MINNESOTA DEPARTMENT OF TRANSPORTATION

THE COUNTY OF OLMSTED

CONSTRUCTION PLAN FOR GRADING & PRECAST CONC. BOX CULVERT (BRIDGE NO. 55J44)

LOCATED ON TWP RD. 199 (70th AVE SW) BETWEEN 10th St. S.W. AND 20th St. S.W. (GEOGRAPHIC DESCRIPTION)

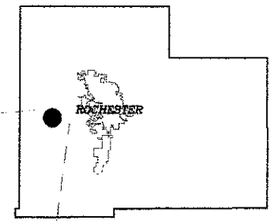
FROM APPROX. 1100 FT. NORTH OF CENTER SEC. 11 & 12 T106-R15W TO APPROX. 340 FT. S. OF SECTION COR. 1, 2, 11 & 12 T106N-R15W (LEGAL DESCRIPTION)

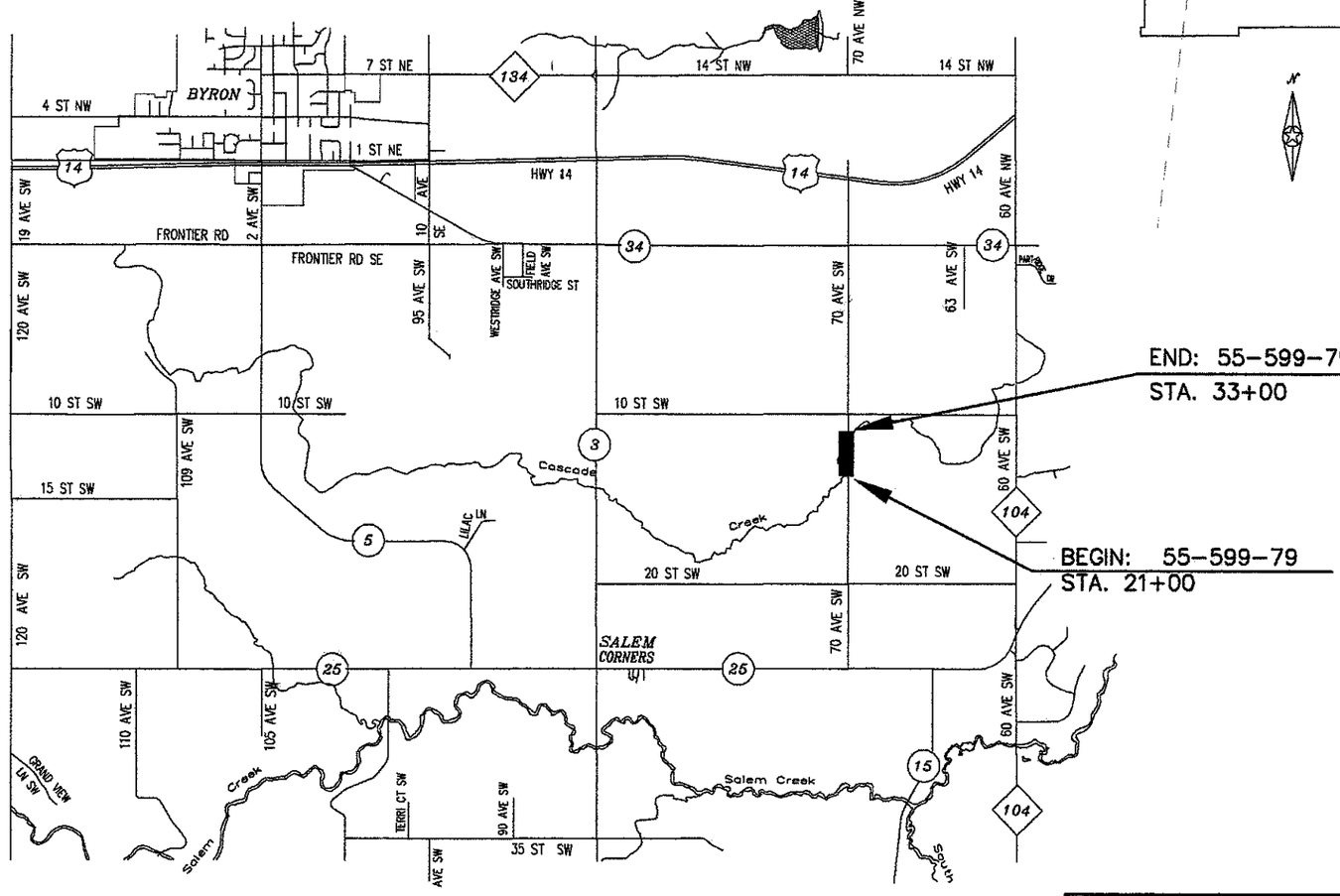
S.A.P. NO.	55-599-79			
GROSS LENGTH	1200.000	FEET	0.227	MILES
BRIDGE-LENGTH	0.000	FEET	0.000	MILES
EXCEPTIONS-LENGTH	0.000	FEET	0.000	MILES
NET LENGTH	1200.000	FEET	0.227	MILES

AS-BUILT

MAR 22 2005

ENGINEERING





END: 55-599-79
STA. 33+00

BEGIN: 55-599-79
STA. 21+00

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

MINN. PROJ. NO. .....

GOVERNING SPECIFICATIONS

THE 2000 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	PLAN AND PROFILE
SHEET NO. 4 – 7	CROSS-SECTIONS
SHEET NO. 8 – 12	EROSION CONTROL
SHEET NO. 13	BRIDGE SURVEY SHEET
SHEET NO. 14 – 15	BARREL DETAILS
SHEET NO. 16 – 17	PRECAST CONC. END SECTION
SHEET NO. 18	TRAFFIC CONTROL PLANS

THIS PLAN CONTAINS 18 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-599-79

R = ΣN18(20) = 55

ADT (Current Year) = <50(2002) Design Speed 55 MPH

ADT (Future Year) = <50(2022) Based on STOPPING Sight Distance

DHV (Design Hr. Vol.) = Height of eye 3.5 FT. Height of object 0.5 FT

D (Directional Distr.) = Design Speed not achieved at:

T (Heavy Commercial) = STA. TO STA. MPH.

SUBGRADE = K=150 STA. TO STA. MPH.

SOIL FACTOR = 130%

SHOULDER WIDTH 1 FT.

TOWNSHIP APPROVALS:

John P. Connolly — May 23 02

APPROVED: TWP. CHAIRPERSON — DATE

LOCAL APPROVALS:

DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENCED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 5/20/02 LICENSE NUMBER 19917

PRINTED NAME: KAYE M. BIENIEK

SIGNATURE: Kaye M Bieniek

APPROVED: COUNTY DESIGN ENGINEER

DATE 5/21/02 LICENSE NUMBER 10397

Michael L Sheehan

APPROVED: OLMSTED COUNTY ENGINEER

DESIGNED BY: K ROSS

STATE AID APPROVALS:

Judy Schmidt — DATE: 5-28-02

DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

Mark Briese — DATE: 6-7-02

APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER

S.A.P. NO. 55-599-79 SALEM TWP. SHEET NO. 1 OF 18 SHEETS

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ESTIMATED QUANTITIES
①	2101.511	CLEARING AND GRUBBING	LUMP SUM	1		1
	2104.501	REMOVE METAL CULVERT	LIN. FT.	62		62
②	2105.511	COMMON CHANNEL EXCAVATION	CU. YD.	87		87 (P)
③	2105.515	UNCLASSIFIED EXCAVATION	CU. YD.	2,457		2,457 (P)
	2105.523	COMMON BORROW (LV)	CU. YD.	3,587		3,587 (P)
④	2211.501	AGGREGATE BASE CL.5	TON	1,358		1,358
	2412.511	14'x 6' PRECAST CONC. BOX CULV. CL. II	LIN. FT.		100	100
	2412.512	14'x 6' PRECAST CONC. BOX CULVERT END SECTION	EACH		4	4
	2442.501	REMOVE OLD BRIDGE	LUMP SUM	1		1
	2451.507	GRANULAR BEDDING (CV)	CU. YD.		140	140(P)
	2501.511	24" C.S. PIPE CULVERT	LIN. FT.	82		82
	2501.515	24" G.S. PIPE APRON	EACH	4		4
⑤	2502.541	10" PERF PE PIPE DRAIN	LIN. FT.	200		200
⑥	2511.501	RIPRAP CL. IV	CU. YD.		273	273
	2575.501	SEEDING	ACRE	1.33		1.33 (P)
	2575.511	MULCH MATERIAL TYPE1	TON	2.7		2.7
	2575.519	DISK ANCHOR	ACRE	1.2		1.2 (P)
	2575.532	COMMERCIAL FERTILIZER ANALYSIS 10-10-10	POUND	266		266
⑦	2575.502	SEED MIXTURE 50B	POUND	67		67
⑧	2575.502	SEED MIXTURE 110B	POUND	133		133

(P) PLAN

QUANTITY NOTES:

① APPROX. 1 TREE AND 0.3 ACRES WOODS.

② CHANNEL EXC. TO PLACED ON SHOULDERS AS DIRECTED BY THE ENGINEER

③ INCLUDES 1,521 CU. YDS. FOR THE REMOVAL OF THE OLD ROAD TO BE USED AS ROAD EMBANKMENT. 340 CU. YDS. TO BE USED AS TOPSOIL ON NEW ROAD LOCATION AND 199 CU. YDS. ON OLD ROAD LOCATION

④ 1,223 TON FOR MAINLINE AND 135 TON FOR ENTRANCES.

⑤ FOR RELOCATION OF EXIST. TILE OUTLET IN FIELD BY THE ENGINEER SPEC. NO. 1903 DOES NOT APPLY TO ITEM NO. 2502

⑥ PLACE RIPRAP ON 9" GRANULAR FILTER OR GEOTEXTILE MATERIAL WHICH SHALL BE CONSIDERED INCIDENTAL AND NO DIRECT COMPENSATION WILL BE MADE THEREFOR

⑦ INCLUDES 25 POUNDS TO BE USED ON OLD ROAD REMOVAL AREA.

⑧ INCLUDES 49 POUNDS TO BE USED ON OLD ROAD REMOVAL AREA.

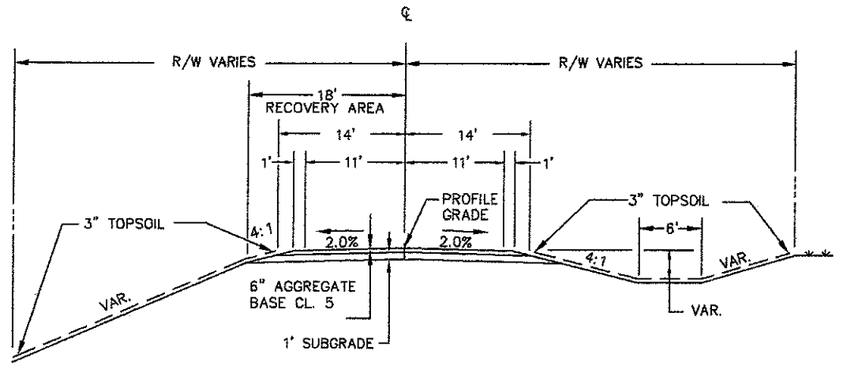
STANDARD PLATES

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

PLATE NO.	DESCRIPTION
	NUMERICAL INDEX OF STANDARD PLATES
3007C	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3040F	CORRUGATED METAL PIPE CULVERT
3123J	METAL APRON FOR C.S. PIPE
3124B	METAL APRON CONNECTION
3145E	CONCRETE PIPE TIES
3221C	CORRUGATED STEEL PIPE COUPLING BAND
8000I	STANDARD BARRICADES
9000D	APPROACHES AND ENTRANCES

TYPICAL SECTION

STA. 21+00 TO STA. 33+00



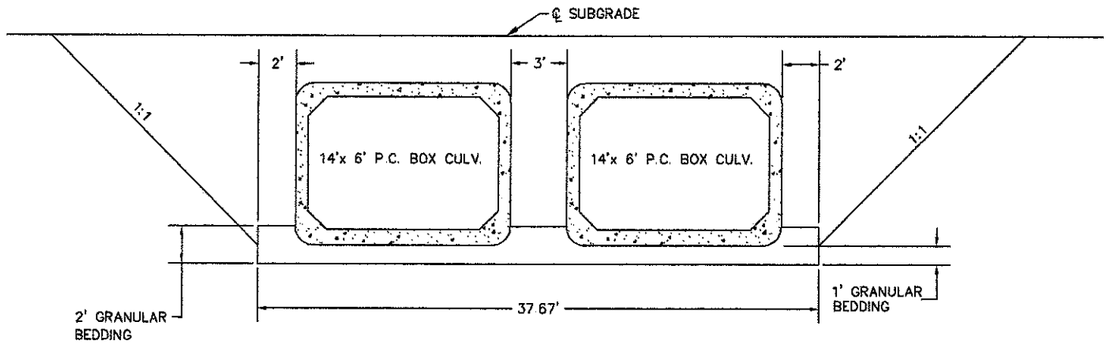
AS-BUILT

MAR 22 2005

ENGINEERING

NOTES: ALL UTILITY POLES AND UNYIELDING OBJECTS WILL BE LOCATED OUTSIDE THE 18 FT. RECOVERY AREA BY OTHERS.

BEDDING DETAIL



NOTES:

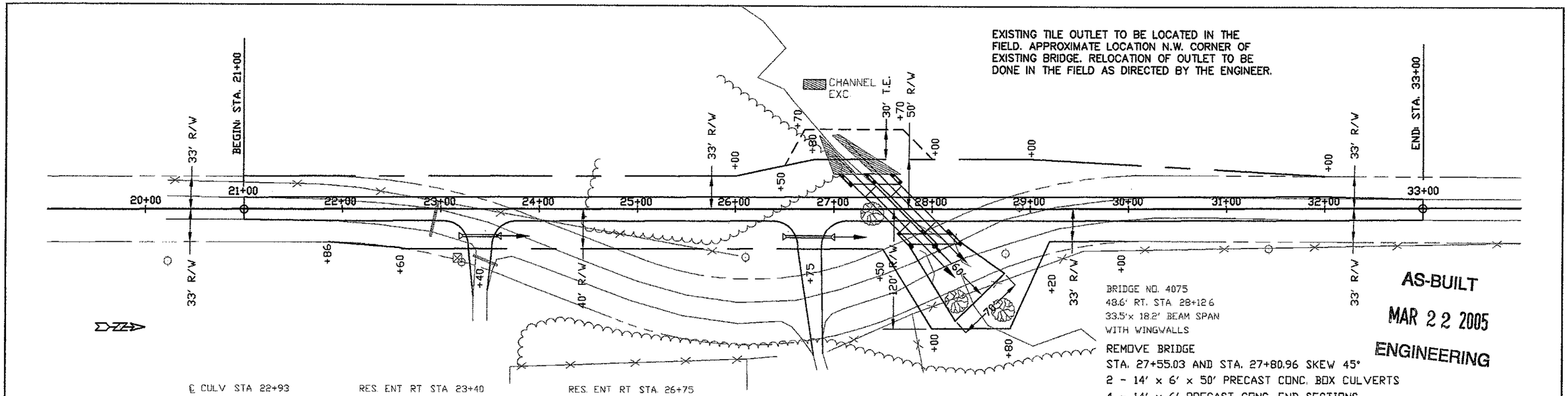
1. CULVERT EXCAVATION WILL BE CONSIDERED INCIDENTAL AND WILL BE INCLUDED FOR PAYMENT UNDER UNIT PRICE FOR ITEM NO. 2412.511 AND ITEM NO. 2412.512.
2. CULVERT TO BE BACKFILLED WITH EXCAVATION MATERIAL AND WILL BE CONSIDERED INCIDENTAL TO UNCLASSIFIED EXCAVATION AND NO DIRECT COMPENSATION WILL BE MADE
3. ALL DIMENSIONS AND SLOPES SHOWN ON TYPICAL SECTION ARE APPROXIMATE.
4. GRANULAR BEDDING TO BE PLACED UNDER BARREL SECTIONS ONLY.

