STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
DESIGN DIVISION
NASHVILLE, TENNESSEE 37243-0348

INSTRUCTIONAL BULLETIN NO. 08-10

Regarding the New and Revised Erosion Prevention and Sediment Control Standard Drawings

Effective immediately, the new standard drawings, EC-STR-6A, Enhanced Rock Check Dam; EC-STR-8, Filter Sock; EC-STR-11A, Culvert Protection Type 2; and RD-L-7, Standard Legend for EPSC may be used during the development of the Erosion Prevention and Sediment Control Plans as required. The revised existing standard drawings listed below are **effective** for the October 31, 2008 letting (August 27, 2008 Turn-In Date)

Until the drawings are added to the standard drawings, they are to be printed with the plans. The drawings shall be identified on the lower left side of the index sheet **"To be printed with plans"**.

ROADWAY STANDARD DRAWINGS – ENGLISH

Drawing Number	Current Revision Date	Drawing Title
EC-STR-1	04-01-08	DEWATERING STRUCTURE
EC-STR-2	04-01-08	SEDIMENT FILTER BAG
EC-STR-3B	04-01-08	SILT FENCE
EC-STR-3C	04-01-08	SILT FENCE WITH WIRE BACKING
EC-STR-3D	04-01-08	ENHANCED SILT FENCE
EC-STR-3E	04-01-08	SILT FENCE FABRIC JOINING DETAILS
EC-STR-4	04-01-08	ENHANCED SILT FENCE CHECK (TRAPEZOIDAL DITCH)
EC-STR-4A	04-01-08	ENHANCED SILT FENCE CHECK (V-DITCH)
EC-STR-6	04-01-08	ROCK CHECK DAM
EC-STR-6A	NEW	ENHANCED ROCK CHECK DAM
EC-STR-7	04-01-08	SEDIMENT TRAP WITH CHECK DAM
EC-STR-8	NEW	FILTER SOCK
EC-STR-11	04-01-08	CULVERT PROTECTION TYPE 1
EC-STR-11A	NEW	CULVERT PROTECTION TYPE 2
EC-STR-12	04-01-08	ROCK SEDIMENT DAM
EC-STR-13	04-01-08	ROCK AND EARTH SEDIMENT EMBANKMENT
EC-STR-15	04-01-08	SEDIMENT BASIN
EC-STR-16	04-01-08	SEDIMENT BASIN RISER AND COLLAR APPURTENANCES
EC-STR-17	04-01-08	SEDIMENT BASIN EMBANKMENT DETAILS
EC-STR-19	04-01-08	CATCH BASIN PROTECTION

Drawing Number	Current Revision Date	Drawing Title
EC-STR-21	04-01-08	PERMANENT RIPRAP BASIN ENERGY DISSIPATOR
EC-STR-25	04-01-08	TEMPORARY CULVERT CROSSING, CONSTRUCTION EXIT, CONSTRUCTION FORD
EC-STR-27	04-01-08	TEMPORARY SLOPE DRAIN AND BERM
EC-STR-29	04-01-08	PERMANENT SLOPE DRAIN PIPE
EC-STR-31	04-01-08	TEMPORARY DIVERSION CHANNEL
EC-STR-31A	04-01-08	TEMPORARY DIVERSION CHANNEL DESIGN
EC-STR-32	04-01-08	TEMPORARY DIVERSION CULVERTS
EC-STR-33	04-01-08	SUSPENDED PIPE DIVERSION (DOWNSTREAM)
EC-STR-33A	04-01-08	SUSPENDED PIPE DIVERSION (UPSTREAM)
EC-STR-34	04-01-08	EROSION CONTROL BLANKET FOR SLOPE INSTALLATION
EC-STR-35	04-01-08	FILTER BERMS
EC-STR-36	04-01-08	TURF REINFORCEMENT MAT FOR CHANNEL INSTALLATION
EC-STR-37	04-01-08	SEDIMENT TUBE
EC-STR-38	04-01-08	FLOATING TURBIDITY CURTAIN
EC-STR-39	04-01-08	CURB INLET PROTECTION TYPE 1 & 2
EC-STR-39A	04-01-08	CURB INLET PROTECTION TYPE 3 & 4
EC-STR-55	04-01-08	GABION CHECK DAM
EC-STR-56	04-01-08	GABION CHECK DAM DESIGN TABLES
EC-STR-57	04-01-08	GABION ASSEMBLY DETAILS
EC-STR-58	04-01-08	GABION ASSEMBLY DETAILS
EC-STR-59	04-01-08	GABION CHECK DAM GENERAL NOTES AND COMPONENT PROPERTIES
RD-L-5	05-01-08	STANDARD LEGEND FOR EPSC
RD-L-6	05-01-08	STANDARD LEGEND FOR EPSC
RD-L-7	NEW	STANDARD LEGEND FOR EPSC

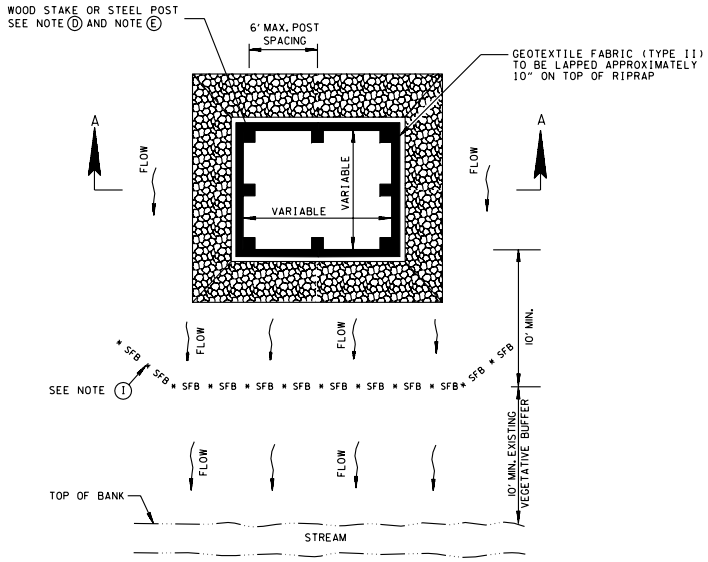
The existing Standard Drawings listed below are DELETED.

EC-STR-3A Temporary Filter Barrier
EC-STR-5 Temporary Straw or Hay Bale Erosion Checks
EC-STR-60 Temporary Sediment Trap with Temporary Gabion Check Dam

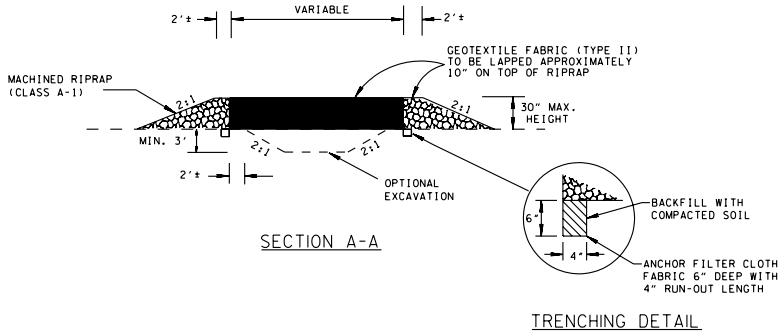
Copies of the new and revised standard drawings are attached. The Metric version of the subject Standard Drawing may be obtained by calling the Quality Assurance and Standards Office at (615)741-2806.

Original signed by Jeff C. Jones
Jeff C. Jones, Civil Engineering Director
Design Division

June 25, 2008
JCJ:arhAttachment



PLAN VIEW



SECTION A-A

TRENCHING DETAIL

EROSION CONTROL PLAN LEGEND: ▦ DEWATERING STRUCTURE

DEWATERING STRUCTURE VOLUMES AND DIMENSIONS				
PUMP DIAMETER (INCHES)	PUMP RATE (GALLONS PER MINUTE)	STORAGE VOLUME REQD (CUBIC YARDS)	INTERIOR DIMENSIONS	EXTERIOR DIMENSIONS
2	140	84	30' X 30'	44' X 44'
3	260	155	41' X 41'	55' X 55'
4	500	298	57' X 57'	71' X 71'
6	1,100	654	85' X 85'	99' X 99'

1. DIMENSIONS BASED ON THE MAXIMUM STRUCTURE HEIGHT OF 30" AND THE LENGTH BEING EQUAL TO THE WIDTH.
   OPTIONAL EXCAVATION IS NOT INCLUDED.
2. ADJUSTMENTS SHOULD BE MADE TO THE DIMESIONS TO OBTAIN THE BEST CONFIGURATION FOR THE PROJECT SITE. DIMENSIONS ARE BASED ON THE DEWATERING STRUCTURE BEING HORIZONTAL.

DEWATERING STRUCTURE GENERAL NOTES

(A) DEWATERING STRUCTURES MAY BE USED WHENEVER SEDIMENT LADEN WATER IS REMOVED BY MEANS OF PUMPING. THEY SHOULD BE USED IN CONJUNCTION WITH THE DEWATERING OF COFFERDAMS, TRENCHES, ENCLOSED DITCHES, AND OTHER CONSTRUCTION ACTIVITIES WHICH REQUIRE THE REMOVAL OF SEDIMENT LADEN WATER.

(B) DEWATERING STRUCTURES SHOULD NOT BE PLACED WITHIN A JURISDICTIONAL WETLAND OR WITHIN 20 FEET OF A STABILIZED OUTLET, STREAM, OR OTHER NATURAL WATER RESOURCE.

(C) THE MINIMUM STORAGE VOLUME REQUIRED FOR A DEWATERING STRUCTURE SHOULD BE BASED ON 2 HOURS OF PUMPING AT THE RATE SHOWN IN THE "DEWATERING STRUCTURE VOLUMES AND DIMENSIONS" TABLE. THE MINIMUM STORAGE VOLUME REQUIRED IN CUBIC FEET IS OBTAINED BY MULTIPLYING THE PUMPING RATE IN GALLONS PER MINUTE BY 16.

(D) POST SHALL BE PLACED ALONG THE INTERIOR PERIMETER OF THE DEWATERING STRUCTURE. ONE POST SHOULD BE PLACED IN EACH CORNER AND POST SHOULD BE PLACE ALONG THE SIDES AT A MAXIMUM SPACING OF 6 FEET. POST SHOULD BE EMBEDDED A MINIMUM OF 30 INCHES INTO THE EXISTING GROUND AND SHOULD EXTEND AT A MINIMUM THE HEIGHT OF THE DEWATERING STRUCTURE.

(E) THE POST SHOULD BE A MINIMUM 2.25" (NOMINAL) X 2.25" (NOMINAL) HARDWOOD POST (OAK OR HICKORY) OR MINIMUM 1.25 LB./FT. STEEL POST (STD. "T" OR "U" SECTION).

(F) DIVERT ANY STORMWATER RUNOFF AWAY FROM THE DEWATERING STRUCTURE.

(G) SEDIMENT FILTER BAGS MAY BE USED TO COLLECT SEDIMENT WHEN PUMPING FROM A DEWATERING STRUCTURE INTO AN ADJACENT STREAM WHEN APPROVED BY THE ENGINEER. SEE STANDARD DRAWING EC-STR-2.

(H) ONLY GEOTEXTILE FABRIC (TYPE II) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(I) INSTALL SILT FENCE WITH WIRE BACKING BETWEEN STREAM AND/OR DRAINAGE DITCH AND THE DEWATERING STRUCTURE. SEE STANDARD DRAWINGS EC-STR-3C AND EC-STR-3E FOR INSTALLATION DETAILS.

(J) THE EXISTING VEGETATIVE BUFFER SHOULD REMAIN BETWEEN SILT FENCE WITH WIRE BACKING AND STABILIZED OUTLET, STREAM, OR OTHER NATURAL WATER RESOURCE.

(K) THE VOLUME OF DEWATERING STRUCTURE SHOWN IN THE EROSION PREVENTION AND SEDIMENT CONTROL PLANS IS TO BE BASED ON USE OF THE 4 INCH PUMP SHOWN IN THE "DEWATERING STRUCTURE VOLUMES AND DIMENSIONS" TABLE BELOW.

(L) DEWATERING STRUCTURES SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01 ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
209-10.01 TEMPORARY DEWATERING STRUCTURE PER CUBIC YARD

SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO ITS RESPECTIVE STANDARD DRAWING.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE DEWATERING STRUCTURE.

(M) THE ACCUMULATED SEDIMENT MUST BE REMOVED WHEN THE STRUCTURE IS HALF FULL AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-1 TO EC-STR-1.

REV. 10-26-00: IN TEMPORARY EROSION AND SEDIMENT CONTROL PAY ITEMS BLOCK CHANGED PAY ITEM NUMBERS AND DESCRIPTIONS TO CONCUR WITH CHANGES MADE BY CONSTRUCTION DIVISION.

REV. 5-27-01: REVISED PAY ITEMS AND GENERAL NOTES TO COMPLY WITH NEW PAY ITEM SYSTEM GOING IN EFFECT OCTOBER 26, 2001.

REV. 12-18-02: ADDED PAY ITEM NOS. 209-08.02 AND 209-08.04. CHANGED SHEET NAME.

REV. 1-22-03: CHANGED GENERAL NOTE (H).

REV. 3-15-04: ADDED PAY ITEMS FOR CATCH BASIN FILTER ASSEMBLIES.

REV. 4-1-08: REMOVED TEMPORARY REFERENCE, REMOVED PAY ITEMS TABLE, REPLACED GENERAL NOTES AND DEWATERING STRUCTURE VOLUMES TABLE, AND OTHER MINOR DRAFTING EDITS.

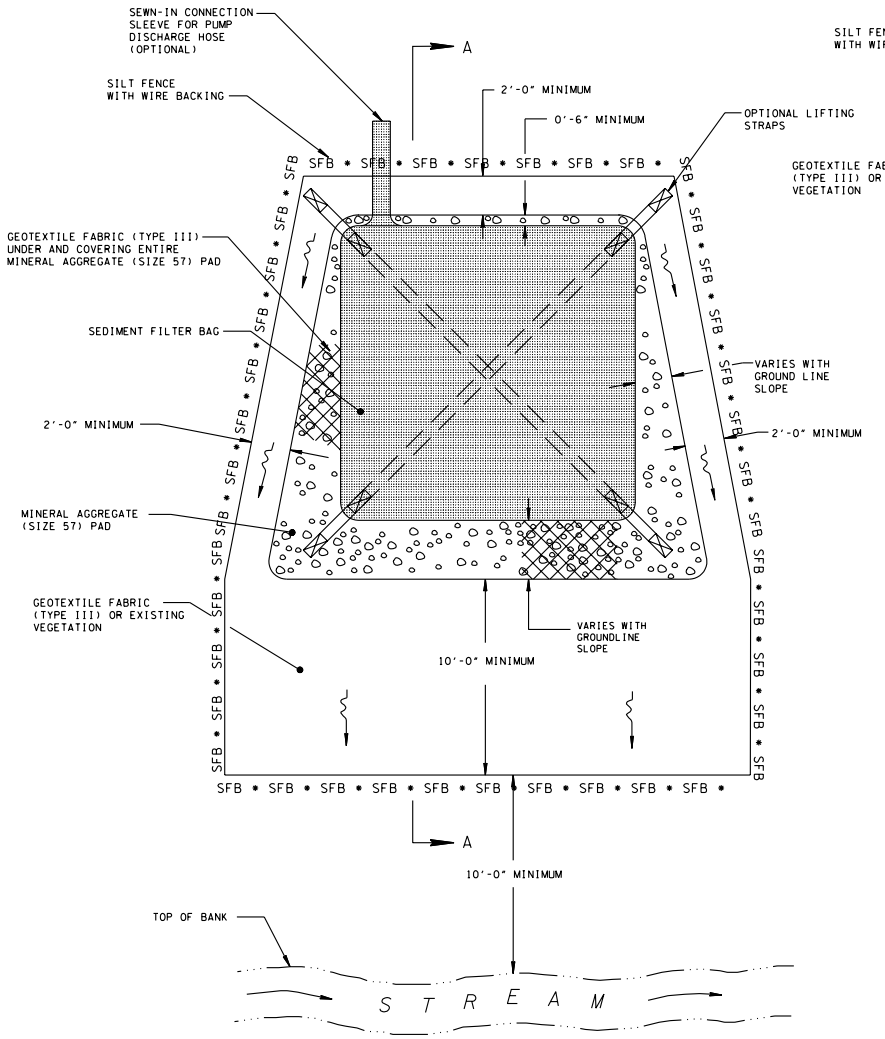
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

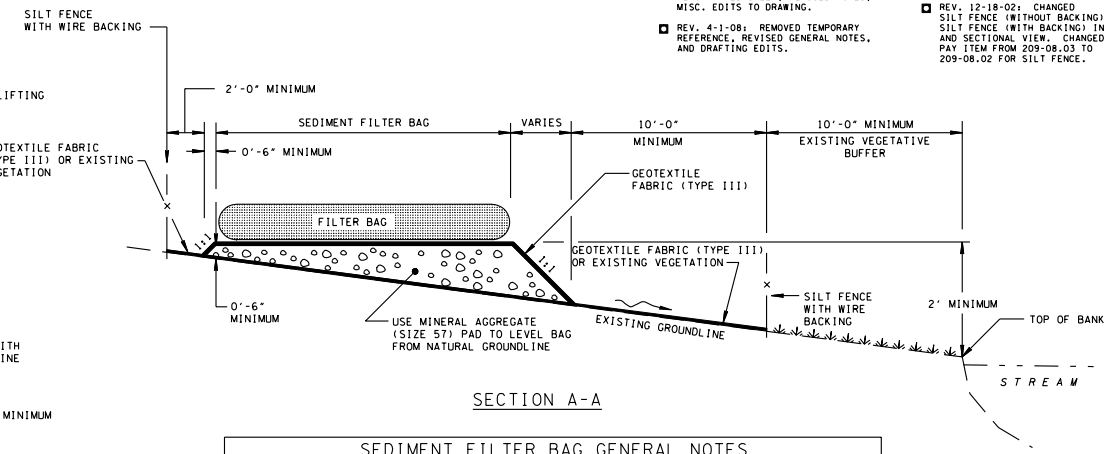
DEWATERING STRUCTURE

10-26-92 EC-STR-1

- REV. 10-26-03: ADDED EROSION CONTROL SYMBOL.
- REV. 5-27-04: CORRECTED DIMENSION IN SECTION A-A.
- REV. 4-15-06: ADDED CONNECTION SLEEVE AND OPTIONAL LIFTING STRAPS. REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE. REVISED GENERAL NOTES, AND DRAFTING EDITS.
- REV. 2-28-01: CORRECTED PAY ITEM NUMBER IN PLAN VIEW.
- REV. 5-27-01: CHANGED ITEM NOS. 209-08 TO 209-08.03, 209-08.10 TO 209-09.02 AND 303-15.01 TO 303-10.01. CHANGED DESCRIPTION IN ITEM NO. 209-20.03.
- REV. 12-18-02: CHANGED SILT FENCE (WITHOUT BACKING) TO SILT FENCE (WITH BACKING) IN PLAN AND SECTIONAL VIEW. CHANGED PAY ITEM FROM 209-08.03 TO 209-08.02 FOR SILT FENCE.



PLAN VIEW



SECTION A-A

SEDIMENT FILTER BAG GENERAL NOTES

(A) SPECIAL PROVISION 209B IS TO BE USED FOR SEDIMENT FILTER BAGS. ALL REFERENCES IN SPECIAL PROVISION 209B TO PUMPING FROM SEDIMENT TRAPS ALSO APPLIES TO PUMPING FROM COFFER DAMS.

(B) SEDIMENT FILTER BAGS SHOULD NOT BE PLACED WITHIN A JURISDICTIONAL WETLAND OR WITHIN 20 FEET OF A STABILIZED OUTLET, STREAM, OR OTHER NATURAL WATER RESOURCE.

(C) CONTRACTOR SHALL EXERCISE CAUTION NOT TO BURST OR DAMAGE THE SEDIMENT FILTER BAG WHEN PUMPING.

(D) THE LENGTH AND WIDTH OF THE SEDIMENT BAG SHOWN ON THIS DRAWING MAY VARY PER VENDOR SPECIFICATIONS. THE MINIMUM "FOOTPRINT" OF THE BAG SHALL BE 150 SQUARE FEET.

(E) SEDIMENT FILTER BAGS MAY BE EQUIPPED WITH A SEWN-IN SLEEVE OF SUFFICIENT SIZE TO ACCEPT A MINIMUM FOUR-INCH DIAMETER PUMP DISCHARGE HOSE. A HOSE CONNECTION THROUGH A SLIT IN THE BAG IS ALSO ACCEPTABLE. THE DISCHARGE HOSE SHOULD BE EXTENDED INTO THIS SLEEVE A MINIMUM OF SIX INCHES AND BE TIGHTLY SECURED WITH A HOSE CLAMP OR OTHER SUITABLE MEANS TO PREVENT LEAKAGE.

(F) THE PUMP DISCHARGE HOSE CONNECTION SLEEVE, OR SLIT, SHALL BE SECURELY TIED OFF DURING DISPOSAL OF THE SEDIMENT FILTER BAG IN ORDER TO PREVENT LEAKAGE OF COLLECTED SEDIMENTS.

(G) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(H) SURROUND SEDIMENT FILTER BAG ASSEMBLY WITH SILT FENCE WITH WIRE BACKING. SEE STANDARD DRAWING EC-STR-3C AND EC-STR-3E FOR INSTALLATION DETAILS.

(I) EXISTING VEGETATIVE BUFFER TO REMAIN BETWEEN SILT FENCE WITH WIRE BACKING AND STABILIZED OUTLET, STREAM OR OTHER NATURAL WATER RESOURCE.

(J) SEDIMENT TUBES OR FILTER SOCKS MAY BE USED AS AN ALTERNATIVE TO SILT FENCE WITH WIRE BACKING. SEE STANDARD DRAWINGS EC-STR-37 AND EC-STR-8 FOR INSTALLATION DETAILS. FILTER SOCKS MAY NOT REQUIRE STAKING WHEN APPROVED BY THE ENGINEER.

(K) SEDIMENT FILTER BAGS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-09.03	SEDIMENT FILTER BAG (15' X 15') PER EACH
209-09.04	SEDIMENT FILTER BAG (15' X 10') PER EACH
303-10.01	MINERAL AGGREGATE (SIZE 57) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

SILT FENCE WITH BACKING, SEDIMENT TUBES, AND FILTER SOCKS SHALL BE PAID FOR ACCORDING TO ITS RESPECTIVE STANDARD DRAWING.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SEDIMENT FILTER BAGS.

(L) WHEN SEDIMENT FILTER BAGS ARE REPLACED ONLY THE REPLACEMENT BAG SHALL BE PAID FOR. MAINTENANCE ON ALL OTHER PARTS OF THE SEDIMENT FILTER BAG ASSEMBLY SHALL BE INCLUDED IN THE INITIAL PAYMENT.

(M) ONLY SEDIMENT FILTER BAGS LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED.

(N) SEDIMENT FILTER BAGS SHALL BE REPLACED WHEN SEDIMENT HAS ACCUMULATED TO ½ OF THE BAGS CAPACITY OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

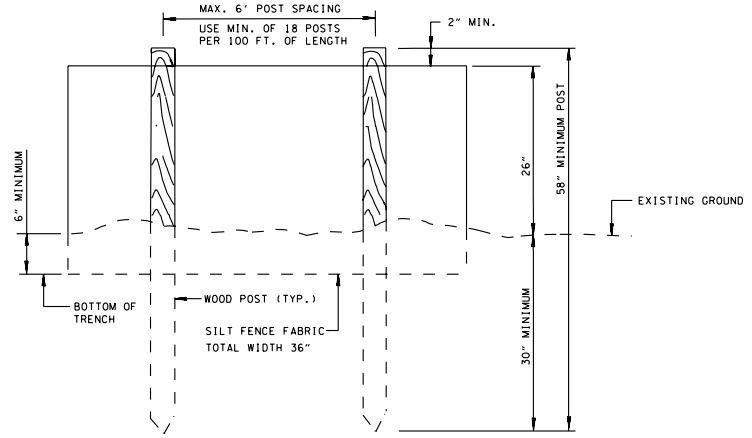
EROSION CONTROL PLAN LEGEND: SEDIMENT FILTER BAG

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

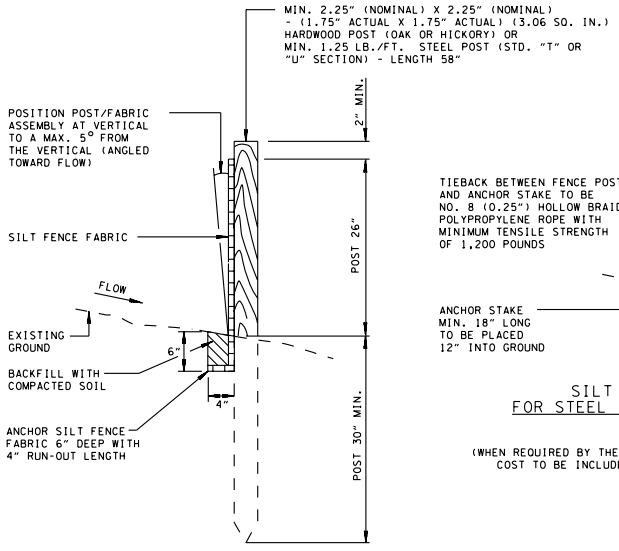
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SEDIMENT FILTER BAG

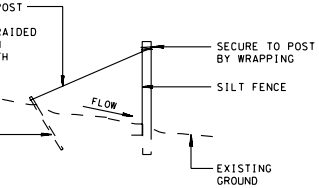
10-26-00 | EC-STR-2



ELEVATION VIEW



SECTIONAL VIEW



SILT FENCE TIEBACK
FOR STEEL POSTS OR WOOD POSTS

(WHEN REQUIRED BY THE ENGINEER OR NOTED IN THE PLANS.
COST TO BE INCLUDED IN THE ITEMS FOR SILT FENCE)

EROSION CONTROL PLAN LEGEND: * SF * SF * SF * SILT FENCE

SILT FENCE FABRIC SPECIFICATIONS

FABRIC PROPERTY AND TEST METHODS	REQUIRED PHYSICAL PROPERTIES (MARV VALUES OF TEST DATA)
GEOTEXTILE FABRIC TYPE	WOVEN SLIT FILM
APPARENT OPENING SIZE (ASTM D4751)	# 30 TO # 70 STANDARD SIEVE
WATER FLUX (ASTM D4491)	≥ 4 GPM/FT^2
TENSILE STRENGTH (ASTM D4632)	≥ 120 LB. (WARP DIRECTION) X 100 LB. (FILL DIRECTION)
ULTRAVIOLET STABILITY (AFTER 500 HRS PER ASTM D4355)	≥ 70%
ELONGATION (ASTM D4632)	≤ 20% (MAX)
BURST STRENGTH (ASTM D3786)	≥ 250 PSI
PUNCTURE STRENGTH (ASTM D4833)	≥ 60 LB.
TRAPEZOIDAL TEAR (ASTM D4533)	≥ 50 LB. (WARP DIRECTION) X 40 LB. (FILL DIRECTION)

SILT FENCE GENERAL NOTES

(A) SILT FENCE IS USED TO INTERCEPT SMALL AMOUNTS OF SEDIMENT AND REDUCE VELOCITY FROM SHEET FLOW ONLY. DO NOT USE IT ADJACENT TO NATURAL WATER RESOURCES (WETLANDS OR STREAMS).

(B) THE MAXIMUM DRAINAGE AREA SIZE FOR A CONTINUOUS BARRIER SHALL BE ¼ ACRE PER 100 LINEAR FEET OF FENCE LENGTH UP TO A MAXIMUM DRAINAGE AREA OF 2 ACRES. MAXIMUM SLOPE LENGTH BEHIND FENCE ON UPSLOPE SIDE SHALL BE 110 FEET (AS MEASURED ALONG THE GROUND SURFACE).

(C) WHEN INSTALLED AT THE TOE OF A SLOPE, SILT FENCE SHOULD BE PLACED 5 FEET TO 7 FEET AWAY FROM THE TOE TO ALLOW SPACE FOR PONDING OF WATER AND COLLECTION OF SEDIMENT.

(D) WHEN TWO SECTIONS OF SILT FENCE FABRIC ADJOIN EACH OTHER THEY SHALL BE JOINED ACCORDING TO THE DETAILS ON STANDARD DRAWING EC-STR-3E.

(E) MAINTENANCE SHALL BE PERFORMED AS NEEDED; CAPTURED SOIL MATERIAL SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND/OR OTHER EVIDENCE OF FILTER CLOGGING IS OBSERVED.

(F) STEEL POSTS SHALL BE ROLLED FROM HIGH CARBON STEEL AND SHALL HAVE A MINIMUM WEIGHT OF 1.25 LB/FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH GRADE WEATHER RESISTANT STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH AN ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED TO AID IN THE ATTACHMENT OF THE WIRE BACKING. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702.

(G) WHEN STEEL POSTS ARE USED THEY SHALL HAVE A PROJECTION FOR FASTENING WIRE TO THEM. THE WIRE FASTENERS SHOULD BE EVENLY SPACED WITH AT LEAST FIVE PER POST.

(H) IF THE FILTER MATERIAL IS STAPLED TO THE WOODEN STAKES, HEAVY DUTY WIRE STAPLES WITH ½ INCH LEG AND 1 INCH WIDTH SHALL BE USED AND EVENLY SPACED WITH AT LEAST FOUR PER POST. SILT FENCE FABRIC SHALL NOT BE STAPLED TO TREES.

(I) SILT FENCES SHOULD BE PLACED ALONG OR NEAR THE GROUND CONTOUR. THE BOTTOM OF FENCE AT GROUNDLINE SHOULD BE ON A ZERO PERCENT (0%) GRADE, PLUS OR MINUS FIVE TENTHS OF ONE PERCENT (±0.5%). THE ENDS OF A ROW OF SILT FENCE SHOULD BE TURNED UPSLOPE.

(J) A PREASSEMBLED SILT FENCE MEETING THE REQUIREMENTS OF THIS DRAWING IS ACCEPTABLE IN LIEU OF A FIELD CONSTRUCTED SILT FENCE.

(K) STATIC SLICING IS THE PREFERRED METHOD OF FENCE INSTALLATION. STATIC SLICING INVOLVES THE INSERTION OF A NARROW CUTTING BLADE, PLACED AT THE SPECIFIED ANCHOR DEPTH FOR THE GIVEN FABRIC AS SHOWN ON THE APPLICABLE DETAIL, AND SIMULTANEOUSLY PULLING THE FENCE FABRIC INTO THE TRENCH AS THE TRENCH IS BEING EXCAVATED. ALTERNATE TRENCH-BASED METHODS ARE ALSO ACCEPTABLE. FOR TRENCH-BASED INSTALLATIONS, SILT FENCING SHALL BE INSTALLED PER THE FOLLOWING STEPS AND IN THE FOLLOWING ORDER:

- EXCAVATE TRENCH A MAXIMUM OF 4 INCHES WIDE AND 6 INCHES DEEP. THE TRENCH SHALL BE HAND-CLEANED FOLLOWING EXCAVATION TO REMOVE BULKY DEBRIS SUCH AS ROCKS, STICKS, AND SOIL CLODS FROM THE TRENCH.
- INSTALL FABRIC IN TRENCH.
- BACKFILL TRENCH (OVER-FILL) WITH SOIL PLACED AROUND FABRIC.
- COMPACT SOIL BACKFILL WITH MECHANICAL EQUIPMENT. DO NOT DAMAGE THE FABRIC DURING COMPACTION (DAMAGED FABRIC SHALL BE REPLACED).
- DRIVE AND SET SUPPORT POSTS PER SPACING REQUIREMENTS GIVEN ON THE APPLICABLE FENCE DETAIL. FOR PRE-ASSEMBLED SILT FENCE, DRIVE SUPPORT IN TO GROUND FIRST, FOLLOWED BY FABRIC PLACEMENT IN TRENCH.
- ATTACH FABRIC TO THE POSTS USING WIRE TIES OR STAPLES. SPACING AND DENSITY OF TIES OR STAPLES SHALL BE INSTALLED AS DESCRIBED IN NOTES F AND G.

(L) ONLY SILT FENCE FABRIC LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED. ANY PRODUCTS LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE MAY ALSO BE USED.

(M) SILT FENCE SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-08.03 TEMPORARY SILT FENCE (WITHOUT BACKING) PER LINEAR FOOT

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE SILT FENCE.

(M) SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

- REV. 12-18-03: MODIFIED TABLE (1) AND GENERAL NOTE (L).
- REV. 7-29-04: CHANGED VALUES IN TABLE 1 FROM MEAN TO MARV VALUES.
- REV. 4-15-06: REMOVED POA SPECS. FROM TABLE 1. ADDED NOTE (L). REVISED TABLE TITLE. REORDERED GENERAL NOTES. REFORMATTED SHEET. REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE. REVISED NOTES, AND MISC. EDITS TO DRAWING.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SILT FENCE

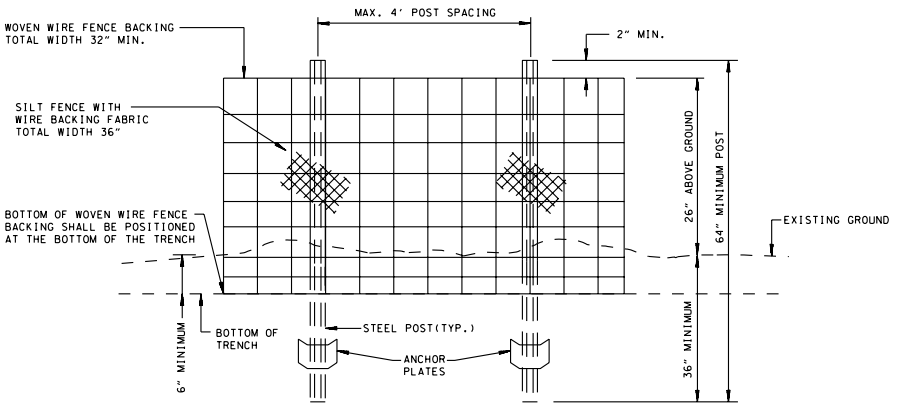
12-18-02 EC-STR-3B

REV. 12-18-03: MODIFIED TABLE (2) AND GENERAL NOTE (E).

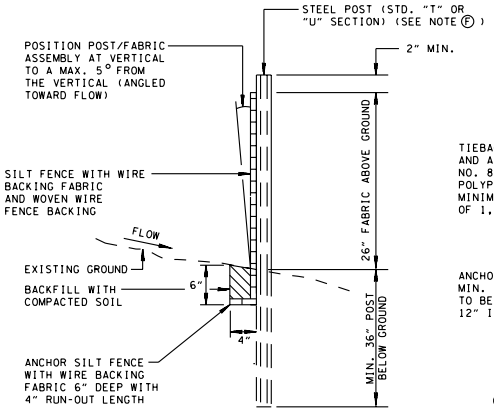
REV. 7-29-04: CHANGED VALUES IN TABLE 2 FROM MEAN TO MARV VALUES.

REV. 4-15-06: MODIFIED FABRIC HEIGHT. ADDED NOTES (J) AND (K). REVISED TABLE TITLE, REORDERED GENERAL NOTES, REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.

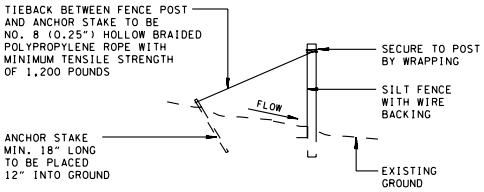
REV. 4-1-08: REMOVED TEMPORARY REFERENCE, REVISED NOTES, AND MISC. EDITS TO DRAWING.



ELEVATION VIEW



SECTIONAL VIEW



SILT FENCE TIEBACK

(WHEN REQUIRED BY THE ENGINEER OR NOTED IN THE PLANS. COST TO BE INCLUDED IN THE ITEMS FOR SILT FENCE WITH WIRE BACKING)

EROSION CONTROL PLAN LEGEND: * SFB * SFB * SFB * SILT FENCE WITH WIRE BACKING

SILT FENCE WITH WIRE BACKING FABRIC SPECIFICATIONS

FABRIC PROPERTY AND TEST METHODS	REQUIRED PHYSICAL PROPERTIES (MARV VALUES OF TEST DATA)
GEOTEXTILE FABRIC TYPE	WOVEN MONOFILAMENT
APPARENT OPENING SIZE (ASTM D4751)	#70 TO #100 STANDARD SIEVE
WATER FLUX (ASTM D4491)	≥ 18 GPM/FT^2
TENSILE STRENGTH (ASTM D4632)	≥ 310 LB. (WARP DIRECTION) X 200 LB. (FILL DIRECTION)
ULTRAVIOLET STABILITY (AFTER 500 HRS PER ASTM D4355)	≥ 90%
BURST STRENGTH (ASTM D3786)	≥ 400 PSI
PUNCTURE STRENGTH (ASTM D4833)	≥ 105 LB.
TRAPEZOIDAL TEAR (ASTM D4533)	≥ 100 LB. (WARP DIRECTION) X 60 LB. (FILL DIRECTION)

SILT FENCE WITH WIRE BACKING GENERAL NOTES

(A) SILT FENCE WITH WIRE BACKING IS USED TO INTERCEPT SMALL AMOUNTS OF SEDIMENT AND REDUCE VELOCITY FROM SHEET FLOW ONLY. USE SILT FENCE WITH WIRE BACKING UP-GRADIENT TO, AND ALONG THE PERIMETER OF STREAMS, WETLANDS, PONDS, SPRINGS, OR OTHER NATURAL WATER RESOURCES LOCATED WITHIN OR ADJACENT TO THE PROJECT RIGHT-OF-WAY.

(B) THE MAXIMUM DRAINAGE AREA SIZE FOR CONTINUOUS SILT FENCE WITH BACKING SHALL BE 1 ACRE PER 150 LINEAR FEET OF FENCE LENGTH. MAXIMUM SLOPE LENGTH BEHIND FENCE ON UPSLOPE SIDE SHALL BE 290 FEET (AS MEASURED ALONG THE GROUND SURFACE).

(C) WHEN INSTALLED AT THE TOE OF A SLOPE SILT FENCE WITH WIRE BACKING SHOULD BE PLACED 5 FEET TO 10 FEET AWAY FROM THE TOE TO ALLOW SPACE FOR PONDING OF WATER AND COLLECTION OF SEDIMENT.

(D) WHEN TWO SECTIONS OF SILT FENCE WITH WIRE BACKING FABRIC ADJOIN EACH OTHER, THEY SHALL BE JOINED ACCORDING TO THE DETAILS ON STANDARD DRAWING EC-STR-3E.

(E) MAINTENANCE SHALL BE PERFORMED AS NEEDED; CAPTURED SOIL MATERIAL SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND/OR WHEN EVIDENCE OF FILTER CLOGGING IS OBSERVED.

(F) STEEL POSTS SHALL BE ROLLED FROM HIGH CARBON STEEL AND SHALL HAVE A MINIMUM WEIGHT OF 1.25 LB/FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH GRADE WEATHER RESISTANT STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH AN ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED TO AID IN THE ATTACHMENT OF THE WIRE BACKING. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702.

(G) STEEL POSTS SHALL HAVE A PROJECTION FOR FASTENING WIRE TO THEM. WOVEN WIRE FENCE BACKING TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. THE WIRE FASTENERS SHOULD BE EVENLY SPACED WITH AT LEAST SIX PER POST.

(H) FABRIC SHALL BE FASTENED SECURELY TO WOVEN WIRE FENCE BACKING WITH THE TIES SPACED EVERY 24 INCHES ALONG TOP AND MIDSECTION.

(I) WOVEN WIRE FENCE BACKING SHALL MEET THE REQUIREMENTS FOR ASTM A-116 FOR NO. 11 FARM, DESIGN NO. 832-6-11, CLASS 3 COATING.

(J) SILT FENCE WITH BACKING SHOULD BE PLACED ALONG OR NEAR THE GROUND CONTOUR. THE BOTTOM OF FENCE AT GROUNDLINE SHOULD BE ON A ZERO PERCENT (0%) GRADE, PLUS OR MINUS FIVE TENTHS OF ONE PERCENT (±0.5%). THE END OF A ROW OF SILT FENCE WITH WIRE BACKING SHOULD BE TURNED UP SLOPE.

(K) FOR TRENCH-BASED INSTALLATIONS, SILT FENCING WITH WIRE BACKING SHALL BE INSTALLED PER THE FOLLOWING STEPS AND IN THE FOLLOWING ORDER:

- EXCAVATE TRENCH A MAXIMUM OF 4 INCHES WIDE AND 6 INCHES DEEP. THE TRENCH SHALL BE HAND-CLEANED FOLLOWING EXCAVATION TO REMOVE BULKY DEBRIS SUCH AS ROCKS, STICKS, AND SOIL CLODS FROM THE TRENCH.
- DRIVE AND SET SUPPORT POSTS PER SPACING REQUIREMENTS GIVEN ON THE APPLICABLE FENCE DETAIL.
- ATTACH WOVEN WIRE FENCE BACKING TO POSTS AND FABRIC TO THE WIRE BACKING USING WIRE TIES. SPACING AND DENSITY OF TIES SHALL BE INSTALLED ACCORDING TO NOTES G AND H
- INSTALL FABRIC IN TRENCH.
- BACKFILL TRENCH (OVER-FILL) WITH SOIL PLACED AROUND FABRIC.
- COMPACT SOIL BACKFILL WITH MECHANICAL EQUIPMENT. DO NOT DAMAGE THE FABRIC DURING COMPACTION (DAMAGED FABRIC SHALL BE REPLACED).

(L) ONLY SILT FENCE WITH WIRE BACKING FABRIC LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED. ANY PRODUCTS LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE MAY ALSO BE USED.

(M) SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-08.02 TEMPORARY SILT FENCE (WITH BACKING) PER LINEAR FOOT

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE SILT FENCE WITH WIRE BACKING.

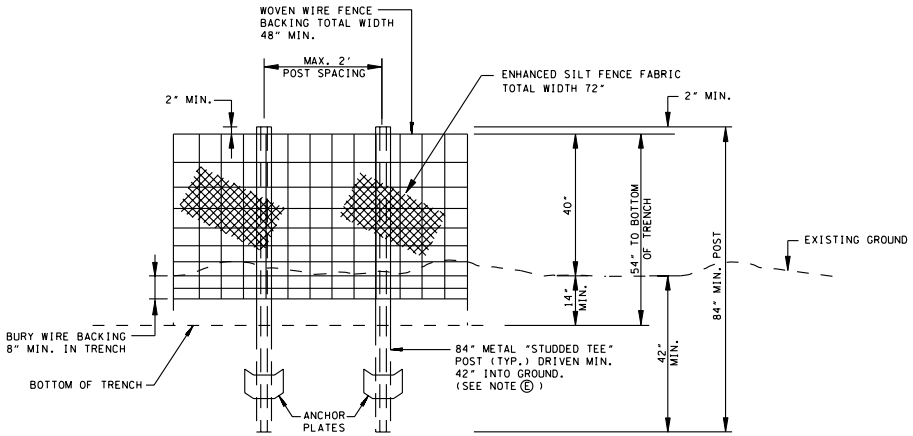
(N) SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE WITH WIRE BACKING WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

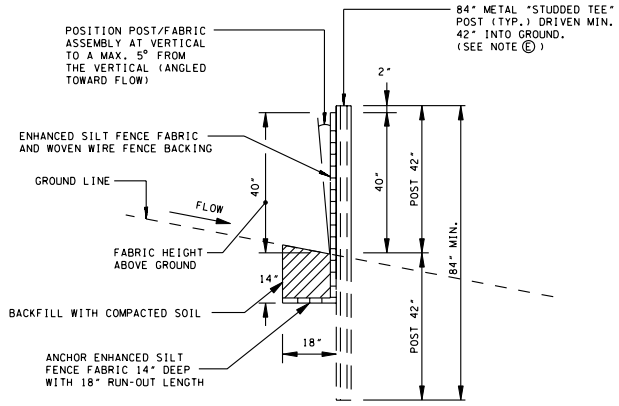
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SILT FENCE WITH WIRE BACKING

12-18-02 EC-STR-3C



ELEVATION VIEW



SECTIONAL VIEW

EROSION CONTROL PLAN LEGEND: * ESF * ESF * ESF * ENHANCED SILT FENCE

ENHANCED SILT FENCE FABRIC SPECIFICATIONS

FABRIC PROPERTY AND TEST METHODS	REQUIRED PHYSICAL PROPERTIES (MARV VALUES OF TEST DATA)
GEOTEXTILE FABRIC TYPE	WOVEN MONOFILAMENT
APPARENT OPENING SIZE (ASTM D4751)	# 30 TO # 80 STANDARD SIEVE
WATER FLUX (ASTM D4491)	≥ 110 GPM/FT^2
TENSILE STRENGTH (ASTM D4632)	≥ 370 LBS. (WARP DIRECTION) X ≥ 230 LBS (FILL DIRECTION)
ULTRAVIOLET STABILITY (AFTER 500 HRS PER ASTM D4355)	≥ 90%
BURST STRENGTH (ASTM D3786)	≥ 470 PSI
PUNCTURE STRENGTH (ASTM D4833)	≥ 110 LB.
TRAPEZOIDAL TEAR (ASTM D4533)	≥ 115 LB. (WARP DIRECTION) X ≥ 75 LB. (FILL DIRECTION)
PERMEABILITY (ASTM D4491)	≥ 0.02 INCHES/SEC
THICKNESS (ASTM D5199)	≤ 35 MILS

ENHANCED SILT FENCE GENERAL NOTES

(A) ENHANCED SILT FENCE IS TO BE USED WHERE INTERCEPTION OF CONCENTRATED FLOWS (e.g. SWALES, DITCHES, RUTS ALONG SLOPE) ARE ANTICIPATED. LIMITS OF FLOW APPLICATIONS FOR USE OF ENHANCED SILT FENCE ARE GIVEN ON STANDARD DRAWINGS EC-STR-4 AND EC-STR-4A. DO NOT USE ENHANCED SILT FENCE IN OR ADJACENT TO NATURAL WATER RESOURCES (WETLANDS OR STREAMS).

(B) ENHANCED SILT FENCE SHOULD NOT BE USED TO REPLACE SILT FENCE WITH WIRE BACKING.

(C) WHEN TWO SECTIONS OF ENHANCED SILT FENCE FABRIC ADJOIN EACH OTHER THEY SHALL BE JOINED ACCORDING TO THE DETAILS ON STANDARD DRAWING EC-STR-3E.

(D) MAINTENANCE SHALL BE PERFORMED AS NEEDED; CAPTURED SOIL MATERIAL SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND/OR WHEN EVIDENCE OF FILTER CLOGGING IS NOTED.

(E) STEEL POSTS SHALL BE ROLLED FROM HIGH CARBON STEEL AND SHALL HAVE A MINIMUM WEIGHT OF 1.25 LB/FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH GRADE WEATHER RESISTANT STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH AN ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED TO AID IN THE ATTACHMENT OF THE WIRE BACKING. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702.

