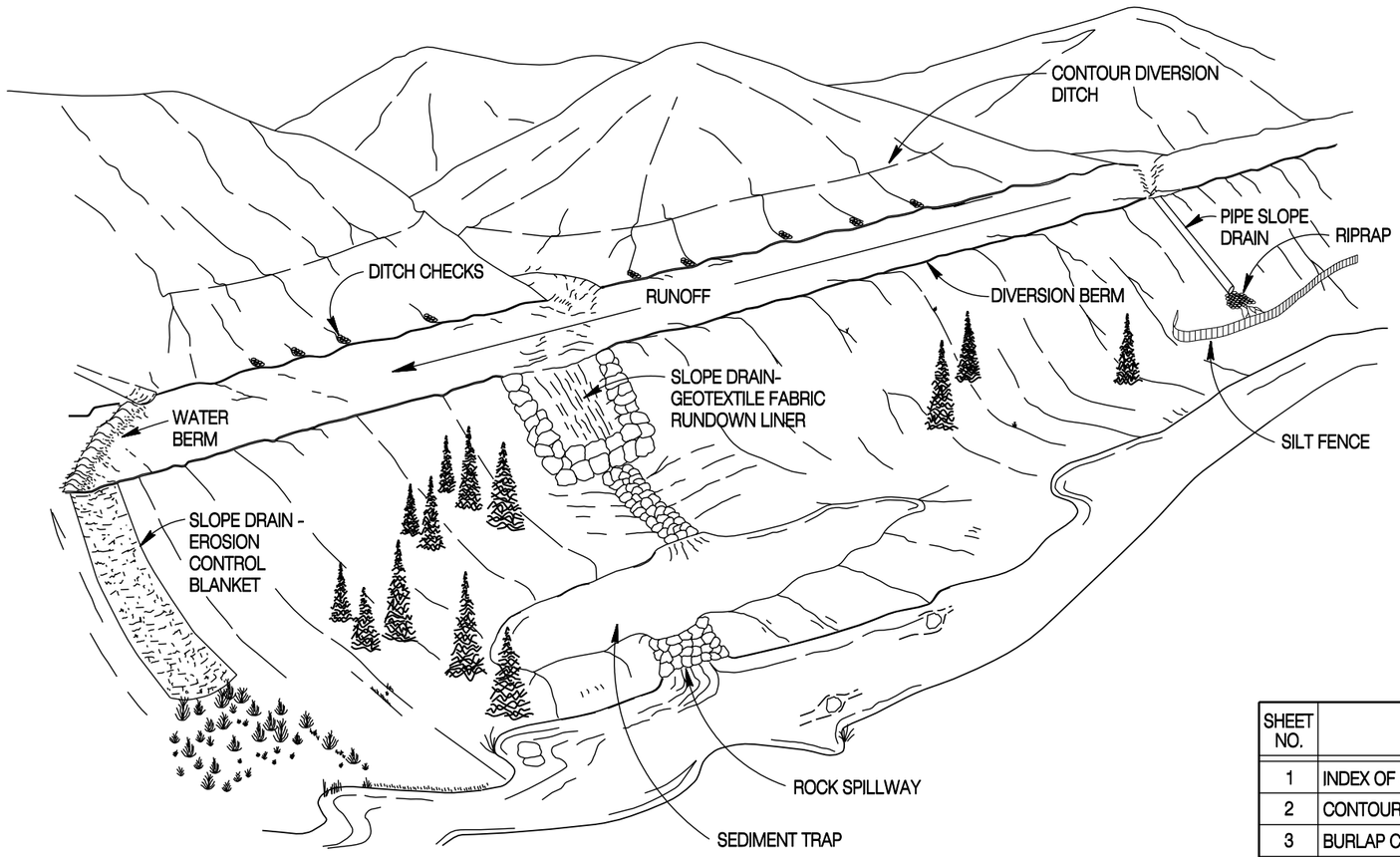
GENERAL NOTE

This standard plan includes some, but not all techniques for limiting erosion and pollution during construction operations. Limit size of areas to be disrupted to reduce the quantity of erosion control devices to be installed and maintained. Adhere to Best Management Practices (BMP) and project erosion control plan. Refer to specifications for detailed information not shown hereon.



BASIC EROSION CONTROL SYSTEM

Designed by: KBP
Drawn by: GLD
Checked by: WBW
Previous Dwg. No. 215-01C

INDEX OF SHEETS, GENERAL INFORMATION & BASIC EROSION CONTROL SYSTEM

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

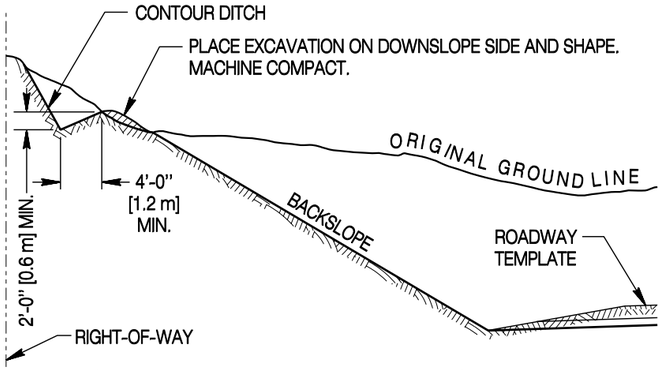
WYOMING DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

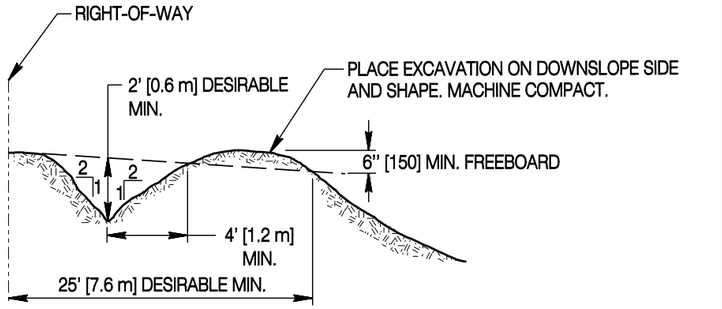
STANDARD PLAN

STANDARD PLAN NUMBER
215-1
SHEET 1 of 11
Issued by: ENGINEERING SERVICES
Date Issued: MARCH, 2004

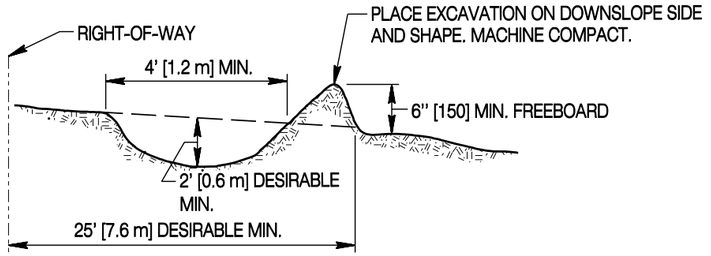
FILE: j:\Stan\Dual_Std\2151_01.dgn



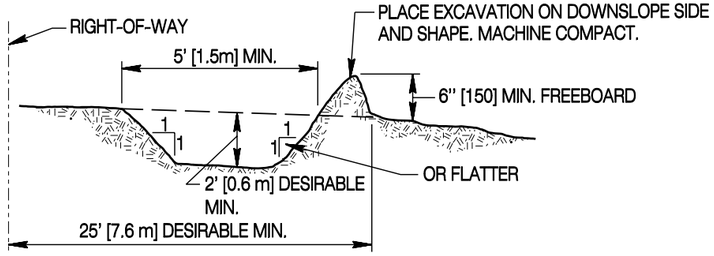
TYPICAL CONTOUR DIVERSION DITCH LOCATION



