10' VERT.
CROSS SECTIONS ..... 0 10' HORIZ. 0 10' VERT.
INDEX MAP ..... NOT TO SCALE

MINNESOTA DEPARTMENT OF TRANSPORTATION

THE COUNTY OF OLMSTED

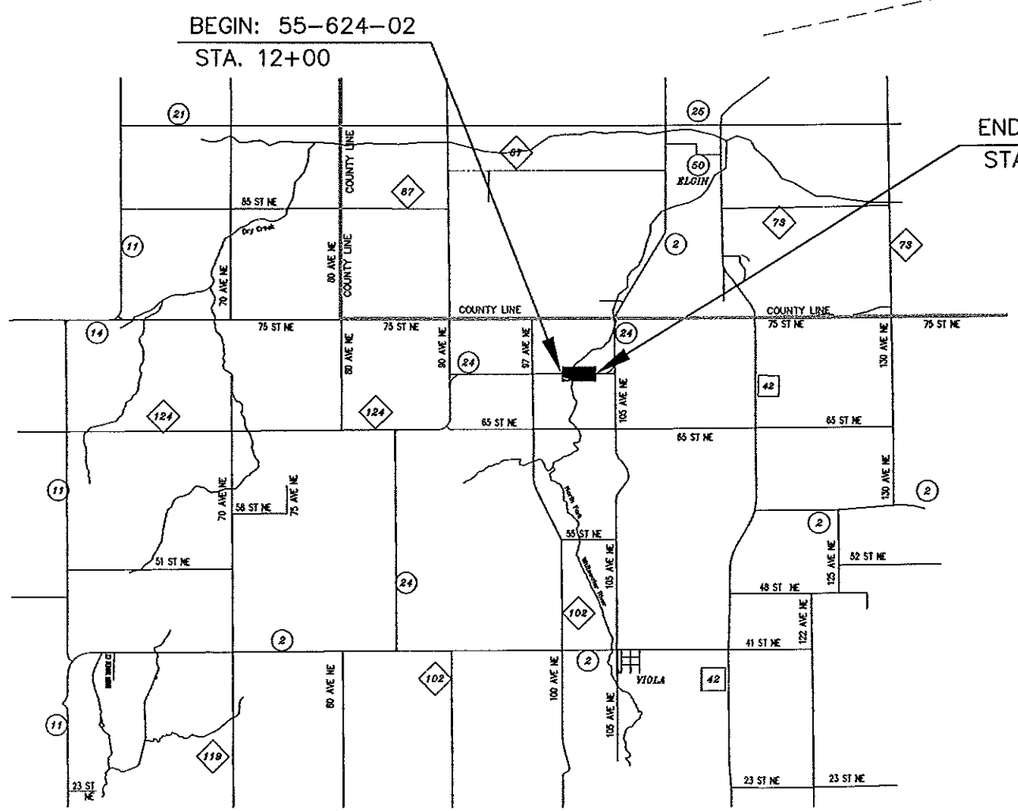
REPLACE BR. NO. 89179 (NEW BR. NO. 55J74) AND
CONSTRUCTION PLAN FOR BR. NO. 88736 (NEW BR. NO. 55J75), GRADING, & BIT. SURFACING

LOCATED ON C.S.A.H. 24 BETWEEN 0.25 MILE W. OF JCT. C.R. 102 AND 0.6 MILE S. OF N. CO. LINE (GEOGRAPHIC DESCRIPTION)

FROM EAST CENTER SEC. OF 5 &. 4 T107N – R12W TO APPROX. 895' WEST OF CENTER SEC. 4 T107N – R12W (LEGAL DESCRIPTION)

S.A.P. NO. 55-624-02

GROSS LENGTH	1,900.00	FEET	0.360	MILES
BRIDGE–LENGTH	65.50	FEET	0.012	MILES
EXCEPTIONS–LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	1,900.00	FEET	0.360	MILES



AS-BUILT
MAR 15 2010
ENGINEERING

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.

MINN. PROJ. NO. .....

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

INDEX

SHEET NO. 1	TITLE SHEET
SHEET NO. 2	ESTIMATE OF QUANTITIES & TYPICAL SECTION
SHEET NO. 3-4	PLAN AND PROFILE
SHEET NO. 5-9	CROSS-SECTIONS
SHEET NO. 10 – 17	BRIDGE SURVEY AND DETAILS
SHEET NO. 18 – 25	EROSION CONTROL
SHEET NO. 26 – 27	TRAFFIC CONTROL PLAN

THIS PLAN CONTAINS 27 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-624-02

R Value	= 20	20yr Design ESAL =	135,000
ADT (Current Year)	= 884(2009)	Design Speed	55 MPH
ADT (Future Year)	= 1414(2029)	Based on STOPPING Sight Distance	
DHV (Design Hr. Vol.)	=	Height of eye 3.5 FT. Height of object 2.0 FT.	
D (Directional Distr.)	=	Design Speed not achieved at:	
T (Heavy Commercial)	= 5%	STA.	TO STA. MPH
SUBGRADE	= K=150	STA.	TO STA. MPH
SOIL FACTOR	= 130%		

SHOULDER WIDTH 4 FT.
MAJOR COLLECTOR 10 TON DESIGN

DESIGN ENGINEER: 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.

DATE 3/18/09 REG. NO. 19917

PRINTED NAME: KAYE M BIENIEK

SIGNED NAME: Kaye M Bieniek
COUNTY DESIGN ENGINEER

DATE 3/18/09 REG. NO. 10397

APPROVED: OLMSTED COUNTY ENGINEER

STATE AID APPROVALS:

DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/ POLICY — DATE: 3-19-09

APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER — DATE: 3-19-09

S.A.P. NO. 55-624-02 C.S.A.H. 24 | SHEET NO. 1 OF 27 SHEETS

ESTIMATED QUANTITIES

NOTE	SPECIFICATION NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ESTIMATED QUANTITIES
	2104.501	REMOVE METAL CULVERT	LIN. FT.		250	250
1	2104.501	REMOVE FENCE	LIN. FT.		60	60
	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ. YD.		5,967	5,967(P)
2	2104.513	SAW BITUMINOUS PAVEMENT	LIN. FT.		56	56(P)
3	2105.511	COMMON CHANNEL EXCAVATION	CU. YD.		842	842(P)
	2105.515	UNCLASSIFIED EXCAVATION	CU. YD.		4,939	4,939(P)
	2105.522	SELECT GRANULAR BORROW (CV)	CU. YD.		2,966	2,966(P)
	2211.501	AGGREGATE BASE CL.5 MODIFIED	TON		3,399	3,399
4	2221.501	AGGREGATE SHOULDERING CL.2	TON		529	529
5	2360.501	TYPE SP 12.5 BITUMINOUS WEARING COURSE MIXTURE (3C)	TON		1,192	1,192
	2360.502	TYPE SP 12.5 BITUMINOUS NON-WEARING COURSE MIXTURE (3B)	TON		666	666
6	2412.511	12'x 5' PRECAST CONC. BOX CULV.	LIN. FT.		148	148
7	2412.511	12'x 8' PRECAST CONC. BOX CULV.	LIN. FT.		222	222
	2412.512	12'x 5' PRECAST CONC. BOX CULVERT END SECTION	EACH		4	4
	2412.512	12'x 8' PRECAST CONC. BOX CULVERT END SECTION	EACH		6	6
	2442.501	REMOVE OLD BRIDGE	LUMP SUM		2	2
8	2451.507	GRANULAR BEDDING (CV)	CU. YD.		234	234(P)
	2501.511	24" C.S. PIPE CULVERT	LIN. FT.		170	170
	2501.511	48" R.C. PIPE CULVERT	LIN. FT.		154	154
	2501.515	24" G.S. PIPE APRON	EACH		8	8
	2501.515	48" R.C. PIPE APRON	EACH		4	4
9	2511.501	RANDOM RIPRAP CL. IV	CU. YD.		401	401
10	2520.501	LEAN MIX BACKFILL	CU. YD.		49	49(P)
	2563.601	TRAFFIC CONTROL	LUMP SUM		1	1
11	2573.502	SILT FENCE TYPE MACHINE SLICED	LIN. FT.		678	678
12	2573.512	TEMPORARY DITCH CHECK TYPE 2	LIN. FT.		70	70
	2575.501	SEEDING	ACRE		3	3(P)
	2575.502	SEED MIXTURE 110	LBS.		300	300
	2575.502	SEED MIXTURE 250	LBS.		210	210
	2575.511	MULCH MATERIAL TYPE 1	TON		6	6
	2575.519	DISK ANCHORING	ACRE		3	3(P)
11	2575.523	EROSION CONTROL BLANKET CATEGORY 3	SQ. YDS.		2,485	2,485
	2575.532	FERTILIZER TYPE 1	LBS.		600	600
13	2580.603	INTERIM PAVEMENT MARKINGS	LIN. FT.		980	980

(P) PLAN

QUANTITY NOTES:

1 APPROX. LOCATION LT. STA. 17+70 TO STA. 18+13. SPEC. NO. 1903 DOES NOT APPLY TO ITEM NO. 2104.501 REMOVE FENCE.

2 LOCATION: STA. 12+00 & STA. 31+00

3 SEE SHEET NO. 3, 351 CU. YDS. ON INLET & 416 CU. YDS. ON THE OUTLET. SEE SHEET 4, 75 CU. YDS. ON OUTLET.

4 356 TON FOR MAINLINE AND 173 TON FOR ENTRANCES.

5 1,146 TON FOR MAINLINE AND 46 TON FOR ENTRANCES.

6 SEE SHEET NO. 14 FOR PIPE CLASS.

7 SEE SHEET NO. 12 FOR PIPE CLASS.

8 129 CU. YDS. SEE SHEET NO. 16 AND 91 CU. YDS. SEE SHEET NO. 17.

9 11 CU. YDS. INLET & 167 CU. YDS. OUTLET SEE SHEET NO. 16.
8 CU. YDS. INLET & 163 CU. YDS. OUTLET SEE SHEET NO. 17.
52 CU. YDS. OUTLET OF 2 – 48" RCP SEE SHEET 3 AND PLATE NO. 3133C.
PLACE RIPRAP ON 9" GRANULAR FILTER OR GEOTEXTILE MATERIAL WHICH SHALL BE CONSIDERED INCIDENTAL AND NO DIRECT COMPENSATION WILL BE MADE THEREFOR.

10 36 CU. YDS. SEE SHEET NO. 16 AND 13 CU. YDS. SEE SHEET NO. 17.

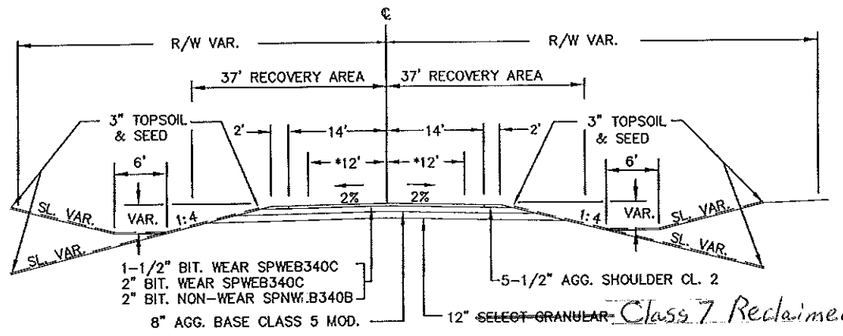
11 SEE SHEET NO. 18 AND 19. SPEC. NO. 1903 DOES NOT APPLY TO ITEM NO. 2573.502 SILT FENCE TYPE MACHINE SLICED AND ITEM NO. 2575.523 EROSION CONTROL BLANKET CATEGORY 3

12 SEE SHEET NO. 18. SPEC. NO. 1903 DOES NOT APPLY TO ITEM NO. 2573.512 TEMPORARY DITCH CHECK TYPE 2

13 SPEC. NO. 1903 DOES NOT APPLY TO ITEM NO. 2580.603 INTERIM PAVEMENT MARKINGS.

TYPICAL SECTION

STA. 12+00 TO STA. 31+00



*NOTE: TRAFFIC LANE

AS-BUILT

MAR 15 2010

ENGINEERING

NOTES: ALL UTILITY POLES AND UNYIELDING OBJECTS WILL BE LOCATED OUTSIDE THE 37 FT. RECOVERY AREA BY OTHERS.

BASIS OF PLANNED QUANTITIES

AGGREGATE BASE CLASS 5 MOD. – 140 LBS./CU. FT. COMPACTED
AGGREGATE SHOULDER CLASS 2 – 140 LBS./CU. FT. COMPACTED
BITUMINOUS MIXTURE – 110 LBS./SQ. YD./1" DEPTH
SEED MIXTURE 110 – 100 LBS./ACRE
SEED MIXTURE 250 – 70 LBS./ACRE
MULCH MATERIAL – 2 TONS/ACRE EXCEPT EROSION CONTROL BLANKET AREAS
DISK ANCHORING – ALL SEEDED AREAS EXCEPT 1:2 SLOPES AND EROSION CONTROL BLANKET AREAS
COMMERCIAL FERTILIZER – 200 LBS./ACRE

STANDARD PLATES

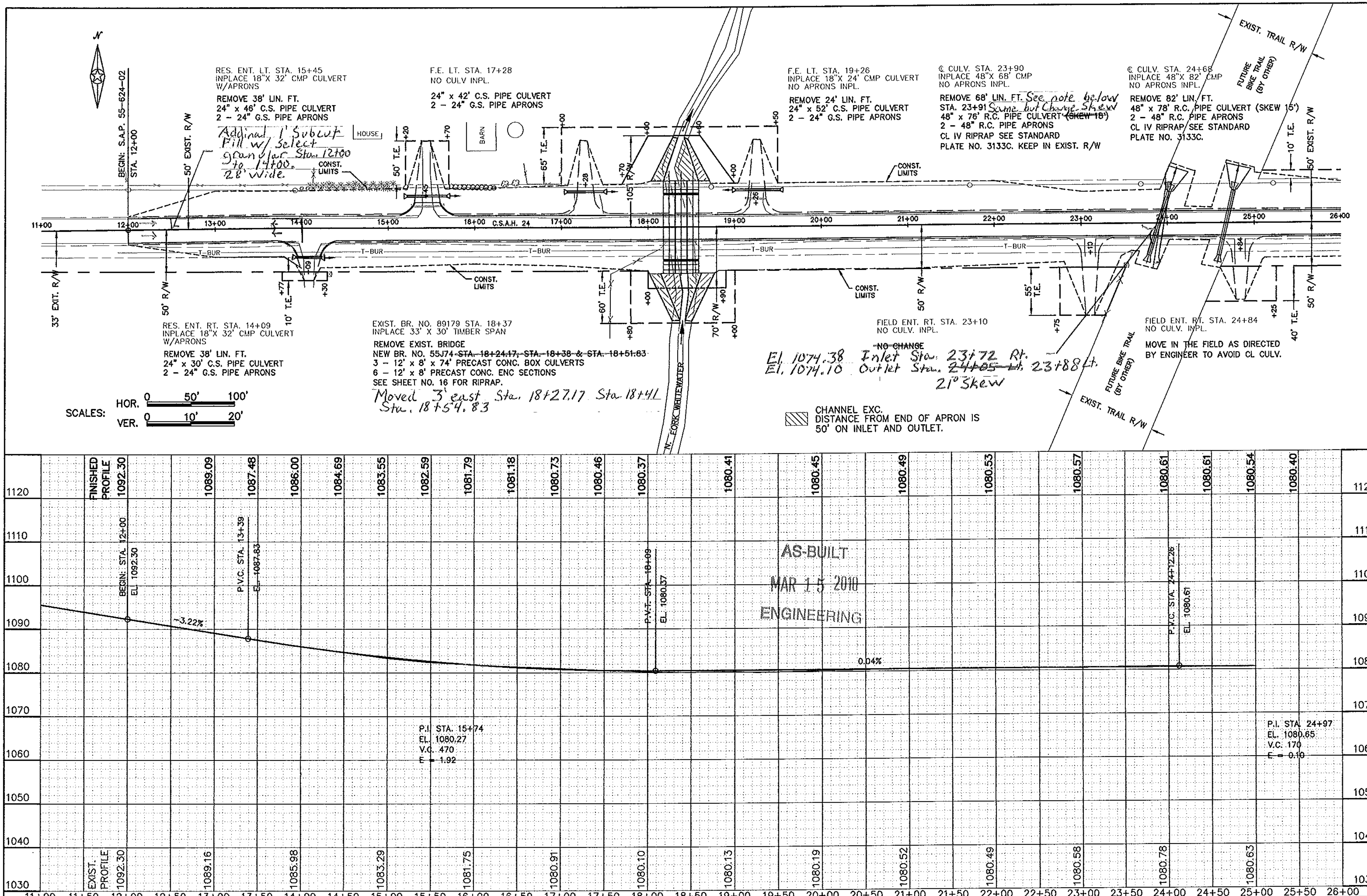
THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION SHALL APPLY ON THIS PROJECT.

PLATE NO.	DESCRIPTION
	NUMERICAL INDEX OF STANDARD PLATES
3000L	REINFORCED CONCRETE PIPE
3040F	CORRUGATED METAL PIPE CULVERT
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3123J	METAL APRON FOR C.S. PIPE
3124B	METAL APRON CONNECTION
3133C	RIPRAP AT RCP OUTLET
3145F	CONCRETE PIPE TIES
3221C	CORRUGATED STEEL PIPE COUPLING BAND
8000I	STANDARD BARRICADES
*9000D	APPROACHES AND ENTRANCES

* USE 1:4 SLOPES

CERTIFIED BY Kaye M Bierwiek REG. NO. 19917 2/27 2009
LICENSED PROFESSIONAL ENGINEER

S.A.P. NO. 55-624-02



CERTIFIED BY Kaye M Bieniek
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 2/27 2009

S.A.P. 55-624-02

Addinal 1' Subcut Sta. 25+00 to 27+00 28' wide Fill w/ select granular

Addinal 1' Subcut Sta. 25+00 30+00 to 30+70 28' wide Fill w/ select granular

CONST. LIMITS

50' EXIST. R/W

10' T.E.

+25 +35 +45 +55

120' R/W

END: S.A.P. 55-624-02 STA. 31+00

50' EXIST. R/W

26+00 27+00 28+00 29+00 30+00 31+00 C.S.A.H. 24 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00

P.C. STA. 34+23.1790

T-BUR

40' T.E. +25

+91

50' R/W

EXIST. 50' R/W

10' T.E.

+30

70' R/W

30' T.E. +50

EXIST. 6" TILE OUTLET
RT. 50' STA. 28+78

RELOCATE OUTLET IN THE FIELD AS DIRECTED BY ENGINEER.

Outlet Not Changed

NO NAME

EXIST. BR. NO. 88736 STA. 28+86
INPLACE 19' X 46' TIMBER BOX

REMOVE EXIST. BRIDGE
NEW BR. NO. 55J75 ~~STA. 28+73.08 & STA. 28+86.92~~
2 - 12' x 5' x 74' PRECAST CONC. BOX CULVERTS
4 - 12' x 5' PRECAST CONC. ENC SECTIONS
SEE SHEET NO. 17 FOR RIPRAP.

Move 7' East Sta. 28+80.08 & Sta. 28+93.92

CHANNEL EXC. DISTANCE FROM END OF APRON IS 35' OUTLET.