BASIS OF PLANNED QUANTITIES

AGGREGATE BASE CLASS 5 –	140 LBS / CU. FT COMPACTED
SEED MIXTURE 50B –	50 LBS / ACRE
SEED MIXTURE 110B–	100 LBS / ACRE
MULCH MATERIAL –	2 TONS / ACRE
DISC ANCHOR –	ALL SEEDING AREA'S, EXCLUDING 2:1 SLOPES
COMMERCIAL FERTILIZER –	200 LBS / ACRE

CERTIFIED BY Kaye M Brenneke LIC. NO. 19917 5/20 2002
LICENCED PROFESSIONAL ENGINEER

S.A.P. NO. 55-599-79 SALEM TWP.



AS-BUILT
MAR 22 2005
ENGINEERING

BRIDGE NO. 4075
48.6' RT. STA 28+12.6
33.5'x 18.2' BEAM SPAN
WITH WINGWALLS

REMOVE BRIDGE
STA. 27+55.03 AND STA. 27+80.96 SKEW 45°
2 - 14' x 6' x 50' PRECAST CONC. BOX CULVERTS
4 - 14' x 6' PRECAST CONC. END SECTIONS
PLACE BARREL ONLY, ON 140 CU. YDS. GRANULAR BEDDING.
253 CU. YDS CL. IV RIPRAP OUTLET
20 CU. YDS. CL. IV RIPRAP INLET
PLACE RIPRAP ON 9" GRANULAR FILTER OR GEOTEXTILE MATERIAL. THIS WORK SHALL BE INCIDENTAL TO RIPRAP.

2' Timber Weir Installed on Inlet of N. Line

℄ CULV STA 22+93
INPL 24"x 36' C.M.P
NO APRONS
REMOVE 36 LIN. FT.

NO CULV. REQ'D

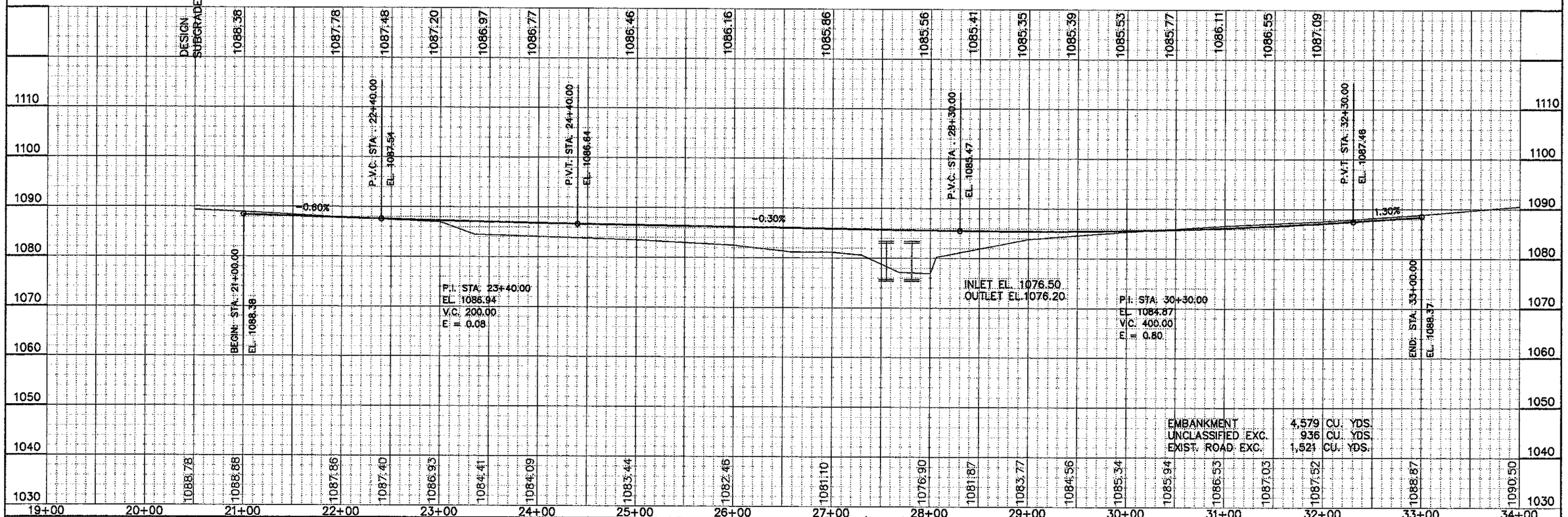
RES. ENT RT STA 23+40
INPL 24"x 26' C.M.P
NO APRONS
REMOVE 26 LIN. FT

24" x 36' C.S. PIPE CULV.
2 - 24" G.S. PIPE APRONS

RES. ENT RT STA. 26+75
NO CULV INPL

24" x 46' C.S. PIPE CULV.
2 - 24" G.S. PIPE APRONS

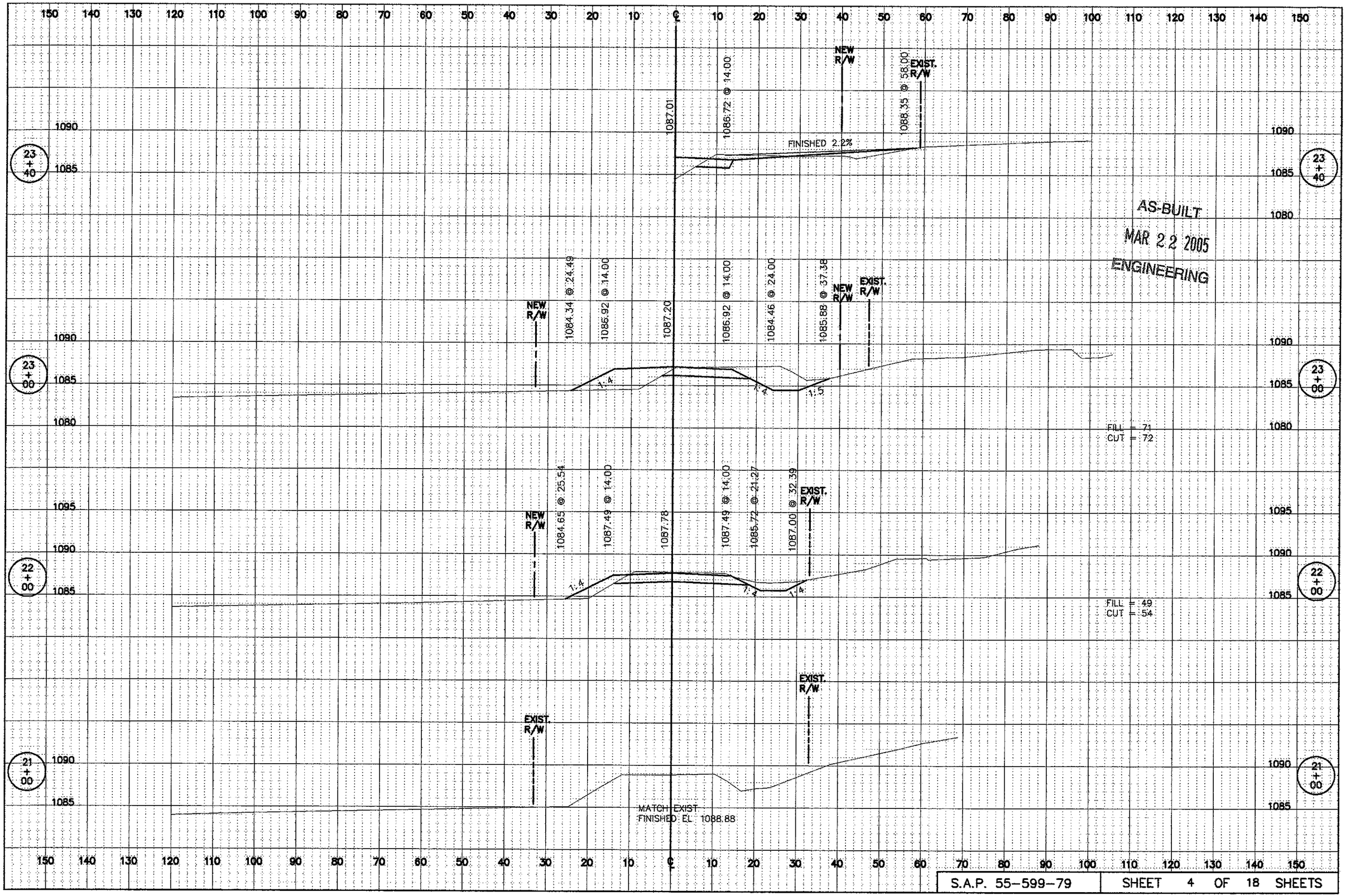
SCALES:
0 50' 100' HOR.
0 10' VER.

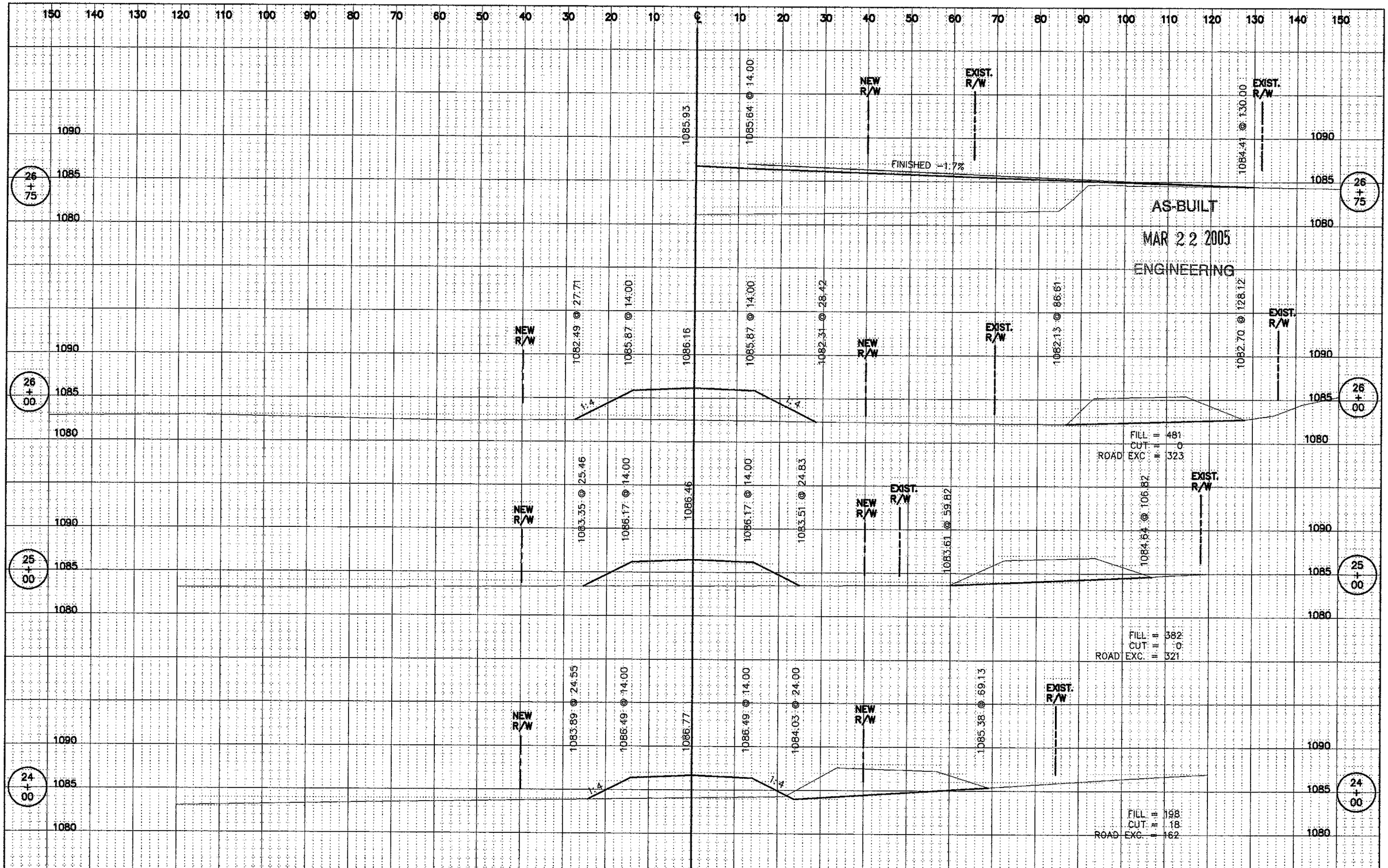


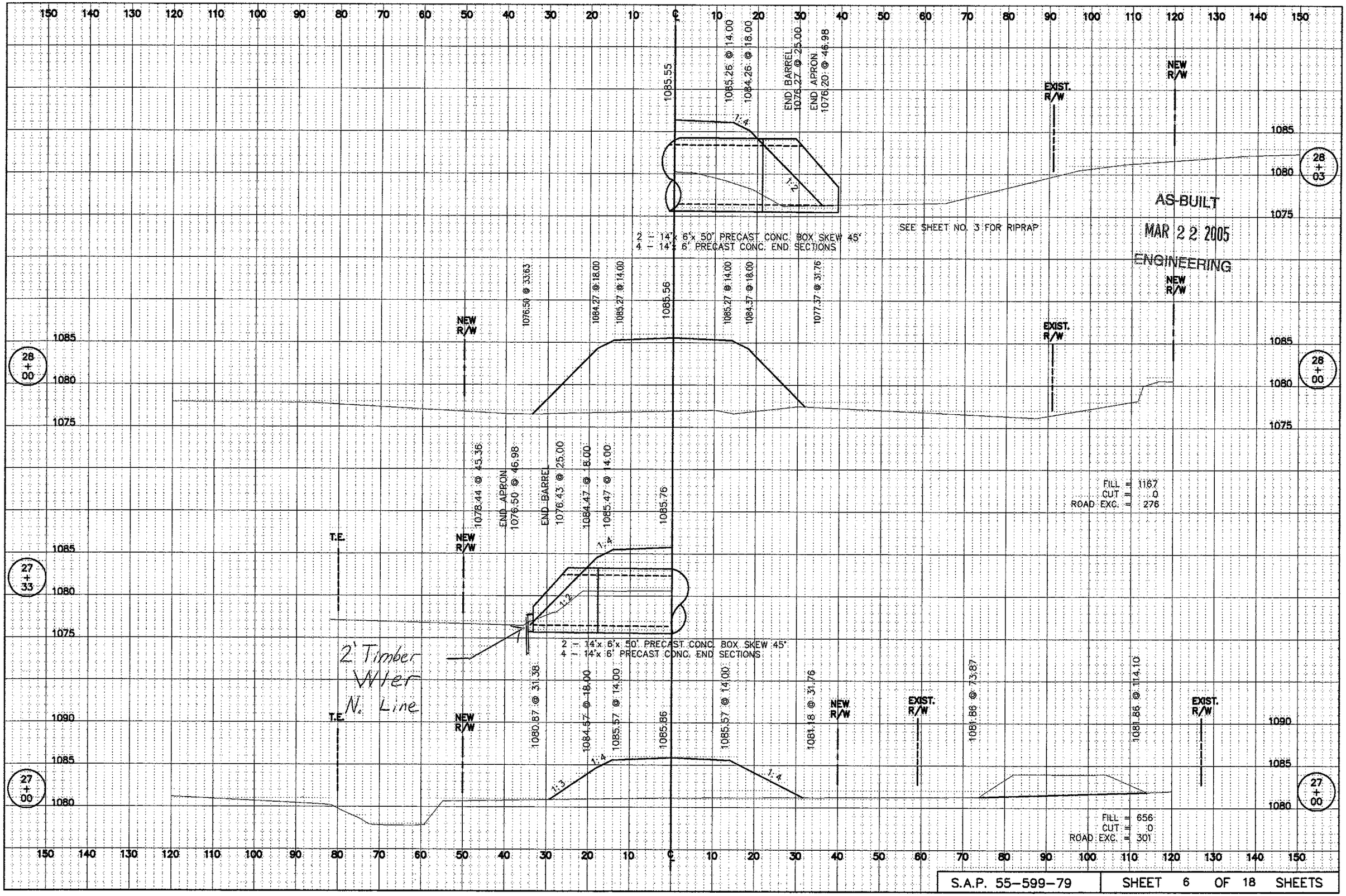
EMBANKMENT	4,579 CU. YDS.
UNCLASSIFIED EXC.	936 CU. YDS.
EXIST. ROAD EXC.	1,521 CU. YDS.