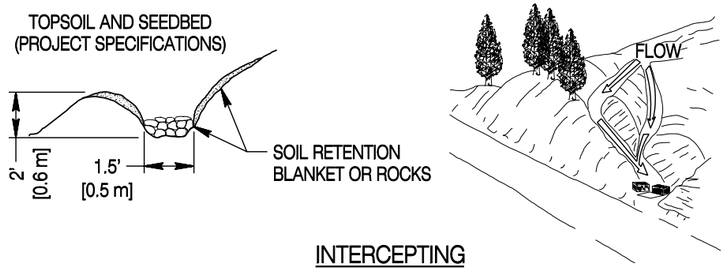
TRIANGULAR CONTOUR DIVERSION



PARABOLIC CONTOUR DIVERSION

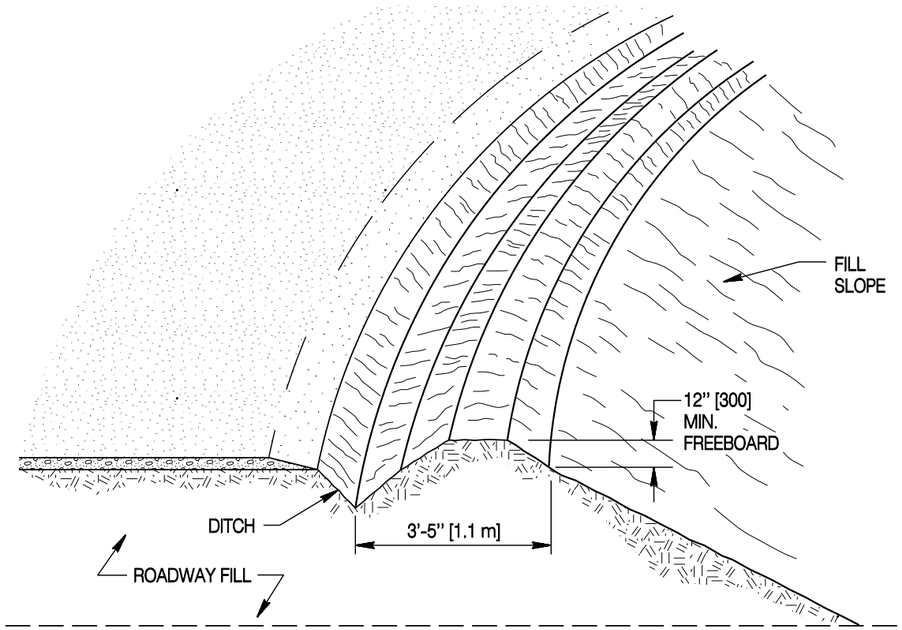


TRAPEZODIAL CONTOUR DIVERSION



INTERCEPTING

TYPES OF DITCHES



INTERIM EARTHWORK BERM

Determine height and width of temporary berms by the size of the run-off area. Compact berms with several passes of dozer or grader wheels as approved by the engineer.

Designed by: KBP	
Drawn by: GLD	
Checked by: WBW	
Previous Dwg. No. 215-01C	

CONTOUR DIVERSION DITCHES AND ROADBED RUN-OFF BERMS

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

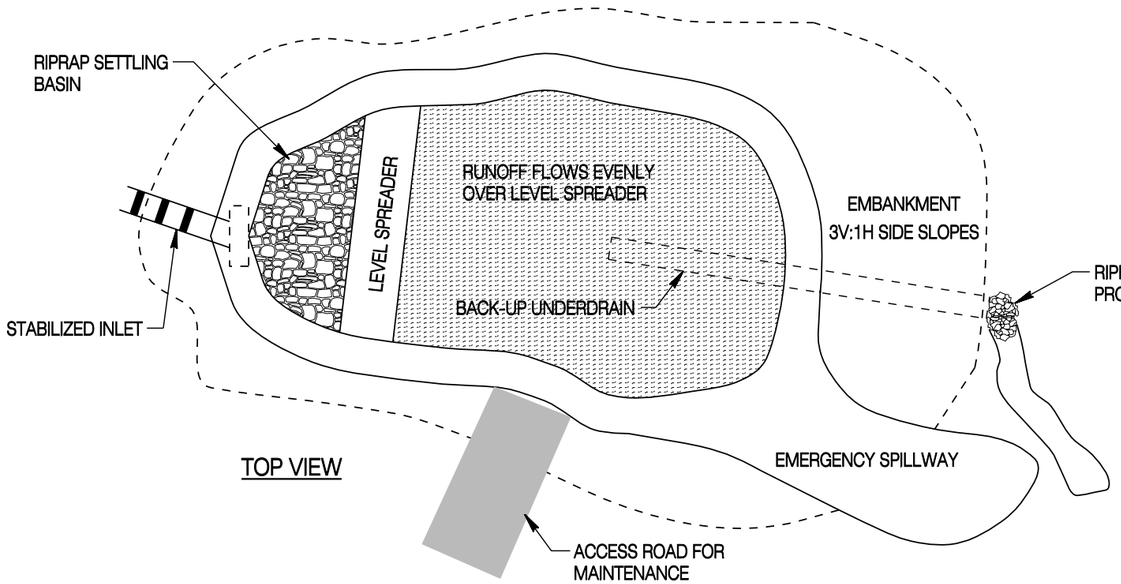
WYOMING DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

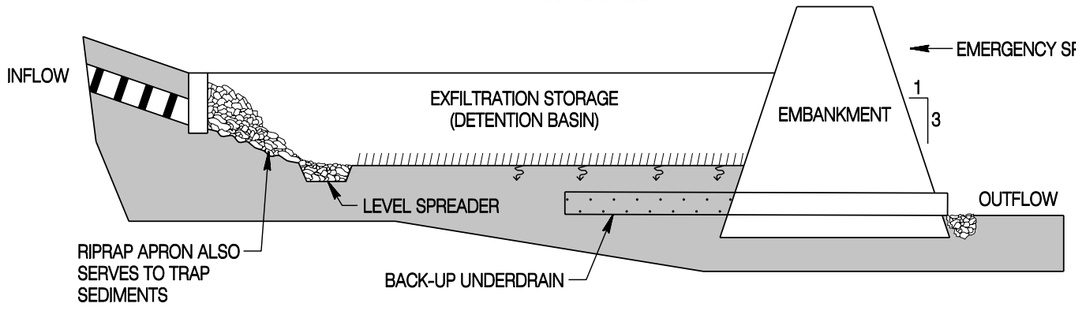
STANDARD PLAN

STANDARD PLAN NUMBER
215-1
SHEET 2 of 11
Issued by: ENGINEERING SERVICES
Date Issued: MARCH, 2004

FILE: j:\Stan\Dual_Std\2151_02.dgn



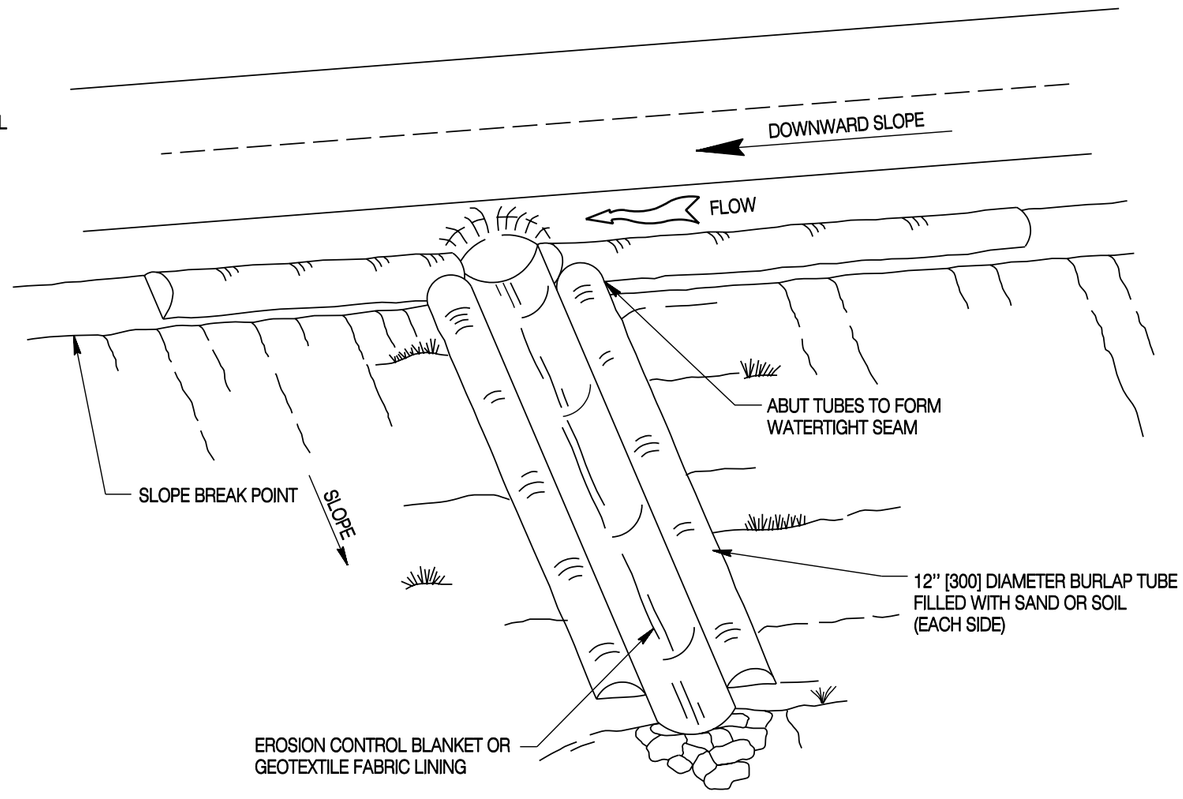
TOP VIEW



SIDE VIEW

LEVEL SPREADER

Water may be diverted from a slope by one of the above ditches and then redistributed with a level spreader. The level spreader may be covered with geotextile fabric, erosion control blankets, or rock.



