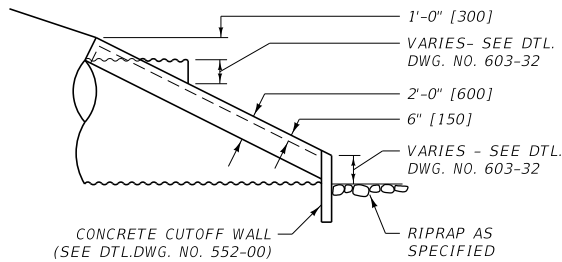
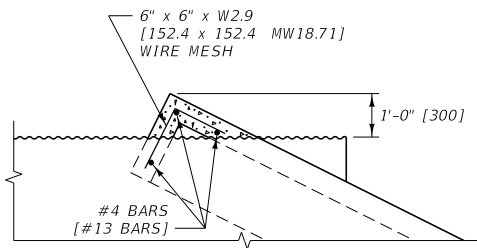


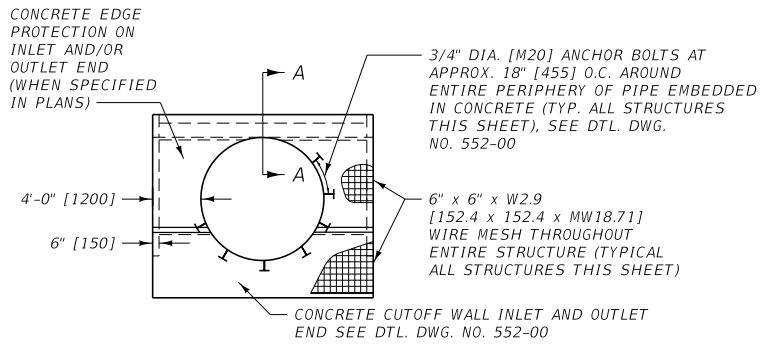
ROUND PIPE



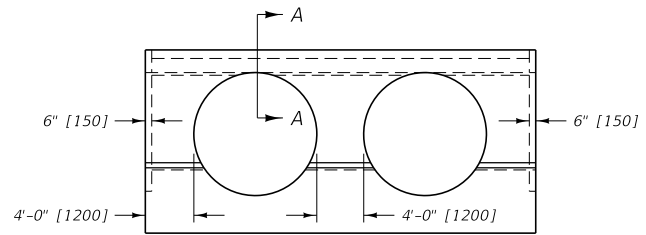
SIDE ELEVATION



SECTION A-A

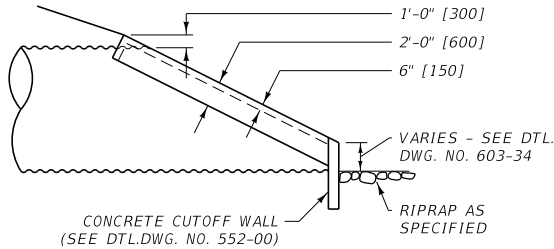


FRONT ELEVATION

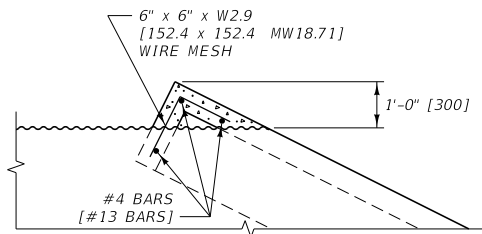


FRONT ELEVATION MULTIPLE PIPES

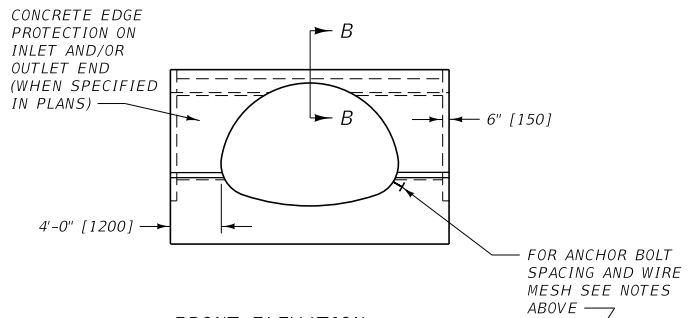
ARCH PIPE



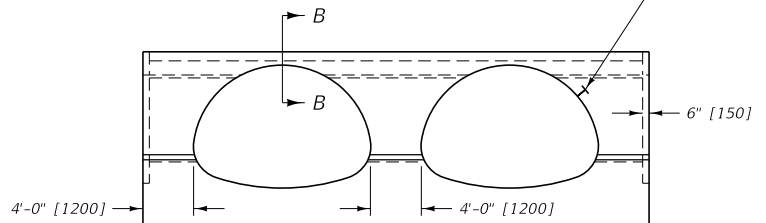
SIDE ELEVATION



SECTION B-B



FRONT ELEVATION



FRONT ELEVATION MULTIPLE PIPES

NOTE:
ALL CONCRETE IS CLASS
GENERAL OR EQUAL.