(F) STEEL POSTS SHALL HAVE A PROJECTION FOR FASTENING WIRE TO THEM. WOVEN WIRE FENCE BACKING TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. THE WIRE FASTENERS SHOULD BE EVENLY SPACED WITH AT LEAST SIX PER POST.

(G) WOVEN WIRE FENCE BACKING SHALL MEET THE REQUIREMENTS FOR ASTM A-116 FOR NO. 11 FARM, DESIGN NO. 1047-6-11, CLASS 3 COATING.

(H) FILTER FABRIC SHALL BE FASTENED SECURELY TO WOVEN WIRE FENCE BACKING WITH TIES SPACED EVERY 24 INCHES ALONG TOP AND MID SECTION.

(I) FOR TRENCH-BASED INSTALLATIONS, ENHANCED SILT FENCING SHALL BE INSTALLED PER THE FOLLOWING STEPS AND IN THE FOLLOWING ORDER:

- EXCAVATE TRENCH A MAXIMUM OF 18 INCHES WIDE 14 INCHES DEEP. THE TRENCH SHALL BE HAND-CLEANED FOLLOWING EXCAVATION TO REMOVE BULKY DEBRIS SUCH AS ROCKS, STICKS, AND SOIL CLODS FROM THE TRENCH.
- DRIVE AND SET SUPPORT POSTS PER SPACING REQUIREMENTS GIVEN ON THE APPLICABLE FENCE DETAIL.
- ATTACH WOVEN WIRE FENCE BACKING TO POSTS AND FABRIC TO THE WIRE BACKING USING WIRE TIES. SPACING AND DENSITY OF TIES SHALL BE INSTALLED ACCORDING TO NOTES F AND H.
- INSTALL FABRIC IN TRENCH.
- BACKFILL TRENCH (OVER-FILL) WITH SOIL PLACED AROUND FABRIC.
- COMPACT SOIL BACKFILL WITH MECHANICAL EQUIPMENT. DO NOT DAMAGE THE FABRIC DURING COMPACTION (DAMAGED FABRIC SHALL BE REPLACED).

(J) ONLY ENHANCED SILT FENCE FABRIC LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED. ANY PRODUCTS LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE MAY ALSO BE USED.

(K) ENHANCED SILT FENCE SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-08.04 TEMPORARY ENHANCED SILT FENCE PER LINEAR FOOT

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE ENHANCED SILT FENCE.

(L) SEDIMENT SHALL BE REMOVED FROM BEHIND THE ENHANCED SILT FENCE WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

- REV. 12-18-03: REPLACED TABLE (3) AND MODIFIED GENERAL NOTES (B), (D), AND (I).
- REV. 7-29-04: CHANGED VALUES IN TABLE 3 FROM MEAN TO MARV VALUES.
- REV. 4-15-06: MODIFIED NOTE (H), ADDED NOTE (J), REVISED TABLE TITLE. REORDERED GENERAL NOTES. REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, REVISED GENERAL NOTES, AND MISC. EDITS TO DRAWING.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

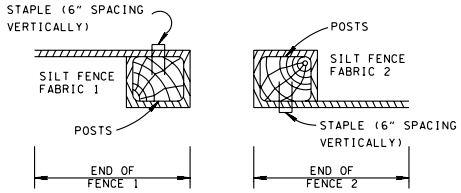
ENHANCED SILT FENCE

12-18-02 EC-STR-3D

REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.

REV. 4-1-08: MISC. EDITS TO DRAWING, CHANGED DRAWING NAME, REFORMATTED SHEET.

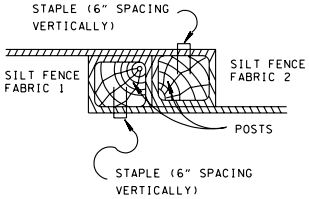
STEP 1



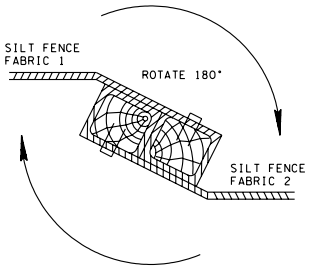
① WRAP FABRIC AROUND END SUPPORTS AS SHOWN AND ANCHOR FABRIC TO POSTS.

② POSITION POSTS/FABRIC AS SHOWN ABOVE.

STEP 2



STEP 3



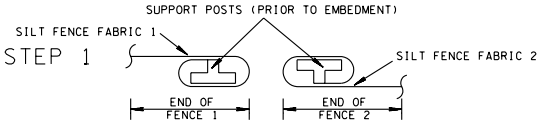
① ROTATE BOTH POSTS WITH FABRIC CLOCKWISE AT LEAST 180°.

② EMBED BOTH POSTS INTO GROUND PER SILT FENCE STANDARD DRAWING EC-STR-3B.

PLAN VIEW

JOINING SILT FENCE FABRIC SECTIONS (WOOD POSTS)

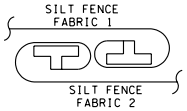
STEP 1



① WRAP FABRIC AROUND END SUPPORTS AS SHOWN AND ANCHOR FABRIC TO POSTS.

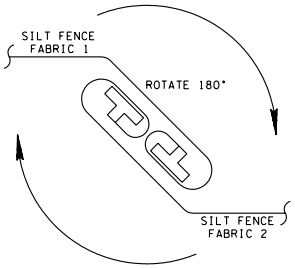
② POSITION POSTS/FABRIC AS SHOWN ABOVE.

STEP 2



① POSITION THE SILT FENCE FABRIC 2 POST INSIDE OF THE SILT FENCE FABRIC 1 POST AS SHOWN ABOVE.

STEP 3



① ROTATE BOTH POSTS WITH FABRIC CLOCKWISE AT LEAST 180°.

② EMBED BOTH POSTS INTO GROUND PER APPLICABLE SILT FENCE STANDARD DRAWING. (EC-STR-3B, EC-STR-3C, OR EC-STR-3D)

PLAN VIEW

JOINING SILT FENCE FABRIC SECTIONS (STEEL POSTS)

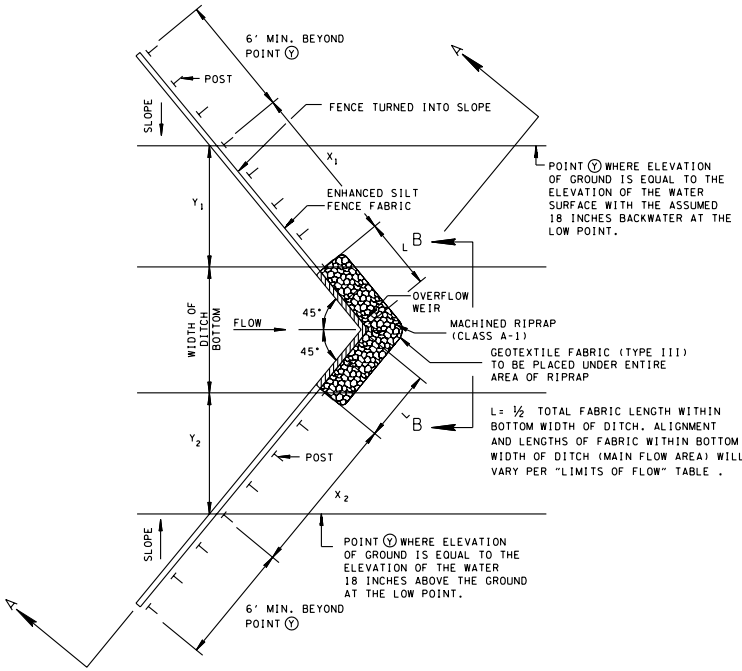
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

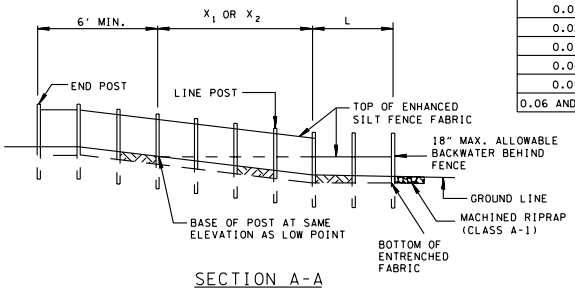
SILT FENCE FABRIC JOINING DETAILS

12-18-02 | EC-STR-3E

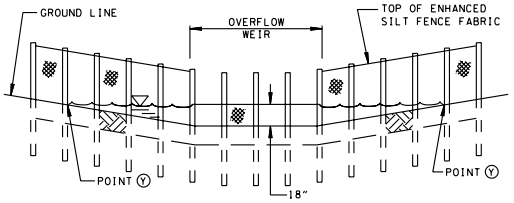
- REV. 12-18-03: MODIFIED SPACING FOR ENHANCED SILT FENCE DETAIL AND ADDED SUPPORTING TABLE. MODIFIED TABLE 4 AND GENERAL NOTES.
- REV. 3-15-04: CHANGED PLANS LEGEND SYMBOL.
- REV. 4-15-06: ADDED OVERFLOW WIER, SECTION B-B, REVISED TABLE TITLE. REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING, CHANGED PLAN SYMBOL. CHANGED DRAWING NAME.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, MISC. EDITS TO DRAWING, CHANGED DRAWING NAME, REVISED GENERAL NOTES.



PLAN VIEW

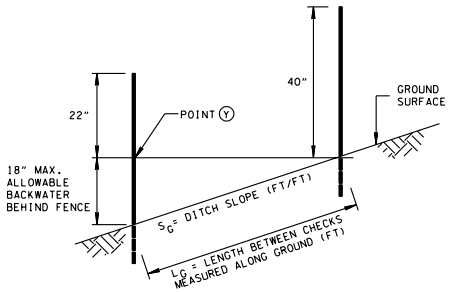


SECTION A-A



ELEVATION VIEW B-B

DITCH SLOPE S_G (FT/FT)	RECOMMENDED SPACING, (L_G) BETWEEN ENHANCED SILT FENCE CHECKS, (FT)
0.01	150
0.02	75
0.03	50
0.04	40
0.05	30
0.06 AND STEEPER	25



PROFILE VIEW

SPACING FOR DITCH CHECK LOCATIONS

LIMITS OF FLOW

WIDTH OF DITCH BOTTOM (FT) SEE NOTE Ⓔ	② TOTAL ENHANCED SILT FENCE CHECK LENGTH 2L (LENGTH L) WITHIN FLAT-BOTTOM ZONE OF DITCH, (FT)	X_1 OR X_2 (FT)			TOTAL AVALABLE SURFACE AREA OF FABRIC IN DITCH AT 18 INCHES OF FLOW DEPTH (FT^2)			① MAXIMUM ALLOWABLE PEAK FLOW (CFS)		
		2:1	3:1	4:1	2:1 SIDESLOPE	3:1 SIDESLOPE	4:1 SIDESLOPE	2:1 SIDESLOPE	3:1 SIDESLOPE	4:1 SIDESLOPE
3	4.2 (2.1)	4.2	6.4	8.5	12.6	15.8	19.0	4.6	5.5	6.4
4	5.7 (2.9)	4.2	6.4	8.5	14.9	18.0	21.2	5.6	6.5	7.4
5	7.0 (3.5)	4.2	6.4	8.5	16.8	20.0	23.2	6.4	7.3	8.3
6	8.5 (4.3)	4.2	6.4	8.5	19.1	22.2	25.4	7.4	8.3	9.2
7	9.9 (5.0)	4.2	6.4	8.5	21.2	24.3	27.5	8.3	9.2	10.1
8	11.3 (5.7)	4.2	6.4	8.5	23.3	26.4	29.6	9.2	10.1	11.1
9	12.7 (6.4)	4.2	6.4	8.5	25.4	28.5	31.7	10.1	11.0	12.0
10	14.1 (7.1)	4.2	6.4	8.5	27.5	30.6	33.8	11.0	12.0	12.9
12	17.0 (8.5)	4.2	6.4	8.5	31.8	35.0	38.2	12.9	13.8	14.8
15	21.2 (10.6)	4.2	6.4	8.5	38.1	41.3	44.5	15.7	16.6	17.5

① BASED ON 110 GPM/FT^2 (0.02 INCHES/SEC PERMEABILITY) ENHANCED SILT FENCE DITCH CHECK FABRIC AND TRAPEZOIDAL DITCH CROSS SECTION. SEE STANDARD DRAWING EC-STR-3D FOR FABRIC SPECIFICATIONS. A HEAD OF 18 INCHES BEHIND THE FENCE WAS USED TO DETERMINE MAXIMUM ALLOWABLE DESIGN PEAK FLOW THROUGH THE FILTER FABRIC. ALLOWABLE FLOWS DO NOT INCLUDE HYDRAULIC REDUCTION DUE TO ACCUMULATION OF CAPTURED SOIL PARTICLES ON THE FABRIC SURFACE AREA.

② THIS LENGTH IS TO BE ADDED TO CALCULATED LENGTHS X_1 AND X_2. LENGTH Y_1 AND Y_2 ARE BASED ON PERPENDICULAR SLOPE LENGTHS TO A POINT WHERE THE BASE OF POST ENTERING THE GROUND IS AT THE SAME ELEVATION AS A POINT 18 INCHES ABOVE THE GROUND AT THE LOW POINT OF THE DITCH. LENGTHS X_1 AND X_2 ARE CALCULATED BY MULTIPLYING THE LENGTHS OF SLOPE Y_1 OR Y_2 AT EACH INDIVIDUAL LOCATION BY 1.414.

EROSION CONTROL PLAN LEGEND: > ENHANCED SILT FENCE CHECK (TRAPEZOIDAL DITCH)

ENHANCED SILT FENCE CHECK GENERAL NOTES

Ⓐ ENHANCED SILT FENCE CHECKS ARE USED TO REMOVE SUSPENDED SEDIMENTS FROM STORM WATER FLOW VIA SETTLING AND FILTRATION. THEY ARE ALSO USED FOR VELOCITY REDUCTION. ENHANCED SILT FENCE CHECKS SHOULD NOT BE PLACED IN STREAMS OR OTHER NATURAL WATER RESOURCES.

Ⓑ A DITCH WITH A TRAPEZOIDAL CROSS-SECTION IS ASSUMED WITH SIDE SLOPES AS NOTED.

Ⓒ CHECK LENGTH DESIGNATED IN THE "LIMITS OF FLOW" TABLE ONLY INCLUDES THE LENGTH OF FENCE STAKED WITHIN THE BOTTOM WIDTH OF DITCH (2L).

Ⓓ SELECT A DITCH BOTTOM WIDTH FROM THE "LIMITS OF FLOW" TABLE SUCH THAT THE MAXIMUM ALLOWABLE DESIGN PEAK FLOW OBTAINED FROM THE APPROPRIATE COLUMN AT THE RIGHT SIDE OF THE TABLE IS EQUAL TO OR GREATER THAN THE 2-YEAR, 24-HOUR FLOW RATE AT THE CHECK. IF THE SITE DRAINS TO A SEDIMENT-IMPAIRED OR HIGH-QUALITY STREAM, THE FLOW OBTAINED FROM THE TABLE MUST BE EQUAL TO OR GREATER THAN THE 5-YEAR, 24-HOUR FLOW RATE. FLOWS IN EXCESS OF THESE VALUES MAY BE PASSED OVER THE WEIR.

Ⓔ IT MAY BE NECESSARY TO WIDEN THE DITCH BOTTOM WIDTH IN THE VICINITY OF THE CHECK IN ORDER TO ACHIEVE THE BOTTOM WIDTH REQUIRED FOR THE CHECK.

Ⓕ THE LOCATIONS AND SPACING OF ENHANCED SILT FENCE CHECKS, ALONG A DITCH SHOULD BE BASED ON A COMBINATION OF HYDRAULIC PROPERTIES OF THE FENCE MATERIAL, BASED ON THE LIMITS OF FLOW TABLE AND THE SPACING TABLE.

Ⓖ THE FLOW VALUES IN THE LIMITS OF FLOW TABLE ASSUME NO CLOGGING ON THE ENHANCED SILT FENCE CHECK FABRIC SURFACE. IN ORDER TO INSURE MINIMAL INFLUENCE FROM FILTER CLOGGING, ENHANCED SILT FENCE CHECKS SHOULD BE REGULARLY CLEANED BY DRY BRUSHING AND/OR PRESSURE WASHING THE FABRIC SURFACE.

Ⓗ FOR INSTALLATION DETAILS FOR ENHANCED SILT FENCE SEE STANDARD DRAWING EC-STR-3D AND EC-STR-3E.

Ⓘ UPON REMOVAL OF THE ENHANCED SILT FENCE CHECK THE AREA BENEATH THE ENHANCED SILT FENCE CHECK LOCATION SHOULD BE IMMEDIATELY COVERED WITH SEEDING AND EROSION CONTROL BLANKETS OR TURF REINFORCEMENT MATS OR IT SHOULD BE SODDED.

Ⓙ ANY PRODUCTS LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE MAY ALSO BE USED.

Ⓚ ENHANCED SILT FENCE CHECKS SHOULD BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-08.06 ENHANCED SILT FENCE CHECK (TRAPEZOIDAL) PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE ENHANCED SILT FENCE CHECK.

Ⓛ SEDIMENT SHALL BE REMOVED FROM BEHIND THE ENHANCED SILT FENCE CHECK WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT TO THE STRUCTURE AND PAID FOR UNDER ITEM NO. 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

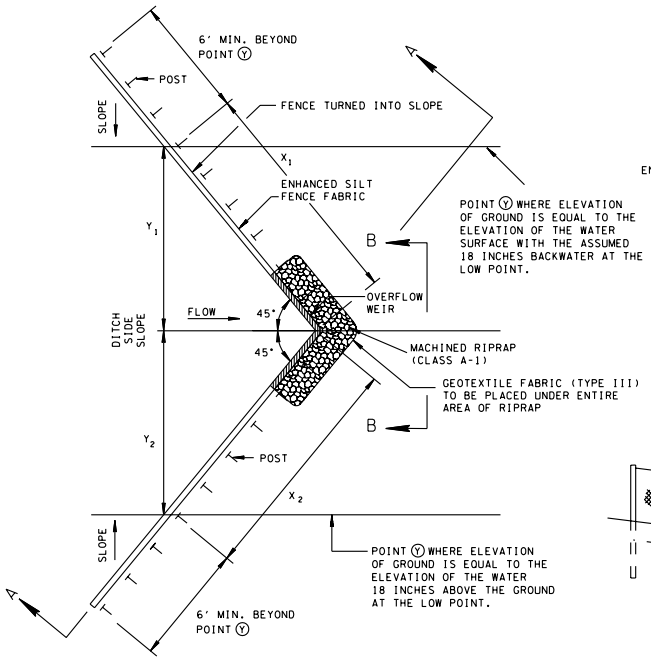
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

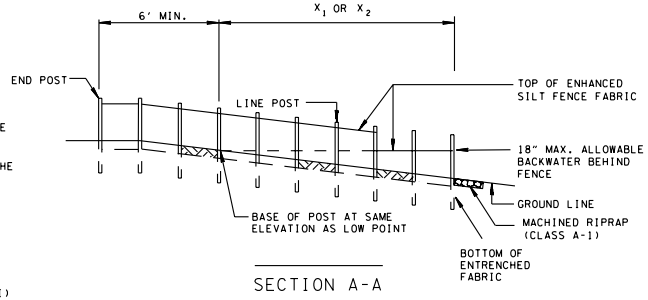
ENHANCED SILT FENCE CHECK (TRAPEZOIDAL DITCH)

12-28-02 EC-STR-4

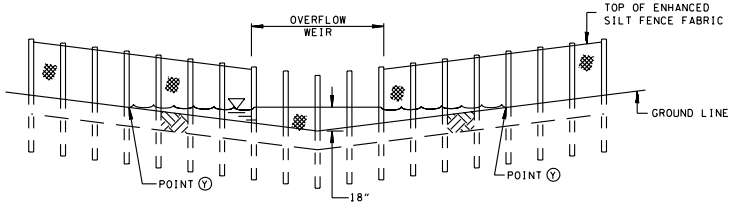
- REV. 12-18-03: MODIFIED SPACING FOR ENHANCED SILT FENCE DETAIL AND ADDED SUPPORTING TABLE. MODIFIED TABLE 5 AND GENERAL NOTES.
- REV. 3-15-04: CHANGED PLANS LEGEND SYMBOL.
- REV. 4-15-06: ADDED OVERFLOW WIER AND SECTION B-B, REVISED TABLE TITLE, REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING. CHANGED DRAWING NAME.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, MISC. EDITS TO DRAWING, CHANGED DRAWING NAME, REVISED GENERAL NOTES.



PLAN VIEW

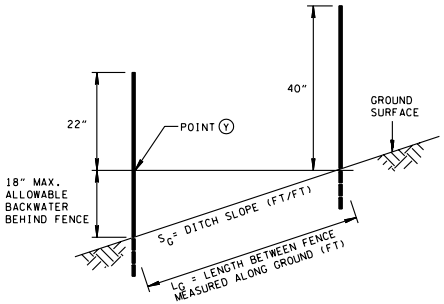


SECTION A-A



ELEVATION VIEW B-B

DITCH SLOPE S_G(FT/FT)	RECOMMENDED SPACING, (L_G) BETWEEN ENHANCED SILT FENCE CHECKS(FT)
0.01	150
0.02	75
0.03	50
0.04	40
0.05	30
0.06 AND STEEPER	25



PROFILE VIEW

SPACING FOR ENHANCED SILT FENCE CHECKS

LIMITS OF FLOW			
DITCH SIDESLOPES (SEE NOTE D)	② X_1 OR X_2 (FT)	TOTAL AVALABLE SURFACE AREA OF FABRIC IN DITCH AT 18 INCHES OF FLOW DEPTH (FT^2)	① MAXIMUM ALLOWABLE PEAK FLOW (CFS)
2:1	4.2	6.4	1.9
3:1	6.4	9.5	2.8
4:1	8.5	12.7	3.7
5:1	10.6	15.9	4.6
6:1	12.7	19.1	5.6
7:1	14.8	22.3	6.5
8:1	17.0	25.4	7.4
9:1	19.1	28.6	8.3
10:1	21.2	31.8	9.3

① BASED ON 110 GPM/FT^2 (0.02 INCHES/SEC PERMEABILITY) ENHANCED SILT FENCE. DITCH CHECK FABRIC AND TRIANGULAR DITCH CROSS SECTION. SEE STANDARD DRAWING EC-STR-3D FOR FABRIC SPECIFICATIONS. A HEAD OF 18 INCHES BEHIND THE FENCE WAS USED TO DETERMINE MAXIMUM ALLOWABLE DESIGN PEAK FLOW THROUGH THE FILTER FABRIC. ALLOWABLE FLOWS DO NOT INCLUDE HYDRAULIC REDUCTION DUE TO ACCUMULATION OF CAPTURED SOIL PARTICLES ON THE FABRIC SURFACE AREA.

② LENGTHS Y_1 AND Y_2 ARE BASED ON PERPENDICULAR SLOPE LENGTHS TO A POINT WHERE THE BASE OF THE POST ENTERING THE GROUND IS AT THE SAME ELEVATION AS A POINT 18 INCHES ABOVE THE GROUND AT THE LOW POINT OF THE DITCH. LENGTHS X_1 AND X_2 ARE CALCULATED BY MULTIPLYING THE LENGTHS OF THE SLOPE Y_1 OR Y_2 AT EACH INDIVIDUAL LOCATION BY 1.414.

ENHANCED SILT FENCE CHECK GENERAL NOTES

(A) ENHANCED SILT FENCE CHECKS ARE USED TO REMOVE SUSPENDED SEDIMENTS FROM STORM WATER FLOW VIA SETTLING AND FILTRATION. THEY ARE ALSO USED FOR VELOCITY REDUCTION. ENHANCED SILT FENCE CHECKS SHOULD NOT BE PLACED IN STREAMS OR OTHER NATURAL WATER RESOURCES. ENHANCED SILT FENCE CHECKS SHOULD NOT BE USED WITHIN THE CLEAR ZONE OF A ROADWAY WHERE TRAFFIC IS TO BE MAINTAINED DURING CONSTRUCTION.

(B) A DITCH WITH A TRIANGULAR CROSS-SECTION IS ASSUMED WITH SIDE SLOPES AS NOTED.

(C) SELECT DITCH SIDE SLOPES FROM THE "LIMITS OF FLOW" TABLE SUCH THAT THE MAXIMUM ALLOWABLE DESIGN PEAK FLOW OBTAINED FROM THE APPROPRIATE COLUMN AT THE RIGHT SIDE OF THE TABLE IS EQUAL TO OR GREATER THAN THE 2-YEAR, 24-HOUR FLOW RATE AT THE CHECK. IF THE SITE DRAINS TO A SEDIMENT-IMPAIRED OR HIGH-QUALITY STREAM, THE FLOW OBTAINED FROM THE TABLE MUST BE EQUAL TO OR GREATER THAN THE 5-YEAR, 24-HOUR FLOW RATE. FLOWS IN EXCESS OF THESE VALUES MAY BE PASSED OVER THE WEIR.

(D) IT MAY BE NECESSARY TO FLATTEN THE DITCH SIDE SLOPES IN THE VICINITY OF THE CHECK IN ORDER TO ACHIEVE THE SIDE SLOPES REQUIRED FOR THE CHECK.

(E) THE LOCATIONS AND SPACING OF ENHANCED SILT FENCE CHECKS, ALONG A DITCH SHOULD BE BASED ON A COMBINATION OF HYDRAULIC PROPERTIES OF THE FENCE MATERIAL, BASED ON THE LIMITS OF FLOW TABLE AND THE SPACING TABLE.

(F) THE FLOW VALUES IN THE LIMITS OF FLOW TABLE ASSUME NO CLOGGING ON THE ENHANCED SILT FENCE CHECK FABRIC SURFACE. IN ORDER TO INSURE MINIMAL INFLUENCE FROM FILTER CLOGGING, ENHANCED SILT FENCE CHECKS SHOULD BE REGULARLY CLEANED BY DRY BRUSHING AND/OR PRESSURE WASHING THE FABRIC SURFACE.

(G) FOR INSTALLATION DETAILS FOR ENHANCED SILT FENCE SEE STANDARD DRAWING EC-STR-3D AND EC-STR-3E.

(I) UPON REMOVAL OF THE ENHANCED SILT FENCE CHECK THE AREA BENEATH THE ENHANCED SILT FENCE CHECK LOCATION SHOULD BE IMMEDIATELY COVERED WITH SEEDING AND EROSION CONTROL BLANKETS OR TURF REINFORCEMENT MATS OR IT SHOULD BE SODDED.

(J) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE MAY ALSO BE USED.

(K) ENHANCED SILT FENCE CHECKS SHOULD BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-08.05 ENHANCED SILT FENCE CHECK (V-DITCH) PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE ENHANCED SILT FENCE CHECK.

(L) SEDIMENT SHALL BE REMOVED FROM BEHIND THE ENHANCED SILT FENCE CHECK WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT TO THE STRUCTURE AND PAID FOR UNDER ITEM NO. 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

EROSION CONTROL PLAN LEGEND: ≫ ENHANCED SILT FENCE CHECK (V-DITCH)

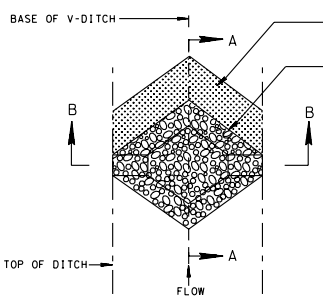
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

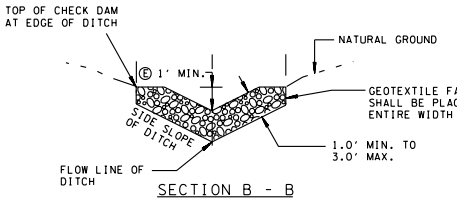
ENHANCED SILT FENCE CHECK (V-DITCH)

12-28-02 EC-STR-4A

DETAIL FOR V-DITCH

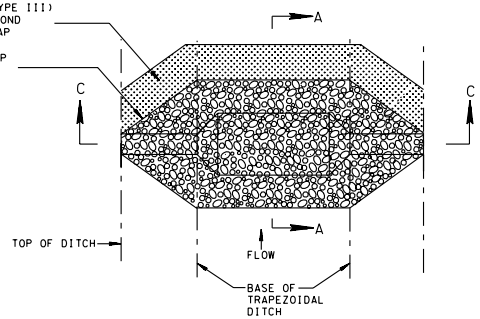


PLAN VIEW

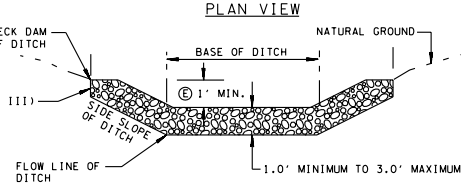


SECTION B - B

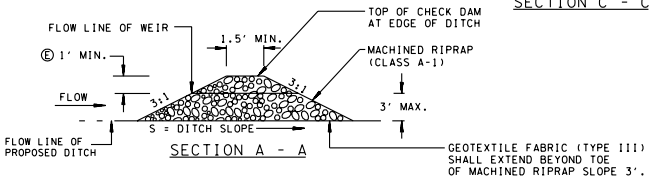
DETAIL FOR TRAPEZOIDAL DITCH



PLAN VIEW

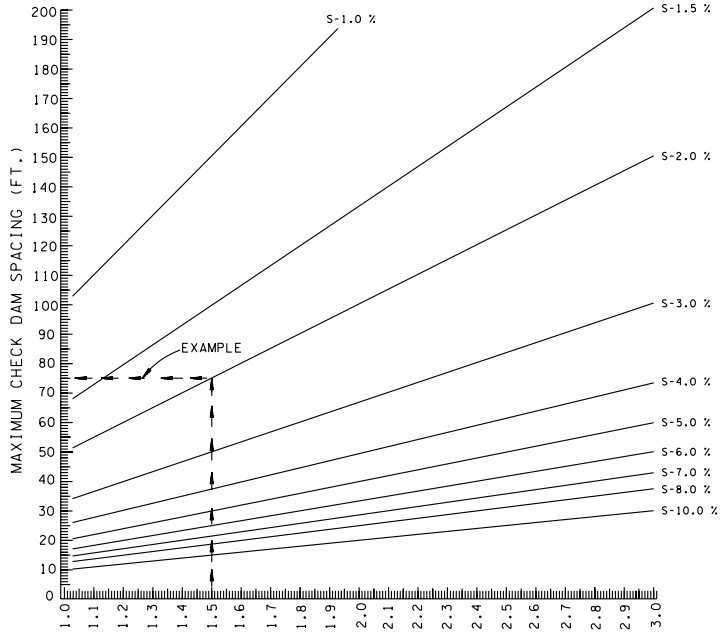


SECTION C - C



SECTION A - A

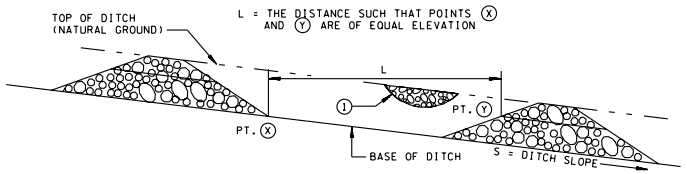
ROCK CHECK DAM SPACING



EXAMPLE: HEIGHT OF WEIR 1.5'; SLOPE 2%
EXTEND PERPENDICULAR FROM 1.5' HEIGHT TO INTERSECT S = 2.0% SLOPE
EXTEND 90° TO THE LEFT TO DETERMINE SPACING (75'+)

- REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-6 TO EC-STR-6.
- REV. 7-29-96: MADE MINOR CORRECTIONS TO GENERAL NOTES.
- REV. 4-15-98: CHANGED PAY ITEMS FOR CHECK DAMS.
- REV. 5-27-01: CHANGED DESCRIPTION FOR GEOTEXTILE FABRIC (TYPE III, CLASS A) TO GEOTEXTILE FABRIC (TYPE III).
- REV. 12-18-02: CHANGED GENERAL NOTE Ⓖ.
- REV. 1-22-03: CORRECTED NOTE IN SECTION A-A.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, REVISED NOTES, MISC. EDITS TO DRAWING, MODIFIED SPACING CHART.

DETAIL FOR SPACING BETWEEN CHECK DAMS



NOTE (1): FILL LOW AREAS ALONG TOP OF BANK TO PREVENT BACKWATER FROM EXITING DITCH.

ROCK CHECK DAM ESTIMATED QUANTITIES

DEPTH	V-DITCH[1] MACHINED RIPRAP (CLASS A-1) (TON)	V-DITCH[1] GEOTEXTILE FABRIC (TYPE III) (S.Y.)	TRAPEZOIDAL DITCH[2] MACHINED RIPRAP (CLASS A-1) (TON)	TRAPEZOIDAL DITCH[2] GEOTEXTILE FABRIC (TYPE III) (S.Y.)
1.5	12.2	26.7	17.2	33.3
2.0	20.2	36.0	27.6	44.0
2.5	31.1	46.7	41.2	56.0
3.0	45.1	58.7	58.3	69.3

1. ESTIMATED QUANTITIES BASED ON 4:1 SIDE SLOPES. QUANTITIES WILL VERY BASED ON ACTUAL DITCH CONFIGURATION.
2. ESTIMATED QUANTITIES BASED ON 4FT BOTTOM WIDTH, AND 4:1 SIDE SLOPES. QUANTITIES WILL VERY BASED ON ACTUAL DITCH CONFIGURATION.

EROSION CONTROL PLAN LEGEND : ROCK CHECK DAM (V-DITCH)

EROSION CONTROL PLAN LEGEND : ROCK CHECK DAM (TRAPEZOIDAL DITCH)

ROCK CHECK DAM GENERAL NOTES

(A) ROCK CHECK DAMS ARE TO BE USED FOR VELOCITY REDUCTION AND EROSION PREVENTION IN AREAS WHERE CONCENTRATED FLOW EXISTS. ROCK CHECK DAMS SHALL NOT BE USED IN STREAMS OR OTHER NATURAL WATER RESOURCES. ROCK CHECK DAMS ARE NOT TO BE USED FOR SEDIMENT CONTROL AND SHOULD NOT BE CONSIDERED A SEDIMENT TRAPPING DEVICE.

(B) THE DRAINAGE AREA FOR THE ROCK CHECK DAMS SHALL BE 10 ACRES OR LESS.

(C) ROCK CHECK DAMS MAY REMAIN IN PLACE AS PERMANENT CHECK DAMS, IF SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

(D) THE CENTER OF THE ROCK CHECK DAM MUST BE AT LEAST ONE (1) FOOT LOWER THAN THE OUTER EDGES.

(E) THE DEPTH OF FLOW ON THE CENTER OF THE STRUCTURE SHALL BE COMPUTED FOR THE PEAK FLOW RATE GENERATED BY THE 2-YEAR, 24-HOUR STORM IN ORDER TO ENSURE THAT THE TOP OF THE STRUCTURE WILL NOT BE OVERTOPPED. FOR SITES WHICH DRAIN TO HIGH-QUALITY STREAMS OR STREAMS LISTED AS IMPAIRED BY SEDIMENTATION, THE DEPTH SHOULD BE DETERMINED FOR THE 5-YEAR, 24-HOUR PEAK FLOW RATE. THIS WILL ELIMINATE THE ROCK-SOIL FAILURE POINT WHERE THE ROCK CHECK DAM AND NATURAL GROUND MERGE.

(F) FOR SITES WHICH DRAIN TO HIGH-QUALITY STREAMS OR STREAMS LISTED AS IMPAIRED BY SEDIMENTATION, THE MINIMUM HEIGHT OF THE STRUCTURE ABOVE THE DITCH BOTTOM SHALL BE INCREASED TO 2 FEET.

(G) THE MAXIMUM SPACING BETWEEN ROCK CHECK DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE FLOW LINE OF THE WEIR OF THE DOWNSTREAM DAM (SEE ROCK CHECK SPACING GRAPH THIS SHEET).

(H) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(I) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.

(J) ROCK CHECK DAMS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-08.07 ROCK CHECK DAM PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ROCK CHECK DAMS.

(K) SEDIMENT SHALL BE REMOVED FROM BEHIND THE ROCK CHECK DAMS WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE DAM AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

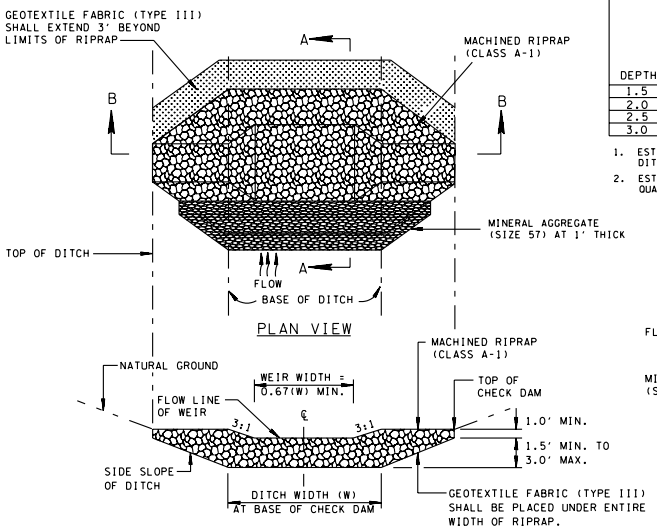
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ROCK CHECK DAM

10-26-92 | EC-STR-6

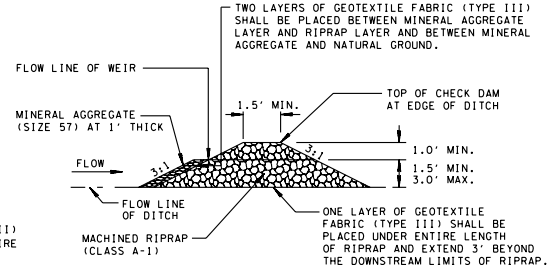
DETAIL FOR TRAPEZOIDAL DITCH



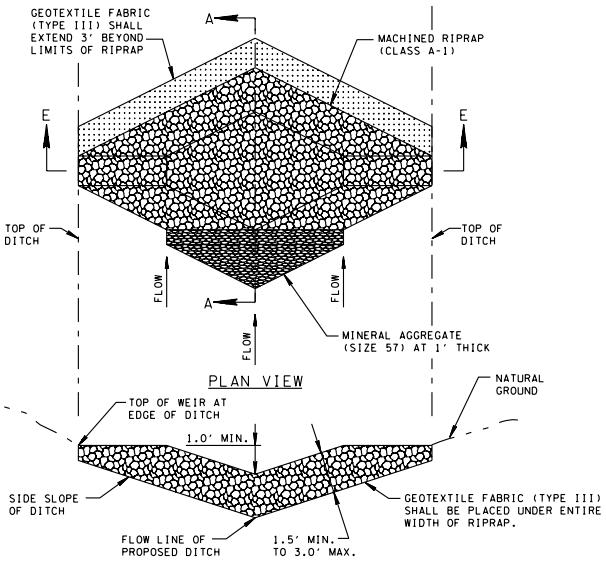
ENHANCED ROCK CHECK DAM ESTIMATED QUANTITIES

DEPTH	V-DITCH[1] MINERAL AGGREGATE (SIZE 57) (TON)	V-DITCH[1] MACHINED RIPRAP (CLASS A-1) (TON)	V-DITCH[1] GEOTEXTILE FAABRIC (TYPE III) (S.Y.)	TRAPEZOIDAL DITCH[2] MINERAL AGGREGATE (SIZE 57) (TON)	TRAPEZOIDAL DITCH[2] MACHINED RIPRAP (CLASS A-1) (TON)	TRAPEZOIDAL DITCH[2] GEOTEXTILE FAABRIC (TYPE III) (S.Y.)
1.5	0.21	12.2	31.7	0.29	17.2	40.3
2.0	0.33	20.2	44.0	0.44	27.6	54.7
2.5	0.48	31.1	58.3	0.62	41.2	71.0
3.0	0.66	45.1	74.7	0.83	58.3	89.3

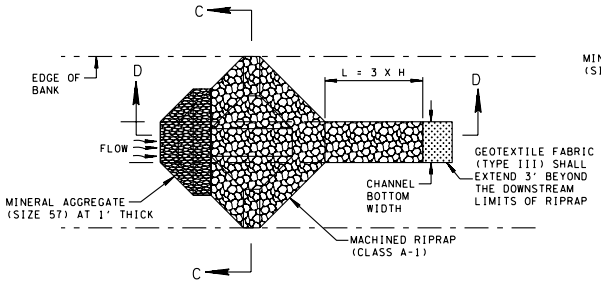
1. ESTIMATED QUANTITIES BASED ON 4:1 SIDE SLOPES. QUANTITIES WILL VERY BASED ON ACTUAL DITCH CONFIGURATION.
2. ESTIMATED QUANTITIES BASED ON 4FT BOTTOM WIDTH, 4 FT DEPTH, AND 4:1 SIDE SLOPES. QUANTITIES WILL VERY BASED ON ACTUAL DITCH CONFIGURATION.

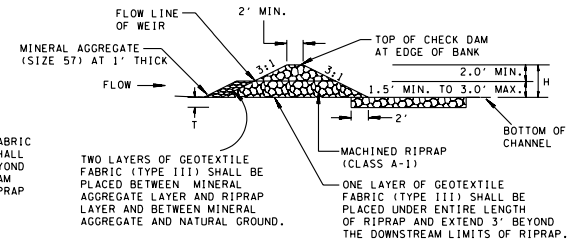


DETAIL FOR V-DITCH



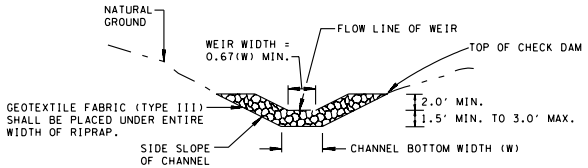
DETAIL FOR CHANNELS





SECTION D - D

T = 1.0' MINIMUM TO 1.5' MAXIMUM
H = HEIGHT OF CHECK DAM
L = LENGTH OF RIPRAP PAD
W = WIDTH OF DITCH (CHANNEL) BOTTOM



EROSION CONTROL PLAN LEGEND:

ENHANCED ROCK CHECK DAM (TRAPEZOIDAL DITCH)

ENHANCED ROCK CHECK DAM (V-DITCH)

ENHANCED ROCK CHECK DAM (CHANNEL)

ENHANCED ROCK CHECK DAM GENERAL NOTES

(A) ENHANCED ROCK CHECK DAMS MAY BE USED TO REDUCE FLOW VELOCITIES TO ALLOW SEDIMENTS TO DROP OUT. THEY MAY BE EMPLOYED WHERE THE DRAINAGE AREA EXCEEDS THE MAXIMUM FOR ROCK CHECK DAMS OR WHERE A FILTRATION FUNCTION FOR VERY LOW FLOWS IS DESIRED. ENHANCED ROCK CHECK DAMS SHALL NOT BE USED IN STREAMS, UNLESS PROVIDED FOR IN THE PERMITS.

(B) AT MOST SITES, THE MAXIMUM ALLOWABLE DRAINAGE AREA SHALL BE 30 ACRES. AT SITES WHICH DRAIN TO HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE MAXIMUM ALLOWABLE DRAINAGE AREA SHALL BE 20 ACRES.

(C) ENHANCED CHECK DAM MAY REMAIN IN PLACE AS PERMANENT CHECK DAM. IF SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

(D) THE CENTER OF THE ENHANCED ROCK CHECK DAM USED IN DITCHES MUST BE AT LEAST ONE (1) FOOT LOWER THAN THE OUTER EDGES. THE CENTER OF ENHANCED ROCK CHECK DAMS USED IN CHANNELS MUST BE AT LEAST TWO (2) FEET LOWER THAN THE OUTER EDGES.

(E) THE DEPTH OF FLOW ON THE CENTER OF THE STRUCTURE SHALL BE COMPUTED FOR THE PEAK FLOW RATE GENERATED BY THE 2-YEAR, 24-HOUR STORM IN ORDER TO ENSURE THAT THE TOP OF THE STRUCTURE WILL NOT BE OVERTOPPED. FOR SITES WHICH DRAIN TO HIGH-QUALITY STREAMS OR STREAMS LISTED AS IMPAIRED BY SEDIMENTATION, THE DEPTH SHOULD BE DETERMINED FOR THE 5-YEAR, 24-HOUR PEAK FLOW RATE. THIS WILL ELIMINATE THE ROCK - SOIL FAILURE POINT WHERE THE ENHANCED ROCK CHECK DAM AND NATURAL GROUND MERGE.

(F) THE MAXIMUM SPACE BETWEEN ENHANCED ROCK CHECK DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM IS AT THE SAME ELEVATION AS THE FLOW LINE OF THE WEIR OF THE DOWNSTREAM DAM. (SEE ROCK CHECK DAM SPACING GRAPH ON EC-STR-6)

(G) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(H) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE TO ENHANCED ROCK CHECK DAM IS ALSO ACCEPTABLE.

(I) ENHANCED ROCK CHECK DAMS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-08.08 ENHANCED ROCK CHECK DAM PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ENHANCED ROCK CHECK DAMS.

(J) SEDIMENT SHALL BE REMOVED FROM BEHIND THE ENHANCED ROCK CHECK DAM WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDMENT REMOVAL PER CUBIC YARD.

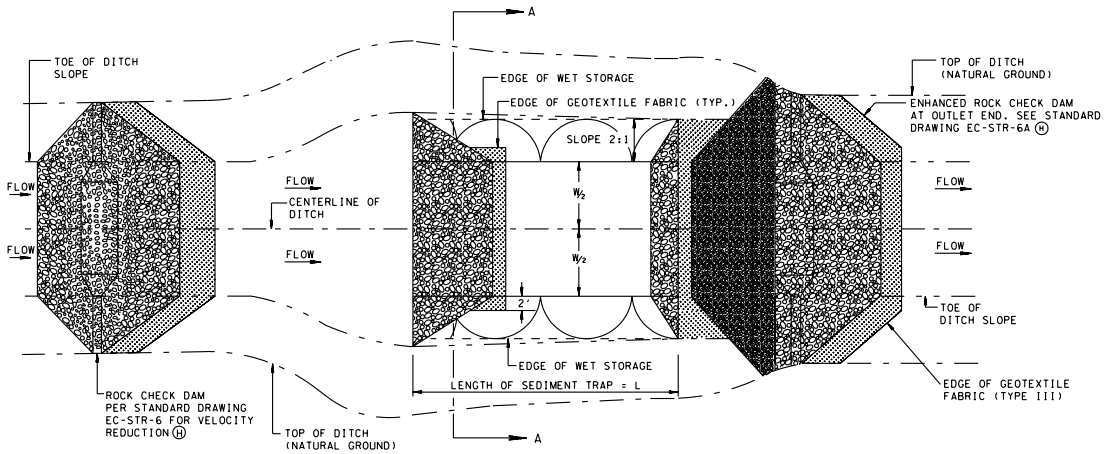
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ENHANCED ROCK CHECK DAM

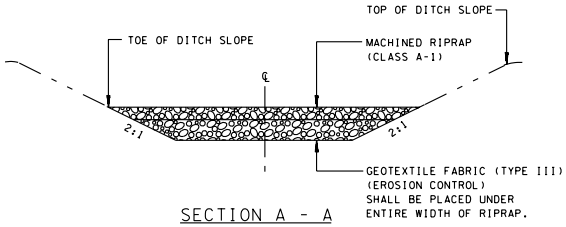
4-1-08 | EC-STR-6A

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-7 TO EC-STR-7.