CERTIFIED BY Kaye M Bruner LIC NO 19917 5/20 2002
LICENSED PROFESSIONAL ENGINEER

S.A.P. 55-599-79 | SHEET 3 OF 18 SHEETS


150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
23 + 40
1090
1085
1080
1087.01
1086.72 @ 14.00
1088.35 @ 58.00
NEW R/W
EXIST. R/W
FINISHED 2.2%
AS-BUILT
MAR 22 2005
ENGINEERING
23 + 00
1084.34 @ 24.49
1085.92 @ 14.00
1087.20
1086.92 @ 14.00
1084.46 @ 24.00
1085.88 @ 37.38
1:4
1:5
FILL = 71
CUT = 72
1095
22 + 00
1084.65 @ 25.54
1087.49 @ 14.00
1087.78
1087.49 @ 14.00
1085.72 @ 21.27
1087.00 @ 32.39
FILL = 49
CUT = 54
21 + 00
MATCH EXIST
FINISHED EL 1088.88


150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
1090
1085
1080
26 + 75
26 + 00
25 + 00
24 + 00
NEW R/W
EXIST. R/W
1085.93
1085.64 @ 14.00
1084.41 @ 130.00
FINISHED -1.7%
AS-BUILT
MAR 22 2005
ENGINEERING
1082.49 @ 27.71
1085.87 @ 14.00
1086.16
1085.87 @ 14.00
1082.31 @ 28.42
1082.13 @ 86.61
1082.70 @ 128.12
1:4
FILL = 481
CUT = 0
ROAD EXC. = 323
1083.35 @ 25.46
1086.17 @ 14.00
1086.46
1086.17 @ 14.00
1083.51 @ 24.83
1083.61 @ 59.82
1084.64 @ 106.82
FILL = 382
CUT = 0
ROAD EXC. = 321
1083.89 @ 24.55
1086.49 @ 14.00
1086.77
1086.49 @ 14.00
1084.03 @ 24.00
1085.38 @ 69.13
FILL = 198
CUT = 18
ROAD EXC. = 162



S.A.P. 55-599-79 | SHEET 6 OF 18 SHEETS

EMBANKMENT 4,579 CU YDS.
UNCLASSIFIED EXC. 936 CU YDS.
EXIST. ROAD EXC. 1,521 CU YDS.

AS-BUILT
MAR 22 2005
ENGINEERING

EXIST. R/W
MATCH EXIST.
FINISHED EL. 1088.87
1086.06 @ 31.48
1085.02 @ 21.32
1084.65 @ 14.00
1087.09
1084.65 @ 14.00
1083.89 @ 25.85
1:4
FILL = 96
CUT = 129

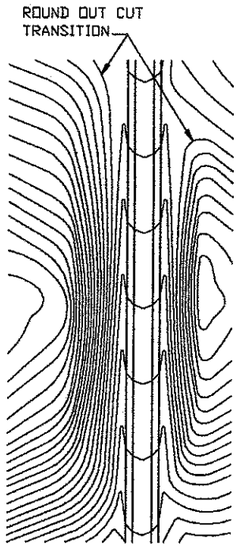
NEW R/W
1084.68 @ 35.25
1083.37 @ 24.00
1083.37 @ 14.00
1086.11
1083.37 @ 14.00
1082.61 @ 27.03
FILL = 199
CUT = 245

NEW R/W
1083.95 @ 41.05
1081.99 @ 27.21
1085.25 @ 14.00
1085.53
1085.25 @ 14.00
1081.79 @ 28.02
EXIST. R/W
FILL = 213
CUT = 234

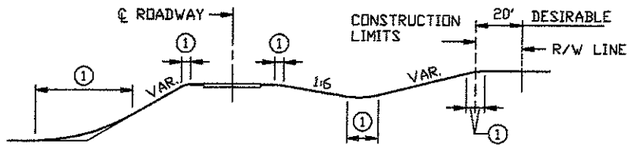
NEW R/W
1082.85 @ 46.95
1080.61 @ 32.00
1085.07 @ 14.00
1086.18
1085.07 @ 14.00
1081.61 @ 28.00
1082.81.25 @ 36.08
NEW R/W
FILL = 195
CUT = 151

FILL = 873
CUT = 33
ROAD EXC. = 138

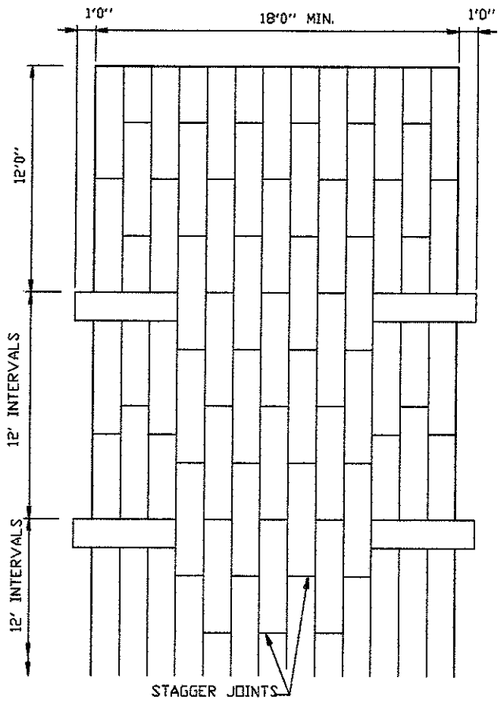
S.A.P. 55-599-79	SHEET 7 OF 18 SHEETS



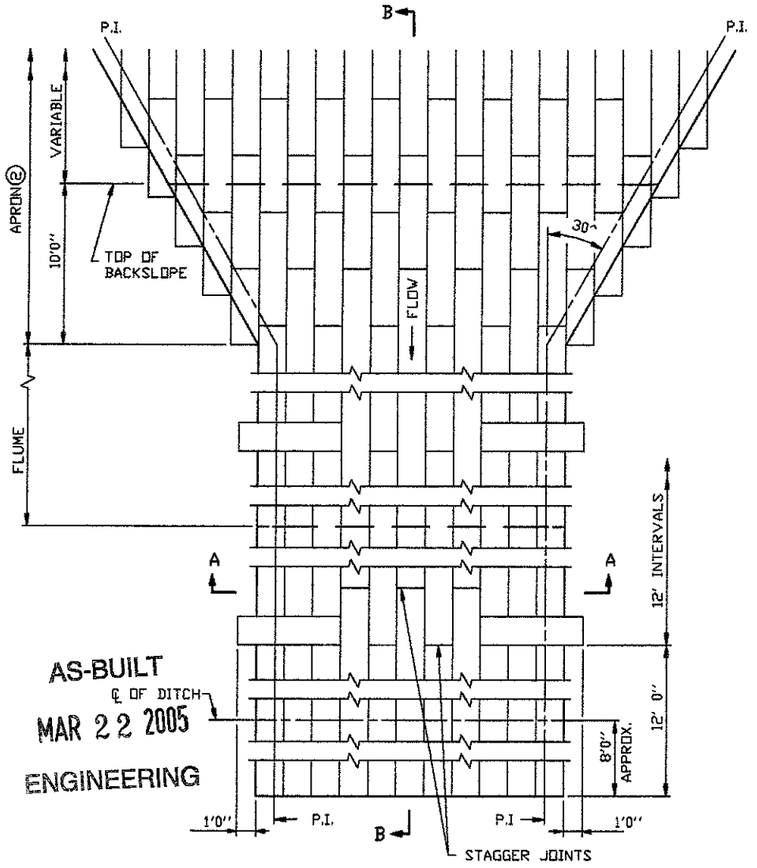
CONTOURING ROAD CUTS



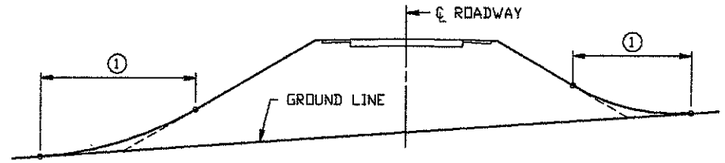
ROUNDING SHOULDERS AND BACKSLOPES



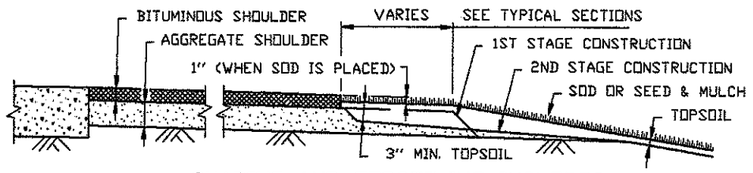
PLAN VIEW



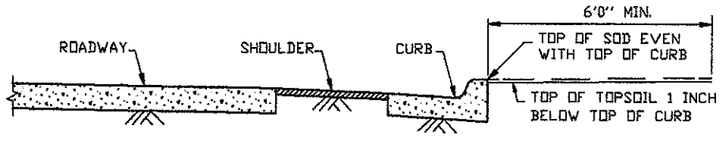
PLAN VIEW



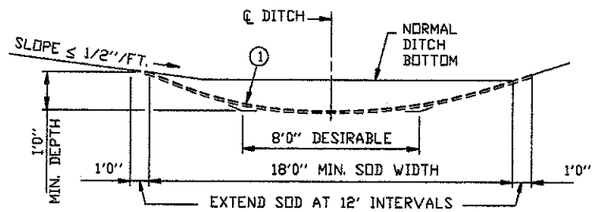
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



SHAPING AND TOPSOILING INSLOPES

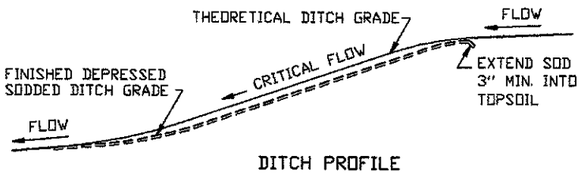


SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



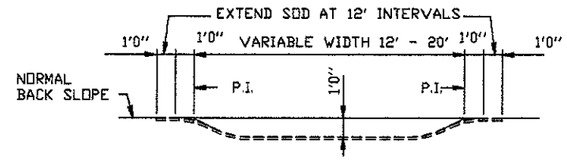
SODDED DITCH CROSS SECTION

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

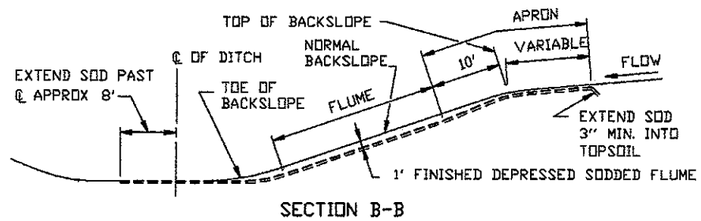


DITCH PROFILE

SODDED DITCH DETAILS



SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

NOTES:

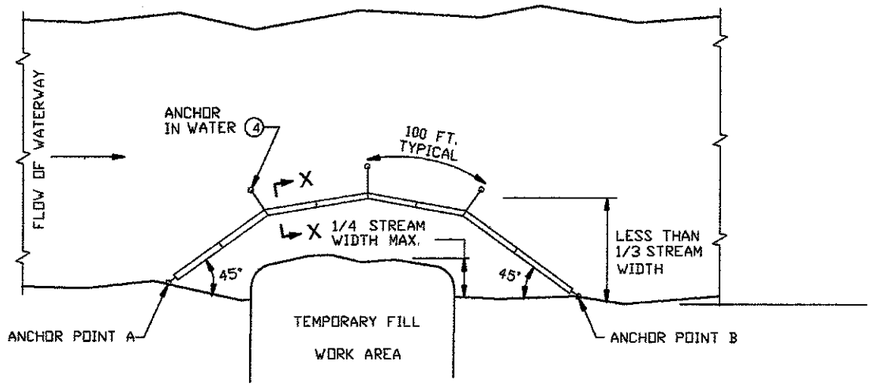
SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

① FOR ROUNDING, SEE ROAD DESIGN MANUAL.

② CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

REVISION DATE 10-26-2000

STANDARD SHEET NO. 5-297.404	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: DECEMBER 19, 1990	
S.A.P. 55-599-79	SHEET NO. 8 OF 18 SHEETS



PLAN VIEW

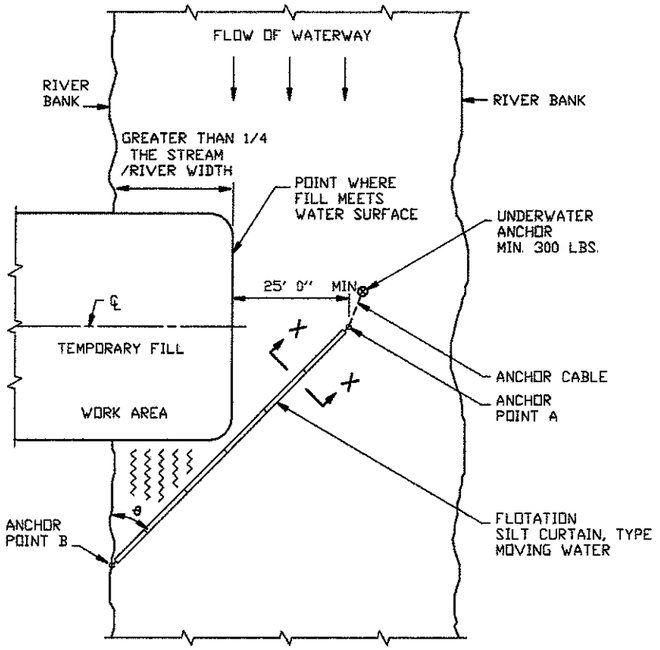
FLOTATION SILT CURTAIN - TYPE WORK AREA

(SPEC. 3887)

FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

DESIGN GUIDELINES:

WHEN TEMPORARY FILL ENCROACHES LESS THAN 1/4 OF THE WIDTH OF STREAM.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WATER DEPTH: 11 FT.



∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 3 FT./SEC.
35°	MODERATE, 3 - 5 FT./SEC.

PLAN VIEW

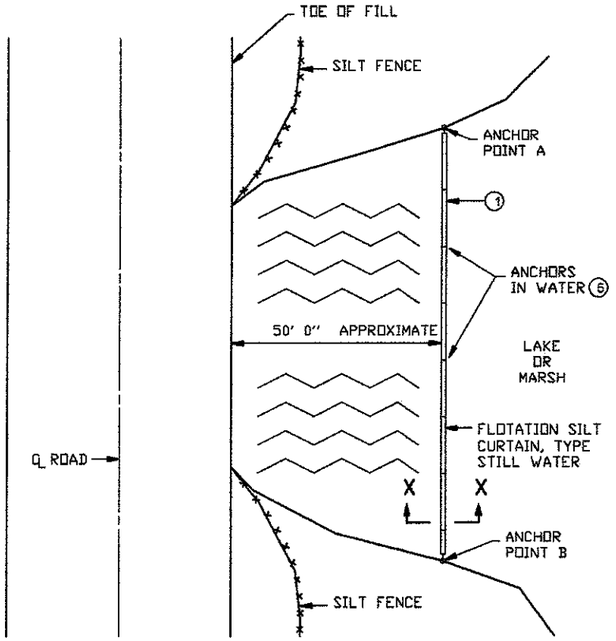
FLOTATION SILT CURTAIN - TYPE MOVING WATER

(SPEC. 3887)

DESIGN GUIDELINES:

WHEN TEMPORARY FILL ENCROACHES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM.

MAXIMUM WATER DEPTH: 11 FT. (1)
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.



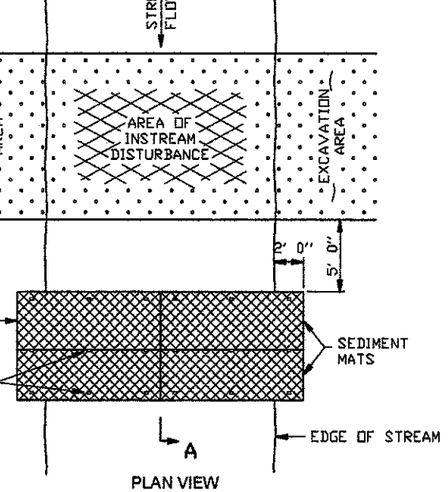
PLAN VIEW

FLOTATION SILT CURTAIN - TYPE STILL WATER

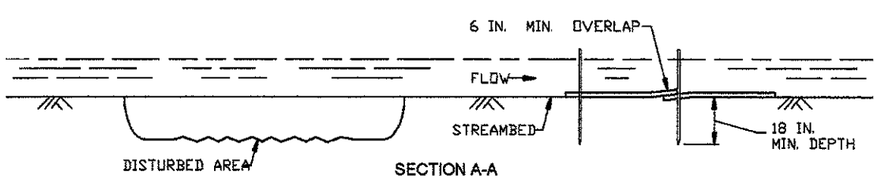
(SPEC. 3887)

DESIGN GUIDELINES:

MAXIMUM WATER DEPTH: 11 FT. (1)
MINIMUM WATER DEPTH: 3 FT.



PLAN VIEW



SECTION A-A

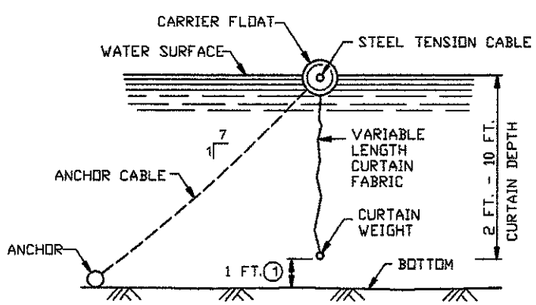
SEDIMENT MAT

(SPEC. 3894)

TYPICAL STREAMBED INSTALLATION

DESIGN GUIDELINES:

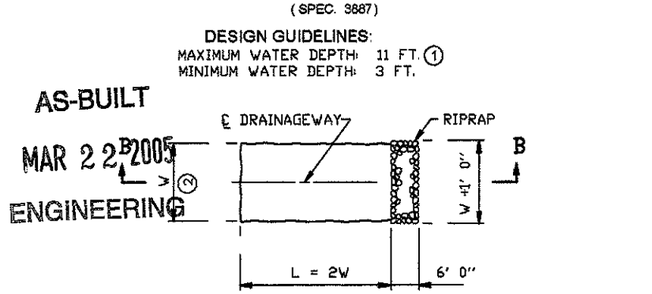
MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



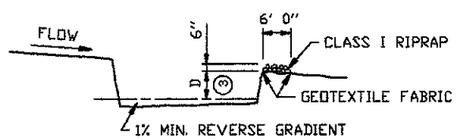
SECTION X-X

FLOTATION SILT CURTAINS

(SPEC. 3887)



PLAN



SECTION B-B

SEDIMENT TRAP DETAIL

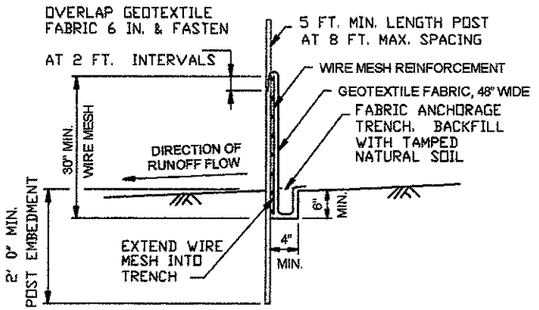
(SPEC. 2573)

NOTES:

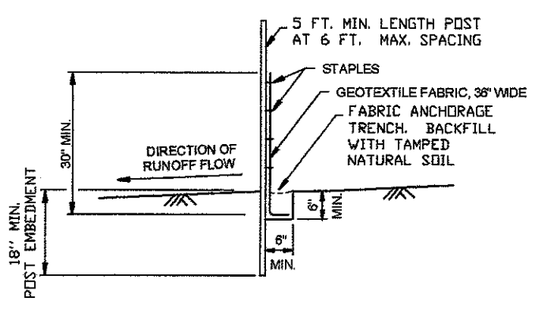
SEE SPECS. 2573, 3887 & 3894.

(1) CURTAIN 1 FT. FROM BOTTOM
(2) W = 10 FT. MIN., 20 FT. MAX.
(3) D = 2 FT.
(4) 100 FT. MAX. SPACING BETWEEN ANCHORS, MIN. 40 LBS.
(5) USE ENOUGH ANCHORS TO HOLD SILT CURTAIN IN PLACE.

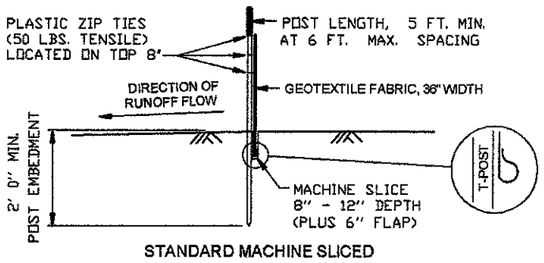
STANDARD SHEET NO. 5-297.405 (1 OF 4)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: July 30, 2001	
S.A.P. 55-599-79	SHEET NO 9 OF 18 SHEETS



HEAVY DUTY



PREASSEMBLED

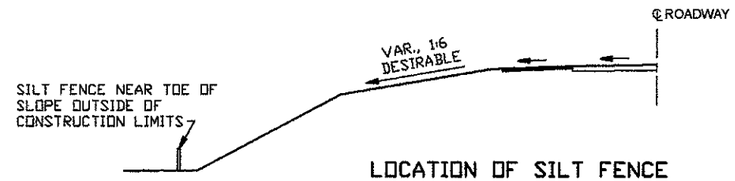


STANDARD MACHINE SLICED

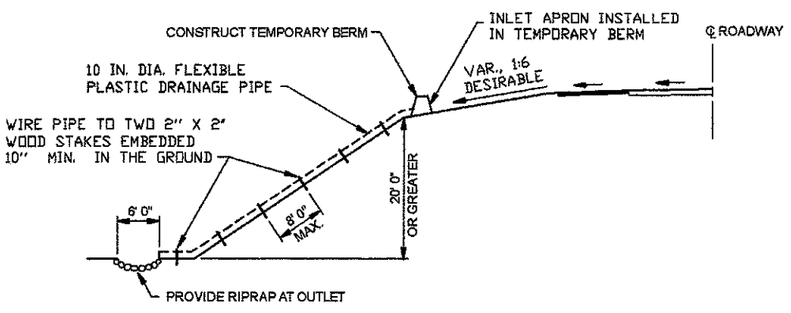
DESIGN GUIDELINES:
MAXIMUM CONTRIBUTING AREA: 3 ACRES

SILT FENCE DETAILS

TO PROTECT AREAS FROM SHEET FLOW
(SEE SPEC. 3886)

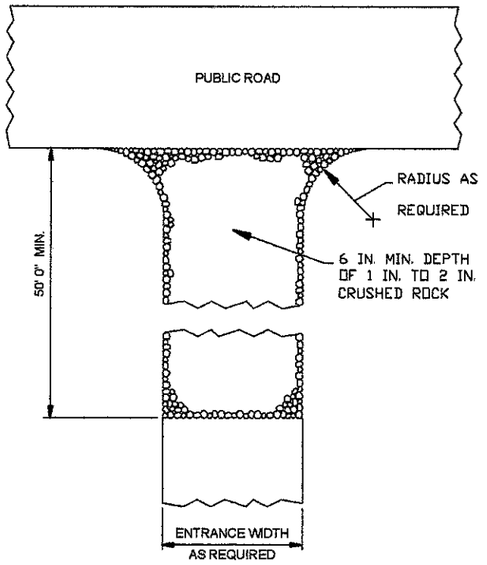


LOCATION OF SILT FENCE AT TOE OF ROADWAY EMBANKMENT

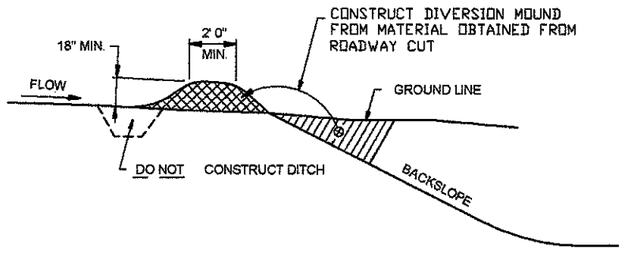


TEMPORARY DRAIN ON FILL SLOPE

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

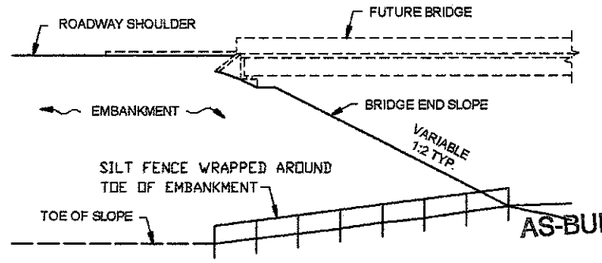


ROCK CONSTRUCTION ENTRANCE ①



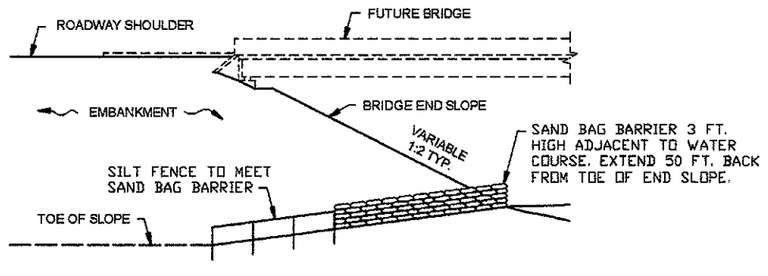
DIVERSION MOUND

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

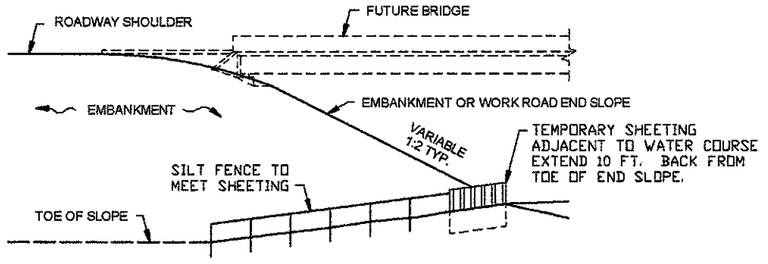


AS-BUILT
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DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: STAGNANT
CONTRIBUTING SLOPE AREA: 1/2 ACRE



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



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

SILT FENCE AT BRIDGE EMBANKMENT

NOTES:

SEE SPECS. 2573 & 3886.

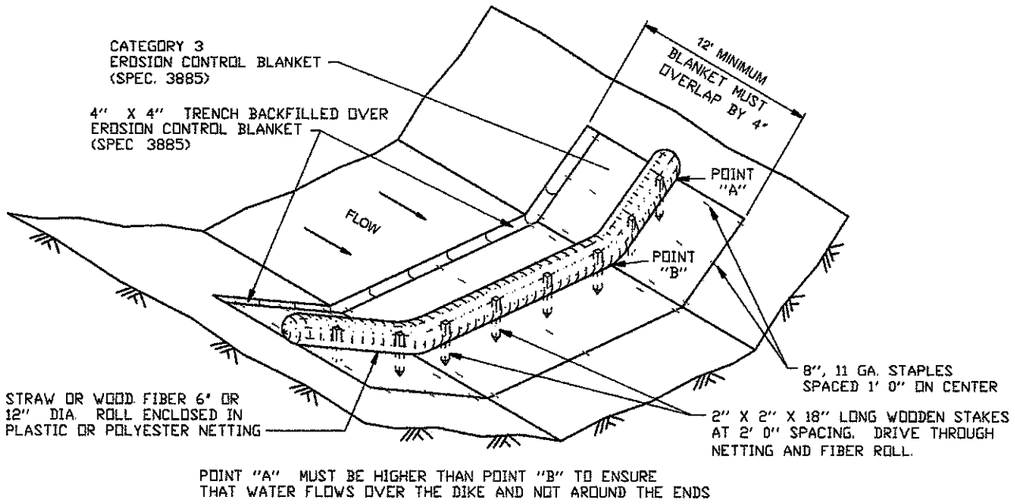
1 ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE DRIVING ON MAIN ROAD. THIS WILL PREVENT AUTO DAMAGE. WE NEED TO KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS.