BURLAP TUBE DIVERSION DIKE

Construct temporary run-off diversions with burlap tubes, low berming, or by excavating and lining a shallow channel.

Designed by:	KBP
Drawn by:	GLD
Checked by:	WBW
Previous Dwg. No.	215-01C

BURLAP CURB DIVERSION DIKE FOR SLOPE DRAIN AND LEVEL SPREADER DETAILS

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

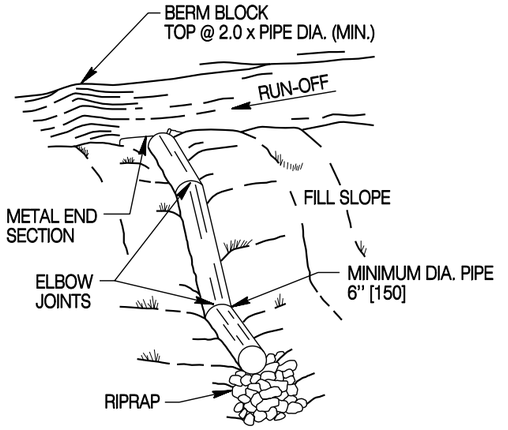
WYOMING DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

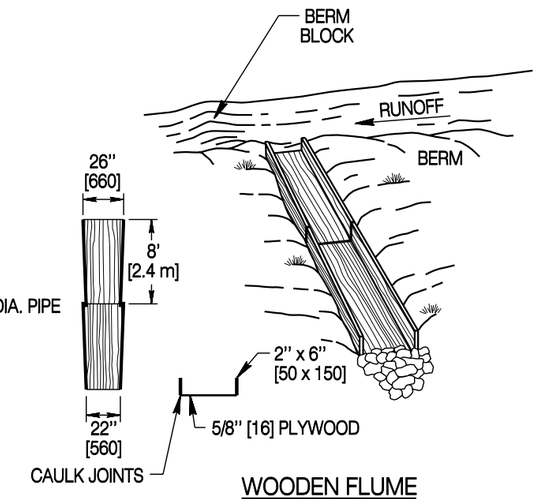
STANDARD PLAN

STANDARD PLAN NUMBER
215-1
SHEET 3 of 11
Issued by: ENGINEERING SERVICES
Date Issued: MARCH, 2004

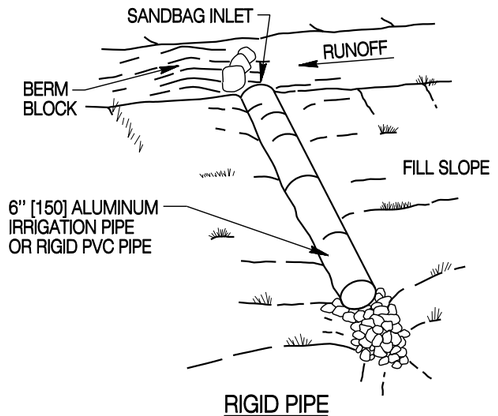
FILE: j:\Stan\Dual_Std\2151_03.dgn



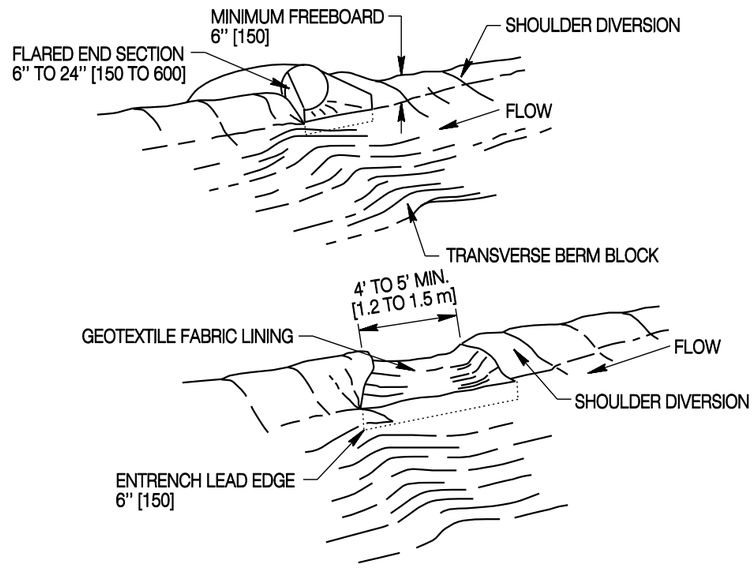
JOINTED PIPE



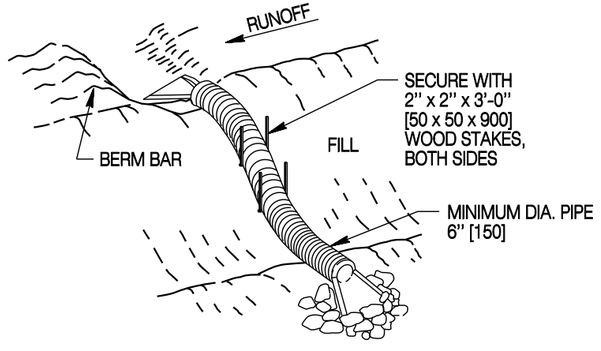
WOODEN FLUME



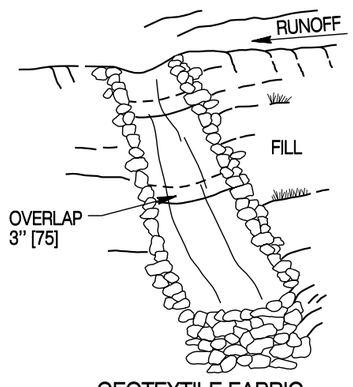
RIGID PIPE



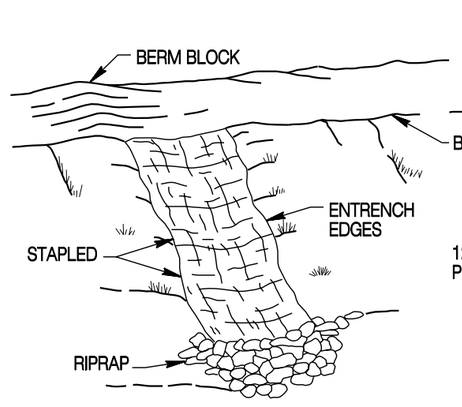
SLOPE DRAIN INLETS



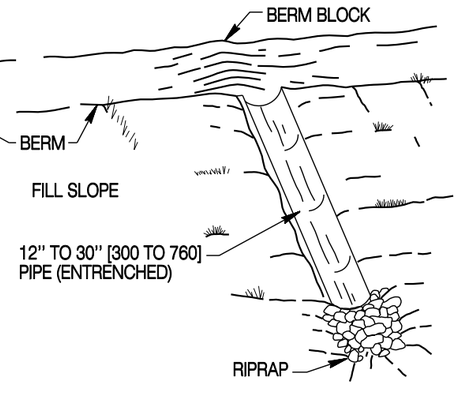
FLEXIBLE PIPE



GEOTEXTILE FABRIC
DITCH LINER



EROSION CONTROL
BLANKET RUNDOWN



HALF-ROUND PIPE

TYPES OF SLOPE DRAINS

Construct slope drains at frequent intervals along countinuous fill slopes and at low points on roadway grade.