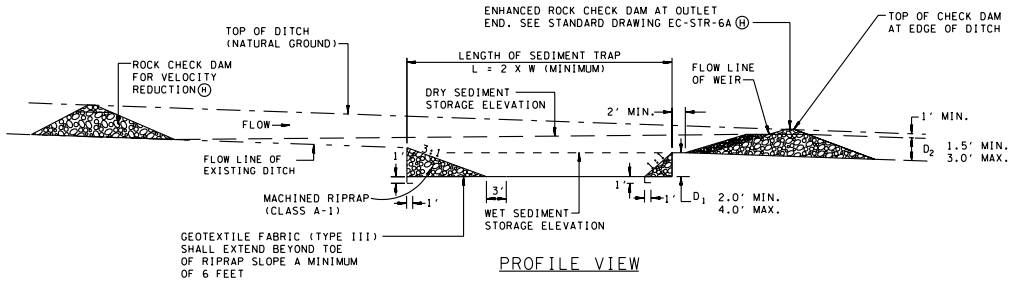
- REV. 5-27-01: CHANGED ITEM NOS. 209-10.01 THROUGH 209-10.19 TO 209-10.20.
- REV. 9-5-01: CORRECTED NOTE REGARDING GEOTEXTILE FABRIC IN SECTION A-A AND SECTION B-B.
- REV. 12-18-02: CHANGED GENERAL NOTE (D).
- REV. 1-22-03: CORRECTED GENERAL NOTE (B). ADDED ADDITIONAL GEOTEXTILE FABRIC TO PROFILE VIEW.
- REV. 7-29-04: ADDED ROCK CHECK DAM TO PLAN AND PROFILE VIEWS. CHANGED GENERAL NOTE (B).
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, CHANGED SILT SCREEN TO ENHANCED CHECK DAM, ADDED GABION ALTERNATE, REVISED NOTES, MISC. DRAWING EDITS.



PLAN VIEW



SECTION A - A



PROFILE VIEW

GENERAL NOTES

(A) SEDIMENT TRAPS WITH CHECK DAMS DETAIN SEDIMENT LADEN STORMWATER RUNOFF FROM SMALL DISTURBED AREAS SO THE MAJORITY OF THE SEDIMENT CAN SETTLE OUT.

(B) THE DRAINAGE AREA FOR THE SEDIMENT TRAP SHALL BE 3 ACRES OR LESS.

(C) THE BELOW GROUND SEDIMENT TRAP IS LOCATED IN A DITCH LINE AND WILL REQUIRE GEOTEXTILE FABRIC (TYPE III) AND RIPRAP AT BOTH ENDS.

(D) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(E) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR ROCK CHECK DAMS (EC-STR-6), ENHANCED ROCK CHECK DAMS (EC-STR-6A), AND GABION CHECK DAMS (EC-STR-55) REFER TO THEIR RESPECTIVE STANDARD DRAWING.

(F) SEDIMENT TRAP WITH CHECK DAM SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-10.20 SEDIMENT TRAP PER CUBIC YARD

ROCK CHECK DAMS, ENHANCED ROCK CHECK DAMS, AND GABION CHECK DAMS SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWING.

PAYMENT SHALL INCLUDE ALL MATERIALS, EXCAVATION, AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE SEDIMENT TRAP WITH CHECK DAM.

(G) SEDIMENT SHALL BE REMOVED FROM THE SEDIMENT TRAP WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

(H) GABION CHECK DAM PER STANDARD DRAWING EC-STR-55 MAY BE SUBSTITUTED WHERE REQUIRED.

EROSION CONTROL PLAN LEGEND: SEDIMENT TRAP WITH ENHANCED ROCK CHECK DAM

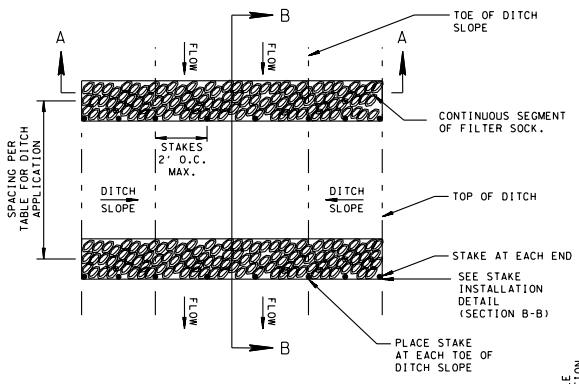
EROSION CONTROL PLAN LEGEND: SEDIMENT TRAP WITH GABION CHECK DAM

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

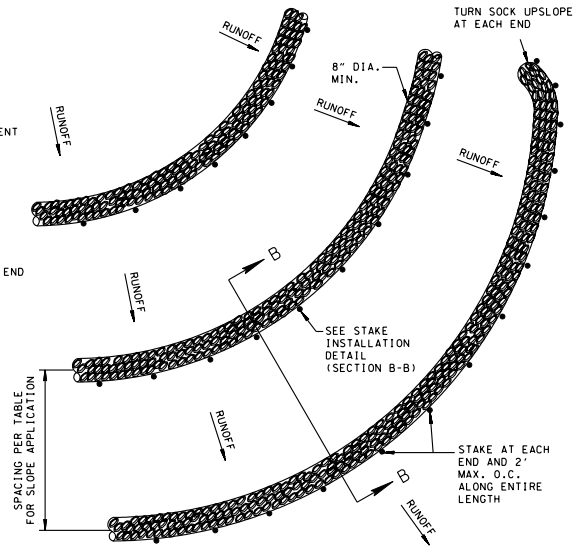
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SEDIMENT TRAP WITH CHECK DAM

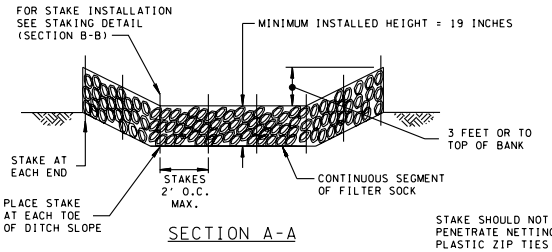
10-26-92 EC-STR-7



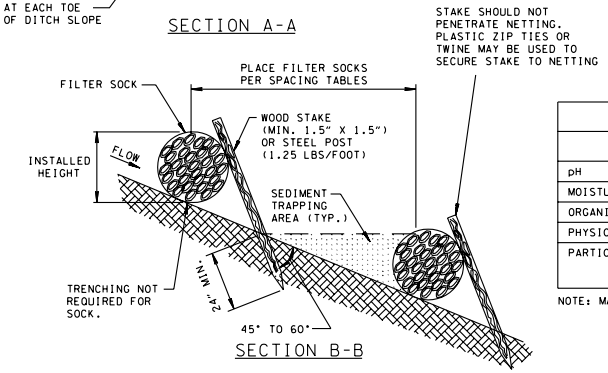
PLAN VIEW FOR DITCH APPLICATION



PLAN VIEW FOR SLOPE APPLICATION



SECTION A-A

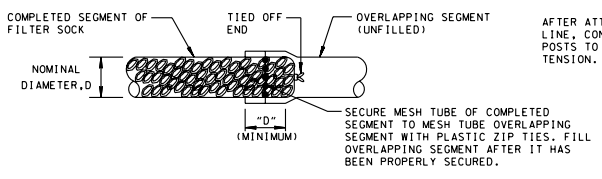


SECTION B-B

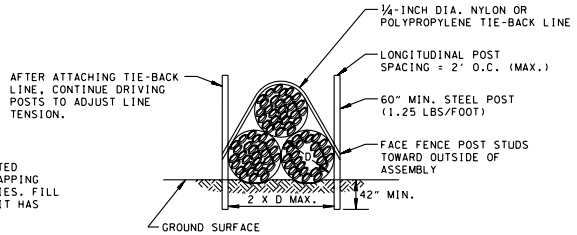
SOCK HEIGHTS INSTALLED		
NOMINAL DIAMETER, D	INSTALLED HEIGHT OF SINGLE SOCK	INSTALLED HEIGHT OF STACKED SOCKS
8"	6.5"	N/A
12"	9.5"	19"
18"	14.5"	29"
24"	19"	38"

MINIMUM SPECIFICATION FOR FILTER MEDIA		
PROPERTY	UNITS	RANGE
pH	pH	5.0 - 8.5
MOISTURE CONTENT	% WET WEIGHT BASIS	< 60
ORGANIC MATTER CONTENT	% DRY WEIGHT BASIS	25 - 100
PHYSICAL CONTAMINANTS	% DRY WEIGHT BASIS	< 1
PARTICLE SIZE	% PASSING SELECTED MESH SIZE, DRY WEIGHT BASIS	2 INCH - 99% ⅜INCH - 30% - 50% MAX. PARTICLE SIZE 2 INCHES

NOTE: MANUFACTURER SPECIFICATION MAY BE SUBSTITUTED WITH THE APPROVAL OF ENGINEER.



FILTER SOCK JOINT DETAIL (FOR SLOPE APPLICATION ONLY)



FILTER SOCK STACKING DETAIL
SEE NOTE Ⓓ

EROSION CONTROL PLAN LEGEND: **SOCK**SOCK**SOCK**SOCK** FILTER SOCK

FILTER SOCK CHECK DAM ESTIMATED QUANTITIES						
	V-DITCH[1]			TRAPEZOIDAL DITCH[2]		
	24' FILTER SOCK (INSTALLED HEIGHT 19")	12" FILTER SOCK STACKED (INSTALLED HEIGHT 19")	18" FILTER SOCK STACKED (INSTALLED HEIGHT 29")	24' FILTER SOCK (INSTALLED HEIGHT 19")	12" FILTER SOCK STACKED (INSTALLED HEIGHT 19")	18" FILTER SOCK STACKED (INSTALLED HEIGHT 29")
LENGTH(FT)	20	60	48	24	72	60

1. ESTIMATED QUANTITIES BASED ON 4:1 SIDE SLOPES. QUANTITIES WILL VERY BASED ON ACTUAL DITCH CONFIGURATION.
2. ESTIMATED QUANTITIES BASED ON 4FT BOTTOM WIDTH, 4 FT DEPTH, AND 4:1 SIDE SLOPES. QUANTITIES WILL VERY BASED ON ACTUAL DITCH CONFIGURATION.

FILTER SOCK SPACING FOR SLOPE APPLICATION				
SLOPE	8"	12"	18"	24"
2%	70'	100'	N/A	N/A
5%	30'	60'	100'	100'
10%	20'	30'	70'	100'
6:1	N/A	20'	40'	55'
4:1	N/A	20'	30'	30'
3:1	N/A	N/A	20'	25'
2:1	N/A	N/A	20'	20'

N/A = NOT RECOMMENDED

FILTER SOCK SPACING FOR DITCH APPLICATION	
DITCH SLOPE	MAXIMUM FILTER SOCK SPACING
LESS THAN 2%	125'
2%	100'
3%	70'
4%	50'
5%	40'
6%	30'
GREATER THAN 6%	25'

BASED ON AN INSTALLED HEIGHT OF 19 INCHES. SEE NOTE D.

FILTER SOCK GENERAL NOTES

(A) FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, OR AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES. THEY CAN ALSO SERVE TO REMOVE SEDIMENT FROM RUNOFF AND RELEASE IT AS SHEET FLOW.

(B) FILTER SOCKS INSTALLED ON A SLOPE SHALL BE PLACED ALONG OR ON THE GROUND CONTOUR. WHERE POSSIBLE FILTER SOCKS APPLIED AT THE TOE OF A SLOPE SHOULD BE PLACED 10 FEET AWAY FROM THE TOE IN ORDER TO PROVIDE SEDIMENT STORAGE. THE MAXIMUM DRAINAGE AREA SHALL BE ¼ ACRE PER 100 LF OF SOCK.

(C) FOR DITCH APPLICATIONS, THE MAXIMUM DRAINAGE AREA SHALL BE 15 ACRES. AT SITES WHICH OUTFALL TO HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS,THE MAXIMUM DRAINAGE AREA SHALL BE LIMITED TO 10 ACRES. FILTER SOCKS SHALL NOT BE USED IN STREAMS, WETLANDS, OTHER NATURAL WATER RESOURCES, OR IN DITCHES WITH CONTINUOUS FLOWS.

(D) FOR DITCH APPLICATIONS, THE MINIMUM INSTALLED HEIGHT OF A SINGLE SOCK, OR OF AN ASSEMBLY OF STACKED SOCKS, SHALL BE 19 INCHES. FILTER SOCKS MAY BE STACKED AS DETAILED ON THIS DRAWING TO ACHIEVE THE REQUIRED HEIGHT. SOCKS SHALL BE PLACED PERPENDICULAR TO THE FLOW OF WATER. FILTER SOCKS SHALL CONTINUE UP THE SIDE SLOPES TO THE TOP OF BANK OR A MAXIMUM OF 3 FEET ABOVE THE INSTALLED HEIGHT FILTER SOCKS SHALL REMAIN IN PLACE UNTIL ALL UPSTREAM AREAS ARE PERMANENTLY STABILIZED.

(E) FILTER SOCKS SHALL CONSIST OF A TUBULAR MESH SOCK WITH OPENINGS NO GREATER THAN 3/8THS OF AN INCH IN SIZE. THE MESH SOCK IS NOT REQUIRED TO BE BIODEGRADABLE. FILL MATERIAL SHALL CONSIST OF EITHER WOOD CHIPS (MULCH) OR A 50/50 COMBINATION OF WOOD CHIPS AND MANUFACTURED COMPOST MATERIAL.

(F) FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED IN DIAMETERS OF 8, 12, 18 OR 24 INCHES. DIAMETER TOLERANCE IS 2 INCHES. A FILTER SOCK WILL FLATTEN OUT TO AN OVAL WHEN IT IS PLACED; THUS, THE INSTALLED HEIGHT WILL BE LESS THAN THE NOMINAL DIAMETER.

(G) STEEL POSTS SHALL BE ROLLED FROM HIGH CARBON STEEL AND SHALL HAVE A MINIMUM WEIGHT OF 1.25 LB/FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH GRADE WEATHER RESISTANT STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH AN ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702.

(H) FILTER SOCKS ARE FILLED ON THE PROJECT SITE AND MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED AS SHOWN ON THIS DRAWING.

(I) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE TO FILTER SOCKS IS ALSO ACCEPTABLE. FOR DITCH APPLICATIONS, SANDBAG OR GRAVEL BAG BERMS MAY ALSO BE USED AS ALTERNATE MATERIALS.

(J) FILTER SOCKS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-03.20 FILTER SOCK (8 INCH) PER LINEAR FOOT
209-03.21 FILTER SOCK (12 INCH) PER LINEAR FOOT
209-03.22 FILTER SOCK (18 INCH) PER LINEAR FOOT
209-03.23 FILTER SOCK (24 INCH) PER LINEAR FOOT
209-08.09 FILTER SOCK CHECK DAM PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF FILTER SOCKS.

(K) SEDIMENT SHALL BE REMOVED FROM BEHIND THE FILTER SOCK WHEN IT HAS ACCUMULATED TO ONE-HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

(L) FILTER SOCKS SHALL BE INSPECTED AFTER EACH RUNOFF EVENT AND SHALL BE REMOVED AND REPLACED IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

(M) FILTER SOCKS SHOULD BE REMOVED FROM SLOPES AFTER STABILIZATION IS COMPLETE. THIS MAY BE ACCOMPLISHED BY CUTTING THE SOCK OPEN AND SPREADING THE FILL MATERIAL ON THE SITE. ALL NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED. FILTER SOCKS APPLIED IN DITCHES SHALL BE COMPLETELY REMOVED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

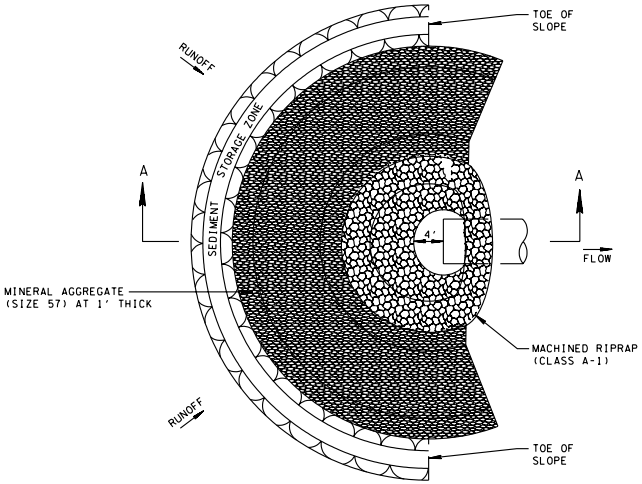
FILTER SOCK

4-1-08 EC-STR-8

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-11 TO EC-STR-11.

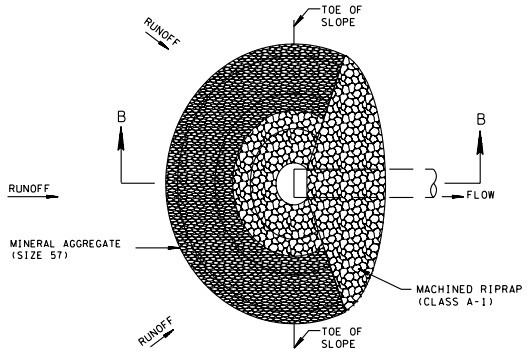
- REV.5-27-01: CHANGED ITEM NOS. 303-15.01 TO 303-10.01 AND 740-03.01 TO 740-10.03. CHANGED DESCRIPTION FOR ITEM NOS. 709-05.05, 709-05.06, AND 709-05.07.
- REV. 12-18-02: CHANGED GENERAL NOTE (D).
- REV. 1-22-03: ADDED ADDITIONAL GEOTEXTILE FABRIC TO ALL SECTIONAL VIEW.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED DITCH AND CHANNEL APPLICATION, RENAMED DRAWING, REVISED NOTES, MISC. EDITS TO DRAWING.

DETAIL FOR UP TO 36" PIPE SIZE

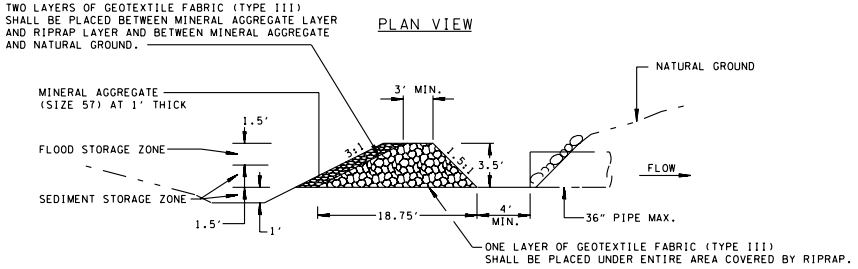


PLAN VIEW

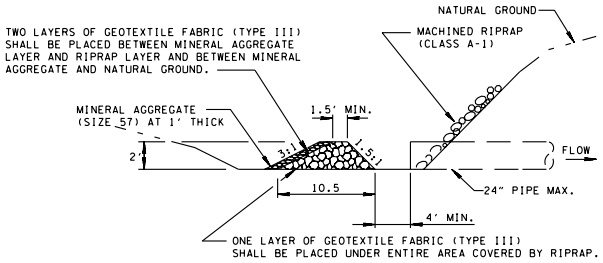
DETAIL FOR 18" TO 24" PIPE SIZE



PLAN VIEW



SECTION A - A



SECTION B - B

CULVERT PROTECTION TYPE 1 GENERAL NOTES

(A) CULVERT PROTECTION (TYPE 1) MAY BE USED AROUND A CULVERT INLET TO REDUCE FLOW VELOCITIES TO ALLOW SEDIMENTS TO DROP OUT. IT IS NORMALLY USED WHERE ALL OF THE INFLOW TO THE CULVERT IS ON-SITE RUNOFF. IT MAY ALSO BE USED WHERE A FILTRATION FUNCTION FOR VERY LOW FLOWS IS DESIRED.

(B) CULVERT PROTECTION (TYPE 1) SHALL NOT BE USED IN STREAMS OR OTHER NATURAL WATER RESOURCES.

(C) CULVERT PROTECTION (TYPE 1) SHOULD NOT BE USED IN DITCHES, SWALES, OR OTHER DEPRESSIONS WITH A DEPTH GREATER THAN 1 FOOT.

(D) CULVERT PROTECTION (TYPE1) SHOULD NOT BE USED AT THE CULVERT OUTLET.

(E) WHERE CONDITIONS OF HIGH SEDIMENT FLOW EXIST, MACHINED RIPRAP (CLASS A-3) MAY BE USED IN LIEU OF MACHINED RIPRAP (CLASS A-1) FOR PIPES UP TO 24 INCHES IN DIAMETER WITH A DRAINAGE AREA LESS THAN 3 ACRES. IT MAY ALSO BE USED FOR PIPE FROM 24 INCHES IN DIAMETER WITH A DRAINAGE AREA LESS THAN 6 ACRES.

(F) AT MOST SITES, THE MAXIMUM ALLOWABLE DRAINAGE AREA SHALL BE 30 ACRES. AT SITES WHICH DRAIN TO HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE MAXIMUM ALLOWABLE DRAINAGE AREA SHALL BE 20 ACRES.

(G) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(H) CULVERT PROTECTION (TYPE 1) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
303-10.01	MINERAL AGGREGATE (SIZE 57) PER TON
709-05.05	MACHINED RIPRAP (CLASS A-3) PER TON
709-05.06	MACHINED RIPRAP (CLASS A-1) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CULVERT PROTECTION (TYPE 1).

(I) SEDIMENT SHALL BE REMOVED FROM BEHIND THE CULVERT PROTECTION (TYPE 1) WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDMENT REMOVAL PER CUBIC YARD.

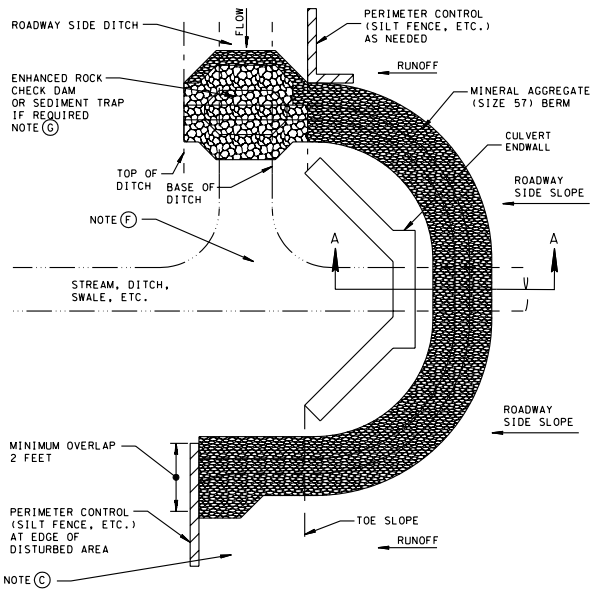
EROSION CONTROL PLAN LEGEND: (C) CULVERT PROTECTION (TYPE 1)

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

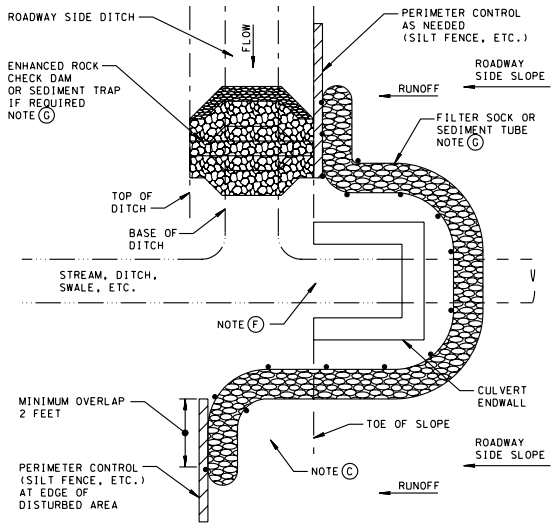
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CULVERT PROTECTION TYPE 1

10-26-92 | EC-STR-11

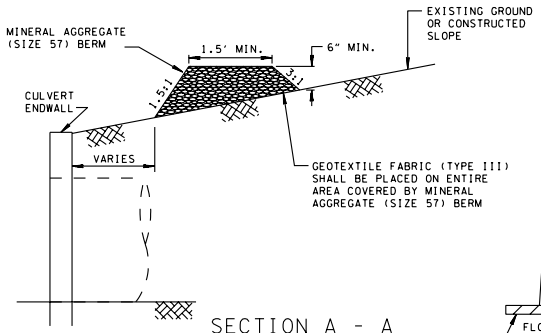


DETAILS WITH ROCK BERM

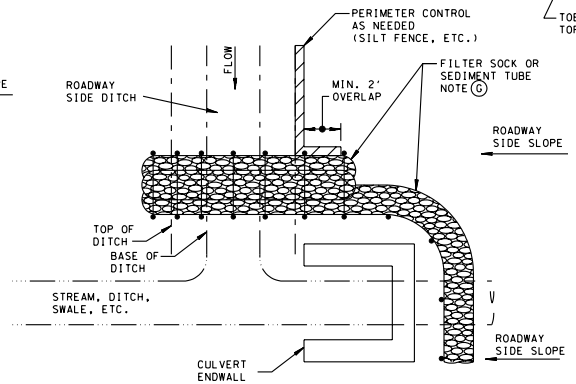


DETAILS WITH ALTERNATE MATERIALS

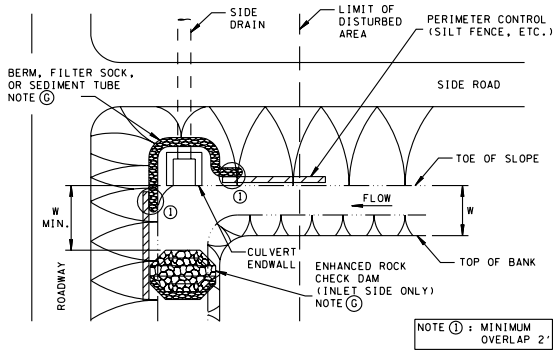
EROSION CONTROL PLAN LEGEND: CULVERT PROTECTION (TYPE 2)



SECTION A - A

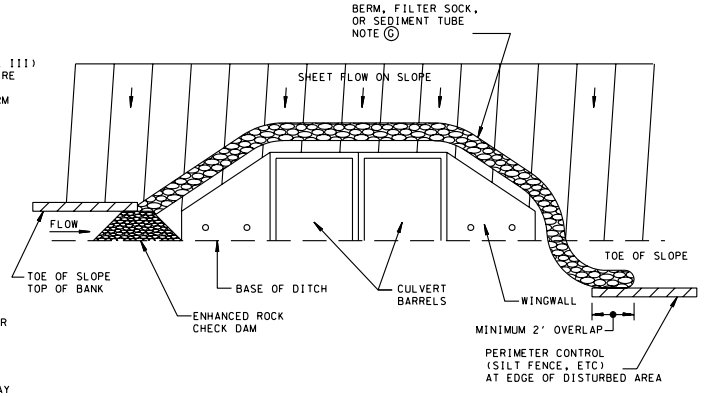


STACKED FILTER SOCK OR SEDIMENT TUBE FOR ROADWAY SIDE DITCHES



SIDE DRAIN APPLICATION

MAY BE APPLIED AT SIDE ROAD OR PRIVATE DRIVES



BOX CULVERT APPLICATION

CULVERT PROTECTION TYPE 2 GENERAL NOTES

(A) CULVERT PROTECTION TYPE 2 MAY BE USED AT SITES WHERE A CULVERT CONVEYS A SIGNIFICANT AMOUNT OF RUN-ON FLOW. IT CONSISTS OF ONE OR MORE EROSION PREVENTION OR SEDIMENT CONTROL MEASURES WHICH SERVE TO REMOVE SEDIMENTS FROM ON-SITE RUNOFF WHILE ALLOWING RUN-ON FLOWS TO PASS THROUGH UNIMPEDED. CULVERT PROTECTION TYPE 2 MAY BE USED AT ANY CULVERT, INLET OR OUTLET, INCLUDING THOSE WHICH CONVEY A PERENNIAL STREAM WHERE CULVERT PROTECTION TYPE 1 WOULD NOT BE ALLOWED IN THE CHANNEL.

(B) WHERE A SIDE DITCH IS LOCATED ADJACENT TO THE ROADWAY, CULVERT PROTECTION TYPE 2 SHALL EITHER BE CONTINUOUS WITH THE CHECK DAM OR ELSE TERMINATE ADJACENT TO IT AS SHOWN.

(C) IN SITUATIONS WHERE NO SIDE DITCH IS REQUIRED, EXTEND THE PROTECTION TO THE EDGE OF THE DISTURBED AREA AND OVERLAP WITH THE PERIMETER CONTROLS A MINIMUM OF 2 FEET.

(D) THE ENDWALLS SHOWN IN THIS DRAWING ARE FOR ILLUSTRATIVE PURPOSES ONLY. CULVERT PROTECTION TYPE 2 MAY BE USED WITH ANY TYPE OF CULVERT ENDWALL OR WITH BOX BRIDGE WINGWALLS.

(E) CULVERT PROTECTION TYPE 2 IS SHOWN ON THIS DRAWING WITH ENDWALL IN PLACE. HOWEVER, IT SHOULD BE APPLIED AS SOON AS GRADING ACTIVITIES ABOVE THE CULVERT ARE COMPLETE, AND THUS MAY BE IN PLACE PRIOR TO ENDWALL CONSTRUCTION.

(F) ANY DISTURBED AREAS IN FRONT OF THE ENDWALL SHALL BE PROVIDED WITH EITHER TEMPORARY SEEDING OR PERMANENT SEEDING WITH EROSION CONTROL BLANKET AS APPROPRIATE.

(G) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR SILT FENCE (EC-STR-3B), SILT FENCE WITH WIRE BACKING (EC-STR-3C), ENHANCED ROCK CHECK DAM (EC-STR-6A), SEDIMENT TRAP WITH CHECK DAM (EC-STR-7), FILTER SOCK (EC-STR-8), AND SEDIMENT TUBE (EC-STR-37) REFER TO THEIR RESPECTIVE STANDARD DRAWING.

(H) CULVERT PROTECTION (TYPE 2) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

303-10.01 MINERAL AGGREGATE (SIZE 57) PER TON
740-10.03 GEOTEXTILE (TYPE III) EROSION CONTROL PER SQUARE YARD

SILT FENCE, SILT FENCE WITH WIRE BACKING, ENHANCED ROCK CHECK DAM, SEDIMENT TRAP WITH CHECK DAM, FILTER SOCK, AND SEDIMENT TUBE SHALL BE PAID FOR UNDER THEIR RESPECTIVE STANDARD DRAWING.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CULVERT PROTECTION (TYPE 2).

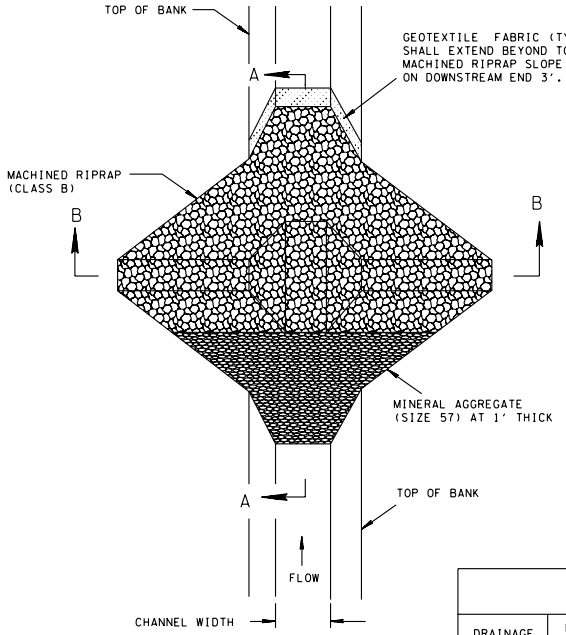
(I) SEDIMENT SHALL BE REMOVED FROM THE CULVERT PROTECTION (TYPE 2) BASED ON THE CRITERIA SHOWN ON THE STANDARD DRAWINGS FOR THE SPECIFIC MEASURES BEING EMPLOYED AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

(J) MAINTENANCE SHALL BE PERFORMED AS NEEDED BASED ON THE MAINTENANCE REQUIREMENTS FOR THE SPECIFIC MEASURES BEING EMPLOYED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CULVERT PROTECTION TYPE 2

4-1-08 EC-STR-11A



PLAN VIEW

ROCK SEDIMENT DAM DIMENSIONS				
DRAINAGE AREA (ACRES)	MINIMUM WEIR LENGTH, Bw (FEET)	MINIMUM CHANNEL WIDTH (FEET)	MAXIMUM WEIR FLOW VELOCITY (FT/SEC)	MINIMUM REQ'D WEIR HEIGHT, Do (FEET)
20	4.0	4.0	4.97	3.0
30	4.0	4.0	5.43	3.5
40	4.0	4.0	5.70	4.0
50	4.2	6.3	5.92	4.5

WEIR HEIGHT AND TOP WIDTH		
HEIGHT OF DAM (D) IN FEET	WEIR HEIGHT (Do) IN FEET	WIDTH AT TOP OF DAM (W) IN FEET
5 - 7	3 - 5	4
7 - 8	5 - 6	5
8 - 10	6 - 8	6

MAXIMUM HEIGHT (Do) OF DAM AT WEIR IS 8 FEET.

ROCK SEDIMENT DAM GENERAL NOTES

(A) ROCK SEDIMENT DAMS ARE FOR TEMPORARY USE. WHERE A PERMANENT FACILITY IS REQUIRED, CONSIDER THE USE OF A SEDIMENT BASIN, WHICH CAN BE CONVERTED INTO A PERMANENT DETENTION BASIN.

(B) THE MAXIMUM DRAINAGE AREA SHALL BE 50 ACRES.

(C) ROCK SEDIMENT DAMS SHALL ONLY BE USED WHEN THE WATER IMPOUNDMENT AREA CAN BE CONTAINED WITHIN THE RIGHT-OF-WAY OR WITH IN A DRAINAGE EASEMENT FOR THE PROJECT.

(D) ROCK SEDIMENT DAM IMPOUNDMENTS SHOULD BE DEWATERED WITH A DEWATERING STRUCTURE (EC-STR-1) OR SEDIMENT FILTER BAG (EC-STR-2) AS NEEDED. REFER TO THEIR RESPECTIVE STANDARD DRAWING FOR INSTALLATION DETAILS AND ITEM NUMBERS.

(E) THE CENTER OF THE ROCK SEDIMENT DAM MUST BE AT LEAST TWO (2) FEET LOWER THAN THE OUTER EDGES. THIS WILL ELIMINATE THE ROCK - SOIL FAILURE POINT WHERE THE SEDIMENT DAM AND NATURAL GROUND MERGE.

(F) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(G) ONLY GEOTEXTILE FABRIC (TYPE IV) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

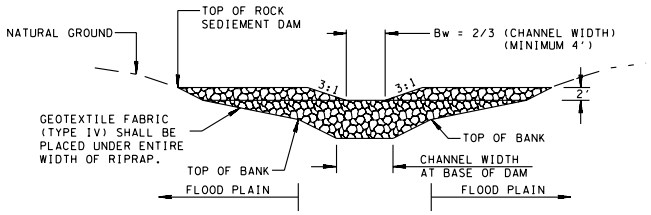
(H) ROCK SEDMENT DAMS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
303-10.01	MINERAL AGGREGATE (SIZE 57) PER TON
709-05.08	MACHINED RIPRAP (CLASS B) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD
740-10.04	GEOTEXTILE (TYPE IV) (STABILIZATION) PER SQUARE YARD

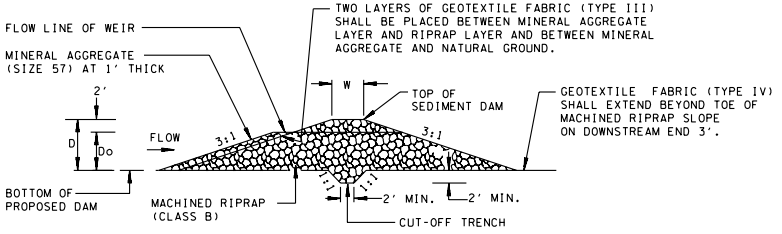
DEWATERING STRUCTURES AND SEDIMENT FILTER BAGS SHALL BE PAID FOR UNDER THEIR RESPECTIVE STANDARD DRAWING.

PAYMENT SHALL INCLUDE ALL MATERIALS, EXCAVATION, AND LABOR NECESSARY FOR THE CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE ROCK SEDIMENT DAMS.

(I) SEDIMENT SHALL BE REMOVED FROM BEHIND THE ROCK SEDIMENT DAMS WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.



SECTION B-B



SECTION A-A

EROSION CONTROL PLAN LEGEND: ROCK SEDIMENT DAM

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-12 TO EC-STR-12.

- REV. 5-27-01: CHANGED ITEM NOS. 303-15.01 TO 303-10.01 AND 740-04.01 TO 740-10.04. CHANGED DESCRIPTION FOR ITEM NOS. 709-05.06 AND 709-05.07.
- REV. 12-18-02: CHANGED GENERAL NOTE (C).
- REV. 1-22-03: CORRECTED GENERAL NOTE (B). ADDED ADDITIONAL GEOTEXTILE FABRIC TO PROFILE VIEW.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: MISC. EDITS TO DRAWING, ADDED AND RE-ORDERED GENERAL NOTES, CHANGED DRAWING NAME.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

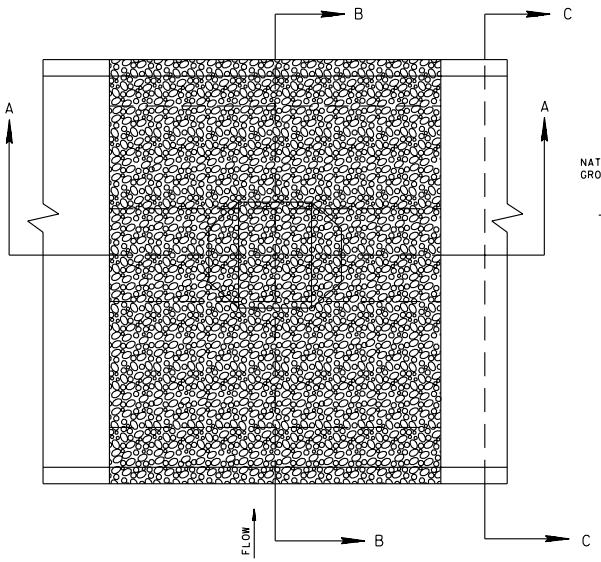
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ROCK SEDIMENT DAM

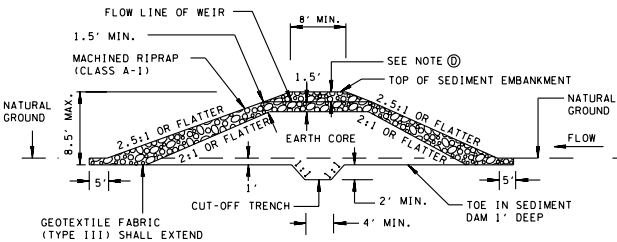
10-26-92 EC-STR-12

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-13 TO EC-STR-13.

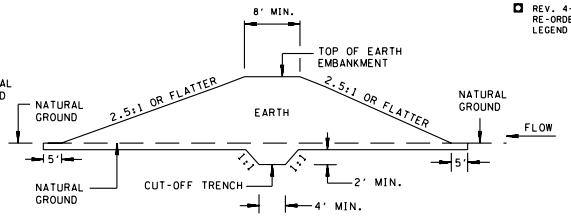
- REV. 5-27-01: CHANGED ITEM NO. 740-03.01 TO 740-10.03.
- REV. 12-18-02: CHANGED GENERAL NOTE Ⓒ.
- REV. 1-22-03: CORRECTED GENERAL NOTE Ⓕ.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING, CHANGED DRAWING NAME.
- REV. 4-1-08: MISC. EDITS TO DRAWING, RE-ORDERED GENERAL NOTES, CHANGED LEGEND AND DRAWING NAME.



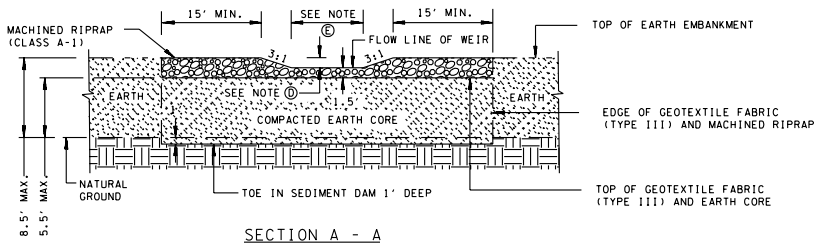
PLAN VIEW OF ROCK FACED SPILLWAY WITH
EARTH CORE AND ADJOINING EARTH EMBANKMENT



SECTION B-B
ROCK FACED SPILLWAY



SECTION C-C
EARTH EMBANKMENT



SECTION A - A

SEDIMENT EMBANKMENT GENERAL NOTES

Ⓐ ROCK AND EARTH SEDIMENT EMBANKMENTS ARE FOR TEMPORARY USE. WHERE A PERMANENT FACILITY IS REQUIRED, CONSIDER THE USE OF A SEDIMENT BASIN, WHICH CAN BE CONVERTED INTO A PERMANENT DETENTION BASIN. THIS SHALL NOT BE PLACED IN STREAMS, WETLANDS, OR OTHER NATURAL WATER RESOURCES.

Ⓑ AT MOST SITES, TEMPORARY ROCK AND EARTH SEDIMENT EMBANKMENTS SHALL BE DESIGNED TO CREATE AN IMPOUNDMENT VOLUME EQUAL TO THE RUNOFF VOLUME FROM THE 2-YEAR, 24-HOUR RAINFALL EVENT. AT SITES WHICH DRAIN TO HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE IMPOUNDMENT VOLUME SHALL BE EQUAL TO THE RUNOFF FROM THE 5-YEAR, 24-HOUR EVENT. IN NO CASE SHALL THE IMPOUNDMENT VOLUME EXCEED FIFTEEN (15) ACRE-FEET.

Ⓒ ROCK AND EARTH SEDIMENT EMBANKMENTS SHALL ONLY BE USED WHEN THE WATER IMPOUNDMENT AREA CAN BE CONTAINED WITHIN THE RIGHT-OF-WAY OR WITHIN A DRAINAGE EASEMENT FOR THE PROJECT.

Ⓓ THE TOP OF THE SEDIMENT EMBANKMENT SHOULD BE A MINIMUM OF ONE (1) FOOT ABOVE THE 25 YEAR DESIGN FLOW DEPTH OVER THE WEIR. THE MINIMUM HEIGHT OF THE OVERFLOW WIER IS 1.5 FEET.

Ⓔ THE WEIR MUST BE DESIGNED TO PASS THE PEAK 25-YEAR FLOW RATE WITHOUT OVERTOPPING THE EMBANKMENT.

Ⓕ THE HEIGHT OF THE OVERFLOW WEIR SHOULD BE SET SUCH THAT ALL FLOWS IN EXCESS OF THE DESIGN IMPOUNDMENT VOLUME SHALL PASS OVER THE WEIR.

Ⓖ FOR EARTH-FILL EMBANKMENTS, A CUT-OFF TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE EMBANKMENT. THE TRENCH MUST EXTEND AT LEAST ONE (1) FOOT INTO A STABLE, IMPERVIOUS LAYER OF SOIL AND HAVE A MINIMUM DEPTH OF 2 FEET. THE MINIMUM BOTTOM WIDTH SHALL BE 4 FEET, BUT ALSO MUST BE WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1H:1V.

Ⓗ THE EARTH EMBANKMENT SHALL BE COMPACTED AS REQUIRED FOR ANY STRUCTURE WHICH IS INTENDED TO IMPOUND WATER.

Ⓘ THE EXPOSED SLOPES OF THE EARTH EMBANKMENT SHOULD BE STABILIZED WITH TEMPORARY SEEDING WITH MULCH OR OTHER STABILIZATION METHODS.

Ⓙ ROCK AND EARTH SEDIMENT EMBANKMENT IMPOUNDMENTS SHOULD BE DEWATERED WITH A DEWATERING STRUCTURE (EC-STR-1) OR SEDIMENT FILTER BAG (EC-STR-2) AS NEEDED.

Ⓚ ROCK AND EARTH SEDIMENT EMBANKMENTS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
709-05.06	MACHINED RIPRAP (CLASS A-1) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD
801-01.07	TEMPORARY SEEDING (WITH MULCH) PER UNIT

DEWATERING STRUCTURES AND SEDIMENT FILTER BAGS SHALL BE PAID FOR UNDER ITS RESPECTIVE ITEM NUMBER.

PAYMENT SHALL INCLUDE ALL MATERIALS, EXCAVATION, AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE ROCK AND EARTH SEDIMENT EMBANKMENTS.

Ⓛ SEDIMENT SHALL BE REMOVED FROM BEHIND THE ROCK AND EARTH SEDIMENT EMBANKMENT WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209.05, SEDIMENT REMOVAL PER CUBIC YARD.