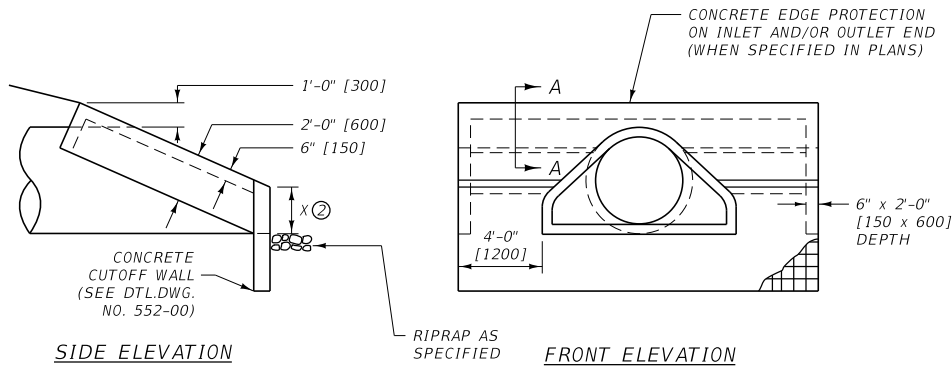
UNITS SHOWN IN BRACKETS [] ARE
METRIC AND ARE IN MILLIMETERS (mm)
UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING

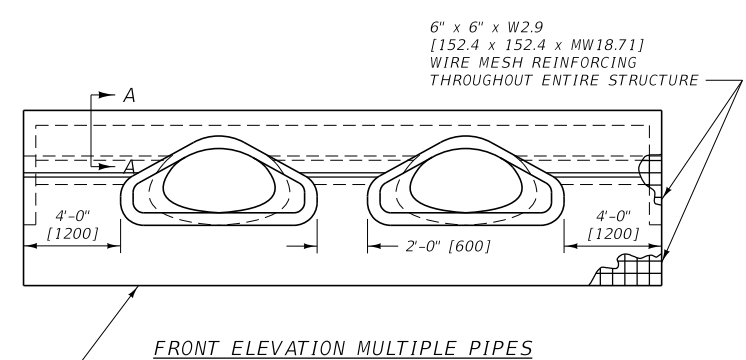
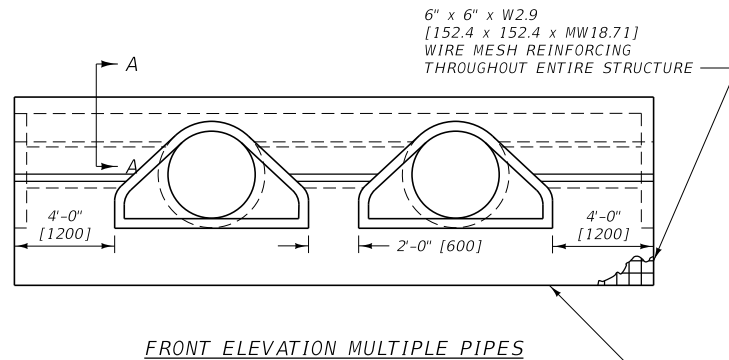
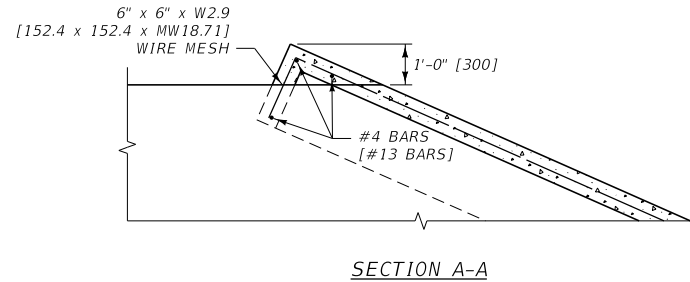
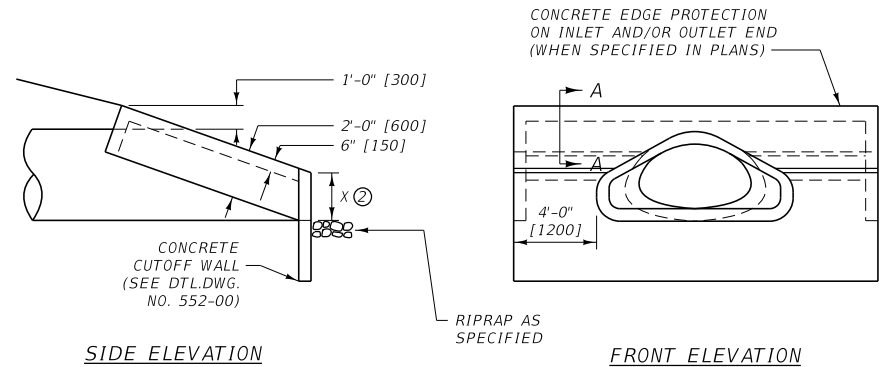
REFERENCE	DWG. NO.
STANDARD SPEC.	613-06
SECTION 613, 603, 552	