Designed by: KBP Drawn by: GLD Checked by: WBW Previous Dwg. No. 215-01C	SLOPE DRAINS	STANDARD PLAN NUMBER 215-1 SHEET 4 of 11 Issued by: ENGINEERING SERVICES Date Issued: MARCH, 2004

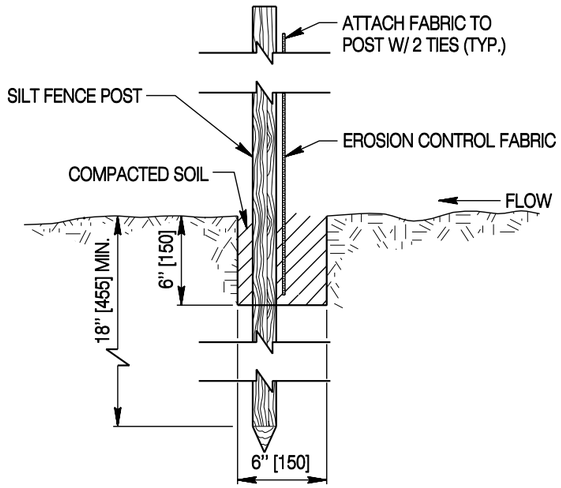
Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

WYOMING DEPARTMENT OF TRANSPORTATION

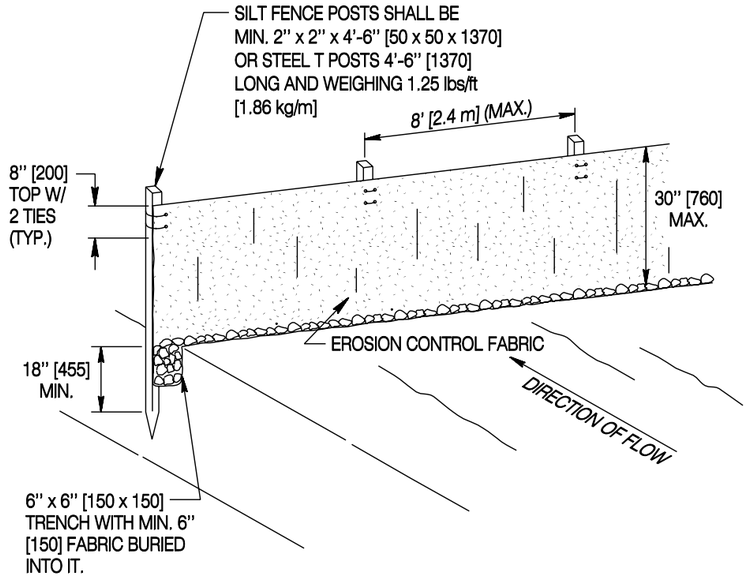
TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

STANDARD PLAN

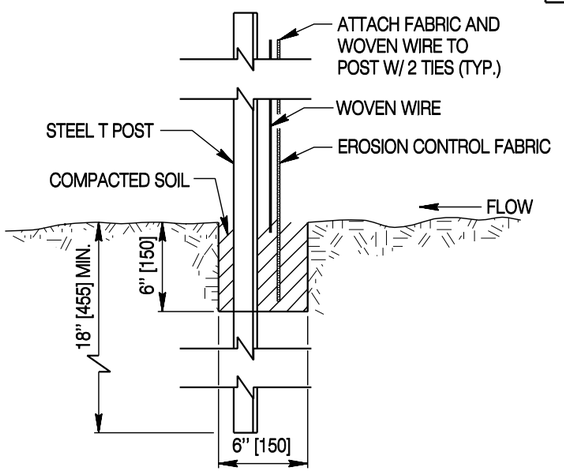
FILE: j:\Stan\Dual_Std\2151_04.dgn



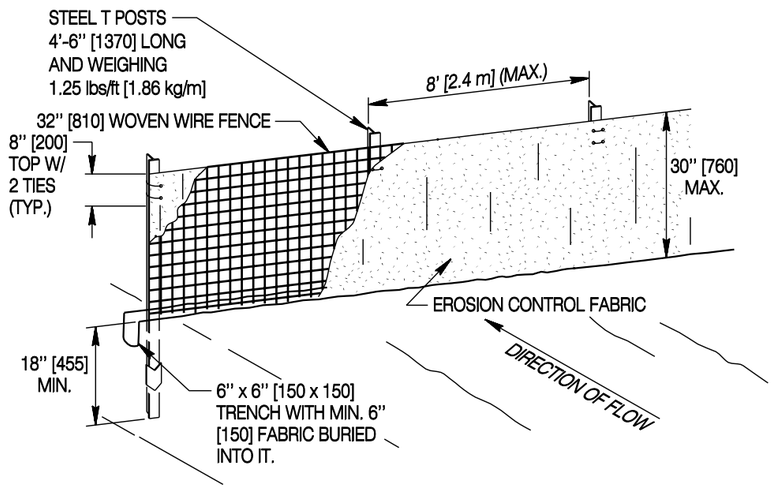
STANDARD SILT FENCE
TRENCH DETAIL



STANDARD SILT FENCE



WIRE-REINFORCED SILT FENCE
TRENCH DETAIL

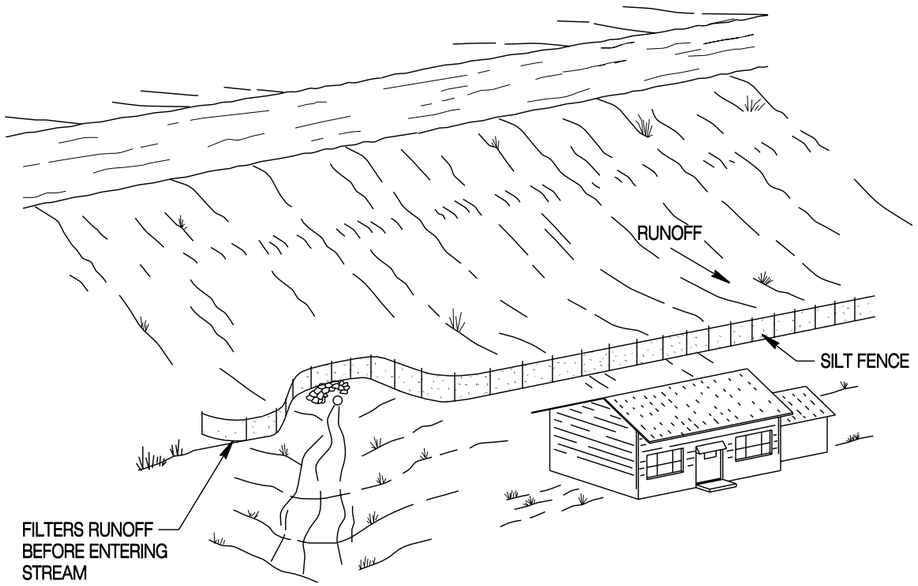


WIRE-REINFORCED SILT FENCE

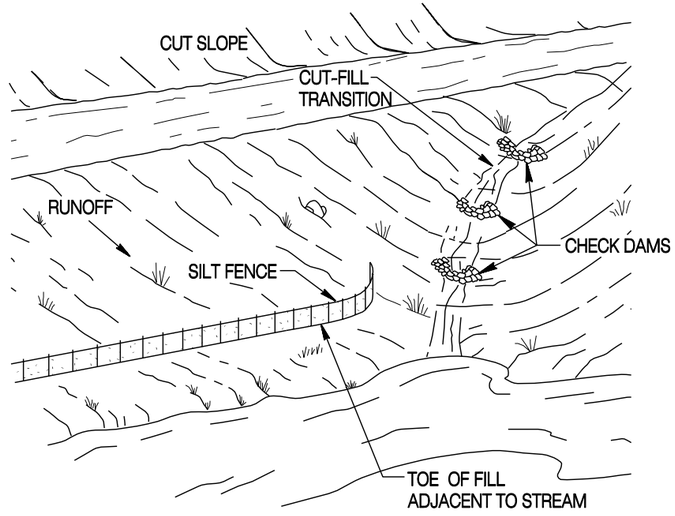
Usage: Place above WDEQ Class I waters and in severe snowfall or high wind areas.

Silt Fence Usage:

Place around inlets, across minor swales, and at the toe of fill slopes adjacent to developed property. Area to be handled shall not exceed 1000 ft² [93 m²] per 10 ft [3 m] of fence. Use caution on slopes in excess of 1V:1H when water flow rates exceed 1 cfs [.03 m³/s] per 10 ft [3 m] of fence.



PROTECTION OF ADJACENT PROPERTY



PROTECTION OF LIVE STREAM

SILT FENCE APPLICATIONS

Designed by: KBP	FILL SLOPE SHEET FLOW PROTECTION
Drawn by: GLD	
Checked by: WBW	
Previous Dwg. No. 215-01C	

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

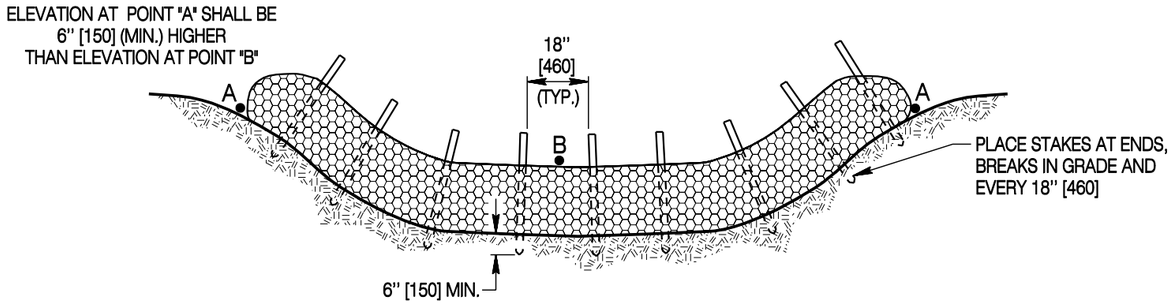
WYOMING DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