EROSION CONTROL PLAN LEGEND: (RE) (SE) ROCK AND EARTH SEDIMENT EMBANKMENT

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ROCK AND EARTH SEDIMENT EMBANKMENT

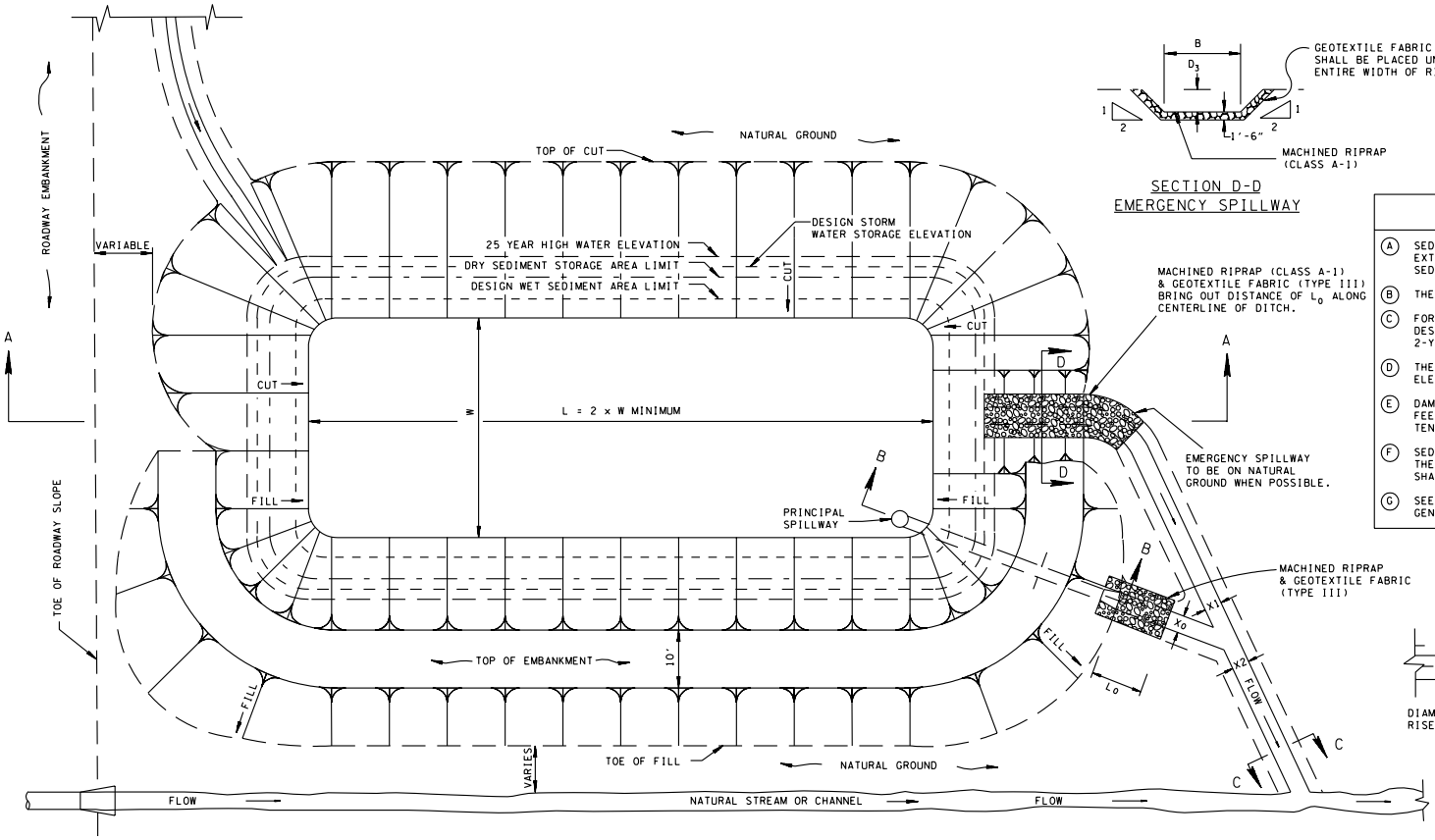
7-29-94 EC-STR-13

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-15 TO EC-STR-15.

REV. 5-27-01: CHANGED REFERENCE TO RIP-RAP AND GEOTEXTILE FABRIC.

REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING. CHANGED DRAWING NAME.

REV. 4-1-08: REVISED GENERAL NOTES, MISC. DRAFTING EDITS.



PLAN VIEW

SECTION D-D
EMERGENCY SPILLWAY

SEDIMENT BASIN GENERAL NOTES

(A) SEDIMENT BASINS DETAIN STORMWATER RUNOFF FROM A DISTURBED AREA FOR AN EXTENDED TIME, ALLOWING SEDIMENT TO SETTLE WHICH REDUCES THE QUANTITY OF SEDIMENT IN THE STORMWATER RELEASED FROM THE BASIN.

(B) THE DRAINAGE AREA FOR A SEDIMENT BASIN SHALL NOT EXCEED 50 ACRES.

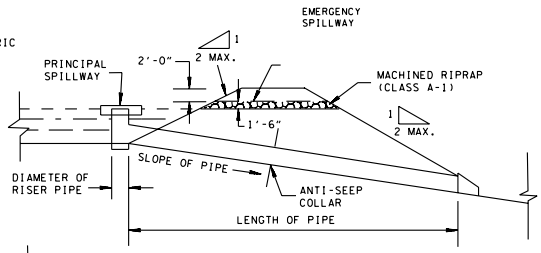
(C) FOR SITES WHICH DRAIN TO A HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAM, THE DESIGN STORM SHALL BE THE 5-YEAR EVENT. THE DESIGN MAY BE BASED ON THE 2-YEAR EVENT AT OTHER SITES.

(D) THE MINIMUM SEDIMENT STORAGE VOLUME BELOW THE DRY SEDIMENT STORAGE ELEVATION SHALL BE 134 CUBIC YARDS PER ACRE OF CONTRIBUTING DRAINAGE AREA.

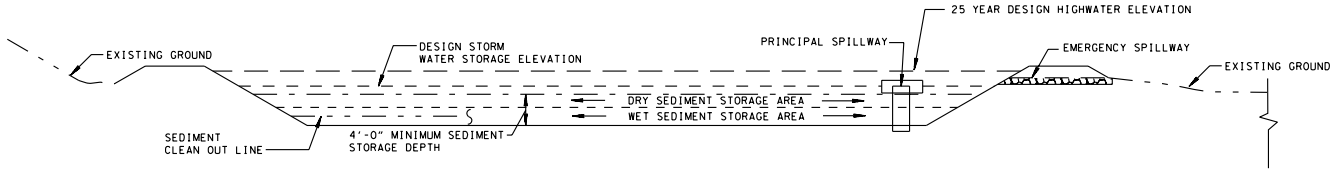
(E) DAMS THAT CAN STORE AT LEAST 30 ACRE-FEET OF RUNOFF OR ARE TWENTY (20) FEET OR MORE IN HEIGHT MUST MEET THE REQUIREMENTS ESTABLISHED BY THE TENNESSEE SAFE DAM ACT.

(F) SEDIMENT BASINS MAY REMAIN IN PLACE AS PERMANENT BASINS, AS INDICTED IN THE PLANS OR AS DIRECTED BY THE ENGINEER. THE DESIGN FOR PERMANENT BASINS SHALL BE APPROVED BY THE HYDRAULIC SECTION OF THE STRUCTURES DIVISION.

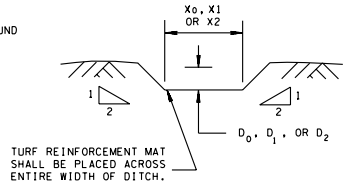
(G) SEE STANDARD DRAWINGS EC-STR-16 AND EC-STR-17 FOR ADDITIONAL DETAILS AND GENERAL NOTES NOT SHOWN ON THIS DRAWING.



SECTION B-B



SECTION A-A



SECTION C-C

EROSION CONTROL PLAN LEGEND: SEDIMENT BASIN

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SEDIMENT BASIN

10-26-92 EC-STR-15

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-16 TO EC-STR-16.

REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.

REV. 4-1-08: REVISED GENERAL NOTES AND CHANGED DRAWING NAME.

CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE DESIGN TABLE

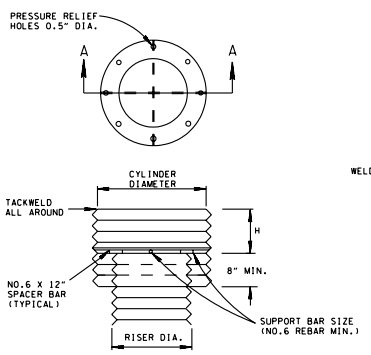
RISER DIA. (IN)	CYLINDER		HEIGHT (INCHES)	MINIMUM SUPPORT BAR	MINIMUM TOP	
	DIAMETER (INCHES)	THICKNESS (GAUGE)			THICKNESS	STIFFENER
12	18	16	6	NO. 6 REBAR OR 1.5 X 1.5 X 0.19 ANGLE	16 GA. (F&C)	-
15	21	16	7	NO. 6 REBAR OR 1.5 X 1.5 X 0.19 ANGLE	16 GA. (F&C)	-
18	27	16	8	NO. 6 REBAR OR 1.5 X 1.5 X 0.19 ANGLE	16 GA. (F&C)	-
21	30	16	11	NO. 6 REBAR OR 1.5 X 1.5 X 0.19 ANGLE	16 GA. (C) 14 GA. (F)	-
24	36	16	13	NO. 6 REBAR OR 1.5 X 1.5 X 0.19 ANGLE	16 GA. (C) 14 GA. (F)	-
27	42	16	15	NO. 6 REBAR OR 1.5 X 1.5 X 0.19 ANGLE	16 GA. (C) 14 GA. (F)	-
36	54	16	17	NO.8 REBAR	14 GA. (C) 12 GA. (F)	-
42	60	16	19	NO.8 REBAR	14 GA. (C) 12 GA. (F)	-
48	72	16	21	1.25" PIPE OR 1.25 X 1.25 X 0.25 ANGLE	14 GA.(C) 10 GA.(F)	-
54	78	16	25	1.25" PIPE OR 1.25 X 1.25 X 0.25 ANGLE	14 GA.(C) 10 GA.(F)	-
60	90	14	29	1.5" PIPE OR 1.5 X 1.5 X 0.25 ANGLE	12 GA. (C) 8 GA. (F)	-
66	96	14	33	2" PIPE OR 2 X 2 X 0.19 ANGLE	12 GA.(C) 8 GA.(F) W/STIFFENER	2 X 2 X 0.25 ANGLE
72	102	14	36	2" PIPE OR 2 X 2 X 0.19 ANGLE	12 GA.(C) 8 GA.(F) W/STIFFENER	2.5 X 2.5 X 0.25 ANGLE
78	114	14	39	2.5" PIPE OR 2 X 2 X 0.25 ANGLE	12 GA.(C) 8 GA.(F) W/STIFFENER	2.5 X 2.5 X 0.25 ANGLE
84	120	12	42	2.5" PIPE OR 2.5 2.5 X 0.25 ANGLE	12 GA.(C) 8 GA.(F) W/STIFFENER	2.5 X 2.5 X 0.31 ANGLE

NOTE: THE CRITERION FOR SIZING THE CYLINDER IS THAT THE AREA BETWEEN THE INSIDE OF THE CYLINDER AND THE OUTSIDE OF THE RISER IS EQUAL TO OR GREATER THAN THE AREA INSIDE THE RISER. THEREFORE, THE ABOVE TABLE IS INVALID FOR USE WITH CONCRETE PIPE RISERS.

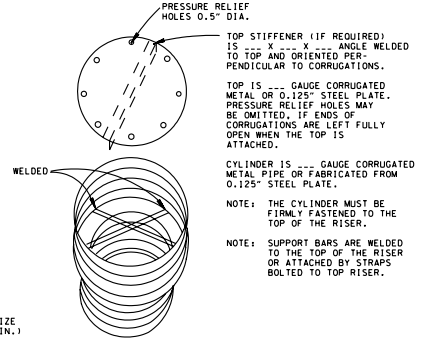
NOTE: CORRUGATION FOR 12" THRU 36" PIPE MEASURE 2.67" X 0.5"; FOR 42" THRU 84" THE CORRUGATION MEASURES 5" X 1" OR 8" X 1".

NOTE: C = CORRUGATED; F = FLAT.

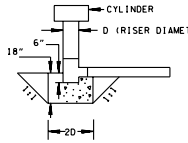
ANTI-VORTEX DEVICE DETAIL



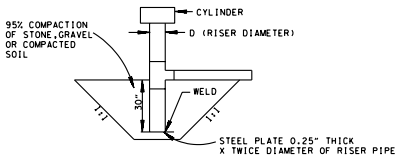
SECTION A - A



ISOMETRIC VIEW



TYPICAL FOR CONCRETE BASE



TYPICAL FOR STEEL BASE

TYPICAL ANTI-FLOTATION BLOCK DETAILS FOR RISERS TEN FEET OR LESS IN HEIGHT

NOTE: THE BASE OF THE PRINCIPAL SPILLWAY MUST BE FIRMLY ANCHORED TO PREVENT ITS FLOATING. IF THE RISER OF THE SPILLWAY IS GREATER THAN 10 FEET IN HEIGHT, COMPUTATIONS MUST BE MADE TO DETERMINE THE ANCHORING REQUIREMENTS. A MINIMUM FACTOR OF 1.25 SHALL BE USED (DOWNWARD FORCES = 1.25 X UPWARD FORCES).

ANTI - SEEP COLLAR DIAPHRAGM DIMENSION TABLE

DIA (IN)	GAUGE	MINIMUM DIAPHRAGM SIZE (IN)	FABRICATION DIM. FOR ½ DIAPHRAGM(INCH)	
			W (WIDTH)	H (HEIGHT)
8	16	58 X 58	58.5	30.5
10	16	58 X 58	58.5	30.5
12	16	60 X 60	64	32.5
15	16	63 X 63	68	34
18	16	66 X 66	69.25	35.5
21	16	69 X 69	72	37
24	14	72 X 72	72	38.5
30	14	78 X 78	82.5	41.5
36	14	84 X 84	88	44.5
42	14	90 X 90	93.25	47.5
48	14	96 X 96	96	50.5
54	14	102 X 102	101.25	53.5

ANTI-SEEP COLLAR DETAIL ASSEMBLY NOTES

(A1) UNASSEMBLED DIAPHRAGMS SHALL BE MARKED BY PAINTING OR TAGGING WHEN NECESSARY TO IDENTIFY MATCHING PAIRS TO SECURE A PROPER INSTALLATION.

(A2) THE LAP BETWEEN THE TWO HALF SECTIONS AND BETWEEN THE PIPE AND COUPLING BAND SHALL BE CAULKED WITH BITUMINOUS MASTIC AT TIME OF INSTALLATION. NEOPRENE GASKET 0.375" x 7" MINIMUM WIDTH MAY BE USED IN LIEU OF MASTIC.

(A3) ALL WELDS AND ALL HEAT AFFECTED AREAS ON ZINC COATED METAL SHALL BE THOROUGHLY CLEANED AND TREATED IN ACCORDANCE WITH SPECIFICATIONS (STEEL ONLY).

(A4) EACH DIAPHRAGM SHALL BE FURNISHED WITH TWO RODS AND NUTS AND TWO STANDARD TANK LUGS OR "L" LUGS FOR SECURING DIAPHRAGMS TO PIPE.

(A5) RODS FOR COLLAR COUPLING BANDS AND DIAPHRAGMS FOR 6" THRU 15" DIAMETER PIPE SHALL BE 0.375" DIAMETER AND FOR PIPE LARGER THAN 15" DIAMETER THE RODS SHALL BE 0.5" DIAMETER.

SEDIMENT BASIN GENERAL NOTES

(C1) THE LENGTH, L, AND WIDTH, W, OF THE BASIN MAY VARY TO CONFORM TO THE SPECIFIC SITE CONDITIONS, PROVIDED THE REQUIRED VOLUME IS MAINTAINED.

(C2) THE MINIMUM LENGTH TO WIDTH RATIO OF THE BASIN SHALL BE 2:1.

(C3) THE SEDIMENT STORAGE DEPTH SHALL BE A MINIMUM OF 4' - 0".

(C4) THE EMERGENCY SPILLWAY SHOULD BE LOCATED IN A CUT AREA WHENEVER POSSIBLE.

(C5) THE DIAMETER OF THE RISER SHALL BE DETERMINED BY THE RISER INFLOW CURVES SHOWN IN THE DESIGN DIVISION DRAINAGE MANUAL.

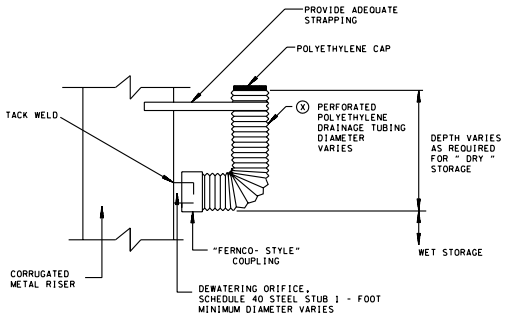
(C6) THE PRINCIPAL SPILLWAY CAPACITY SHALL BE BASED ON THE DESIGN STORM FREQUENCY WHEN AN EMERGENCY SPILLWAY IS USED, OR THE TWENTY-FIVE (25) YEAR STORM WHEN AN EMERGENCY SPILLWAY IS NOT USED. IF AN EMERGENCY SPILLWAY IS USED, IT SHALL BE DESIGNED FOR A 25-YEAR FLOOD. THE RIPRAP PLACED AT THE OUTFALL OF THE PRINCIPAL SPILLWAY OUTLET PIPE SHALL BE DESIGNED TO REMAIN STABLE UNDER THE FLOW CONDITIONS IMPOSED BY THE DESIGN PEAK FLOW RATE.

(C7) SEDIMENT BASIN VOLUME IS MEASURED FROM THE CREST OF THE PRINCIPAL SPILLWAY TO THE BOTTOM OF THE BASIN.

(C8) SEDIMENT SHALL BE REMOVED AND THE SEDIMENT BASIN RESTORED TO THE ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ½ OF THE WET STORAGE VOLUME. A SUITABLE MARKER SHALL BE INSTALLED IN THE BASIN TO INDICATE WHEN THE BASIN REQUIRES MAINTENANCE.

(C9) THE PIPE USED IN THE CONSTRUCTION OF THE PRINCIPAL SPILLWAY BARREL WILL BE PAID FOR IN ACCORDANCE WITH STANDARD SPECIFICATIONS, SECTION 607, PIPE CULVERT AND STORM SEWERS.

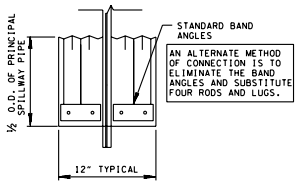
(C10) SEE STANDARD DRAWINGS EC-STR-15 AND EC-STR-17 FOR ADDITIONAL DETAILS AND GENERAL NOTES NOT SHOWN ON THIS DRAWING.



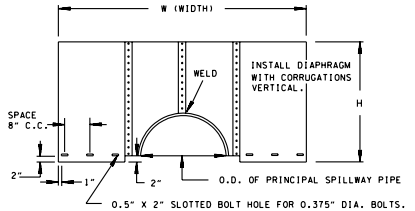
NOTE: WITH CONCRETE RISER, USE PVC SCHEDULE 40 STUB FOR DEWATERING ORIFICE

(X) DRAINAGE TUBING SHALL COMPLY WITH ASTM F667 AND AASHTO M294

DEWATERING SYSTEM DETAIL FOR SEDIMENT BASIN



SIDE VIEW OF ANTI-SEEP COLLAR



PLAN VIEW OF ANTI- SEEP COLLAR

NOTE: UPPER ONE HALF DIAPHRAGM SHOWN, OTHER HALF SAME EXCEPT SLOTS ARE VERTICAL

ANTI-SEEP COLLAR DETAIL

ANTI-SEEP COLLAR GENERAL NOTES

(B1) THE ANTI-SEEP COLLAR IS TO BE USED ON THE BARREL OF THE PRINCIPAL SPILLWAY TO REDUCE SEEPAGE LOSS AND PIPING FAILURE.

(B2) USE IF PIPE BARREL IS LARGER THAN 10 INCHES IN DIAMETER.

(B3) USE A MINIMUM OF ONE ANTI-SEEP COLLAR, IF THE EMBANKMENT IS 15 FEET OR LESS IN HEIGHT AND A MINIMUM OF TWO ANTI-SEEP COLLARS, IF THE EMBANKMENT IS GREATER THAN 15 FEET IN HEIGHT.

(B4) USE MAXIMUM SPACING BETWEEN COLLARS OF FOURTEEN TIMES THE PROJECTION OF THE COLLAR ABOVE THE PIPE, FROM THE DETAILS - THE COLLAR SPACING WOULD BE ONE - HALF THE DIAMETER OF THE PRINCIPAL SPILLWAY PIPE TIMES FOURTEEN.

(B5) COLLARS SHOULD NOT BE CLOSER THAN 2 FEET TO A PIPE JOINT.

(B6) PRECAUTIONS SHOULD BE TAKEN TO ENSURE 95 % COMPACTION IS ACHIEVED AROUND THE COLLARS.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

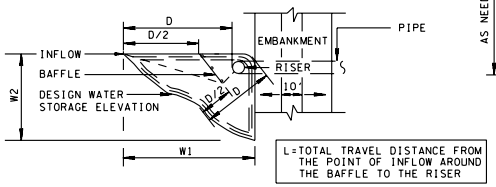
SEDIMENT BASIN RISER AND COLLAR APPURTENANCES

10-26-92 | EC-STR-16

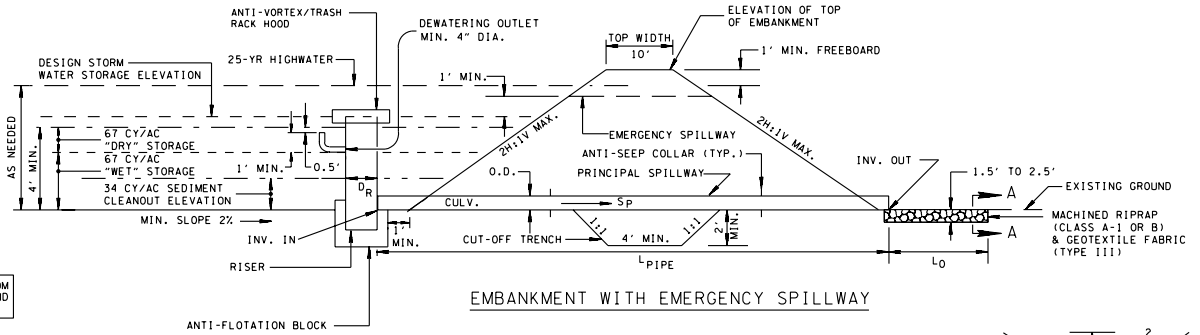
REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-17 TO EC-STR-17.

- REV. 5-27-01: CHANGED ITEM NO. 740-03.01 TO 740-10.03.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING. CHANGED DRAWING NAME.
- REV. 4-15-06: REVISED NOTES.
- REV. 4-1-08: REVISED GENERAL NOTES, MINOR EDITS TO DRAWING, CHANGED DRAWING NAME, AND CHANGED LEGEND.

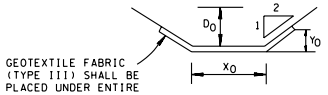
EXAMPLE PLAN VIEWS OF BAFFLE LOCATIONS IN SEDIMENT BASINS



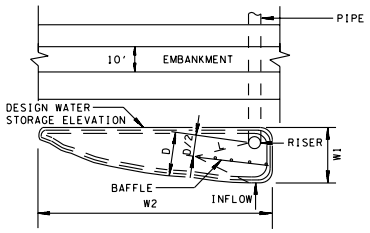
SHAPE NO.1



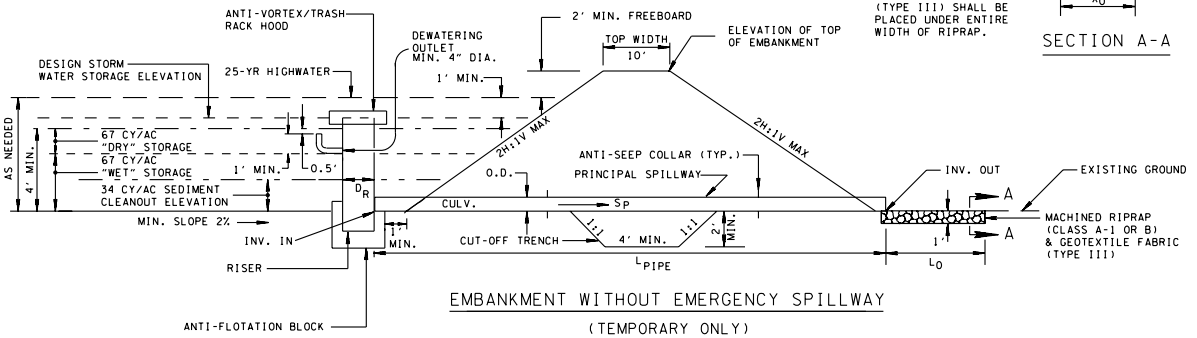
EMBANKMENT WITH EMERGENCY SPILLWAY



SECTION A-A



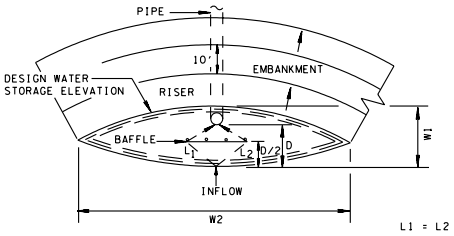
SHAPE NO.2



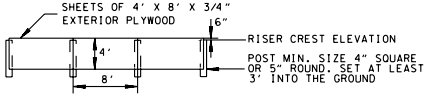
EMBANKMENT WITHOUT EMERGENCY SPILLWAY

(TEMPORARY ONLY)

(TO BE USED FOR SMALL SEDIMENT VOLUMES ONLY)



SHAPE NO.3



BAFFLE DETAIL

SEDIMENT BASIN GENERAL NOTES

(A) BAFFLES SHALL BE 4 FEET X 8 FEET X ¾ INCH EXTERIOR PLYWOOD, TYPE "PLYFORM" GRADE BB, D, AND ES.

(B) FOR EARTH-FILL EMBANKMENTS, A CUT-OFF TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE DAM. THE TRENCH MUST EXTEND AT LEAST ONE (1) FOOT INTO A STABLE, IMPERVIOUS LAYER OF SOIL AND HAVE A MINIMUM DEPTH OF TWO (2) FEET. THE MINIMUM BOTTOM WIDTH SHALL BE 4 FEET, BUT ALSO MUST BE WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1.

(C) THE EXPOSED SLOPES OF THE SEDIMENT BASIN SHOULD BE STABILIZED WITH TEMPORARY SEEDING WITH MULCH OR OTHER STABILIZATION METHODS.

(D) SEDIMENT BASINS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
209-05	SEDIMENT REMOVAL PER CUBIC YARD
209-11.01 THRU	SEDIMENT BASIN RISER (_ _") PER EACH
209-11.09	
209-11.20	SEDIMENT BASIN BAFFLES PER LINEAR FOOT
607-37.02 THRU	_ _" CORRUGATED METAL PIPE CULVERT PER LINEAR FOOT
607-37.13	
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON
709-05.08	MACHINED RIP-RAP (CLASS B) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD
801-01.07	TEMPORARY SEEDING (WITH MULCH) PER UNIT

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR THE CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE SEDIMENT BASIN.

(E) SEE STANDARD DRAWINGS EC-STR-15 AND EC-STR-16 FOR ADDITIONAL DETAILS AND GENERAL NOTES NOT SHOWN ON THIS DRAWING.

EROSION CONTROL PLAN LEGEND: SEDIMENT BASIN

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

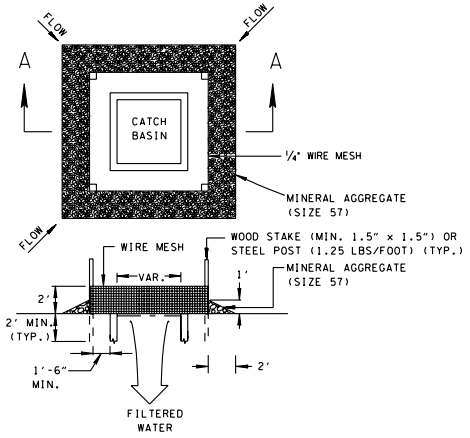
SEDIMENT BASIN EMBANKMENT DETAILS

10-26-92 EC-STR-17

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-19 TO EC-STR-19.

- REV. 5-27-01: CHANGED ITEM NO. 303-15.01 TO 303-10.01.
- REV. 12-18-02: IN CATCH BASIN SILT FENCE SILT TRAP CHANGED TYPE OF SILT FENCE FROM SILT FENCE (WITHOUT BACKING) TO SILT FENCE (WITH BACKING) AND PAY ITEM FROM 209-08 TO 209-08.02.
- REV. 3-15-04: CHANGED LEGENDS FOR TEMPORARY ROCK AND SILT FENCE CATCH BASIN PROTECTION.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REPLACED HAY BALE SILT TRAP, REVISED GENERAL NOTES, AND MISC. EDITS TO DRAWING.

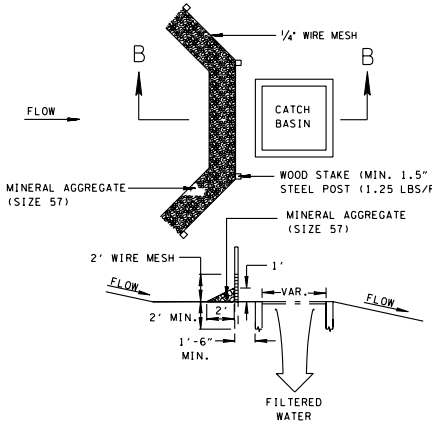
CATCH BASIN PROTECTION (TYPE B)



SECTION A-A

EROSION CONTROL PLAN LEGEND: (B) CATCH BASIN PROTECTION (TYPE B)

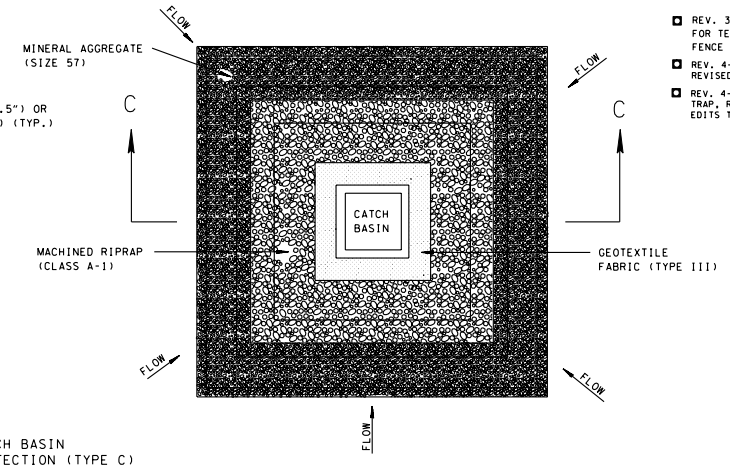
CATCH BASIN PROTECTION (TYPE C)



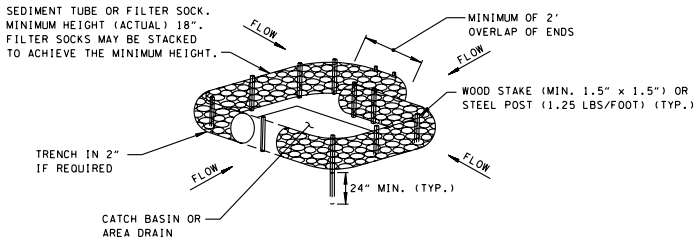
SECTION B-B

EROSION CONTROL PLAN LEGEND: (C) CATCH BASIN PROTECTION (TYPE C)

CATCH BASIN PROTECTION (TYPE A)

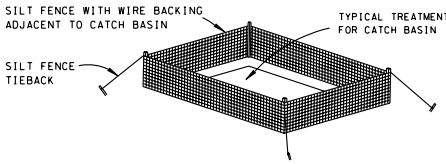


CATCH BASIN PROTECTION (TYPE D)

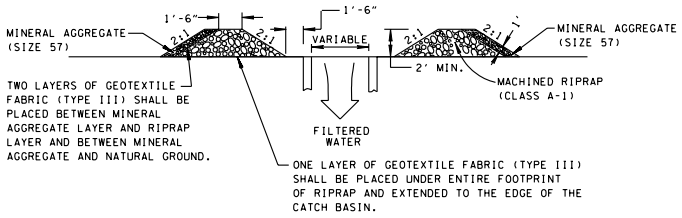


EROSION CONTROL PLAN LEGEND: (D) CATCH BASIN PROTECTION (TYPE D)

CATCH BASIN PROTECTION (TYPE E)



EROSION CONTROL PLAN LEGEND: (E) CATCH BASIN PROTECTION (TYPE E)



SECTION C-C

EROSION CONTROL PLAN LEGEND: (A) CATCH BASIN PROTECTION (TYPE A)

CATCH BASIN PROTECTION GENERAL NOTES

(A) CATCH BASIN PROTECTION IS USED TO PREVENT SEDIMENT IN CONSTRUCTION SITE RUNOFF FROM ENTERING A STORM SEWER SYSTEM.

(B) TYPE B, TYPE C, TYPE D (SEDIMENT TUBE), AND TYPE E SHOULD ONLY BE USED IN UNPAVED AREAS. TYPE A AND TYPE D (FILTER SOCK) MAY BE USED IN BOTH UNPAVED AND PAVED AREAS.

(C) TYPE B, TYPE C, TYPE D, AND TYPE E HAVE A MAXIMUM DRAINAGE AREA OF 1 ACRE. TYPE A HAS A MAXIMUM DRAINAGE AREA OF 2 ACRES.

(D) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(E) THE WIRE MESH USED IN TYPE B AND TYPE C SHALL BE A MINIMUM 19 GAGE HARDWARE CLOTH WITH ¼ INCH MESH OPENINGS.

(F) FOR INSTALLATION DETAILS FOR SILT FENCE WITH WIRE BACKING (EC-STR-3C), FILTER SOCK (EC-STR-8), AND SEDIMENT TUBE (EC-STR-37) REFER TO THEIR RESPECTIVE STANDARD DRAWING. FILTER SOCKS MAY NOT REQUIRE STAKING WHEN APPROVED BY THE ENGINEER.

(G) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.

(H) CATCH BASIN PROTECTION SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-40.30	CATCH BASIN PROTECTION (TYPE A) PER EACH
209-40.31	CATCH BASIN PROTECTION (TYPE B) PER EACH
209-40.32	CATCH BASIN PROTECTION (TYPE C) PER EACH
209-40.33	CATCH BASIN PROTECTION (TYPE D) PER EACH
209-40.34	CATCH BASIN PROTECTION (TYPE E) PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CATCH BASIN PROTECTION.

(I) SEDIMENT SHALL BE REMOVED FROM BEHIND THE CATCH BASIN PROTECTION WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

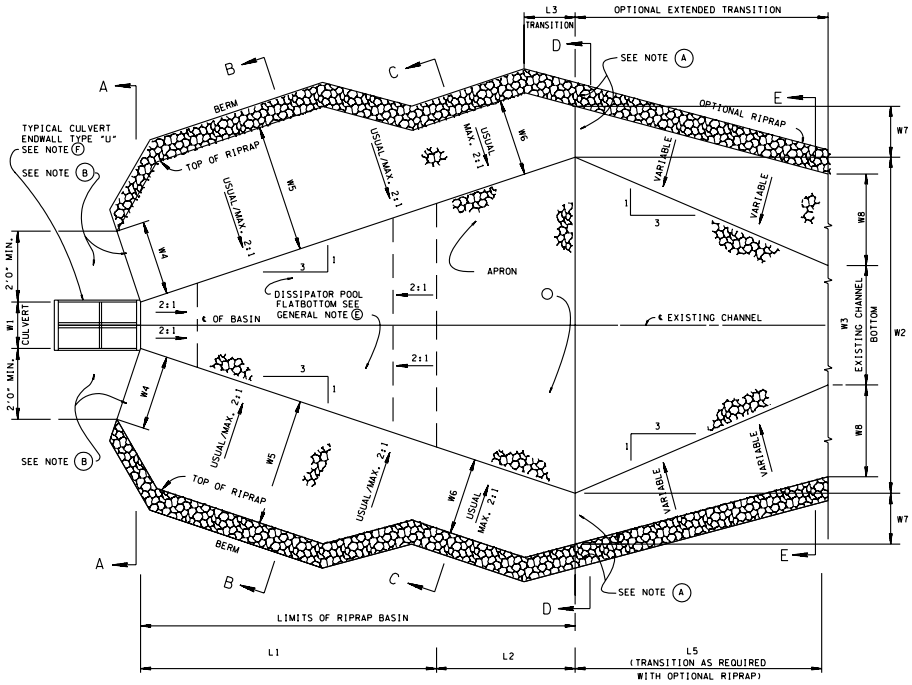
CATCH BASIN PROTECTION

10-26-92 | EC-STR-19

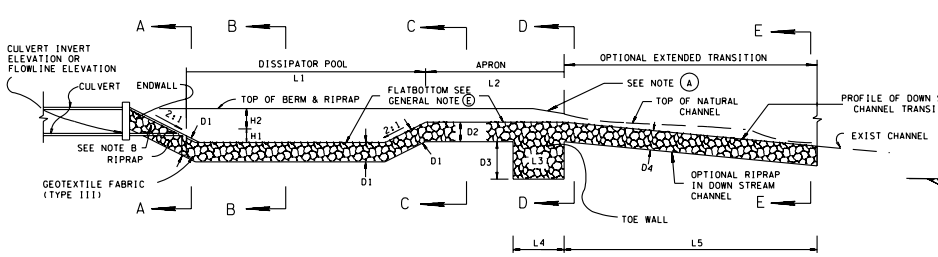
REV. 4-1-08: MISC. EDITS TO DRAWING, TABLE, AND NOTES.

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-21 TO EC-STR-21.

REV. 5-27-01: CHANGED DESCRIPTION OF ITEM NOS. 709-05.06 AND 709-05.07. CHANGED DRAWING NAME.



PLAN VIEW



ELEVATION VIEW

RIPRAP BASIN LOCATIONS, DIMENSIONS, AND QUANTITIES

LOCATION			CULVERT OUTLET		BASIN DIMENSIONS (FT.)													RIPRAP DEPTHS (FT.)				GEOTEXTILE FABRIC (S.Y.)	RIPRAP CLASS (TON)		
STATION	DIST. (FT.)	DIR.	SIZE	LENGTH (FT.)	W1	W2	W3	W4	W5	W6	W7	W8	H1	H2	L1	L2	L3	L4	L5	D1	D2	D3	D4		A1	B	C
TOTAL																											

GENERAL NOTES

(A) WARP BASIN TO CONFORM TO THE NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN DISSIPATOR POOL OR APRON SHALL BE AT THE SAME OR LOWER ELEVATION THAN THE NATURAL CHANNEL BOTTOM SECTION D-D. MODIFY FLATBOTTOM WIDTH IF THE OPTIONAL EXTENDED TRANSITION IS REQUIRED.

(B) MODIFY THE BASIN DIMENSIONS AS REQUIRED TO MATCH THE CONFIGURATION OF CULVERT END TREATMENTS.

(C) REFER TO TDOT DESIGN DIVISION DRAINAGE MANUAL (CHAPTER 9) FOR HYDRAULIC DESIGN PROCEDURES OF ENERGY DISSIPATORS FOR CULVERT AND CHANNELS.

(D) MODIFY DIMENSION W1 AS REQUIRED TO MATCH CULVERT WITH ENDWALL TYPE "A" (WITH OR WITHOUT CONCRETE PAVED APRONS OR OUTLETS).

(E) DESIRABLE SLOPE IS 0.0% IN DISSIPATOR POOL FLATBOTTOM AND IN APRON FLATBOTTOM.

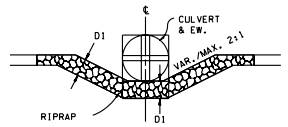
(F) THE ENDWALL SHOWN IN THIS DRAWING IS FOR ILLUSTRATIVE PORPOSES ONLY. PERMANENT RIPRAP BASIN ENERGY DISSIPATER MAY BE USED WITH ANY TYPE OF CULVERT ENDWALL.

(G) GEOTEXTILE FABRIC (TYPE III) SHALL MEET REQUIREMENTS OF THE STANDARD SPECIFICATION FOR GEOTEXTILES AASHTO DESIGNATION M-288, EROSION CONTROL.

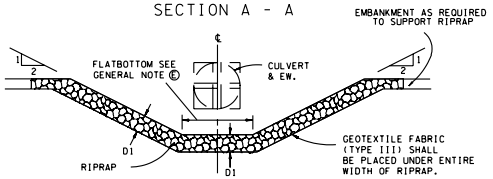
(H) PERMANENT RIPRAP BASIN ENERGY DISSIPATERS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON
709-05.08	MACHINED RIP-RAP (CLASS B) PER TON
709-05.09	MACHINED RIP-RAP (CLASS C) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

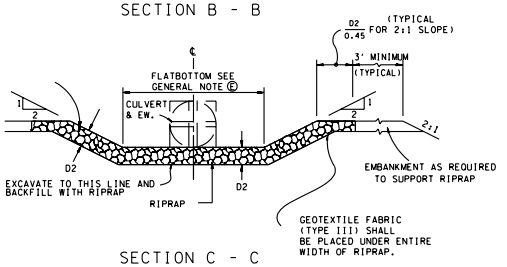
PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION AND MAINTENANCE OF PERMANENT RIPRAP BASIN ENERGY DISSIPATORS.



SECTION A - A

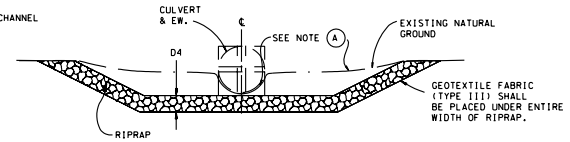


SECTION B - B



SECTION C - C

SECTION E - E



SECTION D - D

EROSION CONTROL LEGEND: RP ED PERMANENT RIPRAP ENERGY DISSIPATOR

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

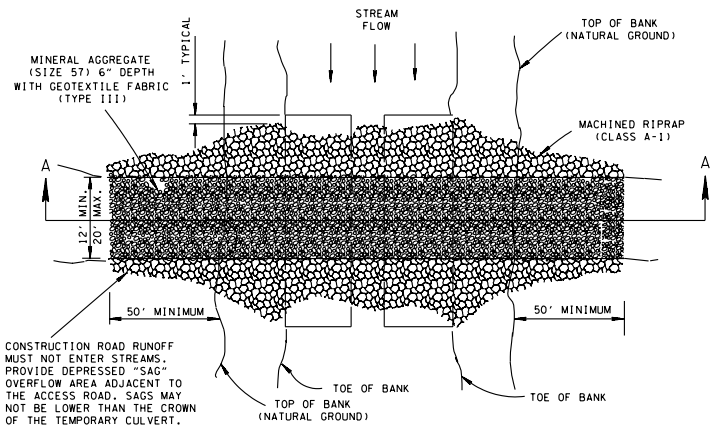
NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

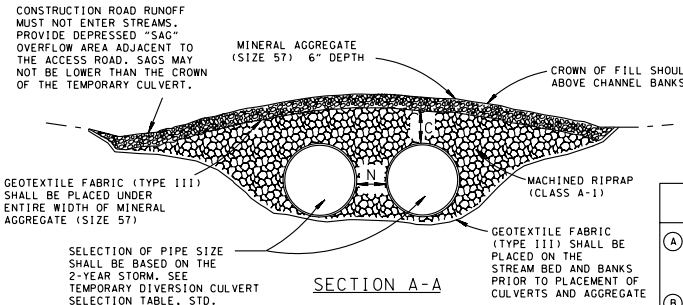
PERMANENT RIPRAP BASIN ENERGY DISSIPATOR

10-26-92 EC-STR-21

TEMPORARY CULVERT CROSSING



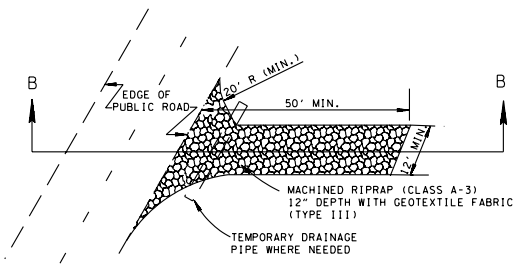
PLAN VIEW OF TEMPORARY CULVERT CROSSING



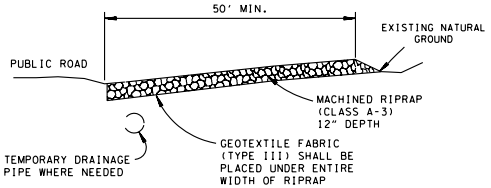
SECTION A-A

C = ½ DIAMETER OF PIPE OR 18" WHICHEVER IS GREATER
N = ½ DIAMETER OF PIPE OR 12" WHICHEVER IS GREATER

TEMPORARY CONSTRUCTION EXIT



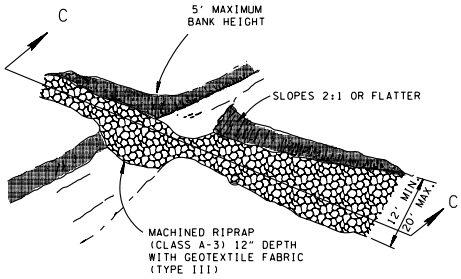
PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD



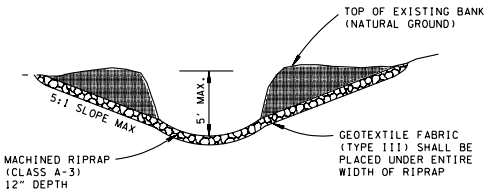
SECTION B-B

TEMPORARY CONSTRUCTION FORD

(NOT TO BE PLACED IN STREAMS)



PLAN VIEW OF TEMPORARY CONSTRUCTION FORD



SECTION C-C

- REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-25 TO EC-STR-25.

  REV. 5-27-01: CHANGED ITEM NO. 303-15.01 TO 303-10.01. CHANGED DESCRIPTIONS IN ITEM NOS. 621-03.02 TO 621-03.10, AND 709-05.05 TO 709-05.07.
- REV. 12-18-02: CHANGED GENERAL NOTE (B).
- REV. 1-22-03: CORRECTED GENERAL NOTE (C).
- REV.7-29-03: ADDED GEOTEXTILE FABRIC TO TEMPORARY CULVERT CROSSING AND TEMPORARY CONSTRUCTION ROAD ENTRANCE DETAILS. CHANGED MINERAL AGGREGATE TO CLASS A-3 RIPRAP IN TEMPORARY CONSTRUCTION ROAD ENTRANCE DETAIL. CHANGED GENERAL NOTES (D) AND (F).
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED VARIOUS GENERAL NOTES, MISC. EDITS TO DRAWING, AND REMOVED CLASS A-2 RIPRAP.

EROSION CONTROL PLAN LEGEND:

TCC — TEMPORARY CULVERT CROSSING (DESCRIBE NUMBER AND SIZE OF PIPES)

TCE — TEMPORARY CONSTRUCTION EXIT

TCF — TEMPORARY CONSTRUCTION FORD

GENERAL NOTES

(A) TEMPORARY CULVERT CROSSINGS SHALL CONSIST OF ONE OR MORE TEMPORARY DRAINAGE PIPES INSTALLED ACROSS A FLOWING WATER COURSE FOR USE BY CONSTRUCTION EQUIPMENT. THE TEMPORARY DRAINAGE PIPES WILL VARY IN SIZE FROM EIGHTEEN TO SEVENTY-TWO INCHES IN DIAMETER.

(B) MINIMIZE CLEARING OF VEGETATION FROM STREAM BANKS WHEN USING TEMPORARY CULVERT CROSSINGS.

(C) TEMPORARY CULVERT CROSSINGS SHALL BE SEPARATED FROM FLOWING WATER DURING THEIR CONSTRUCTION AND REMOVAL.

(D) PROVISION SHOULD BE MADE TO PREVENT CONSTRUCTION ROAD RUNOFF FROM ENTERING THE STREAM.

(E) TEMPORARY CULVERT CROSSINGS SHOULD BE REMOVED, INCLUDING THE AGGREGATE AND GEOTEXTILE, AS SOON AS POSSIBLE AFTER THE CROSSING IS NO LONGER REQUIRED. ANY EXPOSED AREAS SHOULD BE IMMEDIATELY STABILIZED.

(F) FOR SITES WHICH DRAIN TO HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, A 9-INCH LAYER OF MACHINED RIPRAP (CLASS A-3) SHALL BE SUBSTITUTED FOR THE MINERAL AGGREGATE (SIZE 57) USED TO TOP-DRESS A TEMPORARY CULVERT CROSSING.