STANDARD SHEET NO. 5-297.405 (2 OF 4)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: JULY 30, 2001	
S.A.P. 55-599-79	SHEET NO 10 OF 18 SHEETS

AS-BUILT

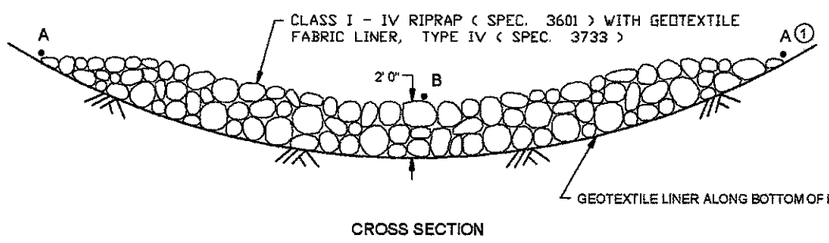
MAR 22 2005

ENGINEERING

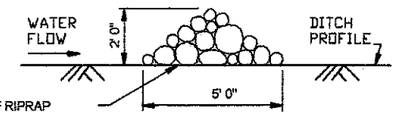


BIOROLL BLANKET SYSTEM

(TYPE 3 SPEC. 3889)



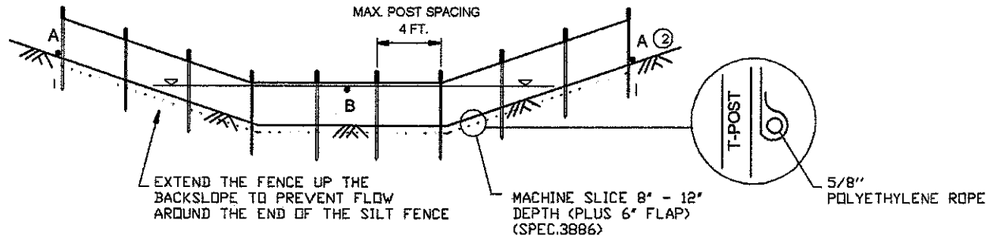
CROSS SECTION



PROFILE VIEW

ROCK CHECK

(TYPE 7 SPEC. 3889)

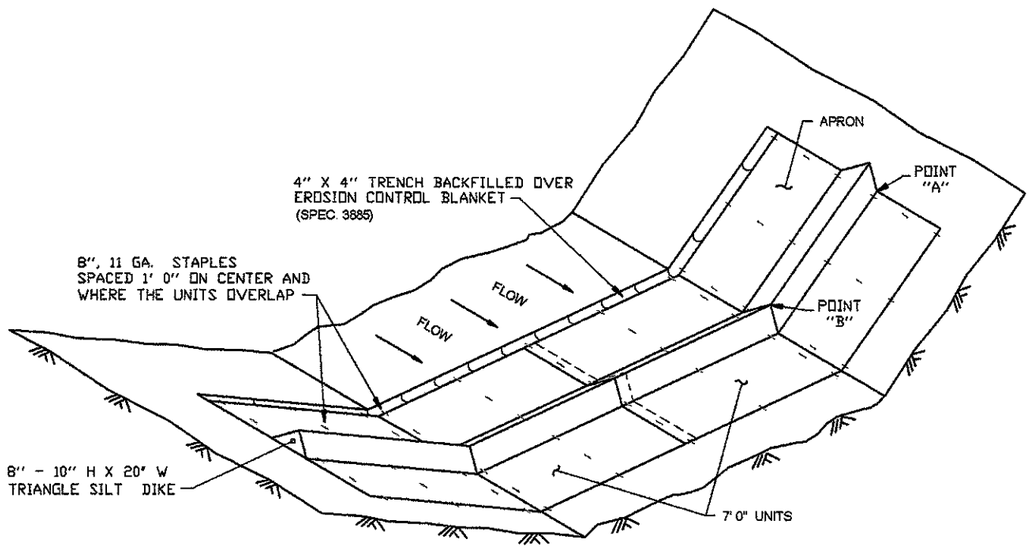


DESIGN GUIDELINES	
STORM FREQUENCY	2 YR.- 24 HR.
MAX. DITCH GRADE ,	5%
MAX. DRAINAGE AREA	1 ACRE

NOTE:
WHEN SEDIMENT BUILD UP REACHES 1.5 FT.,
THE SILT SHOULD BE REMOVED OR A SECOND
SILT FENCE BUILT UPSTREAM FROM THE
EXISTING ONE AT A SUITABLE DISTANCE.

MACHINE SLICED

(TYPE 1 SPEC. 3889)



GEOTEXTILE TRIANGULAR DIKE

(TYPE 6 SPEC. 3889)

NOTES:

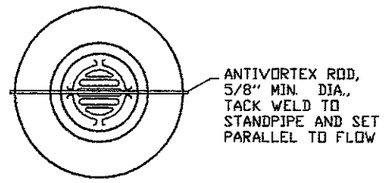
SEE SPECS. 2573, 3885, 3886 & 3889.

SPACING OF DITCH CHECKS IS DEPENDENT ON DRAINAGE AREA AND GRADES. SEE DISTRICT HYDRAULICS ENGINEER FOR RECOMMENDATIONS.

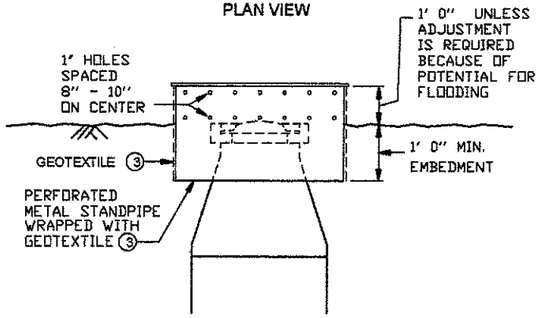
(1) POINT A MUST BE 2' 6" MIN. HIGHER THAN POINT B.

(2) POINT A MUST BE 2' 0" MIN. HIGHER THAN POINT B.

STANDARD SHEET NO.	TITLE:
5-297.405 (3 OF 4)	TEMPORARY EROSION CONTROL DITCH CHECKS
STANDARD APPROVED: JULY 30, 2001	
S.A.P. 55-599-79	SHEET NO. 11 OF 18 SHEETS



PLAN VIEW

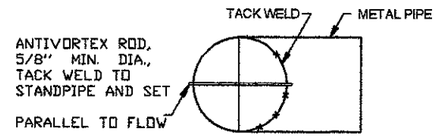


ELEVATION

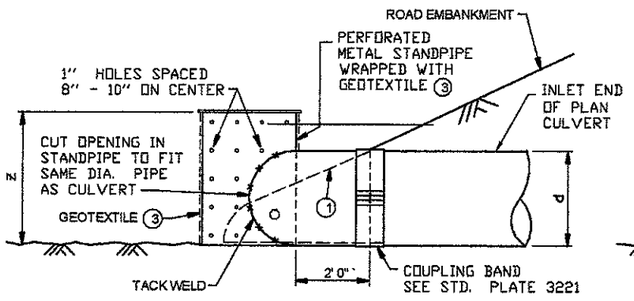
RISER STANDPIPE

TO PROTECT DROP INLET
(TYPE A SPEC. 3891)

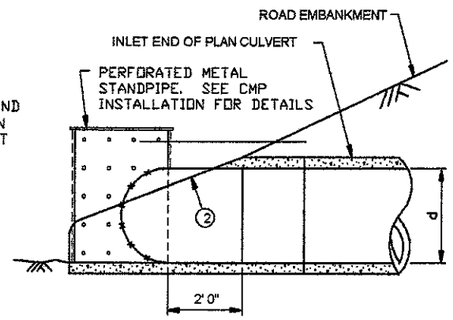
DESIGN GUIDELINES:
STORM FREQUENCY: 10 YEAR - 24 HOUR.



PLAN VIEW



ELEVATION OF CMP INSTALLATION



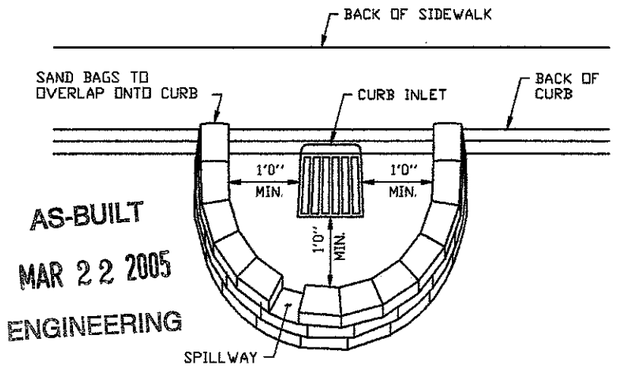
ELEVATION OF RCP INSTALLATION

RISER STANDPIPE

FOR SEDIMENT CONTROL ON CULVERT INLET
(TYPE D SPEC. 3891)

d = DIA. OF STANDPIPE EQUAL TO DIA. OF PLAN CULVERT
z = LENGTH OF PERFORATED STANDPIPE (d + 12")

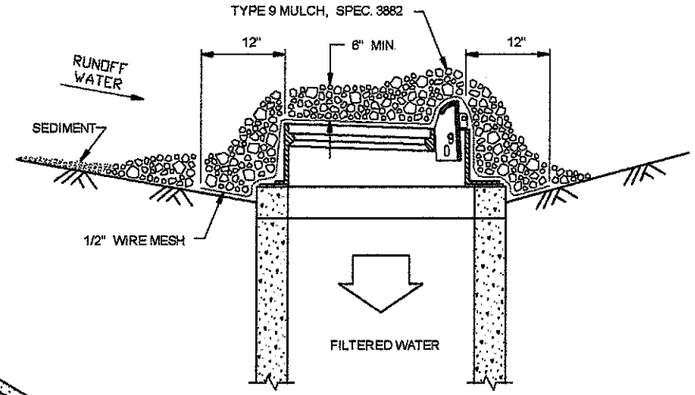
DESIGN GUIDELINES:
CULVERT SIZE: 12" - 36"
STORM FREQUENCY: 10 YR. - 24 HR.



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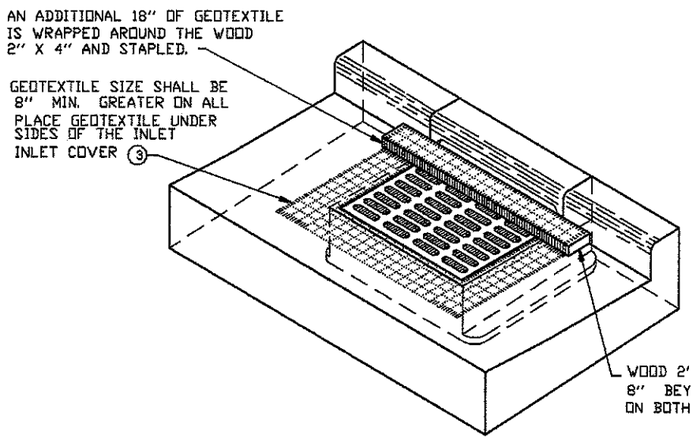
CURB INLET SAND BAG BARRIER

THIS INLET PROTECTION IS USED DURING ROUGH GRADING ONLY. USE BEFORE ROAD IS OPEN TO TRAFFIC OR IS PAVED.
(TYPE B OR C SPEC. 3891)



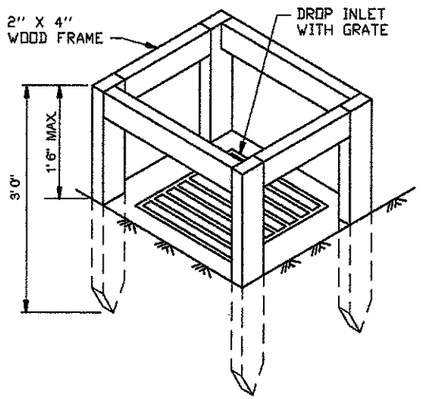
AGGREGATE FILTER AT CURB INLET

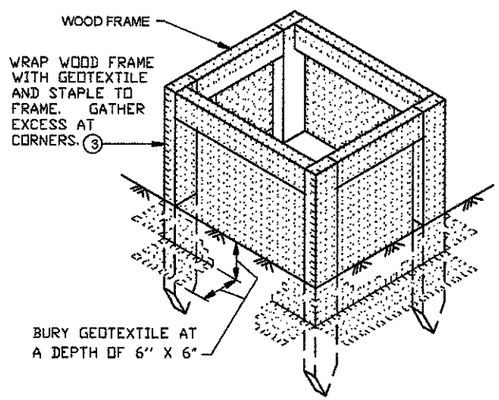
(TYPE B OR C SPEC. 3891)



SILT FENCE BOX TO PROTECT DROP INLETS

(TYPE A SPEC. 3891)





SILT FENCE BOX TO PROTECT DROP INLETS

USE WHERE INLET DRAINS AN AREA WITH SLOPES AT 1:3 or LESS
(TYPE A SPEC. 3891)

NOTES:

SEE SPECS. 2573, 3891 & 3893.
MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.

(1) FOR CMP, REMOVE TEMPORARY STANDPIPE AND INSTALL CULVERT APRON AFTER VEGETATION IS ESTABLISHED.

(2) FOR RCP, INSTALL CULVERT APRON AND SLIDE TEMPORARY STANDPIPE INTO RCP. AFTER VEGETATION IS ESTABLISHED REMOVE TEMPORARY STANDPIPE.

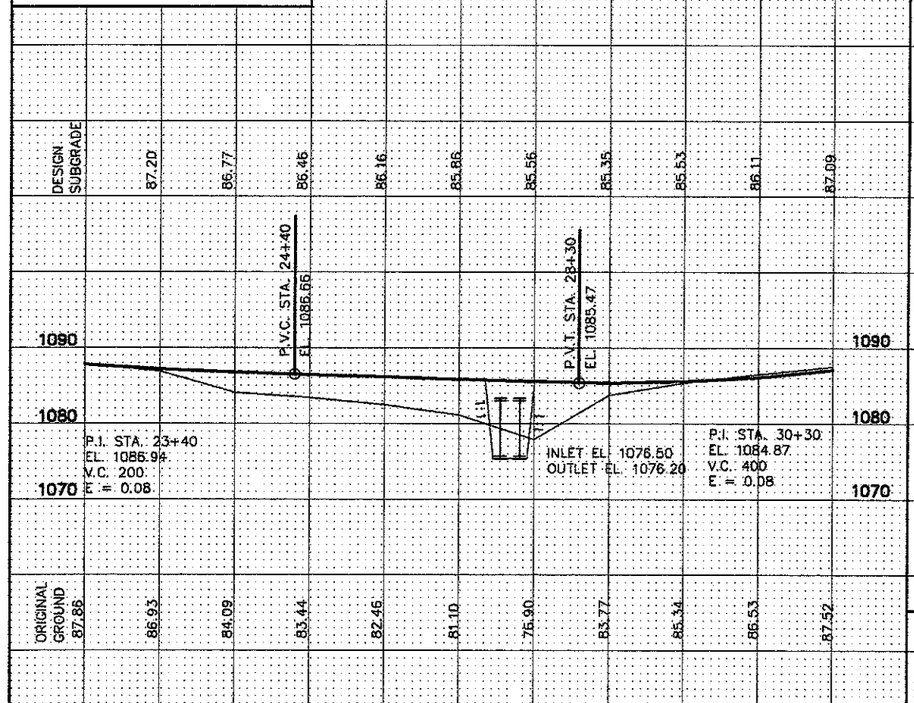
(3) ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MOND/MOND, MEETING SPEC. 3886 FOR MACHINE SLICED. SLICED.