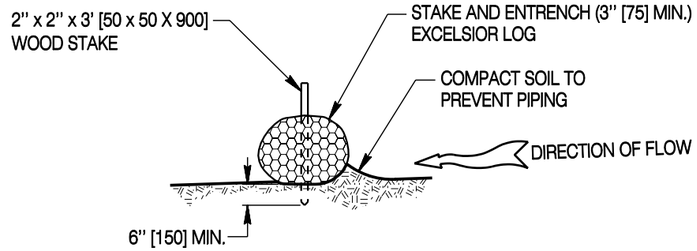
STANDARD PLAN

STANDARD PLAN NUMBER
215-1
SHEET 5 of 11
Issued by: ENGINEERING SERVICES
Date Issued: MARCH, 2004

FILE: j:\Stan\Dual_Std\2151_05.dgn

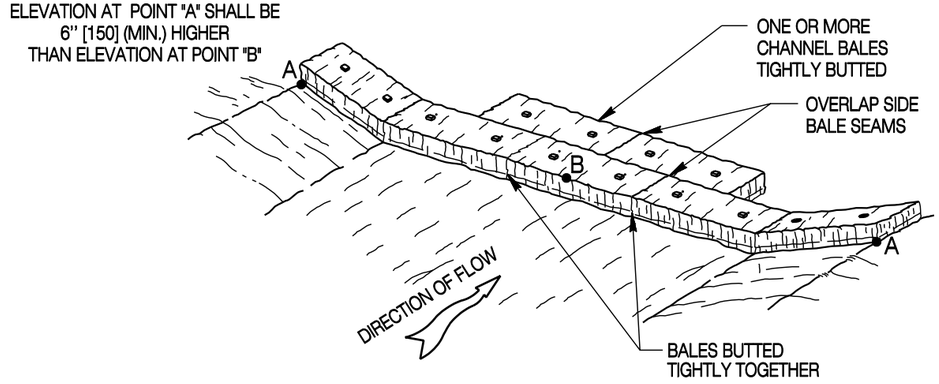


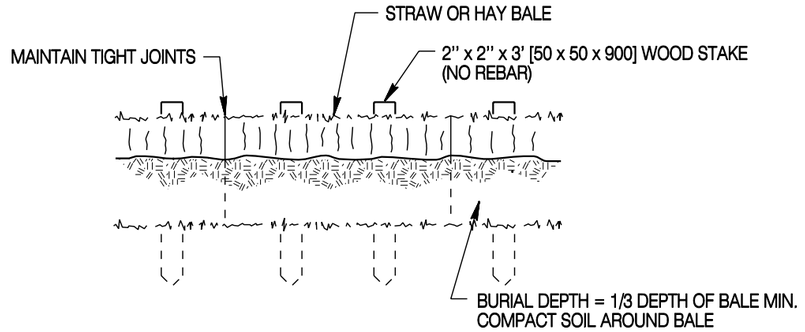
FRONT VIEW



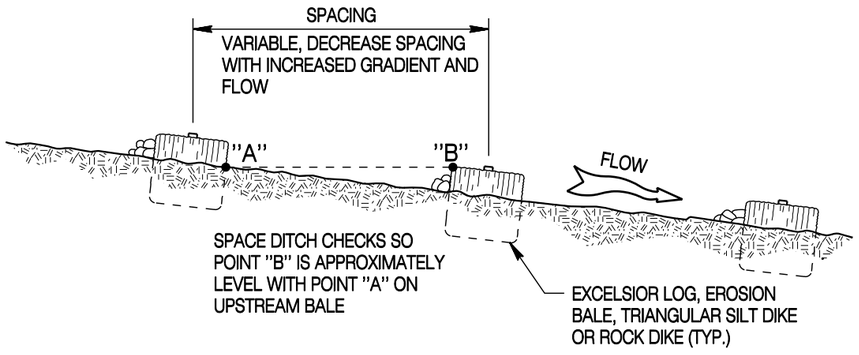
SECTION VIEW

EXCELSIOR LOG DITCH CHECK





EROSION BALE DITCH CHECK



GENERAL DITCH CHECK SPACING DETAIL

General Notes:

1. Place erosion bale check dams in a wide swale.
2. Where a high volume of run-off is expected, cover erosion bales with plastic 10 mil thick.
3. Place rock check dams in narrow ditches and gullies.
4. Concentrate the flow of water to the center of the channel.
5. Place ends of the check dam 6'' [150] above the center and curve upstream to prevent flow around the ends.
6. Reduce water velocity and trap sediment by placing check dams more frequently as slope and flow increase.

Designed by:	KBP
Drawn by:	GLD
Checked by:	WBW
Previous Dwg. No.	215-01C

DITCH CHECKS - EXCELSIOR LOGS
& EROSION BALES

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

WYOMING DEPARTMENT
OF
TRANSPORTATION

**TEMPORARY EROSION CONTROL MEASURES
FOR STORM WATER POLLUTION PREVENTION**

STANDARD PLAN

STANDARD PLAN NUMBER
215-1
SHEET 6 of 11
Issued by: ENGINEERING SERVICES
Date Issued: MARCH, 2004

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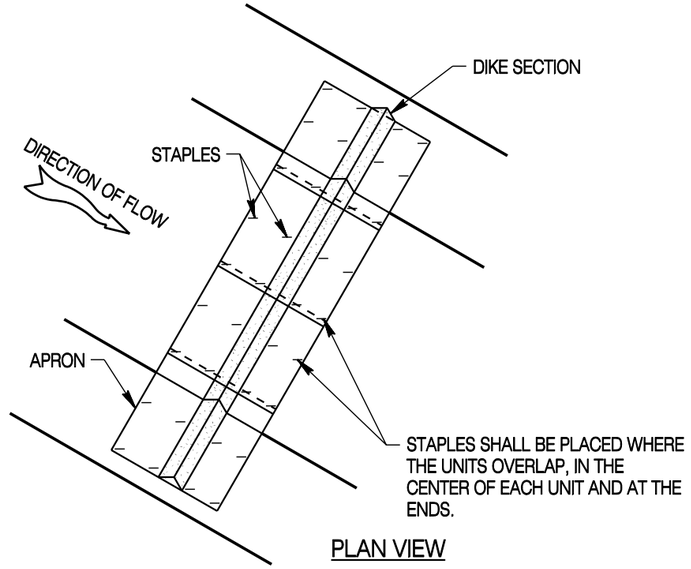
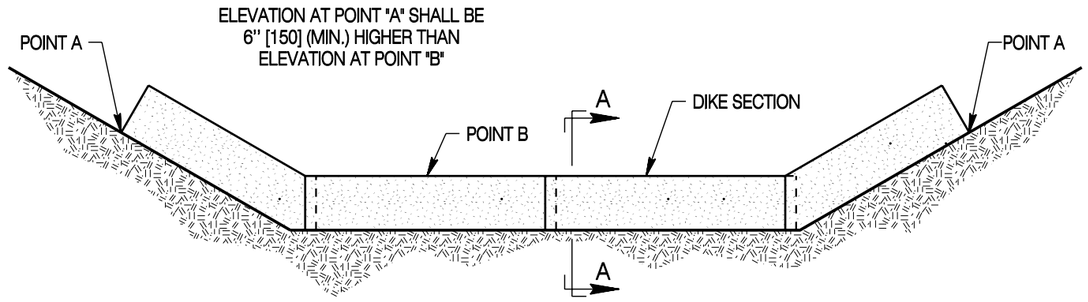
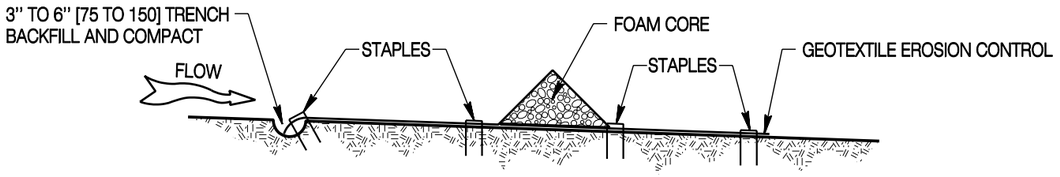