(G) ALL TEMPORARY CULVERT CROSSINGS AND TEMPORARY CONSTRUCTION FORDS SHALL BE PLACED PERPENDICULAR TO THE STREAM WHERE POSSIBLE. CROSSINGS MAY DEVIATE AS MUCH AS 15 DEGREES FROM PERPENDICULAR, IF NECESSARY.

(H) TEMPORARY CONSTRUCTION EXITS SHALL BE BUILT TO REDUCE SEDIMENT LEAVING THE CONSTRUCTION SITE VIA CONSTRUCTION VEHICLES AND TO REDUCE SEDIMENT TRACKING ON TO PUBLIC ROADS AND OTHER PAVED AREAS.

(I) ADDITIONAL STONE MAY BE REQUIRED TO TOP-DRESS THE STONE PAD IF IT BECOMES CLOGGED WITH SEDIMENT TO ENSURE THE TEMPORARY CONSTRUCTION EXIT REMAINS EFFECTIVE.

(J) ON SITES WHERE THE GRADE TOWARD THE PUBLIC ROAD IS GREATER THAN 2% A MOUNTABLE BERM AT LEAST 6 INCHES HIGH WITH 3:1 SIDE SLOPES SHOULD BE PROVIDED AT THE END OF THE PAD TO PREVENT RUNOFF FROM LEAVING THE SITE.

(K) TEMPORARY CONSTRUCTION EXITS SHOULD BE REMOVED WHEN NO LONGER REQUIRED. ANY EXPOSED AREAS SHOULD BE IMMEDIATELY STABILIZED.

(L) TEMPORARY CONSTRUCTION FORDS ARE EFFECTIVE FOR INFREQUENT CROSSINGS OF DITCHES OR SWALES. THEY SHALL NOT BE USED IN STREAMS OR OTHER NATURAL WATER RESOURCES.

(M) TEMPORARY CONSTRUCTION FORDS SHOULD BE CONSTRUCTED TO MINIMIZE THE BLOCKAGE OF FLOW AND TO ALLOW FREE FLOW OVER THE FORD. THE MAXIMUM AMOUNT OF BLOCKAGE ALLOWED IS THE LESSER OF TWELVE INCHES OR ONE-HALF THE HEIGHT OF THE EXISTING BANKS.

(N) A MOUNTABLE BERM AT LEAST 6 INCHES HIGH WITH 3:1 SIDE SLOPES SHOULD BE PROVIDED ON EITHER SIDE OF THE CHANNEL TO PREVENT RUNOFF FROM ENTERING THE CHANNEL.

(O) TEMPORARY CONSTRUCTION FORDS SHOULD BE REMOVED WHEN NO LONGER REQUIRED. THE CHANNEL BANKS SHOULD BE RESTORED TO THEIR ORIGINAL DIMENSIONS. ANY EXPOSED AREAS SHOULD BE IMMEDIATELY STABILIZED.

(P) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(Q) TEMPORARY CULVERT CROSSINGS, TEMPORARY CONSTRUCTION EXITS, AND TEMPORARY CONSTRUCTION FORDS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
303-10.01	MINERAL AGGREGATE (SIZE 57) PER TON
621-03.02 THRU 621-03.11	_ _" TEMPORARY DRAINAGE PIPE PER LINEAR FOOT
709-05.05	MACHINED RIPRAP (CLASS A-3) PER TON
709-05.06	MACHINED RIPRAP (CLASS A-1) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY CULVERT CROSSINGS, TEMPORARY CONSTRUCTION EXITS, AND TEMPORARY CONSTRUCTION FORDS.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

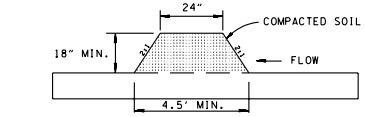
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY CULVERT CROSSING, CONSTRUCTION EXIT, CONSTRUCTION FORD

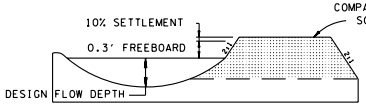
10-26-92 | EC-STR-25

- REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-27 TO EC-STR-27.
- REV. 7-29-97: CHANGED EROSION CONTROL PLAN LEGEND.
- REV. 5-27-01: CHANGED ITEM NOS. 209-01 TO 203-01, 209-02.02 TO 209-02.03, 209-07 TO 709-05.06, 209-07.01 TO 709-05.07, AND 801-07 TO 801-01.07.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED AND ADDED NOTES, REFORMATTED SHEET, CHANGED DRAWING NAME, AND MISC. DRAWING EDITS.

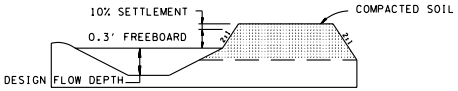
TEMPORARY BERM DETAILS



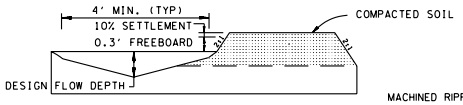
DIVERSION BERM



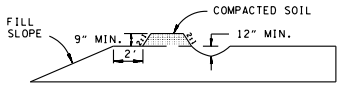
PARABOLIC DIVERSION



TRAPEZOIDAL DIVERSION

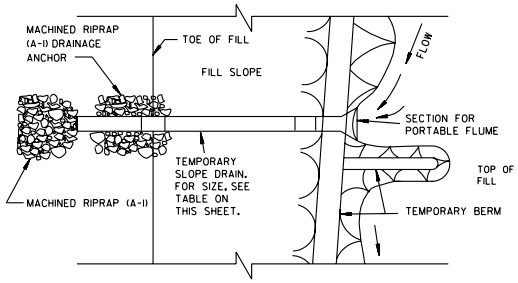


VEE-SHAPED DIVERSION

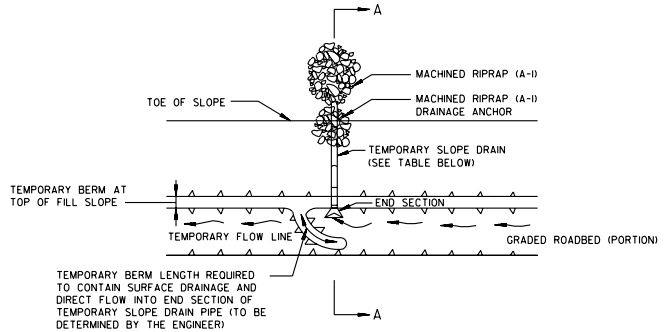


TEMPORARY FILL DIVERSION

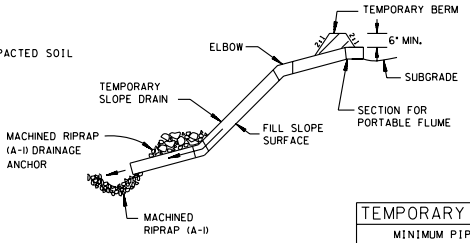
TEMPORARY SLOPE DRAIN WITH BERM AND RIP-RAP



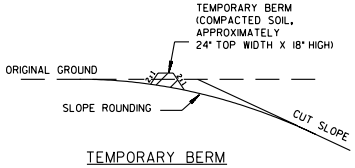
PLAN VIEW



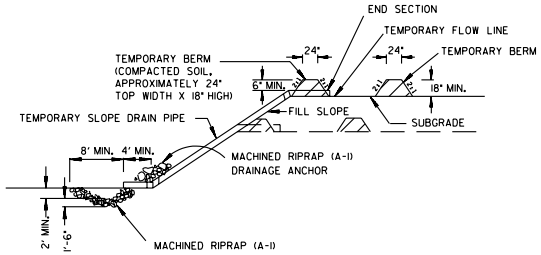
PLAN VIEW



SIDE VIEW



TEMPORARY BERM
(FOR CUT SLOPES)



SECTION A-A
(FOR FILL SLOPES)

TEMPORARY SLOPE DRAIN SIZES

MINIMUM PIPE DIAMETER (IN)	MAXIMUM DRAINAGE AREA (ACRES)
8	0.25
12	0.5
15	0.75
18	1.5

TEMPORARY BERMS GENERAL NOTES

(A1) USE TEMPORARY BERMS TO DIVERT FLOW FROM UNPROTECTED SLOPES TO STABILIZED DITCHES (OUTLETS) AND TO DIVERT SEDIMENT LADEN RUNOFF TO SEDIMENT TRAPS. TEMPORARY BERMS MAY BE USED ABOVE, ACROSS, OR BELOW DISTURBED AREAS.

(A2) TEMPORARY BERMS SHALL BE CONSTRUCTED AT THE TOP OF ALL ERODIBLE CUT SLOPES DESIGNATED BY THE ENGINEER. THE GRADIENT OF THE BERMS SHALL BE THE MINIMUM POSSIBLE THAT CONDITIONS PERMIT. WHERE EXCESSIVE GRADIENTS ARE NECESSARY, CHECK DAMS SHALL BE USED IN ORDER TO REDUCE THE VELOCITY OF THE RUNOFF.

(A3) STABILIZE THE BERMS AND/OR DITCHES OUTSIDE LIMITS OF CONSTRUCTION WITH VEGETATION OR RIPRAP WHENEVER THE PROFILE GRADE IS GREATER THAN 2%.

(A4) CONSTRUCT THE TEMPORARY BERMS OUTSIDE THE LIMITS OF CONSTRUCTION BEFORE ACTUAL PROJECT CONSTRUCTION BEGINS AND SEED THE TEMPORARY BERMS WITHIN 15 CALENDAR DAYS OF CONSTRUCTION.

(A5) MAINTAIN THE TEMPORARY BERMS BY INSPECTING AFTER EACH RAINFALL AND/OR ONCE WEEKLY AND REPAIR AS NEEDED.

(A6) THE MAXIMUM DRAINAGE AREA FOR TEMPORARY BERMS SHALL BE 1.5 ACRES.

(A7) TEMPORARY BERMS MAY REMAIN IN PLACE AS PERMANENT BERMS IF SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

(A8) TEMPORARY BERMS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

203-01 ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD

ITEMS USED FOR THE STABILIZATION OF BERMS SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY BERMS.

TEMPORARY SLOPE DRAIN WITH BERM AND RIPRAP GENERAL NOTES

(B1) TEMPORARY SLOPE DRAINS ARE USED TO CONVEY CONCENTRATED STORMWATER FROM THE TOP OF A CUT OR FILL SLOPE TO ITS BASE.

(B2) TEMPORARY SLOPE DRAINS SHALL BE USED AS THE EMBANKMENT IS CONSTRUCTED. LOCATION AND SPACING OF THE DRAIN ASSEMBLY SHALL BE DESIGNATED BY THE ENGINEER. ALL SLOPE DRAINS SHALL BE IN PLACE BY THE END OF EACH WORK SHIFT. THE DRAIN ASSEMBLIES SHALL BE USED UNTIL THE SLOPES ARE PROTECTED WITH PERMANENT SOIL EROSION CONTROL MEASURES.

(B3) MULTIPLE PIPES MAY BE USED IN PLACE OF A SINGLE TEMPORARY SLOPE DRAIN FOR DRAINAGE AREAS LARGER THAN 1.5 ACRES.

(B4) TEMPORARY SLOPE DRAINS SHALL BE ANCHORED WITH GROMMETS OR STAKES AT INTERVALS NOT TO EXCEED 10 FEET. IN SOME CASES IT MAY BE NECESSARY TO EMBED THE SLOPE DRAIN INTO THE FILL SLOPE TO ENSURE PROPER ANCHORAGE.

(B5) FOR LOW FLOW CONDITIONS, A T-JOINT OR ELL-JOINT MAY BE USED DOWN STREAM ON THE TEMPORARY SLOPE DRAIN TO CONTROL VELOCITY. A T-JOINT OR ELL-JOINT MAY ALSO BE USED UP STREAM AT LOW POINTS TO INTERCEPT FLOW.

(B6) THE MAXIMUM DRAINAGE AREA FOR TEMPORARY SLOPE DRAINS SHALL BE 1.5 ACRES.

(B7) TEMPORARY SLOPE DRAINS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
209-02.03 THRU 209-02.07	__"TEMPORARY SLOPE DRAIN PER LINEAR FOOT
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY SLOPE DRAIN.

EROSION CONTROL PLAN LEGEND: TEMPORARY BERM

EROSION CONTROL PLAN LEGEND: TEMPORARY SLOPE DRAIN

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY SLOPE DRAIN AND BERM

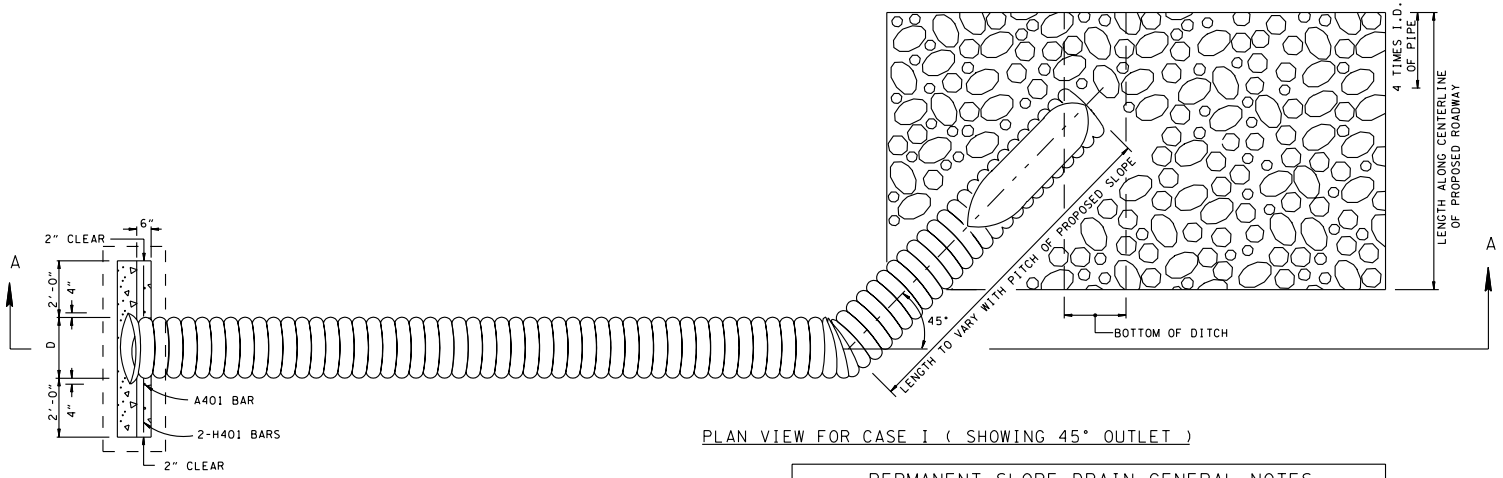
10-26-92 EC-STR-27

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-29 TO EC-STR-29.

REV. 5-27-01: CHANGED ITEM NO. 709-07 TO 709-02.01.

REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING. CHANGED DRAWING NAME.

REV. 4-1-08: MINOR EDITS, ADDED ITEMS 607-41.02 AND 709-05.06. CHANGED STANDARD SYMBOL, REVISED GENERAL NOTES, AND MISC. DRAFTING EDITS.



PLAN VIEW FOR CASE I (SHOWING 45° OUTLET)

PERMANENT SLOPE DRAIN GENERAL NOTES

(A) MATERIALS AND SPECIFICATIONS FOR PERMANENT SLOPE DRAIN PIPE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 604, SECTION 607, AND SECTION 709.

(B) METAL AND PLASTIC PIPES USED FOR PERMANENT SLOPE DRAIN PIPE ARE TO BE ATTACHED TO THE GROUND WITH CONCRETE COLLARS OR OTHER METHODS AS APPROVED BY THE ENGINEER TO ASSURE PROPER ANCHORAGE AND PREVENT THE PIPE FROM SLIPPING DOWN THE SLOPE.

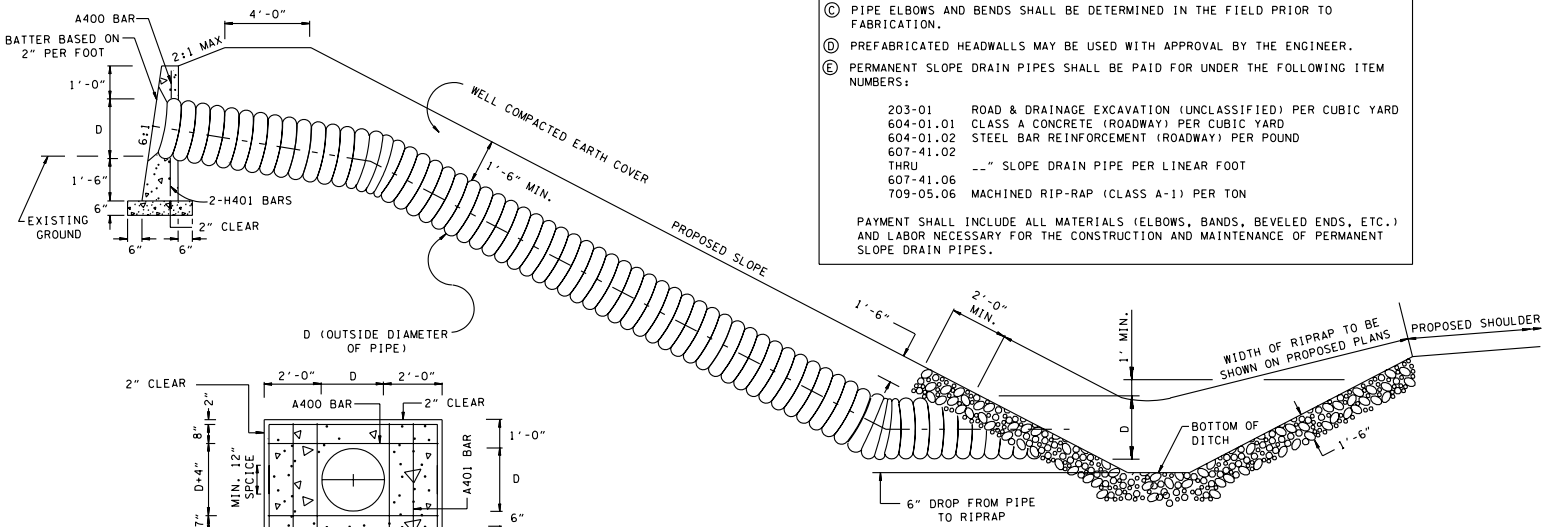
(C) PIPE ELBOWS AND BENDS SHALL BE DETERMINED IN THE FIELD PRIOR TO FABRICATION.

(D) PREFABRICATED HEADWALLS MAY BE USED WITH APPROVAL BY THE ENGINEER.

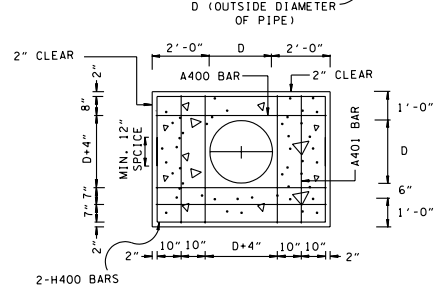
(E) PERMANENT SLOPE DRAIN PIPES SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
604-01.01	CLASS A CONCRETE (ROADWAY) PER CUBIC YARD
604-01.02	STEEL BAR REINFORCEMENT (ROADWAY) PER POUND
607-41.02 THRU 607-41.06	__" SLOPE DRAIN PIPE PER LINEAR FOOT
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON

PAYMENT SHALL INCLUDE ALL MATERIALS (ELBOWS, BANDS, BEVELED ENDS, ETC.) AND LABOR NECESSARY FOR THE CONSTRUCTION AND MAINTENANCE OF PERMANENT SLOPE DRAIN PIPES.



SECTIONAL VIEW A-A FOR CASE I (SHOWING 45° OUTLET)



FRONTAL ELEVATION VIEW FOR INLET HEADWALL FOR CASE I

EROSION CONTROL PLAN LEGEND: PERMANENT SLOPE DRAIN PIPE (SHOW SIZE)

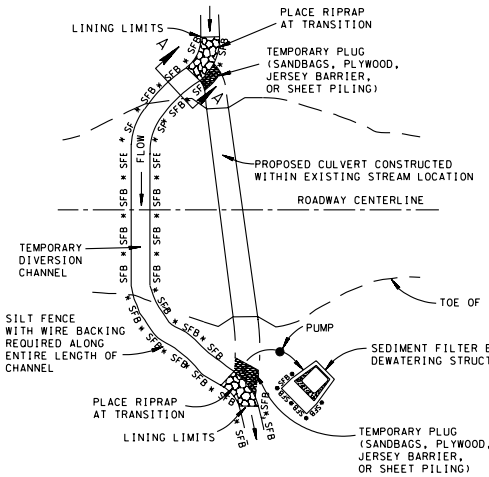
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PERMANENT SLOPE DRAIN PIPE

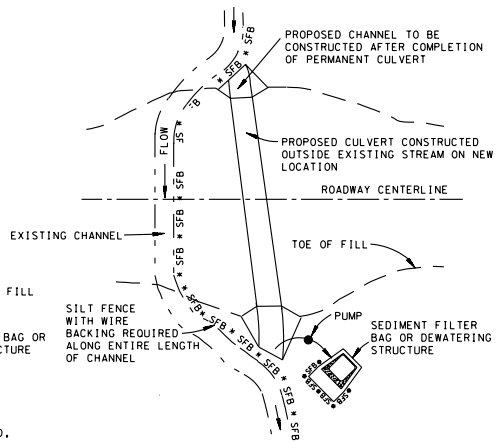
10-26-92 EC-STR-29

CULVERT CONSTRUCTED WITHIN EXISTING STREAM

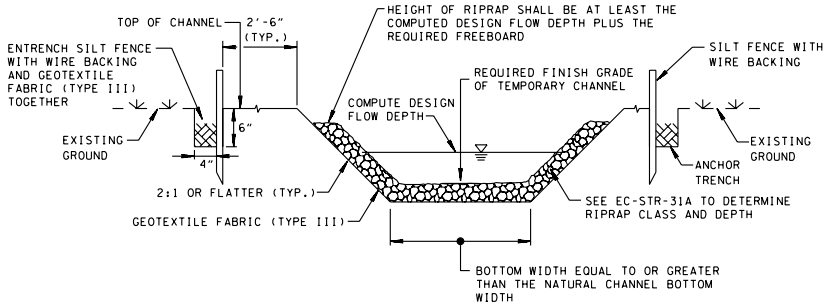


PLAN VIEW

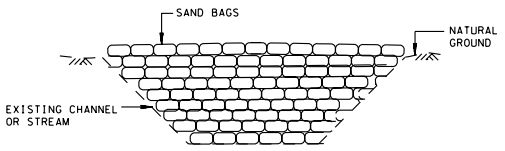
CULVERT CONSTRUCTED OUTSIDE EXISTING STREAM



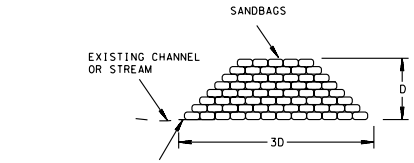
PLAN VIEW



SECTION A-A



ELEVATION VIEW



POLYETHYLENE SHEETING (6 MIL. MINIMUM) INSTALLED BETWEEN SANDBAGS

CROSS SECTION VIEW

PLUG DETAIL

EROSION CONTROL PLAN LEGEND: TEMPORARY DIVERSION CHANNEL (DESCRIBE - SIZE AND TYPE OF LINING)

TEMPORARY DIVERSION CHANNELS GENERAL NOTES

(A) DIVERSION CHANNELS SHALL BE USED TO DIVERT NORMAL STREAM FLOW FROM AN ERODIBLE AREA IN ORDER TO PREVENT POLLUTION OF THE STREAM DUE TO EROSION.

(B) EXAMPLE SHOWN IS FOR NEW CULVERT CONSTRUCTION. OTHER PROJECTS WOULD BE CONSTRUCTED IN A SIMILAR MANNER.

(C) TEMPORARY DIVERSION CHANNELS SHALL BE DESIGNED USING A 2-YEAR, 24-HOUR STORM FREQUENCY FLOW RATE. STANDARD DRAWING EC-STR-31A, MAY BE USED AS A GUIDELINE FOR DETERMINING THE CHANNEL SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION. AT SITES WHICH INVOLVE HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE STABILITY OF THE RIPRAP CHANNEL LINING SHOULD BE DESIGNED FOR THE 5-YEAR, 24-HOUR PEAK FLOW.

(D) ALL TEMPORARY DIVERSION CHANNELS SHALL HAVE A TRAPEZOIDAL SHAPE AND THE BOTTOM WIDTH SHALL BE EQUAL TO OR GREATER THAN THE NATURAL CHANNEL BOTTOM WIDTH.

(E) TO DETERMINE RIPRAP CLASS AND DEPTH USE STANDARD DRAWING EC-STR-31A.

(F) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(G) GEOTEXTILE (TYPE III) (EROSION CONTROL) SHALL BE USED EITHER WITH OR WITHOUT RIPRAP, AS RECOMMENDED IN NOTE B6 ON STANDARD DRAWING EC-STR-31A.

(H) GEOTEXTILE FABRIC (TYPE III) SHALL BE USED ALONE ONLY IN CHANNELS WITH INTERMITTENT FLOW. USE A RIPRAP LINED CHANNEL OR CULVERT WHERE THE STREAM FLOWS YEAR-ROUND.

(I) WHERE EXCAVATION FOR A DIVERSION CHANNEL EXPOSES BEDROCK, GEOTEXTILE FABRIC AND RIPRAP SHALL BE REQUIRED ONLY ON THE SIDES OF THE CHANNEL.

(J) RIPRAP TRANSITIONS AT THE ENTRANCE AND EXIT OF THE DIVERSION CHANNEL SHALL BE DESIGNED IN ACCORDANCE WITH APPROVED TDOT METHODS.

(K) DURING CONSTRUCTION OF THE DIVERSION CHANNEL, DAMAGE TO THE EXISTING STREAM AND DAMAGE TO THE CANOPY SHALL BE MINIMIZED. ALL EXISTING VEGETATION OUTSIDE THE CUT AND FILL LINES BUT INSIDE THE RIGHT-OF-WAY SHALL NOT BE DISTURBED UNLESS IT INTERFERES WITH SAFETY STANDARDS.

(L) THE PROJECT SHALL BE PLANNED IN ORDER TO MINIMIZE THE LENGTH OF TIME THE DIVERSION WILL BE REQUIRED.

(M) DIVERSION CHANNEL CONSTRUCTION SHALL BE COMPLETED IN THE DRY BEFORE DIVERTING WATER FROM THE EXISTING CHANNEL. WHERE THIS IS NOT FEASIBLE, TEMPORARY FLOW DIVERSION STRUCTURES CAN BE USED UNTIL WORK IS COMPLETE. THESE STRUCTURES CAN BE ANY NON-ERODIBLE MATERIAL.

(N) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. CONSTRUCT A MEANDERING TEMPORARY CHANNEL ADJACENT TO THE PROPOSED PROJECT. ISOLATE THE TEMPORARY CHANNEL FROM THE EXISTING CHANNEL WITH TEMPORARY PLUGS. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 209 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. THE DIVERSION CHANNEL SHALL BE STABILIZED AND INSPECTED BY THE PROJECT ENGINEER BEFORE FLOW IS DIVERTED. DIVERT FLOW BY MOVING THE TEMPORARY PLUGS FROM THE TEMPORARY CHANNEL TO THE EXISTING CHANNEL. A COFFER DAM MAY BE USED UPSTREAM TO PREVENT STREAM FLOW DURING THIS OPERATION.
3. CONSTRUCT THE PROJECT IN THE EXISTING STREAM AND PLACE PERMANENT EROSION CONTROL ON THE EXISTING STREAM BANKS.
4. WHERE A TEMPORARY PLUG IS REQUIRED AT THE DOWNSTREAM END OF THE DIVERSION, IT SHOULD BE REMOVED FIRST. THEN REMOVE THE UPPER PLUG IN ORDER TO RELEASE FLOW INTO THE RECONSTRUCTED CHANNEL.
5. REMOVE LINING MATERIALS FROM THE DIVERSION CHANNEL, RESTORE THE AREA TO GRADE, AND STABILIZE EXPOSED SOILS.

(O) ALTERNATIVE DIVERSION METHOD MAY INCLUDE PARALLEL JERSEY BARRIERS LINED WITH POLYETHYLENE SHEETING (6 MIL MINIMUM).

(P) DIVERSION CHANNEL SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY.

(Q) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), AND SILT FENCE WITH WIRE BACKING (EC-STR-3C) SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(R) TEMPORARY DIVERSION CHANNELS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-65.03	TEMPORARY DIVERSION CHANNEL PER LINEAR FOOT.
709-05.06	MACHINED RIPIAP (CLASS A-1) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWINGS.

TEMPORARY PLUGS SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT SHALL INCLUDE ALL MATERIALS (EXCAVATION, GEOTEXTILE FABRIC, RIPRAP, ETC.) AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY DIVERSION CHANNELS.

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-31 TO EC-STR-31.

- REV. 5-27-01: CHANGED ITEM NO. 740-03.01 TO 740-10.03. CHANGED REFERENCE OF TEMPORARY EROSION CONTROL PIPE TO TEMPORARY PIPE.
- REV. 12-18-02: CHANGED ALL SILT FENCE IN DETAILS TO ENHANCED SILT FENCE. CHANGED GENERAL NOTE (E).
- REV. 4-15-06: MODIFIED ALL GENERAL NOTES. REMOVED "TEMPORARY CULVERT USED DURING CONSTRUCTION". REMOVED TABLE FOR "PIPE DIA. FOR STREAM CROSSINGS OR TEMP. DIVERSION CHANNELS (INCHES)" REMOVED DETAIL FOR "TEMP. DIVERSION CHANNEL W/GEOTEXTILE FABRIC LINING."REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED GENERAL NOTES, ADDED NOTE R, AND MISC. EDITS TO DRAWING.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY DIVERSION CHANNEL

10-26-92 | EC-STR-31

- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: DRAWING EDITS UPDATE TABLE AND REVISIONS TO GENERAL NOTES.

"K" VALUES FOR TEMPORARY DIVERSION CHANNEL DEPTH HYDROLOGIC AREA 1

DRAINAGE AREA (ACRES)	FLOW RATE (cfs)	INCREASING CHANNEL SLOPE → 0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
SEE NOTE BELOW	4.0	56.6	40.0	32.7	28.3	25.3	23.1
	10.0	141.4	100.0	81.6	70.7	63.2	57.7
	25.0	353.6	250.0	204.1	176.8	158.1	144.3
128.0	35.3	499.2	353.0	288.2	249.6	223.3	203.8
150.0	39.8	562.9	398.0	325.0	281.4	251.7	229.8
200.0	49.4	698.6	494.0	403.3	349.3	312.4	285.2
250.0	58.5	826.9	584.7	477.4	413.4	369.8	337.6
300.0	67.2	950.4	672.0	548.7	475.2	425.0	388.0
400.0	83.5	1180.9	835.0	681.8	590.4	528.1	482.1
500.0	98.8	1397.2	988.0	806.7	698.6	624.9	570.4
600.0	113.3	1602.8	1133.3	925.4	801.4	716.8	654.3
700.0	127.3	1800.9	1273.4	1039.7	900.4	805.4	735.2
800.0	140.8	1991.2	1408.0	1149.6	995.6	890.5	812.9
900.0	153.9	2176.5	1539.0	1256.6	1088.2	973.3	888.5
1000.0	166.7	2357.5	1667.0	1361.1	1178.7	1054.3	962.4
1100.0	179.1	2532.9	1791.0	1462.3	1266.4	1132.7	1034.0
1200.0	191.3	2705.4	1913.0	1562.0	1352.7	1209.9	1104.5
1300.0	203.2	2873.7	2032.0	1659.1	1436.8	1285.1	1173.2

THE DESIGN FLOW RATE MAY BE DETERMINED FROM THIS TABLE FOR DRAINAGE AREAS > OR = 128 ACRES. FOR SMALLER DRAINAGE AREAS, USE TR-55 TO DETERMINE THE DESIGN FLOW RATE. ONCE THE DESIGN FLOW RATE HAS BEEN DETERMINED, USE THIS TABLE TO FIND THE REQUIRED "K" VALUE.

"K" VALUES FOR TEMPORARY DIVERSION CHANNEL DEPTH HYDROLOGIC AREA 2

DRAINAGE AREA (ACRES)	FLOW RATE (cfs)	INCREASING CHANNEL SLOPE → 0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
	6.0	84.9	60.0	49.0	42.4	37.9	34.6
	15.0	212.1	150.0	122.5	106.1	94.9	86.6
SEE NOTE BELOW	30.0	424.3	300.0	244.9	212.1	189.7	173.2
	50.0	707.1	500.0	408.2	353.6	316.2	288.7
	70.0	989.9	700.0	571.5	495.0	442.7	404.1
	90.0	1272.8	900.0	734.8	636.4	569.2	519.6
	100.0	1414.2	1000.0	816.5	707.1	632.5	577.4
300.0	117.6	1663.1	1176.0	960.2	831.6	743.8	679.0
400.0	145.0	2050.6	1450.0	1183.9	1025.3	917.1	837.2
500.0	170.5	2411.2	1705.0	1392.1	1205.6	1078.3	984.4
600.0	194.6	2752.1	1946.0	1588.9	1376.0	1230.8	1123.5
700.0	217.7	3078.7	2177.0	1777.5	1539.4	1376.9	1256.9
800.0	239.9	3392.7	2399.0	1958.8	1696.3	1517.3	1385.1
900.0	261.4	3696.8	2614.0	2134.3	1848.4	1653.2	1509.2
1000.0	282.2	3990.9	2822.0	2304.2	1995.5	1784.8	1629.3
1100.0	302.4	4276.6	3024.0	2469.1	2138.3	1912.5	1745.9
1200.0	322.2	4556.6	3222.0	2630.8	2278.3	2037.8	1860.2
1300.0	341.5	4829.5	3415.0	2788.3	2414.8	2159.8	1971.7

THE DESIGN FLOW RATE MAY BE DETERMINED FROM THIS TABLE FOR DRAINAGE AREAS > OR = 300 ACRES. FOR SMALLER DRAINAGE AREAS, USE TR-55 TO DETERMINE THE DESIGN FLOW RATE. ONCE THE DESIGN FLOW RATE HAS BEEN DETERMINED, USE THIS TABLE TO FIND THE REQUIRED "K" VALUE.

"K" VALUES FOR TEMPORARY DIVERSION CHANNEL DEPTH HYDROLOGIC AREA 3

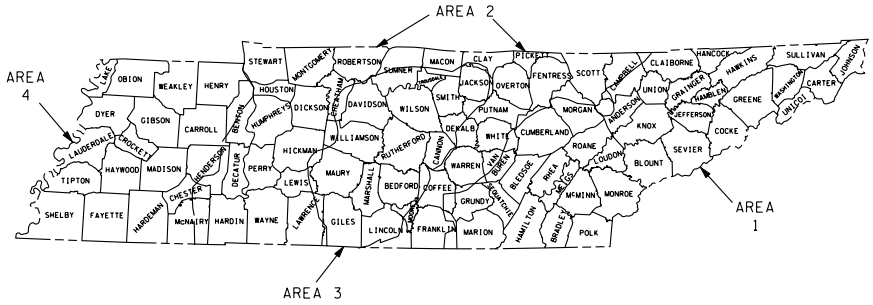
DRAINAGE AREA (ACRES)	FLOW RATE (cfs)	INCREASING CHANNEL SLOPE → 0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
SEE NOTE BELOW	10.0	141.4	100.0	81.6	70.7	63.2	57.7
	25.0	353.6	250.0	204.1	176.8	158.1	144.3
	50.0	707.1	500.0	408.2	353.6	316.2	288.7
109.0	69.3	980.0	693.0	565.8	490.0	438.3	400.1
150.0	89.1	1260.1	891.0	727.5	630.0	563.5	514.4
200.0	111.8	1581.1	1118.0	912.8	790.5	707.1	645.5
250.0	133.4	1886.6	1334.0	1089.2	943.3	843.7	770.2
300.0	154.0	2177.9	1540.0	1257.4	1088.9	974.0	889.1
400.0	193.2	2732.3	1932.0	1577.5	1366.1	1221.9	1115.4
500.0	230.4	3258.3	2304.0	1881.2	1629.2	1457.2	1330.2
600.0	266.1	3763.2	2661.0	2172.7	1881.6	1683.0	1536.3
700.0	300.5	4249.7	3005.0	2453.6	2124.9	1900.5	1734.9
800.0	333.9	4722.1	3339.0	2726.3	2361.0	2111.8	1927.8
900.0	366.4	5181.7	3664.0	2991.6	2590.8	2317.3	2115.4
1000.0	398.2	5631.4	3982.0	3251.3	2815.7	2518.4	2299.0
1100.0	429.3	6071.2	4293.0	3505.2	3035.6	2715.1	2478.6
1200.0	459.8	6502.6	4598.0	3754.3	3251.3	2908.0	2654.7
1300.0	489.8	6926.8	4898.0	3999.2	3463.4	3097.8	2827.9

THE DESIGN FLOW RATE MAY BE DETERMINED FROM THIS TABLE FOR DRAINAGE AREAS > OR = 109 ACRES. FOR SMALLER DRAINAGE AREAS, USE TR-55 TO DETERMINE THE DESIGN FLOW RATE. ONCE THE DESIGN FLOW RATE HAS BEEN DETERMINED, USE THIS TABLE TO FIND THE REQUIRED "K" VALUE.

"K" VALUES FOR TEMPORARY DIVERSION CHANNEL DEPTH HYDROLOGIC AREA 4

DRAINAGE AREA (ACRES)	FLOW RATE (cfs)	INCREASING CHANNEL SLOPE → 0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
	15.0	212.1	150.0	122.5	106.1	94.9	86.6
	30.0	424.0	299.8	244.8	212.0	189.6	173.1
	60.0	848.1	599.7	489.6	424.0	379.3	346.2
SEE NOTE BELOW	100.0	1414.2	1000.0	816.5	707.1	632.5	577.4
	150.0	2121.3	1500.0	1224.7	1060.7	948.7	866.0
	200.0	2828.4	2000.0	1633.0	1414.2	1264.9	1154.7
	250.0	3535.5	2500.0	2041.2	1767.8	1581.1	1443.4
	300.0	4242.6	3000.0	2449.5	2121.3	1897.4	1732.1
	350.0	4949.7	3500.0	2857.7	2474.9	2213.6	2020.7
486.0	377.1	5333.0	3771.0	3079.0	2666.5	2385.0	2177.2
600.0	421.4	5959.5	4214.0	3440.7	2979.7	2665.2	2433.0
700.0	457.1	6464.4	4571.0	3732.2	3232.2	2891.0	2639.1
800.0	490.4	6935.3	4904.0	4004.1	3467.7	3101.6	2831.3
900.0	521.8	7379.4	5218.0	4260.5	3689.7	3300.2	3012.6
1000.0	551.6	7800.8	5516.0	4503.8	3900.4	3488.6	3184.7
1100.0	580.0	8202.4	5800.0	4735.7	4101.2	3668.2	3348.6
1200.0	607.2	8587.1	6072.0	4957.8	4293.6	3840.3	3505.7
1300.0	633.4	8957.6	6334.0	5171.7	4478.8	4006.0	3656.9

THE DESIGN FLOW RATE MAY BE DETERMINED FROM THIS TABLE FOR DRAINAGE AREAS > OR = 486 ACRES. FOR SMALLER DRAINAGE AREAS, USE TR-55 TO DETERMINE THE DESIGN FLOW RATE. ONCE THE DESIGN FLOW RATE HAS BEEN DETERMINED, USE THIS TABLE TO FIND THE REQUIRED "K" VALUE.



SOURCE: "FLOOD FREQUENCY PREDICTION METHODS FOR UNREGULATED STREAMS OF TENNESSEE" WATER RESOURCES INVESTIGATIONS REPORT 03-4176. USGS 2000.

DIVERSION CHANNEL DEPTH TABLES GENERAL NOTES

(A1) THE TABLES ON THIS DRAWING MAY BE USED TO DESIGN TEMPORARY DIVERSION CHANNELS AS SHOWN ON STANDARD DRAWING EC-STR-31.

(A2) THE "K" VALUES PROVIDED IN THE TABLES REPRESENT "CONVEYANCE" WHICH MEASURES THE CAPACITY OF A CHANNEL TO PASS THE FLOW OF WATER. CONVEYANCE IS A TERM IN MANNING'S EQUATION AND IS CONSIDERED TO BE DIMENSIONLESS.

(A3) FOR EACH COMBINATION OF FLOW RATE AND CHANNEL SLOPE IN THE TABLES, THE CORRESPONDING "K" VALUE IS THE CONVEYANCE REQUIRED TO PASS THAT FLOW.

(A4) WHERE APPLICABLE, THE FLOW RATES SHOWN IN THE TABLES ARE BASED ON THE 2-YEAR EVENT AND ARE DETERMINED FROM THE USGS REGRESSION EQUATIONS FOR RURAL AREAS (2000 EDITION). THE REMAINING FLOW RATES ARE PROVIDED AS A REFERENCE FOR FINDING THE REQUIRED CONVEYANCE.

(A5) AS DESCRIBED IN THE PROCEDURE BELOW, THESE TABLES MAY BE USED TO DETERMINE THE 2-YEAR FLOW DEPTH IN A DIVERSION CHANNEL FOR THE FLOW RATES SHOWN. THE FLOW DEPTHS DETERMINED BY THIS PROCEDURE ACCOUNT FOR DIFFERENCES IN HYDRAULIC ROUGHNESS DUE TO THE DIFFERENT CLASSES OF RIPRAP REQUIRED. THE PROCEDURE IS A SIMPLE ALTERNATIVE TO ITERATIVE ANALYSIS USING THE MANNING EQUATION.

(A6) ALL TEMPORARY DIVERSION CHANNELS SHALL HAVE A TRAPEZOIDAL SHAPE AND THE BOTTOM WIDTH SHALL BE EQUAL TO OR GREATER THAN THE NATURAL CHANNEL BOTTOM WIDTH.

PROCEDURE FOR TEMPORARY DIVERSION CHANNEL DESIGN

(B1) USING THE FIGURE PROVIDED ON THIS DRAWING DETERMINE THE HYDROLOGIC AREA IN WHICH THE PROJECT SITE IS LOCATED.

(B2) INTERPOLATE THE REQUIRED "K" VALUE USING THE APPROPRIATE "K" VALUE TABLE, BASED ON THE DESIGN FLOW RATE AND AVERAGE STREAM SLOPE AT THE SITE. WHERE A PROJECT FALLS ON THE BOUNDARY BETWEEN TWO HYDROLOGIC AREAS, USE THE GREATER "K" VALUE. BASED ON THIS "K" VALUE, INTERPOLATE "A" AND "B" VALUES FROM THE TABLE "PARAMETERS FOR DEPTH OF FLOW EQUATION".

(B3) DETERMINE THE BOTTOM WIDTH OF THE EXISTING NATURAL CHANNEL. USE THIS AS THE BOTTOM WIDTH IN THE DEPTH OF FLOW EQUATION PRESENTED ON THIS DRAWING IN ORDER TO COMPUTE THE 2-YEAR FLOW DEPTH IN DIVERSION CHANNEL.

(B4) THE HEIGHT OF THE RIPRAP IN THE CHANNEL WILL BE EQUAL TO THE 2-YEAR FLOW DEPTH PLUS THE REQUIRED FREEBOARD. THE REQUIRED FREEBOARD WILL EITHER BE EQUAL TO THE FLOW DEPTH OR ONE FOOT, WHICHEVER IS LESS. THE TOP OF THE CHANNEL MUST BE EQUAL TO OR GREATER THAN THE HEIGHT OF THE RIPRAP. SEE THE FIGURE PROVIDED ON STANDARD DRAWING EC-STR-31.

(B5) COMPUTE FLOW AREA AS (DEPTH X BOTTOM WIDTH) + (Z X DEPTH^2), WHERE Z IS Z:1 FOR THE SIDE SLOPE.

(B6) COMPUTE VELOCITY AS (FLOW RATE / FLOW AREA). USE COMPUTED VELOCITY TO SELECT RIPRAP CLASS BASED ON APPROVED TDOT METHODS. IF THE COMPUTED VELOCITY IS LESS THAN 2.5 FEET PER SECOND, RIPRAP WILL NOT BE REQUIRED.

PARAMETERS FOR DEPTH OF FLOW EQUATION

K VALUE	A	B
20	-0.213	0.856
30	-0.238	0.998
60	-0.291	1.311
100	-0.323	1.545
175	-0.360	1.846
275	-0.373	2.064
350	-0.378	2.183
400	-0.384	2.260
500	-0.380	2.356
650	-0.401	2.535
750	-0.464	2.796
850	-0.494	2.944
1000	-0.540	3.162
2000	-0.812	4.406
3000	-1.000	5.321
4000	-1.100	5.960
5000	-1.176	6.567
6000	-1.241	7.072
7000	-1.300	7.515
8000	-1.323	7.895

DEPTH OF FLOW EQUATION

FLOW DEPTH = A X *ln* (BOTTOM WIDTH) + B

ln IS THE NATURAL LOG FUNCTION OF THE BOTTOM WIDTH OF THE CHANNEL.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

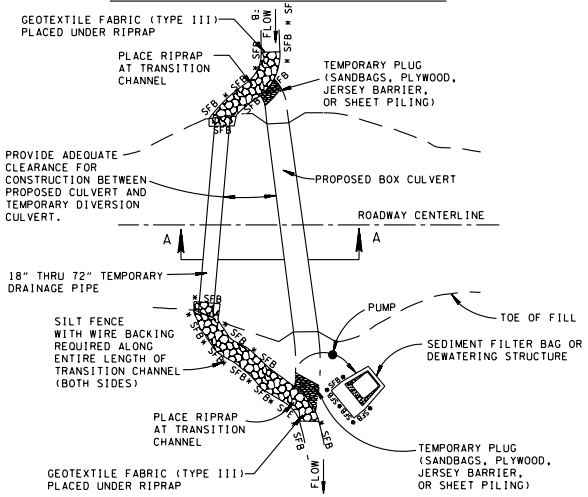
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY DIVERSION CHANNEL DESIGN

1-20-06 | EC-STR-31A

- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED GENERAL NOTES, ADDED NOTE N, MISC. EDITS TO DRAWING, AND CHANGED STANDARD SYMBOL.

