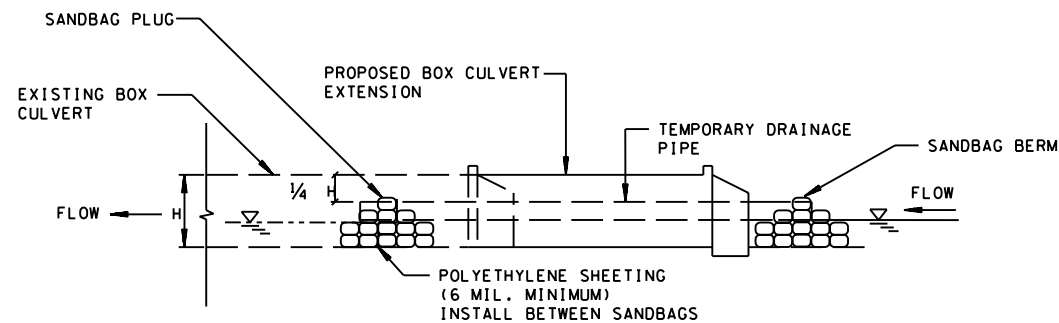
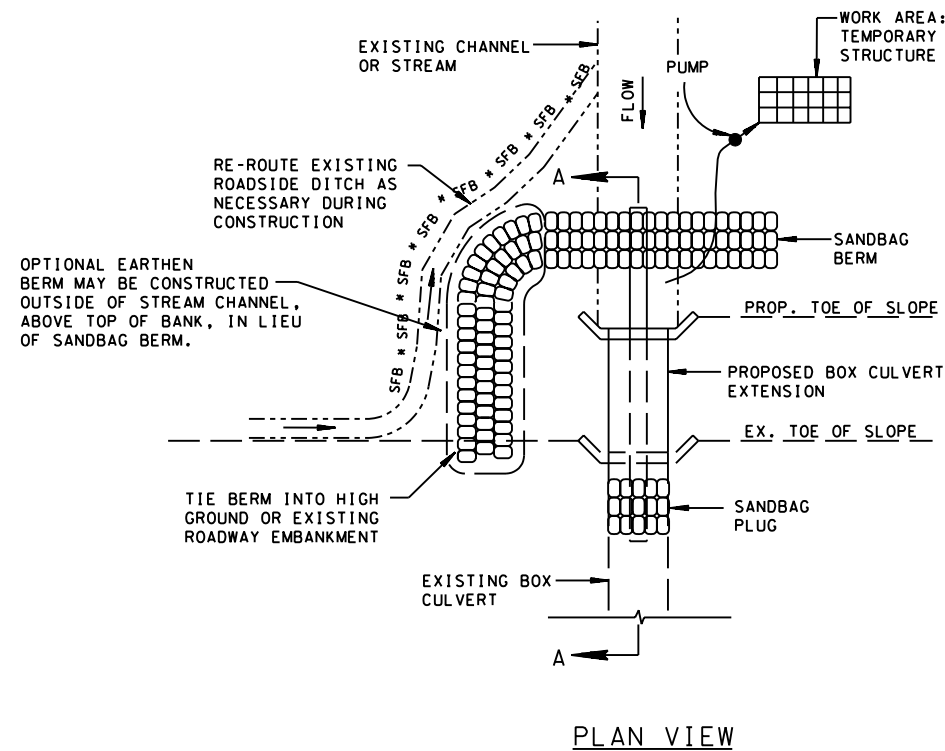


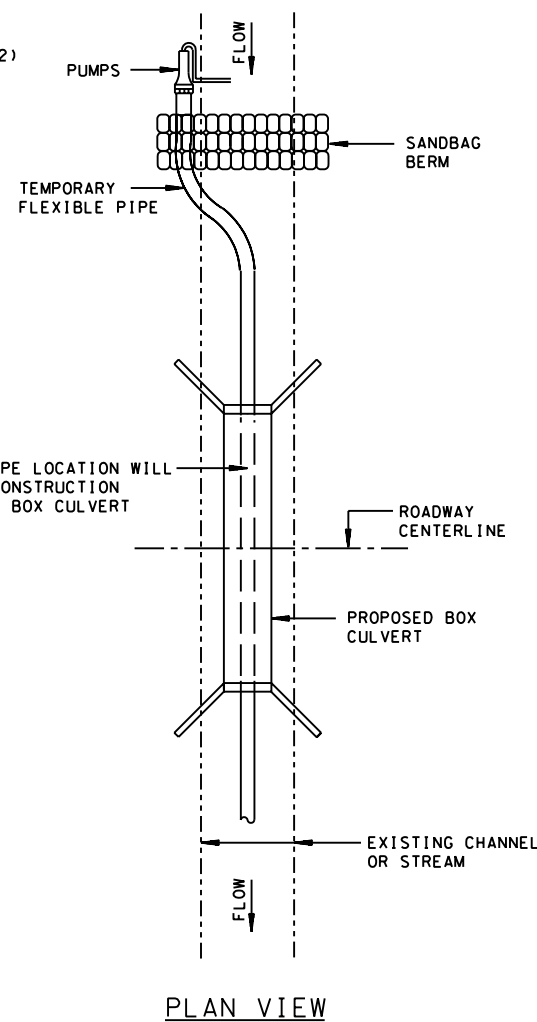
TEMPORARY DRAINAGE PIPE FOR UPSTREAM BOX CULVERT EXTENSION