PLAN VIEW

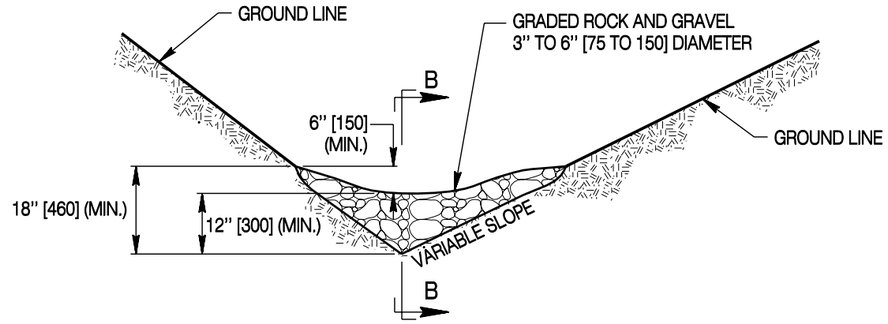


UP CHANNEL VIEW

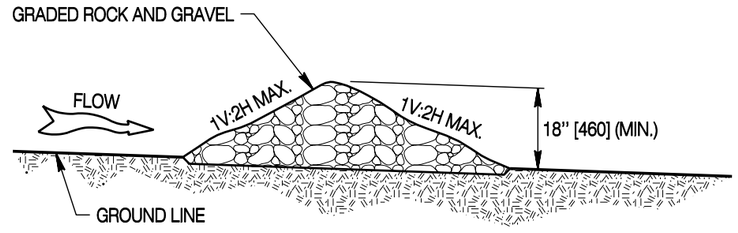


SECTION A-A

TRIANGULAR SILT DIKE (SYNTHETIC)



ELEVATION



SECTION B - B

ROCK CHECK DIKE

ROCK DITCH CHECKS WILL NOT BE ALLOWED WITHIN THE LIMITS OF THE CLEAR ZONE.

See sheet 6 for Ditch Checks notes and general details.

Designed by: KBP	
Drawn by: GLD	DITCH CHECKS - TRIANGULAR SILT DIKES & ROCK CHECK DIKES
Checked by: WBW	
Previous Dwg. No. 215-01C	

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

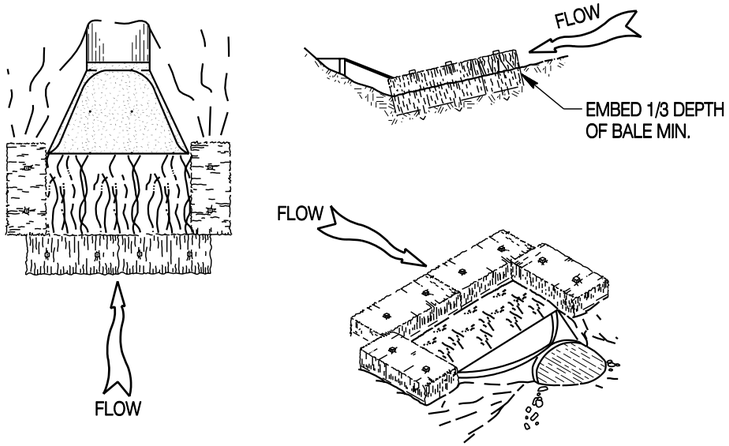
WYOMING DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

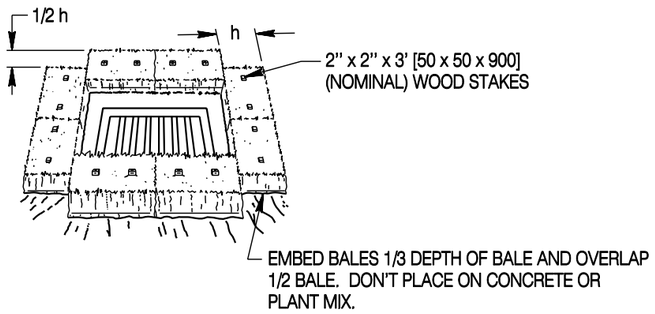
STANDARD PLAN

STANDARD PLAN NUMBER
215-1
SHEET 7 of 11
Issued by: ENGINEERING SERVICES
Date Issued: MARCH, 2004

FILE: j:\Stan\Dual_Std\2151_07.dgn



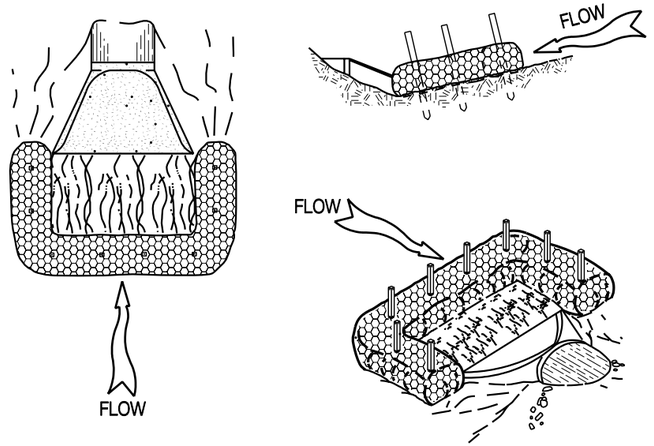
EROSION BALE CULVERT INLET TRAP FOR FLARED END INLETS



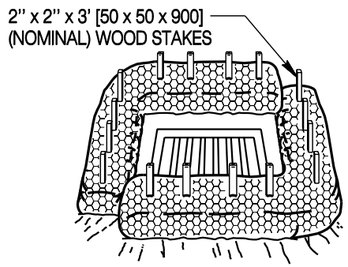
EROSION BALE INLET TRAP FOR M1 INLETS

Note:

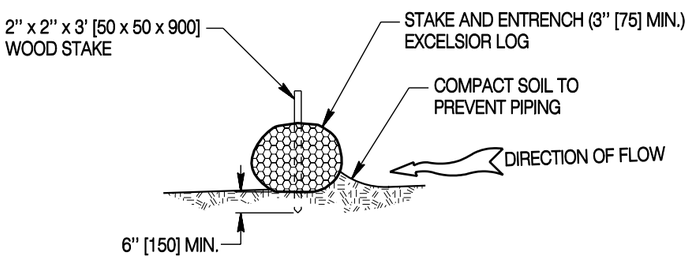
1. Limit use of erosion bales to situations where expected storm water flow volumes are low.
2. Install bales tightly and compact soil all around. Install so that water is not allowed to flow around, beneath or under bales.
3. When no longer needed, spread seed and mulch with the erosion bale.



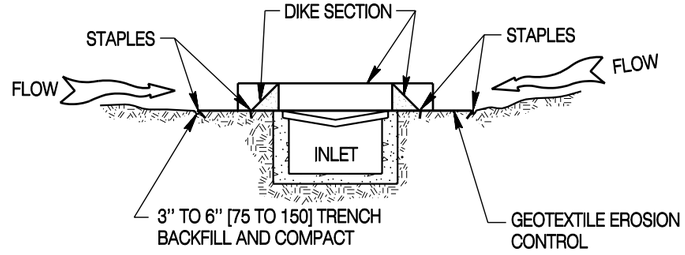
EXCELSIOR LOG CULVERT INLET TRAP FOR FLARED END INLETS



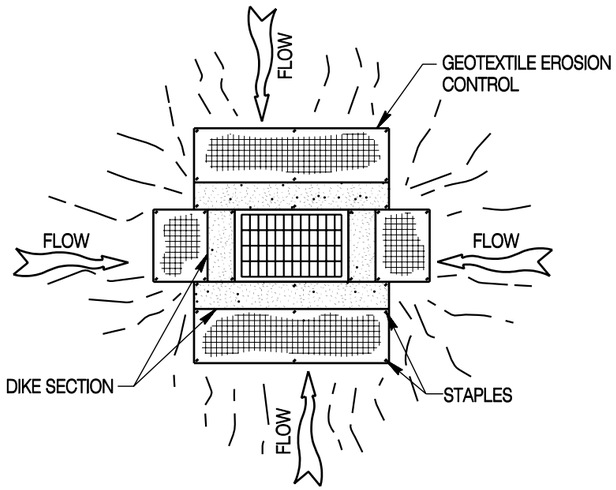
EXCELSIOR LOG INLET TRAP FOR M1 INLETS



SECTION VIEW



SECTION VIEW



SYNTHETIC TRIANGULAR INLET TRAP FOR M1 INLETS

Designed by:	KBP
Drawn by:	GLD
Checked by:	WBW
Previous Dwg. No.	215-01C

SEDIMENT TRAPS FOR
INLET PROTECTION

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

WYOMING DEPARTMENT
OF
TRANSPORTATION

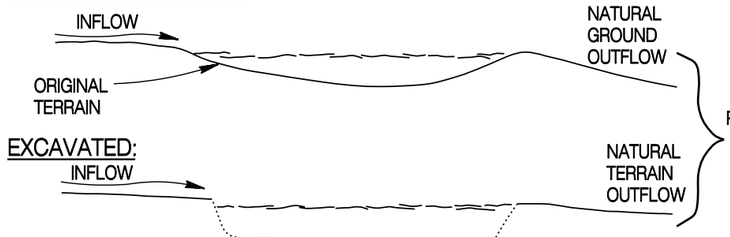
TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