SCALES: HOR. 0 50' 100' VER. 0 10' 20'

AS-BUILT

MAR 15 2010

ENGINEERING

FINISHED PROFILE 1080.40 1080.19 1080.02 1079.91 1079.87 1079.89 1079.97 1080.09 1080.05 1080.03 1080.03 1080.07

P.V.C. STA. 25+82.26
EL. 1080.27
-0.45%

P.V.T. STA. 25+82.26
EL. 1080.27

P.I. STA. 27+17.26
EL. 1079.66
V.C. 270
E = 0.23

P.V.T. STA. 28+52.26
EL. 1079.98

0.23%

P.I. STA. 29+00
EL. 1080.09

P.V.C. STA. 29+41.82
EL. 1080.06

-0.08%

P.I. STA. 30+66.82
EL. 1079.95
V.C. 250
E = 0.09

END: STA. 31+00
EL. 1080.07

EXIST. PROFILE 1080.17 1079.88 1079.87 1080.09 1080.01 1081.07 1080.21 1080.44 1080.65 1080.86 1081.07

1120 1110 1100 1090 1080 1070 1060 1050 1040 1030

25+00 25+50 26+00 26+50 27+00 27+50 28+00 28+50 29+00 29+50 30+00 30+50 31+00 31+50 32+00 32+50 33+00 33+50 34+00 34+50 35+00 35+50 36+00 36+50 37+00 37+50 38+00 38+50 39+00 39+50 40+00

CERTIFIED BY Kay M Brenneth LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 2/27 2009

S.A.P. 55-624-02

SHEET NO. 4 OF 27 SHEETS

EXIST. R/W
1082.88 @ 42.95
1081.64 @ 32.00
1083.37 @ 25.07
1085.72 @ 14.00
1086.00
1085.72 @ 14.00
1083.37 @ 25.07
1081.64 @ 32.00
1084.03 @ 45.57
NEW R/W
14 + 00
1:4
4'
CUT 285
FILL 9
16 + 00
1077.68 @ 44.92
1076.69 @ 34.95
1079.17 @ 25.07
1081.51 @ 14.00
1081.79
1081.51 @ 14.00
1079.17 @ 25.07
1077.35 @ 32.31
1078.10 @ 41.29
CUT 289
FILL 26
AS-BUILT
MAR 15 2010
ENGINEERING
EXIST. R/W
NEW R/W
1079.90 @ 100.00
T.I.E.
RES. ENT. FINISHED -3.3%
1083.44 @ 42.90
1082.21 @ 32.00
1083.94 @ 25.08
1086.29 @ 14.00
1086.57
1086.29 @ 14.00
1083.94 @ 25.08
1082.71 @ 32.82
13 + 80
1:6.3
15 + 45
1082.32 @ 29.00
1080.04 @ 25.07
1082.39 @ 14.00
1082.67
1086.12 @ 43.56
1084.73 @ 32.00
1086.46 @ 25.07
1088.81 @ 14.00
1089.09
1088.81 @ 14.00
1086.46 @ 25.07
1084.83 @ 32.30
13 + 00
CUT 88
FILL 4
1079.99 @ 45.13
1078.70 @ 33.96
1080.92 @ 25.07
1083.27 @ 14.00
1083.55
1083.27 @ 14.00
1080.92 @ 25.07
1078.70 @ 33.96
1079.76 @ 44.21
CUT 321
FILL 15
MATCH EXIST.
12 + 00
1085.47 @ 14.00
1083.12 @ 25.07
1085.39 @ 29.00
1084.16 @ 60.00
T.I.E.
RES. ENT. FINISHED -3.6%
14 + 09

NEW R/W 105'
65' T.E.
1076.14 @ 50.00
1074.39 @ 36.47
1077.74 @ 25.07
1080.09 @ 14.00
1080.37
1080.09 @ 14.00
1077.74 @ 25.07
1074.53 @ 57.91
1076.15 @ 50.00
NEW R/W
1:3.2
1:4
1:4
1:3.8
18 + 00
CUT 375
FILL 29
EXIST. R/W
65' T.E.
1075.31 @ 100.00
1080.21 @ 29.00
1077.93 @ 25.07
1080.28 @ 14.00
1080.56
F.E. FINISHED -7%
17 + 28
AS-BUILT
MAR 15 2010
ENGINEERING
65' T.E.
EXIST. R/W
1075.81 @ 48.15
1074.82 @ 38.19
1078.10 @ 25.07
1080.45 @ 14.00
1080.73
1080.45 @ 14.00
1078.10 @ 25.07
1075.94 @ 33.72
1076.95 @ 43.75
NEW R/W
1:4
1:4
1:4
1:4
17 + 00
CUT 348
FILL 17
EXIST. R/W
65' T.E.
1075.28 @ 100.00
1080.07 @ 29.00
1080.14 @ 14.00
1080.42
FINISHED -6.5%
19 + 26
EXIST. R/W
65' T.E.
1075.70 @ 50.00
1072.89 @ 40.82
1074.80 @ 37.00
1077.78 @ 25.07
1080.13 @ 14.00
1080.41
1080.13 @ 14.00
1077.78 @ 25.07
1073.98 @ 40.28
1076.13 @ 50.00
NEW R/W
19 + 00
1:2
1:2
1:4
1:4
1:2
3'-6"
CUT 117
FILL 44
NEW R/W 105'
10' T.E.
END APRON
1068.90 @ 53.00
END BARREL
1068.93 @ 37.00
1080.11 @ 14.00
1080.39
1080.11 @ 14.00
END BARREL
1069.05 @ 37.00
END APRON
1069.08 @ 53.00
NEW R/W 70'
40' T.E.
1:13.5
1:13.2
18 + 30
39
Moved 3 lines 3' east
18 + 30
39
3 - 12' x 8' X 74' PRECAST CONC. BOX CULVERTS
6 - 2' x 8' PRECAST CONC. END SECTIONS

S.A.P. 55-624-02

SHEET NO. 6 OF 27 SHEETS

70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70

EXIST. R/W — NEW R/W

1074.83 @ 50.00 | 1073.78 @ 40.46 | 1074.92 @ 37.00 | 1077.90 @ 25.07 | 1080.25 @ 14.00 | 1080.53 | 1080.25 @ 14.00 | 1077.90 @ 25.07 | 1075.06 @ 36.45 | 1076.06 @ 46.43

1090 / 1080 / 1070

22 + 00 — 1:4 — 1:3 — 1:4 — 1:4 — 1:4 — 22 + 00

CUT 308
FILL 60

EXIST. R/W — NEW R/W

1074.67 @ 50.00 | 1073.47 @ 40.51 | 1074.88 @ 37.00 | 1077.86 @ 25.07 | 1080.21 @ 14.00 | 1080.49 | 1080.21 @ 14.00 | 1077.86 @ 25.07 | 1074.66 @ 37.86 | 1076.15 @ 49.79

1090 / 1080 / 1070

21 + 00 — 1:2.9 — 1:2.5 — 1:4 — 1:4 — 1:4 — 21 + 00

CUT 330
FILL 56

EXIST. R/W — NEW R/W

1075.26 @ 50.00 | 1073.18 @ 40.32 | 1074.84 @ 37.00 | 1077.82 @ 25.07 | 1080.17 @ 14.00 | 1080.45 | 1080.17 @ 14.00 | 1077.82 @ 25.07 | 1074.48 @ 38.43 | 1076.06 @ 49.16

1090 / 1080 / 1070

20 + 00 — 1:2 — 5.6' — 1:2 — 1:4 — 1:4 — 1:3 — 20 + 00

CUT 337
FILL 50

EXIST. TRAIL R/W

END APRON ON ANGLE @ 46.00 1073.10 1074.12
END BARREL ON ANGLE @ 38.00 1073.13 1074.13

1080.33 @ 14.00 | 1080.61

1090 / 1080 / 1070

24 + 03 — 1:2 — 1:8.3 — 23788

48"x 76' R.C. PIPE CULVERT (~~18° SKEW~~) 21° SKEW
48" R.C. PIPE APRON

EXIST. TRAIL R/W

1073.55 @ 42.76 | 1073.13 @ 38.00 | 1080.33 @ 14.00 | 1080.61 | 1080.33 @ 14.00 | 1077.98 @ 25.07 | 1078.37 @ 32.00

1090 / 1080 / 1070

24 + 00 — 1:2 — 1:8.3 — 1:4 — 24 + 00

CUT 285
FILL 140

EXIST. TRAIL R/W

1080.60 | 1080.32 @ 14.00

END BARREL ON ANGLE @ 38.00 1073.35 1074.35
END APRON ON ANGLE @ 46.00 1073.30 1074.32

1090 / 1080 / 1070

23 + ~~78~~ ~~80.32~~ — 1:9.2 — 1:3 — 23172

48"x 76' R.C. PIPE CULVERT (~~18° SKEW~~) 21° SKEW
48" R.C. PIPE APRON

1080.57 | 1080.29 @ 14.00 | 1080.25 @ 27.00 | NEW R/W | 1073.48 @ 102.00 T.E.

1090 / 1080 / 1070

FIELD ENT. FINISHED -9%

23 + 10

70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110

EXIST. R/W — NEW R/W

1075.10 @ 36.41 | 1077.94 @ 25.07 | 1080.29 @ 14.00 | 1080.57 | 1080.29 @ 14.00 | 1077.94 @ 25.07 | 1076.21 @ 38.00

1090 / 1080 / 1070

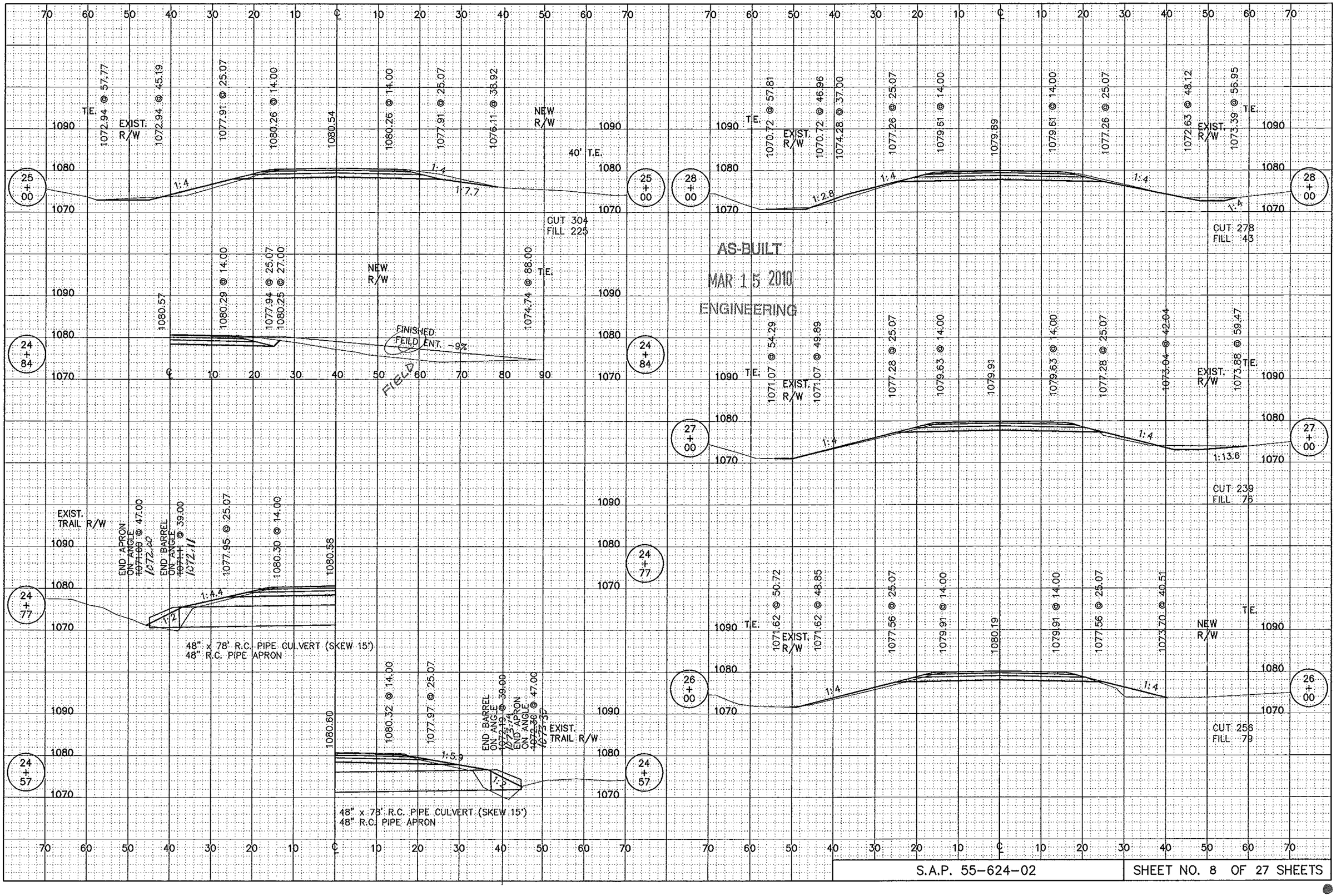
1:4 — 1:4 — 23 + 00

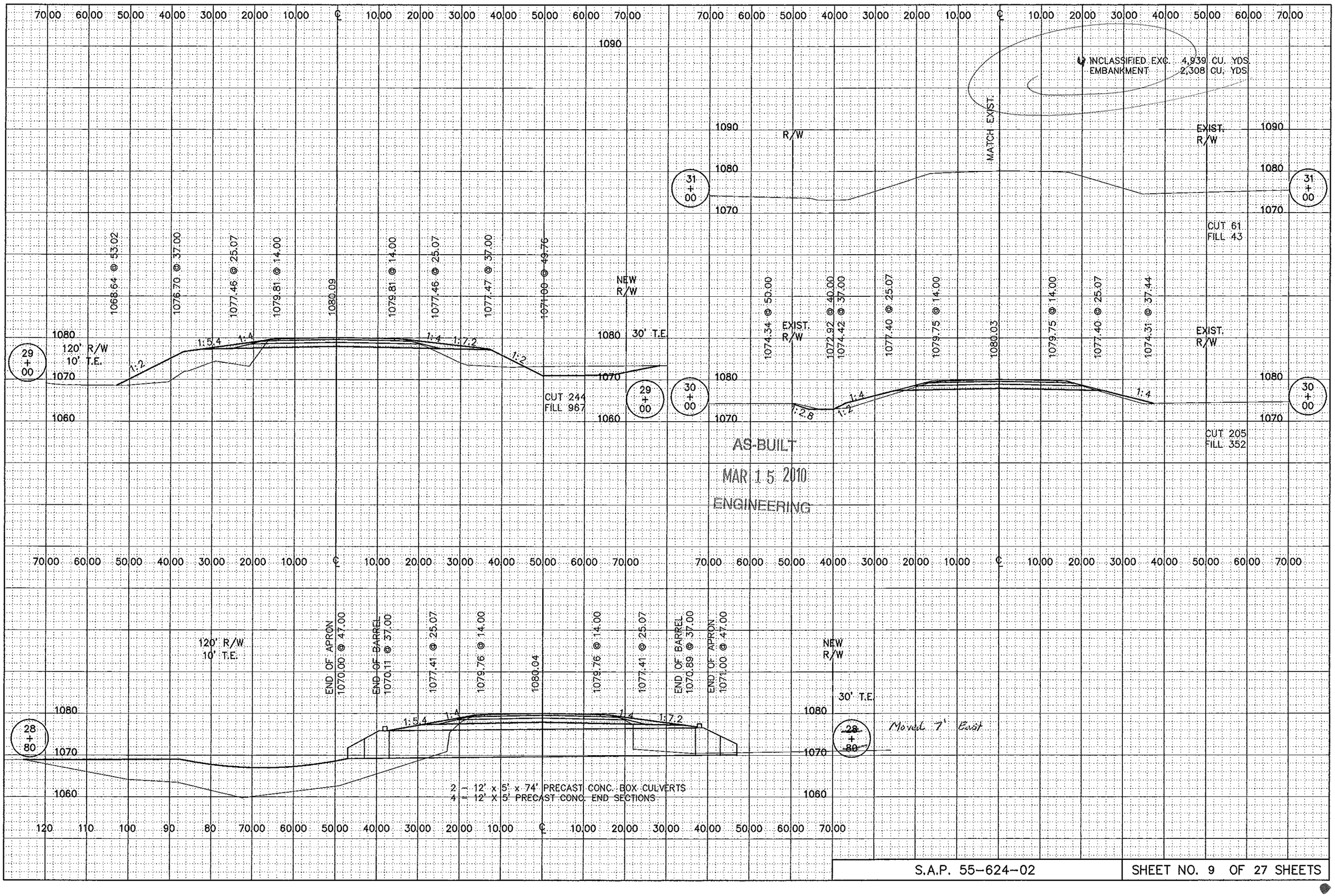
CUT 269
FILL 73

70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70

AS-BUILT
MAR 15 2010
ENGINEERING

S.A.P. 55-624-02 | SHEET NO. 7 OF 27 SHEETS


25 + 00
24 + 84
24 + 77
24 + 57
27 + 00
26 + 00
28 + 00
EXIST. R/W
EXIST. TRAIL R/W
NEW R/W
T.E.
40' T.E.
1:4
1:7.7
1:2.8
1:4.4
1:5.9
1:13.6
1:2
CUT 304
FILL 225
CUT 278
FILL 43
CUT 239
FILL 76
CUT 256
FILL 79
FINISHED FEILD ENT. -9%
FIELD
END APRON ON ANGLE 47.00
END BARREL ON ANGLE 39.00
48" x 78' R.C. PIPE CULVERT (SKEW 15°)
48" R.C. PIPE APRON
AS-BUILT
MAR 15 2010
ENGINEERING

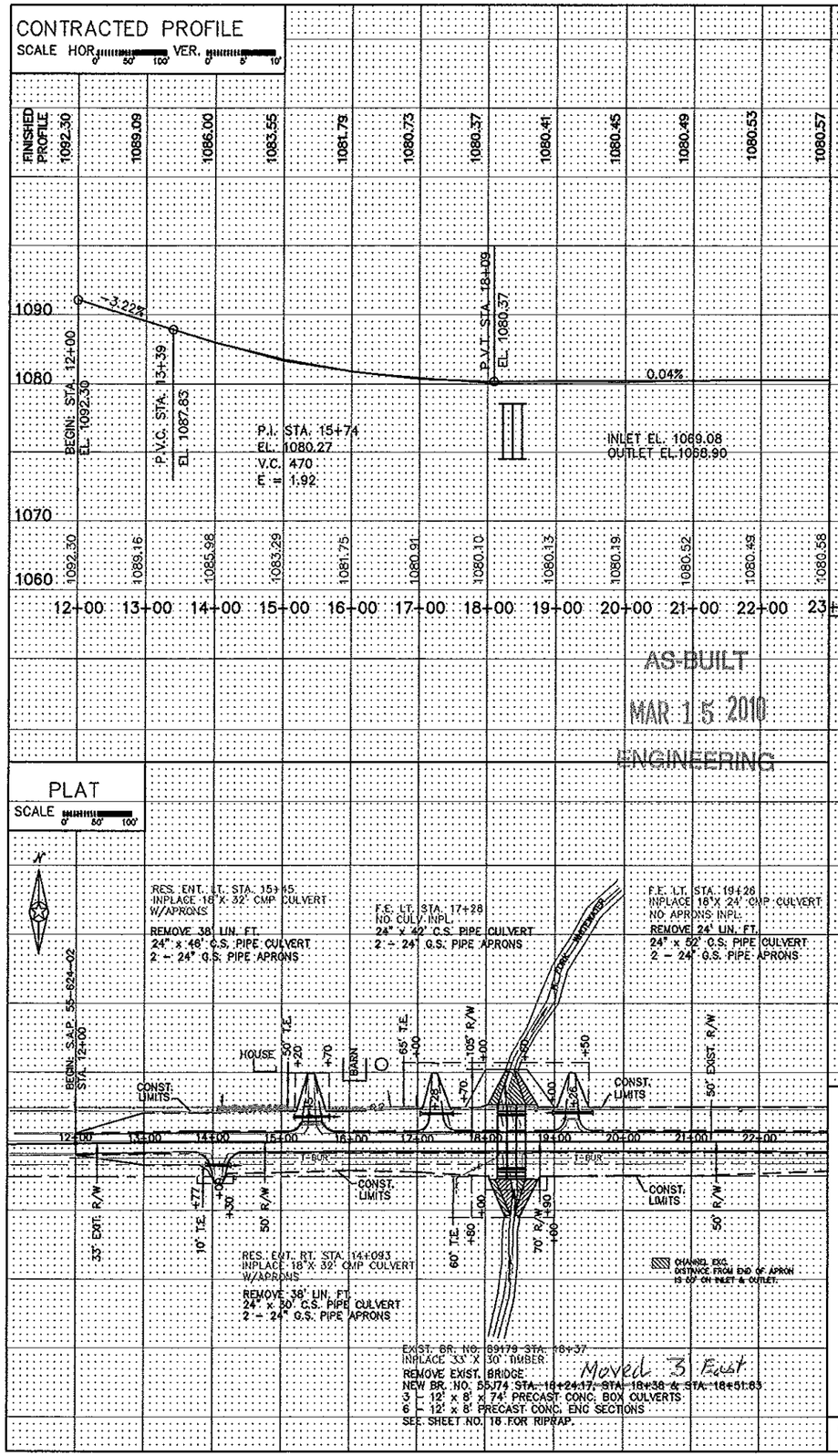


S.A.P. 55-624-02

SHEET NO. 9 OF 27 SHEETS

CONTRACTED PROFILE

SCALE HOR 0' 50' 100' VER. 0' 5' 10'



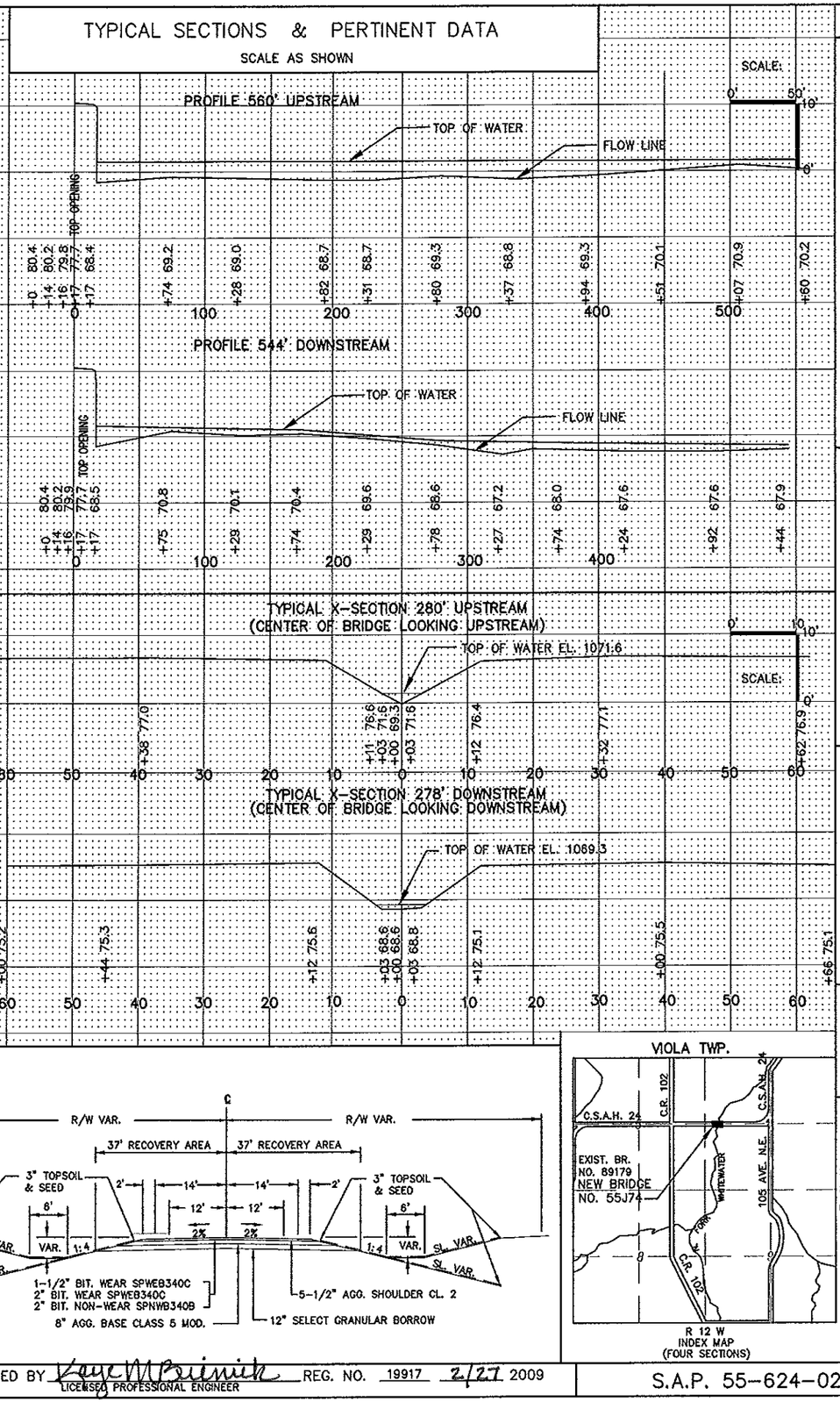
AS-BUILT
MAR 15 2010
ENGINEERING

PLAT

SCALE 0' 50' 100'

TYPICAL SECTIONS & PERTINENT DATA

SCALE AS SHOWN



Fed. Proj. No.

1. Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating.

2. Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway) :Given location, type, length, height above high water, cross-sectional area etc.

3. Apparent highwater elevation ..... Obtained from .....

4. Other data: Approx. velocity of water at time of survey .....

HYDRAULIC ENGINEERS RECOMMENDATION

DATE 5/10/07

Stream or ditch designation N. FORK WHITEWATER RIVER
Drainage area 18.6 SQ. MI.
Max. flood on record UNKNOWN Design flood (25 yr. freq.) 2900 C.F.S.
Max. observed highwater elevation UNKNOWN Design highwater elevation 1077.9
Design mean velocity through structure 9.9 F.P.S. OUTLET
Low superstructure at or above elevation NA
Flowline 1069.0 Skew angle NO SKEW
Waterway area req'd. below elevation NA = NA Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is 4620 C.F.S. at stage 1078.5 and mean velocity of 10.5 F.P.S. with 2.8 Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of National Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE .....

Bridge survey sheets made from: SURVEY CONDUCTED BY OLMSTED COUNTY.

Bench mark elevation ..... (M.S.L. 1929 Adj.)
Location: .....

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 0.4 MI. E. OF JCT. 102 (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 0.4 MILES E. OF C.R. 102
SEC. 4 TWP. 107 N R 12 W
TOWNSHIP VIOLA COUNTY OLMSTED
BRIDGE NO. 55J74

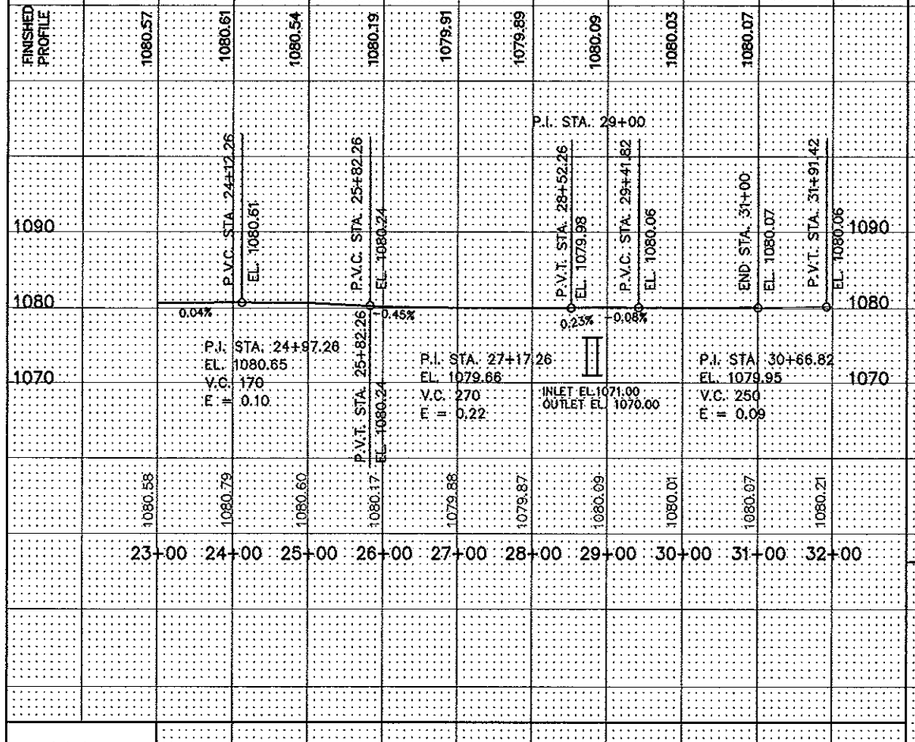
CERTIFIED BY Kaye M Reinitz REG. NO. 19917 2/27 2009
LICENSED PROFESSIONAL ENGINEER

S.A.P. 55-624-02

SHEET NO. 10 OF 27 SHEETS

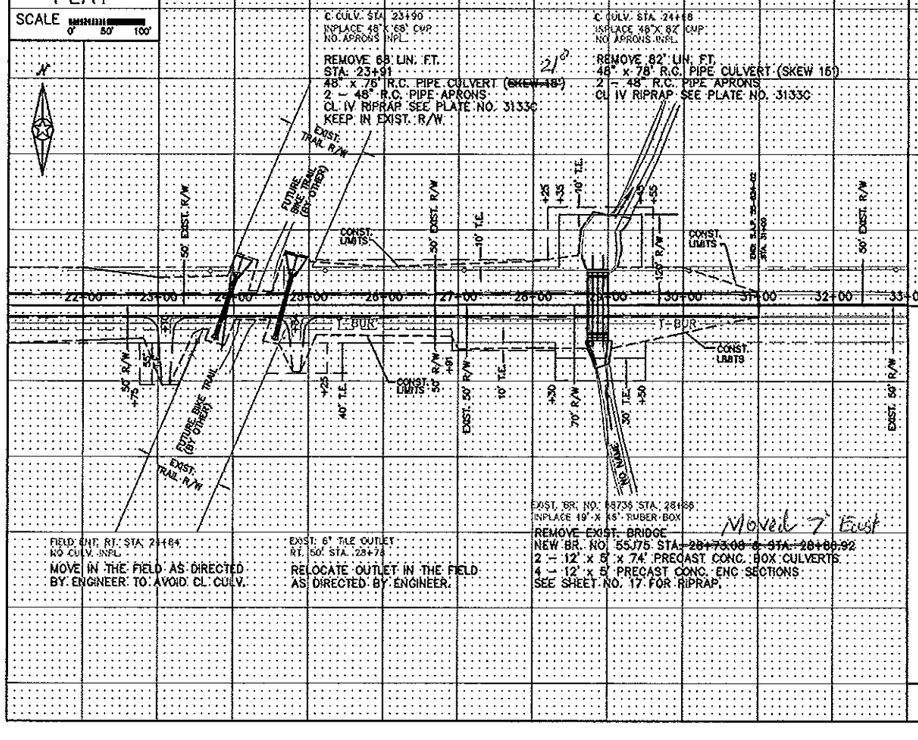
CONTRACTED PROFILE

SCALE HOR. 0' 50' 100' VER. 0' 5' 10'



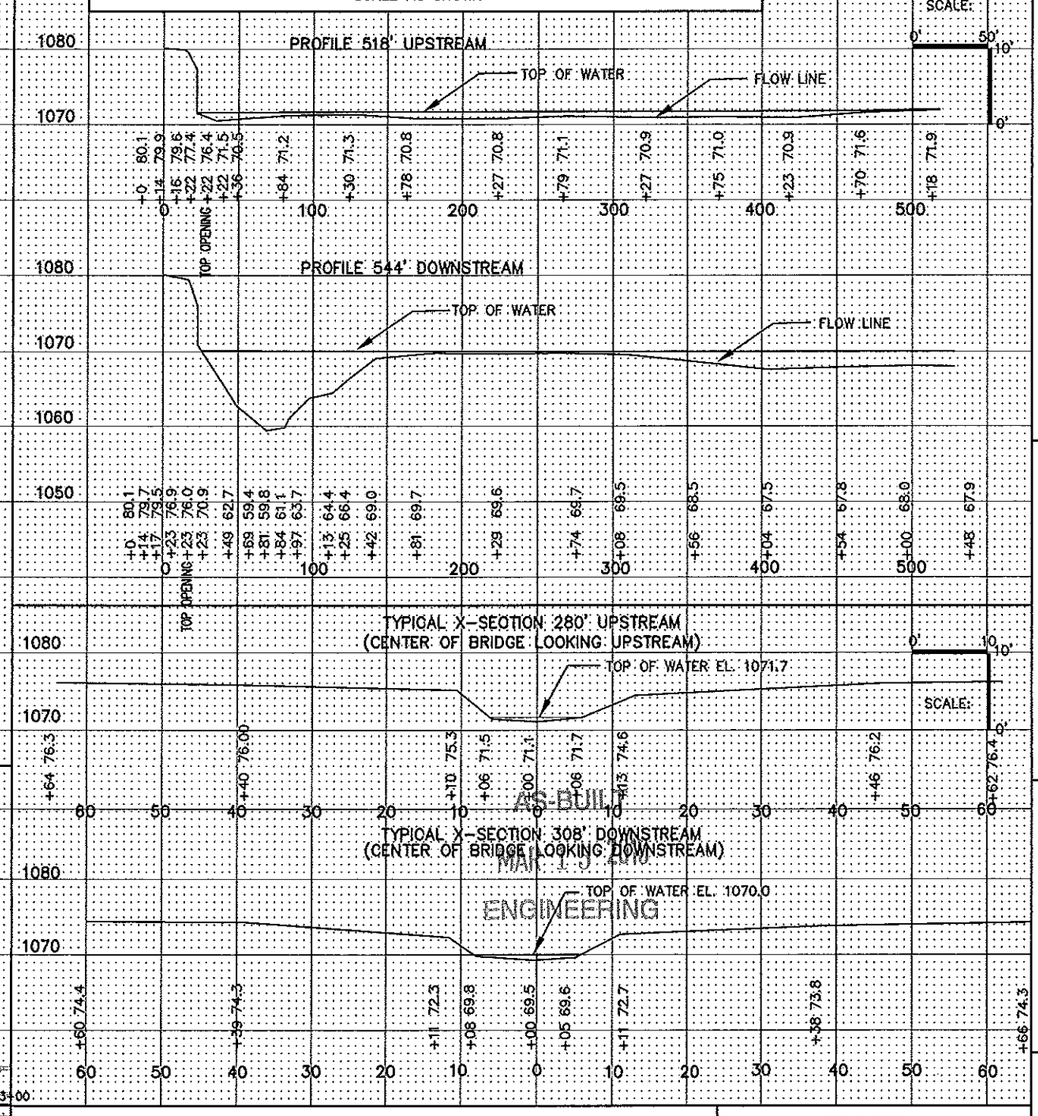
PLAT

SCALE 0' 50' 100'

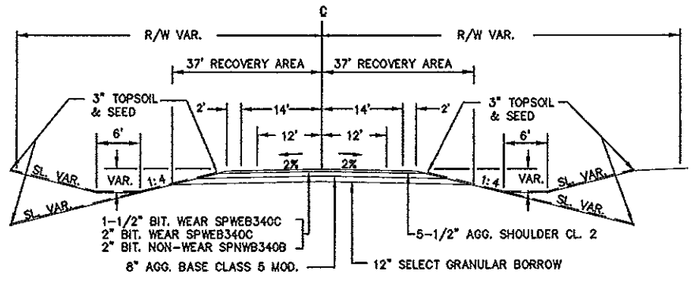


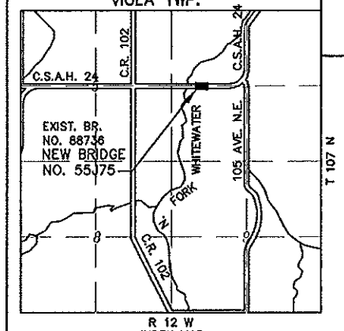
TYPICAL SECTIONS & PERTINENT DATA

SCALE AS SHOWN



AS-BUILT
MAR 1 3 2012
ENGINEERING





Fed. Proj. No.

1. Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating.

2. Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway) : Given location, type, length, height above high water, cross-sectional area etc.

3. Apparent highwater elevation ..... Obtained from .....

4. Other data: Approx. velocity of water at time of survey .....

HYDRAULIC ENGINEERS RECOMMENDATION

DATE 6/11/08

Stream or ditch designation NO NAME

Drainage area 0.48 SQ. MI.

Max. flood on record UNKNOWN Design flood (100 yr. freq.) 690 C.F.S.

Max. observed highwater elevation UNKNOWN Design highwater elevation 1077.1

Design mean velocity through structure 5.8 F.P.S. OUTLET

Low superstructure at or above elevation NA

Flowline 1070.5 Skew angle NO SKEW

Waterway area req'd. below elevation NA = NA Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is 690 C.F.S. at stage 1077.7 and mean velocity of 9.1 F.P.S. with 2.6 Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of National Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE .....

Bridge survey sheets made from: SURVEY CONDUCTED BY OLMSTED COUNTY.

Bench mark elevation ..... (M.S.L. 1929 Adj.)

Location: .....

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 0.5 MI. E. OF JCT. 102 (TH., C.S.A.H., C.R. etc.)

PROPOSED BRIDGE LOCATED 0.5 MILES E. OF C.R. 102

SEC. 4 TWP. 107 N R 12 W

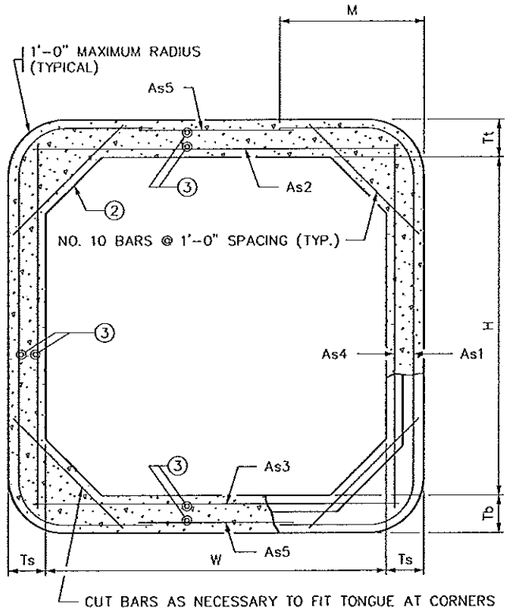
TOWNSHIP VIOLA COUNTY OLMSTED

BRIDGE NO. 55J75

CERTIFIED BY Kaye M Bienick REG. NO. 19917 2/27 2009
LICENSED PROFESSIONAL ENGINEER

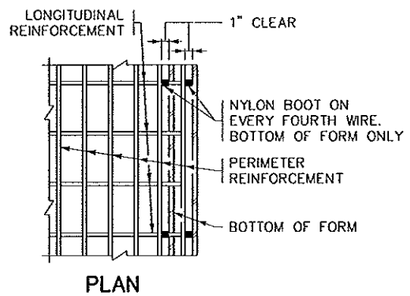
S.A.P. 55-624-02

SHEET NO. 11 OF 27 SHEETS

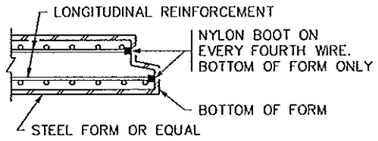


TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

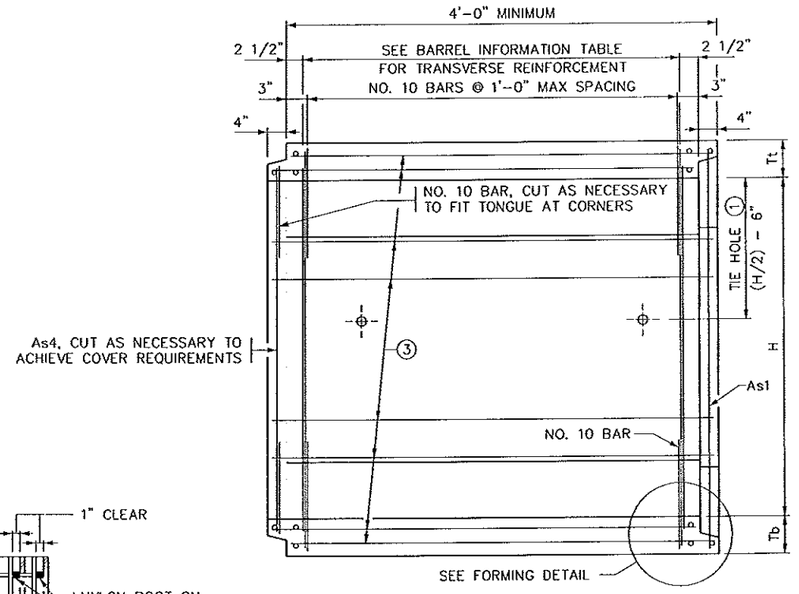


PLAN



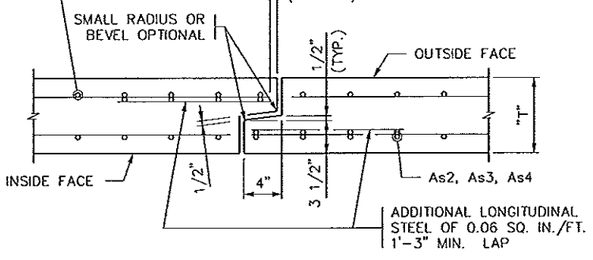
SECTION

FORMING DETAIL

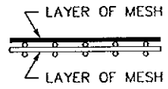


LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN



TONGUE AND GROOVE JOINT DETAIL



FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN

CONSTRUCTION NOTES

CULVERTS TO BE CONSTRUCTED AS PER Mn/DOT SPEC. 2412 EXCEPT AS NOTED.

FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. SEE FIG. 5-395.100(A) AND FIG. 5-395.100(B) FOR ADDITIONAL INFORMATION.

IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'-0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL(Mn/DOT SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. (ALSO, PROVIDE APPROVED GROUT SEEPAGE CORE, MINIMUM 12" THICK, BETWEEN THE CULVERT'S TWO ENDS.) MINIMUM DISTANCE REQUIRED IS 6".

THE STEEL FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

1 1/2" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
(a) 1 OR 2 LAYERS OF MESH OR
(b) 1 LAYER OF MESH AND 1 LAYER OF REINFORCEMENT BARS OR
(c) 1 LAYER OF REINFORCEMENT BARS.
THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WIRE MESH, THE AREAS OF REINFORCEMENT SHALL BE INCREASED BY 8%.

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 19. THE MAXIMUM MESH SIZE SHALL BE 1/2" DIA. PER LAYER (MAXIMUM OF 2 LAYERS).

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8".

WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR STEEL FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

CONCRETE SHALL BE MIX NO. 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL PER Mn/DOT SPEC. 3238.2A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

(1) CULVERT TIES ARE TO BE 1" DIAMETER RODS. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.

(2) HAUNCH SIZE AS FOLLOWS:
6'-0" AND 8'-0" WIDTHS - 6" TO 12"
10'-0" WIDTH - 10" TO 12"
12'-0" AND 14'-0" WIDTHS - 12"

(3) MINIMUM LONGITUDINAL STEEL SHALL BE 0.06 SQ. IN. /FT.

