MINNESOTA DEPARTMENT OF TRANSPORTATION

THE COUNTY OF OLMSTED

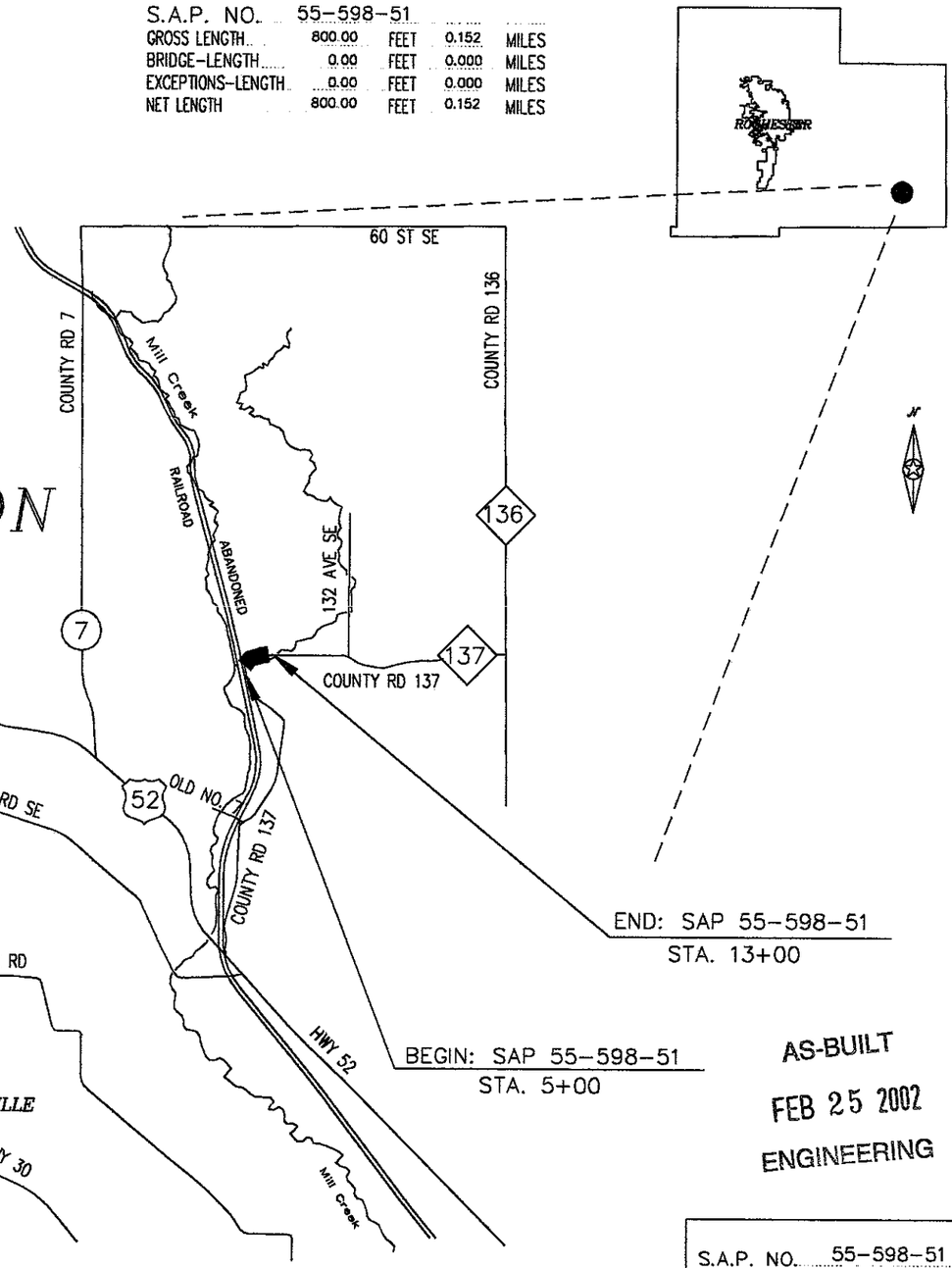
CONSTRUCTION PLAN FOR GRADING & PRECAST CONC. BOX (BRIDGE NO. 55J34)

LOCATED ON C.R. 137 BETWEEN 1 MILE NORTH OF JCT. CR 137 & TH 52 AND 1 MILE WEST OF JCT. CR 137 & CR 136 (OLD BR. NO. L6193)

(GEOGRAPHIC DESCRIPTION)

FROM APPROX. 0.30 MILES WEST of SEC. COR. 11,12,13 &14 T 105 N – R 12 W TO APPROX. 0.20 MILES WEST of SEC. COR. 11,12,13 &14 T 105 N – R 12 W (LEGAL DESCRIPTION)

S.A.P. NO.	55-598-51			
GROSS LENGTH	800.00	FEET	0.152	MILES
BRIDGE-LENGTH	0.00	FEET	0.000	MILES
EXCEPTIONS-LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	800.00	FEET	0.152	MILES



AS-BUILT

FEB 25 2002

ENGINEERING

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 25'
PROFILE 0 50' HORIZ. 0 5' VERT.
CROSS SECTIONS 0 10'
INDEX MAP 0 2640'

MINN. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AS AMENDED BY THE MAY 2, 1994, SUPPLEMENT SPECIFICATION SHALL GOVERN.

INDEX

SHEET NO. 1	TITLE SHEET
SHEET NO. 2	TYPICAL SECTION & ESTIMATE OF QUANTITIES
SHEET NO. 3 – 5	BRIDGE SHEETS
SHEET NO. 6	CROSS SECTIONS
SHEET NO. 7 – 12	EROSION CONTROL
SHEET NO. 13	TRAFFIC CONTROL
SHEET NO. 14	BARREL DETAILS
SHEET NO. 15 – 16	PRECAST CONC. END SECTION DETAILS

THIS PLAN CONTAINS 16 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-598-51

R ΣN18(20)
ADT (Current Year) = 120 (2001) Design Speed 30 MPH
ADT (Future Year) = 192 (2021) 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: STA. TO STA. mph.
T (Heavy Commercial) = STA. TO STA. mph.
SUBGRADE =
LANE WIDTH 11 FT.
SHOULDER WIDTH 3 FT.
SOIL FACTOR = 130%

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

DATE 3/23/01 LICENSE NUMBER 19917

PRINTED NAME: KAYE M. BIENIEK

SIGNED NAME: Kaye M. Bieniek

APPROVED: COUNTY DESIGN ENGINEER

DESIGN SQUAD: Holmes

DATE 3/23/01 LICENSE NUMBER 10397

APPROVED: OLMSTED COUNTY ENGINEER

STATE AID APPROVALS:

DATE: 3-30-01

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

DATE: 5-8-01

APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER

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 PIPE CULVERT	LIN. FT.	14		14
	2105.511	COMMON CHANNEL EXCAVATION	CU. YDS.	278		(P) 278
②	2105.515	UNCLASSIFIED EXCAVATION	CU. YDS.	1870		(P) 1870
③	2123.503	MOTOR GRADER	HOUR	10		10
③	2123.508	15 CU. YD. SCAPER	HOUR	10		10
③	2123.509	DOZER	HOUR	10		10
④	2211.501	AGGREGATE BASE CLASS 5	TON	1030		1030
	2412.511	10' x 8' PRECAST CONCRETE BOX CULVERT	LIN. FT.		138	138
	2412.511	12' x 8' PRECAST CONCRETE BOX CULVERT	LIN. FT.		70	70
⑤	2412.512	10' x 8' PRECAST CONC. BOX CULVERT END SECTIONS	EACH		4	4
⑤	2412.512	12' x 8' PRECAST CONC. BOX CULVERT END SECTIONS	EACH		2	2
	2442.501	REMOVE OLD BRIDGE	LUMP SUM	1		1
	2451.507	GRANULAR BEDDING (CV)	CU. YDS.		145	(P) 145
	2501.511	24" C.S. PIPE CULVERT	LIN. FT.	34		34
	2501.515	24" G.S. PIPE APRON	EACH	2		2
⑥	2511.501	RANDOM RIPRAP CL. III	CU. YDS.		313	313
⑦	2573.502	SILT FENCE, TYPE HEAVY DUTY	LIN FT	600		600
	2575.501	SEEDING	ACRE	2		(P) 2
	2575.502	SEED MIXTURE 50A	POUND	100		100
	2575.502	SEED MIXTURE 110A	POUND	160		160
	2575.511	MULCH MATERIAL TYPE 1	TON	4		4
	2575.519	DISC ANCHORING	ACRE	2		(P) 2
	2575.532	COMMERCIAL FERTILIZER ANALYSIS 12-12-12	POUND	400		400

QUANTITY NOTES:

① APPROX. 0.1 ARCES + 1 TREE IN R/W. TREES FOR REMOVAL SHALL BE DESIGNATED BY THE ENGINEER.

② UNCLASSIFIED EXCAVATION INCLUDES SUBGRADE TREATMENT AS SHOWN IN TYPICAL SECTION AND CROSS SECTIONS. 370 CU. YDS. OF EXCAVATION TO BE USED AS SALVAGED TOPSOIL.

③ EQUIPMENT HOURS ARE FOR OBLITERATING, SHAPING, OR INCORPERATING IN THE EMBANKMENT; THE OLD ROAD AS DIRECTED BY THE ENGINNER.

④ 896 TONS ON MAINLINE AND 134 TONS ON ENTRANCE.

⑤ END SECTIONS WITH DROP WALLS. WEIRS ON 10'x 8' P.C. CONC. BOX INLET ENDS.

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

⑦ SPECIFICATION 1903 SHALL NOT APPLY FOR THIS ITEM.

