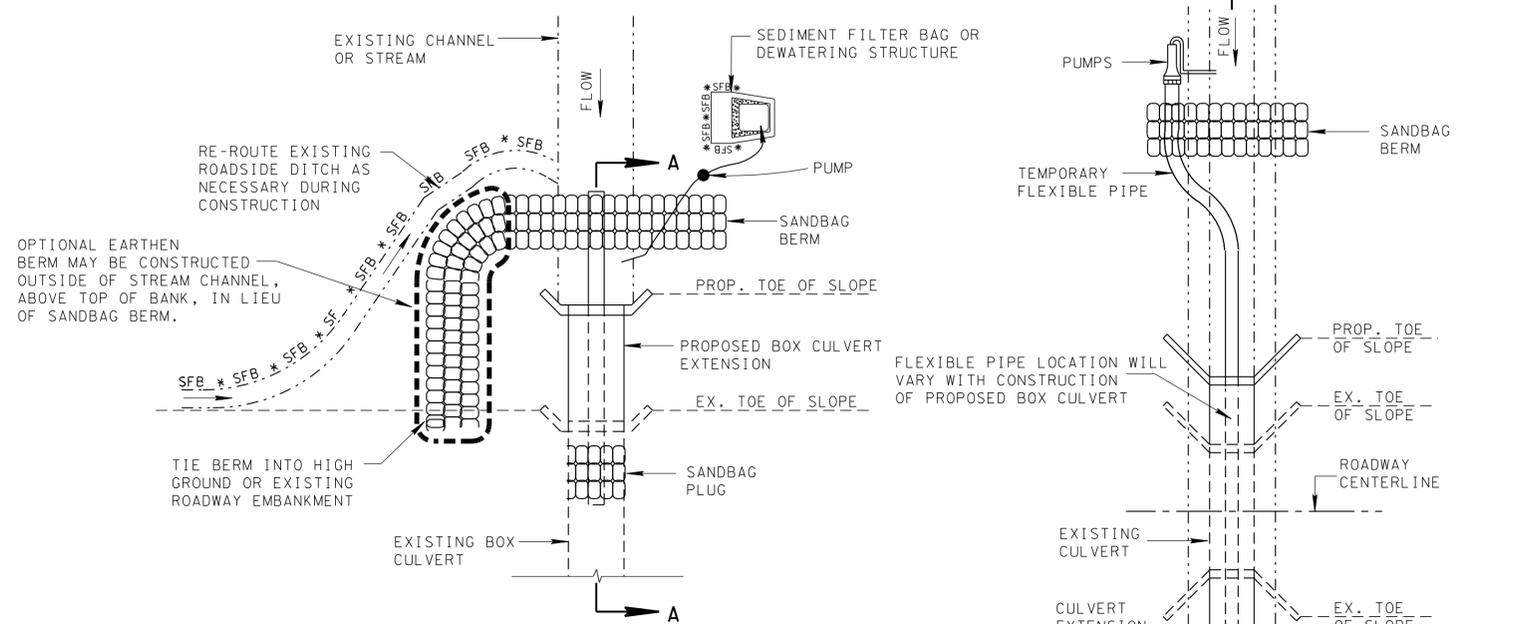
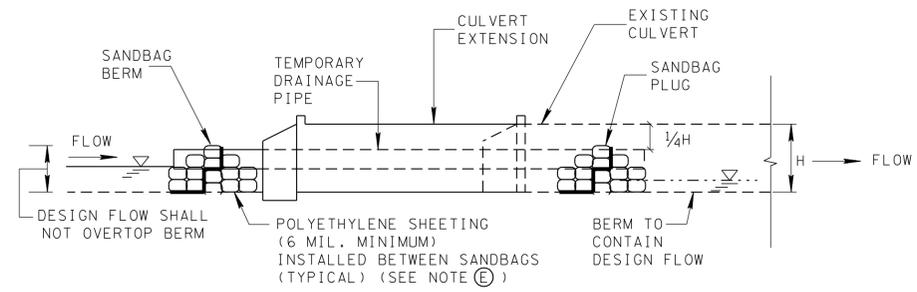