AS-BUILT
MAR 15 2010
ENGINEERING

BARREL INFORMATION

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT									
											As1			As2		As3		As4		As5	
					W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		AREA ($IN.^2/FT.$)	LENGTH (FT.)	M (FT.)	AREA ($IN.^2/FT.$)	LENGTH (FT.)	AREA ($IN.^2/FT.$)	LENGTH (FT.)	AREA ($IN.^2/FT.$)	LENGTH (FT.)	AREA ($IN.^2/FT.$)	LENGTH (FT.)
18+24.17	12' X 8'	2	5000	2-6	12	8	9	10	8	4985	.74	14'-7"	3'-2"	1.11	12'-6"	1.06	12'-6"	0.20	8'-6"	0.06	9'-0"
18+38.00	12' X 8'	2	5000	2-6	12	8	9	10	8	4985	.74	14'-7"	3'-2"	1.11	12'-6"	1.06	12'-6"	0.20	8'-6"	0.06	9'-0"
18+51.83	12' X 8'	2	5000	2-6	12	8	9	10	8	4985	.74	14'-7"	3'-2"	1.11	12'-6"	1.06	12'-6"	0.20	8'-6"	0.06	9'-0"

REVISION:

APPROVED: DECEMBER 11, 2000
Donald J. Flemming
STATE BRIDGE ENGINEER

S.A.P. 55-624-02 C.S.A.H. 24

FIG. 5-395.101(A)

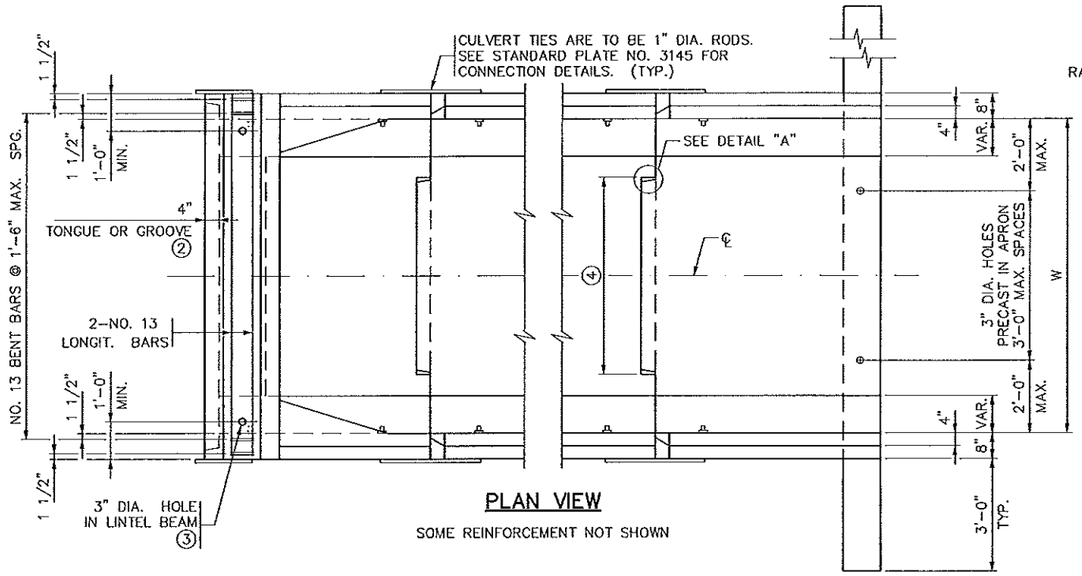
CERTIFIED BY Kaye M Boienick
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 2/27 2009

TITLE: BARREL DETAILS

DES: DR: APPROVED:
CHK: CHK:

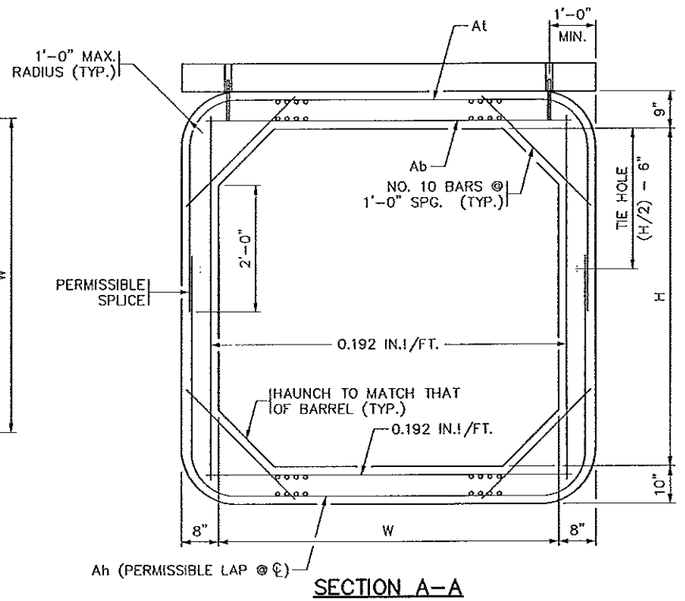
SHEET NO. 12 OF 27 SHEETS

BRIDGE NO. 55J74



PLAN VIEW

SOME REINFORCEMENT NOT SHOWN



SECTION A–A

CONSTRUCTION NOTES

SEE FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.

LONGITUDINAL REINFORCEMENT PARALLEL TO THE AXIS OF THE CULVERT SHALL HAVE A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL, EXCEPT IN THE TONGUE AND GROOVE AREA.

SEE FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" OR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.

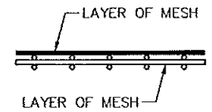
① WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL TO BE CONCRETE MIX NO. 1A43 OR MIX NO. 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON-WATERWAY USE.

② CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.

③ FILL HOLE WITH GROUT. GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".

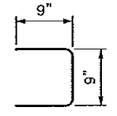
④ 3'-6" TONGUE AND 3'-7" GROOVE FOR 6'-0" WIDE CULVERTS. 5'-0" TONGUE AND 5'-1" GROOVE FOR CULVERTS OVER 6'-0" WIDE. CENTER TONGUE AND GROOVE ON ℄ OF EACH APRON JOINT.

⑤ AS AN ALTERNATE TO THE ONE LAYER MESH, PROVIDE TWO LAYERS OF REBAR OR WIRE MESH WITH THE STEEL AREA EQUAL TO HALF OF THE TEMPERATURE STEEL PER CODE REQUIREMENTS IN EACH FACE OF THE DROPWALL.

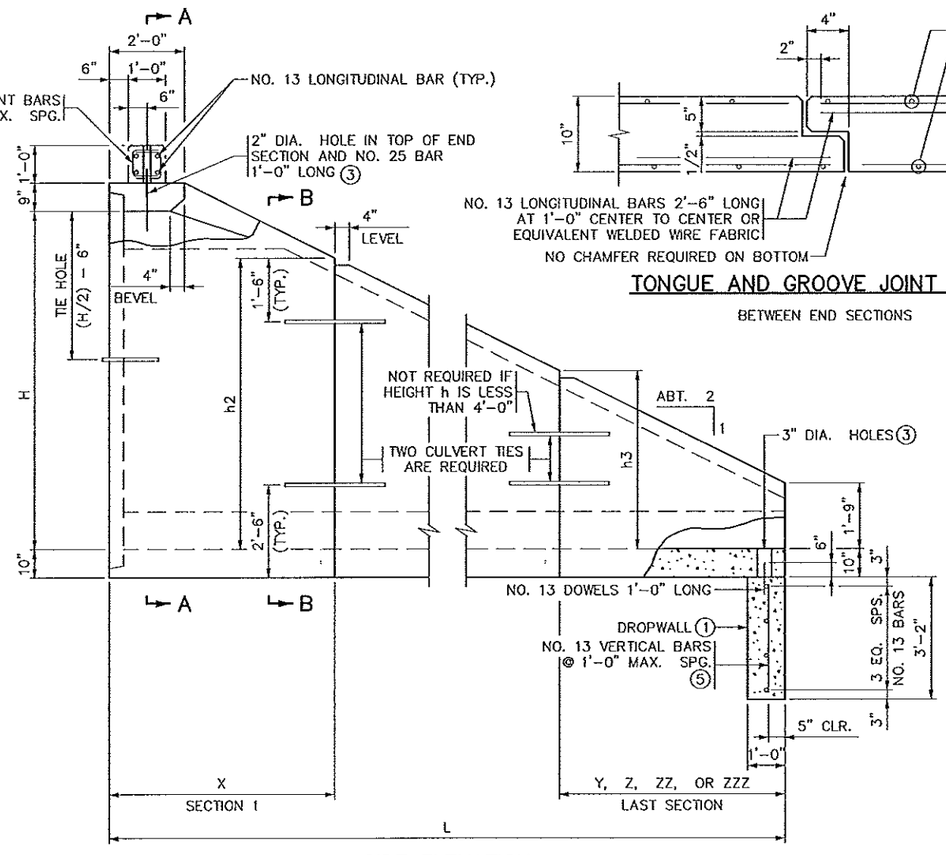


FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN.



NO. 13 BENT BAR



SIDE ELEVATION

TONGUE AND GROOVE JOINT DETAIL

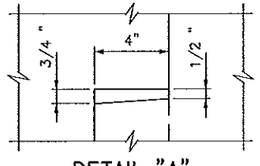
BETWEEN END SECTIONS

SECTION B–B

AS-BUILT

MAR 15 2010

ENGINEERING



DETAIL "A"

At, Ab REINFORCEMENT		
WIDTH (FT.)	At (IN²/FT.)	Ab (IN²/FT.)
6	.27	.44
8	.47	.60
10	.62	.74
12	.88	1.06
14	1.20	1.58

APRON DIMENSIONS & Ah REINFORCEMENT

H FT.	L FT.	SECTION 1 X	SECTION 1 Ah	h2	SECTION 2 Y	SECTION 2 Ah	h3	SECTION 3 Z	SECTION 3 Ah	h4	SECTION 4 ZZ	SECTION 4 Ah	h5	SECTION 5 ZZZ	SECTION 5 Ah	h6
4	8	8'	0.192	1'-9"												
5	10	6'	0.192	3'-9"	4'	0.192	1'-9"									
6	12	6'	0.192	4'-9"	6'	0.192	1'-9"									
7	14	6'	0.192	5'-9"	8'	0.192	1'-9"									
8	16	6'	0.20	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"						
9	18	6'	0.29	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"						
10	20	6'	0.42	8'-9"	6'	0.29	5'-9"	8'	0.192	1'-9"						
11	22	6'	0.60	9'-9"	6'	0.42	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"			
12	24	6'	0.78	10'-9"	6'	0.60	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"			
13	26	6'	1.03	11'-9"	6'	0.78	8'-9"	6'	0.28	5'-9"	8'	0.192	1'-9"			
14	28	6'	1.38	12'-9"	6'	1.03	9'-9"	6'	0.40	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN²/FT.)

REVISION: 06-30-2003

APPROVED: DECEMBER 11, 2000

Donald J. Flemming
STATE BRIDGE ENGINEER

S.A.P. 55-624-02 C.S.A.H. 24

CERTIFIED BY Kaye M Brienick
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 2/27 2009

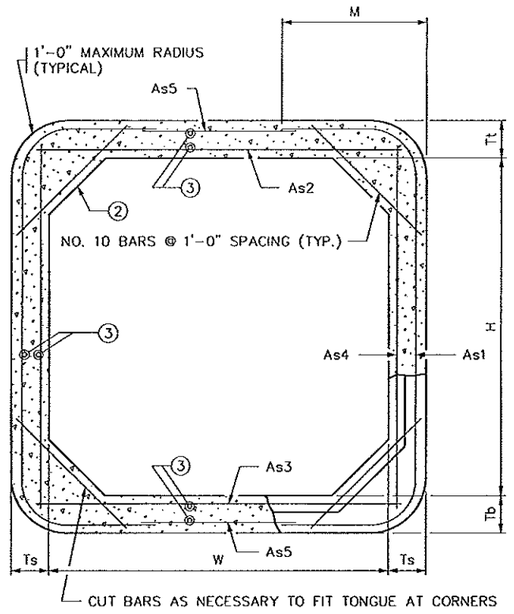
TITLE: PRECAST CONCRETE END SECTION TYPE I - SINGLE OR DOUBLE BARREL FOR SKEWS UP TO 7 1/2'

DES: DR: APPROVED:
CHK: CHK:

FIG. 5-395.102

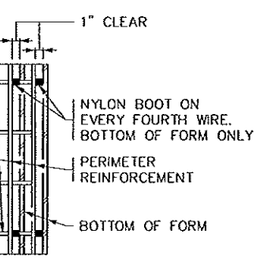
SHEET NO. 13 OF 27 SHEETS

BRIDGE NO. 55J74

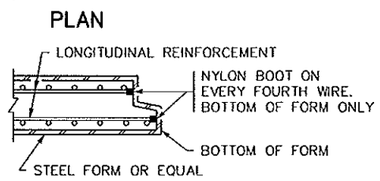


TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

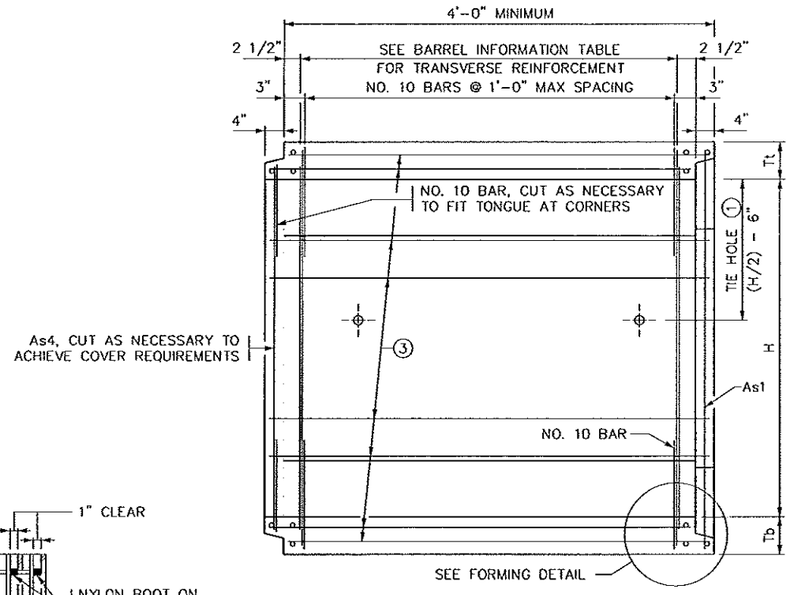


PLAN



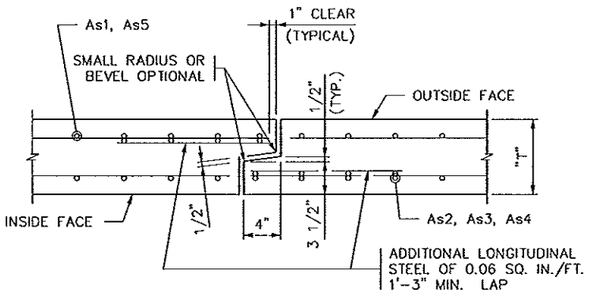
SECTION

FORMING DETAIL

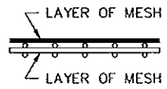


LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN



TONGUE AND GROOVE JOINT DETAIL



FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN

CONSTRUCTION NOTES

CULVERTS TO BE CONSTRUCTED AS PER Mn/DOT SPEC. 2412 EXCEPT AS NOTED.

FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. SEE FIG. 5-395.100(A) AND FIG. 5-395.100(B) FOR ADDITIONAL INFORMATION.

IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'-0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL(Mn/DOT SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. (ALSO, PROVIDE APPROVED GROUT SEEPAGE CORE, MINIMUM 12" THICK, BETWEEN THE CULVERT'S TWO ENDS.) MINIMUM DISTANCE REQUIRED IS 6".

THE STEEL FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

1 1/2" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
- (a) 1 OR 2 LAYERS OF MESH OR
- (b) 1 LAYER OF MESH AND 1 LAYER OF REINFORCEMENT BARS OR
- (c) 1 LAYER OF REINFORCEMENT BARS.

THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WIRE MESH, THE AREAS OF REINFORCEMENT SHALL BE INCREASED BY 8%.

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 19. THE MAXIMUM MESH SIZE SHALL BE 1/2" DIA. PER LAYER (MAXIMUM OF 2 LAYERS).

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8".

WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR STEEL FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

CONCRETE SHALL BE MIX NO. 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL PER Mn/DOT SPEC. 3238.2A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

(1) CULVERT TIES ARE TO BE 1" DIAMETER RODS. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.

(2) HAUNCH SIZE AS FOLLOWS:
6'-0" AND 8'-0" WIDTHS - 6" TO 12"
10'-0" WIDTH - 10" TO 12"
12'-0" AND 14'-0" WIDTHS - 12"

(3) MINIMUM LONGITUDINAL STEEL SHALL BE 0.06 SQ. IN. /FT.

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BARREL INFORMATION

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT									
											As1			As2		As3		As4		As5	
					W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		AREA ($IN.^2/FT.$)	LENGTH (FT.)	M (FT.)	AREA ($IN.^2/FT.$)	LENGTH (FT.)	AREA ($IN.^2/FT.$)	LENGTH (FT.)	AREA ($IN.^2/FT.$)	LENGTH (FT.)	AREA ($IN.^2/FT.$)	LENGTH (FT.)
28+73.08	12' X 5'	2	5000	2-8	12	5	9	10	8	4385	.74	11'-11"	3'-4"	0.93	12'-6"	0.93	12'-6"	0.20	5'-6"	0.06	8'-7"
28+86.92	12' X 5'	2	5000	2-8	12	5	9	10	8	4385	.74	11'-11"	3'-4"	0.93	12'-6"	0.93	12'-6"	0.20	5'-6"	0.06	8'-7

REVISION:

APPROVED: DECEMBER 11, 2000
Donald J. Flemming
STATE BRIDGE ENGINEER

S.A.P. 55-624-02 C.S.A.H. 24

CERTIFIED BY Kayc M Berenick LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 2/27 2009

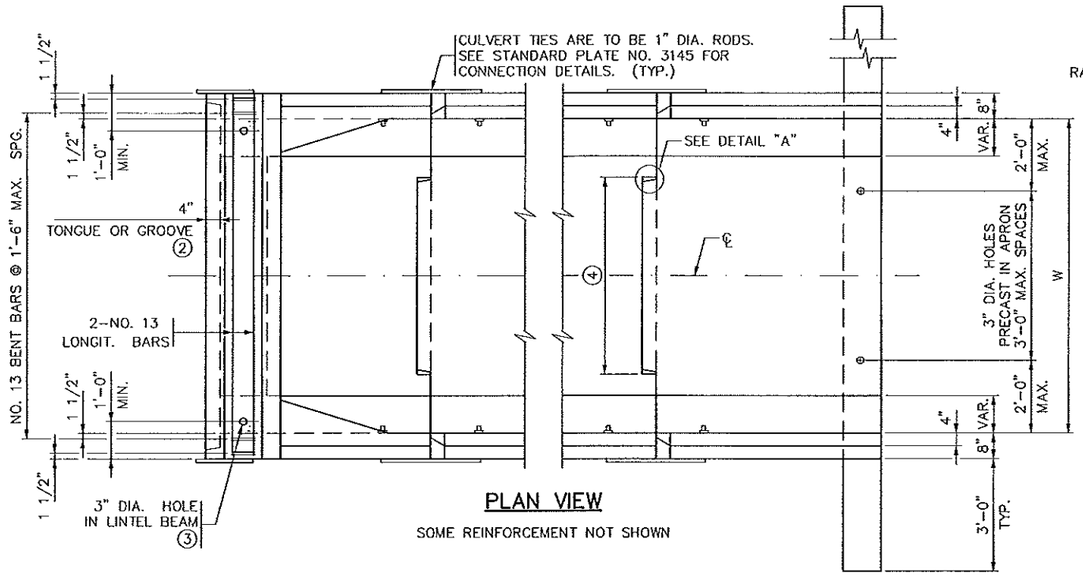
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DES: DR: APPROVED:
CHK: CHK:

SHEET NO. 14 OF 27 SHEETS

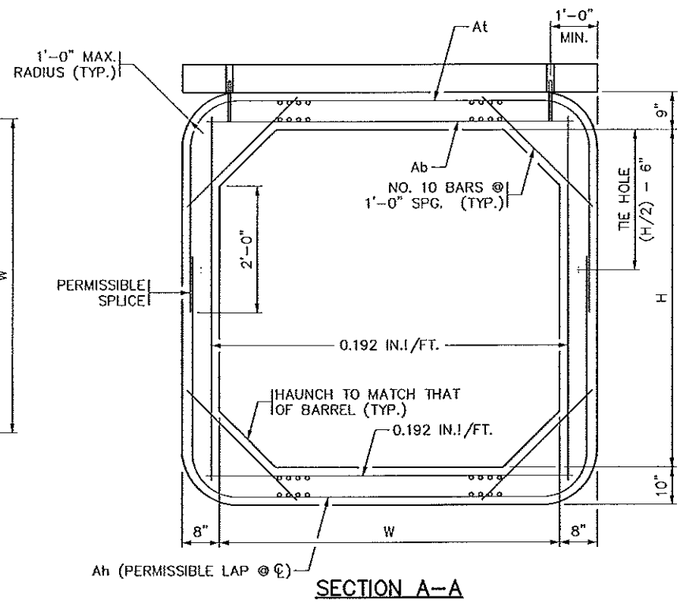
FIG. 5-395.101(A)

BRIDGE NO. 55J75



PLAN VIEW

SOME REINFORCEMENT NOT SHOWN



SECTION A–A

CONSTRUCTION NOTES

SEE FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.