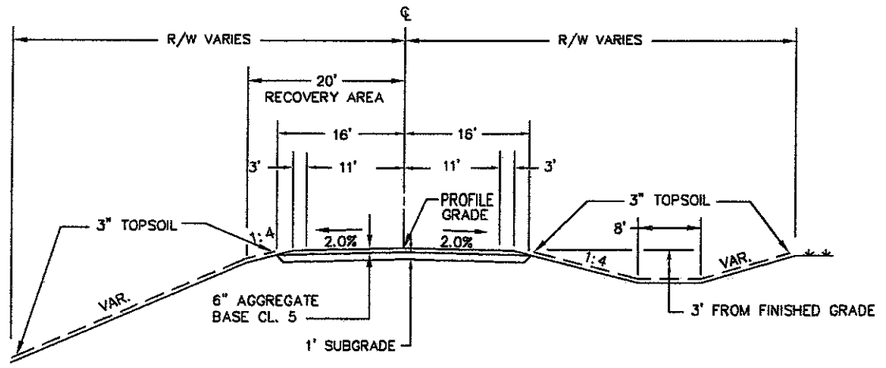
STANDARD PLATES

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

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

TYPICAL SECTION

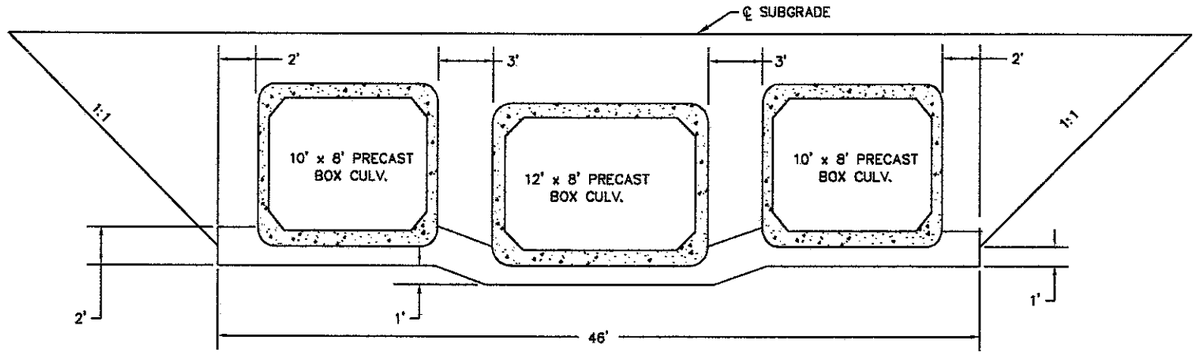
STA. 5+00 TO 13+00



NOTES: ALL UTILITY POLES AND UNYIELDING OBJECTS WILL BE LOCATED OUTSIDE THE 20' RECOVERY AREA BY OTHERS.

BEDDING DETAIL

STA. 7+77.22, STA. 7+98.50, STA. 8+21.76



QUANTITY NOTES:

AGGREGATE BASE CLASS 5 – 140LBS./CU.FT. COMPACTED
SEED MIXTURE 50A – 50 LBS/ACRE
SEED MIXTURE 110A – 80 LBS/ACRE
MULCH MATERIAL – 2 TONS/ACRE
DISK ANCHORING – ALL SEEDING AREAS EXCEPT 1:2 SLOPES
COMMERCIAL FERTILIZER – 200 LBS/ACRE

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 OR COMMON BORROW 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.

AS BUILT
FEB 25 2002
ENGINEERING

CERTIFIED BY Kaye M Bierwirth LIC. NO. 19917 3/23 2001
LICENSED PROFESSIONAL ENGINEER

S.A.P. 55-598-51 CR 137

RES. ENT. LT. STA. 9+32
INPL. 18" x ~~44'~~ CMP NO APRONS
REMOVE 14 LIN. FT.

CONST. 24' ENT. LT. STA. 9+32
24" x 34' C.S. PIPE CULVERT
2-24" C.S. PIPE APRONS

OBLITERATE OLD ROAD

OBLITERATE OLD ROAD

END PROJECT:
STA. 13+00

PI STA 10+18.23
Δ = 98°00'23"
D = 20°59'15"
T = 314.09 FT
R = 273.00 FT
L = 466.98 FT
(30 MPH)

PT STA 11+71.12

PLACE 129 CU YDS RIPRAP AT INLET
278 CU YDS CHANNEL EXCAVATION

BRIDGE NO. 55J34

EXISTING BRIDGE NO. L6193
INPLACE 30.5' L x 16.0' W
STEEL BEAM SPAN

PC STA 7+04.15

PLACE 184 CU YDS RIPRAP AT OUTLET

BEGIN PROJECT:
STA. 5+00

CHANNEL CHANGE

CLASS III RIPRAP

REMOVE EXISTING STRUCTURE

CONST. ℄ CULVERT @ STA. 7+77.22
10' x 8' x ~~62'~~ 60' P. C. BOX CULV. 30° SKEW
2-10' x 8' END SECTIONS

CONST. ℄ CULVERT @ STA. 7+98.50
12' x 8' x 70' P. C. BOX CULV. 30° SKEW
2-12' x 8' END SECTIONS

CONST. ℄ CULVERT @ STA. 8+21.76
10' x 8' x ~~76'~~ 78' P. C. BOX CULV. 30 ° SKEW
2-10' x 8' END SECTIONS

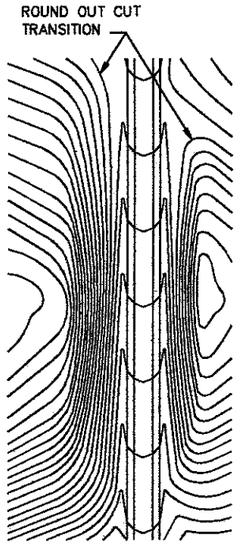
PLACE BARREL SECTIONS ON 145 CU YDS GRANULAR BEDDING

AS-BUILT
FEB 25 2002
ENGINEERING

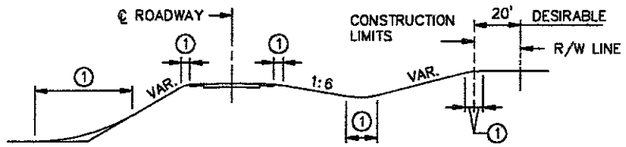
CERTIFIED BY Kaye M Brewer LICENSED PROFESSIONAL ENGINEER LIC. NO. 19917 5/11 2001

S.A.P. 55-598-51

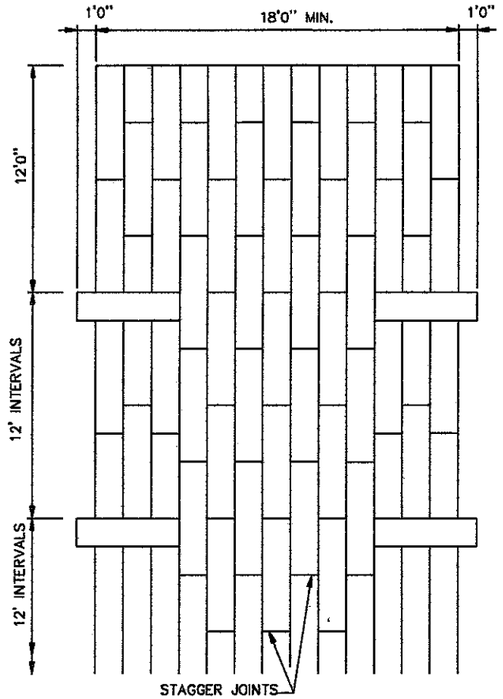
SHEET 3 OF 16 SHEETS



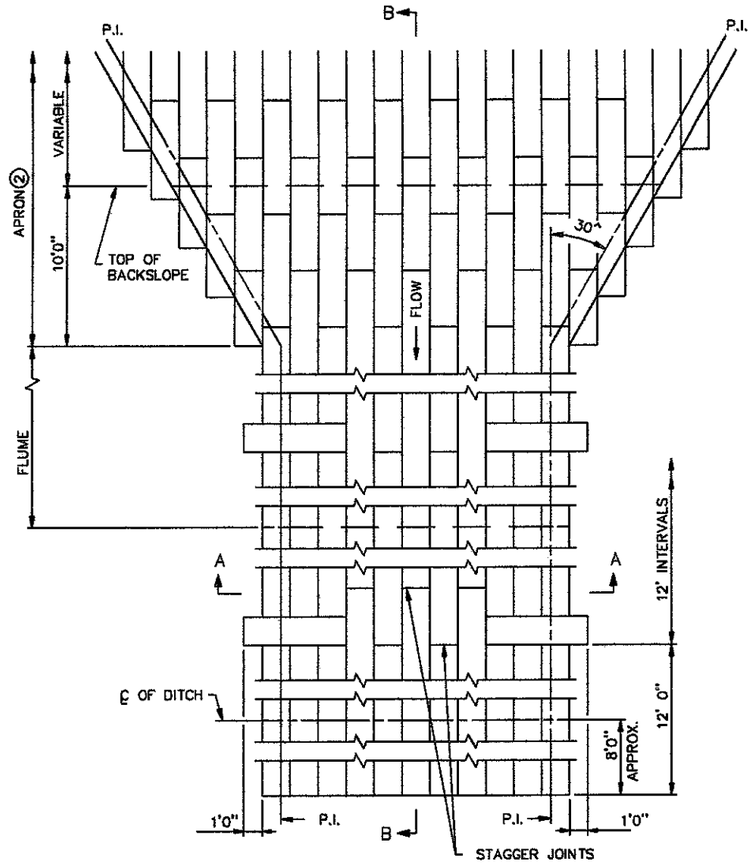
CONTOURING ROAD CUTS



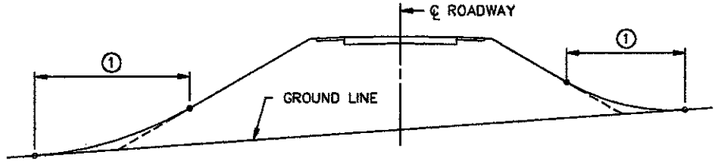
ROUNDING SHOULDERS AND BACKSLOPES



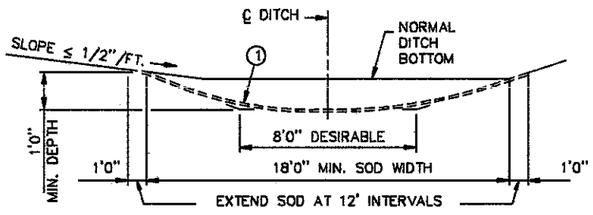
PLAN VIEW



PLAN VIEW

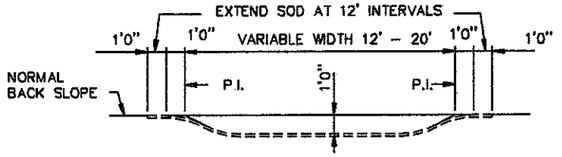


SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES

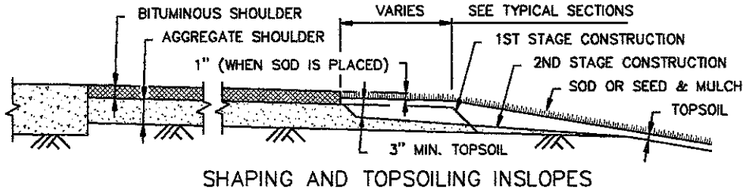


SODDED DITCH CROSS SECTION

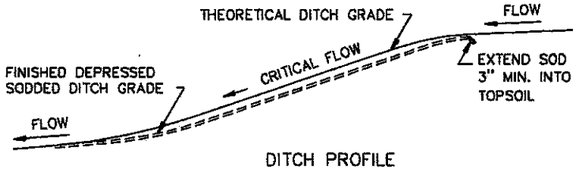
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