STANDARD SHEET NO.	TITLE:
5-297.405 (4 OF 4)	TEMPORARY EROSION CONTROL TEMPORARY INLET PROTECTION
STANDARD APPROVED: JULY 30, 2001	

S.A.P. 55-599-79 SHEET NO 12 OF 18 SHEETS

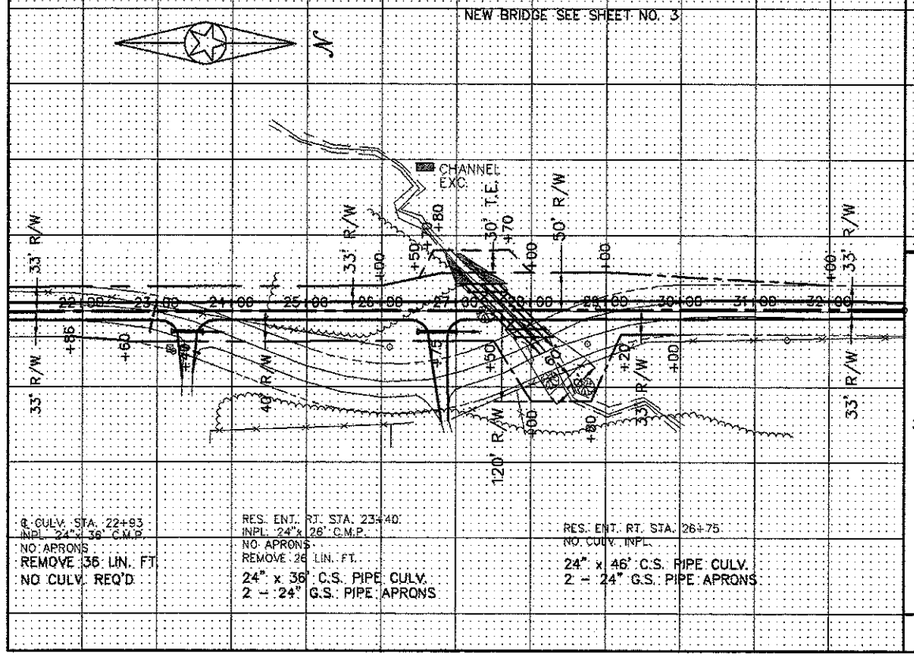
CONTRACTED PROFILE

SCALE HOR 0' 50' 100' VER 0' 50' 100'



PLAT

SCALE 0' 50' 100'



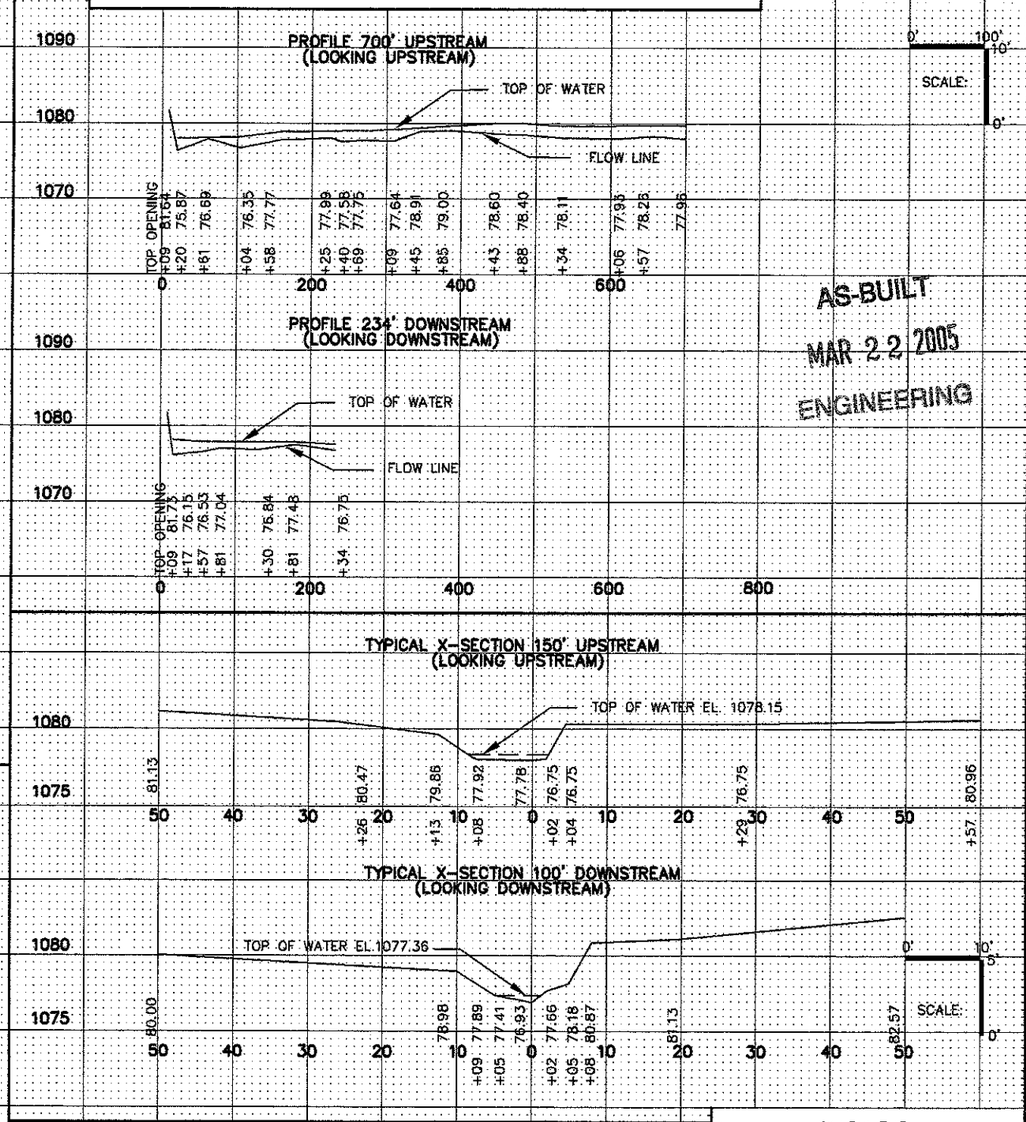
6 CULV. STA. 22+93
INPL. 24"x 36' C.M.P.
NO. APRONS
REMOVE 36 LIN. FT.
NO CULV. REQ'D

RES. ENT. RT. STA. 23+40
INPL. 24"x 26' C.M.P.
NO. APRONS
REMOVE 26 LIN. FT.
24" x 36' C.S. PIPE CULV.
2 - 24" G.S. PIPE APRONS

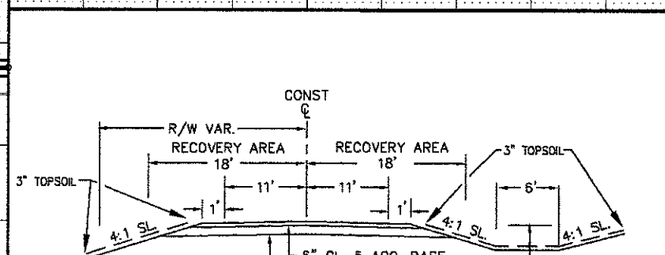
RES. ENT. RT. STA. 26+75
NO. CULV. INPL.
24" x 46' C.S. PIPE CULV.
2 - 24" G.S. PIPE APRONS

TYPICAL SECTIONS & PERTINENT DATA

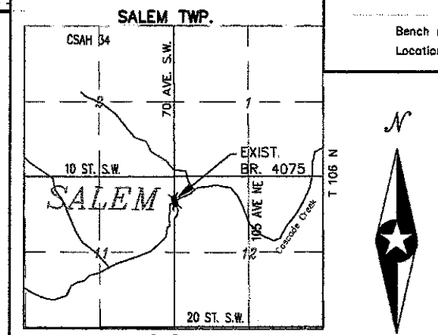
SCALE AS SHOWN



AS-BUILT
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ENGINEERING



STA. 21+00 TO 33+00



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 3/20/02

Stream or ditch designation Cascade Creek
Drainage area 14.4 sq. mi.
Max. flood on record unknown Design flood (10 yr. freq.) 1325 C.F.S.
Max. observed highwater elevation unknown Design highwater elevation 1085.15
Design mean velocity through structure 8.1 F.P.S. Outlet
Low superstructure at or above elevation 1082.2
Flowline 1076.35 Skew angle 45°
Waterway area req'd. below elevation = Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr freq.) is 2835 C.F.S. at stage 1.0 ft. and mean velocity of 7.0 F.P.S. with 1.0 Ft. freeboard. 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: .....

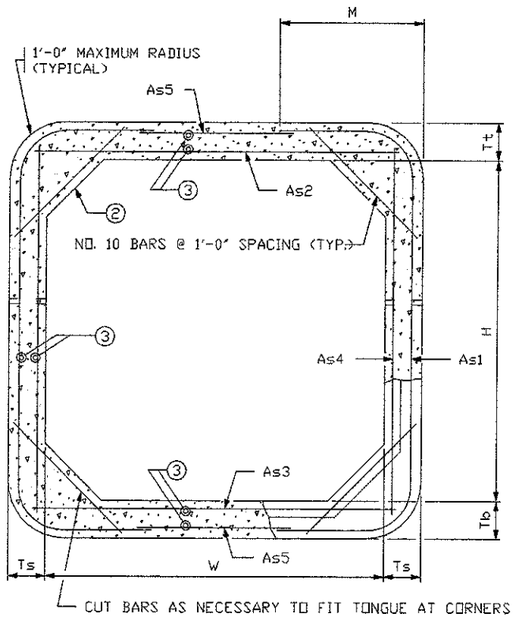
MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 1.2 MI. S. OF JCT. C.S.A.H. 34 ON 70 AVE. S.W. (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 1.2 MILES SOUTH OF JCT. C.S.A.H. 34
SEC. 11-12 TWP. 106 N R 15
TOWNSHIP SALEM COUNTY OLMSTED
BRIDGE NO. 55J44

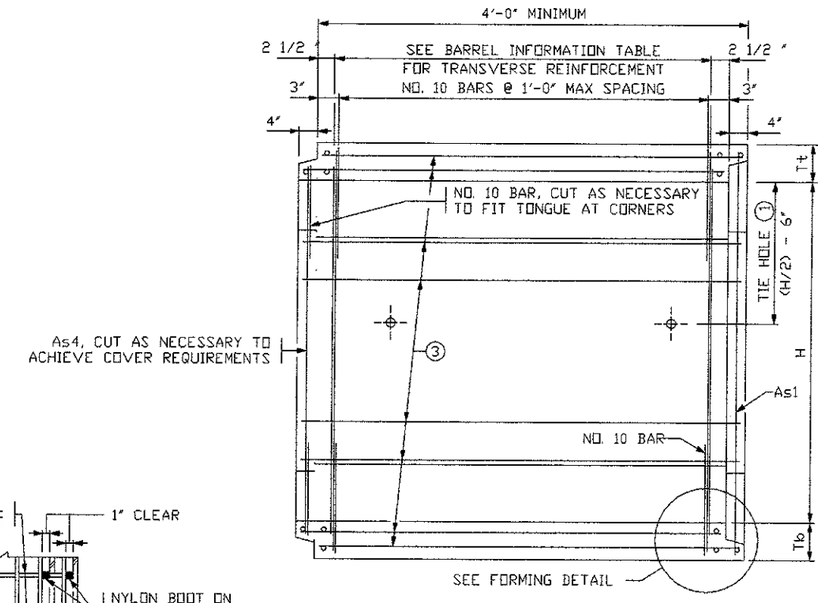
CERTIFIED BY Kaye M Brienek LIC NO. 19917 5/20 2002
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State Aid Proj. 55-599-79 SALEM TWP. Sheet No. 13 of 18 Sheets



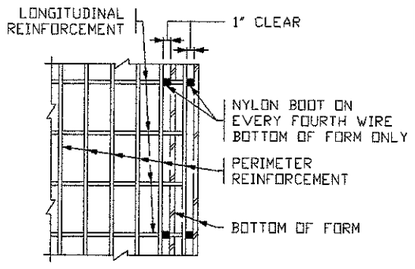
TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

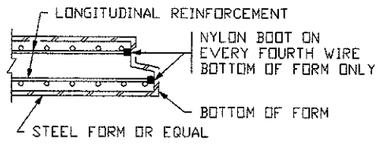


LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

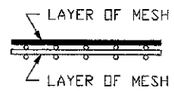


PLAN



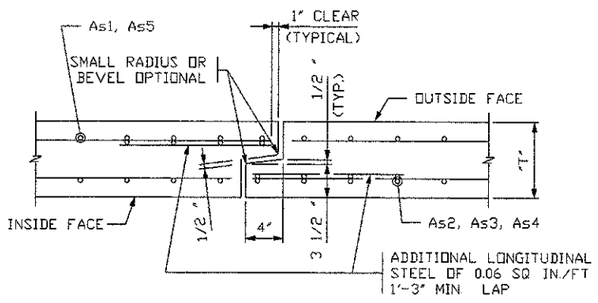
SECTION

FORMING 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



TONGUE AND GROOVE JOINT DETAIL

CONSTRUCTION NOTES

CULVERTS TO BE CONSTRUCTED AS PER MnDOT 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(MnDOT 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 MnDOT 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

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ENGINEERING

BARREL INFORMATION

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DIMENSIONS W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)	WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT As1 AREA (IN.²/FT.)	As1 LENGTH (FT.)	As1 M (FT.)	As2 AREA (IN.²/FT.)	As2 LENGTH (FT.)	As3 AREA (IN.²/FT.)	As3 LENGTH (FT.)	As4 AREA (IN.²/FT.)	As4 LENGTH (FT.)	As5 AREA (IN.²/FT.)	As5 LENGTH (FT.)
27+55.03	14' x 6'	2	5000	2-6	14	6	10	10	8	5200	0.74	14'-9"	4'-2"	1.11	14'-6"	1.06	14'-6"	0.20	6'-6"	0.06	9'-0"
27+80.96	14' x 6'	2	5000	2-6	14	6	10	10	8	5200	0.74	14'-9"	4'-2"	1.11	14'-6"	1.06	14'-6"	0.20	6'-6"	0.06	9'-0"

REVISION:

APPROVED: DECEMBER 11, 2000

Donald J. Flemming

STATE BRIDGE ENGINEER

STATE AID NO 55-599-79 (SALEM TWP.) STA. 27+55.03 AND STA. 27+80.96

FIG. 5-395.101(A)