LONGITUDINAL REINFORCEMENT PARALLEL TO THE AXIS OF THE CULVERT SHALL HAVE A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL, EXCEPT IN THE TONGUE AND GROOVE AREA.

SEE FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" OR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.

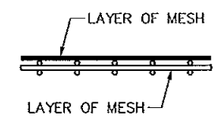
① WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL TO BE CONCRETE MIX NO. 1A43 OR MIX NO. 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON-WATERWAY USE.

② CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.

③ FILL HOLE WITH GROUT. GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".

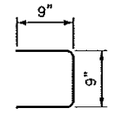
④ 3'-6" TONGUE AND 3'-7" GROOVE FOR 6'-0" WIDE CULVERTS. 5'-0" TONGUE AND 5'-1" GROOVE FOR CULVERTS OVER 6'-0" WIDE. CENTER TONGUE AND GROOVE ON ℄ OF EACH APRON JOINT.

⑤ AS AN ALTERNATE TO THE ONE LAYER MESH, PROVIDE TWO LAYERS OF REBAR OR WIRE MESH WITH THE STEEL AREA EQUAL TO HALF OF THE TEMPERATURE STEEL PER CODE REQUIREMENTS IN EACH FACE OF THE DROPWALL.

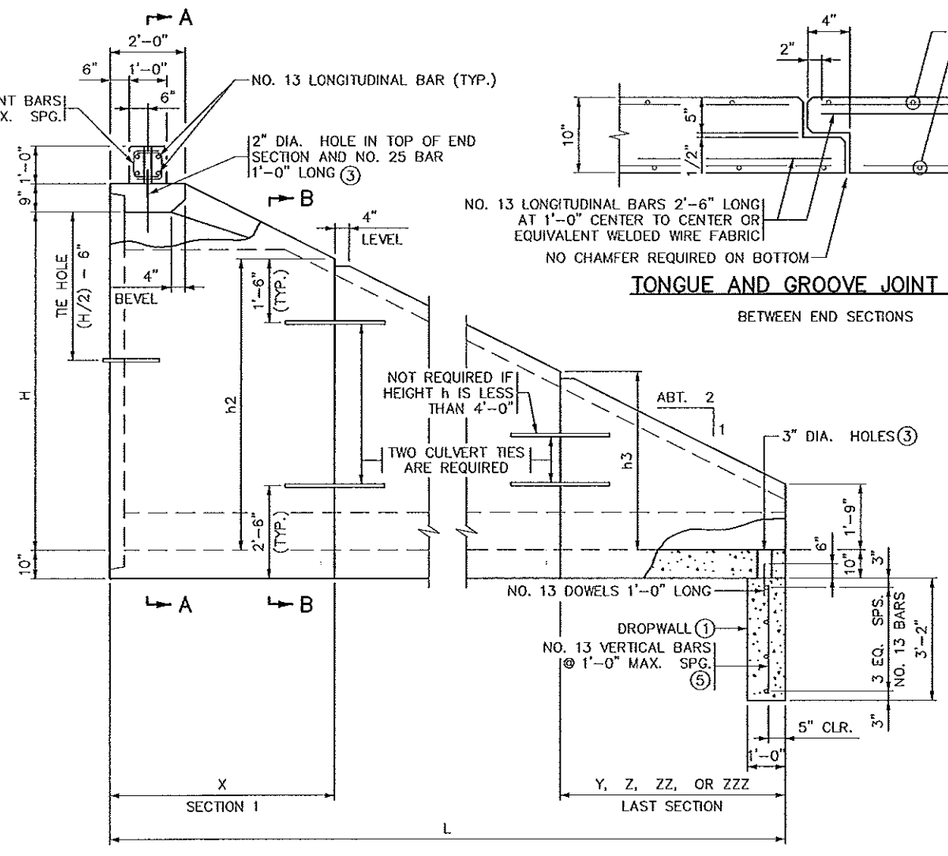


FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN.



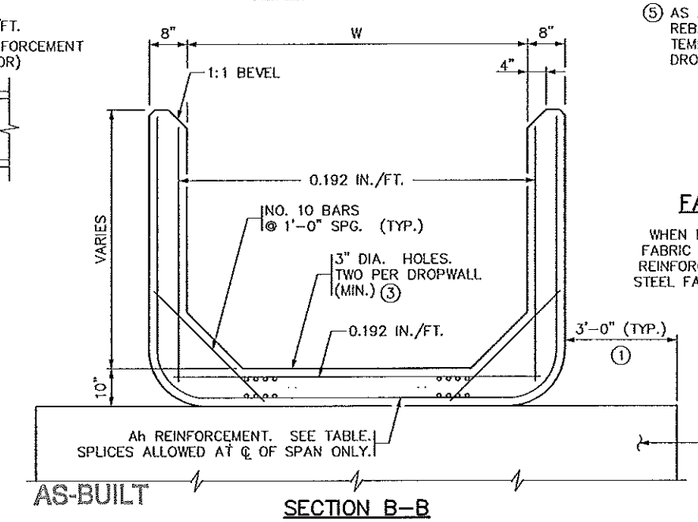
NO. 13 BENT BAR



SIDE ELEVATION

TONGUE AND GROOVE JOINT DETAIL

BETWEEN END SECTIONS

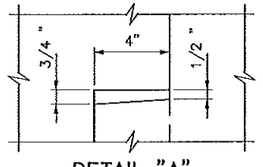


AS-BUILT

SECTION B–B

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DETAIL "A"

At, Ab REINFORCEMENT		
WIDTH (FT.)	At (IN²/FT.)	Ab (IN²/FT.)
6	.27	.44
8	.47	.60
10	.62	.74
12	.88	1.06
14	1.20	1.58

APRON DIMENSIONS & Ah REINFORCEMENT

H	L	SECTION 1		h2	SECTION 2		h3	SECTION 3		h4	SECTION 4		h5	SECTION 5		h6
FT.	FT.	X	Ah		Y	Ah		Z	Ah		ZZ	Ah		ZZZ	Ah	
4	8	8'	0.192	1'-9"												
5	10	6'	0.192	3'-9"	4'	0.192	1'-9"									
6	12	6'	0.192	4'-9"	6'	0.192	1'-9"									
7	14	6'	0.192	5'-9"	8'	0.192	1'-9"									
8	16	6'	0.20	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"						
9	18	6'	0.29	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"						
10	20	6'	0.42	8'-9"	6'	0.29	5'-9"	8'	0.192	1'-9"						
11	22	6'	0.60	9'-9"	6'	0.42	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"			
12	24	6'	0.78	10'-9"	6'	0.60	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"			
13	26	6'	1.03	11'-9"	6'	0.78	8'-9"	6'	0.28	5'-9"	8'	0.192	1'-9"			
14	28	6'	1.38	12'-9"	6'	1.03	9'-9"	6'	0.40	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN²/FT.)

REVISION: 06-30-2003

APPROVED: DECEMBER 11, 2000

Donald J. Flemming
STATE BRIDGE ENGINEER

S.A.P. 55-624-02 C.S.A.H. 24

FIG. 5-395.102

CERTIFIED BY Kaye M Borenick
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 2/27 2009

TITLE: PRECAST CONCRETE END SECTION TYPE I - SINGLE OR DOUBLE BARREL FOR SKEWS UP TO 7 1/2°

DES: | DR: | APPROVED:
CHK: | CHK:

SHEET NO. 15 OF 27 SHEETS

BRIDGE NO. 55J75

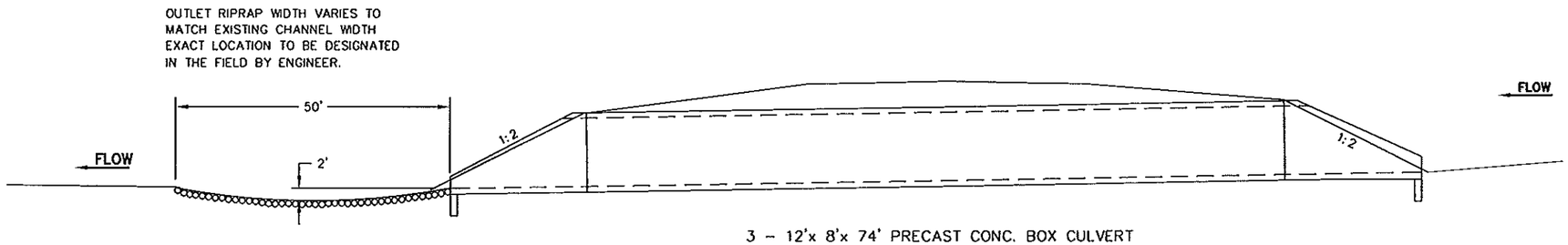
END APRON
1068.90 @ 53.00

END BARREL
1068.93 @ 37.00

END BARREL
1069.05 @ 37.00

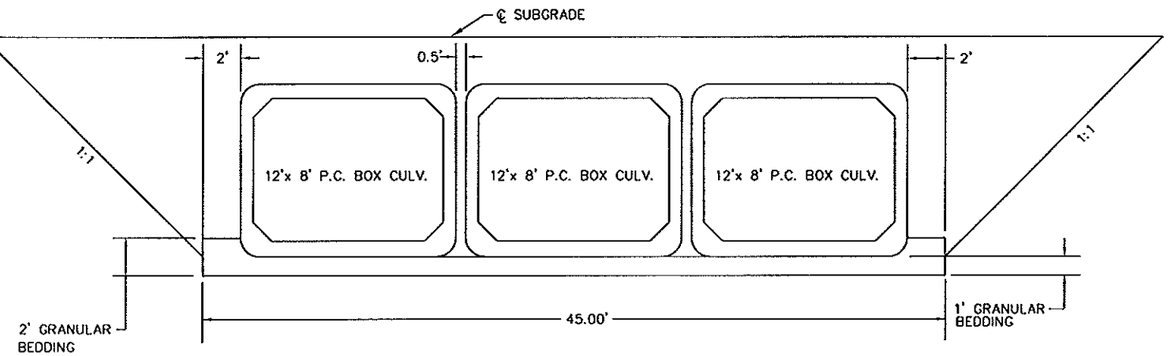
END APRON
1069.08 @ 53.00

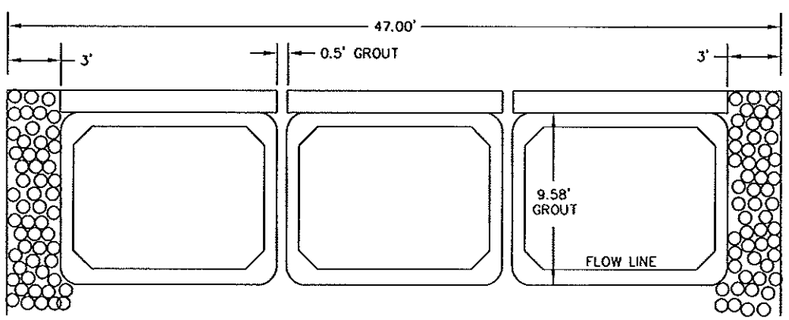
CULVERT DETAIL
STA. 18+24.17, STA. 18+38.00 & STA. 18+51.83



3 – 12'x 8'x 74' PRECAST CONC. BOX CULVERT
6– 12'x 8' PRECAST CONC. END SECTIONS

BEDDING DETAIL
STA. 18+24.17, STA. 18+38.00 & STA. 18+51.83





INLET & OUTLET APRON

AS-BUILT

MAR 1 5 2010

ENGINEERING

NOTES:

1. CULVERT EXCAVATION WILL BE CONSIDERED INCIDENTAL AND WILL BE INCLUDED FOR PAYMENT UNDER UNIT PRICE FOR ITEM NO. 2412.511 AND ITEM NO. 2412.512.
2. CULVERT TO BE BACK FILLED WITH EXCAVATION MATERIAL AND WILL BE CONSIDERED INCIDENTAL TO UNCLASSIFIED EXCAVATION AND NO DIRECT COMPENSATION WILL BE MADE.
3. ALL DIMENSIONS AND SLOPES SHOWN ON TYPICAL SECTION ARE APPROXIMATE.
4. GRANULAR BEDDING TO BE PLACED UNDER BARREL SECTIONS ONLY.
5. PLACE RIPRAP ON 9" GRANULAR FILTER OR GEOTEXTILE MATERIAL WHICH SHALL BE CONSIDERED INCIDENTAL AND NO COMPENSATION WILL BE MADE THEREFORE.
6. 0.5' BETWEEN BOX CULVERTS SHALL BE GROUTED WITH LEAN MIX BACKFILL, ITEM NO. 2520.501, FROM INLET END OF APRON TO OUTLET END OF APRON.

BRIDGE 55J74

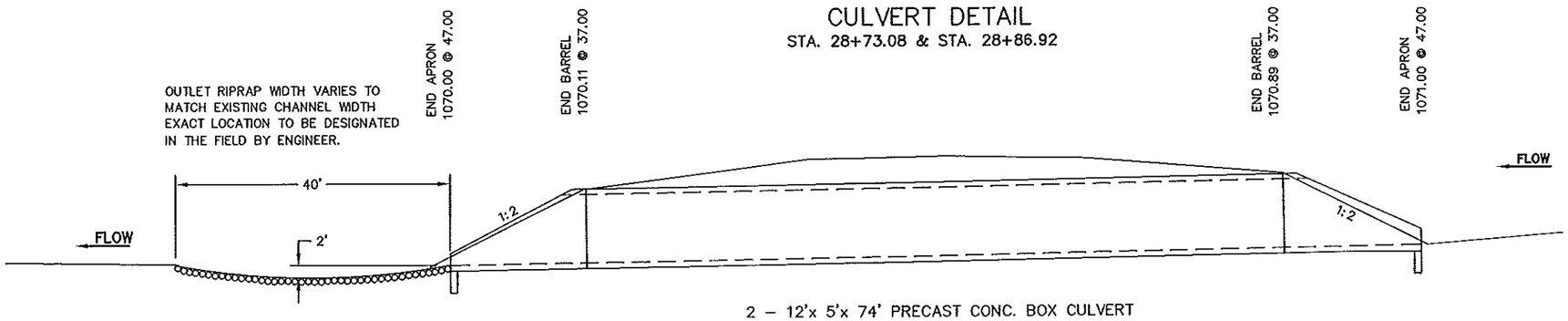
CERTIFIED BY Kyle M Brennick REG. NO. 19917 3/18 2009
LICENSED PROFESSIONAL ENGINEER

S.A.P. NO. 55–624–02

SHEET NO. 16 OF 27 SHEETS

CULVERT DETAIL

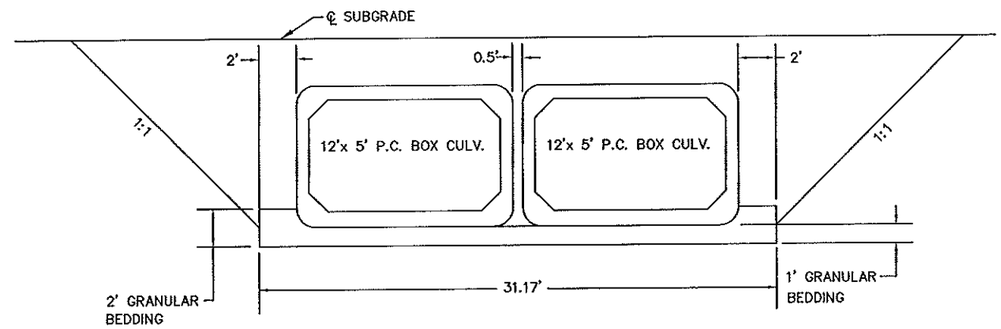
STA. 28+73.08 & STA. 28+86.92

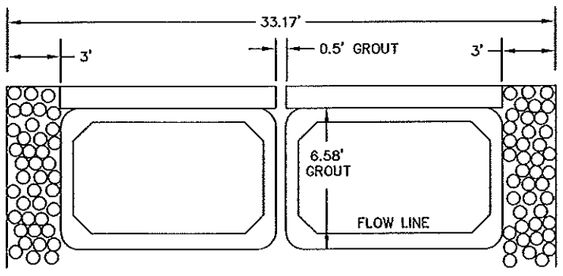


2 – 12'x 5'x 74' PRECAST CONC. BOX CULVERT
4– 12'x 5' PRECAST CONC. END SECTIONS

BEDDING DETAIL

STA. 28+73.08 & STA. 28+86.92





INLET & OUTLET APRON

AS-BUILT

MAR 15 2010

ENGINEERING

NOTES:
1. CULVERT EXCAVATION WILL BE CONSIDERED INCIDENTAL AND WILL BE INCLUDED FOR PAYMENT UNDER UNIT PRICE FOR ITEM NO. 2412.511 AND ITEM NO. 2412.512.
2. CULVERT TO BE BACK FILLED WITH EXCAVATION MATERIAL AND WILL BE CONSIDERED INCIDENTAL TO UNCLASSIFIED EXCAVATION AND NO DIRECT COMPENSATION WILL BE MADE.
3. ALL DIMENSIONS AND SLOPES SHOWN ON TYPICAL SECTION ARE APPROXIMATE.
4. GRANULAR BEDDING TO BE PLACED UNDER BARREL SECTIONS ONLY.
5. PLACE RIPRAP ON 9" GRANULAR FILTER OR GEOTEXTILE MATERIAL WHICH SHALL BE CONSIDERED INCIDENTAL AND NO COMPENSATION WILL BE MADE THEREFORE.
6. 0.5' BETWEEN BOX CULVERTS SHALL BE GROUTED WITH LEAN MIX BACKFILL, ITEM NO. 2520.501, FROM INLET END OF APRON TO OUTLET END OF APRON.

BRIDGE 55J75

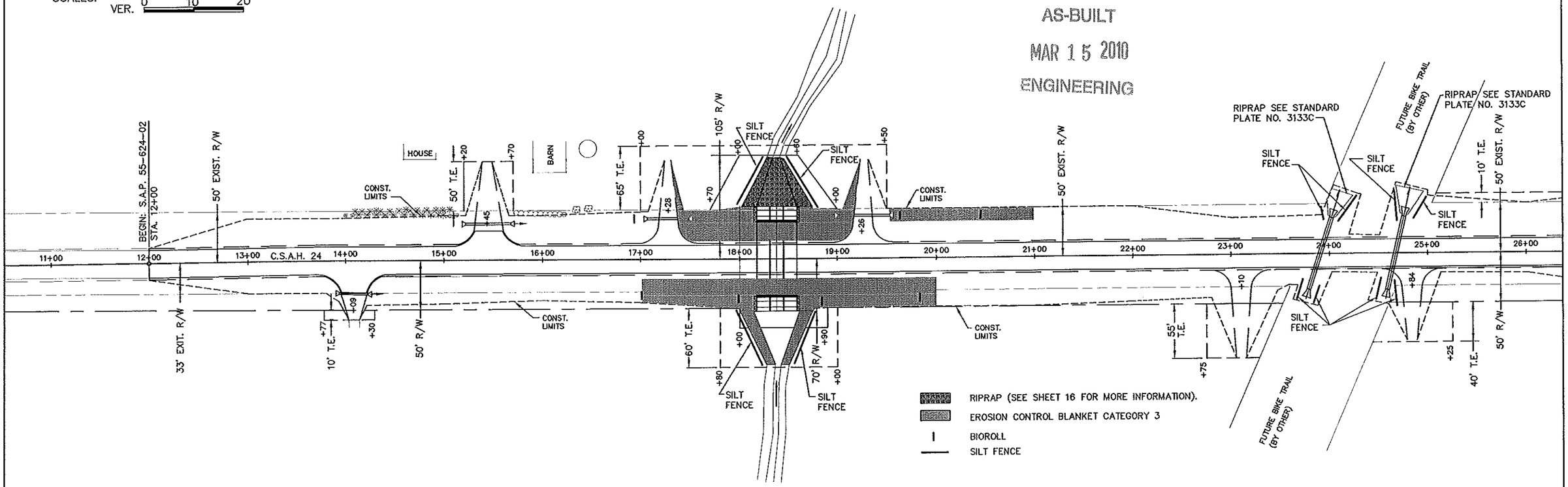
CERTIFIED BY Kaye M Bierwirth LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 2/27 2009

S.A.P. NO. 55-624-02

SHEET NO. 17 OF 27 SHEETS

SCALES: HOR. 0 50' 100'
VER. 0 10' 20'

AS-BUILT
MAR 15 2010
ENGINEERING



SILT FENCE TYPE MACHINE SLICED	
LOCATION	LIN. FT.
LT. STA. 17+98 TO STA. 18+25	55
RT STA. 17+98 TO STA. 18+22	62
LT. STA. 18+49 TO STA. 18+80	62
RT. STA. 18+56 TO STA. 18+77	56
RT. STA. 23+67 TO STA. 23+73	20
RT. STA. 23+84 TO STA. 23+90	18
LT. STA. 23+90 ST STA. 23+94	13
LT. STA. 24+10 ST STA. 24+28	30
RT. STA. 24+48 ST STA. 24+53	22
RT. STA. 24+67 ST STA. 24+69	26
LT. STA. 24+67 ST STA. 24+69	31
LT. STA. 24+90 ST STA. 24+94	25
TOTAL	420

LOCATION ARE APPROX. AND WILL BE DESIGNATED IN THE FIELD BY ENGINEER.