SECTION A–A

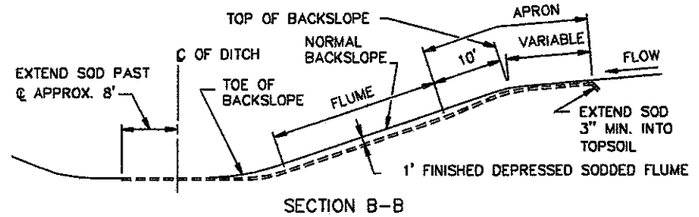


SHAPING AND TOPSOILING INSLOPES



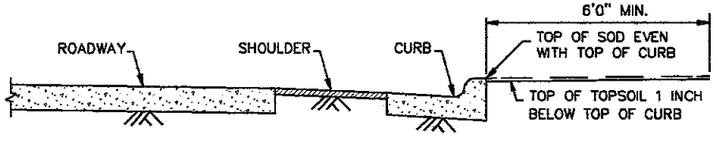
DITCH PROFILE

SODDED DITCH DETAILS



SECTION B–B

SODDED FLUME DETAILS



SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED

NOTES:

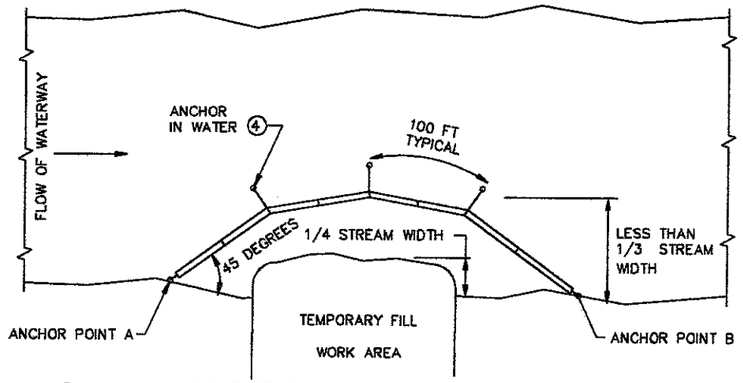
SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

(1) FOR ROUNDING, SEE ROAD DESIGN MANUAL.

(2) CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

REVISION DATE 10-26-2000

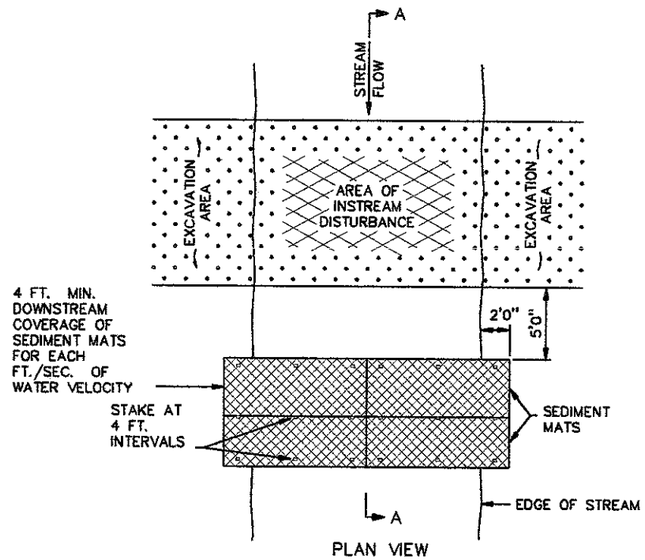
STANDARD SHEET NO. 5-297.404	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: DECEMBER 19, 1990	
~~STATE PROJ. NO.~~	SAP 55-598-51



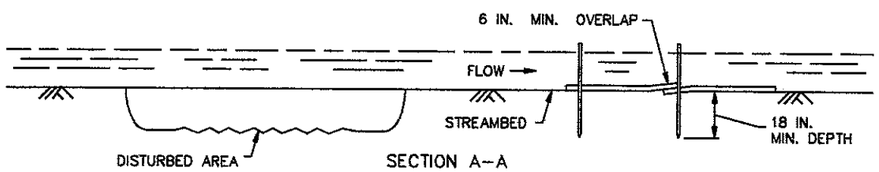
PLAN VIEW OF SILT CURTAIN ENCLOSING A WORK AREA

FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

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



PLAN VIEW

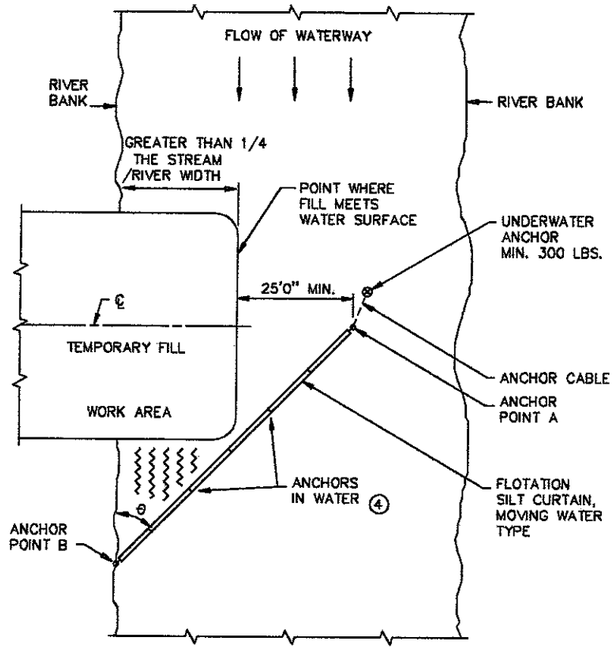


SECTION A–A

SEDIMENT MAT

TYPICAL STREAMBED INSTALLATION

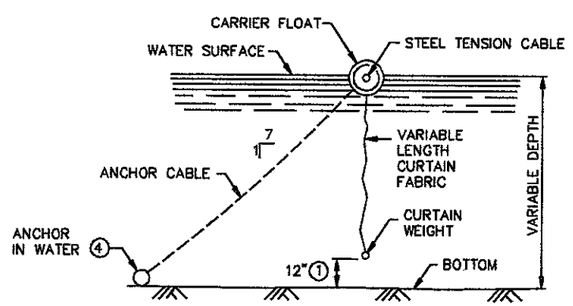
DESIGN GUIDELINES:
MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 5 FT./SEC.
35°	MODERATE, 5 – 7 FT./SEC.

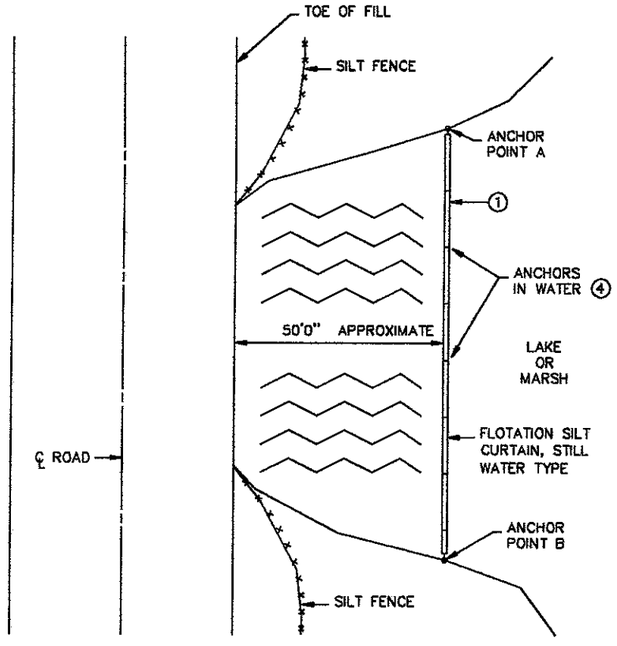
PLAN VIEW OF SILT CURTAIN – MOVING WATER

DESIGN GUIDELINES:
WHEN TEMPORARY FILL ENCROACHES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM.
MAXIMUM WATER DEPTH: 12 FT.
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 7 FT./SEC.



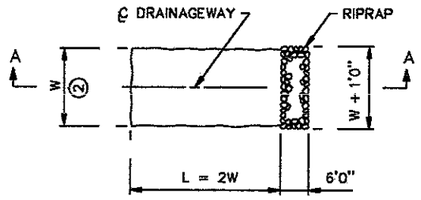
FLOTATION SILT CURTAIN DETAIL

(SEE SPEC. 3887)

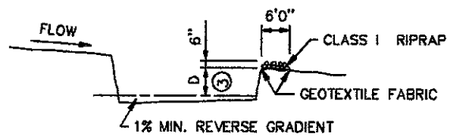


PLAN VIEW OF SILT CURTAIN – STILL WATER

DESIGN GUIDELINES:
MAXIMUM WATER DEPTH: 12 FT.
MINIMUM WATER DEPTH: 3 FT.



PLAN

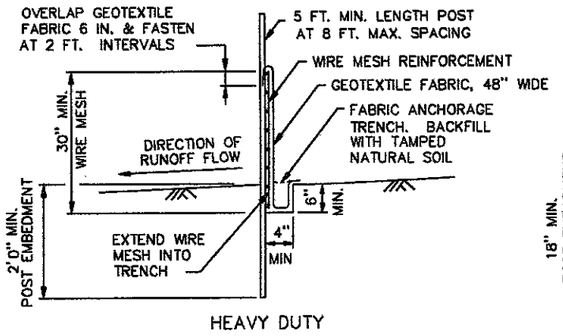


SECTION A–A

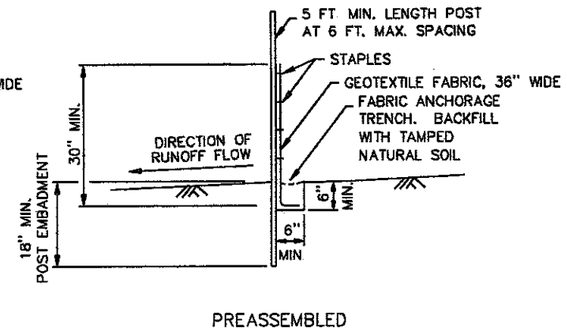
TEMPORARY SEDIMENT TRAP DETAIL

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. MAXIMUM SPACING BETWEEN ANCHORS, MINIMUM 40 LBS.