OPTIONAL TEMPORARY DIVERSION USING PUMPS AND FLEXIBLE PIPES

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



SECTION A-A



PLAN VIEW

TEMPORARY PIPE FOR BOX CULVERT EXTENSION GENERAL NOTES

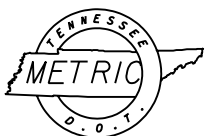
- (A) TEMPORARY DRAINAGE PIPE MAY BE USED TO ALLOW BOX CULVERT EXTENSIONS TO BE CONSTRUCTED, WHILE SEPARATED FROM FLOWING WATER, IN THE DRY, THUS REDUCING SEDIMENTATION. OPTIONAL DIVERSION PUMPING MAY BE UTILIZED ON STREAMS WITH INTERMITTENT FLOW WHERE THE DURATION OF CONSTRUCTION IS EXPECTED TO BE BRIEF.
- (B) TEMPORARY PIPES 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 ECM-STR-32 MAY BE USED AS A GUIDELINE FOR DETERMINING THE PIPE SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 14.2 CMS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION.
- (C) SUSPENDED TEMPORARY DRAINAGE PIPES 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 TEMPORARY PIPE SHOULD BE CONSTRUCTED TO A HEIGHT EQUAL TO THREE QUARTERS OF THE RISE OF THE BOX CULVERT.
- (E) 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.
- (F) THE TEMPORARY DRAINAGE PIPE WILL BE SUPPORTED AT ALL JOINTS AND AT INTERVALS NOT TO EXCEED MAXIMUM VALUES SPECIFIED IN THE TABLE "MAXIMUM SPAN FOR PIPE 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 450 mm IN LENGTH, ALONG THE TEMPORARY PIPE AND CENTERED ON THE JOINT. SUPPORTS SHOULD "CRADLE" THE TEMPORARY PIPE TO ENSURE THAT IT WILL NOT ROLL DURING CONSTRUCTION OF THE BOX CULVERT.
- (G) ALL PIPE JOINTS SHALL BE PROPERLY BANDED OR OTHERWISE PROVIDED WITH A REASONABLE SEAL AGAINST LEAKAGE.
- (H) THE OPTIONAL TEMPORARY DIVERSION USING PUMPS AND FLEXIBLE PIPES CAN BE USED AS AN ALTERNATE FOR EITHER AN UPSTREAM OR DOWNSTREAM CULVERT EXTENSION.
- (I) 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 TEMPORARY PIPE.
 3. CONSTRUCT THE SANDBAG PLUG AT THE DOWNSTREAM END OF THE TEMPORARY PIPE.
 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 PIPE, SUPPORTS AND ANY REMAINING SANDBAGS.
- (J) TEMPORARY DRAINAGE PIPE, TEMPORARY DEWATERING STRUCTURE, SANDBAGS, POLYETHYLENE SHEETING AND SILT FENCES WITH BACKING SHALL BE PAID FOR UNDER THEIR RESPECTIVE PAY ITEMS.
- (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 TEMPORARY PIPE SHALL BE IMMEDIATELY REMOVED.

MAXIMUM SPAN FOR PIPE SUPPORTS, METERS

DIAMETER OF PIPE (mm)	STEEL THICKNESS (mm)				
	1.626	2.007	2.769	3.505	4.267
	51 mm X 13 mm CORRUGATION				
610	3.960	4.570	6.100		
914	3.660	4.570	6.100	7.620	
1219	3.350	4.270	5.790	7.620	9.140
1524		4.270	5.790	7.320	8.840
1829			5.490	7.320	8.840
	127 mm X 25 mm OR 76 mm X 25 mm CORRUGATION				
914	2.740	3.350			
1219	2.740	3.350	4.570		
1524	2.440	3.050	4.270	5.490	
1829	2.440	3.050	4.270	5.490	6.710

FOR PIPE SIZES NOT SHOWN REFER TO NEXT LARGER SIZE

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



ALL UNITS ARE IN MILLIMETERS
UNLESS NOTED OTHERWISE.

MINOR REVISION -- FHWA
APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY DRAINAGE
PIPE FOR
UPSTREAM BOX
CULVERT EXTENSION

1-20-06 ECM-STR-33A

EROSION CONTROL PLAN LEGEND: TEMPORARY PIPE FOR BOX CULVERT EXTENSION