TEMPORARY DIVERSION CULVERT WITH CHANNEL TRANSITIONS



PLAN VIEW

TEMPORARY DIVERSION CULVERT SELECTION

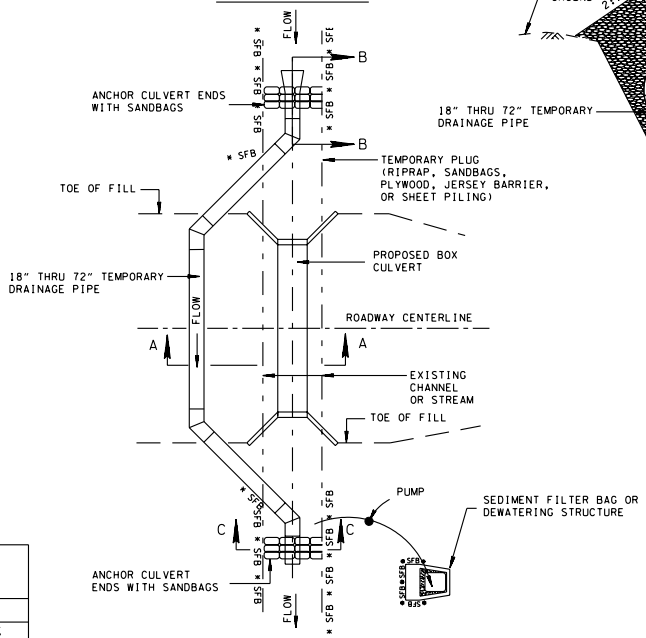
FLOW CAPACITY IN CFS OF A GIVEN PIPE AT A GIVEN CHANNEL SLOPE

PIPE DIAMETER (INCHES)	AVERAGE CHANNEL SLOPE					
	0.5%	1%	1.5%	2.0%	2.5%	3.0%
18	8.5	9.1	9.8	10.4	11.0	11.3
24	17.4	18.8	20.0	21.4	21.5	21.7
30	30.1	32.3	33.9	34.1	33.5	33.0
36	46.8	50.4	49.5	47.8	46.6	45.8
42	67.7	69.0	65.5	62.8	61.0	59.6
48	92.6	88.1	76.8	78.6	75.8	73.7
54	127.2	107.0	91.9	94.9	91.1	88.1
60	146.5	121.1	118.4	111.1	106.1	101.9
72	194.9	142.2	153.6	141.3	133.3	127.9
RIPRAP	B	B	B	B	B/C	B/C

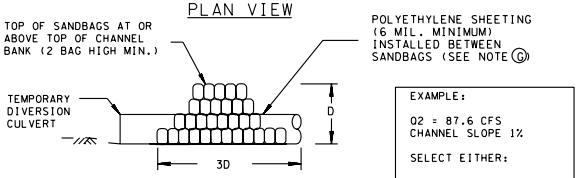
NOTES: FLOW RATES BASED ON 2.5-FOOT INCREASE IN WATER SURFACE ELEVATION ABOVE NORMAL LEVEL FOR THE 2-YEAR, 24 HOUR STORM EVENT

ASSUMES CORRUGATED PIPE (n = 0.024)

TEMPORARY DIVERSION CULVERT WITH ELBOWS



PLAN VIEW



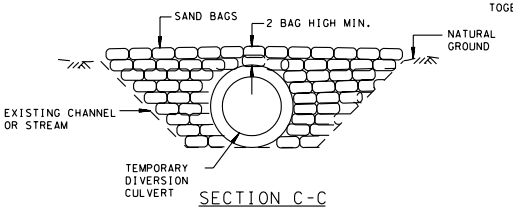
SECTION B-B

EXAMPLE:

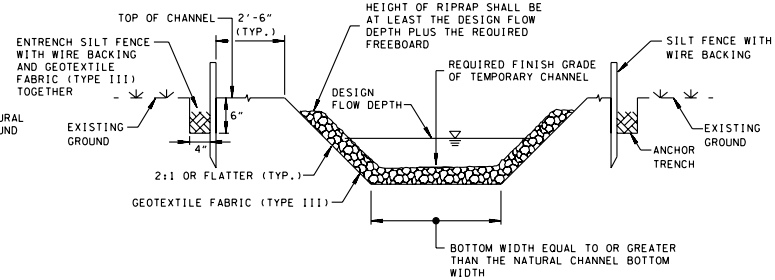
Q2 = 87.6 CFS
CHANNEL SLOPE 1%

SELECT EITHER:

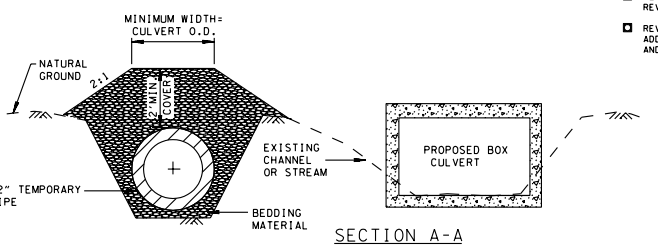
SINGLE 48-INCH PIPE OR TWIN 36-INCH PIPES



SECTION C-C



TRANSITION CHANNEL CROSS-SECTION



SECTION A-A

TEMPORARY DIVERSION CULVERTS GENERAL NOTES

(A) TEMPORARY DIVERSION CULVERTS ARE GENERALLY CONSTRUCTED UNDER AN EXISTING ROADWAY, WHERE IT IS NECESSARY TO MAINTAIN TRAFFIC, TO CONVEY STREAM FLOW AROUND IN-STREAM CONSTRUCTION. THIS ALLOWS IN-STREAM WORK TO BE COMPLETED IN THE DRY, SEPARATED FROM FLOWING WATER.

(B) EXAMPLE SHOWN IS FOR CULVERT REPLACEMENT OR NEW CONSTRUCTION. OTHER PROJECTS WOULD BE CONSTRUCTED IN A SIMILAR MANNER.

(C) TEMPORARY DIVERSION CULVERTS SHALL BE DESIGNED USING A 2-YEAR FREQUENCY STORM FLOW RATE. AT SITES WHICH INVOLVE HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAM, THE PIPE SHALL BE ADEQUATE TO CONVEY THE 5-YEAR, PEAK FLOW. THE TABLE "TEMPORARY DIVERSION CULVERT SELECTION" MAY BE USED AS A GUIDELINE FOR DETERMINING THE PIPE SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION.

(D) THE DESIGNER SHALL PROVIDE CULVERT SECTIONS FOR TEMPORARY CULVERT CROSSINGS. MINIMUM COVER FOR CONSTRUCTION LOADS IS 2 FEET.

(E) THE RIPRAP TRANSITION AT THE INLET AND THE DIVERSION CULVERT SHALL BE DESIGNED IN ACCORDANCE WITH APPROVED TDOT METHODS.

(F) WHERE EXCAVATION FOR A DIVERSION TRANSITION EXPOSES BEDROCK, GEOTEXTILE FABRIC AND RIPRAP SHALL BE USED ONLY ON THE SIDES OF THE CHANNEL.

(G) IN ORDER TO PROVIDE THE BEST POSSIBLE SEAL, THE POLYETHYLENE SHEETING USED IN AN UPSTREAM PIPE ANCHOR SHOULD BE FITTED AROUND THE PIPE. SANDBAGS ON THE DOWNSTREAM SIDE OF THE SHEETING SHOULD BE PLACED FIRST, AND THE SHEETING PLACED ON THESE BAGS. THE REMAINING SANDBAGS WOULD THEN BE PLACED ON THE SHEETING. WHERE MULTIPLE SHEETS ARE USED, THEY SHOULD OVERLAP A MINIMUM OF 18 INCHES.

(H) DURING CONSTRUCTION OF THE TEMPORARY DIVERSION CULVERT, DAMAGE TO THE EXISTING STREAM AND CANOPY SHALL BE MINIMIZED. ALL EXISTING VEGETATION OUTSIDE THE CUT AND FILL LINES BUT INSIDE THE RIGHT-OF-WAY SHALL NOT BE DISTURBED UNLESS IT INTERFERES WITH SAFETY STANDARDS. THE TEMPORARY CULVERT SHOULD BE LOCATED SO AS TO MINIMIZE THE LENGTH OF ANY TRANSITIONS REQUIRED.

(I) DIVERSION CULVERT CONSTRUCTION SHALL BE COMPLETED IN THE DRY BEFORE DIVERTING WATER FROM THE EXISTING CHANNEL. WHERE THIS IS NOT FEASIBLE, TEMPORARY FLOW DIVERSION STRUCTURES CAN BE USED UNTIL WORK IS COMPLETE. THESE STRUCTURES CAN BE ANY NON-ERODIBLE MATERIAL.

(J) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. CONSTRUCT THE TEMPORARY CULVERT ADJACENT TO THE PROPOSED PROJECT. ISOLATE THE TEMPORARY CHANNEL FROM THE EXISTING CHANNEL WITH TEMPORARY PLUGS.
2. DIVERT FLOW BY MOVING THE TEMPORARY PLUGS FROM THE TEMPORARY CHANNEL TO THE EXISTING CHANNEL. A COFFER DAM MAY BE USED UPSTREAM TO PREVENT STREAM FLOW DURING THIS OPERATION.
3. CONSTRUCT THE PROJECT IN THE EXISTING STREAM AND PLACE PERMANENT EROSION CONTROL ON THE EXISTING STREAM BANKS.
4. WHERE A TEMPORARY PLUG IS REQUIRED AT THE DOWNSTREAM END OF THE DIVERSION, IT SHOULD BE REMOVED FIRST. THEN REMOVE THE UPPER PLUG IN ORDER TO RELEASE FLOW INTO THE RECONSTRUCTED CHANNEL.
5. REMOVE LINING MATERIALS FROM THE DIVERSION TRANSITIONS, RESTORE THE AREA TO GRADE AND STABILIZE EXPOSED SOILS.

(K) DIVERSION CULVERT, SANDBAG ANCHORS AND TRANSITIONS SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY.

(L) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(M) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), AND SILT FENCE WITH WIRE BACKING (EC-STR-3C), SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(N) TEMPORARY DIVERSION CULVERTS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
209-09.01	SAND BAGS PER BAG
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM) PER SQUARE YARD
621-03.02 THRU 621-03.11	-- "TEMPORARY DRAINAGE PIPE PER LINEAR FOOT.
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON
709-05.08	MACHINED RIP-RAP (CLASS B) PER TON
709-05.09	MACHINED RIP-RAP (CLASS C) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD.

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWINGS.

TEMPORARY PLUGS SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY DIVERSION CULVERTS.

EROSION CONTROL PLAN LEGEND: TEMPORARY DIVERSION CULVERT (DESCRIBE NUMBER AND SIZE OF PIPES)

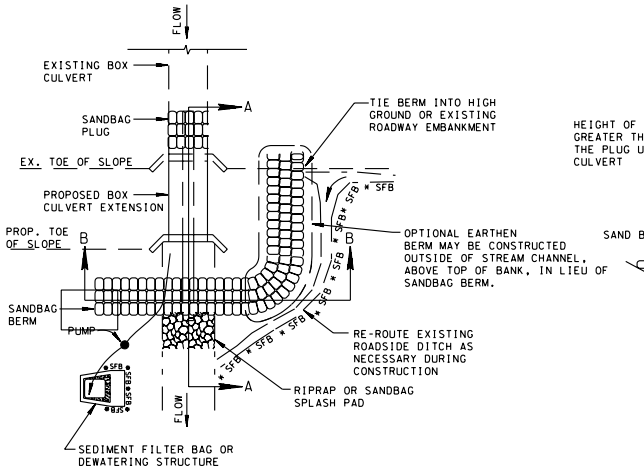
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

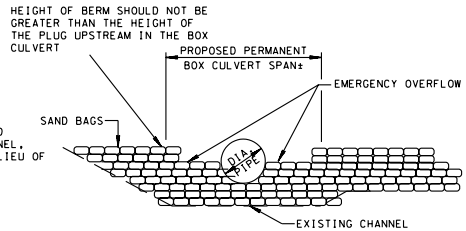
TEMPORARY DIVERSION CULVERTS

1-20-06 | EC-STR-32

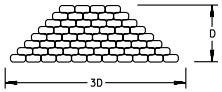
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED, ADDED, AND RENUMBERED NOTES, MINOR EDITS TO DRAWING.



PLAN VIEW

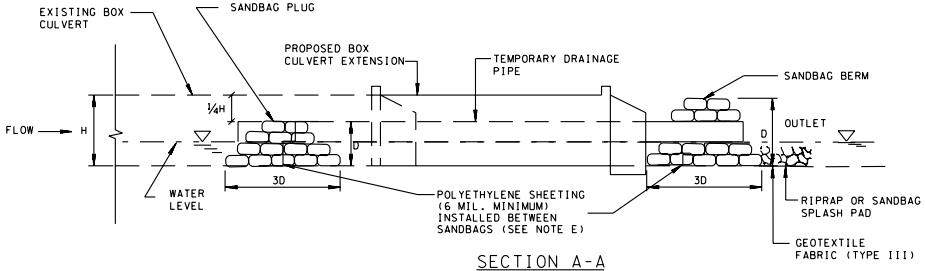


SECTION B-B



SAND BAG PLUG & BERM CROSS SECTION

(SEE NOTE E)



SECTION A-A

EROSION CONTROL PLAN LEGEND: SUSPENDED PIPE DIVERSION

MAXIMUM SPAN FOR PIPE SUPPORTS, FEET					
DIAMETER OF PIPE (IN.)	STEEL THICKNESS (IN.)				
	0.064	0.079	0.109	0.138	0.168
	2" X ½" CORRUGATION				
24	13	15	20		
36	12	15	20	25	
48	11	14	19	25	30
60		14	19	24	29
72			18	24	29
	5" X 1" OR 3" X 1" CORRUGATION				
36	9	11			
48	9	11	15		
60	8	10	14	18	
72	8	10	14	18	22

FOR PIPE SIZES NOT SHOWN REFER TO NEXT LARGER SIZE

SOURCE: HANDBOOK OF STEEL DRAINAGE AND HIGHWAY CONSTRUCTION PRODUCTS, 1994, P. 278

SUSPENDED PIPE DIVERSION (DOWNSTREAM) GENERAL NOTES

(A) SUSPENDED PIPE DIVERSIONS MAY BE USED TO ALLOW BOX CULVERT EXTENSIONS TO BE CONSTRUCTED, WHILE SEPARATED FROM FLOWING WATER, THUS REDUCING SEDIMENTATION. OPTIONAL FLEXIBLE PIPE DIVERSION MAY BE UTILIZED ON STREAMS WITH INTERMITTENT FLOW WHERE THE DURATION OF CONSTRUCTION IS EXPECTED TO BE BRIEF.

(B) SUSPENDED PIPE DIVERSIONS SHALL BE DESIGNED USING A 2-YEAR STORM FREQUENCY FLOW RATE. AT SITES WHICH INVOLVE HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE PIPE SHALL BE ADEQUATE TO CONVEY THE 5-YEAR, PEAK FLOW. THE TABLE "TEMPORARY DIVERSION CULVERT SELECTION" ON STANDARD DRAWING EC-STR-32 MAY BE USED AS A GUIDELINE FOR DETERMINING THE PIPE SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION.

(C) SUSPENDED PIPE DIVERSIONS MAY BE USED WHERE ADVERSE IMPACTS WILL NOT BE CAUSED BY WATER PONDED UPSTREAM OF THE PIPE.

(D) THE SANDBAG PLUG AT THE UPSTREAM END OF THE SUSPENDED PIPE DIVERSION SHOULD BE CONSTRUCTED TO A HEIGHT EQUAL TO THREE QUARTERS OF THE RISE OF THE BOX CULVERT.

(E) POLYETHYLENE SHEETING (6 MIL. MINIMUM) SHALL BE PLACED INSIDE THE SANDBAG PLUG IN THE BOX CULVERT AND IN THE SAND BAG BERM WITHIN THE CHANNEL IN ORDER TO PROVIDE THE BEST POSSIBLE SEAL. SANDBAGS ON THE DOWNSTREAM SIDE OF THE SHEETING SHOULD BE PLACED FIRST, AND THEN SHEETING PLACED ON THESE BAGS. AS MUCH AS POSSIBLE, THE SHEETING SHOULD BE FITTED AROUND THE PIPE. THE REMAINING SANDBAGS WOULD THEN BE PLACED ON THE SHEETING. WHERE MULTIPLE SHEETS ARE USED, THEY SHOULD OVERLAP A MINIMUM OF 18 INCHES.

(F) THE PROPOSED CULVERT CONSTRUCTION SHALL BE SEALED FROM THE EXISTING STREAM BY MEANS OF A SANDBAG BERM WHICH SHOULD BE AT THE SAME HEIGHT AS THE PLUG INSIDE THE BOX CULVERT. THIS BERM SHALL BE TIED INTO EITHER HIGH GROUND ADJACENT TO THE CHANNEL OR THE EXISTING ROADWAY EMBANKMENT. IT SHALL BE PROVIDED WITH A SPILLWAY EQUAL IN WIDTH TO THE BOX CULVERT AND AT A HEIGHT LOWER THAN THE REST OF THE BERM.

(G) THE TEMPORARY DRAINAGE PIPE SHALL BE SUPPORTED AT ALL JOINTS AND AT INTERVALS NOT TO EXCEED MAXIMUM VALUES SPECIFIED IN THE TABLE "MINIMUM SPAN FOR SUPPORTS." SUPPORTS MAY CONSIST OF SANDBAGS, CONCRETE BLOCKS, WOODEN FRAMES, OR ANY OTHER MATERIAL SUFFICIENT TO SUPPORT THE WEIGHT OF THE PIPE WHEN IT IS FLOWING FULL. SUPPORTS AT JOINTS SHALL BE A MINIMUM OF 18 INCHES IN LENGTH, ALONG THE TEMPORARY DRAINAGE PIPE AND CENTERED ON THE JOINT. SUPPORTS SHOULD "CRADLE" THE TEMPORARY DRAINAGE PIPE TO ENSURE THAT IT WILL NOT ROLL DURING CONSTRUCTION OF THE BOX CULVERT.

(H) ALL PIPE JOINTS SHALL BE PROPERLY BANDED OR OTHERWISE PROVIDED WITH A REASONABLE SEAL AGAINST LEAKAGE.

(I) THE OPTIONAL FLEXIBLE PIPE DIVERSION USING PUMPS AND SHOWN ON STD. DWG. EC-STR-33A CAN BE USED AS AN ALTERNATE FOR SUSPENDED PIPE DIVERSIONS (UPSTREAM AND DOWNSTREAM).

(J) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. INSTALL TEMPORARY DRAINAGE PIPE ON ITS SUPPORTS INSIDE THE CULVERT TO BE EXTENDED.
2. CONSTRUCT THE SANDBAG PLUG AT THE UPSTREAM END OF THE SUSPENDED PIPE DIVERSION.
3. CONSTRUCT THE SANDBAG BERM AT THE DOWNSTREAM END OF THE SUSPENDED PIPE DIVERSION.
4. ONCE THE BOX CULVERT EXTENSION HAS BEEN COMPLETED, REMOVE THE DOWNSTREAM SANDBAG STRUCTURE, EXCEPT FOR THOSE BAGS NEEDED TO SUPPORT THE END OF THE PIPE. THE UPSTREAM SANDBAG STRUCTURE SHOULD THEN BE REMOVED GRADUALLY, IN ORDER TO ALLOW THE UPSTREAM WATER LEVEL TO DRAW DOWN AT A SAFE RATE.
5. REMOVE THE TEMPORARY DRAINAGE PIPE, SUPPORTS AND ANY REMAINING SANDBAGS.

(K) TEMPORARY DRAINAGE PIPE, SANDBAG PLUGS, BERMS, AND SUPPORTS SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY. ANY DEBRIS WHICH HAS ACCUMULATED AT THE INLET OF THE SUSPENDED PIPE DIVERSION SHALL BE IMMEDIATELY REMOVED.

(L) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), AND SILT FENCE WITH WIRE BACKING (EC-STR-3C), SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(M) SUSPENDED PIPE DIVERSIONS (DOWNSTREAM) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-09.01	SANDBAGS PER BAG
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM) PER SQUARE YARD
621-03.02 THRU 621-03.11	__ "TEMPORARY DRAINAGE PIPE PER LINEAR FOOT.
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON
709-05.08	MACHINED RIP-RAP (CLASS B) PER TON
709-05.09	MACHINED RIP-RAP (CLASS C) PER TON

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWINGS.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SUSPENDED PIPE DIVERSION (DOWNSTREAM).

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

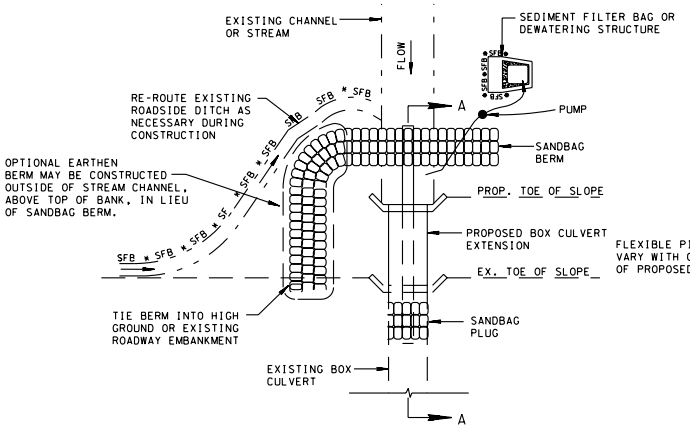
SUSPENDED PIPE DIVERSION (DOWNSTREAM)

1-20-06 | EC-STR-33

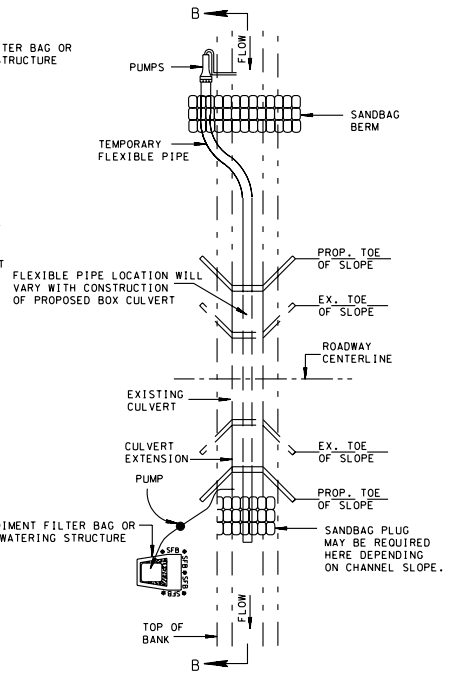
REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.

REV. 4-1-08: REVISED, ADDED, AND RENUMBERED NOTES, MINOR EDITS TO DRAWING.

FLEXIBLE PIPE DIVERSION (OPTIONAL)

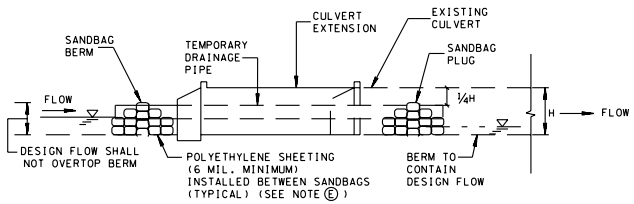


PLAN VIEW

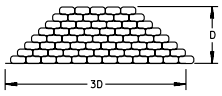


PLAN VIEW

(SHOWN WITH UPSTREAM & DOWNSTREAM EXTENTIONS)

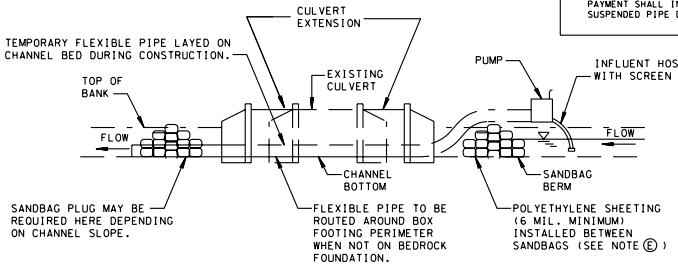


SECTION A-A



SAND BAG PLUG & BERM CROSS SECTION

(SEE NOTE Ⓔ)



SECTION B-B

SUSPENDED PIPE DIVERSION (UPSTREAM) GENERAL NOTES

Ⓐ SUSPENDED PIPE DIVERSIONS MAY BE USED TO ALLOW BOX CULVERT EXTENSIONS TO BE CONSTRUCTED, WHILE SEPARATED FROM FLOWING WATER, IN THE DRY, THUS REDUCING SEDIMENTATION. FLEXIBLE PIPE DIVERSION MAY BE UTILIZED ON STREAMS WITH INTERMITTENT FLOW WHERE THE DURATION OF CONSTRUCTION IS EXPECTED TO BE BRIEF.

Ⓑ SUSPENDED PIPE DIVERSIONS SHALL BE DESIGNED USING A 2-YEAR STORM FREQUENCY FLOW RATE. AT SITES WHICH INVOLVE HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE PIPE SHALL BE ADEQUATE TO CONVEY THE 5-YEAR, PEAK FLOW. THE TABLE "TEMPORARY DIVERSION CULVERT SELECTION" ON STANDARD DRAWING EC-STR-32 MAY BE USED AS A GUIDELINE FOR DETERMINING THE PIPE SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION.

Ⓒ SUSPENDED PIPE DIVERSIONS MAY BE USED WHERE ADVERSE IMPACTS WILL NOT BE CAUSED BY WATER PONDED UPSTREAM OF THE PIPE.

Ⓓ THE SANDBAG PLUG AT THE DOWNSTREAM END OF THE SUSPENDED PIPE DIVERSIONS SHOULD BE CONSTRUCTED TO A HEIGHT EQUAL TO THREE QUARTERS OF THE RISE OF THE BOX CULVERT.

Ⓔ POLYETHYLENE SHEETING (6 MIL. MINIMUM) SHALL BE PLACED INSIDE THE SANDBAG BERM IN THE CHANNEL AND THE SAND BAG PLUG IN THE BOX CULVERT, IN ORDER TO PROVIDE THE BEST POSSIBLE SEAL. SANDBAGS ON THE DOWNSTREAM SIDE OF THE SHEETING SHOULD BE PLACED FIRST, AND THEN SHEETING PLACED ON THESE BAGS. AS MUCH AS POSSIBLE, THE SHEETING SHOULD BE FITTED AROUND THE PIPE. THE REMAINING SANDBAGS WOULD THEN BE PLACED ON THE SHEETING. WHERE MULTIPLE SHEETS ARE USED, THEY SHOULD OVERLAP A MINIMUM OF 18 INCHES.

Ⓕ THE PROPOSED CULVERT CONSTRUCTION SHALL BE SEALED FROM THE EXISTING STREAM BY MEANS OF A SANDBAG BERM WHICH WILL BE TIED IN TO EITHER HIGH GROUND BESIDE THE CHANNEL OR THE EXISTING ROADWAY EMBANKMENT, UP TO THE 2-YEAR FLOOD LEVEL.

Ⓖ THE TEMPORARY DRAINAGE PIPE WILL BE SUPPORTED AT ALL JOINTS AND AT INTERVALS NOT TO EXCEED MAXIMUM VALUES SPECIFIED IN THE TABLE "MINIMUM SPAN FOR SUPPORTS." SUPPORTS MAY CONSIST OF SANDBAGS, CONCRETE BLOCKS, WOODEN FRAMES, OR ANY OTHER MATERIAL SUFFICIENT TO SUPPORT THE WEIGHT OF THE PIPE WHEN IT IS FLOWING FULL. SUPPORTS AT JOINTS SHALL BE A MINIMUM OF 18 INCHES IN LENGTH, ALONG THE TEMPORARY DRAINAGE PIPE AND CENTERED ON THE JOINT. SUPPORTS SHOULD "CRADLE" THE TEMPORARY DRAINAGE PIPE TO ENSURE THAT IT WILL NOT ROLL DURING CONSTRUCTION OF THE BOX CULVERT.

Ⓗ ALL PIPE JOINTS SHALL BE PROPERLY BANDED OR OTHERWISE PROVIDED WITH A REASONABLE SEAL AGAINST LEAKAGE.

Ⓘ THE OPTIONAL FLEXIBLE PIPE DIVERSION CAN BE USED AS AN ALTERNATE FOR SUSPENDED PIPE DIVERSIONS (UPSTREAM OR DOWNSTREAM).

Ⓙ CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. INSTALL TEMPORARY DRAINAGE PIPE ON ITS SUPPORTS INSIDE THE CULVERT TO BE EXTENDED.
2. CONSTRUCT THE SANDBAG BERM AT THE UPSTREAM END OF THE SUSPENDED PIPE DIVERSIONS.
3. CONSTRUCT THE SANDBAG PLUG AT THE DOWNSTREAM END OF THE SUSPENDED PIPE DIVERSIONS.
4. ONCE THE BOX CULVERT EXTENSION HAS BEEN COMPLETED, REMOVE THE DOWNSTREAM SANDBAG STRUCTURE, EXCEPT FOR THOSE BAGS NEEDED TO SUPPORT THE END OF THE PIPE. THE UPSTREAM SANDBAG STRUCTURE SHOULD THEN BE REMOVED GRADUALLY, IN ORDER TO ALLOW THE UPSTREAM WATER LEVEL TO DRAW DOWN AT A SAFE RATE.
5. REMOVE THE TEMPORARY DRAINAGE PIPE, SUPPORTS AND ANY REMAINING SANDBAGS.

Ⓚ TEMPORARY DRAINAGE PIPE, SANDBAG PLUGS, BERMS, AND SUPPORTS SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY. ANY DEBRIS WHICH HAS ACCUMULATED AT THE INLET OF THE SUSPENDED PIPE DIVERSIONS SHALL BE IMMEDIATELY REMOVED.

Ⓛ FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), AND SILT FENCE WITH WIRE BACKING (EC-STR-3C), SEE THEIR RESPECTIVE STANDARD DRAWINGS.

Ⓜ SUSPENDED PIPE DIVERSIONS (UPSTREAM) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-09.01	SANDBAGS PER BAG
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM) PER SQUARE YARD
621-03.02 THRU 621-03.11	__" TEMPORARY DRAINAGE PIPE PER LINEAR FOOT

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWING.

PUMPS AND FLEXIBLE PIPES SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SUSPENDED PIPE DIVERSIONS (UPSTREAM).

MAXIMUM SPAN FOR PIPE SUPPORTS, FEET

DIAMETER OF PIPE (IN.)	STEEL THICKNESS (IN.)				
	0.064	0.079	0.109	0.138	0.168
	2" X ½" CORRUGATION				
24	13	15	20		
36	12	15	20	25	
48	11	14	19	25	30
60		14	19	24	29
72			18	24	29
	5" X 1" OR 3" X 1" CORRUGATION				
36	9	11			
48	9	11	15		
60	8	10	14	18	
72	8	10	14	18	22

FOR PIPE SIZES NOT SHOWN REFER TO NEXT LARGER SIZE

SOURCE: HANDBOOK OF STEEL DRAINAGE AND HIGHWAY CONSTRUCTION PRODUCTS, 1994, P. 278

EROSION CONTROL PLAN LEGEND: SUSPENDED PIPE DIVERSION

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SUSPENDED PIPE DIVERSION (UPSTREAM)

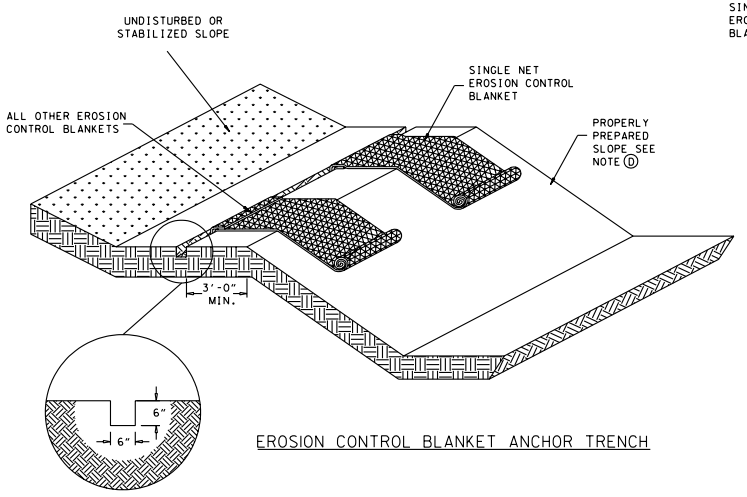
1-20-06 EC-STR-33A

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-34 TO EC-STR-34.

☒ REV. 1-22-03: LAPPED LONGITUDINAL SEAM IN ISOMETRIC VIEW. REMOVED ITEM 805-12.01 FROM GENERAL NOTE (G) SINCE TYPE I BLANKETS ARE NO LONGER USED.

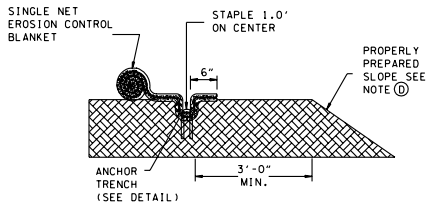
☒ REV. 1-19-05: CHANGED GENERAL NOTE (B). CHANGED PLAN VIEW AND LONGITUDINAL SEAM VEIW.

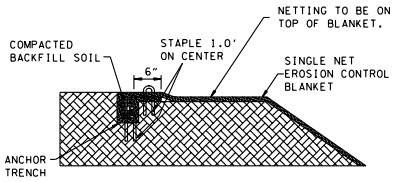
☒ REV. 4-1-08: REDREW REVISED GENERAL NOTES, ADDED STANDARD SYMBOL, REVISED INSTALLATION DETAILS.



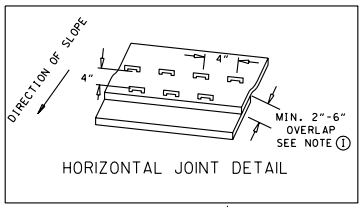
TRANCH DETAIL

EROSION CONTROL BLANKET ANCHOR TRENCH

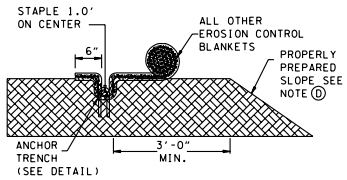


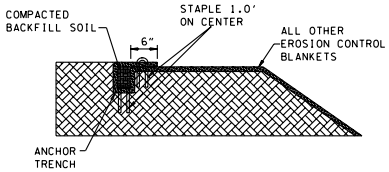


ANCHOR TRENCH DETAILS
SINGLE NET EROSION CONTROL BLANKETS

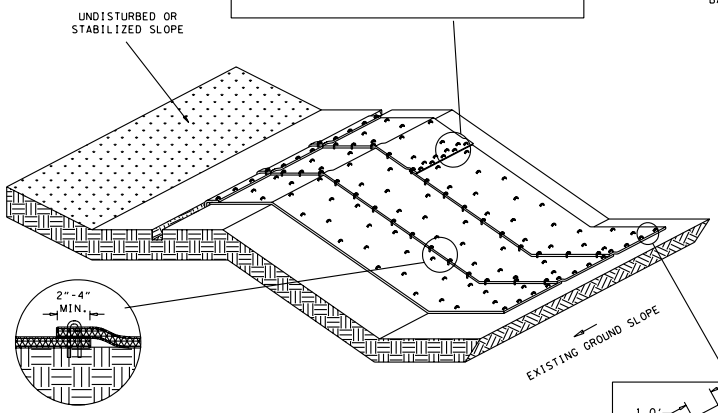


HORIZONTAL JOINT DETAIL

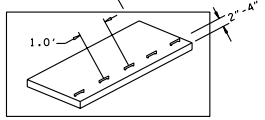




ANCHOR TRENCH DETAILS
ALL OTHER EROSION CONTROL BLANKETS



LONGITUDINAL JOINT DETAIL



SEE NOTE (J)

EROSION CONTROL BLANKET STAPLE DETAILS
(USE MANUFACTURER'S RECOMMENDED STAPLE PATTERN)

EROSION CONTROL PLAN LEGEND: EROSION CONTROL BLANKET

EROSION CONTROL BLANKET SLOPE INSTALLATION GENERAL NOTES

(A) EROSION CONTROL BLANKETS ARE INTENDED TO BE USED AS AN IMMEDIATE MULCH COVER FOR DISTURBED SLOPES THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED.

(B) EROSION CONTROL BLANKETS MAY ALSO BE USED AS CHANNEL LINERS WHERE THE ANTICIPATED MAXIMUM SHEAR STRESS IS LOW. REFER TO EC-STR-36 FOR INSTALLATION DETAILS.

(C) EROSION CONTROL BLANKETS SHALL BE INSTALLED ACCORDING TO MANUFACTURES SPECIFICATIONS. WHEN NOT AVAILABLE INSTALL ACCORDING TO NOTES D THRU J.

(D) STEP ONE: SITE PREPARATION
THE SITE SHOULD BE FINE GRADED TO A SMOOTH PROFILE AND RELATIVELY FREE FROM ALL WEEDS, CLODS, STONES, ROOTS, STICKS, RIVULETS, GULLIES, CRUSTING AND CAKING. FILL ANY VOIDS AND MAKE SURE THE SLOPE IS COMPACTED PROPERLY.

(E) STEP TWO: SEEDING
SEEDING WITHOUT MULCH SHOULD BE APPLIED TO THE AREA TO BE VEGETATED.

(F) STEP THREE: PREPARE THE ANCHOR TRENCH
AT THE TOP OF THE SLOPE EXCAVATE AN ANCHOR TRENCH 6 INCHES DEEP BY 6 INCHES WIDE. THE EROSION CONTROL BLANKET WILL BE ANCHORED INTO THE TRENCH BY STAPLES. ALLOW A MINIMUM OF 3 FEET FROM THE CREST OF THE SLOPE TO THE ANCHOR TRENCH.

(G) STEP FOUR: SECURE THE EROSION CONTROL BLANKET IN THE ANCHOR TRENCH
BEGIN EROSION CONTROL BLANKET PLACEMENT 30 INCHES ABOVE THE ANCHOR TRENCH. RUN THE EROSION CONTROL BLANKET INTO THE ANCHOR TRENCH. ANCHOR THE EROSION CONTROL BLANKET WITH STAPLES ONE FOOT ON CENTER IN THE ANCHOR TRENCH. BE SURE TO DRIVE STAPLES OR STAKES FLUSH WITH THE SOIL SURFACE. BACKFILL THE ANCHOR TRENCH AND COMPACT THE SOIL. PLACE SEED OVER THE COMPACTED SOIL. COVER THE COMPACTED SOIL WITH THE REMAINING 12 INCHES OF THE TERMINAL END OF THE EROSION CONTROL BLANKET. STAPLE OR STAKE TERMINAL END DOWN SLOPE OF THE ANCHOR TRENCH ON ONE FOOT CENTERS.

(H) STEP FIVE: EROSION CONTROL BLANKET DEPLOYMENT
STARTING AT THE CREST OF THE SLOPE, ROLL THE EROSION CONTROL BLANKET DOWN THE SLOPE IN A CONTROLLED MANNER. APPROXIMATELY EVERY 20-25 FEET PULL THE EROSION CONTROL BLANKET TO TAKE OUT ANY EXCESS SLACK. THE GOAL IS TO HAVE THE EROSION CONTROL BLANKET CONTOUR AND INITIATE CONTACT WITH THE SOIL.

(I) STEP SIX: STAPLE OR STAKE THE EROSION CONTROL BLANKET
SECURE THE OVERLAP OR THE EDGES WITH STAPLES. THE TYPICAL INSTALLATION WILL REQUIRE ONE STAPLE PLACED AT THREE TO FIVE FEET INTERVALS ALONG THE VERTICAL LENGTH OF THE EROSION CONTROL BLANKET. STAPLES SHOULD BE STAGGERED EVERY 18 TO 24 INCHES HORIZONTALLY ACROSS THE EROSION CONTROL BLANKET. IF THE EROSION CONTROL BLANKET NEEDS TO BE SPLICED IN THE MIDDLE OF A SLOPE BE SURE THE EROSION CONTROL BLANKET IS "SHINGLED" WITH UP-SLOPE EROSION CONTROL BLANKET OVERLAPPING THE DOWN-SLOPE EROSION CONTROL BLANKET. THERE SHOULD BE A MINIMUM OF 4-INCHES OF OVERLAP IN A SPLICE. USE A STAPLE CHECK SLOT TO SECURE THE OVERLAP. A STAPLE CHECK SLOT IS MADE BY PLACING A ROW OF STAPLES 4-INCHES ON CENTER AND THEN PLACING A SECOND ROW OF STAPLES 4-INCHES ON CENTER, STAGGERED FROM THE FIRST ROW.

(J) STEP SEVEN: SECURING THE EROSION CONTROL BLANKET AT THE SLOPE TOE
ROLL THE EROSION CONTROL BLANKET 24-INCHES PAST THE TOE OF THE SLOPE. STAPLE OR STAKE TERMINAL END OF THE EROSION CONTROL BLANKET ON ONE FOOT CENTERS.

(K) ONLY EROSION CONTROL BLANKETS LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED.

(L) EROSION CONTROL BLANKETS FOR SLOPE INSTALLATION SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

801-02	SEEDING (WITHOUT MULCH) PER UNIT
801-02.01	CROWN VETCH MIXTURE (WITHOUT MULCH) PER UNIT
801-02.08	TEMPORARY SEEDING (WITHOUT MULCH) PER UNIT
805-12.01	EROSION CONTROL BLANKET (TYPE I) PER SQUARE YARD
805-12.02	EROSION CONTROL BLANKET (TYPE II) PER SQUARE YARD
805-12.03	EROSION CONTROL BLANKET (TYPE III) PER SQUARE YARD
805-12.04	EROSION CONTROL BLANKET (TYPE IV) PER SQUARE YARD

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION AND MAINTENANCE OF EROSION CONTROL BLANKETS.

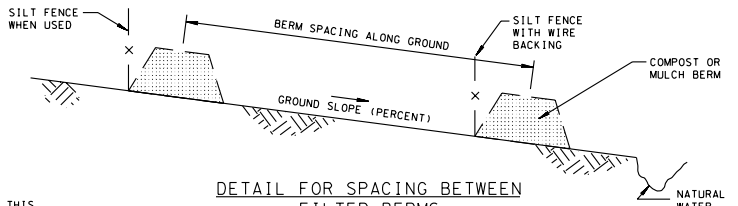
☒ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

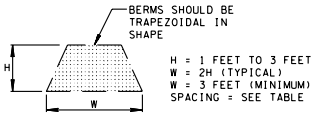
EROSION CONTROL BLANKET FOR SLOPE INSTALLATION

10-26-92 | EC-STR-34

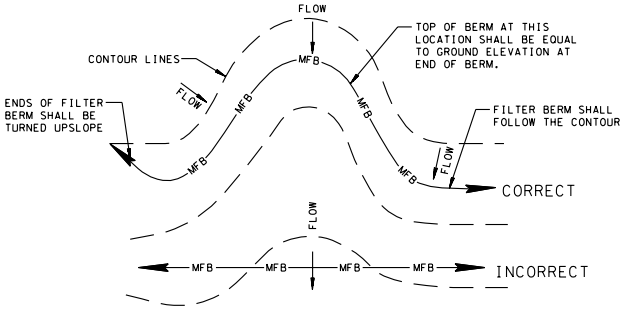
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, REVISED NOTES, MISC. EDITS TO DRAWING.



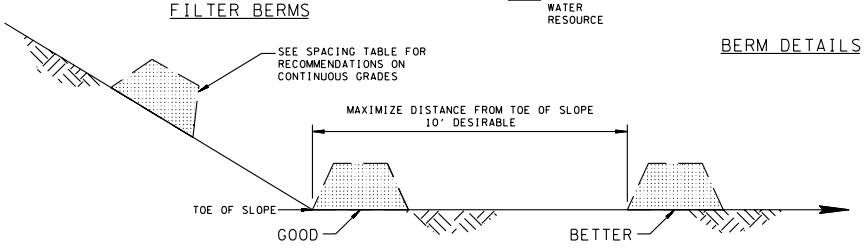
DETAIL FOR SPACING BETWEEN FILTER BERMS



BERM DETAILS



PLAN VIEW



SLOPE PROFILE

FILTER BERM SPACING	
GROUND SLOPE (%)	RECOMMENDED SPACING BETWEEN BERMS ALONG GROUND (FT)
<2	110
2-5	100
5-10	75
10-20	25
>20	NOT ALLOWED

COMPOST MATERIAL SPECIFICATIONS			
		RANGE	
PROPERTY	UNITS	BERM TO BE VEGETATED (1)	BERM TO BE NON-VEGETATED
pH	pH	5.0-8.5	N/A
SOLUBLE SALT CONCENTRATION	dS/m	MAXIMUM 5	N/A
MOISTURE CONTENT	% WET WEIGHT BASIS	30-60	30-60
ORGANIC MATTER	% DRY WEIGHT BASIS	25-65	25-100
PHYSICAL CONTAMINANTS (MAN-MADE INERTS)	% DRY WEIGHT BASIS	LESS THAN 1	LESS THAN 1
PARTICLE SIZE	% PASSING SELECTED MESH SIZE, DRY WEIGHT BASIS	3 INCH - 100% 1 INCH - 90% - 100% 3/4 INCH - 70% - 100% 1/4 INCH - 30% - 75% MAXIMUM PARTICLE SIZE LENGTH 6 INCHES	3 INCH - 100% 1 INCH - 90% - 100% 3/4 INCH - 70% - 100% 1/4 INCH - 30% - 75% MAXIMUM PARTICLE SIZE LENGTH 6 INCHES

(1) COARSE COMPOSTS WHICH CONTAIN LESS THAN 30% OF FINE PARTICLES 0.039 INCHES (1 mm IN SIZE) SHOULD BE AVOIDED IF THE COMPOST BERM IS TO BE VEGETATED

EROSION CONTROL PLAN LEGEND: ———CFB———CFB——— COMPOST FILTER BERM

EROSION CONTROL PLAN LEGEND: ———MFB———MFB——— MULCH FILTER BERM

COMPOST OR MULCH FILTER BERM GENERAL NOTES

(A) COMPOST OR MULCH FILTER BERMS ARE SEDIMENT CONTROL DEVICES WHICH MAY BE USED IN PLACE OF SILT FENCE TO CONTROL SEDIMENT TRANSPORT FROM AREAS WHERE RUNOFF OCCURS AS SHEET FLOW.

(B) THE MAXIMUM DRAINAGE AREA FOR A CONTINUOUS BERM SHALL BE 1/4 ACRE PER 100 LINEAR FEET OF FILTER BERM.

(C) FILTER BERMS SHALL NOT BE USED TO TREAT CONCENTRATED FLOW AND SHOULD BE USED WITH SILT FENCE WITH WIRE BACKING OR OTHER APPROPRIATE STRUCTURAL MEASURES ON SITES WHICH DRAIN TO SENSITIVE NATURAL WATER RESOURCES (WETLANDS OR STREAMS).

(D) FILTER BERMS MAY BE USED IN CONJUNCTION WITH SILT FENCE OR SILT FENCE WITH WIRE BACKING AND SHOULD BE CONSTRUCTED DIRECTLY AT THE BASE OF THE OTHER STRUCTURAL MEASURE (DOWNHILL SIDE).

(E) WHERE POSSIBLE, BERMS SHOULD BE PLACED AWAY FROM THE TOE OF SLOPES A MINIMUM OF 10 FEET TO ALLOW FOR ENERGY DISSIPATION AND STORAGE OF SEDIMENT.

(F) FILTER BERMS SHALL BE PLACED ALONG OR ON THE GROUND CONTOUR WITH THE ENDS OF THE FILTER BERM TURNED UP SLOPE. ADEQUATE AREA SHALL BE PROVIDED BEHIND BERM FOR PONDING OF WATER.