CONCRETE EDGE PROTECTION
FOR METAL CULVERTS

ROUND PIPE
(FETS SHOWN)



ARCH PIPE
(FETS SHOWN)



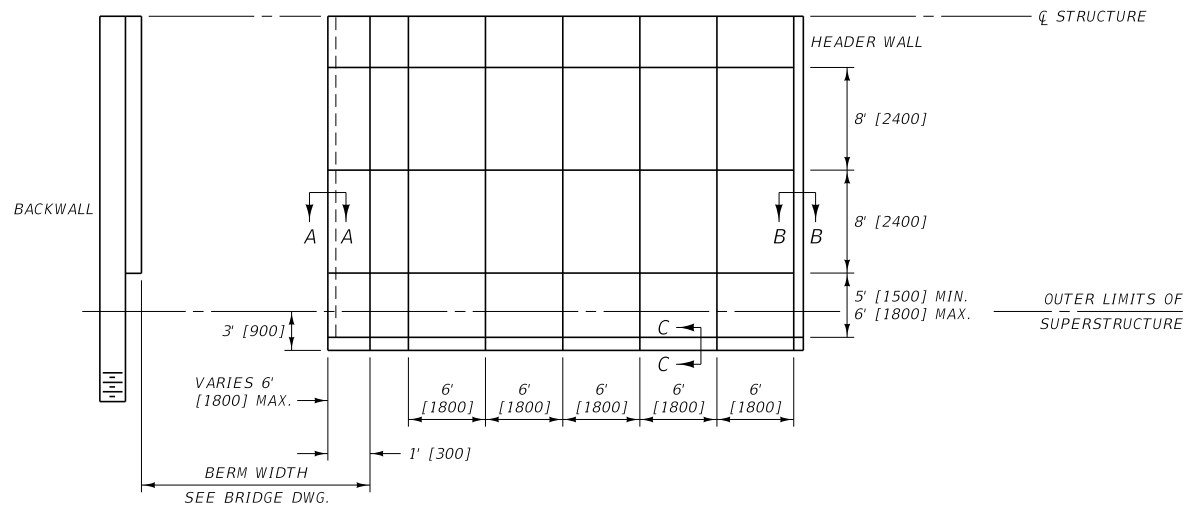
CONCRETE CUTOFF WALL INLET AND OUTLET END SEE DTL. DWG. NO. 552-00 (WHEN SPECIFIED IN PLANS)

NOTES:

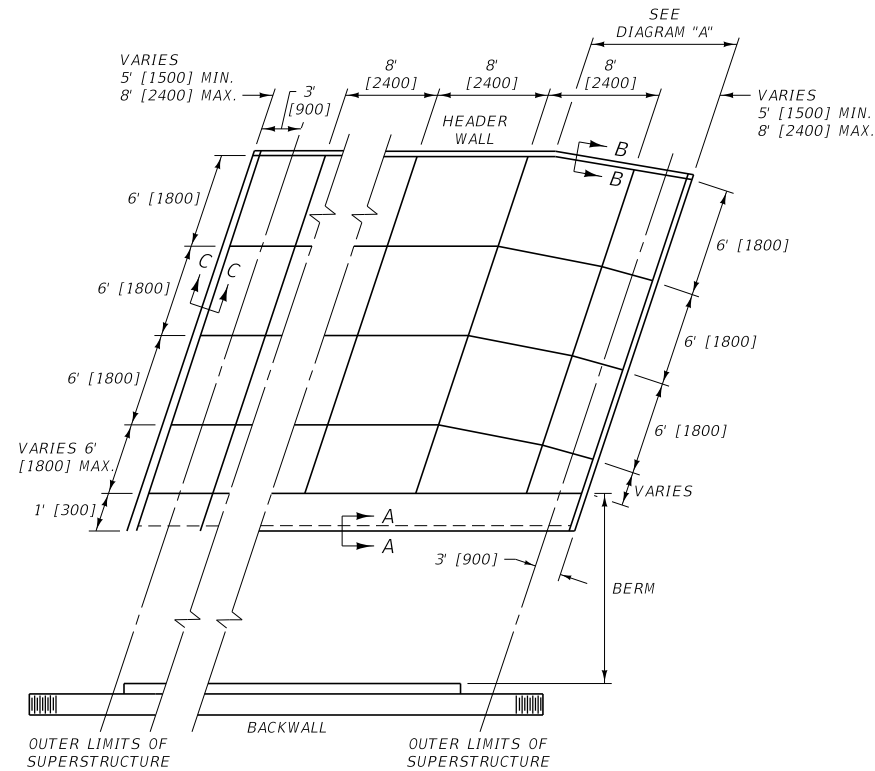
- ① ALL CONCRETE IS CLASS GENERAL CONCRETE OR EQUAL.
- ② SEE DTL. DWG. NO. 603-08 AND 603-10 FOR RCP AND RCPA CULVERTS WITH FETS. FOR RCP AND RCPA CULVERTS WITH SQUARE ENDS, THE "X" DIMENSION IS D/4 OR R/3.

UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING	
REFERENCE	DWG. NO.
STANDARD SPEC.	613-08
SECTION 613,603,552	
CONCRETE EDGE PROTECTION FOR CONCRETE CULVERTS	
MDT MONTANA DEPARTMENT OF TRANSPORTATION	



STRAIGHT STRUCTURE



SKewed STRUCTURE

CAST-IN-PLACE CONCRETE:

LOCATE JOINTS AS INDICATED ON THE PLANS. IF CONSTRUCTION IS STOPPED FOR OVER TWO HOURS, CREATE A CONSTRUCTION JOINT. USE CLASS GENERAL CONCRETE FOR ALL CAST-IN-PLACE CONCRETE.

USE A 1/2" [13] EXPANSION JOINT FILLER PER SECTION 707 WHENEVER THE CAST-IN-PLACE CONCRETE ABUTS AGAINST ANY PART OF THE BRIDGE STRUCTURE.

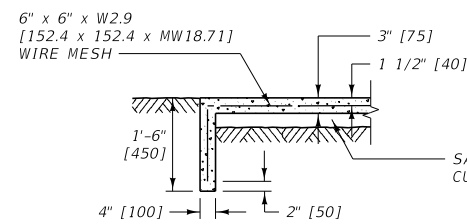
CLEAR THE EMBANKMENT SLOPE OF ALL BRUSH, DEBRIS AND RUBBLE. A CUSHION IS NOT REQUIRED FOR GRAVEL EMBANKMENT SLOPES. FINISH ALL SLOPES TO THE SLOPE INDICATED IN THE BRIDGE PLANS. COMPACT ALL LOOSE MATERIAL. LEAVE THE ADJACENT SLOPE AREA IN A SMOOTH, UNIFORM CONDITION.

REINFORCING STEEL:

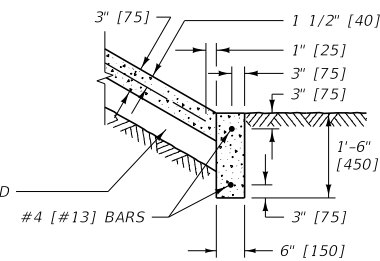
(MAY USE EITHER ALTERNATE LISTED BELOW)

1. #3 [#10] BARS AT 10" [250] O.C. (HORIZONTAL AND VERTICAL SPACING) MIN. COVER OF 2" [50]
2. 6" x 6" x W2.9 [152.4 x 152.4 x MW187.1] WIRE MESH

12" [300] OVERLAP REQUIRED AT CONSTRUCTION JOINTS FOR REINFORCING STEEL AND WIRE MESH.