STANDARD PLAN

STANDARD PLAN NUMBER	215-1
SHEET	8 of 11
Issued by:	ENGINEERING SERVICES
Date Issued:	MARCH, 2004

FILE: j:\Stan\Dual_Std\2151_08.dgn

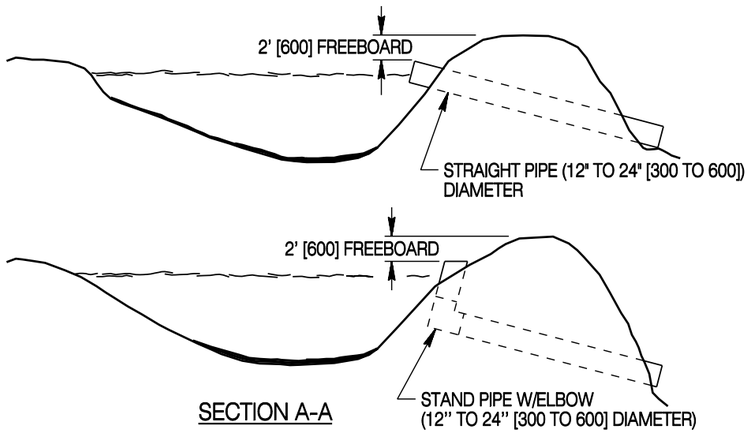
NATURAL DEPRESSION:



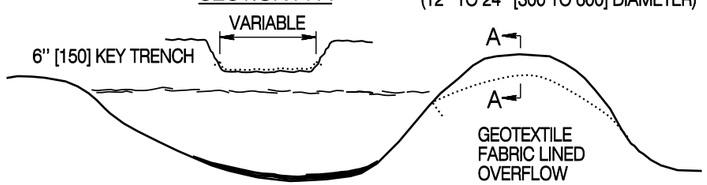
PROTECT OUTFLOW BY:
1. NATURAL VEGETATION
2. EROSION CONTROL BLANKETS
3. GEOTEXTILE FABRIC
4. ROCK RIP RAP

DAM EMBANKMENT:

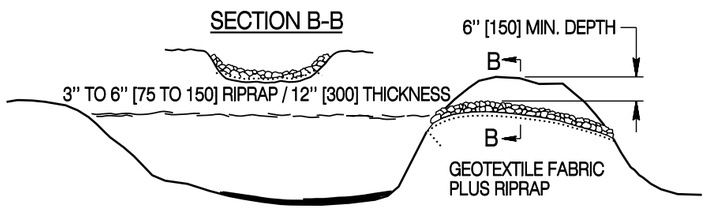
TYPES OF SEDIMENT TRAPS



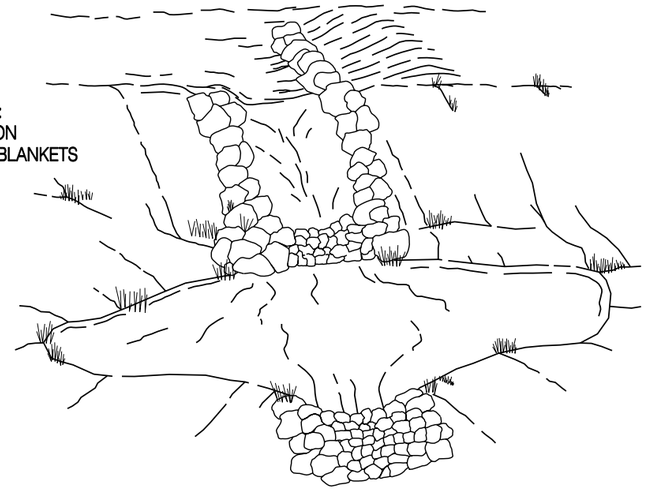
SECTION A-A



SECTION B-B



SEDIMENT TRAP OUTLETS



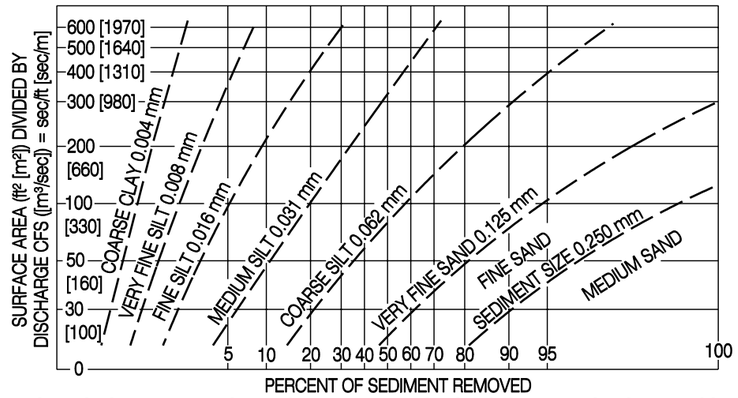
SEDIMENTATION TRAP

$$\text{APPROXIMATE VOLUME} = D\left(\frac{L_o W_o + L_i W_i}{2}\right)$$

D = AVERAGE WATER DEPTH (MIDDLE OF POND)
W_o = WIDTH OF POND AT TOP (SURFACE)
W_i = WIDTH OF POND AT BOTTOM
L_o = LENGTH OF POND AT TOP (SURFACE)
L_i = LENGTH OF POND AT BOTTOM

ALTERNATIVE SEDIMENT TRAP DRAINS

CHART FOR DETERMINING SIZE OF SEDIMENT TRAPS



PERCENT OF SEDIMENT REMOVED FOR DIFFERENT BASIN SIZES, SEDIMENT SIZES, AND DISCHARGES.

Sediment Traps

Sediment traps are small water detention basins which allow sediment to settle out before the water is allowed to enter streams or ditches.

Determine size and percentage of particles. Remove ninety percent of all particles larger than fine sand. Remove silt and clay particles with trap, chemical system, or both, as approved by the engineer.

The required surface area of the trap is computed using the above chart. The horizontal scale shows the percent of sediment load removed and the vertical axis gives the ratio of the required surface area divided by the discharge.

Example:

Given: 1. Q_2 = 3 CFS [0.08 m³/sec.]
2. Must remove 90% of particles larger than course silt.

Solution: 1. Read up from 90% removal to the coarse silt curve.
2. Read across to the ratio of surface Area/Q = 280.
3. Use this number to compute the trap surface area. Surface area = 3 x 280 = 840 ft² [78 m²]
4. The trap dimensions may be any combination which give this surface area, 25 ft x 34 ft [7.6 m x 10.4 m] or 15 ft x 57 ft [4.6 m x 17.4 m]. The terrain generally controls these dimensions.

Construct depth of trap from spillway to low point not to exceed 3 ft [0.9 m].

Construct a geotextile lined overflow channel for small design flows up to 3 CFS [0.08 m³/sec] over low dam.

Add riprap for greater flows over higher dam embankments.

As approved by the engineer, place pipe outlets in overflow spillways.

Construct pipe outlet so that it provides a suitable freeboard to the dam crest and has suitable capacity to handle a two year frequency discharge.

Drain trap as approved by the engineer prior to storms that may inundate the trap system.

Designed by: KBP	MISCELLANEOUS SEDIMENT TRAPS
Drawn by: GLD	
Checked by: WBW	
Previous Dwg. No. 215-01C	

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

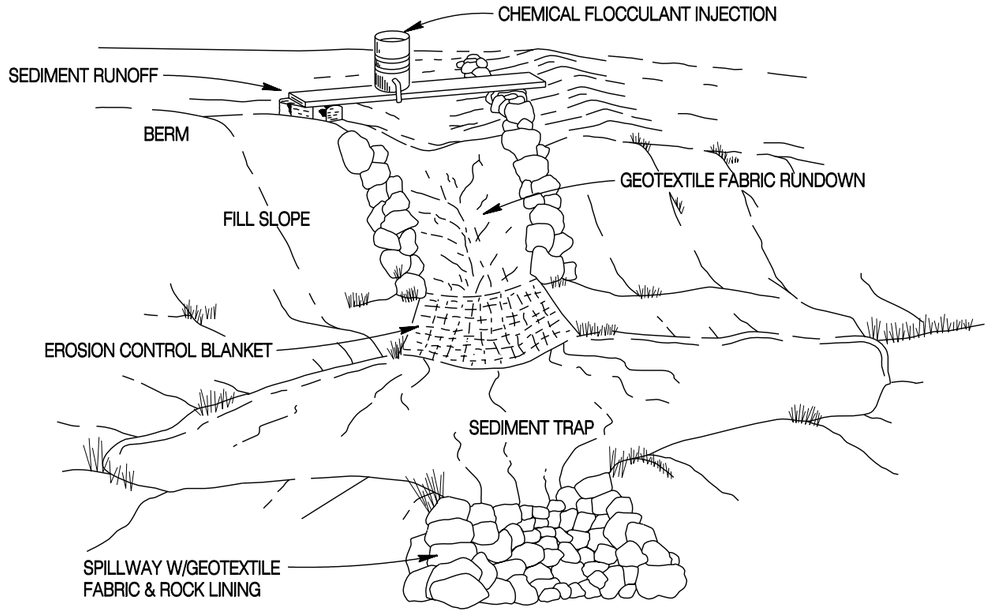
WYOMING DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