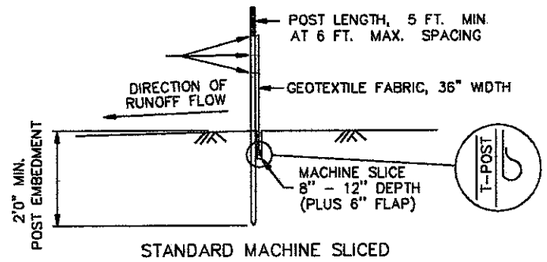
STANDARD SHEET NO. 5-297.405 (1 OF 4)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: SEPTEMBER 19, 2000	
~~STATE PROJ. NO.~~ SAP 55-598-51	SHEET NO. 8 OF 16 SHEETS



HEAVY DUTY



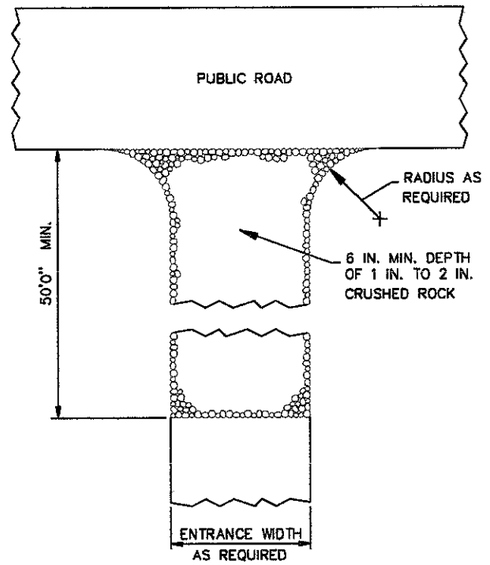
PREASSEMBLED



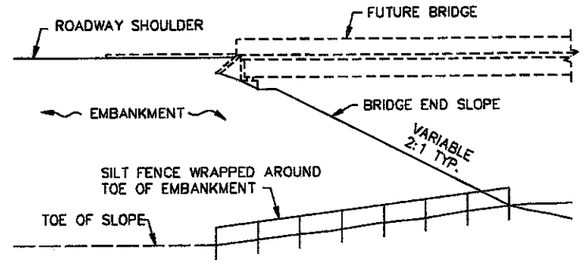
STANDARD MACHINE SLICED

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

DESIGN GUIDELINES:
MAXIMUM CONTRIBUTING AREA: 3 ACRES

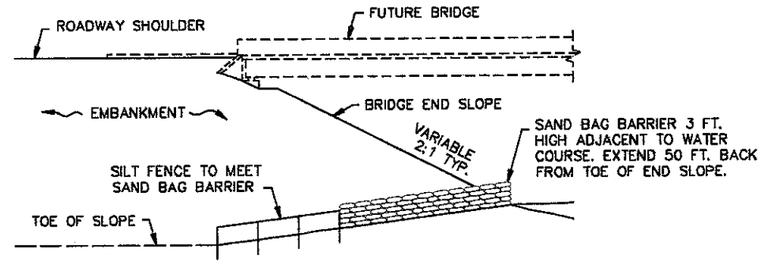


ROCK CONSTRUCTION ENTRANCE ①



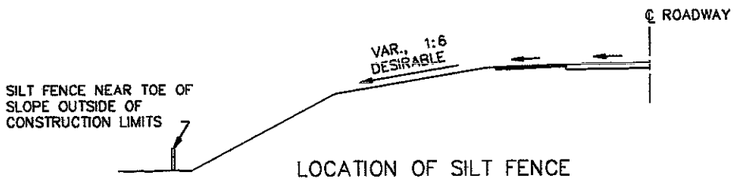
BRIDGE FILL

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

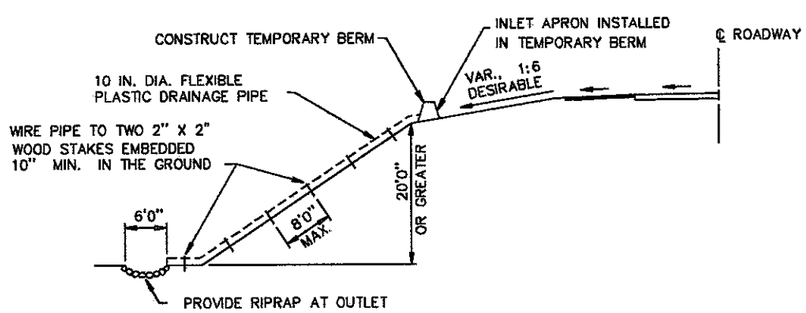


BRIDGE FILL

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

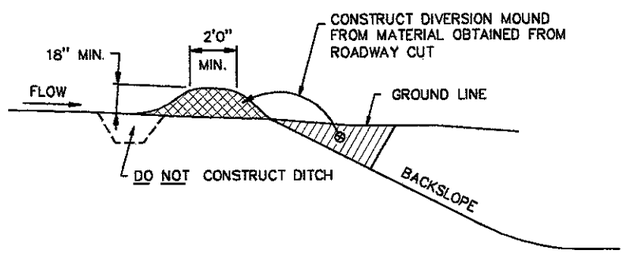


LOCATION OF SILT FENCE
AT TOE OF ROADWAY
EMBANKMENT



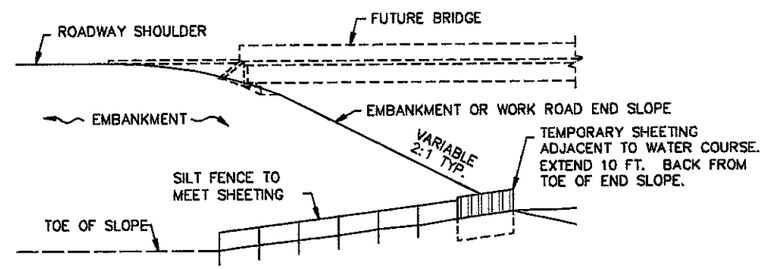
TEMPORARY DRAIN ON FILL SLOPE

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



DIVERSION MOUND

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



EMBANKMENT OR WORK ROAD FILL

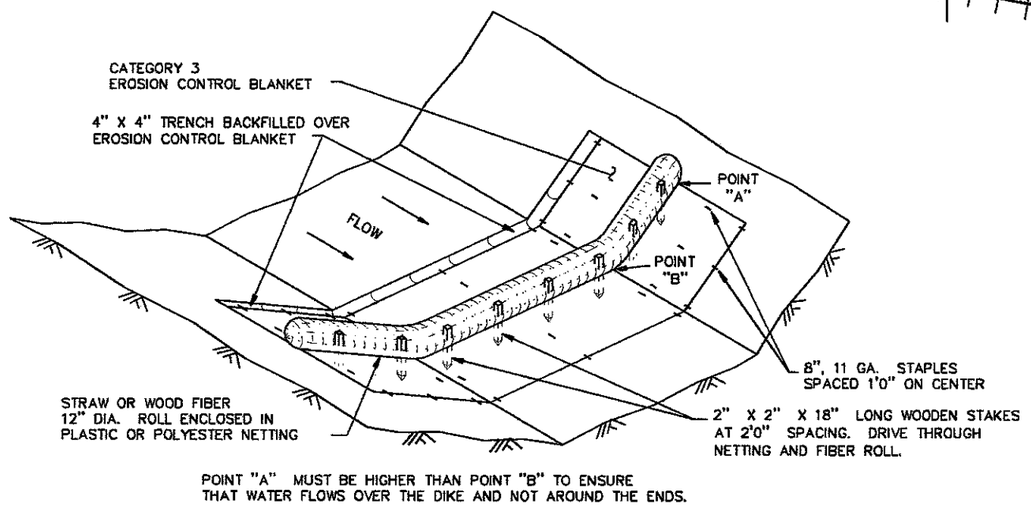
DESIGN GUIDELINES:
MAX. WATER COURSE FLOW VELOCITY: 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

SILT FENCE AT BRIDGE EMBANKMENT

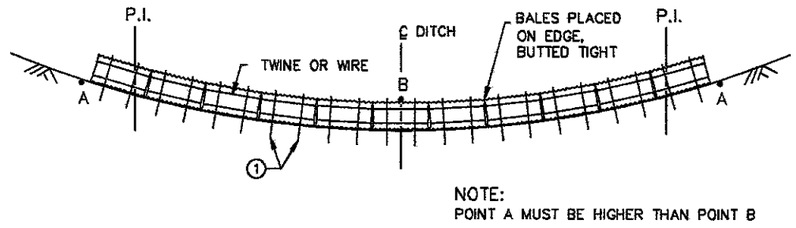
NOTES:
SEE SPECS. 2573 & 3886.

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.

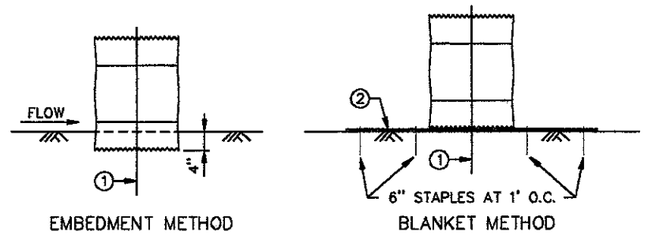
STANDARD SHEET NO. 5-297.405 (2 OF4)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: SEPTEMBER 19, 2000	
~~STATE PROJ. NO.~~ SAP 55-598-51	SHEET NO. 9 OF 16 SHEETS



BIOROLL BLANKET SYSTEM DITCH CHECK



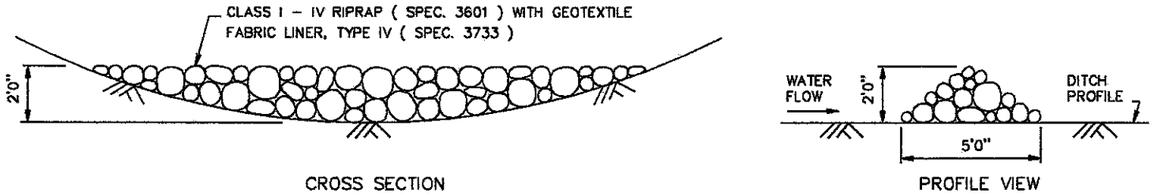
BALE DITCH SEDIMENT CHECK



BALE CHECK DETAIL

DESIGN GUIDELINES:

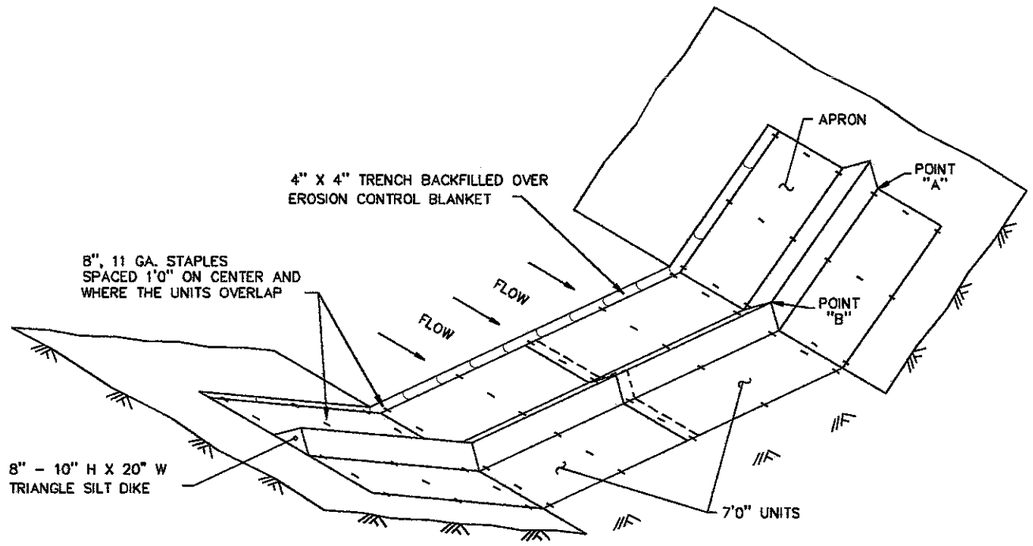
	BALE	ROCK
STORM FREQUENCY:	2 YR. – 24 HR.	10 YR. – 24 HR.
MAX. FLOW VELOCITY:	5 FT./SEC.	12 FT./SEC.
MAX. DITCH GRADE:	5%	—
MAX. DRAINAGE AREA:	2 ACRES	5 ACRES



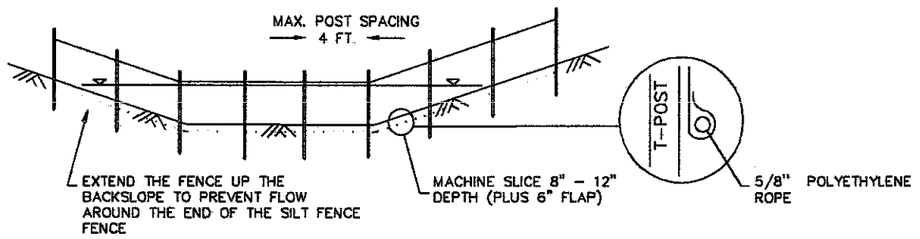
CROSS SECTION

PROFILE VIEW

ROCK DITCH CHECK



GEOTEXTILE TRIANGULAR DIKE DITCH CHECK



SPACING DISTANCE = SILT FENCE HEIGHT / % CHANNEL SLOPE

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.

SILT FENCE DITCH CHECK, TYPE MACHINE SLICED

NOTES:

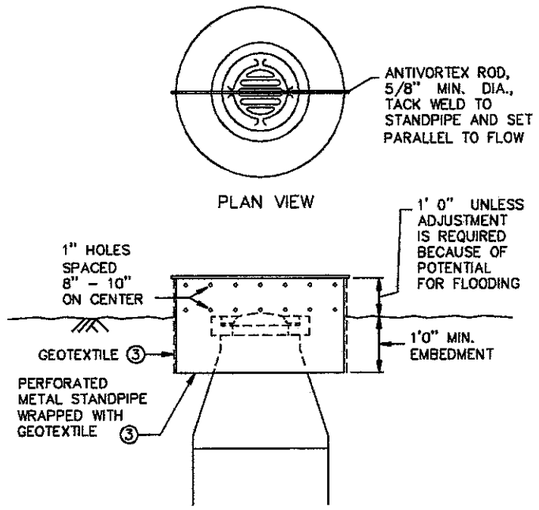
SEE SPECS. 2573, 3885, 3886 & 3889.

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

(1) TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE. AND EMBEDDED IN THE GROUND 10 IN. MINIMUM.

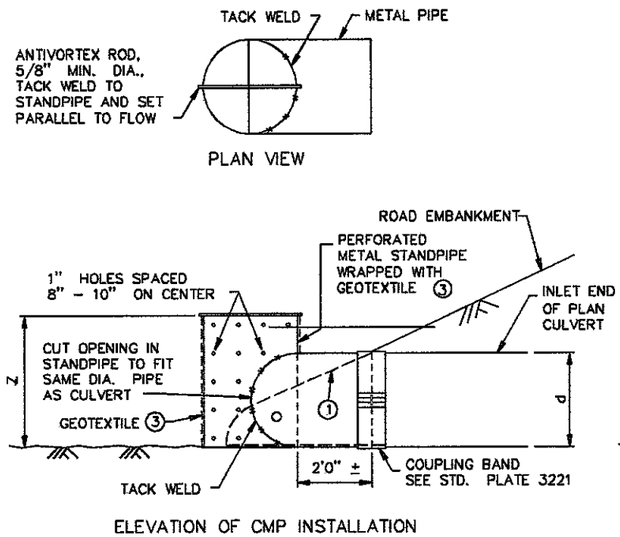
(2) PLACE A CATEGORY 3 EROSION CONTROL BLANKET, 6 FT. WIDE MINIMUM, UNDER THE BALE DITCH CHECK INSTEAD OF TRENCHING.

STANDARD SHEET NO.	TITLE:
5-297.405 (3 OF4)	TEMPORARY EROSION CONTROL DITCH CHECKS
STANDARD APPROVED: SEPTEMBER 19, 2000	
~~STATE PROJ. NO.~~ SAP 55-598-51	SHEET NO. 10 OF 16 SHEETS

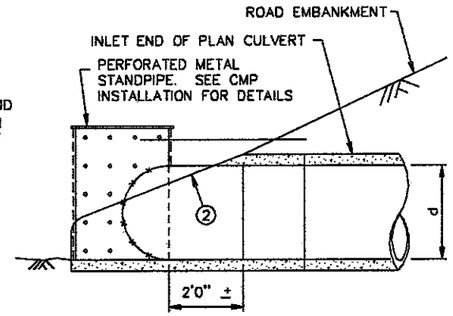


TEMPORARY STANDPIPE
TO PROTECT DROP INLET
TYPE A SPEC. 3891

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



ELEVATION OF CMP INSTALLATION

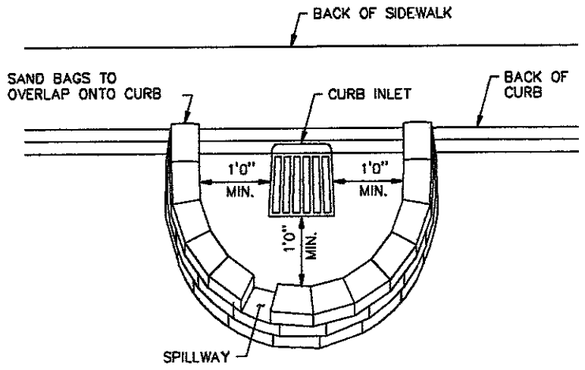


ELEVATION OF RCP INSTALLATION

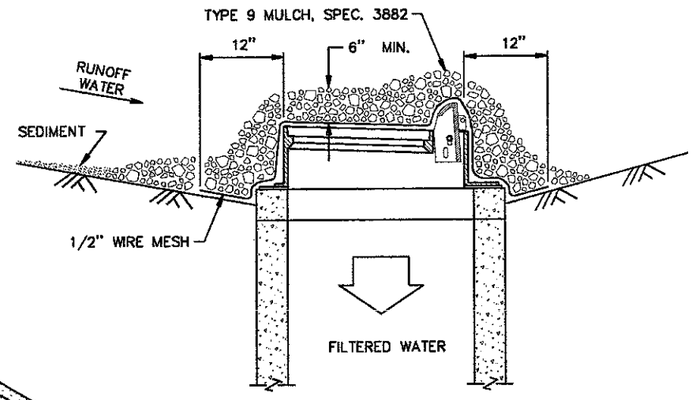
TEMPORARY STANDPIPE
FOR SEDIMENT CONTROL ON CULVERT INLET
TYPE D SPEC. 3891

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

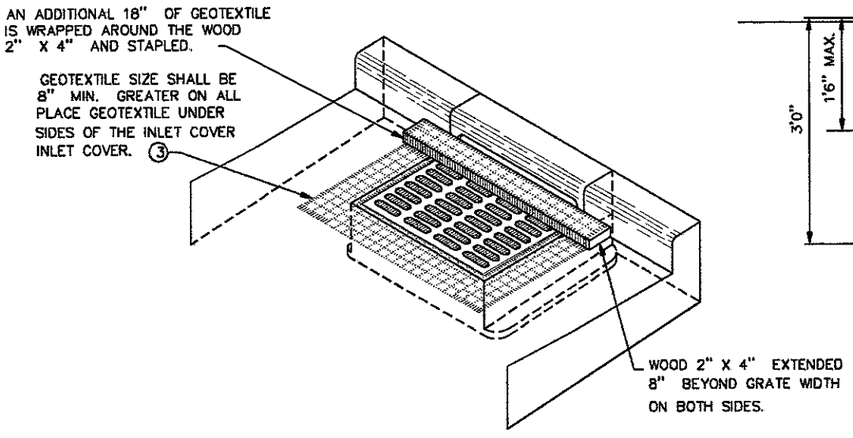
DESIGN GUIDELINES:
CULVERT SIZE: 12" - 36"
STORM FREQUENCY: 10 YR. - 24 HR.