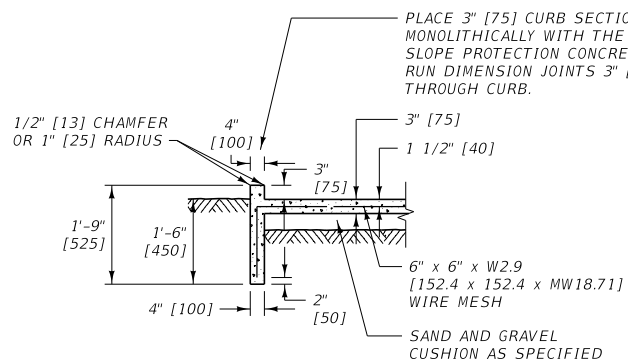


SECTION A-A



SECTION B-B

HEADER WALL



SECTION C-C

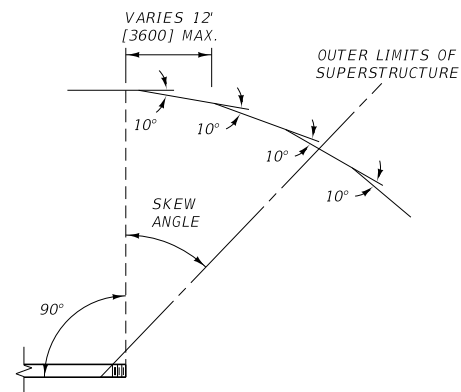
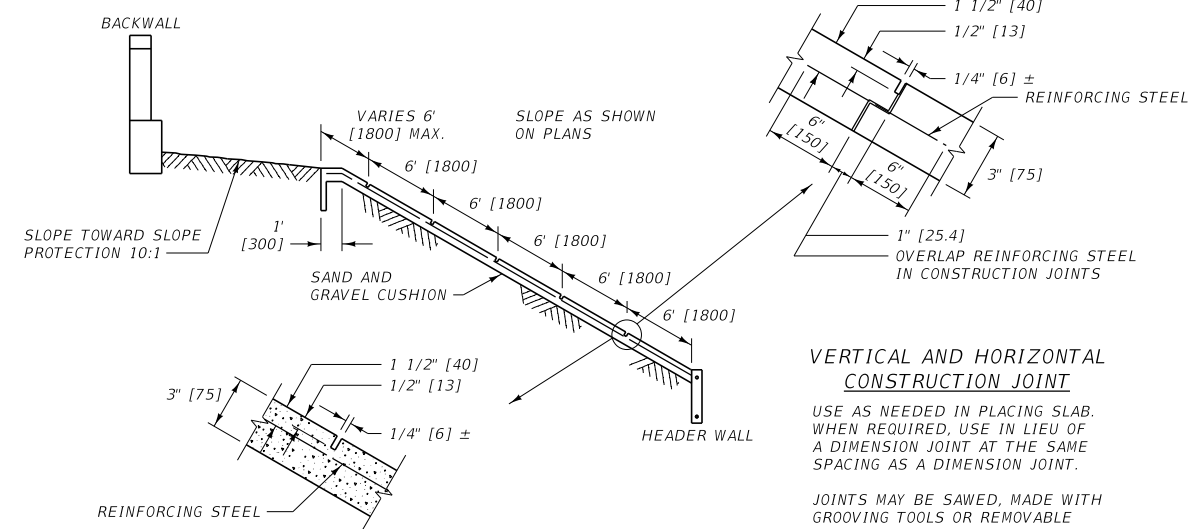


DIAGRAM "A"



VERTICAL AND HORIZONTAL DIMENSION JOINT

6' [1800] VERTICAL SPACING OR AS NOTED.
8' [2400] HORIZONTAL SPACING OR AS NOTED.
JOINTS MAY BE SAWED, MADE WITH GROOVING TOOLS OR REMOVABLE INSERTS OF AN APPROVED TYPE.

VERTICAL AND HORIZONTAL CONSTRUCTION JOINT

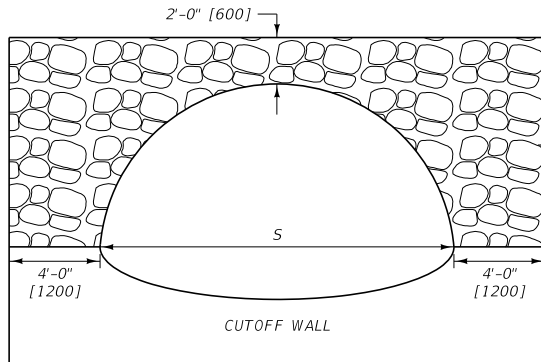
USE AS NEEDED IN PLACING SLAB. WHEN REQUIRED, USE IN LIEU OF A DIMENSION JOINT AT THE SAME SPACING AS A DIMENSION JOINT.

JOINTS MAY BE SAWED, MADE WITH GROOVING TOOLS OR REMOVABLE INSERTS OF AN APPROVED TYPE.

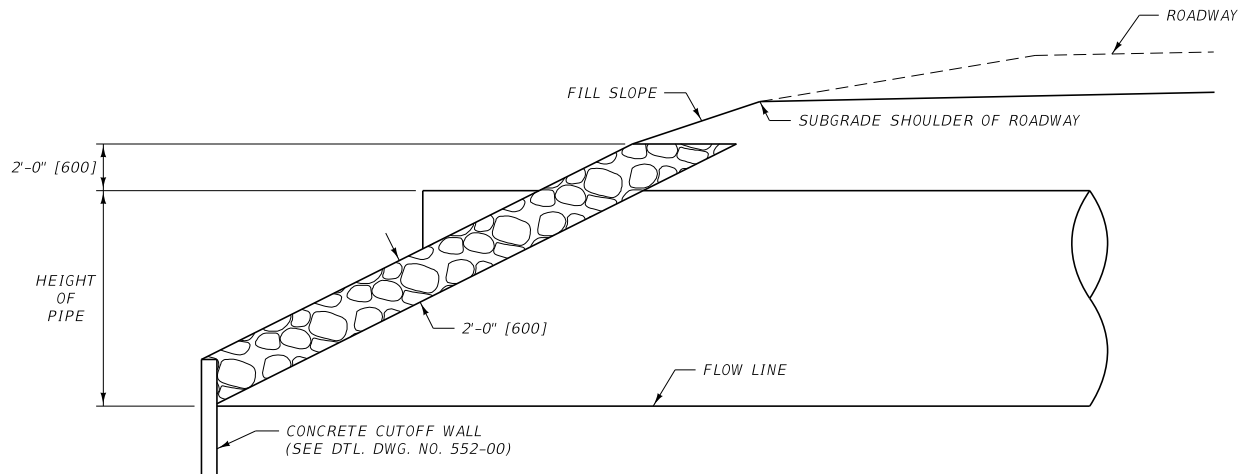
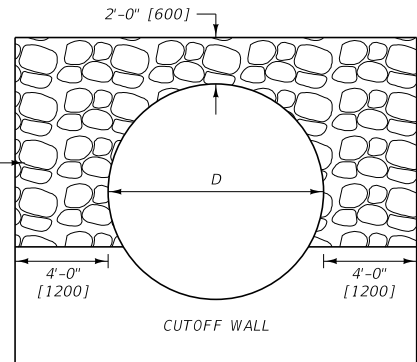
IF JOINTS ARE TO BE SAWED, SAW JOINTS JUST AFTER CONCRETE HAS SET BUT BEFORE UNCONTROLLED CRACKING OCCURS.

UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 613, 707	DWG. NO. 613-10
CONCRETE SLOPE PROTECTION	
MDT MONTANA DEPARTMENT OF TRANSPORTATION	



CLASS 1 RIPRAP UNLESS OTHERWISE SPECIFIED

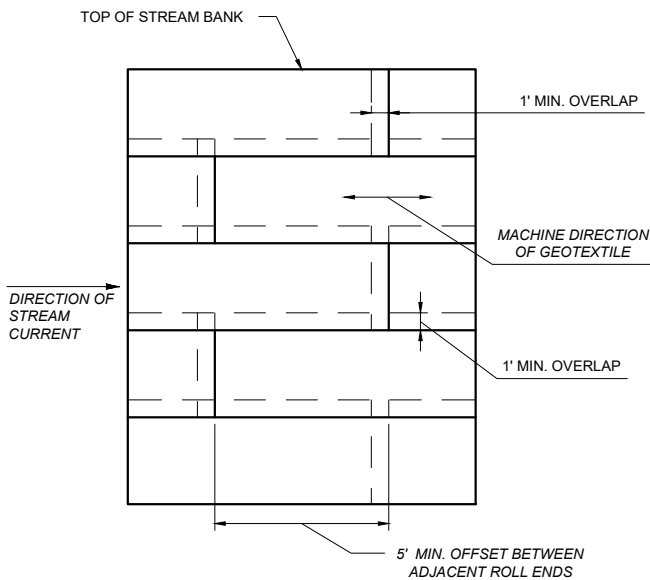
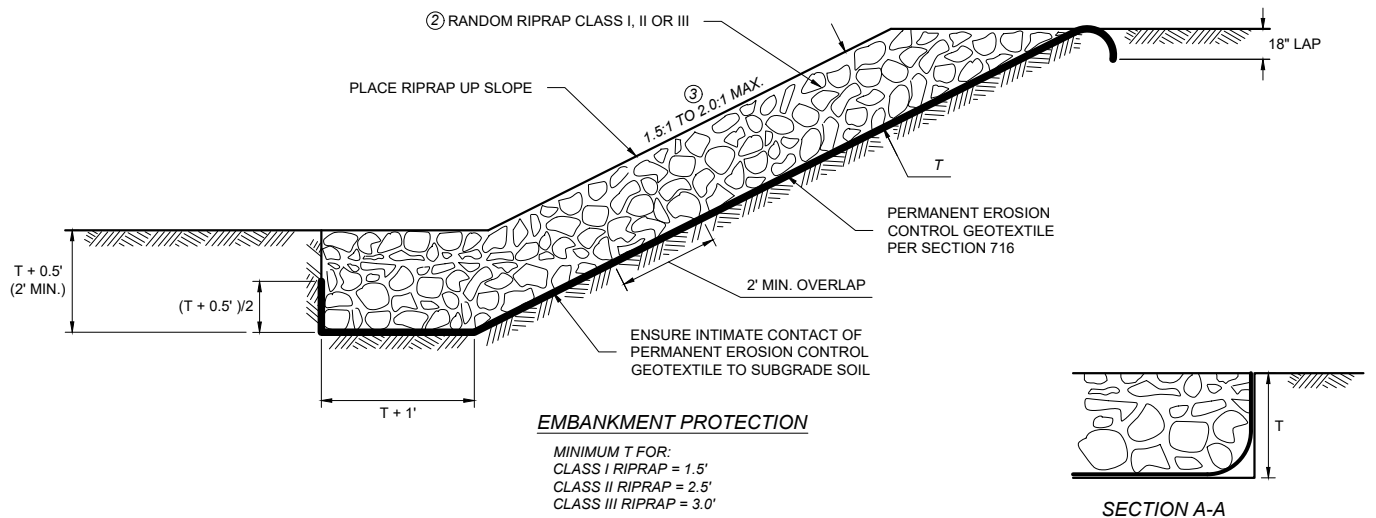


NOTES:

- ① CULVERT RIPRAP IS ONLY USED IN SPECIAL CIRCUMSTANCES.
- ② KEY ENDS OF RIPRAP WALLS INTO THE EMBANKMENT SLOPES A MINIMUM OF 2 FEET [600 mm] FROM OUTER FACE OF THE RIPRAP FOR THE FULL HEIGHT OF THE RIPRAP WALL.