(G) MULCH FILTER BERMS SHALL CONSIST OF 100 PERCENT WOOD CHIPS. COMPOST FILTER BERM SHALL CONSIST OF 50 PERCENT WOOD CHIPS BLENDED WITH 50 PERCENT COMPOST SPECIFIED IN COMPOST BERM MATERIAL SPECIFICATIONS TABLE. ALL WOOD CHIPS SHALL BE LESS THAN 6 INCHES IN LENGTH WITH 95 PERCENT PASSING A 2 INCH SCREEN AND NOT LESS THAN 30 PERCENT PASSING A 1 INCH SCREEN.

(H) COMPOST FILTER BERM MAY BE VEGETATED WITH TEMPORARY OR PERMANENT SEEDING AFTER PLACEMENT. MULCH FILTER BERMS SHALL NOT BE SEEDED.

(I) ROUTINELY INSPECT FILTER BERMS AND MAINTAIN TO A FUNCTIONAL CONDITION THROUGHOUT CONSTRUCTION. INSTALL ADDITIONAL FILTER MATERIAL AS DIRECTED BY THE ENGINEER. UPON PROJECT COMPLETION, DISPERSE OR REMOVE BERM OR LEAVE IN PLACE AS DIRECTED BY THE ENGINEER.

(J) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR SILT FENCE (EC-STR-3B) AND SILT FENCE WITH WIRE BACKING (EC-STR-3C) SEE STANDARD DRAWINGS.

(K) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.

(L) COMPOST OR MULCH FILTER BERMS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-01.30 TEMPORARY COMPOST FILTER BERM PER CUBIC YARD
209-01.31 TEMPORARY MULCH FILTER BERM PER CUBIC YARD

SILT FENCE AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWING.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE FILTER BERMS.

(M) SEDIMENT SHALL BE REMOVED FROM BEHIND THE FILTER BERM WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

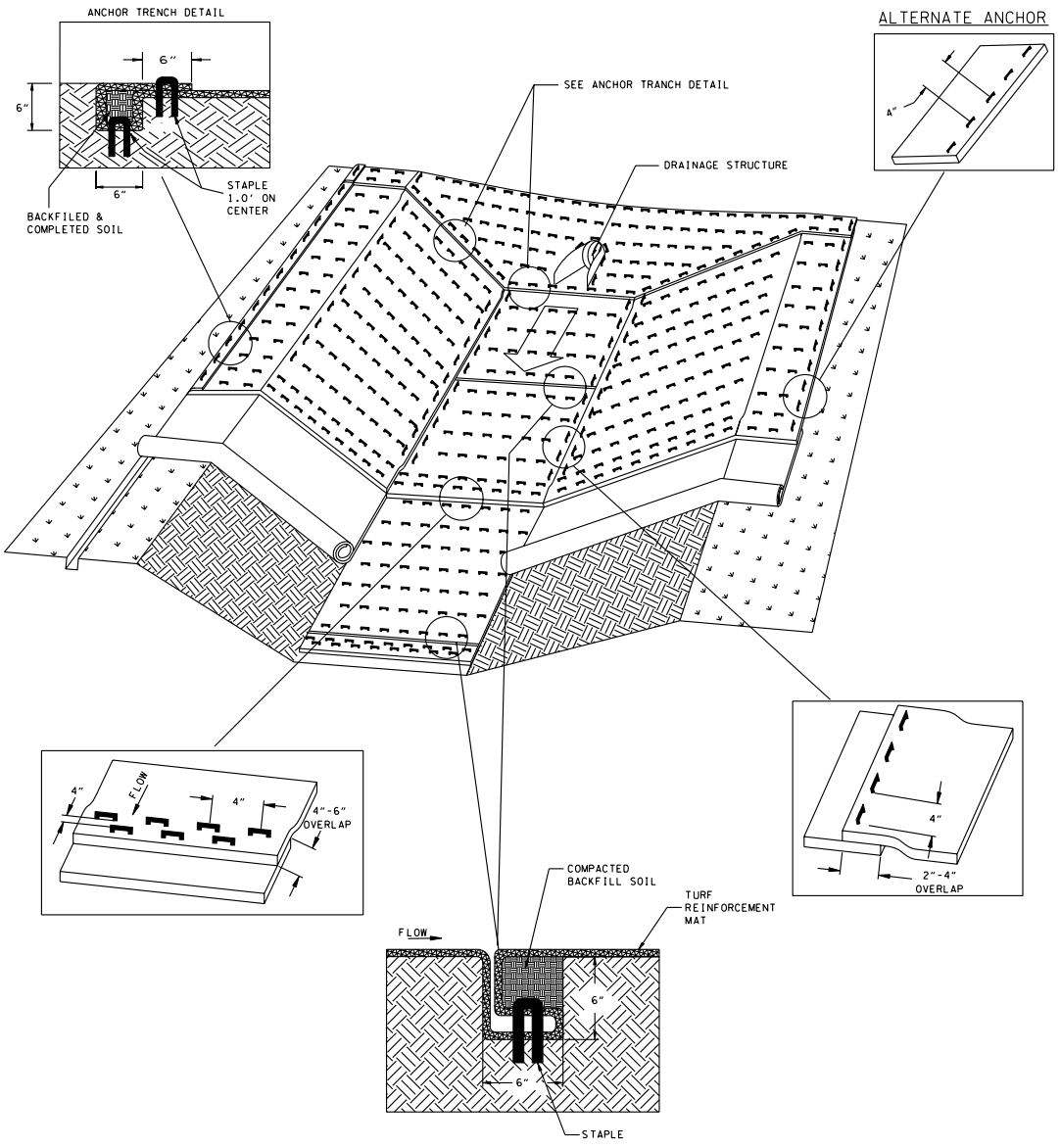
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FILTER BERMS

1-20-06 | EC-STR-35

REV. 1-22-03: CORRECTED LONGITUDINAL SEAM IN ISOMETRIC VIEW.

- REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-35 TO EC-STR-36.
- REV. 5-27-01: CHANGED REFERENCE IN GENERAL NOTES FOR ALL EROSION CONTROL BLANKETS TO FLEXIBLE CHANNEL LINERS.
- REV. 4-1-08: REDREW REVISED GENERAL NOTES, ADDED STANDARD SYMBOL, REVISED INSTALLATION DETAILS.



CHANNEL CHECK SLOT
SEE NOTE (H)

EROSION CONTROL PLAN LEGEND: TURF REINFORCEMENT MAT

TURF REINFORCEMENT MAT FOR CHANNEL INSTALLATION GENERAL NOTES

(A) TURF REINFORCEMENT MATS ARE USED TO PERMANENTLY STABILIZE DITCHES AND SWALES.

(B) EROSION CONTROL BLANKETS MAY BE USED TO TEMPORARILY STABILIZE DITCHES AND SWALES.

(C) TURF REINFORCEMENT MATS SHALL BE INSTALLED ACCORDING TO MANUFACTURES SPECIFICATIONS. WHEN NOT AVAILABLE INSTALL ACCORDING TO NOTES D THRU J.

(D) STEP ONE: SITE PREPARATION
THE CHANNEL SHOULD BE FINE GRADED TO A SMOOTH PROFILE AND RELATIVELY FREE FROM ALL WEEDS, CLODS, STONES, ROOTS, STICKS, RIVULETS, GULLIES, CRUSTING AND CAKING. FILL ANY VOIDS AND MAKE SURE THE CHANNEL IS COMPACTED PROPERLY.

(E) STEP TWO: SEEDING
SEEDING WITHOUT MULCH SHOULD BE APPLIED TO THE AREA TO BE VEGETATED.

(F) STEP THREE: ANCHORING THE TURF REINFORCEMENT
TURF REINFORCEMENT MATS SHALL BE ANCHORED AT THE BEGINNING OF THE CHANNEL. A 6-INCH WIDE BY 6-INCH DEEP TRENCH SHOULD BE EXCAVATED PERPENDICULAR TO THE DIRECTION OF WATER FLOW ACROSS THE ENTIRE WIDTH OF THE CHANNEL. THE TURF REINFORCEMENT MAT SHOULD BE LAID IN THE CHECK SLOT WITH 30 INCHES OF THE TURF REINFORCEMENT MAT EXTENDING UPSTREAM OF THE ANCHORING TRENCH. STAKE OR STAPLE THE TURF REINFORCEMENT MAT IN THE CHECK SLOT ON 12-INCH CENTERS. BACKFILL THE ANCHOR TRENCH AND COMPACT THE SOIL. PLACE SEED OVER THE COMPACTED SOIL. COVER THE COMPACTED SOIL WITH THE REMAINING 12 INCHES OF THE TERMINAL END OF THE TURF REINFORCEMENT MAT. STAPLE OR STAKE TERMINAL END DOWN SLOPE OF THE ANCHOR TRENCH ON 12-INCH CENTERS.

(G) STEP FOUR: TURF REINFORCEMENT MAT DEPLOYMENT IN THE CHANNEL BOTTOM
THE TURF REINFORCEMENT MATS SHOULD BE UNROLLED IN THE DIRECTION OF WATER FLOW. FIRST THE TURF REINFORCEMENT MAT IS DEPLOYED IN THE CHANNEL BOTTOM. IT IS ALSO NECESSARY TO PREVENT A SEAM FROM GOING DOWN THE CENTER OF THE CHANNEL BOTTOM OR IN AREAS OF CONCENTRATED WATER FLOW. WHEN INSTALLING TWO TURF REINFORCEMENT MATS SIDE BY SIDE IN A WATERWAY THE CENTER OF THE TURF REINFORCEMENT MAT SHOULD BE CENTERED IN THE AREA OF CONCENTRATED WATER FLOW. INSTALL ADJOINING TURF REINFORCEMENT MATS AWAY FROM THE CENTER OF THE CHANNEL BOTTOM. ADJOINING TURF REINFORCEMENT MATS SHOULD BE OVERLAPED 2 TO 4 INCHES. CONTINUE TO INSTALL A COMMON ROW OF STAPLES AT TWO-FOOT CENTERS ALONG THE LENGTH OF THE OVERLAP.

(H) STEP FIVE: CHECK SLOTS
CHECK SLOTS SHOULD BE PLACED PERPENDICULAR TO THE FLOW DIRECTION ACROSS THE ENTIRE WIDTH OF THE CHANNEL AT 25-FOOT INTERVALS AND AT THE TERMINAL END OF THE CHANNEL. THE CHECK SLOTS SHOULD BE PLACED IN A 6-INCH WIDE X 6-INCH DEEP TRENCH AS SHOWN. SECURE TURF REINFORCEMENT MAT IN THE UP STREAM SIDE OF THE CHECK SLOT WITH STAPLES OR STAKES ON 12-INCH CENTERS. FLIP THE TURF REINFORCEMENT MAT ROLL ON THE UPSTREAM EDGE. BACK FILL THE CHECK SLOT AS SHOWN AND COMPACT THE SOIL. CONTINUE ROLLING THE TURF REINFORCEMENT MAT DOWN STREAM OVER THE COMPLETED CHECK SLOT.

(I) STEP SIX: TURF REINFORCEMENT MAT DEPLOYMENT ON THE SIDE SLOPES
CONTINUE TO ROLL THE TURF REINFORCEMENT MAT ALONG THE CHANNEL BOTTOM AND SIDE SLOPES IN THE DIRECTION OF THE WATER FLOW. AS THE TURF REINFORCEMENT MAT IS INSTALLED FROM THE CHANNEL BOTTOM UP THE SLOPE A SHINGLE TYPE INSTALLATION IS RECOMMENDED WITH THE UP-SLOPE TURF REINFORCEMENT MAT OVERLAPPING THE LOWER TURF REINFORCEMENT MAT APPROXIMATELY 2-4 INCHES. ANCHOR THE TURF REINFORCEMENT MATS WITH A MINIMUM ONE STAPLE EVERY 24 INCHES ACROSS THE WIDTH AND ONE STAPLE EVERY 36 INCHES DOWN ITS LENGTH. IF THE TURF REINFORCEMENT MAT NEEDS TO BE SPLICED, BE SURE THE TURF REINFORCEMENT MAT IS "SHINGLED" WITH THE UP-STREAM TURF REINFORCEMENT MAT OVERLAPPING THE DOWN-STREAM TURF REINFORCEMENT MAT. THERE SHOULD BE MINMUM OF 4 INCHES OF OVERLAP IN A SPLICE. USE A STAPLE CHECK SLOT TO SECURE THE OVERLAP. ANCHOR THE TURF REINFORCEMENT MAT PLACED AT THE TOP OF THE CHANNEL SLOPE IN THE SAME MANNER AS SHOWN.

(J) STEP SEVEN: TERMINAL END
SECURE THE TURF REINFORCEMENT MAT AT THE TERMINAL END OF THE CHANNEL WITH A CHECK SLOT SIMILAR TO THE ONE MADE AT THE BEGINNING OF THE CHANNEL.

(K) ONLY TURF REINFORCEMENT MATS LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED.

(L) TURF REINFORCEMENT MATS FOR CHANNEL INSTALLATION SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

801-02	SEEDING (WITHOUT MULCH) PER UNIT
801-02.01	CROWN VETCH MIXTURE (WITHOUT MULCH) PER UNIT
801-02.08	TEMPORARY SEEDING (WITHOUT MULCH) PER UNIT
805-01.01	TURF REINFORCEMENT MAT (TYPE I) PER SQUARE YARD
805-01.02	TURF REINFORCEMENT MAT (TYPE II) PER SQUARE YARD
805-01.03	TURF REINFORCEMENT MAT (TYPE III) PER SQUARE YARD

EROSION CONTROL BLANKETS SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION AND MAINTENANCE OF TURF REINFORCEMENT MATS.

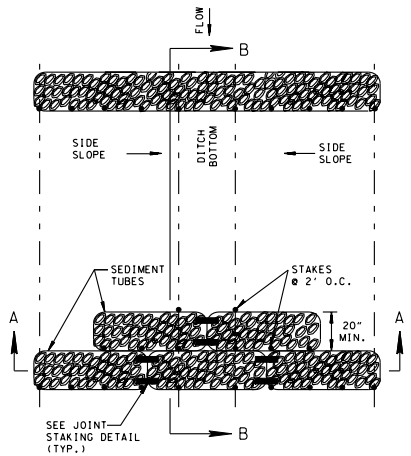
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

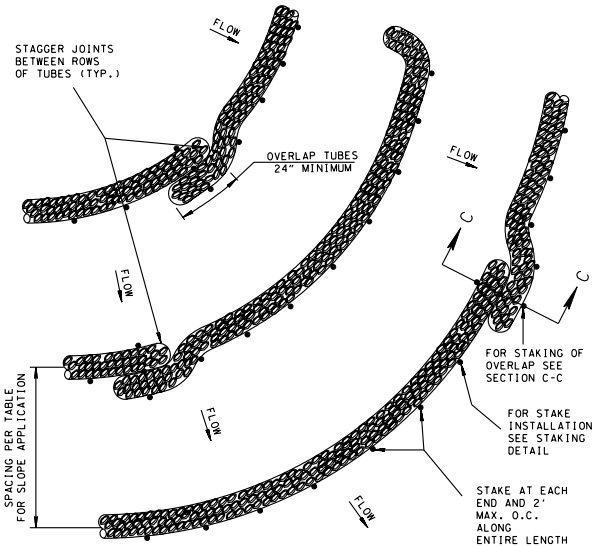
TURF REINFORCEMENT MAT FOR CHANNEL INSTALLATION

10-26-92 EC-STR-36

- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, ADDED OVERLAP DETAIL, OTHER MINOR MISC. EDITS, REVISED GENERAL NOTES.



PLAN VIEW FOR DITCH APPLICATION



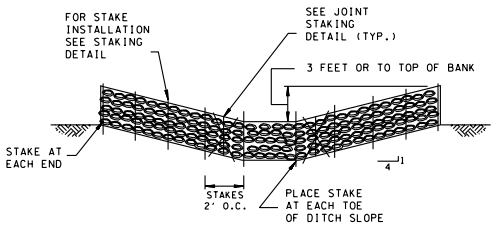
PLAN VIEW FOR SLOPE APPLICATION

SEDIMENT TUBE SPACING FOR SLOPE APPLICATION					
SLOPE	8"	12"	18"	20"	24"
2%	70'	100'	N/A	N/A	N/A
5%	30'	60'	100'	100'	100'
10%	20'	30'	70'	85'	100'
6:1	N/A	20'	40'	50'	55'
4:1	N/A	20'	30'	30'	30'
3:1	N/A	N/A	20'	20'	25'
2:1	N/A	N/A	20'	20'	20'

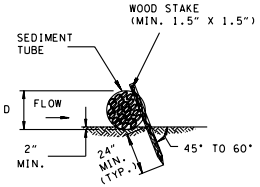
N/A = NOT RECOMMENDED

SEDIMENT TUBE SPACING TABLE FOR DITCH APPLICATION	
SLOPE	MAXIMUM SEDIMENT TUBE SPACING
LESS THAN 2%	125'
2%	100'
3%	75'
4%	50'
5%	40'
6%	30'
GREATER THAN 6%	25'

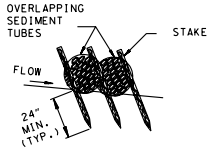
BASED ON A 20" SEDIMENT TUBE



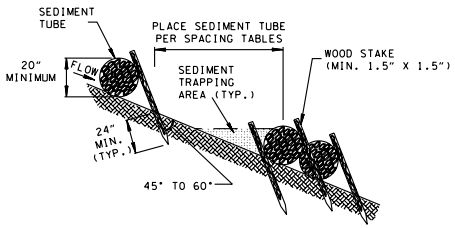
SECTION A-A



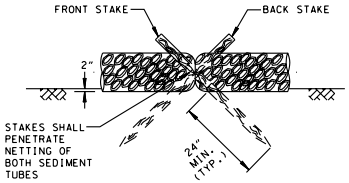
STAKING DETAIL



SECTION C-C



SECTION B-B



JOINT STAKING DETAIL

(DITCH APPLICATION ONLY)

EROSION CONTROL PLAN LEGEND: TUBE••TUBE••TUBE SEDIMENT TUBE

SEDIMENT TUBE GENERAL NOTES

(A) SEDIMENT TUBES CAN BE PLACED AT THE TOP, ON THE FACE, OR AT THE TOE OF SLOPES TO INTERCEPT RUNOFF, REDUCE FLOW VELOCITY, RELEASE THE RUNOFF AS SHEET FLOW AND PROVIDE REMOVAL OF SEDIMENT FROM THE RUNOFF.

(B) SEDIMENT TUBES SHALL BE INSTALLED ALONG OR ON THE GROUND CONTOUR, AT THE TOE OF SLOPES, OR IN A DITCH TO HELP REDUCE THE EFFECTS OF SOIL EROSION AND RETAIN SEDIMENT. SEDIMENT TUBES SHOULD NOT BE USED IN DITCHES OR STREAMS WITH CONTINUOUS FLOW.

(C) FOR DITCH APPLICATIONS, THE MAXIMUM DRAINAGE AREA SHALL BE 15 ACRES. AT SITES WHICH DRAIN TO HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE MAXIMUM DRAINAGE AREA SHALL BE 10 ACRES. FOR SLOPE APPLICATIONS, THE MAXIMUM DRAINAGE ARES SHALL BE ¼ ACRE PER 100 LF OF TUBE.

(D) SEDIMENT TUBES SHALL NOT BE USED ON PAVEMENT, ROCKY SOILS, OR ANY OTHER LOCATION WHERE THE STAKES CANNOT BE DRIVEN TO THE REQUIRED DEPTH.

(E) SEDIMENT TUBES SHALL BE MANUFACTURED FROM WOOD EXCELSIOR, RICE OR WHEAT STRAW, COCONUT FIBERS, OR HARDWOOD MULCH THAT IS ENCLOSED BY A TUBULAR FLEXIBLE NETTING MATERIAL. ALL MATERIALS INCLUDING THE NETTING SHALL BE BIODEGRADABLE.

(F) PINE NEEDLE AND LEAF MULCH FILLED SEDIMENT TUBES AND STRAW BALES ARE NOT ACCEPTABLE MATERIALS.

(G) THE DIAMETER OF A SEDIMENT TUBE SHALL BE A MINIMUM OF 8 INCHES AND A MAXIMUM OF 24 INCHES. DIAMETER TOLERANCE IS 2 INCHES. FOR DITCH APPLICATIONS, SEDIMENT TUBES SHALL BE A MINIMUM OF 20 INCHES.

(H) SEDIMENT TUBES SHALL BE INSTALLED WITH WOODEN STAKES (MIN. 1.5" x 1.5" ACTUAL). THE STAKE SHALL BE EMBEDDED A MINIMUM OF 2 FEET.

(I) SEDIMENT TUBES SHALL BE TRENCHED IN A MINIMUM OF 2 INCHES.

(J) IF MORE THAN ONE SEDIMENT TUBE IS PLACED IN A ROW IN SLOPE APPLICATION, THE TUBES SHALL BE OVERLAPPED A MINIMUM OF 24 INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT. WHEN USED IN DITCHES, TWO ROWS OF TUBE SHALL BE PLACED ON THE CHANNEL BOTTOM WITH STAGGERED JOINTS AS SHOWN.

(K) FOR DITCH APPLICATIONS, SEDIMENT TUBES SHALL BE A MINIMUM OF 20 INCH DIAMETER AND SHALL BE PLACED PERPENDICULAR TO THE FLOW OF WATER. SEDIMENT TUBES SHALL CONTINUE UP THE SIDES SLOPES A MINIMUM OF 3 FEET PLUS THE DIAMETER OF THE TUBE, OR TO THE TOP OF THE DITCH, WHICHEVER IS LESS.

(L) SEDIMENT TUBES USED IN SLOPE APPLICATIONS MAY REMAIN IN PLACE TO BIODEGRADE. FOR DITCH APPLICATIONS SEDIMENT TUBES SHALL BE COMPLETELY REMOVED AFTER FULLY ESTABLISHED VEGETATION HAS COMPLETELY DEVELOPED.

(M) SEDIMENT TUBES SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS NUMBERS:

740-11.01 TEMPORARY SEDIMENT TUBE (8 INCH) PER LINEAR FOOT
740-11.02 TEMPORARY SEDIMENT TUBE (12 INCH) PER LINEAR FOOT
740-11.03 TEMPORARY SEDIMENT TUBE (18 INCH) PER LINEAR FOOT
740-11.04 TEMPORARY SEDIMENT TUBE (20 INCH) PER LINEAR FOOT
740-11.05 TEMPORARY SEDIMENT TUBE (24 INCH) PER LINEAR FOOT

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SEDIMENT TUBE.

(N) ONLY SEDIMENT TUBES LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED.

(O) SEDIMENT SHALL BE REMOVED FROM BEHIND THE SEDIMENT TUBE WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

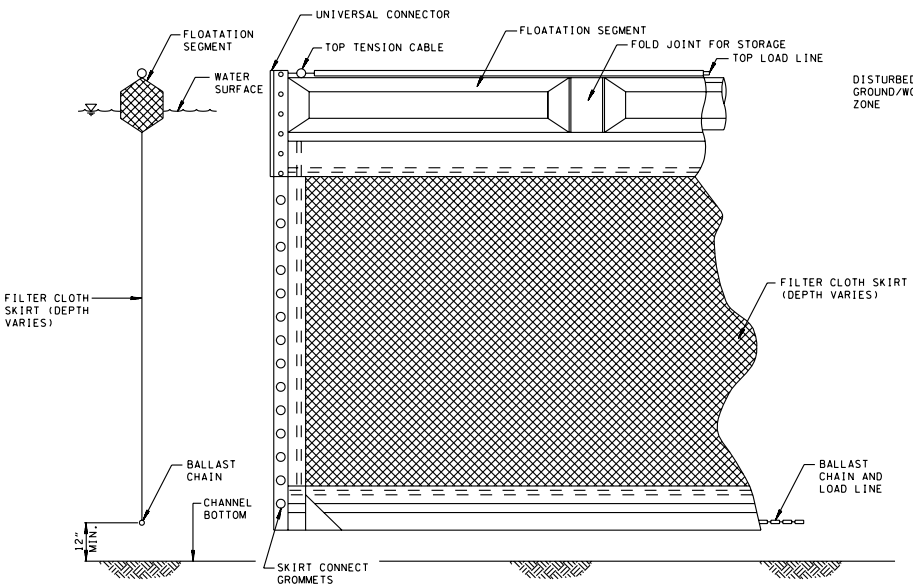
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SEDIMENT TUBE

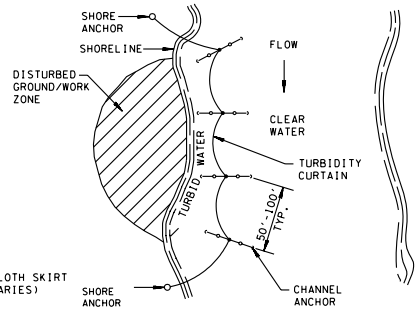
1-20-06 EC-STR-37

- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED GENERAL NOTES.

FLOATING TURBIDITY CURTAIN

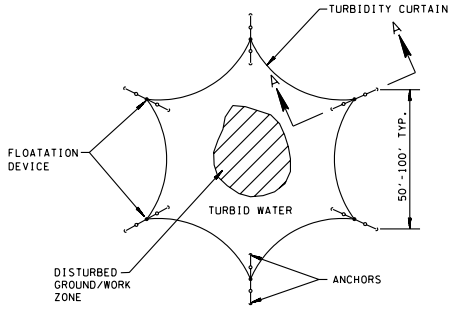


TYPICAL ANCHORING PLAN FOR SHORELINE/RIVER EDGE WORK



PLAN VIEW

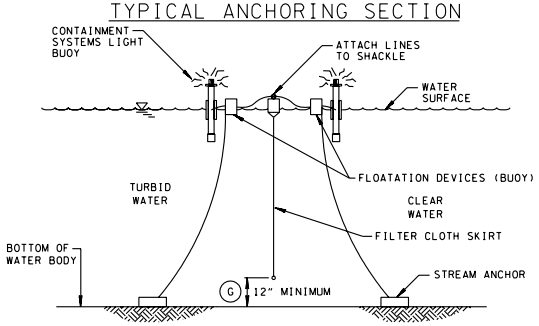
TYPICAL ANCHORING PLAN FOR MID CHANNEL WORK (BRIDGE PIER, CAISSON, ETC.)



PLAN VIEW

PHYSICAL PROPERTIES OF TURBIDITY CURTAIN FABRIC	
PHYSICAL PROPERTY	MINIMUM REQUIREMENT
THICKNESS, MILS	45
WEIGHT, OZ. / SQ. YD.	18
GRAB TENSILE STRENGTH, LBS.	300
UV INHIBITOR	MUST BE INCLUDED
APPARENT OPENING SIZE (AOS)	FINER THAN OR EQUAL TO #70 U.S. STANDARD SIEVE

TYPICAL ANCHORING SECTION



SECTION A-A

AUTOMATIC FLASHING LIGHT BUOY (ON AT DUSK-OFF AT DAWN) 100' ON CENTER SHALL BE USED IN NAVIGABLE CHANNELS ONLY

EROSION CONTROL PLAN LEGEND: FLOATING TURBIDITY CURTAIN

FLOATING TURBIDITY CURTAIN GENERAL NOTES

(A) FLOATING TURBIDITY CURTAINS (ALSO KNOWN AS TURBIDITY BARRIERS OR SILT CURTAINS) CREATE A BARRIER TO PREVENT TURBID WATER FROM ENTERING CLEAR WATER. FLOATING TURBIDITY CURTAINS SHOULD BE USED TO ISOLATE ACTIVE CONSTRUCTION AREAS WITHIN OR ADJACENT TO A BODY OF WATER TO MINIMIZE THE MIGRATION OF SILT LADEN WATER OUT OF THE CONSTRUCTION ZONE.

(B) TURBIDITY CURTAINS SHALL NOT BE INSTALLED PERPENDICULAR ACROSS THE MAIN FLOW OF A SIGNIFICANT BODY OF MOVING WATER.

(C) FLOATING TURBIDITY CURTAINS SHALL NO BE USED WHERE THE ANTICIPATED FLOW VELOCITIES WILL EXCEED 5 FT/SEC.

(D) TURBIDITY CURTAINS SHALL BE ANCHORED TO PREVENT DRIFT SHOREWARD OR DOWNSTREAM. ANCHORAGE SHALL BE INSTALLED ON BOTH SHORE AND STREAM SIDE. CURTAINS SHALL BE INSTALLED AS CLOSE TO PROJECT SITE AS POSSIBLE. BARRIERS SHOULD BE A BRIGHT COLOR (YELLOW OR "INTERNATIONAL" ORANGE ARE RECOMMENDED) THAT WILL ATTRACT THE ATTENTION OF NEARBY BOATERS.

(E) SHORE ANCHORS SHALL CONSIST OF A POST WITH DEADMAN OR APPROVED EQUAL. STREAM ANCHORS SHALL BE OF SUFFICIENT SIZE TO STABILIZE THE BARRIER WITH NUMBER AND SPACING DEPENDENT ON WATERWAY VELOCITIES AND MANUFACTURER'S RECOMMENDATIONS.

(F) IN SHALLOW WATER (2 FEET OF DEPTH OR LESS) A TURBIDITY CURTAIN MAY BE INSTALLED ON STAKES DRIVEN INTO THE BED OF THE WATER BODY.

(G) FABRIC SECTIONS SHALL BE CONNECTED END TO END WITH MINIMUM 5/8" DIAMETER POLYPROPYLENE ROPE. FABRIC SHALL BE SEAMED TOGETHER IN A MANNER THAT RETAINS THE OVERALL TENSILE STRENGTH.

(H) DESIGN OF CURTAIN AND ANCHORAGE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FILTER CLOTH SKIRT SHOULD BE ABLE TO WITHSTAND THE FORCES IMPARTED ON IT DUE TO THE EXPECTED WIND VELOCITY OR STREAM VELOCITY. FABRIC SHALL BE MADE OF A NON-DETERIORATING MATERIAL, SUCH AS PLASTIC OR NYLON, WHICH WILL ALLOW WATER TO PASS THROUGH WHILE STILL RETAINING SEDIMENT.

(I) THE TURBIDITY CURTAIN AND ADJACENT WORK AREAS SHALL NOT BE DISTURBED 12 HOURS PRIOR TO REMOVAL FROM WATER BODY. MAINTENANCE SHALL BE PERFORMED AS NEEDED. CONTRACTOR SHALL REMOVE THE CURTAIN AT COMPLETION OF WORK IN A MANNER THAT WILL PREVENT SILTATION OF THE WATERWAY. DURING REMOVAL, EXTREME CARE SHOULD BE TAKEN NOT TO DISTURB ANY SEDIMENT DEPOSITS.

(J) MAINTAIN 12" MINIMUM GAP BETWEEN SKIRT BOTTOM AND CHANNEL BOTTOM TO PREVENT ACCUMULATED SEDIMENT FROM PULLING TOP OF CURTAIN BELOW WATER SURFACE.

(K) IN WIND OR WAVE ACTION SITUATIONS, THE MAXIMUM DEPTH OF THE CURTAIN SHALL BE 12 FEET.

(L) CONCENTRATED FLOWS SHALL NOT DISCHARGE BEYOND FLOATING TURBIDITY CURTAIN. CURTAINS ARE NOT TO BE INSTALLED ACROSS FLOWING BODY OF WATER.

(M) WHEN INSTALLED IN A NAVIGABLE WATERWAY, BUOYS SHOULD BE LIT ACCORDING TO REGULATORY AGENCY STANDARDS.

(N) WHEN ESTIMATING THE LENGTH OF TURBIDITY CURTAIN, ALLOW 10 TO 20 PERCENT VARIANCE IN STRAIGHT LINE MEASUREMENT.

(O) FLOATING TURBIDITY CURTAIN SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-13.04 TURBIDITY CURTAIN (DESCRIPTION) PER LINEAR FOOT
209-13.05 TURBIDITY CURTAIN (DESCRIPTION) PER LINEAR FOOT
209-13.06 TURBIDITY CURTAIN (DESCRIPTION) PER LINEAR FOOT
209-13.07 TURBIDITY CURTAIN (DESCRIPTION) PER LINEAR FOOT
209-13.08 TURBIDITY CURTAIN (DESCRIPTION) PER LINEAR FOOT

PAYMENT SHALL INCLUDE ALL MATERIAL AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TURBIDITY CURTAINS

(P) ONLY FLOATING TURBIDITY CURTAINS LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED. ANY PRODUCTS LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FLOATING TURBIDITY CURTAIN

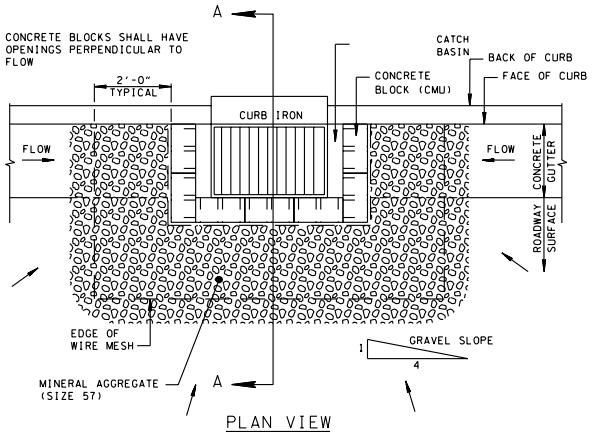
1-20-06 | EC-STR-38

REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.

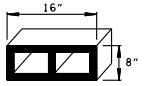
REV. 4-1-08: MISC. MINOR EDITS AND GENERAL NOTE REVISIONS.

CURB INLET PROTECTION TYPE 1

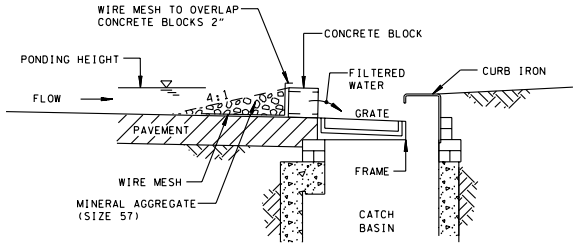
LOW VOLUME, LOW SPEED TRAFFIC AREAS ONLY



PLAN VIEW



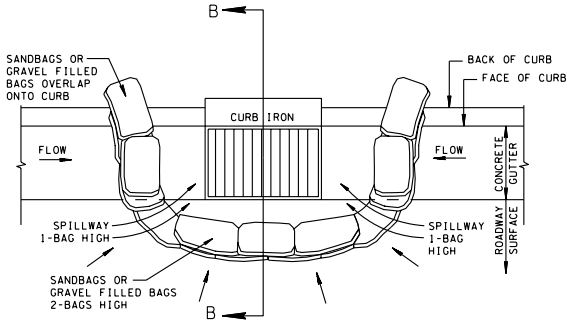
TYPICAL CMU



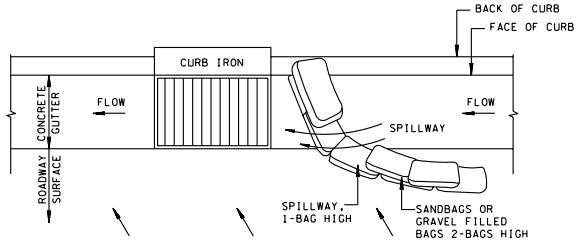
SECTION A-A

CURB INLET PROTECTION TYPE 2

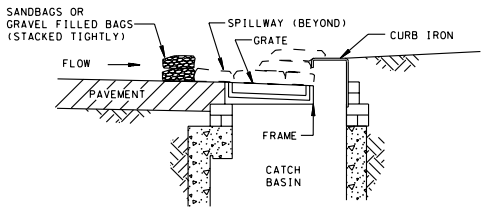
LOW VOLUME, LOW SPEED TRAFFIC AREAS ONLY



PLAN VIEW - INLET AT SAG



PLAN VIEW - INLET ON GRADE



SECTION B-B

CURB INLET PROTECTION TYPE 1 GENERAL NOTES

(A1) CURB INLET PROTECTION (TYPE 1) IS USED TO INTERCEPT SEDIMENT AND PREVENT SEDIMENT LADEN WATER FROM ENTERING STORM SEWER SYSTEMS. THIS DEVICE IS INTENDED AS A SECONDARY SEDIMENT CONTROL MEASURE. CURB INLET PROTECTION (TYPE 1) IS USED IN AREAS WHERE PONDING IS NOT A CONCERN AND ADEQUATE AREA IS AVAILABLE FOR PONDING.

(A2) MAXIMUM DRAINAGE AREA IS 1 ACRE.

(A3) CONCRETE BLOCKS SHALL BE PLACED LENGTHWISE ON THEIR SIDES IN A SINGLE ROW AROUND THE PERIMETER OF THE INLET. THE ENDS OF ADJACENT BLOCKS SHOULD ABUT TIGHTLY TOGETHER.

(A4) ADDITIONAL BLOCKS WITH OPENINGS PERPENDICULAR TO FLOW MAY BE REQUIRED DEPENDING ON AMOUNT OF FLOW AND AVAILABLE PONDING AREA.

(A5) WIRE MESH SHALL BE 19 GUAGE GALVANIZED HARDWARE CLOTH WITH ½ INCH OPENINGS. WIRE SHALL BE SHAPED TO FIT SECURELY AGAINST CONCRETE BLOCK AND SHALL LAP OVER THE TOP OF THE BLOCK A MINIMUM OF 2 INCHES.

(A6) CURB INLET PROTECTION (TYPE 1) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER.

209-09.40 CURB INLET PROTECTION (TYPE 1) PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CURB INLET PROTECTION (TYPE 1).

(A7) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.

(A8) MAINTENANCE SHALL BE PERFORMED AS NEEDED. FOR PROPER FUNCTION, SEDIMENT REMOVAL SHALL BE PERFORMED CONTINUOUSLY AND/OR AFTER EVERY RAIN EVENT AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

CURB INLET PROTECTION TYPE 2 GENERAL NOTES

(B1) CURB INLET PROTECTION (TYPE 2) IS USED TO INTERCEPT SEDIMENT AND PREVENT TURBID WATER FROM ENTERING STORM SEWER SYSTEMS. THIS DEVICE IS INTENDED AS A SECONDARY SEDIMENT CONTROL MEASURE. CURB INLET PROTECTION (TYPE 2) IS USED IN AREAS WHERE PONDING IS NOT A CONCERN AND ADEQUATE AREA IS AVAILABLE FOR PONDING.

(B2) MAXIMUM DRAINAGE AREA IS 1 ACRE.

(B3) MAXIMUM TOP OF SPILLWAY ELEVATION = TOP OF CURB ELEVATION MINUS 1 INCH.

(B4) BAGS SHALL BE MADE OF EITHER BURLAP OR GEOTEXTILE FABRIC AND FILLED WITH CLEAN MINERAL AGGREGATE (SIZE 57) OR SAND.

(B5) PACK SAND/GRAVEL FILLED BAGS TIGHTLY TOGETHER END TO END TO ENSURE NO SEDIMENT FLOWS BETWEEN OR UNDERNEATH THE BAGS. WHERE TIGHT FIT IS UNACHIEVABLE, INSTALL GEOTEXTILE FABRIC (TYPE III) ALONG THE UPSTREAM FACE OF THE BAGS LAPPING OVER THE TOP BAGS 6 INCHES AND EXTENDING GEOTEXTILE FABRIC (TYPE III) A MINIMUM OF 18 INCHES UPSTREAM OF THE BAGS. COVER GEOTEXTILE FABRIC (TYPE III) WITH MINERAL AGGREGATE (SIZE 57) STONE WEDGE TO THE TOP OF THE BAGS.

(B6) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(B7) AN OVERFLOW SPILLWAY SHALL BE PROVIDED BY LEAVING AN OPENING OF ONE SAND OR GRAVEL BAG WIDE AND HIGH AS SHOWN. STORMS GREATER THAN 2-YEAR, 24 HOUR STORM SHOULD NOT OVERTOP THE CURB.

(B8) CURB INLET PROTECTION (TYPE 2) SHALL BE PAID FOR UNDER THE FOLLOW ITEM NUMBER:

209-09.41 CURB INLET PROTECTION (TYPE 2) PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CURB INLET PROTECTION (TYPE 2).

(B9) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.

(B10) MAINTENANCE SHALL BE PERFORMED AS NEEDED. FOR PROPER FUNCTION SEDIMENT REMOVAL SHALL BE PERFORMED CONTINUOUSLY AND/OR AFTER EVERY RAIN EVENT AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

EROSION CONTROL PLAN LEGEND: ① CURB INLET PROTECTION (TYPE 1)

EROSION CONTROL PLAN LEGEND: ② CURB INLET PROTECTION (TYPE 2)

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

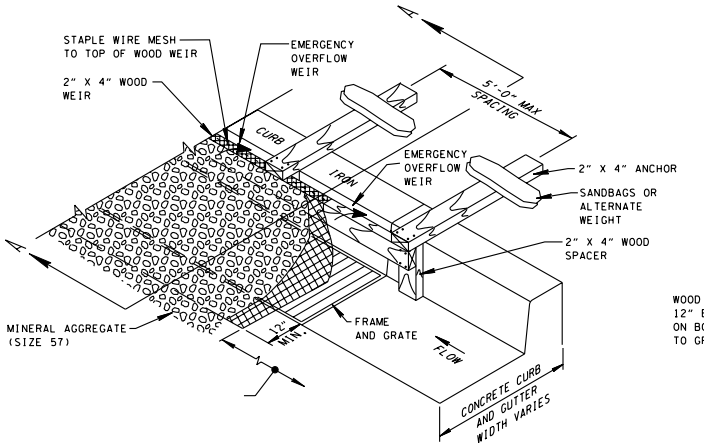
CURB INLET PROTECTION TYPE 1 & 2

1-20-06 EC-STR-39

- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: MISC. MINOR EDITS AND GENERAL NOTE REVISIONS.

CURB INLET PROTECTION TYPE 3

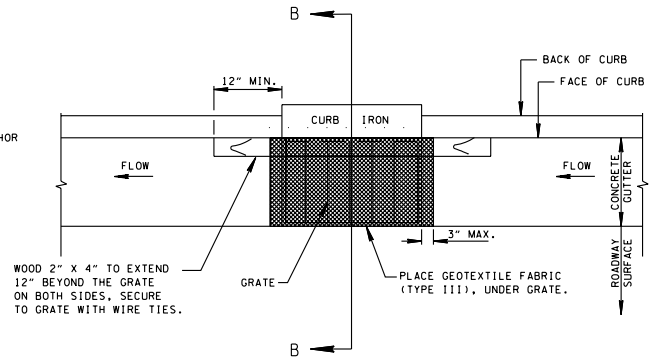
LOW VOLUME, LOW SPEED TRAFFIC AREAS ONLY



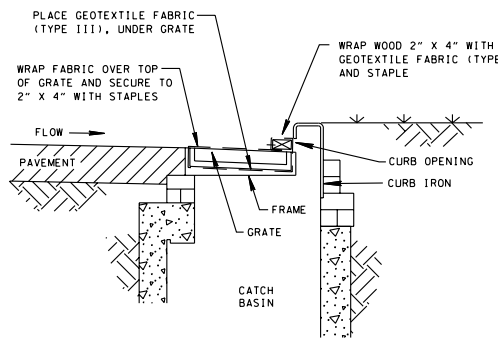
ISOMETRIC VIEW

CURB INLET PROTECTION TYPE 4

LOW VOLUME, LOW SPEED TRAFFIC AREAS ONLY

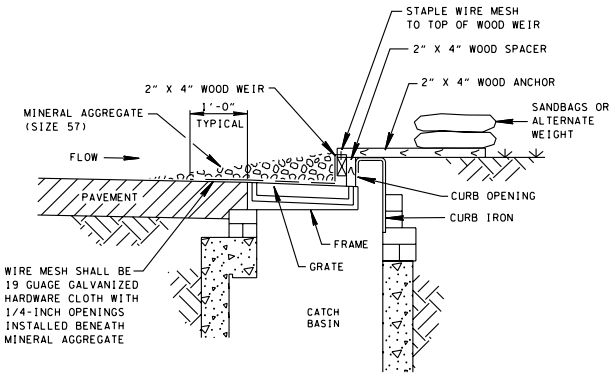


PLAN VIEW



SECTION B-B

EROSION CONTROL PLAN LEGEND: ④ CURB INLET PROTECTION (TYPE 4)



SECTION A-A

EROSION CONTROL PLAN LEGEND: ③ CURB INLET PROTECTION (TYPE 3)

CURB INLET PROTECTION TYPE 3 GENERAL NOTES

(A1) CURB INLET PROTECTION (TYPE 3) IS A SEDIMENT CONTROL DEVICE USED TO INTERCEPT SEDIMENT LADEN WATER AND PREVENT TRANSPORTED SEDIMENT FROM ENTERING AN EXISTING STORM SEWER SYSTEM. THIS SEDIMENT CONTROL DEVICE SHOULD BE CONSIDERED, AND IS INTENDED TO BE, A SECONDARY TREATMENT DEVICE.

(A2) CURB INLET PROTECTION (TYPE 3) IS APPLICABLE TO CURB AND GUTTER INLETS WHERE A STURDY, COMPACT INSTALLATION IS DESIRED AND WHERE PONDING IS NOT A CONCERN. EMERGENCY OVERFLOW CAPABILITIES ARE MINIMAL, SO EXPECT THE POTENTIAL FOR SIGNIFICANT PONDING WITH THIS DEVICE.

(A3) MAXIMUM DRAINAGE AREA IS 1 ACRE.

(A4) CURB INLET PROTECTION (TYPE3) SHALL NOT BE USED WHERE LARGE QUANTITIES OF SEDIMENT ARE EXPECTED OR WHERE THE LONGITUDINAL GRADE OF CURB AND GUTTER EXCEEDS ONE (1) PERCENT.

(A5) WIRE MESH SHALL BE 19 GAUGE GALVANIZED HARDWARE CLOTH WITH ¼ INCH OPENINGS. MESH SHALL BE PLACED OVER THE CURB INLET OPENING AND AGAINST THE FACE OF CURB ON BOTH SIDES OF THE INLET SO THAT AT LEAST 12 INCHES OF WIRE EXTENDS ACROSS THE PAVEMENT AND AT LEAST 12 INCHES ACROSS THE CONCRETE GUTTER BEYOND THE EDGES OF THE INLET OPENING.

(A6) THE WIRE MESH USED FOR THIS SEDIMENT CONTROL DEVICE SHALL BE A CONTINUOUS PIECE OF MATERIAL FORMED AND SHAPED TO MATCH THE SHAPE OF THE CURB AND GUTTER AND SECURED TO THE WOOD FRAME AS NEEDED BY WIRE STAPLES.

(A7) MINERAL AGGREGATE (SIZE 57) SHALL BE PLACED AGAINST THE WIRE MESH SO AS TO ANCHOR IT AGAINST THE CONCRETE GUTTER, PAVEMENT, AND WOOD FRAME.

(A8) 2" X 4" WOOD ANCHORS SHALL BE NAILED TO THE TOP OF THE WEIR AND VERTICAL WOOD SPACERS AT SPACER LOCATIONS AND SHALL BE SECURED BEHIND THE CURB IRON WITH SANDBAGS OR OTHER APPROVED ANCHORING DEVICE.