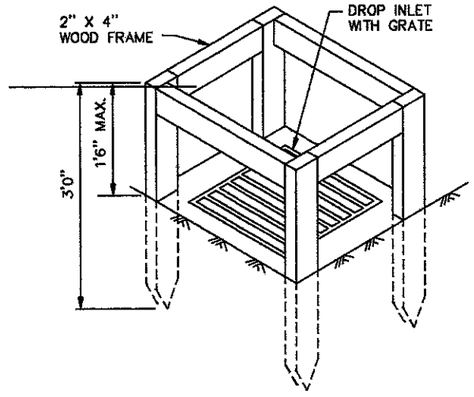
CURB INLET SAND BAG BARRIER
THIS INLET PROTECTION IS USED BEFORE THE ROAD IS PAVED
TYPE B OR C SPEC. 3891

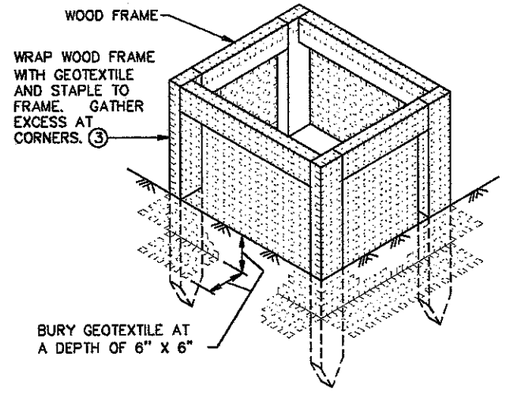


AGGREGATE FILTER AT CURB INLET
TYPE B OR C SPEC. 3891



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.

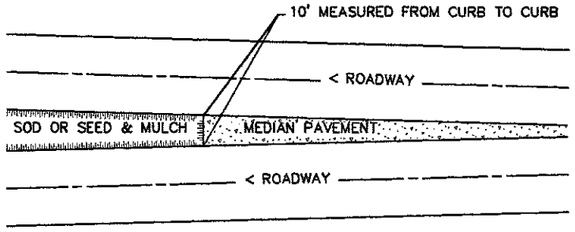
MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.

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

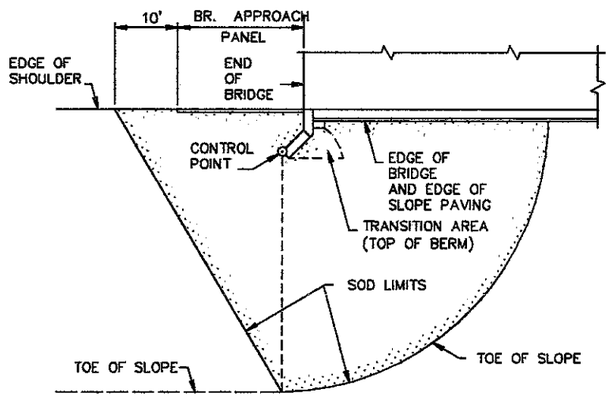
(2) FOR RCP, INSTALL CULVERT APRON AND SLIDE ESTABLISHED, TEMPORARY STANDPIPE INTO RCP. AFTER VEGETATION IS ESTABLISHED REMOVE TEMPORARY STANDPIPE.

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

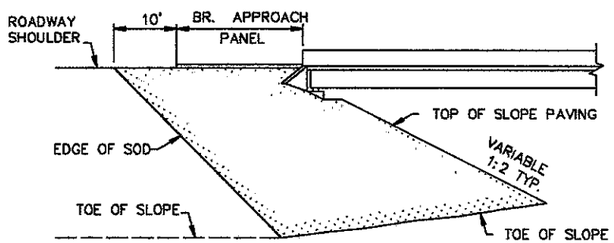
STANDARD SHEET NO. 5-297.405 (4 OF 4)	TITLE: TEMPORARY EROSION CONTROL TEMPORARY INLET PROTECTION
STANDARD APPROVED: SEPTEMBER 19, 2000	
~~STATE PROJ. NO.~~ SAP 55-598-51	SHEET NO. 11 OF 16 SHEETS



SODDING LIMITS AT GORE AREA

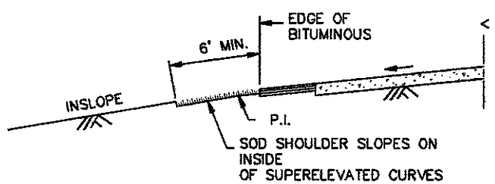


PLAN

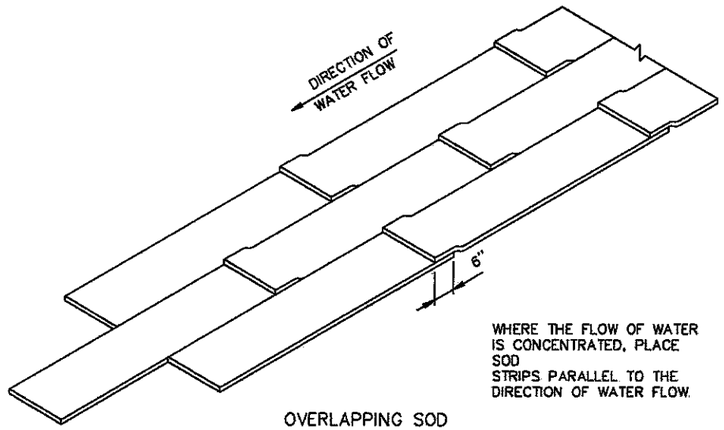


ELEVATION

SODDING LIMITS AT BRIDGE APPROACH FILLS

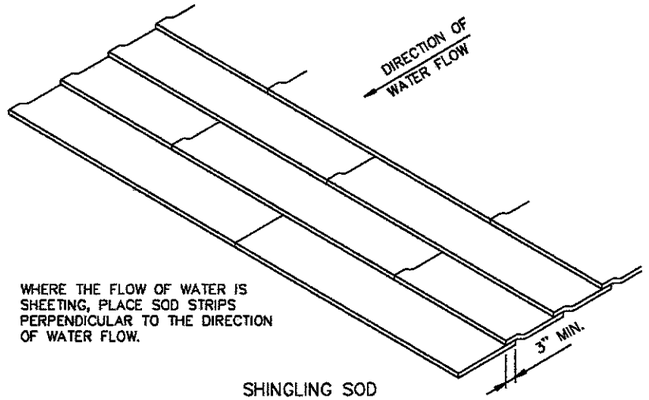


SODDING INSLOPES OF SUPERELEVATED CURVES



WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW.

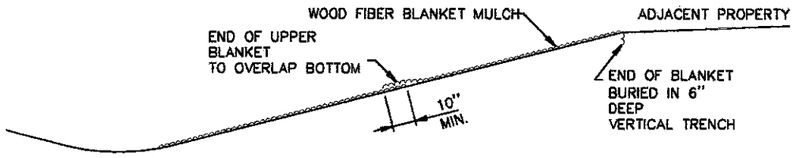
OVERLAPPING SOD



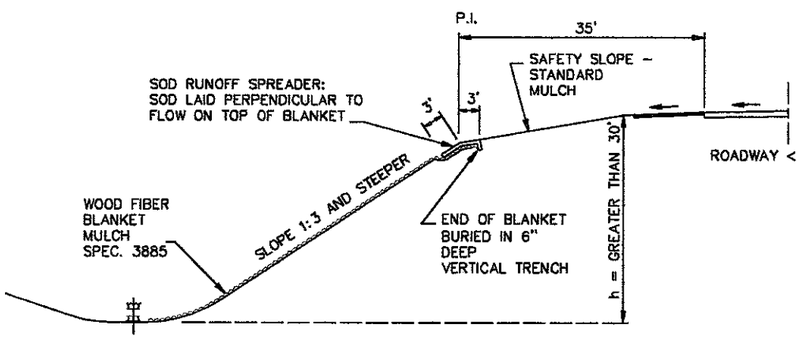
WHERE THE FLOW OF WATER IS SHEETING, PLACE SOD STRIPS PERPENDICULAR TO THE DIRECTION OF WATER FLOW.

SHINGLING SOD

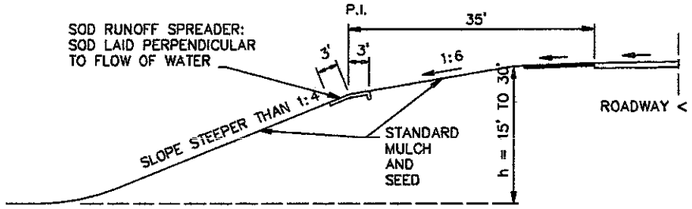
SPECIAL SOD PLACEMENT TECHNIQUES



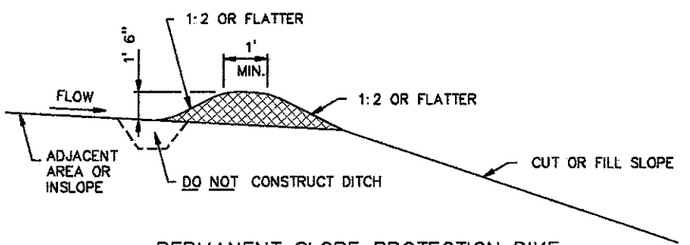
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE
(WHEN REQUIRED)