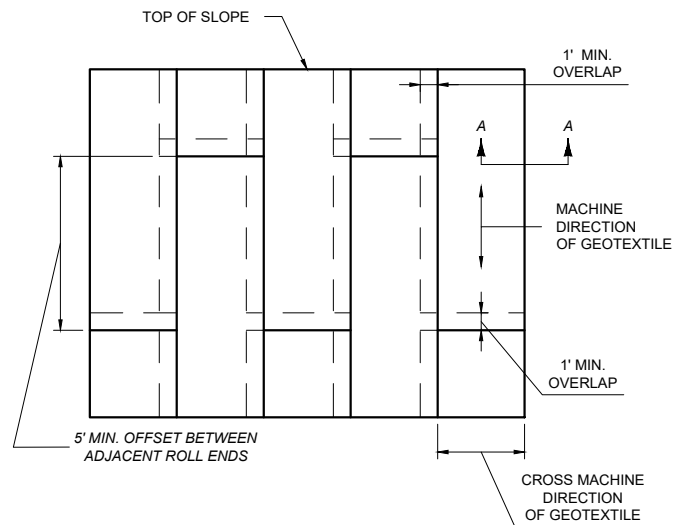
UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING	
REFERENCE	DWG. NO.
STANDARD SPEC.	613-14
SECTION 613	
CULVERT RIPRAP	
MDT MONTANA DEPARTMENT OF TRANSPORTATION	



GEOTEXTILE PLACEMENT DETAIL

METHOD FOR PLACING PERMANENT EROSION CONTROL GEOTEXTILE FOR PROTECTION OF STREAM BANKS



GEOTEXTILE PLACEMENT DETAIL

METHOD FOR PLACING PERMANENT EROSION CONTROL GEOTEXTILE FOR PROTECTION OF CUT AND FILL SLOPES

NOTES:

- ① INSTALL PERMANENT EROSION CONTROL GEOTEXTILE PER SECTION 622.
- ② ONLY RANDOM RIPRAP CLASS II OR LARGER IS ALLOWED FOR RIPRAP SLOPE PROTECTION AT BRIDGES.
- ③ 2.0:1 MAX ALLOWED FOR RIPRAP SLOPE PROTECTION AT BRIDGES.

DETAILED DRAWINGS

REFERENCE	DWG. NO.
STANDARD SPEC.	613-16
SECTION 613, 622	

RIPRAP SLOPE PROTECTION

EFFECTIVE: JAN 23, 2020



MONTANA
Department of Transportation

--REVISED--
JAN 15, 2026

12/12/2025 2:20 PM

STDDRD613016.DWG

Technical drawing of a chute cross-section. The drawing shows a central chute with a width of $3A$ at the top. The height of the chute is B . The chute is flanked by shoulder berms. The distance from the centerline to the outer edge of the shoulder berm is $0.5A$. The distance from the centerline to the inner edge of the shoulder berm is A . The distance from the centerline to the outer edge of the shoulder berm is $1'-0'' [300]$. The drawing includes a note: "SHOULDER BERM AS REQUIRED TO DIRECT DRAINAGE INTO CHUTE".

Diagram illustrating the cross-section of a riprap structure, showing dimensions and materials:

- Dimensions:**
 - Top width: $1'-0''$ [300]
 - Top slope: $0.5A$
 - Top flat width: A
 - Bottom slope: $0.5A$
 - Bottom width: $1'-0''$ [300]
 - Height: C
- Materials and Details:**
 - ANCHOR PER DETAIL DWG 208-12**: Indicated by a bracket on the left side.
 - RIPRAP: 2' [600]**: Indicated by a bracket on the left side.
 - GROUTED RIPRAP: 1' - 6" [450]**: Indicated by a bracket on the left side.
 - PERMANENT EROSION CONTROL GEOTEXTILE PER SECTION 716**: Indicated by a bracket on the right side.

2A

3'-0" [900]