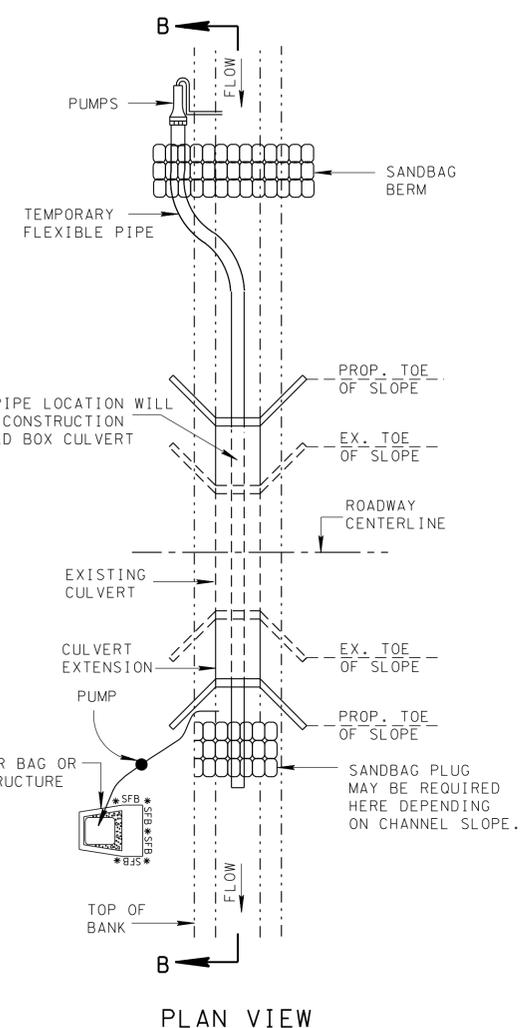
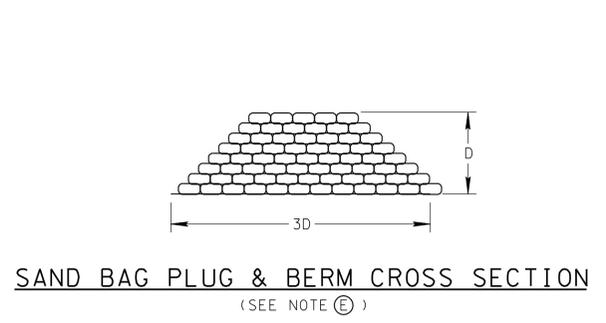
### FLEXIBLE PIPE DIVERSION (OPTIONAL)



PLAN VIEW

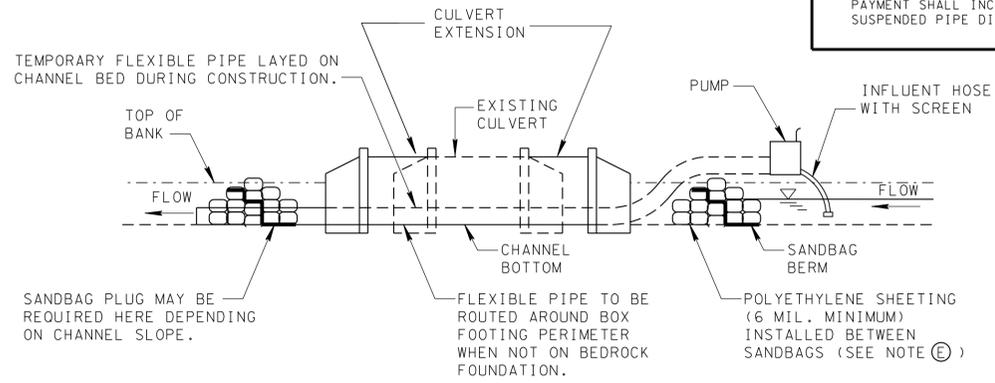


SECTION A-A



PLAN VIEW

(SHOWN WITH UPSTREAM & DOWNSTREAM EXTENTIONS)



SECTION B-B

#### SUSPENDED PIPE DIVERSION (UPSTREAM) GENERAL NOTES

(A) 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.

(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 DOWNSTREAM END OF THE SUSPENDED PIPE DIVERSIONS 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 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.

(F) 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.

(G) 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.

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

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

(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 DIVERSIONS 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 (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).

DIAMETER OF PIPE (IN.)	STEEL THICKNESS (IN.)					
	0.064	0.079	0.109	0.138	0.168	
2" X 1/2" 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)