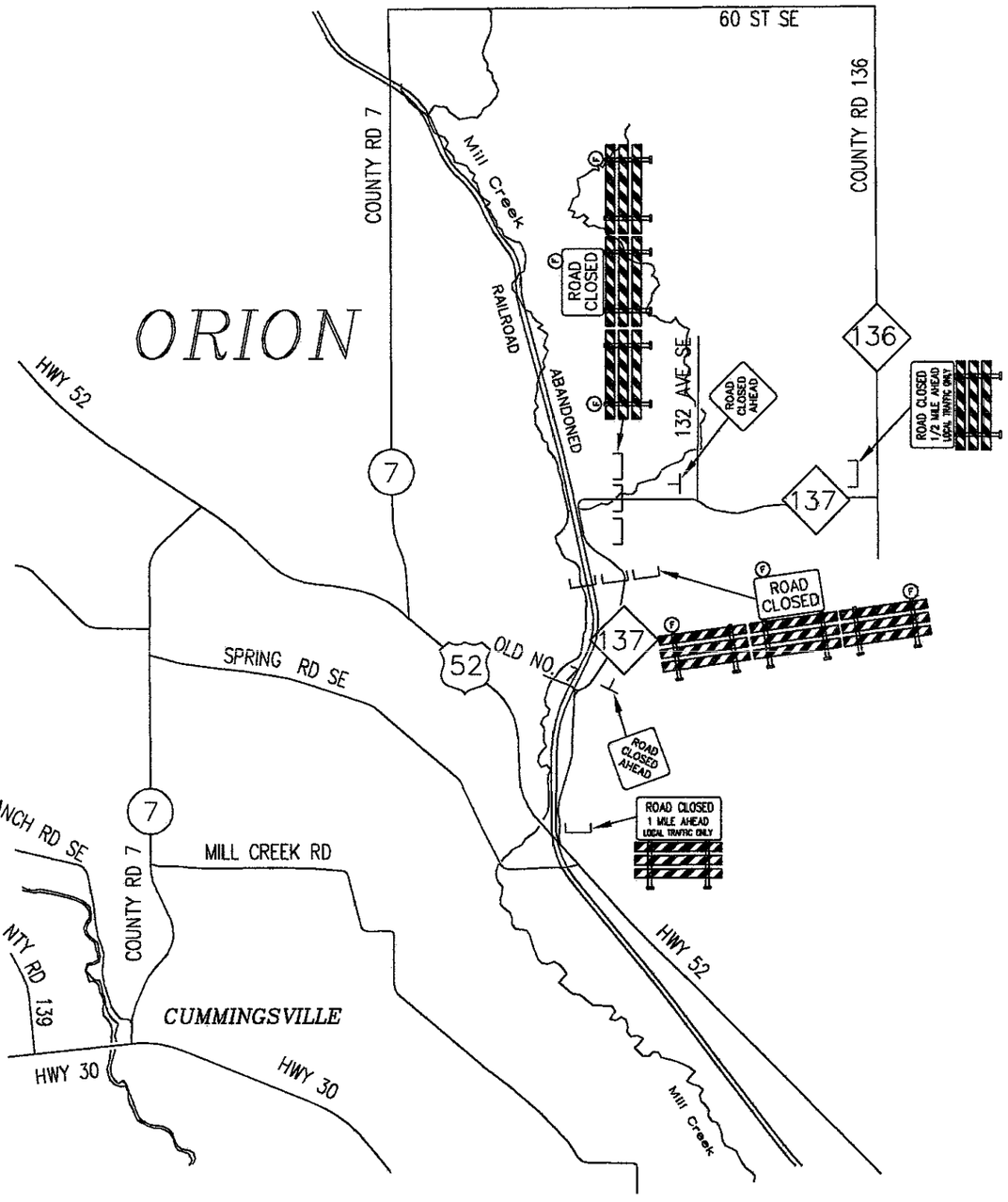


BROKEN–BACK SAFETY FILL SLOPE



PERMANENT SLOPE PROTECTION DIKE

STANDARD SHEET NO. 5-297.406	TITLE: PERMANENT EROSION CONTROL
STANDARD APPROVED: JANUARY 31, 1985	ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS
REVISION DATE 10-26-2000	~~STATE PROJ. NO.~~ SAP 55-598-51 SHEET NO. 12 OF 16 SHEETS



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 & WHT	18
ROAD CLOSED MILE AHEAD LOCAL TRAFFIC ONLY	R11-3	60 x 30	BLK/WH	2	(F)	TYPE A	FLASHING LAMP	AMBER	16
ROAD CLOSED AHEAD	W20-3	48 x 48	BLK/OR	2					

ALL COSTS INCURRED FOR MATERIALS, INSTALLATION, AND MAINTENANCE OF TRAFFIC CONTROL AS SHOWN ON THIS SHEET, AND RELATED WORK DURING CONSTRUCTION SHALL BE CONSIDERED AN INCIDENTIAL EXPENSE.

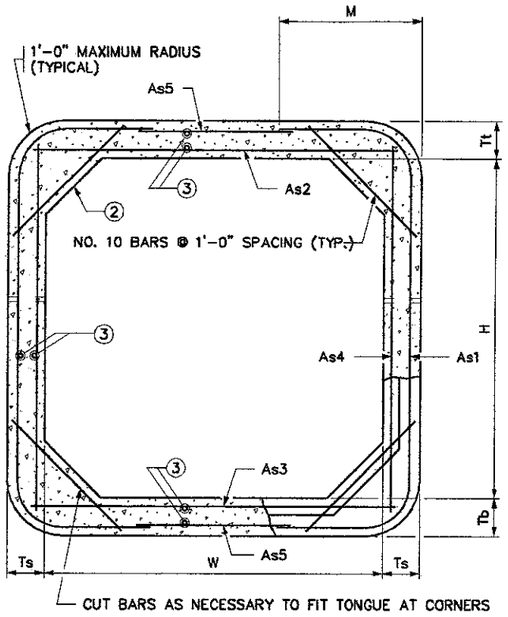
N

TRAFFIC CONTROL LEGEND

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

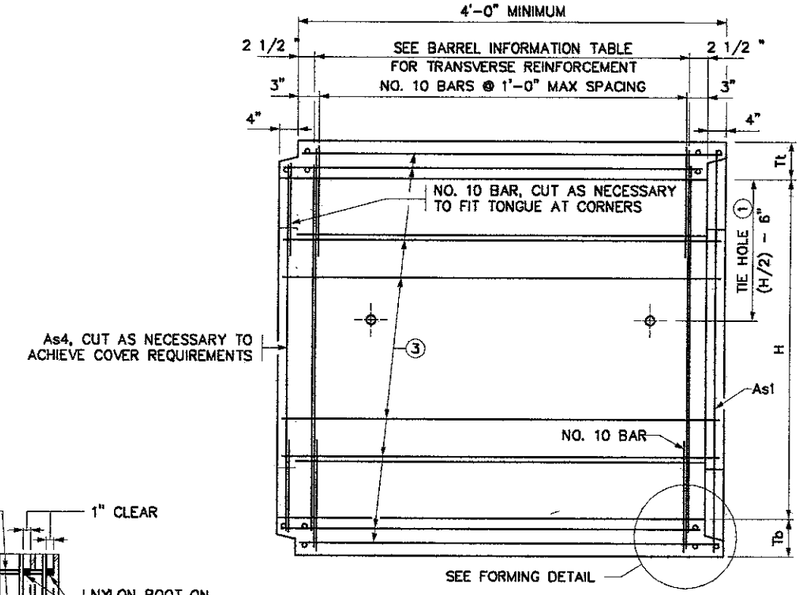
TRAFFIC CONTROL NOTES

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.



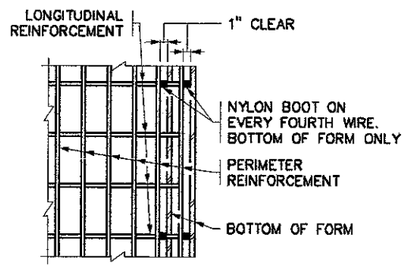
TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

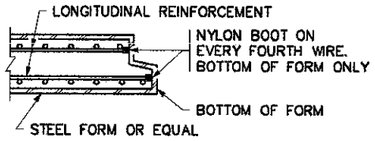


LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

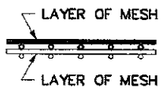


PLAN



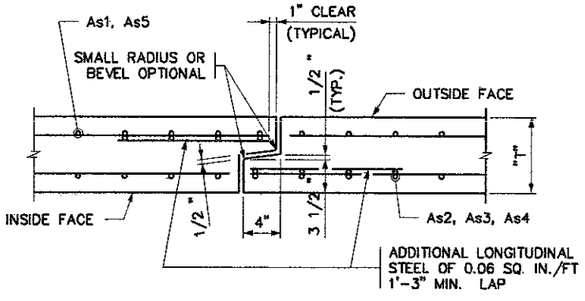
SECTION

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 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.

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.)
7+77.22	10' x 8'	2	5000	2-8	10	7	9	10	8	4510	0.48	13'-9"	2'-9"	0.90	10'-6"	0.74	10'-6"	0.20	8'-6"	0.06	7'-9"
7+98.50	12' x 8'	2	5000	2-8	10	7	9	10	8	4985	0.74	14'-7"	3'-2"	1.11	12'-6"	1.06	12'-6"	0.20	8'-6"	0.06	9'-0"
8+21.76	10' x 8'	2	5000	2-8	10	7	9	10	8	4510	0.48	13'-9"	2'-9"	0.90	10'-6"	0.74	10'-6"	0.20	8'-6"	0.06	7'-9"

REVISION:

APPROVED: DECEMBER 11, 2000
Darrell J. Henning
STATE BRIDGE ENGINEER

~~STATE PROJ. NO.~~ S.A.P. 55-598-51 CR 137

FIG. 5-395.101(A)

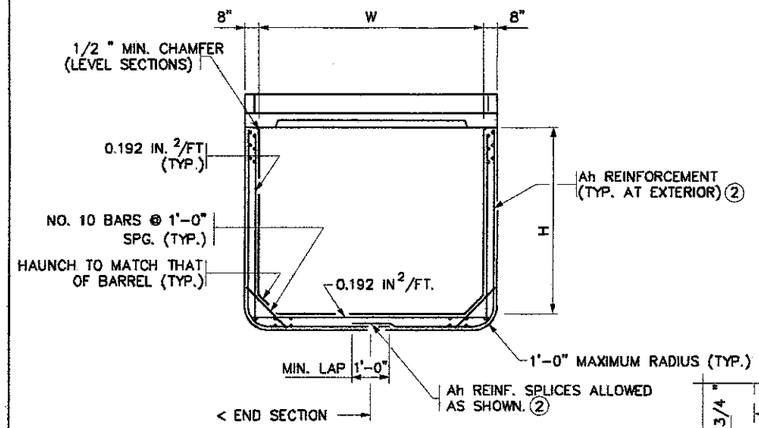
CERTIFIED BY Kaye M. Brieniek
LICENSED PROFESSIONAL ENGINEER
LIC. NO. 19917 3/23 2001

TITLE: BARREL DETAILS

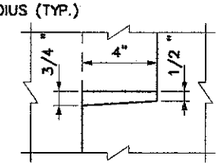
DES: | DR: | APPROVED:
CHK: | CHK:

SHEET NO. 14 OF 16 SHEETS

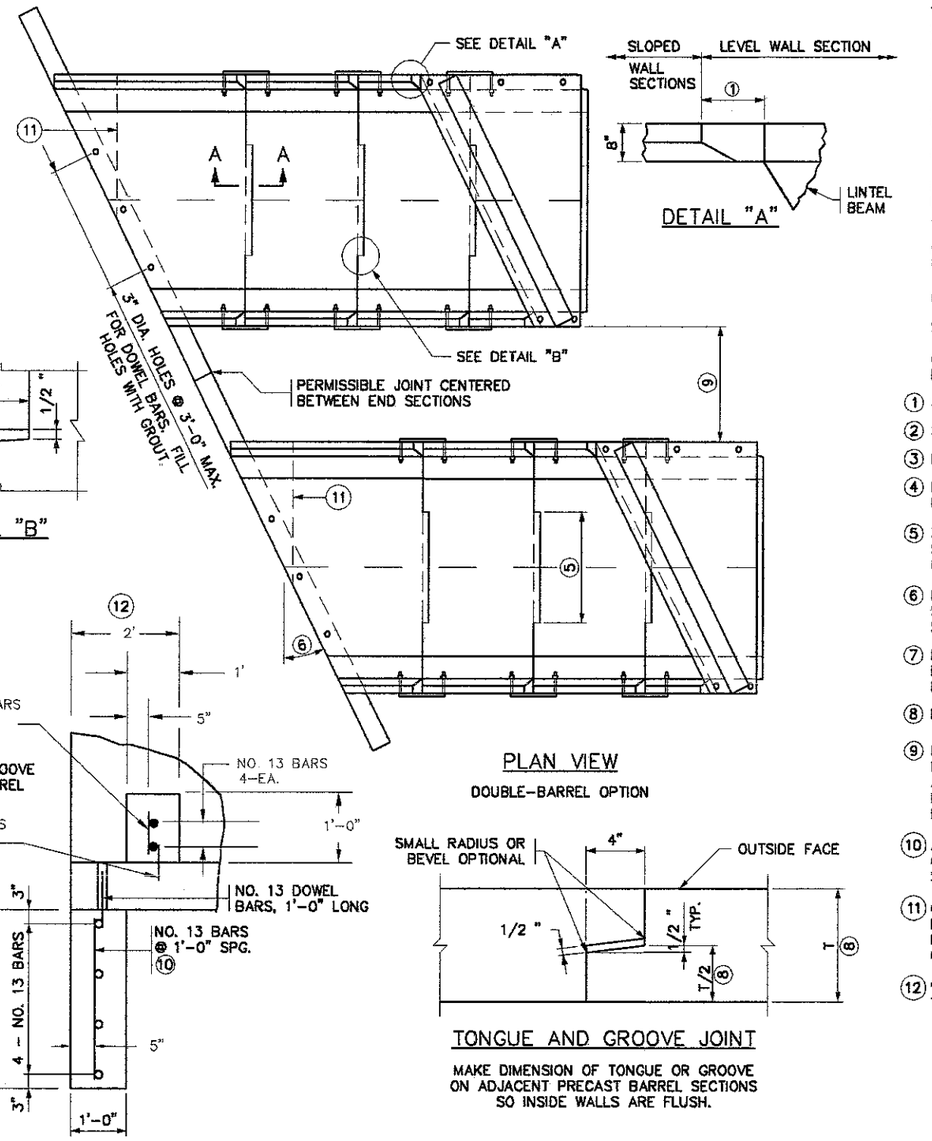
BRIDGE NO. 55J34



END VIEW

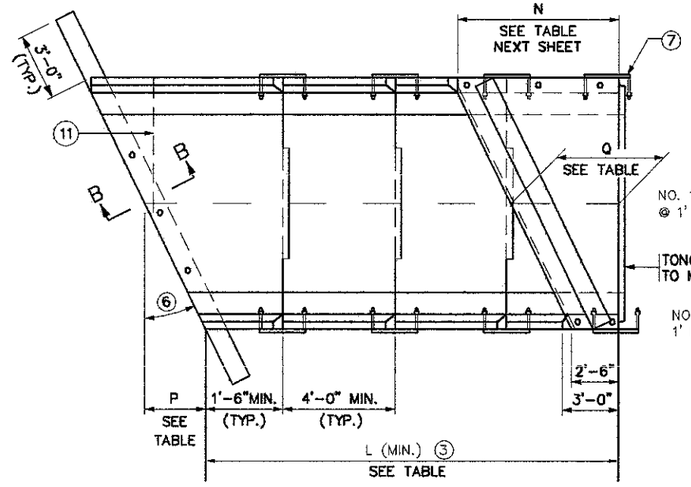


DETAIL "B"



PLAN VIEW

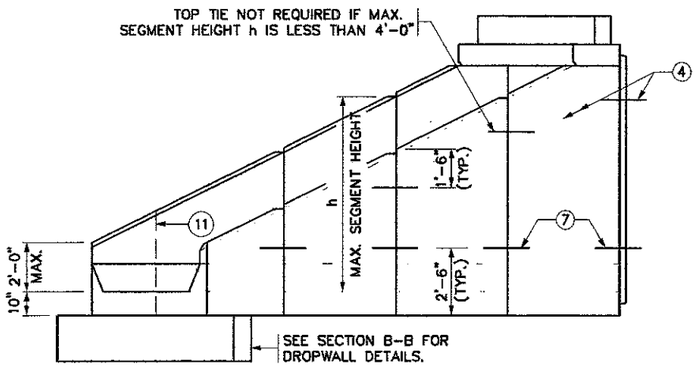
DETAIL "A"



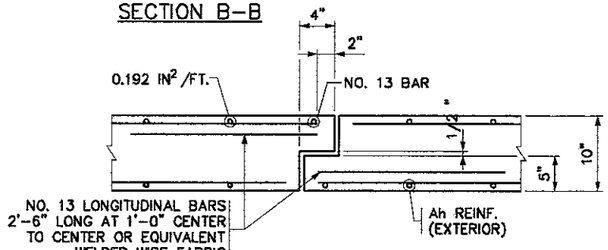
PLAN VIEW

SINGLE BARREL OPTION

SECTION B-B



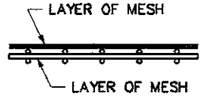
ELEVATION



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 ARE TO BE 1" DIA RODS. SEE STANDARD PLATE NO. 3145 FOR DETAILS.

(5) 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.

(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

(12) WEIR PLACED ON 10' x 8' PRECAST CONCRETE BOX CULVERT END SECTIONS TO BE CONSIDERED INCIDENTAL TO ITEM NO. 2412.512

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

STATE BRIDGE ENGINEER

* MODIFIED

CERTIFIED BY Kaye M Bruniek LICENSED PROFESSIONAL ENGINEER

LIC. NO. 19917 3/23 2001

~~STATE PROJ. NO.~~ S.A.P. 55-598-51

FIG. 5-395.110(A)

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. 15 OF 16 SHEETS

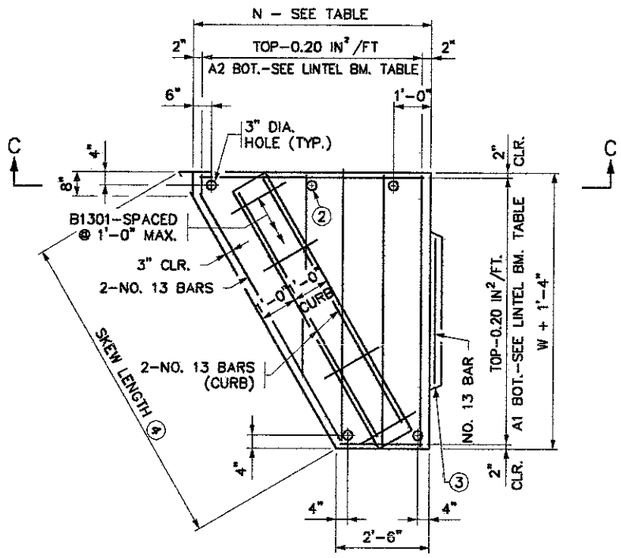
BRIDGE NO. 55J34

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.

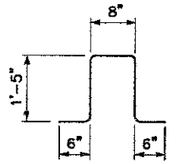
LINTEL BEAM REINFORCEMENT		
WIDTH W (FT.)	BOTTOM REINFORCEMENT	
	A1	A2
6	NO. 13 @ 1'-6"	NO. 13 @ 1'-4"
8	NO. 13 @ 1'-1"	NO. 13 @ 9"
10	NO. 13 @ 9"	NO. 13 @ 6"
12	NO. 16 @ 9"	NO. 16 @ 6"
14	NO. 19 @ 9"	NO. 22 @ 6"

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"

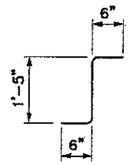


PLAN VIEW

LINTEL BEAM WITH INTEGRAL CURB

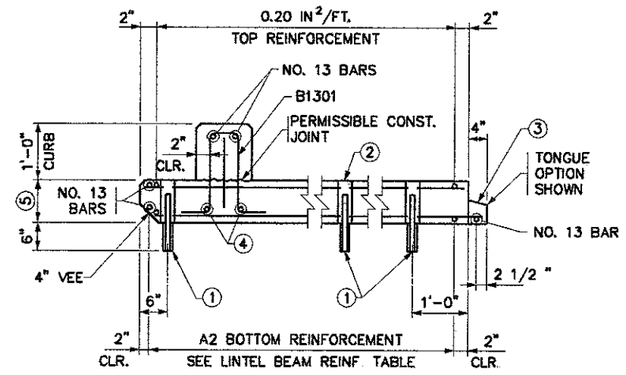


B1301

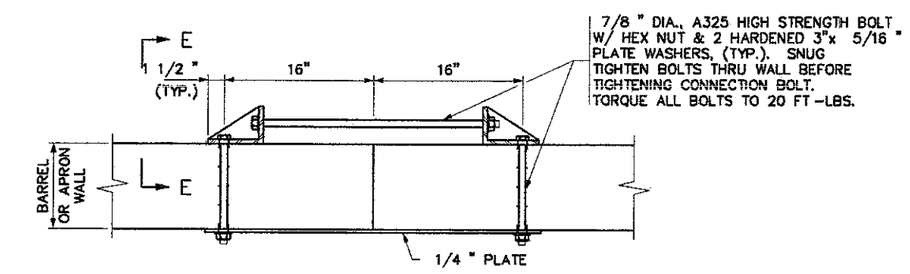


B1301 ALTERNATE

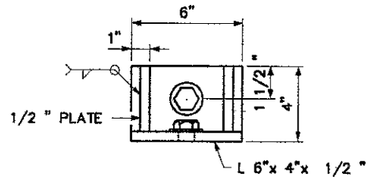
⑥ 2 REQUIRED



SECTION C–C



PLAN VIEW



SECTION E–E

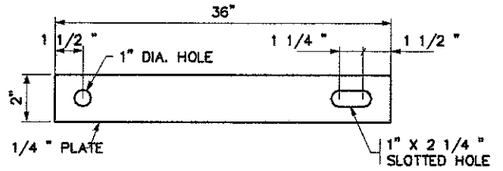


PLATE DETAIL

EXTRA STRONG CONNECTION DETAILS

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 PROJ. NO.~~ S.A.P. 55–598–51 | FIG. 5–395.110(B)

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 16 SHEETS

BRIDGE NO. 55J34