(A9) CURB INLET PROTECTION (TYPE 3) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-09.42 CURB INLET PROTECTION (TYPE 3) PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CURB INLET PROTECTION (TYPE 3).

(A10) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.

(A11) MAINTENANCE SHALL BE PERFORMED AS NEEDED. FOR PROPER FUNCTION, SEDIMENT REMOVAL SHALL BE PERFORMED CONTINUOUSLY AND/OR AFTER EVERY RAIN EVENT AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

CURB INLET PROTECTION TYPE 4 GENERAL NOTES

(B1) CURB INLET PROTECTION (TYPE 4) IS A SEDIMENT CONTROL DEVICE USED TO PREVENT TRANSPORTED SEDIMENT FROM ENTERING AN EXISTING STORM SEWER SYSTEM. THIS SEDIMENT CONTROL DEVICE SHOULD BE CONSIDERED, AND IS INTENDED TO BE, A SECONDARY TREATMENT DEVICE.

(B2) CURB INLET PROTECTION (TYPE 4) IS APPLICABLE TO CURB AND GUTTER INLETS WHERE A COMPACT INSTALLATION IS DESIRED AND POST PAVING CONDITIONS ARE PRESENT. THIS DEVICE WILL REQUIRE FREQUENT MAINTENANCE WHILE IN USE.

(B3) MAXIMUM DRAINAGE AREA IS 1 ACRE.

(B4) TYPE 4 INLET PROTECTION SHALL NOT BE USED WHERE LARGE QUANTITIES OF SEDIMENT ARE EXPECTED OR WHERE HIGH VELOCITIES OF APPROACHING WATER ARE ANTICIPATED DUE TO LONGITUDINAL GRADE OF CURB AND GUTTER.

(B5) GEOTEXTILE FABRIC (TYPE III) SHALL BE A CONTINUOUS PIECE WRAPPED AROUND THE 2" X 4" AND SECURED WITH STAPLES. TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3 INCHES OF THE GRATE.

(B6) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(B7) WOOD 2" X 4" SHALL BE PRESSURE TREATED YELLOW PINE. THE WOOD SHALL NOT BLOCK THE ENTIRE OPENING HEIGHT OF THE CURB IRON, AS THIS WILL OBSTRUCT THE EMERGENCY OVERFLOW CAPABILITIES OF THE DEVICE.

(B8) THE CONTRACTOR SHALL SECURE THE DEVICE WHEN REMOVING THE GRATE TO PREVENT SEDIMENT FROM ENTERING THE STORM SEWER SYSTEM. WHEN REPLACING THE GRATE, CARE MUST BE TAKEN TO INSURE THAT THE 2" X 4" REST FIRMLY AGAINST THE FACE OF THE CURB AND/OR THE CONCRETE GUTTER.

(B9) CURB INLET PROTECTION (TYPE 4) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-09.43 CURB INLET PROTECTION (TYPE 4) PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CURB INLET PROTECTION (TYPE 4).

(B10) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.

(B11) MAINTENANCE SHALL BE PERFORMED AS NEEDED. FOR PROPER FUNCTION, SEDIMENT REMOVAL SHALL BE PERFORMED CONTINUOUSLY AND/OR AFTER EVERY RAIN EVENT AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

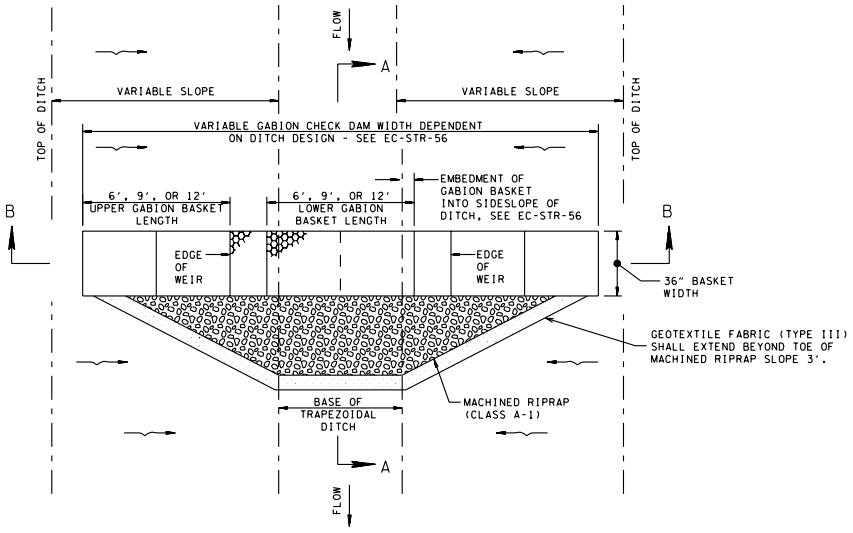
- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

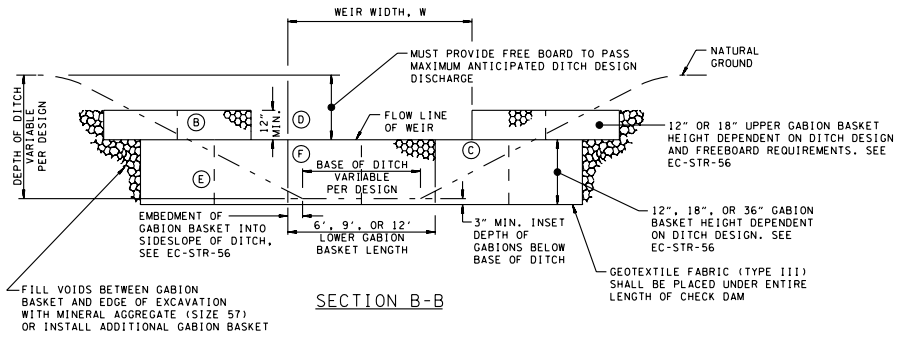
CURB INLET PROTECTION TYPE 3 & 4

1-20-06 | EC-STR-39A

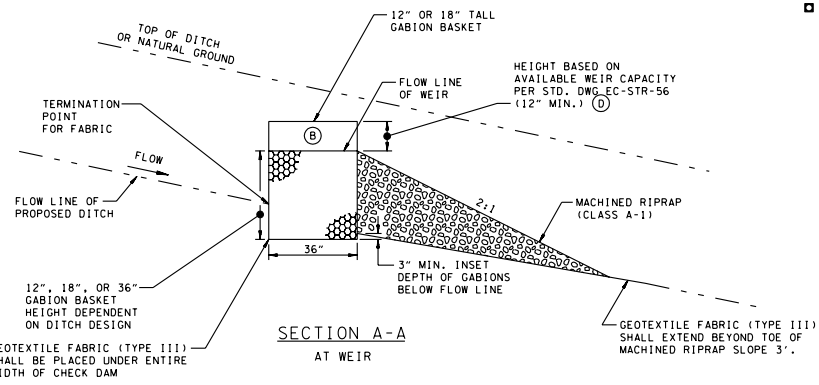
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED GENERAL NOTES, TABLES, MISC. DRAFTING EDITS.



PLAN VIEW

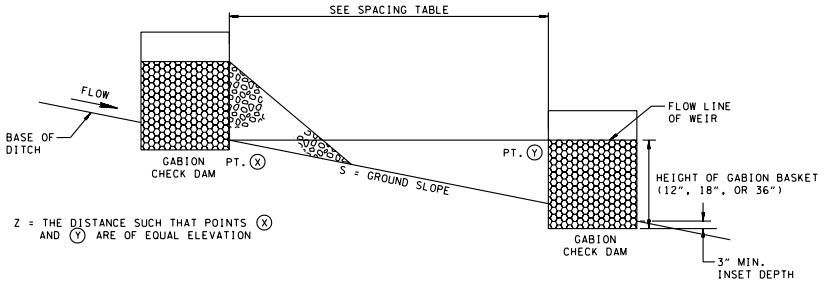


SECTION B-B



SECTION A-A

AT WEIR



GABION CHECK DAM SPACING AT CENTER OF WEIR

MAXIMUM GABION CHECK DAM SPACING TABLE (IN FEET)			
GROUND SLOPE, S (FT/FT)	12-INCH BASKETS	18-INCH BASKETS	36-INCH BASKETS
0.010	72	122	272
0.015	47	81	181
0.020	35	60	135
0.030	22	39	89
0.040	16	29	66
0.050	12	22	52
0.060	10	18	43
0.070	N/A	15	37
0.080	N/A	13	32
0.090	N/A	11	28
0.100	N/A	10	25
0.110	N/A	N/A	22
0.120	N/A	N/A	20
0.130	N/A	N/A	19
0.140	N/A	N/A	17
0.150	N/A	N/A	16
0.200	N/A	N/A	11

GABION CHECK DAM GENERAL NOTES

(A) GABION CHECK DAMS ARE USED FOR VELOCITY REDUCTION AND EROSION PREVENTION IN AREAS WHERE CONCENTRATED FLOWS EXIST. GABION CHECK DAMS ARE NOT TO BE USED FOR SEDIMENT CONTROL AND SHOULD NOT BE CONSIDERED A SEDIMENT TRAPPING DEVICE. GABION CHECK DAMS SHALL NOT BE USED IN STREAMS OR OTHER NATURAL WATER RESOURCES.

(B) HEIGHT OF UPPER GABION SHALL BE OF EQUAL OR LESSER HEIGHT THAN LOWER GABION AND SHALL NOT EXCEED 18".

(C) VERTICAL JOINTS OF GABION BASKETS SHALL BE STAGGERED.

(D) SIZE WEIR TO CONTAIN THE 2-YEAR, 24-HOUR STORM. CONTAIN DESIGN DISCHARGE WITHIN WEIR STRUCTURE WHERE POSSIBLE. FOR SITES WHICH DRAIN TO HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE WEIR SHALL BE SIZED TO CONTAIN THE 5-YEAR, 24-HOUR STORM.

(E) DIAPHRAGMS SEPARATE INDIVIDUAL GABION CELLS.

(F) BASKET-TO-BASKET CONNECTIONS SHALL BE AS DIRECTED ON STD. DWG. EC-STR-57 & EC-STR-58.

(G) THE DRAINAGE AREA FOR THE GABION CHECK DAM SHALL BE 35 ACRES OR LESS.

(H) SEE STANDARD DRAWINGS EC-STR-56, EC-STR-57, EC-STR-58, AND EC-STR-59 FOR ADDITIONAL DETAILS AND GENERAL NOTES NOT SHOWN ON THIS DRAWING.

EROSION CONTROL PLAN LEGEND: GABION CHECK DAM

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

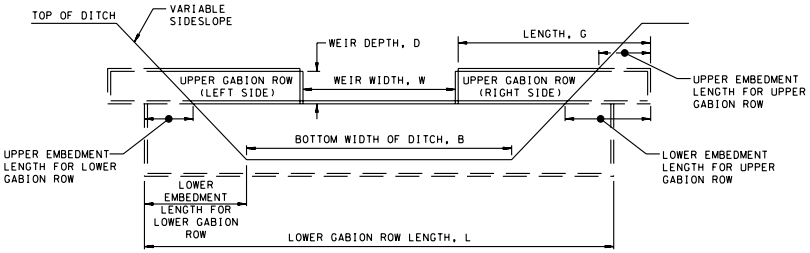
GABION CHECK DAM

7-29-04 EC-STR-55

- REV. 4-15-06: REFORMATTED SHEET, REVISED TABLES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: MINOR REVISIONS TO TABLES, ADDED GABION TO BOTTOM TABLE.

DESIGN DIMENSIONS, UPPER GABION ROW

BOTTOM WIDTH OF DITCH, B IN FEET	UPPER GABION ROW, 12-INCH GABION HEIGHT									UPPER GABION ROW, 18-INCH GABION HEIGHT										BOTTOM WIDTH OF DITCH, B IN FEET
	MINIMUM LENGTH OF GABIONS, G (ONE PER SIDE) (UPPER ROW), IN FEET			LOWER EMBEDMENT LENGTH FOR UPPER GABIONS, IN FEET			UPPER EMBEDMENT LENGTH FOR UPPER GABIONS, IN FEET			MINIMUM LENGTH OF GABIONS, G (ONE PER SIDE) (UPPER ROW), IN FEET			LOWER EMBEDMENT LENGTH FOR UPPER GABIONS, IN FEET			UPPER EMBEDMENT LENGTH FOR UPPER GABIONS, IN FEET					
	SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE				
	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1		
3	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		3
4	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		4
5	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		5
6	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		6
7	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		7
8	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		8
9	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		9
10	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		10
12	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		12
15	3	6	6	2.1	4.5	4.5	0.1	1.5	0.5	6	9	9	3.3	5.4	6.3	0.3	0.9	0.3		15



DEFINITION OF TERMS FOR GABION CHECK DAM IN TRAPEZOIDAL DITCH

DESIGN DIMENSIONS, LOWER GABION ROW

BOTTOM WIDTH OF DITCH, B IN FEET	LOWER GABION ROW, 12-INCH GABION HEIGHT									LOWER GABION ROW, 18-INCH GABION HEIGHT									LOWER GABION ROW, 36-INCH GABION HEIGHT									BOTTOM WIDTH OF DITCH, B IN FEET
	MINIMUM LENGTH OF GABIONS, L (LOWER ROW), IN FEET			LOWER EMBEDMENT LENGTH, IN FEET			✱UPPER EMBEDMENT LENGTH, IN FEET			MINIMUM LENGTH OF GABIONS, L (LOWER ROW), IN FEET			LOWER EMBEDMENT LENGTH, IN FEET			✱UPPER EMBEDMENT LENGTH, IN FEET			MINIMUM LENGTH OF GABIONS, L (LOWER ROW), IN FEET			LOWER EMBEDMENT LENGTH, IN FEET			✱UPPER EMBEDMENT LENGTH, IN FEET			
	SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			
	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	
3	9	9	12	3	3	4.5	1.5	0.75	1.5	9	12	15	3	4.5	6	0.5	0.75	1	15	21	27	6	9	12	0.5	0.75	1	3
4	9	9	12	2.5	2.5	4	1	0.25	1	12	15	15	4	5.5	5.5	1.5	1.75	0.5	18	21	27	7	8.5	11.5	1.5	0.25	0.5	4
5	9	12	12	2	3.5	3.5	0.5	1.25	0.5	12	15	18	3.5	5	6.5	1	1.25	1.5	18	24	30	6.5	9.5	12.5	1	1.25	1.5	5
6	12	12	15	3	3	4.5	1.5	0.75	1.5	12	15	18	3	4.5	6	0.5	0.75	1	18	24	30	6	9	12	0.5	0.75	1	6
7	12	15	15	2.5	4	4	1	1.75	1	15	15	18	4	4	5.5	1.5	0.25	0.5	21	24	30	7	8.5	11.5	1.5	0.25	0.5	7
8	12	15	15	2	3.5	3.5	0.5	1.25	0.5	15	18	21	3.5	5	6.5	1	1.25	1.5	21	27	33	6.5	9.5	12.5	1	1.25	1.5	8
9	15	15	18	3	3	4.5	1.5	0.75	1.5	15	18	21	3	4.5	6	0.5	0.75	1	21	27	33	6	9	12	0.5	0.75	1	9
10	15	15	18	2.5	2.5	4	1	0.25	1	18	18	21	4	4	5.5	1.5	0.25	0.5	24	27	33	7	8.5	11.5	1.5	0.25	0.5	10
12	18	18	21	3	3	4.5	1.5	0.75	1.5	18	21	24	3	4.5	6	0.5	0.75	1	24	30	36	6	9	12	0.5	0.75	1	12
15	21	21	24	3	3	4.5	1.5	0.75	1.5	21	24	27	3	4.5	6	0.5	0.75	1	27	33	39	6	9	12	0.5	0.75	1	15
	✱ ASSUMING 3 INCH EMBEDMENT DEPTH AT BASE OF GABION									✱ ASSUMING 3 INCH EMBEDMENT DEPTH AT BASE OF GABION									✱ ASSUMING 3 INCH EMBEDMENT DEPTH AT BASE OF GABION									

GABION CHECK DAM WEIR LENGTHS AND ALLOWABLE FLOW RATES

BOTTOM WIDTH OF DITCH, B IN FEET	UPPER GABION ROW, 12-INCH GABION HEIGHT															UPPER GABION ROW, 18-INCH GABION HEIGHT												BOTTOM WIDTH OF DITCH, B IN FEET
	12-INCH LOWER GABION ROW						18-INCH LOWER GABION ROW						36-INCH LOWER GABION ROW						12-INCH LOWER GABION ROW						18-INCH LOWER GABION ROW					
	RECTANGULAR WEIR WIDTH, W IN FEET			ALLOWABLE FLOW (cfs) FOR 12-INCH UPPER GABION HEIGHT			RECTANGULAR WEIR WIDTH, W IN FEET			ALLOWABLE FLOW (cfs) FOR 12-INCH UPPER GABION HEIGHT			RECTANGULAR WEIR WIDTH, W IN FEET			ALLOWABLE FLOW (cfs) FOR 12-INCH UPPER GABION HEIGHT			RECTANGULAR WEIR WIDTH, W IN FEET			ALLOWABLE FLOW (cfs) FOR 18-INCH UPPER GABION HEIGHT			RECTANGULAR WEIR WIDTH, W IN FEET			ALLOWABLE FLOW (cfs) FOR 18-INCH UPPER GABION HEIGHT			
	SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			SIDESLOPE			
	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	2:1	3:1	4:1	
3	4.2	4.5	6	4.7	6.3	6.9	6.2	7.5	10	7.6	9.9	11.4	12.2	16.5	22	20.4	27.8	34.3	2.6	3.3	7.6	13.4	18.8	13.4	8.6	12.3	19.6	23.1	31.0	35.6	3
4	5.2	5.5	7	5.6	7.1	7.7	7.2	8.5	11	9.0	11.3	12.8	13.2	17.5	23	23.2	30.6	37.1	3.6	4.3	8.6	13.2	17.7	14.7	9.6	13.3	20.6	25.9	33.8	38.5	4
5	6.2	6.5	8	6.5	7.9	8.6	8.2	9.5	12	10.4	12.7	14.3	14.2	18.5	24	26.1	33.6	40.0	4.6	5.3	9.6	13.9	17.9	16.0	10.6	14.3	21.6	28.8	36.7	41.4	5
6	7.2	7.5	9	7.5	8.8	9.5	9.2	10.5	13	11.9	14.2	15.7	15.2	19.5	25	29.0	36.5	42.9	5.6	6.3	10.6	15.0	18.7	17.4	11.6	15.3	22.6	31.7	39.6	44.4	6
7	8.2	8.5	10	8.4	9.8	10.4	10.2	11.5	14	13.4	15.7	17.2	16.2	20.5	26	31.9	39.5	45.9	6.6	7.3	11.6	16.1	19.7	18.7	12.6	16.3	23.6	34.7	42.6	47.2	7
8	9.2	9.5	11	9.4	10.7	11.4	11.2	12.5	15	14.9	17.1	18.6	17.2	21.5	27	34.9	42.5	48.8	7.6	8.3	12.6	17.5	20.9	20.1	13.6	17.3	24.6	37.7	45.7	50.0	8
9	10.2	10.5	12	10.4	11.7	12.3	12.2	13.5	16	16.4	18.6	20.1	18.2	22.5	28	37.9	45.3	51.8	8.6	9.3	13.6	18.8	22.2	21.5	14.6	18.3	25.6	40.7	48.4	53.2	9
10	11.2	11.5	13	11.4	12.6	13.3	13.2	14.5	17	18.0	20.1	21.6	19.2	23.5	29	41.0	48.3	54.8	9.6	10.3	14.6	20.3	23.4	23.0	15.6	19.3	26.6	43.8	51.6	56.2	10
12	13.2	13.5	15	13.4	14.6	15.2	15.2	16.5	19	21.0	23.2	24.6	21.2	25.5	31	47.1	54.4	60.9	11.6	12.3	16.6	23.2	26.1	26.0	17.6	21.3	28.6	49.8	57.7	62.3	12
15	16.2	16.5	18	16.5	17.6	18.2	18.2	19.5	22	25.6	27.8	29.2	24.2	28.5	34	56.4	63.6	70.1	14.6	15.3	19.6	27.8	30.5	30.5	20.6	24.3	31.6	59.2	66.9	71.4	15

EROSION CONTROL PLAN LEGEND: GABION CHECK DAM

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

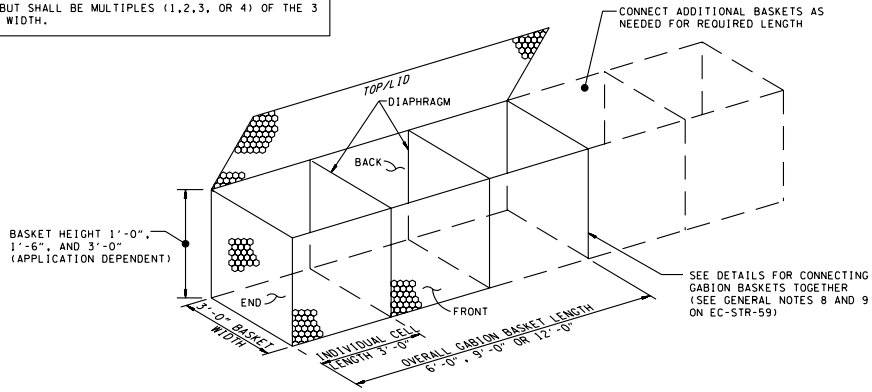
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

GABION CHECK DAM DESIGN TABLES

7-29-04 | EC-STR-56

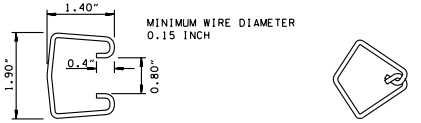
REV. 4-1-08: REVISED TEXT ON TYPE 3 DETAIL.

EXAMPLE BELOW SHOWS 3-CELLED, 9 FOOT LONG GABION BASKET WITH ATTACHED 6 FOOT LONG GABION. ACTUAL GABION LENGTHS WILL VARY, BUT SHALL BE MULTIPLES (1,2,3, OR 4) OF THE 3 FOOT BASKET WIDTH.



ISOMETRIC - TYPICAL GABION

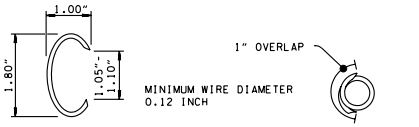
N.T.S.



BEFORE CLOSURE

AFTER CLOSURE

TYPE 1 FASTENER INTERLOCKING WIRE



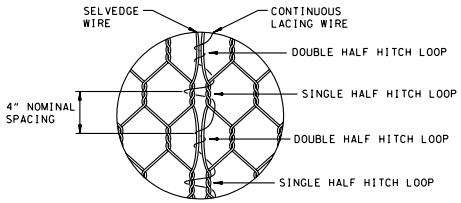
BEFORE CLOSURE

AFTER CLOSURE

TYPE 2 FASTENER OVERLAPPING RING

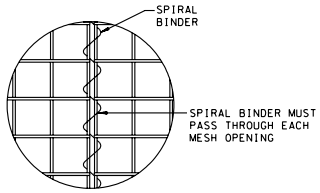
NOTE: DIMENSIONS SHOWN ARE NOMINAL

INSTALL TYPE 1 OR TYPE 2 FASTENERS AT EACH MESH OPENING ALONG GABION BASKET EDGE.

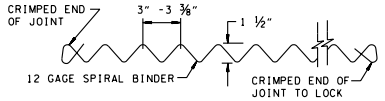


WOVEN MESH GABION
LACING DETAIL

TYPE 3 FASTENER LACING WIRE



WELDED MESH GABION
SPIRAL BINDER LACING DETAIL



TYPE 4 FASTENER SPIRAL BINDER

TO BE USED WITH WELDED MESH ONLY

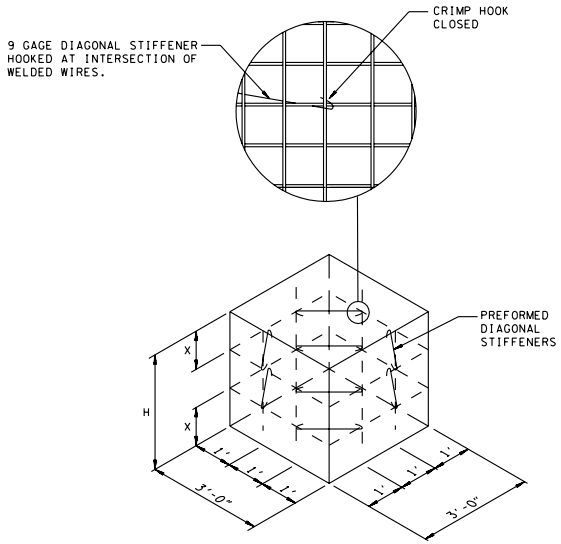
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

GABION ASSEMBLY DETAILS

7-29-04 | EC-STR-57

REV. 4-1-08: MINOR TEXT REVISION.

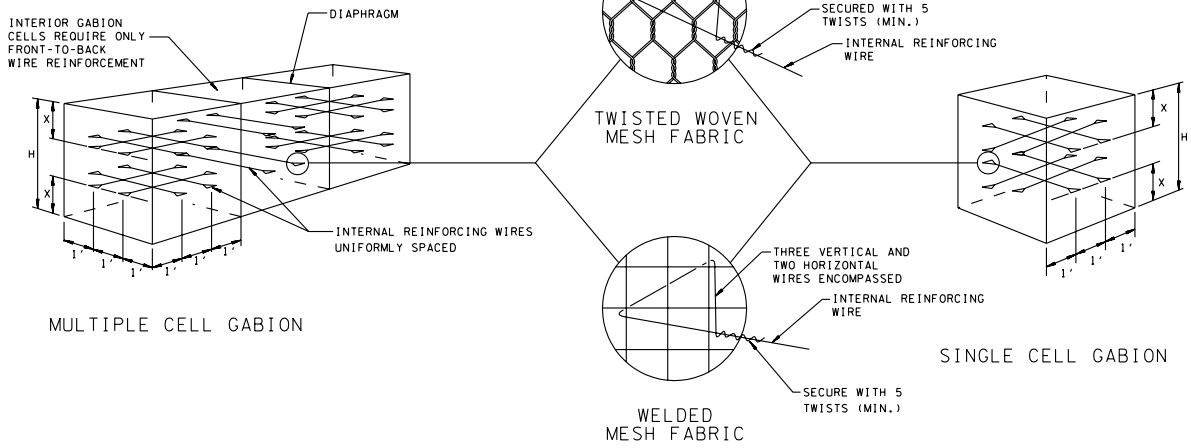


ALL GABION CELLS

CELL HEIGHT H (FT)	DIAGONAL STIFFENER SPACING, X
3'-0"	1/3H & 2/3H
1'-6"	1/2H
1'-0"	NONE

OPTIONAL DIAGONAL CORNER STIFFENERS FOR WELDED WIRE GABION BASKETS ONLY

N.T.S.



CELL HEIGHT H (FT)	TIE WIRE SPACING, X
3'-0"	1/3H & 2/3H
1'-6"	1/2H
1'-0"	NONE

PLACEMENT OF INTERNAL CONNECTING WIRE REINFORCEMENT

N.T.S.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

GABION ASSEMBLY DETAILS

7-29-04 | EC-STR-58

REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.

REV. 4-1-08: REVISED GENERAL NOTES, REMOVED GEOTEXTILE SPEC. TABLE, REFORMATTED SHEET.

GABION CHECK DAM GENERAL NOTES

(A) GABIONS SHALL BE APPLIED AS CHECK DAMS WHERE ALLOWABLE MAXIMUM SHEAR FORCES AND VELOCITIES FOR LOOSE RIP RAP ARE EXCEEDED.

(B) GABION CHECK DAMS SHALL NOT BE USED IN STREAMS.

(C) GABION CHECK DAMS ARE TO BE USED, PRIMARILY AS AN EROSION CONTROL MEASURE FOR VELOCITY REDUCTION. AN APPROPRIATE GABION CHECK DAM CONFIGURATION MAY BE SELECTED USING EC-STR-56. THE 2-YEAR PEAK FLOW RATE MUST BE LESS THAN OR EQUAL TO THE WEIR FLOW SHOWN FOR THE SELECTED GABION CHECK DAM CONFIGURATION. AT SITES WHICH DRAIN TO HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAMS, THE 5-YEAR PEAK FLOW RATE MUST BE LESS THAN OR EQUAL TO THE WEIR FLOW SHOWN ON THE TABLE.

(D) GABION CHECK DAMS MAY REMAIN IN PLACE AS PERMANENT CHECK DAMS, IF SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

(E) THE CENTER OF THE GABION CHECK DAM MUST BE AT LEAST ONE (1) FOOT LOWER THAN THE OUTER EDGES. THIS WILL ELIMINATE THE BASKET-SOIL FAILURE POINT WHERE THE GABION CHECK DAM AND NATURAL GROUND MERGE.

(F) WIRE MESH GABION ALTERNATES:

1. WOVEN MESH - NON-RAVELING TRIPLE TWISTED HEXAGONAL WIRE MESH, CONSISTING OF TWO WIRES TWISTED TOGETHER IN THREE 180 DEGREE TURNS. AREA OF MESH OPENINGS SHALL NOT EXCEED 10 SQUARE INCHES. THE MINIMUM LINEAR DIMENSION OF A WOVEN MESH OPENING SHALL NOT EXCEED 4.5 INCHES.

2. WELDED MESH - WELDED WIRE MESH WITH A UNIFORM SQUARE OR RECTANGULAR PATTERN AND RESISTANCE WELD AT EACH INTERSECTION. THE WELDED WIRE CONNECTIONS SHALL CONFORM WITH THE REQUIREMENTS OF ASTM A185, INCLUDING WIRE SMALLER THAN W1.2 (0.124 IN.), EXCEPT THAT THE WELDED CONNECTIONS SHALL HAVE A MINIMUM AVERAGE SHEAR STRENGTH OF 70% AND A MINIMUM SHEAR STRENGTH OF 60% OF THE MINIMUM ULTIMATE TENSILE STRENGTH OF THE WIRE. WIRE SHALL BE GALVANIZED AFTER THE FORMING OF THE WELDED MESH.

(G) WIRE FOR FABRICATION AND ASSEMBLY SHALL BE HOT-DIPPED GALVANIZED. THE WIRE SHALL HAVE A MINIMUM TENSILE STRENGTH OF 60,000 PSI. GALVANIZED STEEL WIRE SHALL CONFORM TO ASTM A641, CLASS 3, SOFT TEMPER.

(H) TYPE 1, TYPE 2 AND TYPE 3 FASTENERS MUST PROVIDE A MINIMUM STRENGTH OF 1,400 POUNDS PER LINEAR FOOT FOR GABION BASKETS. ALL FASTENERS SHALL MEET ALL OF THE COATING REQUIREMENTS OF THE GABION MANUFACTURER IN ADDITION TO ANY REQUIREMENTS SPECIFIED IN THESE GENERAL NOTES.

(I) TYPE 4 SPIRAL BINDERS ARE FOR WELDED-MESH GABION BASKETS ONLY AND SHALL BE FORMED FROM WIRE MEETING THE SAME QUALITY AND COATING THICKNESS REQUIREMENTS AS SPECIFIED FOR THE GABION BASKETS. ALTERNATE FASTENERS FOR USE WITH WIRE MESH GABIONS, SUCH AS RING FASTENERS, SHALL BE FORMED FROM WIRE MEETING THE SAME QUALITY AND COATING THICKNESS REQUIREMENTS AS SPECIFIED FOR THE GABIONS.

(J) FOUNDATION PREPARATION - SURFACE IRREGULARITIES, LOOSE MATERIAL, VEGETATION, AND ALL FOREIGN MATTER SHALL BE REMOVED FROM FOUNDATIONS.

(K) ASSEMBLY - ROTATE THE GABION PANELS INTO POSITION AND JOIN THE VERTICAL EDGES WITH FASTENERS FOR GABION ASSEMBLY. WHERE LACING WIRE IS USED, WRAP THE WIRE WITH ALTERNATING SINGLE AND DOUBLE HALF-HITCHES AT INTERVALS BETWEEN FOUR (4) TO FIVE (5) INCHES. WHERE SPIRAL FASTENERS ARE USED FOR WELDED-WIRE MESH, CRIMP THE ENDS TO SECURE THE SPIRALS IN PLACE. WHERE RING TYPE ALTERNATE FASTENERS ARE USED FOR BASKET ASSEMBLY, INSTALL THE FASTENERS AT A MAXIMUM SPACING OF 6 INCHES. USE THE SAME FASTENING PROCEDURES TO INSTALL INTERIOR DIAPHRAGMS WHERE THEY ARE REQUIRED. INTERIOR DIAPHRAGMS WILL BE REQUIRED WHEN ANY INSIDE DIMENSION OF A GABION BASKET EXCEEDS 3 FEET.

(L) PLACEMENT - PLACE THE EMPTY GABIONS ON THE FOUNDATION AND INTERCONNECT THE ADJACENT GABIONS ALONG THE TOP, BOTTOM, AND VERTICAL EDGES USING LACING WIRE. WRAP THE WIRE WITH ALTERNATING SINGLE AND DOUBLE HALF-HITCHES AT INTERVALS BETWEEN FOUR (4) TO SIX (6) INCHES. UNLESS OTHERWISE SPECIFIED, LACING WIRE WILL BE THE ONLY FASTENER ALLOWED FOR INTERCONNECTING WOVEN MESH GABIONS. SPIRAL FASTENERS ARE COMMONLY USED FOR THE ASSEMBLY AND INTERCONNECTION OF WELDED MESH GABIONS. SPIRALS ARE SCREWED DOWN AT THE CONNECTING EDGES, THEN EACH END OF THE SPIRAL IS SECURELY TIED DOWN TO PREVENT UNRAVELING. LACING MAY BE USED AS NEEDED TO SUPPLEMENT THE INTERCONNECTION OF WELDED MESH GABIONS, AND THE CLOSING OF LIDS. FOR GABION LACING DETAILS, SEE EC-STR-57.

GABION CHECK DAM GENERAL NOTES (CONT.)

(M) UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE VERTICAL JOINTS BETWEEN GABION BASKET UNITS OF ADJACENT LAYERS OR TIERS, ALONG THE LENGTH OF THE CHECK DAM, SHALL BE STAGGERED BY A MINIMUM OF ONE CELL.

(N) FILLING OPERATION

1. FOR REINFORCEMENT, INTERNAL CONNECTING WIRES SHALL BE PLACED IN EACH UNRESTRAINED GABION CELL 18 INCHES OR GREATER IN HEIGHT, INCLUDING GABION CELLS LEFT TEMPORARILY UNRESTRAINED. TWO INTERNAL CONNECTING WIRES SHALL BE PLACED (TWO ACROSS THE WIDTH AND TWO ACROSS THE LENGTH) CONCURRENTLY WITH ROCK PLACEMENT, AT THE SPECIFIED DEPTH INTERVAL SHOWN ON STANDARD DRAWING EC-STR-58. IN WOVEN MESH GABIONS THESE REINFORCING WIRES SHALL BE EVENLY SPACED ALONG THE FRONT FACE AND CONNECTING TO THE BACK FACE. ALL CONNECTING WIRES SHALL BE LOOPED AROUND TWO MESH OPENINGS AND EACH WIRE END SHALL BE SECURED BY A MINIMUM OF FIVE 180 DEGREE TWISTS AROUND ITSELF AFTER LOOPING.

2. IN WELDED MESH GABIONS, OPTIONAL CORNER STIFFENERS MAY BE USED IN LIEU OF INTERNAL CONNECTING WIRE REINFORCEMENT. WHEN USED, DIAGONAL STIFFENERS SHALL BE PLACED ACROSS THE CORNERS OF THE GABIONS AT 12 INCHES FROM CORNERS AS DETAILED ON STANDARD DRAWING EC-STR-58. LACING WIRE OR PREFORMED HOOKING WIRE STIFFENERS MAY BE USED.

3. THE GABIONS SHALL BE CAREFULLY FILLED WITH ROCK, EITHER BY MACHINE OR HAND METHODS, ENSURING ALIGNMENT, AVOIDING BULGES, AND PROVIDING A COMPACT MASS THAT MINIMIZES VOIDS. MACHINE PLACEMENT WILL REQUIRE SUPPLEMENTING WITH HAND WORK TO ENSURE THE DESIRED RESULTS. THE CELLS IN ANY ROW SHALL BE FILLED IN STAGES SO THAT THE DEPTH OF ROCK PLACED IN ANY ONE CELL DOES NOT EXCEED THE DEPTH OF ROCK IN ANY ADJOINING CELL BY MORE THAN 3 INCHES. ALONG THE EXPOSED FACES, THE OUTER LAYER OF STONE SHALL BE CAREFULLY PLACED AND ARRANGED BY HAND TO ENSURE A NEAT, COMPACT PLACEMENT WITH A UNIFORM APPEARANCE.

4. THE LAST LAYER OF ROCK SHALL BE UNIFORMLY LEVELED TO THE TOP EDGES OF THE GABIONS. LIDS SHALL BE STRETCHED TIGHT OVER THE ROCK FILLING USING ONLY APPROVED LID CLOSING TOOLS AS NECESSARY. THE USE OF CROWBARS OR OTHER SINGLE POINT LEVERAGE BARS FOR LID CLOSING IS PROHIBITED, AS THEY MAY DAMAGE THE BASKETS. THE LID SHALL BE STRETCHED UNTIL IT MEETS THE PERIMETER EDGES OF THE FRONT AND END PANELS. THE GABION LID SHALL THEN BE SECURED TO THE SIDES, ENDS, AND DIAPHRAGMS WITH SPIRAL BINDERS, INTERLOCKING WIRE, OVERLAPPING RING FASTENERS, OR LACING WIRE WRAPPED WITH ALTERNATING SINGLE AND DOUBLE HALF-HITCHES IN THE MESH OPENINGS.

(O) CARE SHOULD BE TAKEN WHEN PLACING ROCK IN GABIONS TO INSURE THAT THE GABION BASKETS WILL NOT BE DAMAGED OR BROKEN.

(P) ROCK OR STONE SIZE FOR USE IN GABION BASKETS SHALL BE BETWEEN 4 AND 8 INCHES WITH A D_{50} OF 6 INCHES (MINIMUM) AND SHALL CONSIST OF FIELD STONE OR ROUGH UNHEWN QUARRY STONE. THE SPECIFIC GRAVITY OF INDIVIDUAL STONES SHALL BE A MINIMUM OF 2.6. STONES SHALL BE OF A QUALITY THAT WILL NOT DISINTEGRATE WITH EXPOSURE TO WATER OR WEATHERING.

(Q) GEOTEXTILE FABRIC (TYPE III) SHALL MEET REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GEOTEXTILES AASHTO DESIGNATION M-288, EROSION CONTROL.

(R) GABION CHECK DAMS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

709-05.06 MACHINE RIP-RAP (CLASS A-1) PER TON
709-10.01 GABIONS (DESCRIPTION) PER CUBIC YARD
709-10.02 GABIONS (DESCRIPTION) PER CUBIC YARD
709-10.03 GABIONS (DESCRIPTION) PER CUBIC YARD
709-10.04 GABIONS (DESCRIPTION) PER CUBIC YARD
709-10.05 GABIONS (DESCRIPTION) PER CUBIC YARD
740-10.03 GEOTEXTILE (TYPE III)(EROSION CONTROL) PER SQUARE YARD

PAYMENT SHALL INCLUDE ALL MATERIALS, EQUIPMENT, EXCAVATION, AND LABOR NECESSARY FOR CONSTRUCTION AND MAINTENANCE OF THE GABION CHECK DAMS.

(S) SEDIMENT SHALL BE REMOVED FROM BEHIND THE GABION CHECK DAMS WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE DAM AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

(T) SEE STANDARD DRAWINGS EC-STR-55, EC-STR-56, EC-STR-57, AND EC-STR-58 FOR ADDDITIONAL DETAILS AND GENERAL NOTES NOT SHOWN ON THIS DRAWING.

GABION CHECK DAM COMPONENT PROPERTIES *

TYPE OF WIRE	MESH SIZE (INCHES)	U.S WIRE (GAGE)	GALVANIZED ZINC COATING (OZ/S.F.)	TOTAL DIAMETER CORE WIRE (INCHES)
WOVEN (TWISTED) WIRE MESH	3.25 X 4.50	12	0.8	0.105
WELDED WIRE MESH	3.00 X 3.00	12	0.8	0.105
SELVEDGE	—	10	0.8	0.130
LACING WIRE	—	13.5	0.8	0.087
INTERNAL REINFORCING WIRE	—	13.5	0.8	0.087
SPIRAL BINDER	—	12	0.8	0.105

* ALL COMPONENTS SHALL BE HOT-DIPPED GALVANIZED STEEL (SEE NOTE 6B REGARDING WELDED MESH GABIONS).

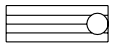
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

GABION CHECK DAM GENERAL NOTES AND COMPONENT PROPERTIES

7-29-04 EC-STR-59

STANDARD LEGEND

	DEWATERING STRUCTURE
	SEDIMENT FILTER BAG
* SF * SF * SF *	SILT FENCE
* SFB * SFB * SFB *	SILT FENCE WITH WIRE BACKING
* ESF * ESF * ESF *	ENHANCED SILT FENCE
	ENHANCED SILT FENCE CHECK (TRAPEZOIDAL DITCH)
	ENHANCED SILT FENCE CHECK (V-DITCH)
	ROCK CHECK DAM (V-DITCH)
	ROCK CHECK DAM (TRAPEZOIDAL DITCH)
	ENHANCED ROCK CHECK DAM (TRAPEZOIDAL DITCH)
	ENHANCED ROCK CHECK DAM (V-DITCH)
	ENHANCED ROCK CHECK DAM (CHANNEL)
	SEDIMENT TRAP WITH ENHANCED ROCK CHECK DAM
	SEDIMENT TRAP WITH GABION CHECK DAM
SOCKSOCK**SOCK**SOCK**	FILTER SOCK
	CULVERT PROTECTION (TYPE 1)
	CULVERT PROTECTION (TYPE 2)
	ROCK SEDIMENT DAM
	ROCK AND EARTH SEDIMENT EMBANKMENT
	SEDIMENT BASIN

- REV. 10-26-94: MOVED EROSION AND SEDIMENT CONTROL LEGENDS FROM OLD STANDARD DRAWING NO. RD-L-2 AND THE ESC-STR SERIES OF DETAIL SHEETS.
- REV. 5-27-95: ADDED NEW SYMBOLS.
- REV. 5-27-96: MODIFIED SYMBOL FOR TEMPORARY CATCH BASIN.
- REV. 7-29-97: CHANGED LEGEND FOR TEMPORARY SLOPE DRAIN PIPE.
- REV. 5-27-01: CHANGED REFERENCE IN LEGEND FROM DUMPED ROCK TO RIP-RAP.
- REV. 12-18-02: REMOVED SYMBOLS FOR TYPE IA, IB, IC, AND ID EROSION DITCH CHECKS. ADDED SYMBOL FOR TYPE I EROSION DITCH CHECK, TEMPORARY SILT FENCE (WITH BACKING), AND TEMPORARY ENHANCED SILT FENCE.
- REV. 1-22-03: ADDED SYMBOL FOR TYPE EC IA FILTER BARRIER DITCH CHECK.
- REV. 10-26-03: DELETED LEGEND FOR TYPE EC V FILTER BARRIER.
- REV.3-15-04: MOVED PART OF LEGEND BEGINNING WITH TEMPORARY ROCK AND SEDIMENT DAM TO NEW SHEET RD-L-5. CHANGED LEGEND FOR TEMPORARY CATCH BASIN SILT FENCE SILT TRAP. ADD TEMPORARY CATCH BASIN FILTER ASSEMBLY (TYPE 1 THROUGH 9).
- REV. 4-15-04: CHANGED DRAWING NUMBER FROM RD-L-4 TO RD-L-5.
- REV.5-1-08: REFORMATTED DRAWING IN CONJUNCTION WITH RD-L-6.

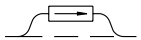
MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL

10-26-94 | RD-L-5

STANDARD LEGEND

A	CATCH BASIN PROTECTION (TYPE A)		TEMPORARY SLOPE DRAIN
B	CATCH BASIN PROTECTION (TYPE B)		PERMANENT SLOPE DRAIN PIPE (SHOW SIZE)
C	CATCH BASIN PROTECTION (TYPE C)		TEMPORARY DIVERSION CHANNEL (DESCRIBE - SIZE AND TYPE OF LINING)
D	CATCH BASIN PROTECTION (TYPE D)		TEMPORARY DIVERSION CULVERT (DESCRIBE NUMBER AND SIZE OF PIPES)
E	CATCH BASIN PROTECTION (TYPE E)		SUSPENDED PIPE DIVERSION
RP ED	PERMANENT RIPRAP ENERGY DISSIPATOR		EROSION CONTROL BLANKET
TCC	TEMPORARY CULVERT CROSSING (DESCRIBE NUMBER AND SIZE OF PIPES)	CFB——CFB	COMPOST FILTER BERM
TCE	TEMPORARY CONSTRUCTION EXIT	MFB——MFB	MULCH FILTER BERM
TCF	TEMPORARY CONSTRUCTION FORD		TURF REINFORCEMENT MAT
TTTTTTTTT	TEMPORARY BERM	TUBE••TUBE••TUBE	SEDIMENT TUBE

- REV. 10-26-94: MOVED EROSION AND SEDIMENT CONTROL LEGENDS FROM OLD STANDARD DRAWING NO. RD-L-2 AND THE ESC-STR SERIES OF DETAIL SHEETS.
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- REV. 4-15-04: CHANGED DRAWING NUMBER FROM RD-L-4 TO RD-L-5.
- REV.5-1-08: REFORMATTED DRAWING IN CONJUNCTION WITH RD-L-5.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
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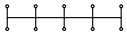
STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL

10-26-94 | RD-L-6

STANDARD LEGEND


FLOATING TURBIDITY CURTAIN


CURB INLET PROTECTION (TYPE 1)


CURB INLET PROTECTION (TYPE 2)


CURB INLET PROTECTION (TYPE 3)


CURB INLET PROTECTION (TYPE 4)


GABION CHECK DAM


CATCH BASIN FILTER ASSEMBLY (TYPE 1)


CATCH BASIN FILTER ASSEMBLY (TYPE 2)


CATCH BASIN FILTER ASSEMBLY (TYPE 3)


CATCH BASIN FILTER ASSEMBLY (TYPE 4)


CATCH BASIN FILTER ASSEMBLY (TYPE 5)


CATCH BASIN FILTER ASSEMBLY (TYPE 6)

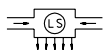

CATCH BASIN FILTER ASSEMBLY (TYPE 7)


CATCH BASIN FILTER ASSEMBLY (TYPE 8)


CATCH BASIN FILTER ASSEMBLY (TYPE 9)


CATCH BASIN FILTER ASSEMBLY (TYPE 10)


CATCH BASIN FILTER ASSEMBLY (TYPE 11)


LEVEL SPREADER (DUAL DIRECTION)


LEVEL SPREADER (SINGLE DIRECTION)


RIP-RAP


SAND BAG

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD
LEGEND FOR EROSION
PREVENTION AND
SEDIMENT CONTROL

5-1-08 | RD-L-7