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LIC. NO. 19917 5/20 2002

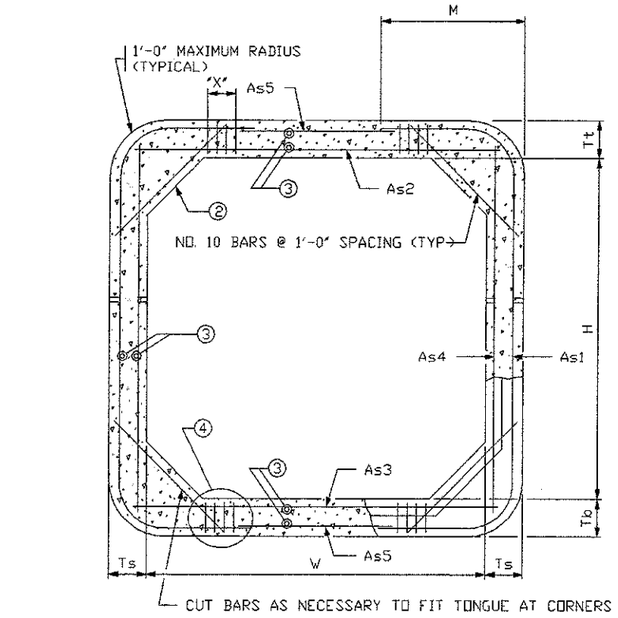
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DES: DR: APPROVED:

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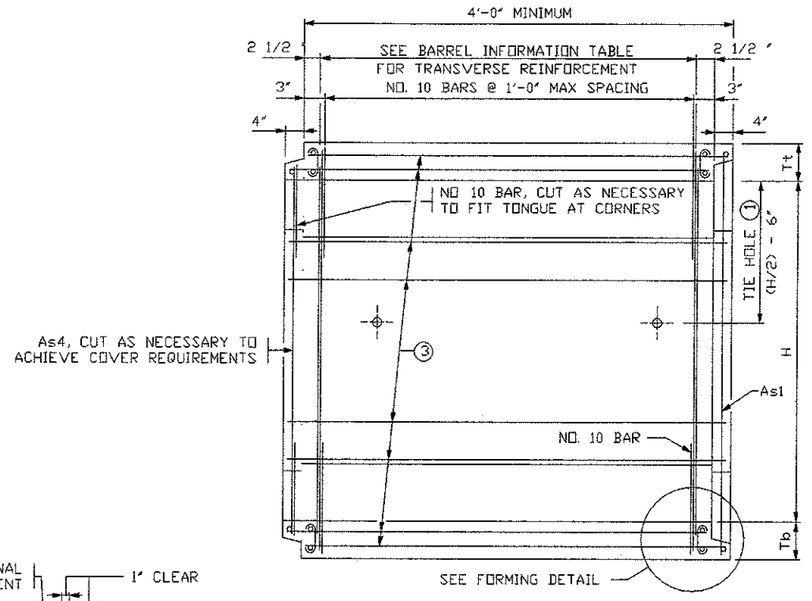
SHEET NO. 14 OF 18 SHEETS

BRIDGE NO. 55J44



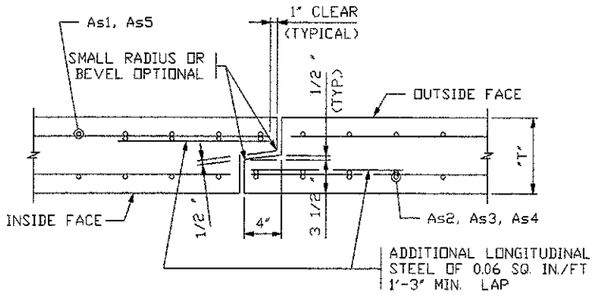
TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

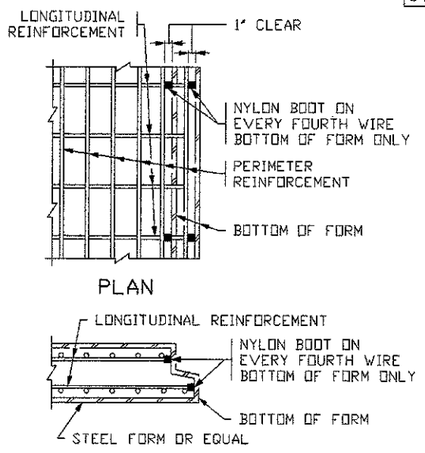


LONGITUDINAL BARREL SECTION

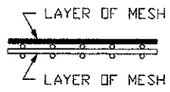
BAR REINFORCEMENT OPTION SHOWN



TONGUE AND GROOVE JOINT DETAIL



FORMING 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 MnDOT 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 (MnDOT 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 MnDOT SPEC 3238.2A IS REQUIRED

(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

(4) SEE STANDARD PLATE NO. 3007 FOR SHEAR REINFORCEMENT OPTIONS. THE MAXIMUM SHEAR REINFORCEMENT SPACING IN THE LONGITUDINAL DIRECTION SHALL BE 6".

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BARREL INFORMATION

LOCATION	SIZE	f'c (PSI)	OVERFILL LIMITS (FT)	DIMENSIONS					WEIGHT (LBS/FT.)	STEEL FABRIC REINFORCEMENT												(4) SHEAR REINFORCEMENT TOP AND BOTTOM OF BARREL		
				W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		As1			As2		As3		As4		As5					
										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.)	AREA (IN.²/FT.)	MAX. SPG. (IN.)	X (IN.)

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

STATE AID NO 55-599-79, (SALEM TWP.) STA. 27+55.03 AND STA. 27+80.96

FIG. 5-395.101(B)

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LIC. NO. 19917 5/20 2002

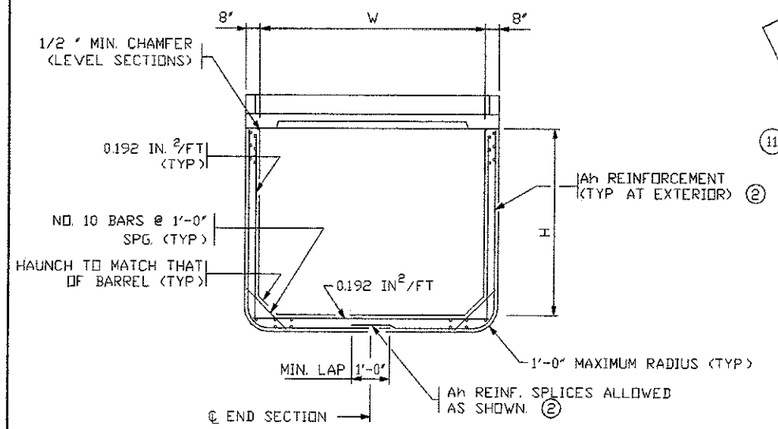
TITLE: BARREL DETAILS (SPECIAL DESIGN)

DES: | DR: | APPROVED:

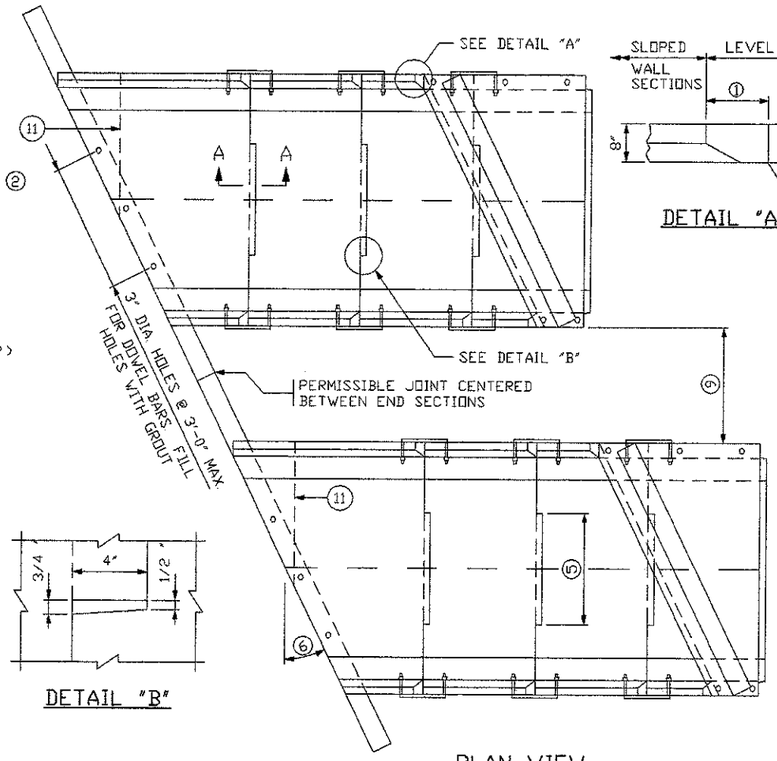
CHK: | CHK:

SHEET NO. 15 OF 18 SHEETS

BRIDGE NO. 55J44



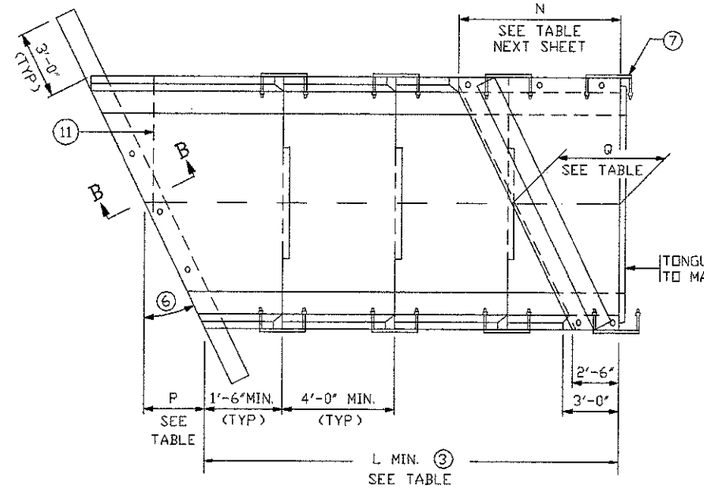
END VIEW



PLAN VIEW

DOUBLE-BARREL OPTION

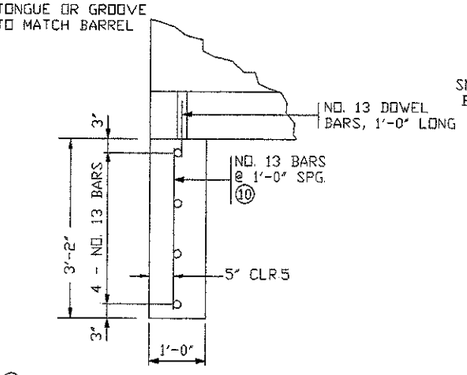
DETAIL "A"



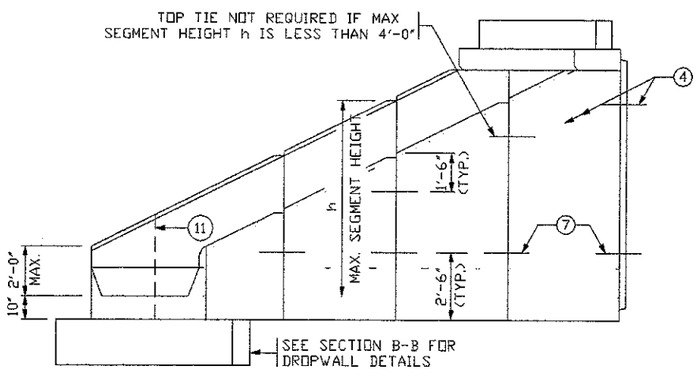
PLAN VIEW

SINGLE BARREL OPTION

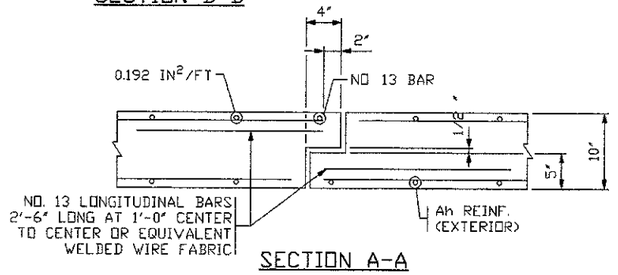
DETAIL "B"



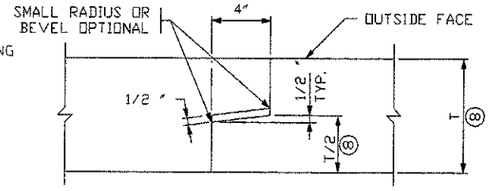
SECTION B-B



ELEVATION

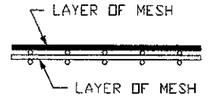


SECTION A-A



TONGUE AND GROOVE JOINT

MAKE DIMENSION OF TONGUE OR GROOVE ON ADJACENT PRECAST BARREL SECTIONS SO INSIDE WALLS ARE FLUSH.



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

SEE FIG. 5-395.101(A) AND FIG. 5-393.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

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

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

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

DROPWALL CONCRETE SHALL BE MIX NO. 1A43 OR 3Y43. LIMITS FOR DROPWALL EXCAVATION TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS.

LONGITUDINAL REINFORCEMENT SHALL BE A MINIMUM OF 0.06 SQ. IN. PER FT. ON BOTH FACES.

NO TONGUE OR GROOVE REQUIRED IN WALLS BETWEEN END SECTIONS.

SEE FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

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".

① 8 1/8 " @ 15°; 10 5/8 " @ 30°; 1'-2" @ 45°

② SEE FIG. 5-395.110(B) FOR REINFORCEMENT TABLES

③ NUMBER OF SECTIONS VARIES WITH "H" DIMENSION

④ EXCEPT AS NOTED, CULVERT TIES #4 DIA RODS. SEE STANDARD PLATE NO. 3145 FOR DETAILS

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

⑥ FOR SKEW ANGLES OVER 7 1/2 ° UP TO 22 1/2 °, USE A 15° SKEW END SECTION. FOR SKEW ANGLES OVER 22 1/2 ° UP TO 37 1/2 °, USE A 30° SKEW END SECTION. FOR SKEW ANGLES OVER 37 1/2° UP TO 45°, USE A 45° SKEW END SECTION.

⑦ PROVIDE EXTRA STRONG CONNECTION AT LOCATION SHOWN; REQUIRED ONLY ON HIGH FILL SIDE FOR 45° SKEW END SECTIONS OVER 6'-0" HIGH. SEE FIG. 5-395.110(B) FOR DETAILS.

⑧ DIMENSION "T" IS EQUAL TO Tt, Tb OR Ts.

⑨ 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 BETWEEN DOUBLE BARRELS IS 6'.