BIOROLL DITCH CHECK TYPE 2		
LOCATION	REMARKS	LIN. FT.
LT. STA. 16+98	DITCH	10
RT STA. 17+00	DITCH	10
RT. STA. 18+00	DITCH	10
RT. STA. 18+80	DITCH	10
LT. STA. 19+65	DITCH	10
RT. STA. 19+80	DITCH	10
LT. STA. 20+50	DITCH	10
	TOTAL	70

LOCATION ARE APPROX. AND WILL BE DESIGNATED IN THE FIELD BY ENGINEER.

EROSION CONTROL BLANKET CATEGORY 3		
LOCATION	REMARKS	SQ. YDS.
LT. STA. 17+38 TO STA. 19+16	INSLOPE, DITCH, & BACKSLOPE	660
RT STA. 17+00 TO STA. 20+00	INSLOPE, DITCH, & BACKSLOPE	1,080
LT. STA. 19+50 TO STA. 21+00	DITCH	220
	TOTAL	1,960

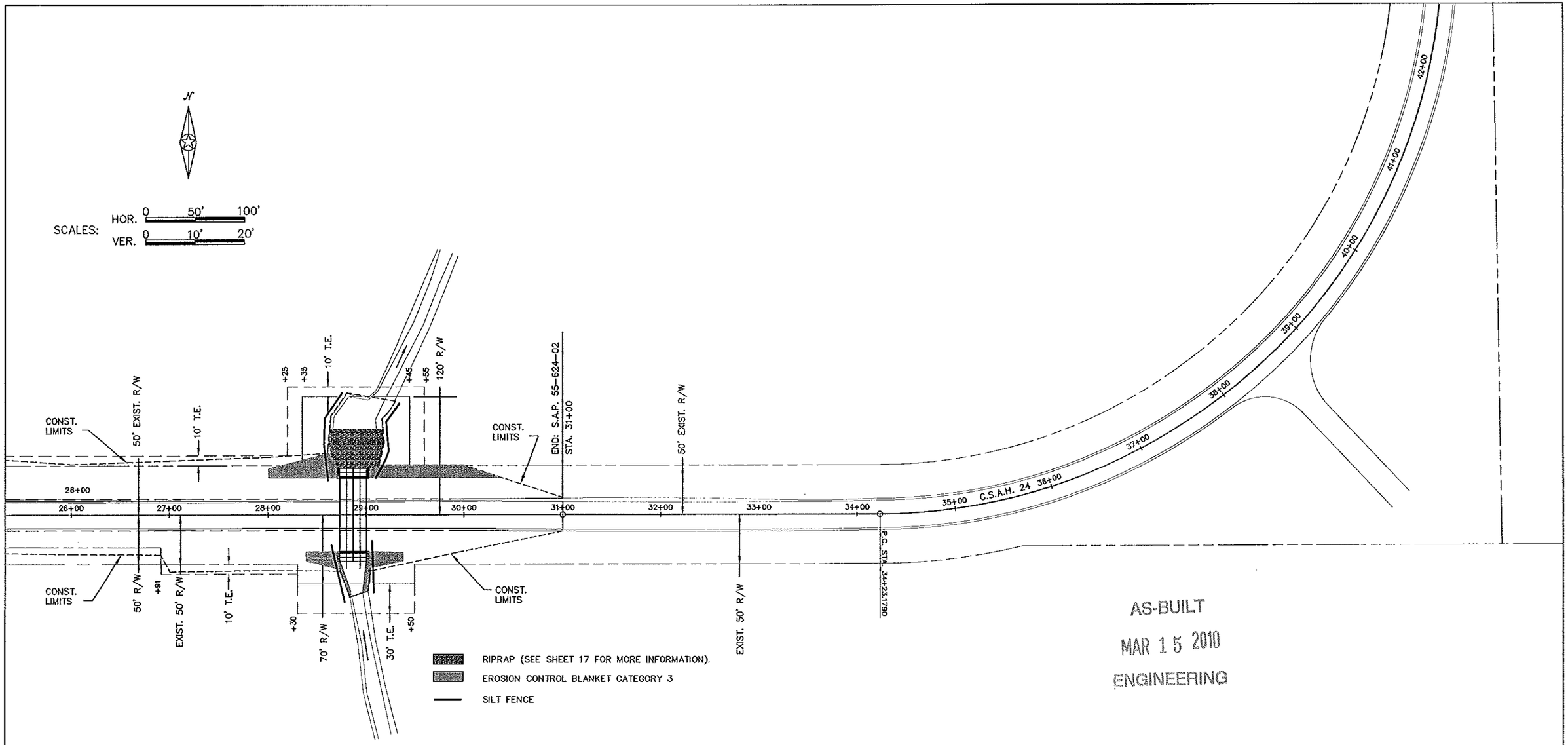
LOCATION ARE APPROX. AND WILL BE DESIGNATED IN THE FIELD BY ENGINEER.

CERTIFIED BY Kayc M Bienich REG. NO. 19917 2/27 2009
LICENSED PROFESSIONAL ENGINEER

EROSION CONTROL

S.A.P. 55-624-02

SHEET NO. 18 OF 27 SHEETS



AS-BUILT

MAR 15 2010

ENGINEERING

SILT FENCE TYPE MACHINE SLICED	
LOCATION	LIN. FT.
RT. STA. 28+65 TO STA. 28+78	60
RT STA. 29+06 TO STA. 29+08	52
LT. STA. 28+65 TO STA. 28+76	62
LT. STA. 29+10TO STA. 29+34	84
TOTAL	258

LOCATION ARE APPROX. AND WILL BE DESIGNATED IN THE FIELD BY ENGINEER.

EROSION CONTROL BLANKET CATEGORY 3		
LOCATION	REMARKS	SQ. YDS.
LT. STA. 28+00 TO STA. 28+71	BACKSLOPE	160
RT STA. 28+50 TO STA. 28+86	INSLOPE, DITCH, & BACKSLOPE	50
LT. STA. 29+03 TO STA. 30+50	INSLOPE, DITCH, & BACKSLOPE	155
RT STA. 28+95 TO STA. 29+40	BACKSLOPE	160
	TOTAL	525

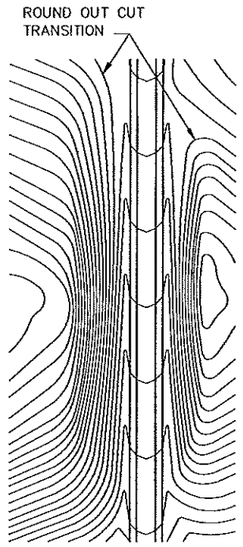
LOCATION ARE APPROX. AND WILL BE DESIGNATED IN THE FIELD BY ENGINEER.

EROSION CONTROL

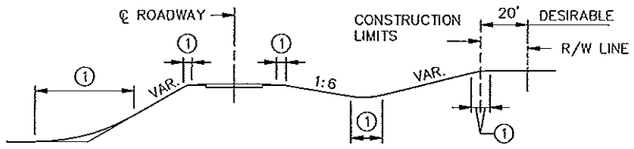
CERTIFIED BY Kayc M Brienick LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 2/27 2009

S.A.P. 55-624-02

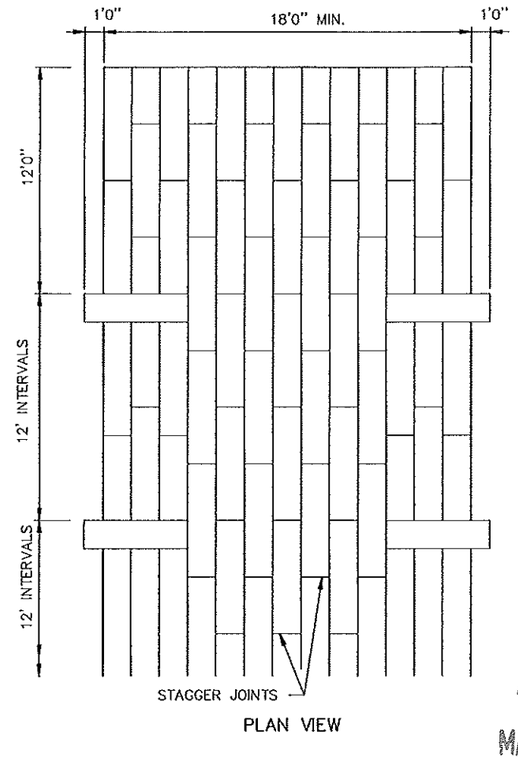
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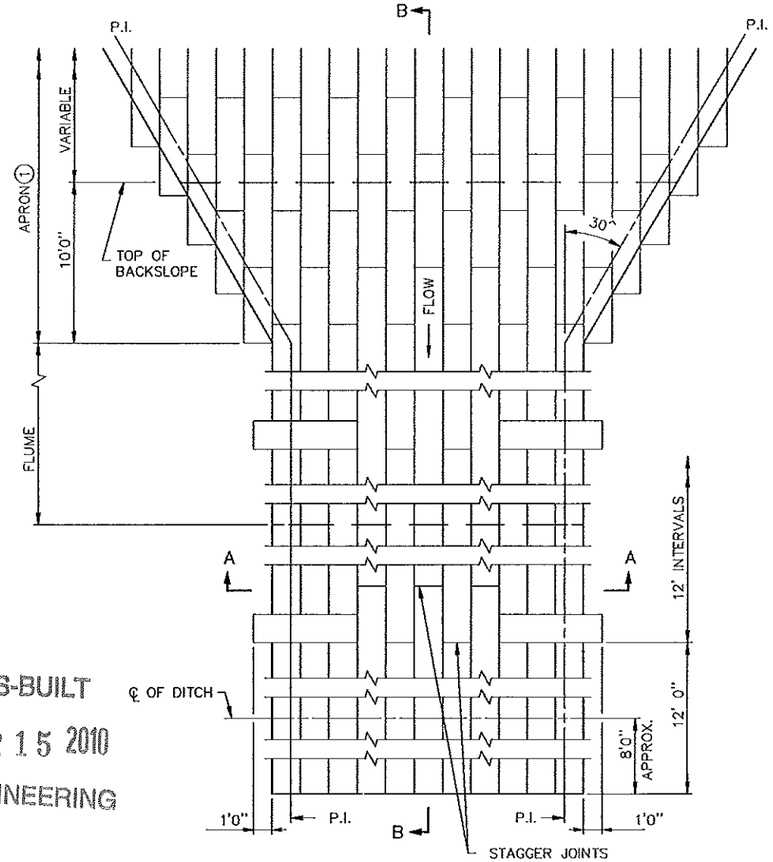
CONTOURING ROAD CUTS



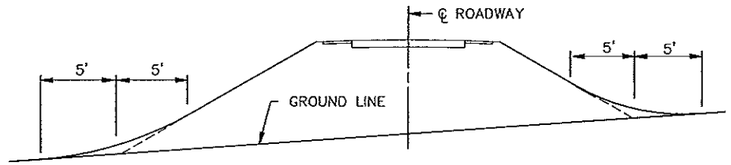
ROUNDING SHOULDERS AND BACKSLOPES



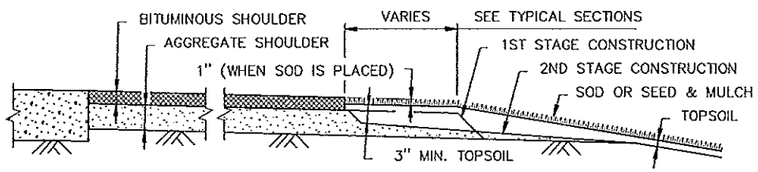
PLAN VIEW



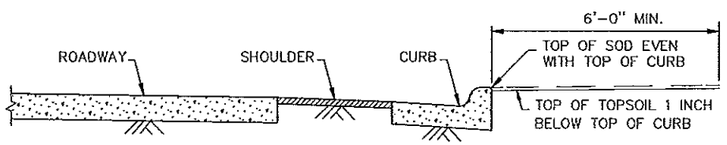
PLAN VIEW



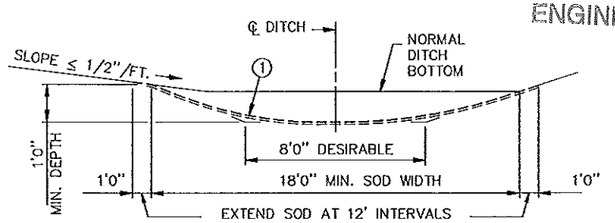
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



SHAPING AND TOPSOILING INSLOPES

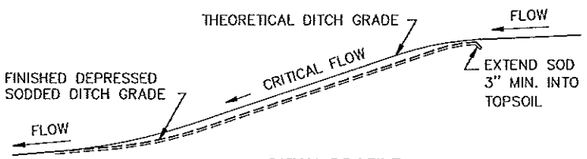


SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



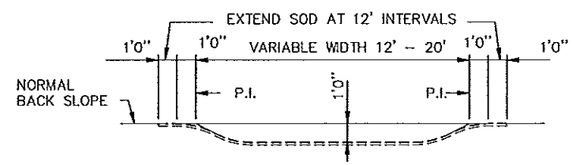
SODDED DITCH CROSS SECTION

WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.

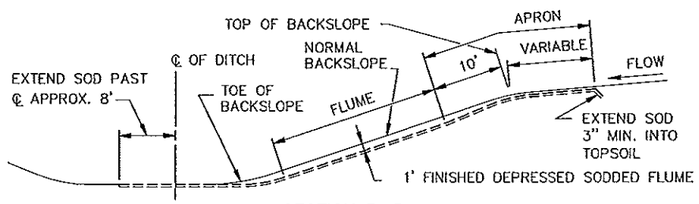


DITCH PROFILE

SODDED DITCH DETAILS



SECTION A–A



SECTION B–B

SODDED FLUME DETAILS

AS-BUILT

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NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

① CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

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LICENSED PROFESSIONAL ENGINEER

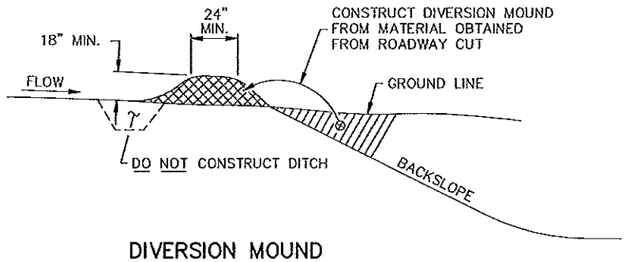
STANDARD SHEET NO. 5–297.404

STANDARD APPROVED: NOVEMBER 20, 2002

TITLE: PERMANENT EROSION CONTROL
ALONG ROADWAYS, DITCHES AND FLUMES

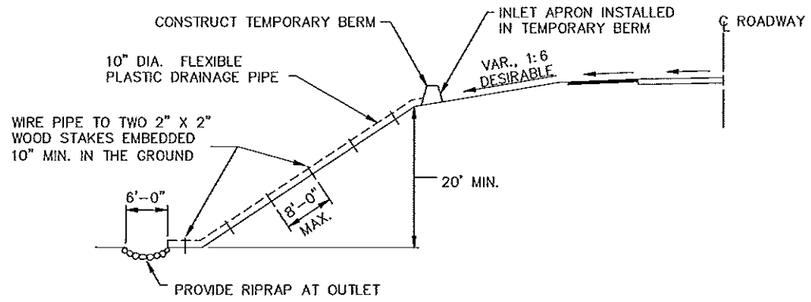
S.A.P. 55–624–02

SHEET NO. 20 OF 27 SHEETS



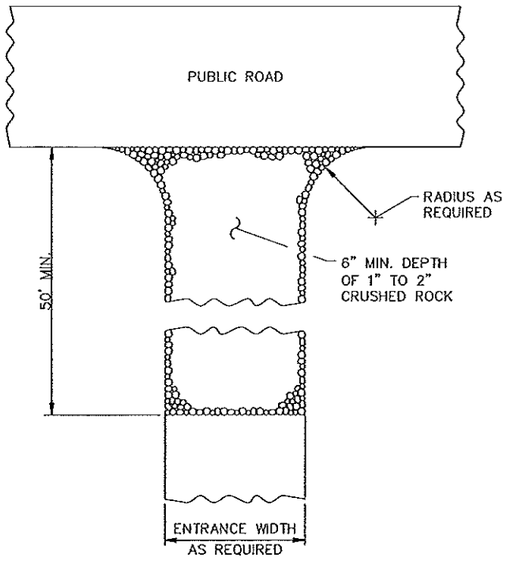
DIVERSION MOUND

DESIGN GUIDELINES:
STORM FREQUENCY: 10 YEAR – 24 HOUR
MAXIMUM DRAINAGE AREA: 5 ACRES
MAXIMUM DIVERSION: GRADE 5%

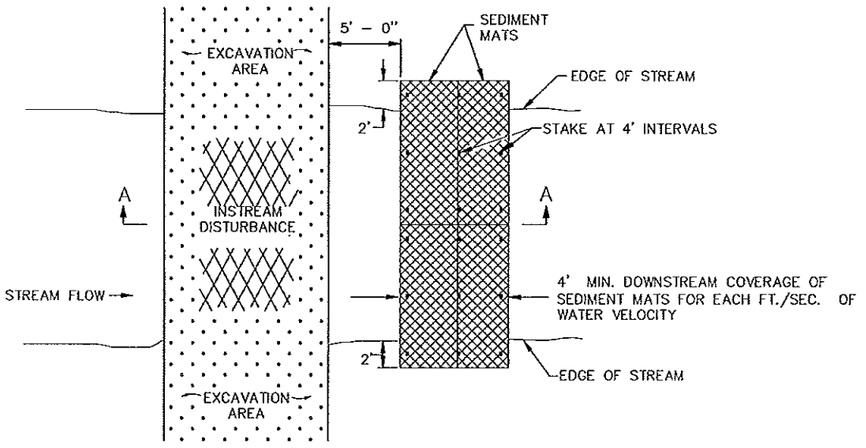


TEMPORARY DOWN DRAIN ON FILL SLOPE

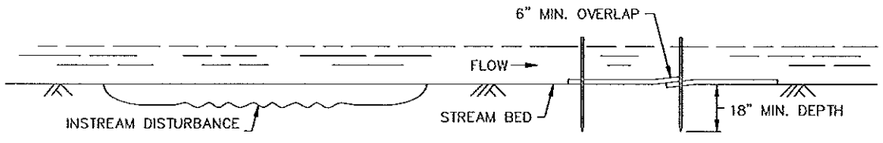
DESIGN GUIDELINES:
STORM FREQUENCY: 2 YEAR – 24 HOUR
MAXIMUM DRAINAGE AREA: 3 ACRES



ROCK CONSTRUCTION ENTRANCE ①



PLAN VIEW

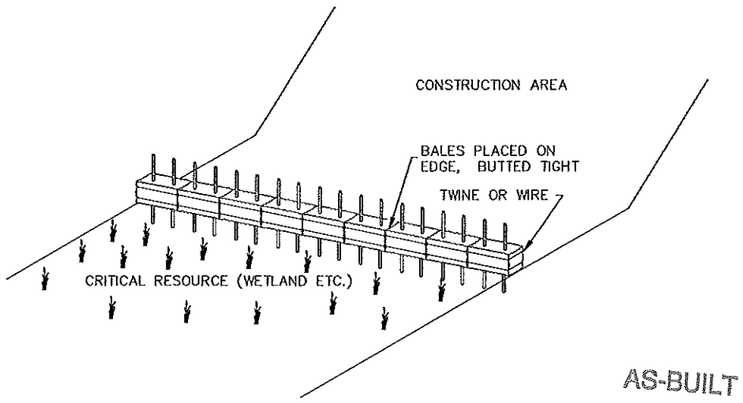


SECTION A–A

SEDIMENT MAT ⑥

TYPICAL STREAM BED INSTALLATION

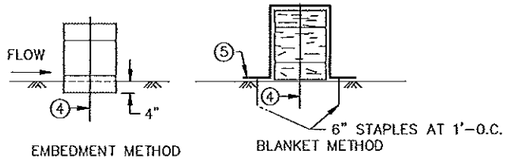
DESIGN GUIDELINES:
MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



BALE BARRIERS

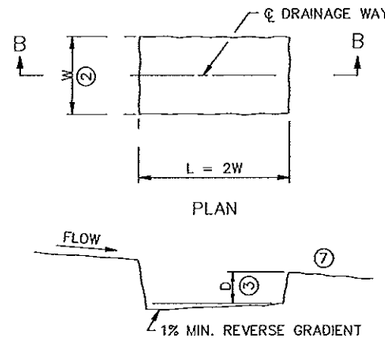
TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS

AS-BUILT
MAR 15 2010
ENGINEERING



BALE BARRIER DETAIL

APPROX. BALE SIZE: 14" X 18" X 36" LONG



SEDIMENT TRAP DETAIL

NOTES:
SEE SPECS. 2573, 3892, & 3894.

① ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE TRUCKS ENTER MAIN ROAD. KEEPING MUD OFF THE ROAD WILL PREVENT AUTO DAMAGE AND KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS. GEOTEXTILE MAY BE PLACED UNDER THE ROCK TO KEEP ROCKS SEPARATE FROM SOIL.

② W = 10 FT. MIN., 20 FT. MAX.

③ D = 2 FT.

④ TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE EMBEDDED 10 INCHES MINIMUM IN THE GROUND.

⑤ PLACE A CATEGORY 3 EROSION CONTROL BLANKET, 6 FT. WIDE MINIMUM, OVER THE BALE INSTEAD OF TRENCHING.

⑥ THIS DETAIL MAY NOT BE ACCEPTABLE FOR WORK ON PUBLIC WATERS, SEE GENERAL PUBLIC WATERS PERMIT (GP) 2004–0001.

⑦ LOCATION OF DOWNSTREAM TEMPORARY SEDIMENT CONTROL DEVICE.

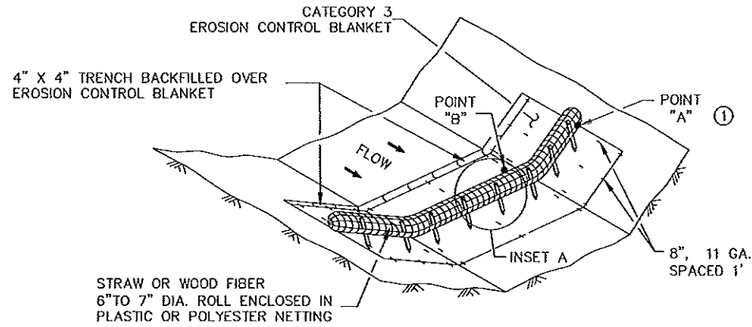
STANDARD SHEET NO. ~~5-297.405~~ (2 of 4)
STANDARD APPROVED: SEPTEMBER 27, 2006

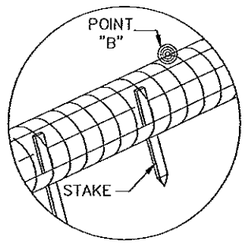
TITLE: TEMPORARY SEDIMENT CONTROL
MISCELLANEOUS DETAILS

CERTIFIED BY Kay M Brierich LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 2/27 2009

S.A.P. 55–624–02

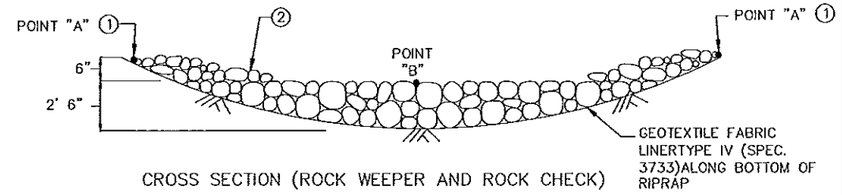
SHEET NO. 21 OF 27 SHEETS



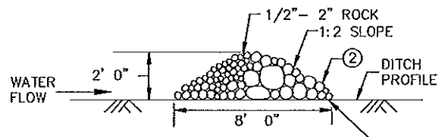


INSET A

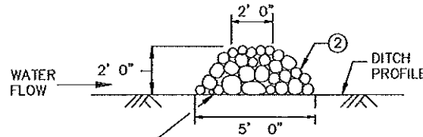
TYPE 3: BIOROLL BLANKET SYSTEM DITCH CHECK



CROSS SECTION (ROCK WEEPER AND ROCK CHECK)



TYPE 5: ROCK WEEPER
PROFILE VIEW ③



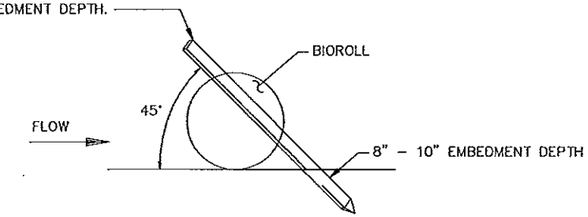
TYPE 7: ROCK CHECK
PROFILE VIEW

GEOTEXTILE FABRIC
LINERTYPE IV ALONG
BOTTOM OF RIPRAP

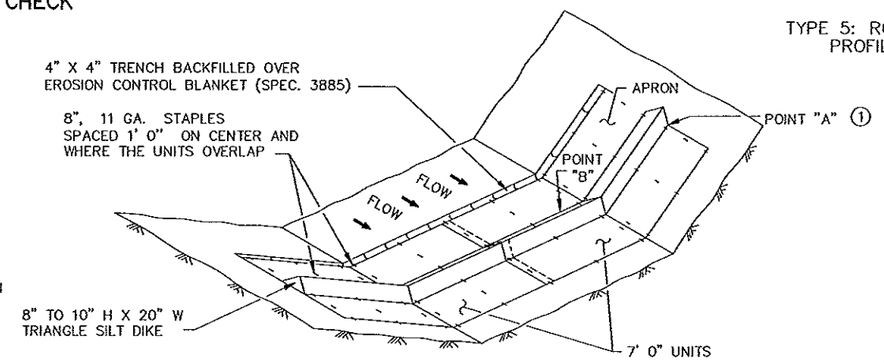
TYPE 5: ROCK WEEPER AND
TYPE 7: ROCK CHECK DITCH CHECKS ④

USE ON ROUGH GRADED AREAS

1" X 2" X 18" LONG WOODEN STAKES AT
1' 0" SPACING MAXIMUM. STAKES SHALL BE
DRIVEN THROUGH THE BACK HALF OF THE
BIOROLL AT AN ANGLE OF 45 DEGREES WITH
THE TOP OF THE STAKE POINTING UPSTREAM.
PROVIDE 8" TO 10" OF EMBEDMENT DEPTH.

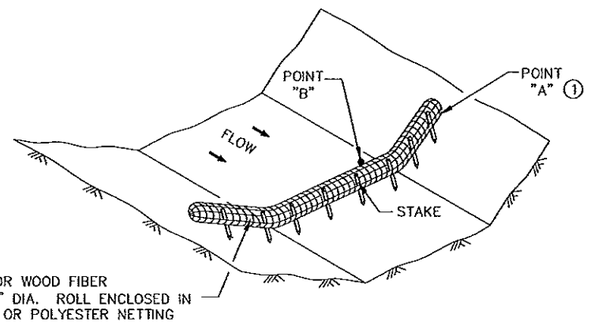


BIOROLL STAKING DETAIL



TYPE 6: GEOTEXTILE TRIANGULAR DIKE DITCH CHECK

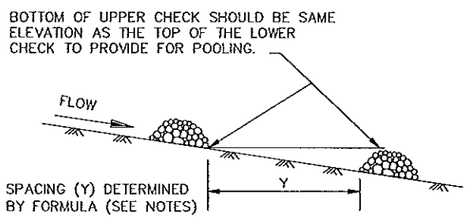
AS-BUILT
MAR 15 2010
ENGINEERING



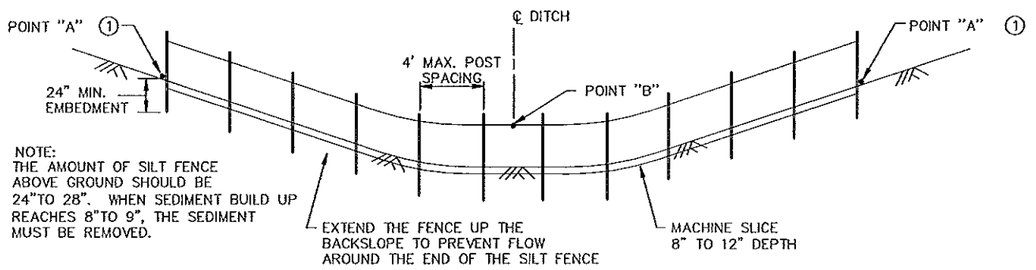
TYPE 2: BIOROLL DITCH CHECK

USE ON ROUGH GRADED AREAS

1.5 FT./SECOND



DITCH CHECK SPACING ④



TYPE 1: SLICED IN SILT FENCE DITCH CHECK

GENERAL DESIGN GUIDELINES						
DITCH CHECK TYPE	SILT FENCE	BIOROLL	BIOROLL BLANKET	TRIANGULAR DIKE	ROCK WEEPER	ROCK CHECK
STORM FREQUENCY:	2 YR. - 24 HR.	2 YR. - 24 HR.	2 YR. - 24 HR.	2 YR. - 24 HR.	5 YR. - 24 HR.	5 YR. - 24 HR.
MAX. FLOW VELOCITY:	< 1 FT./SECOND	1.5 FT./SECOND	4.5 FT./SECOND	1.5 FT./SECOND	12 FT./SECOND	12 FT./SECOND
MAX. DITCH GRADE:	0% - 0.5%	1.5% - 3%	1.5% - 3%	1.5% - 2.0%	3% - 5%	3% - 5%
MAX. DRAINAGE AREA:	1 ACRE	2 ACRE	2 ACRE	4 ACRE	4+ ACRE	4+ ACRE

NOTES:

SEE SPECS. 2573, 3601, 3733, 3885, 3886 & 3889.

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\text{\% CHANNEL SLOPE}} \times 100$$

① POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

② CLASS I - IV RIPRAP (SPEC. 3601) WITH GEOTEXTILE FABRIC LINER, TYPE IV (SPEC. 3733).

③ THE ROCK WEEPER FILTERS SEDIMENT OUT OF THE WATER BETTER THAN THE OTHER DITCH CHECKS. THE ROCK WEEPER COULD BE USED AS A PERMANENT WATER FILTERING FEATURE.

④ PERMANENT ROCK DITCH CHECKS PLACED WITHIN THE CLEAR ZONE WILL NEED TO BE 18" OR LESS IN HEIGHT. A 1:6 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.

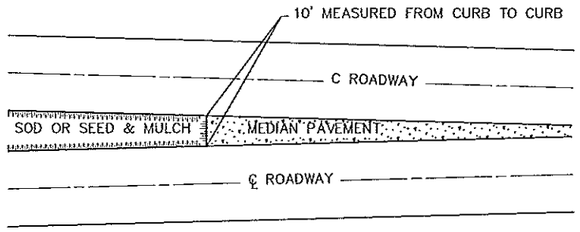
STANDARD SHEET NO.
5-297.405 (3 OF 4)
STANDARD APPROVED:
SEPTEMBER 27, 2006

TEMPORARY SEDIMENT CONTROL
DITCH CHECK/BARRIER

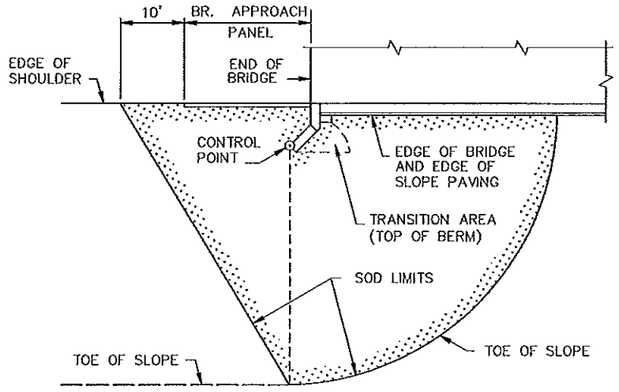
CERTIFIED BY Kaye M Brienich LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 2/27 2009

S.A.P. 55-624-02

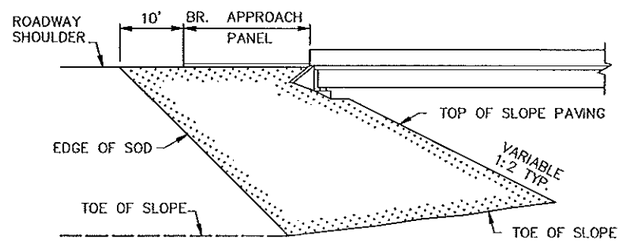
SHEET NO. 22 OF 27 SHEETS



SODDING LIMITS AT GORE AREA

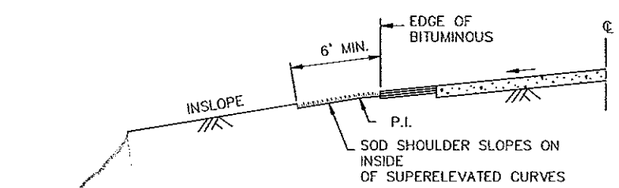


PLAN

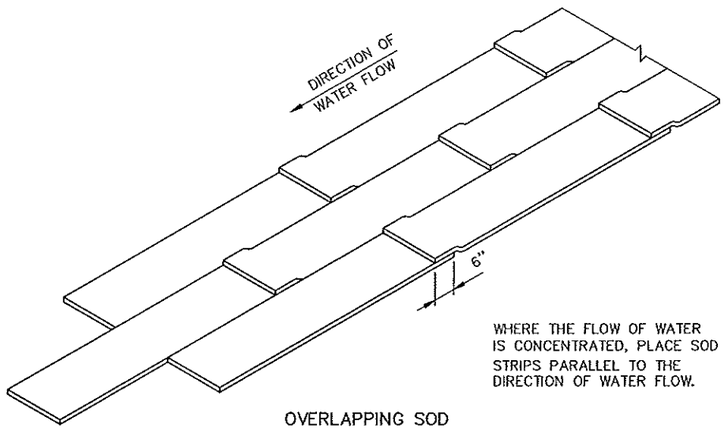


ELEVATION

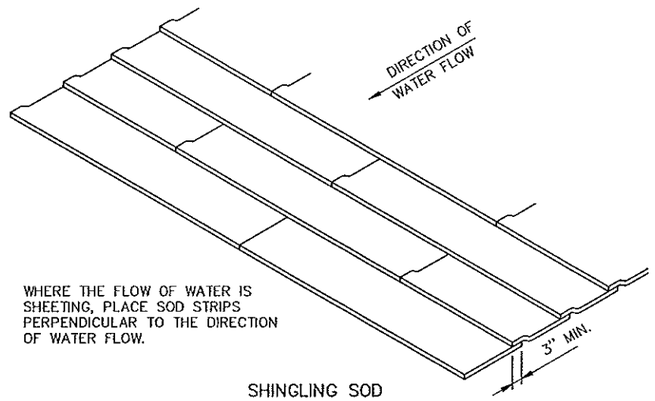
SODDING LIMITS AT BRIDGE APPROACH FILLS



SODDING INSLOPES OF SUPERELEVATED CURVES

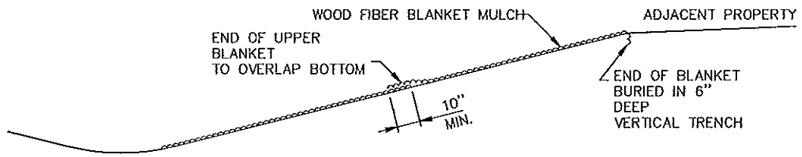


OVERLAPPING SOD

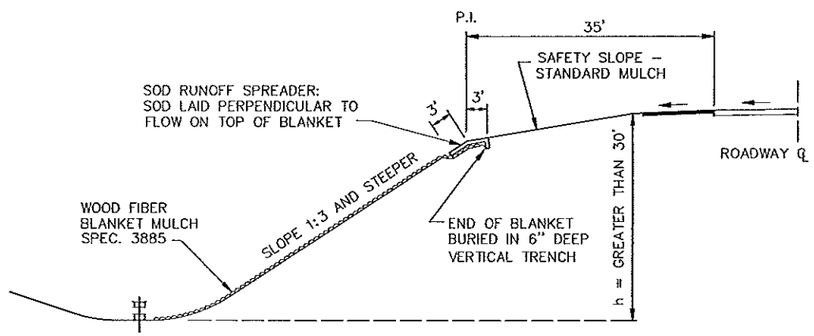


SHINGLING SOD

SPECIAL SOD PLACEMENT TECHNIQUES



WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE

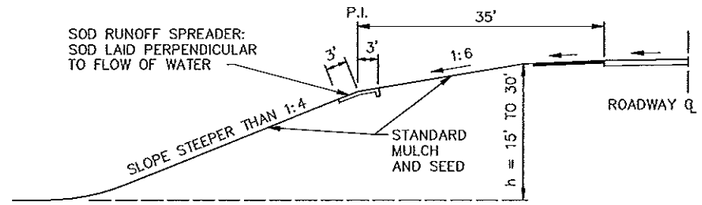


WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE
(WHEN REQUIRED)

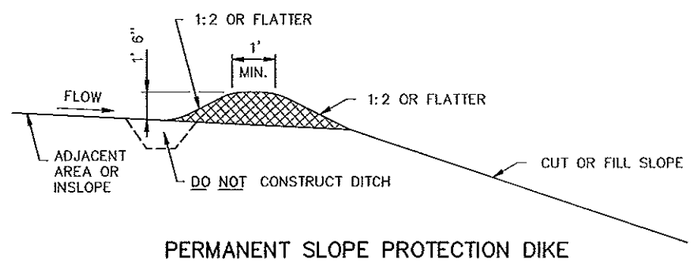
AS-BUILT

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BROKEN–BACK SAFETY FILL SLOPE

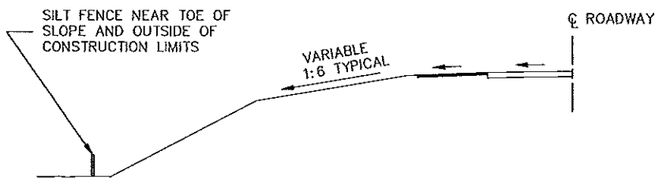


PERMANENT SLOPE PROTECTION DIKE

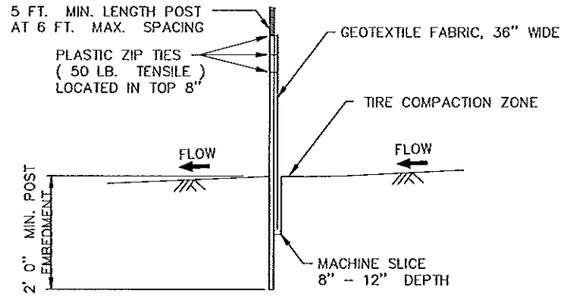
REVISION DATE 10-26-2000

CERTIFIED BY Kayne M Poirier LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 2/27 2009

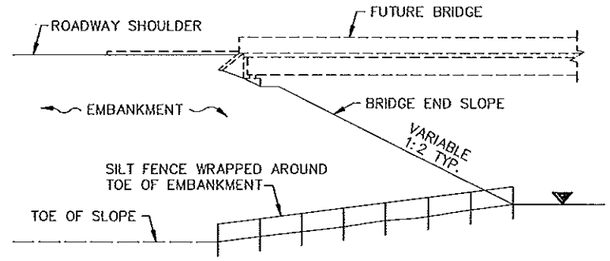
STANDARD SHEET NO. 5-297.406	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS
STANDARD APPROVED: JANUARY 31, 1985	
S.A.P. 55-624-02	SHEET NO. 23 OF 27 SHEETS



LOCATION OF SILT FENCE
AT TOE OF ROADWAY EMBANKMENT

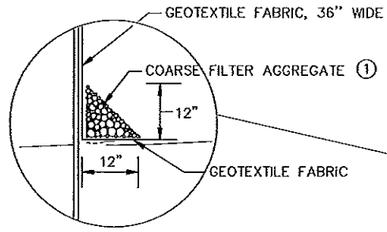


SILT FENCE, MACHINE SLICED
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.