2A

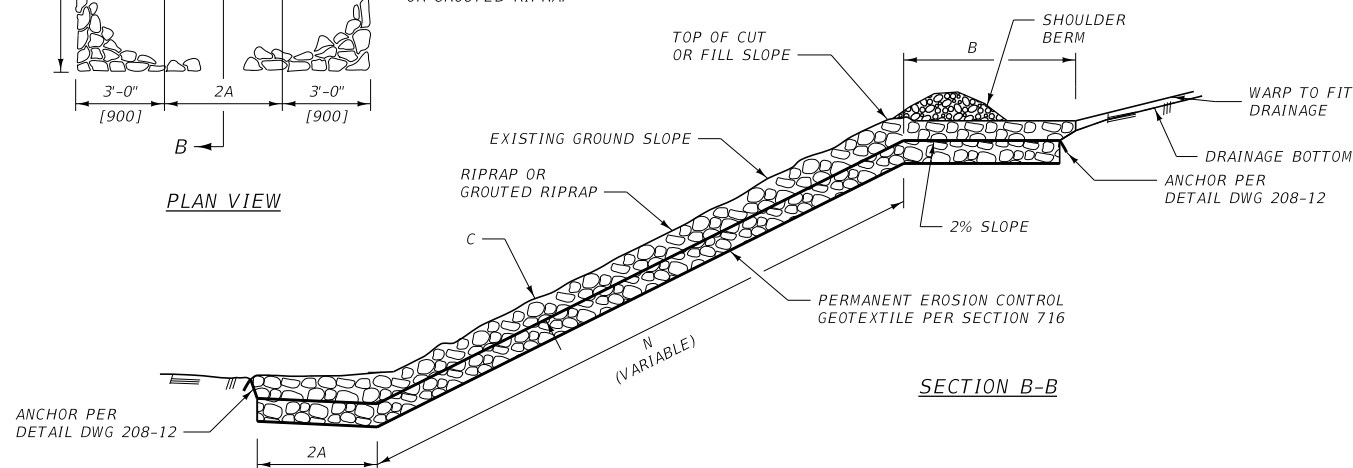
3'-0" [900]

SETTLING BASIN RIPRAP OR GROUTED RIPRAP

B

EXISTING GROUND

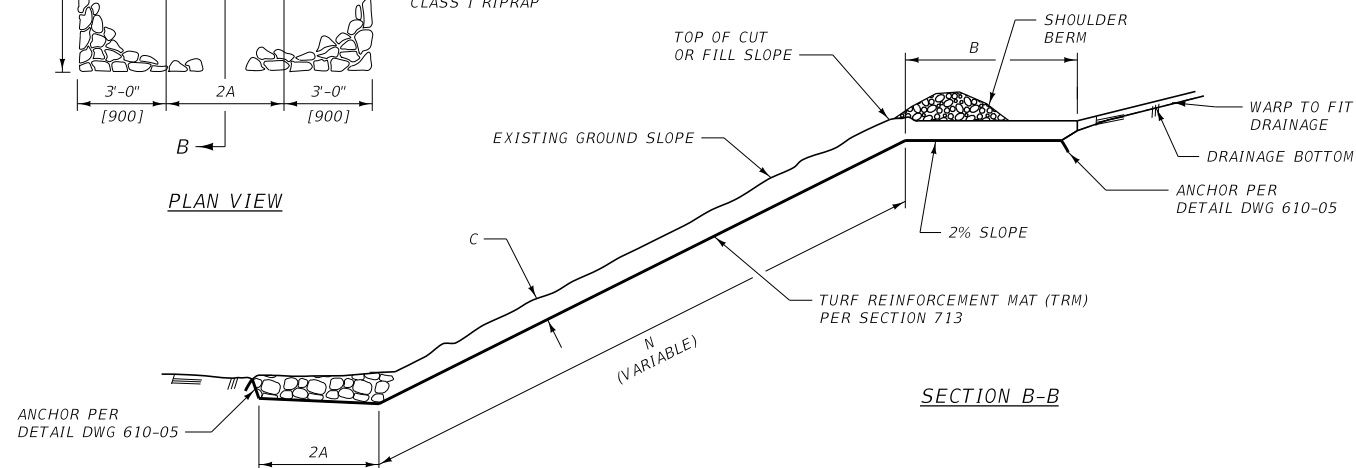
PLAN VIEW



SECTION B-B

Technical drawing of a chute cross-section. The drawing shows a central chute with a width of A at its base. The top of the chute has a width of $3A$. The height of the chute is B . The chute is flanked by shoulder berms, which are labeled "SHOULDER BERM AS REQUIRED TO DIRECT DRAINAGE INTO CHUTE". The berms have a height of B and a width of $0.5A$ on each side. The drawing also shows a cross-section of the chute's interior, with a width of A at the base and a height of A at the top. The drawing is a technical drawing of a chute cross-section, showing the dimensions and components of the structure.

PLAN VIEW



SECTION B-B

10" [250]

SHOULDER BERM

FILL SLOPE


3' [900] TYP.

SHOULDER BERM DETAIL (TYP. FOR ALL TYPES)

INLET CONDITIONS (TYP. FOR ALL TYPES):

DEPRESS THE INLET BELOW THE NATURAL DRAINAGE BOTTOM TO PREVENT FLOW FROM BYPASSING THE DRAINAGE CHUTE.

<i>DETAILED DRAWING</i>	
<i>REFERENCE</i>	<i>DWG. NO.</i>
<i>STANDARD SPEC.</i>	<i>613-18</i>
<i>SECTION 613.701,713,716</i>	
<i>DRAINAGE CHUTES</i>	


 MONTANA DEPARTMENT
OF TRANSPORTATION

* USE CLASS-I RIPRAP FOR ALL GROUTED RIPRAP TYPES & TRM CHUTES