⑩ AS AN ALTERNATE TO THE ONE LAYER MESH CONTRACTOR MAY 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

⑪ ON THE LAST SEGMENT OF THE 45° SKEWED APRONS, A TRANSVERSE JOINT IN THE BOTTOM IS PERMITTED. A SPECIAL TIE, SIMILAR TO THE SIDE TIE, MUST BE PROVIDED THE TIE SHALL BE INSET AND THE SPACE FILLED WITH AN APPROVED GROUT

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MIN. LENGTH L

HEIGHT H (FT.)	15° SKEW	30° SKEW	45° SKEW
4	7'-1 3/4"	7'-7 3/8"	8'-7 7/8"
5	9'-2 1/2"	9'-11 1/8"	11'-5 7/8"
6	11'-3 3/8"	12'-2 7/8"	14'-3 3/4"
7	13'-4 1/4"	14'-6 5/8"	17'-1 3/4"
8	15'-5 1/8"	16'-10 1/4"	19'-11 5/8"
9	17'-5 7/8"	19'-2"	22'-9 5/8"
10	19'-6 3/4"	21'-5 3/4"	25'-7 1/2"
11	21'-7 5/8"	23'-9 3/8"	28'-5 1/2"
12	23'-8 1/2"	26'-1 1/8"	31'-3 3/8"
13	25'-9 3/8"	28'-4 7/8"	34'-1 3/8"
14	27'-10 1/8"	30'-8 1/2"	36'-11 1/4"

LENGTH P

WIDTH W (FT.)	15° SKEW	30° SKEW	45° SKEW
6	0'-11 3/4"	2'-1 3/8"	3'-8"
8	1'-3"	2'-8 3/8"	4'-8"
10	1'-6 1/4"	3'-3 1/4"	5'-8"
12	1'-9 3/8"	3'-10 1/4"	6'-8"
14	2'-0 5/8"	4'-5 1/8"	7'-8"

LENGTH Q

WIDTH W (FT.)	15° SKEW	30° SKEW	45° SKEW
6	3'-5 3/4"	4'-7 3/8"	6'-2"
8	3'-9"	5'-2 3/8"	7'-2"
10	4'-0"	5'-9 1/4"	8'-2"
12	4'-3 3/8"	6'-4 1/8"	9'-2"
14	4'-6 5/8"	6'-11 1/8"	10'-2"

REVISION:

APPROVED: DECEMBER 11, 2000

Donald J. Fleming
STATE BRIDGE ENGINEER

STATE AID NO 55-599-79 (SALEM TWP.) STA 27+55.03 AND STA 27+80.96

FIG. 5-395.110(A)

CERTIFIED BY Kaye M Bremer PROFESSIONAL ENGINEER

LIC. NO. 19917 5/20 2002

TITLE PRECAST CONCRETE END SECTION TYPE III - SINGLE OR DOUBLE BARREL FOR SKEWS 7 1/2 ° TO 45°

DES: DR: APPROVED:

CHK: CHK:

SHEET NO 16 OF 18 SHEETS

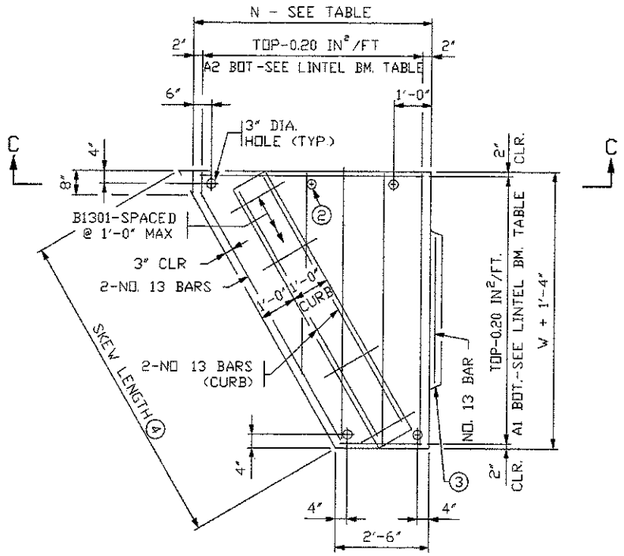
BRIDGE NO. 55J44

Ah REINFORCEMENT		
HEIGHT h (FT.)	Ah (IN^2/FT.)	
	15°&30° SKEW	45° SKEW
7 OR LESS	0.192	0.192
8	0.20	0.24
9	0.29	0.36
10	0.42	0.53
11	0.60	0.75
12	0.78	0.98
13	1.03	1.36
14	1.38	1.85

NOTE: h IS THE LARGEST VERTICAL DIMENSION OF THE SEGMENT

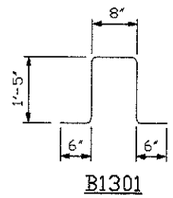
LINTEL BEAM REINFORCEMENT		
WIDTH W (FT.)	BOTTOM REINFORCEMENT	
	A1	A2
6	NO. 13 @ 1'-6"	NO. 13 @ 1'-4"
8	NO. 13 @ 1'-1"	NO. 13 @ 9"
10	NO. 13 @ 9"	NO. 13 @ 6"
12	NO. 16 @ 9"	NO. 16 @ 6"
14	NO. 19 @ 9"	NO. 22 @ 6"

LENGTH N			
WIDTH W (FT.)	15° SKEW	30° SKEW	45° SKEW
6	4'-3 3/8"	6'-4 1/4"	9'-2"
8	4'-9 7/8"	7'-6"	11'-2"
10	5'-4 1/4"	8'-7 7/8"	13'-2"
12	5'-10 3/4"	9'-9 3/4"	15'-2"
14	6'-5 1/8"	10'-11 5/8"	17'-2"

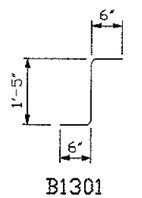


PLAN VIEW

LINTEL BEAM WITH INTEGRAL CURB



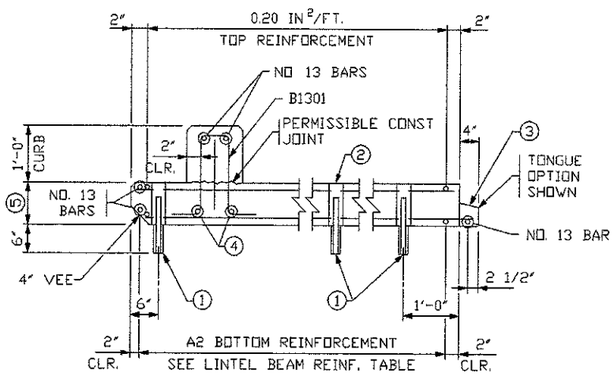
B1301



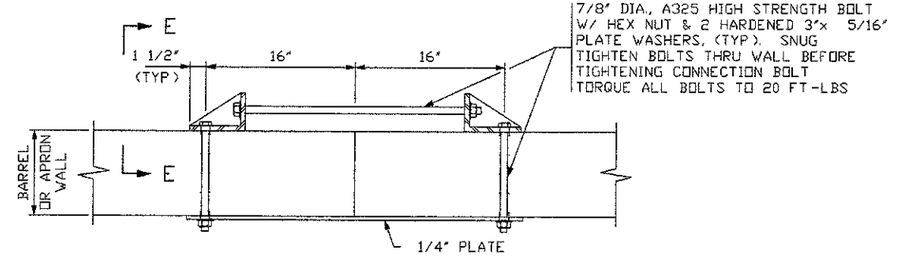
B1301 ALTERNATE

⑥

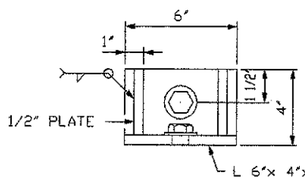
2 REQUIRED



SECTION C-C



PLAN VIEW



SECTION E-E

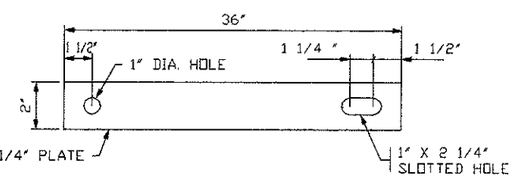


PLATE DETAIL

EXTRA STRONG CONNECTION DETAILS

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CONSTRUCTION NOTES

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

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"

STRUCTURAL STEEL PER Mn/DOT SPEC 3306.

WELDING PER Mn/DOT SPEC 2471

GALVANIZE STRUCTURAL STEEL PER Mn/DOT SPEC 3394.

GALVANIZE BOLTS, NUTS AND WASHERS PER Mn/DOT SPEC. 3392

① NO. 25 DOWEL, 1'-0" LONG, 2" DIA. HOLE IN THE TOP OF THE WALL SECTION AND 3" DIA. HOLE IN THE LINTEL. FILL HOLE WITH GROUT.

② PROVIDE ADDITIONAL 3" HOLES AT 4'-0" MAXIMUM SPACING WHEN SIDE OF LINTEL BEAM IS OVER 6 FT

③ CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT CULVERT RADIUS

④ FOR SKEW LENGTH UNDER 10' USE NO. 25 BARS. FOR SKEW LENGTH OF 10' TO 14' USE NO 29 BARS. FOR SKEW LENGTH OVER 14' TO 18' USE NO. 32 BARS. FOR SKEW LENGTH OVER 18' TO 22' USE NO. 36 BARS OR EQUAL. SKEW LENGTH IS DISTANCE BETWEEN OUTSIDE FACES OF END SECTION ALONG LINTEL BEAM

⑤ FOR CULVERTS LESS THAN 14' WIDE, USE 9" LINTEL BEAM THICKNESS WITH 5000 P.S.I. CONCRETE. FOR 14' WIDE CULVERTS, WITH A 15° SKEW, USE 9" LINTEL BEAM THICKNESS WITH 5000 P.S.I. CONCRETE FOR 14' WIDE CULVERTS, WITH A 30° OR 45° SKEW, USE 10" LINTEL BEAM THICKNESS WITH 5000 P.S.I. CONCRETE (OR USE 9" LINTEL BEAM THICKNESS WITH 6500 P.S.I. CONCRETE)

⑥ ALTERNATE BAR BEND MAY BE USED FOR B1301

REVISION:

APPROVED: DECEMBER 11, 2000

Donald J. Flemming
STATE BRIDGE ENGINEER

STATE AID NO 55-599-79 (SALEM TWP.) STA 27+55.03 AND STA 27+80.96

FIG. 5-395.110(B)

CERTIFIED BY Kay M Brenick
PROFESSIONAL ENGINEER

LIC. NO. 19917 5/20 2002

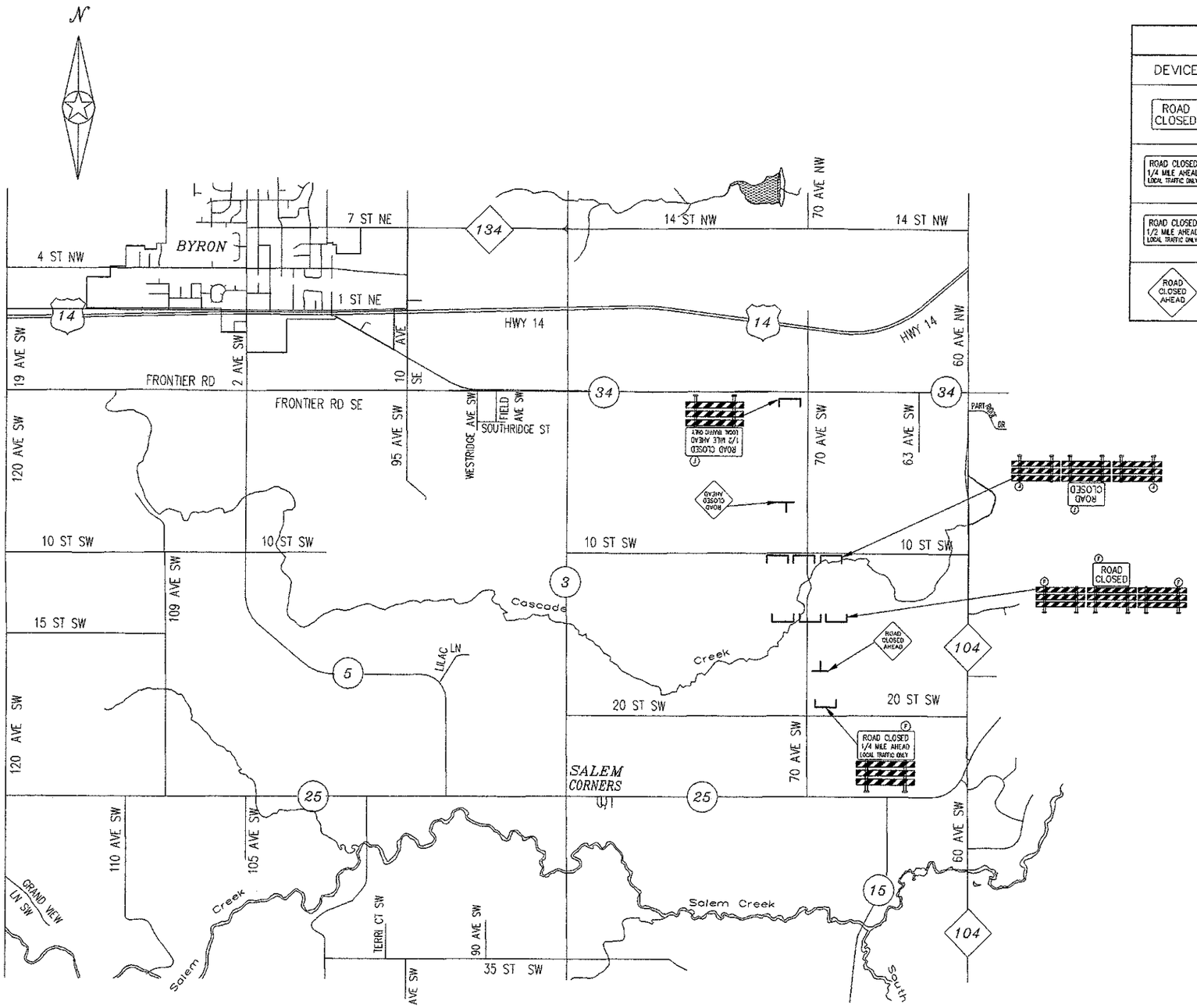
TITLE PRECAST CONCRETE END SECTION TYPE III - SINGLE OR DOUBLE BARREL FOR SKEWS 7 1/2 ° TO 45°

DES: DR: APPROVED:

CHK: CHK:

SHEET NO 17 OF 18 SHEETS

BRIDGE NO. 55J44



ESTIMATE OF TRAFFIC CONTROL DEVICES

DEVICE	NUMBER	SIZE	COLOR	QUANTITY	DEVICE	NUMBER	SIZE	COLOR	QUANTITY
ROAD CLOSED	R11-2	48 x 30	BLK/WH	2		TYPE III	MIN. 6'	OR & BLK	8
ROAD CLOSED 1/4 MILE AHEAD LOCAL TRAFFIC ONLY	R11-3	60 x 30	BLK/WH	1	(F)	TYPE A	FLASHING LAMP	AMBER	8
ROAD CLOSED 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	R11-3	60 x 30	BLK/WH	1					
ROAD CLOSED AHEAD	W20-3	48 x 48	BLK/OR	2					

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TRAFFIC CONTROL LEGEND

- ⊥ 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 DATED JANUARY 2001
4. CONSTRUCTION ZONE SIGNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL INCLUDE, BUT NOT BE LIMITED TO SIGNS FOR LANE CLOSURE, MACHINERY AHEAD, 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.