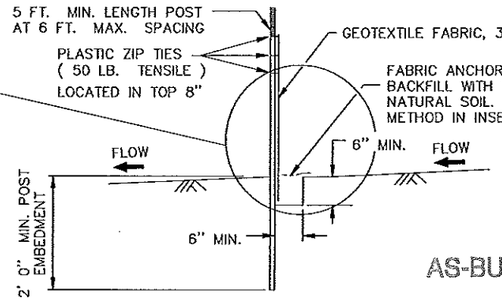


BRIDGE FILL

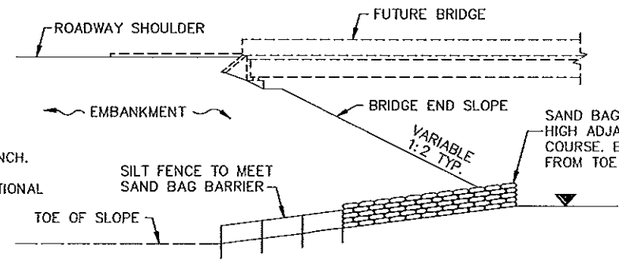
DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: STAGNANT
CONTRIBUTING SLOPE AREA: 1/2 ACRE



OPTIONAL METHOD
FOR SILT FENCE, HEAVY DUTY

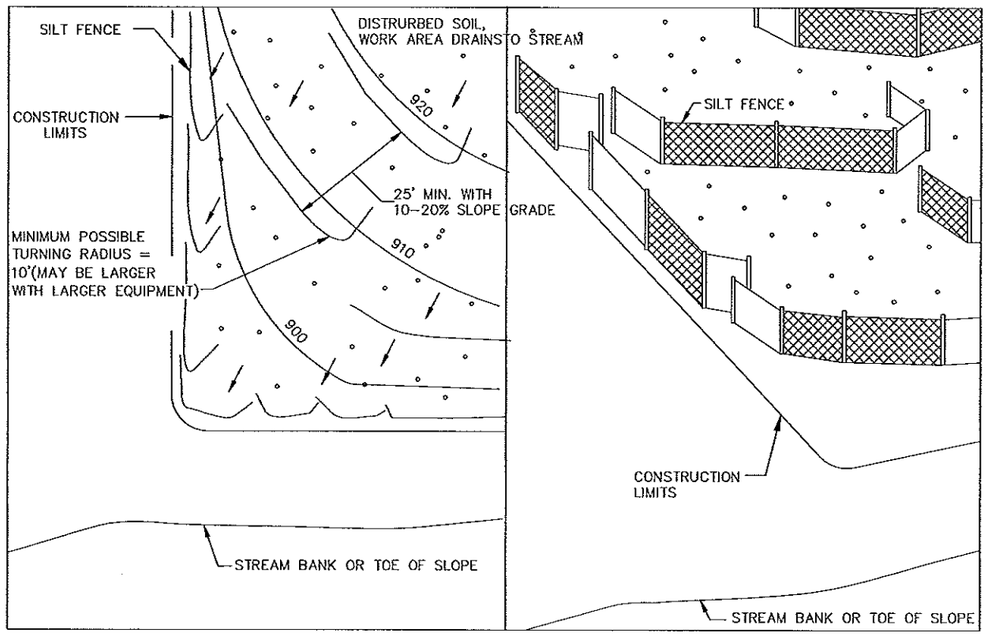


SILT FENCE, HEAVY DUTY
(HAND INSTALLED)
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



BRIDGE FILL

DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1 ACRE

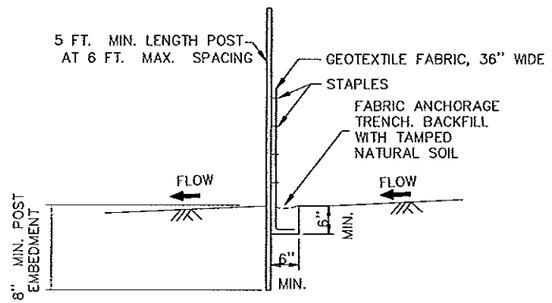


PLAN VIEW

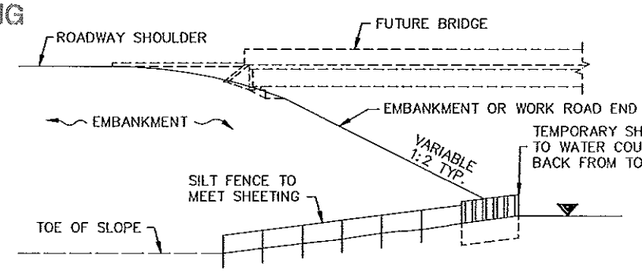
SIDE VIEW

SILT FENCE, J-HOOK INSTALLATION

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SILT FENCE, PREASSEMBLED
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



EMBANKMENT OR WORK ROAD FILL

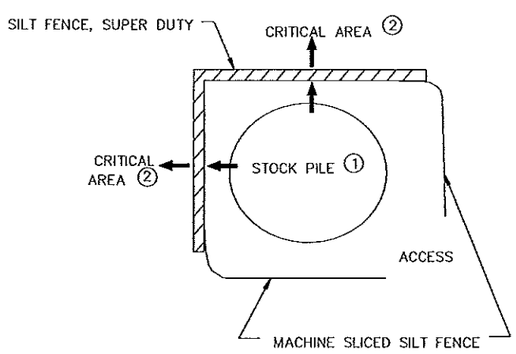
DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

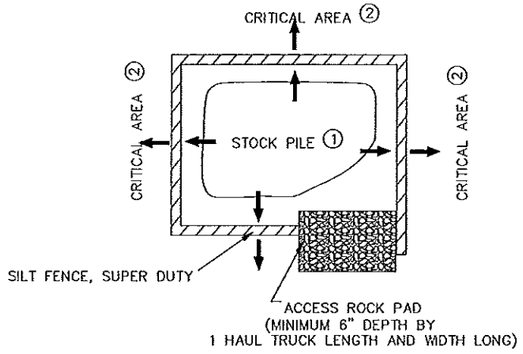
SILT FENCE AT BRIDGE EMBANKMENT ADJACENT TO WATER

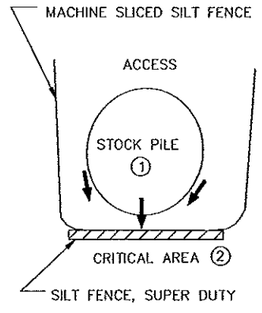
NOTES:
SEE SPECS. 2573, 3149 & 3886.
(1) COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

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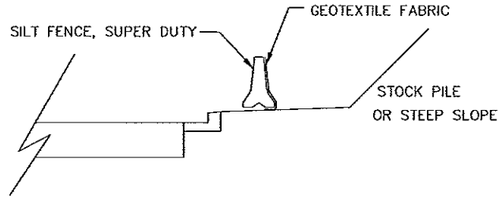
STANDARD SHEET NO. 5-297.408 (1 OF 2)	TITLE: TEMPORARY SEDIMENT CONTROL
STANDARD APPROVED: SEPTEMBER 27, 2006	SILT FENCE
S.A.P. 55-624-02	SHEET NO. 24 OF 27 SHEETS



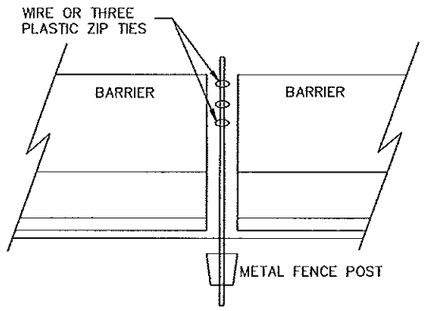




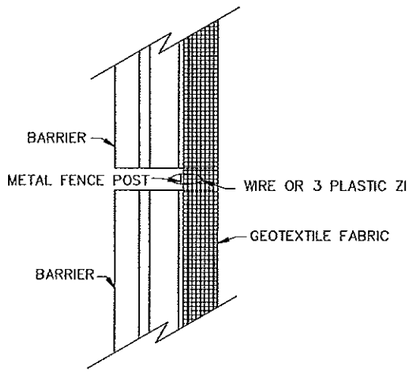
SILT FENCE, SUPER DUTY
STOCK PILE CONTAINMENT



SILT FENCE, SUPER DUTY
CURB AND GUTTER PROTECTION SYSTEM

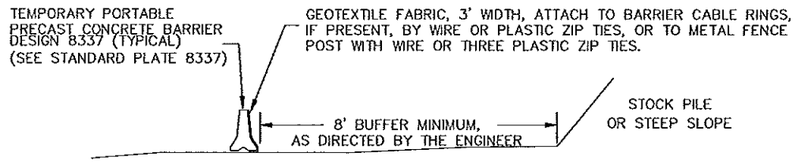


SIDE VIEW

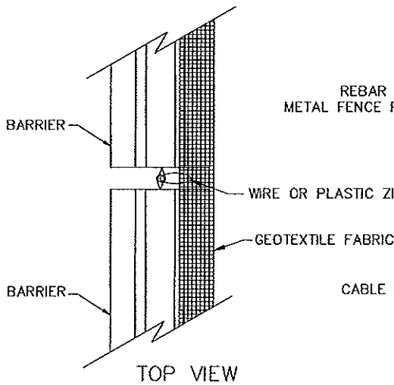


TOP VIEW

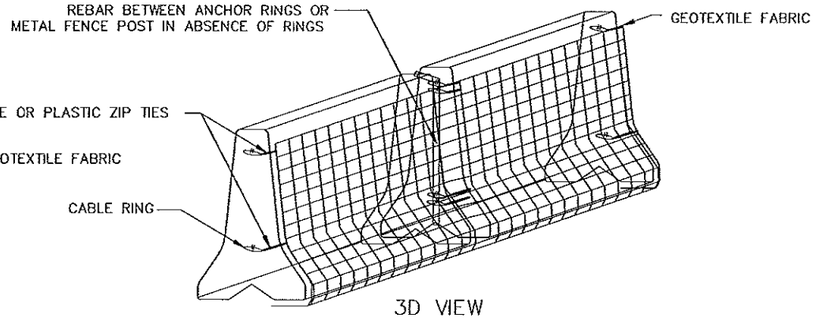
BARRIER WITHOUT CABLE RINGS



SILT FENCE, SUPER DUTY
STOCKPILE SEDIMENT CONTROL



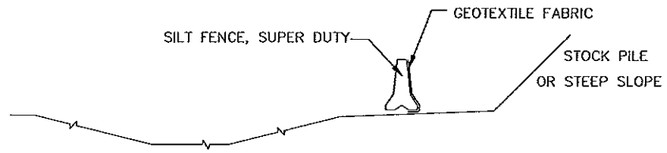
TOP VIEW



3D VIEW

BARRIER WITH CABLE RINGS
SILT FENCE, SUPER DUTY

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SILT FENCE, SUPER DUTY
DITCH PROTECTION SYSTEM

NOTES:

SEE SPECS. 2533, 2573 & 3886.

PLACE SUPER DUTY SILT FENCE ALONG A CONSTANT ELEVATION.

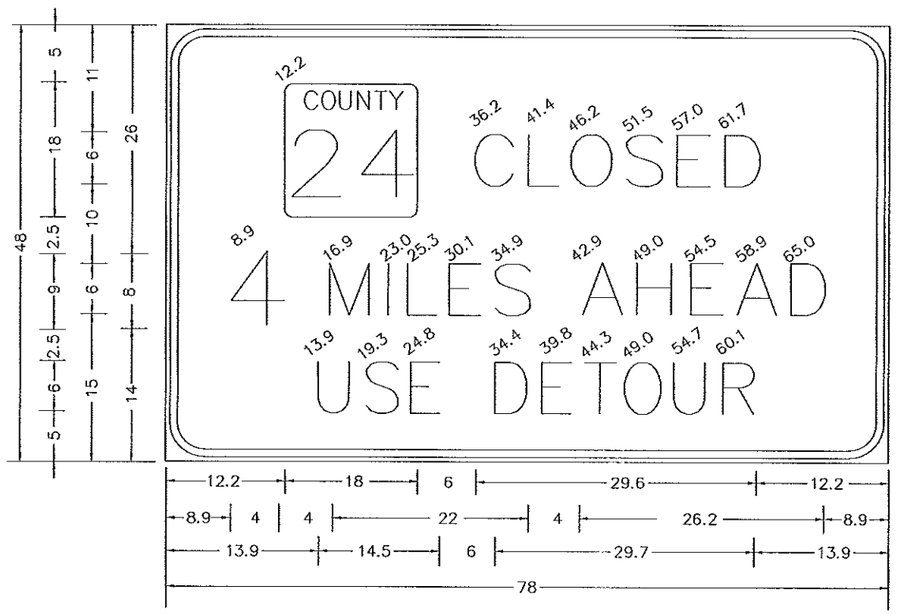
SUPER DUTY SILT FENCE CAN UTILIZE EITHER A CONCRETE, OR WATER FILLED, TEMPORARY MEDIAN BARRIER.

① PLACING STOCK PILES NEXT TO AN ENVIRONMENTALLY SENSITIVE AREA IS NOT RECOMMENDED. WHEN THERE ARE NO FEASIBLE ALTERNATIVES, THE SUPER DUTY SILT FENCE IS TO BE USED AS SHOWN OR AS DIRECTED BY THE ENGINEER.

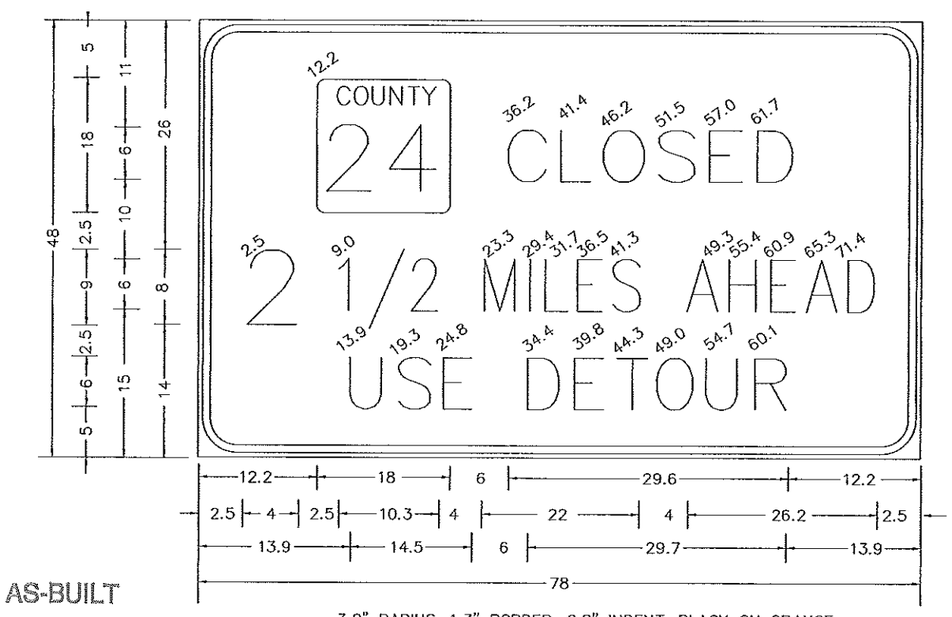
② CRITICAL AREAS INCLUDE WETLANDS, JUDICIAL DITCHES, STREAMS, WATER BODIES, AND OTHER AREAS REQUIRING PROTECTION.

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STANDARD SHEET NO.	TITLE:
5--297.408 (2 of 2)	TEMPORARY SEDIMENT CONTROL
STANDARD APPROVED: SEPTEMBER 27, 2006	SUPER DUTY SILT FENCE
S.A.P. 55-624-02	SHEET NO. 25 OF 27 SHEETS



3.0" RADIUS, 1.3" BORDER, 0.8" INDENT, BLACK ON ORANGE
"CLOSED" D; "3" MILES AHEAD" D; "USE DETOUR" D



3.0" RADIUS, 1.3" BORDER, 0.8" INDENT, BLACK ON ORANGE
"CLOSED" D; "4 1/4" MILES AHEAD" D; "USE DETOUR" D

AS-BUILT

MAR 15 2010

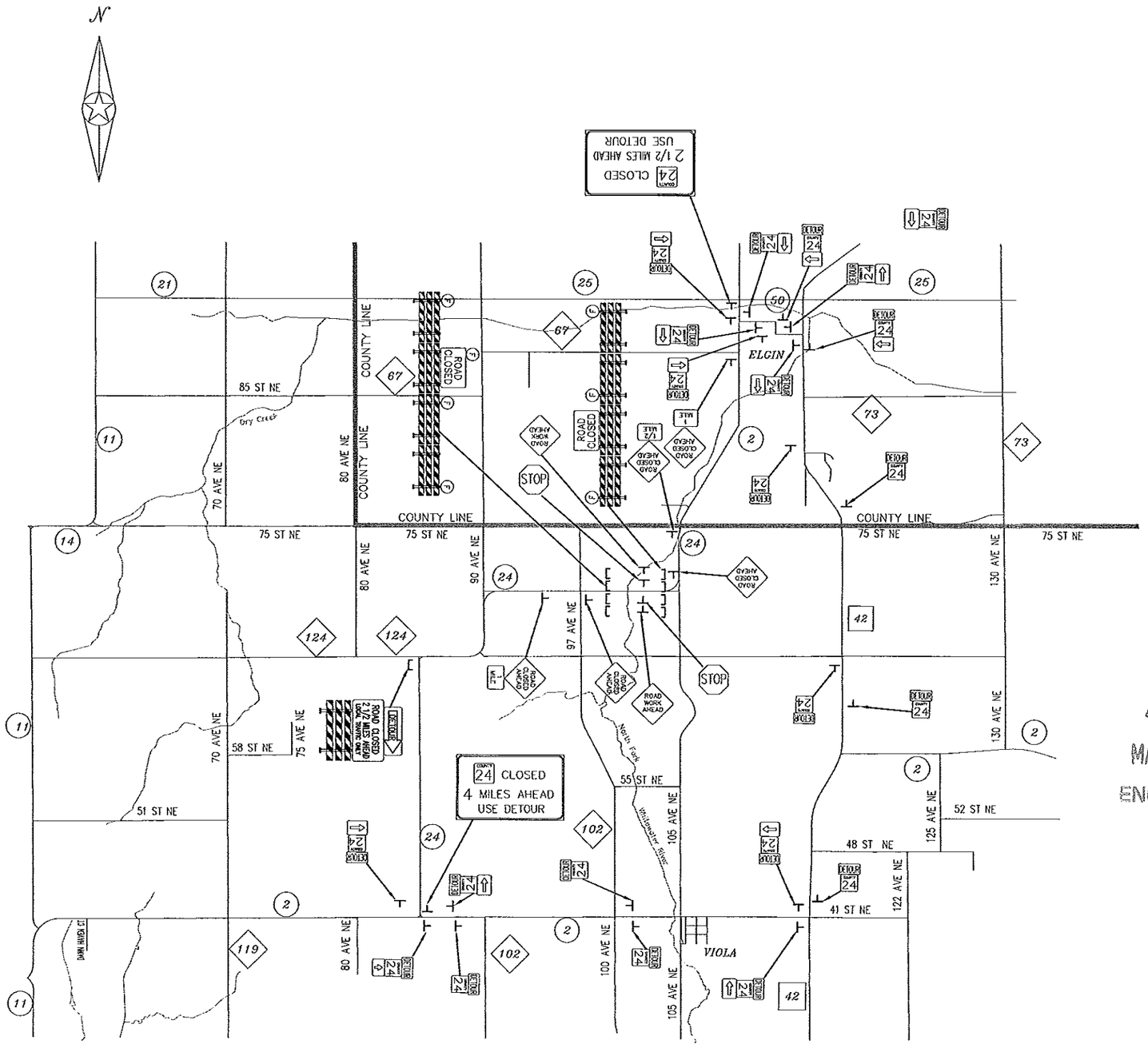
ENGINEERING

TRAFFIC CONTROL

CERTIFIED BY Kaye M Bierwirth LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 2/27 2009

S.A.P. 55-624-02

SHEET NO. 26 OF 27 SHEETS



ESTIMATE OF TRAFFIC CONTROL DEVICES

DEVICE	NUMBER	SIZE	COLOR	QUANTITY	DEVICE	NUMBER	SIZE	COLOR	QUANTITY
COUNTY 24	M1-X4A	24 x 24	BLK/WH	21	ROAD WORK AHEAD	W20-1	36 x 36	BLK/OR	2 SEE NOTE
DETOUR	M4-8	24 x 12	BLK/OR	21	ROAD CLOSED AHEAD	W20-3	48 x 48	BLK/OR	5
DETOUR	M4-10R	48 x 18	BLK/OR	1	1/2 MILE	W20-100P	24 x 18	BLK/OR	1
	M6-1	21 x 15	BLK/WH	12	1 MILE	W20-100P	24 x 18	BLK/OR	2
	M6-3	21 x 15	BLK/WH	1	COUNTY 24 CLOSED 2 1/2 MILES AHEAD USE DETOUR	SPECIAL	SEE SHEET NO. 26	BLK/OR	1
STOP	R1-1	36 X 36	RD/WH	2	COUNTY 24 CLOSED 4 MILES AHEAD USE DETOUR	SPECIAL	SEE SHEET NO. 26	BLK/OR	1
ROAD CLOSED	R11-2	48 x 30	BLK/WH	2		TYPE III	MIN. 6'	OR & WHT	9
ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY	R11-3	60 x 30	BLK/OR	1	(F)	TYPE A	FLASHING LAMPS	AMBER	8

NOTE: SIGN PLACED ALONG TRAIL.

AS-BUILT
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⊥ POST OR STAND MOUNTED SIGN
⌊⌋ TYPE III BARRICADE
(F) TYPE "A" AMBER FLASHING LAMP

TRAFFIC CONTROL NOTES

1. THE LOCATION OF SIGNS AND DEVICES WILL BE STAKED BY THE ENGINEER IN THE FIELD.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL ON THIS PROJECT.
3. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL.
4. CONSTRUCTION ZONE SIGNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL INCLUDE, BUT NOT BE LIMITED TO SIGNS FOR LANE CLOSURE, BUMP, DIP, LOOSE GRAVEL, ETC.. THE NUMBER AND LOCATION WILL BE DETERMINED BY THE CONTRACTORS OPERATION.
5. ALL BARRICADES ON THIS PROJECT SHALL BE REFLECTORIZED ON BOTH SIDES.

TRAFFIC CONTROL

CERTIFIED BY Lan M Zienich LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 2/27 2009	S.A.P. 55-624-00	SHEET 27 OF 27 SHEETS