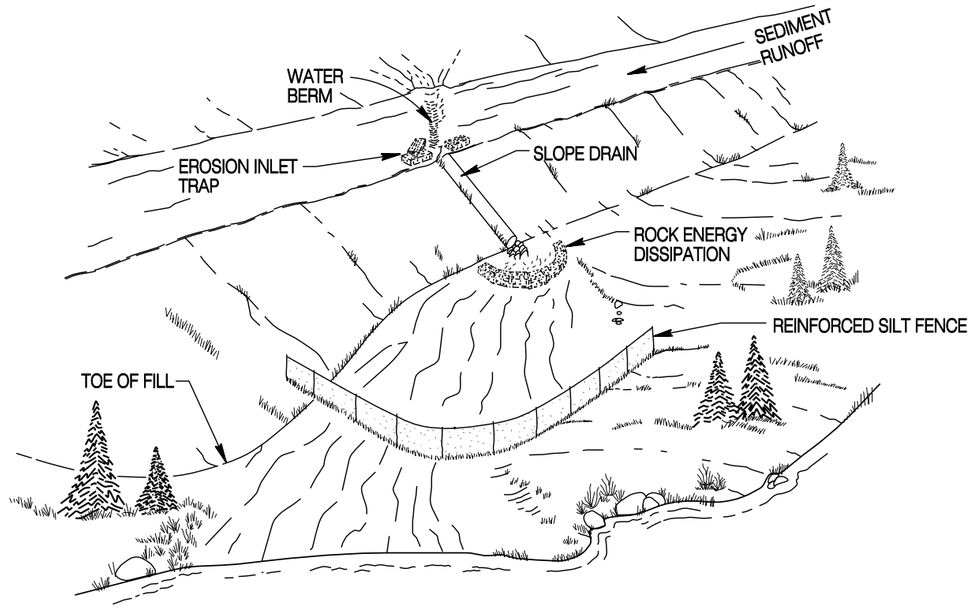
STANDARD PLAN

STANDARD PLAN NUMBER
215-1
SHEET 9 of 11
Issued by: ENGINEERING SERVICES
Date Issued: MARCH, 2004

FILE: j:\Stan\Dual_Std\2151_09.dgn



CHEMICAL TREATMENT



DIRTY WATER TREATMENT SYSTEM

CHEMICAL WATER TREATMENT, DIRTY WATER TREATMENT SYSTEM

Chemical settling agents may be warranted where turbidity caused by fine silt particles (which pass through the other sediment control devices) cannot be tolerated.

Chemical settling agents form a nucleus which attracts small soil particles (flocculation). This heavier conglomerate of particles then can be trapped.

Add the chemical at the top of the slope rundown or at the entrance of the sedimentation pond to insure even mixing. The chemical is effective in the still or slow waters of the pond.

Use only non-toxic settling agents. Injection methods, concentration, and effective maintenance shall be as directed and according to the manufacturer's recommendation.

Designed by:	KBP
Drawn by:	GLD
Checked by:	WBW
Previous Dwg. No.	215-01C

CHEMICAL WATER TREATMENT

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

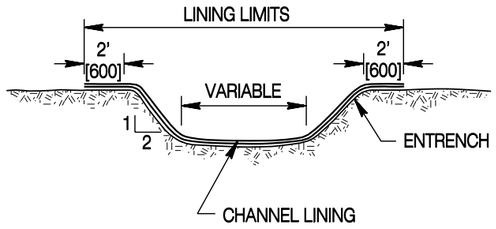
WYOMING DEPARTMENT OF TRANSPORTATION

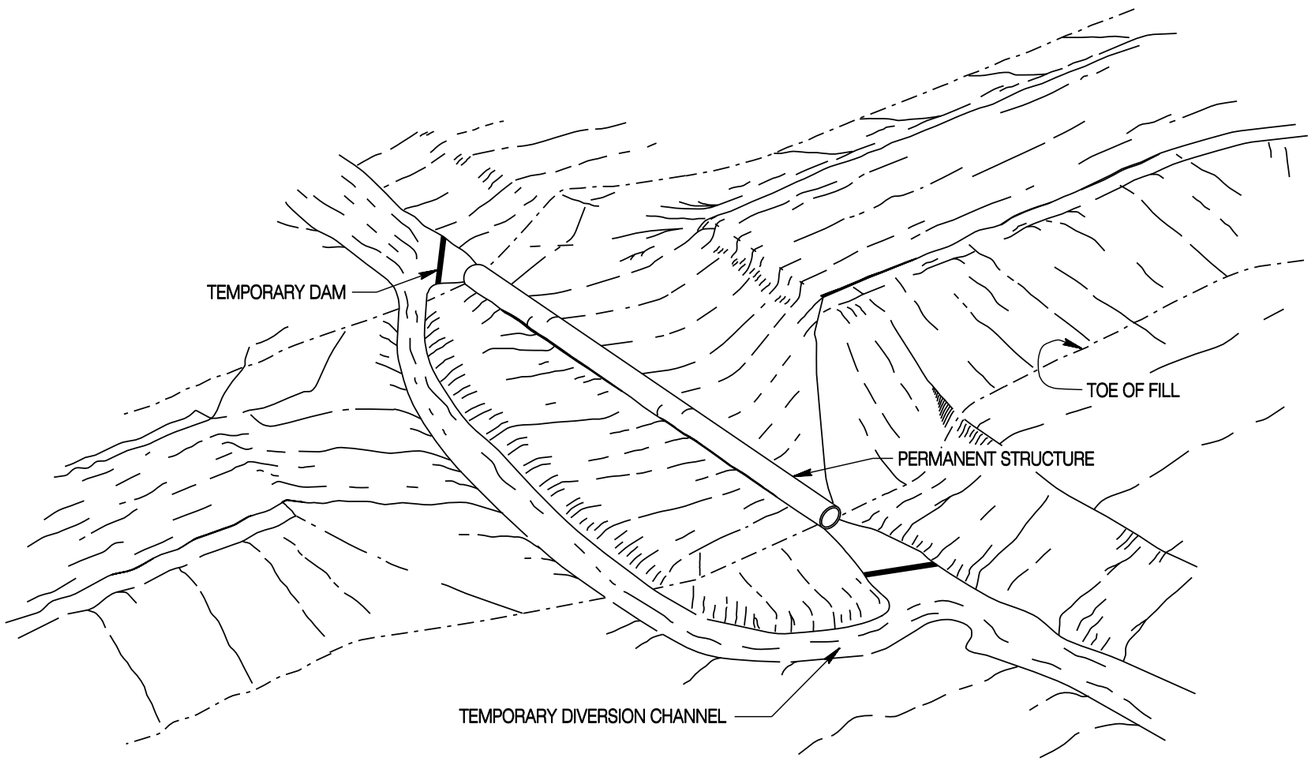
TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION

STANDARD PLAN

STANDARD PLAN NUMBER
215-1
SHEET 10 of 11
Issued by: ENGINEERING SERVICES
Date Issued: MARCH, 2004

FILE: j:\Stan\Dual_Std\2151_10.dgn





CHANNEL LINERS:
EROSION CONTROL BLANKET, ROCK, GEOTEXTILE FABRIC

TEMPORARY PIPE DIVERSION CHANNEL

Notes:

Construct temporary diversion channels to convey flows around a work site to keep the area dry while permanent drainage structures are being constructed.

Construct the following sequence:

1. Excavate and shape the diversion channel with a plug at both ends.
2. Install channel linings as specified.
3. Remove plugs and divert flow into diversion channel.
4. Construct permanent drainage structures.
5. Divert flow through the permanent structure.
6. Salvage material and obliterate temporary diversion channel.

Line temporary diversion channel with erosion control blankets when specified and as approved by the engineer.

When using erosion control blankets or geotextile fabric or rock, cover the entire structure.

Entrench the lining and anchor with rocks or soil.

Overlap 2 ft [600] and pin edges to the ground.

Use silt fence or berms as approved by the engineer parallel across the top of the channel to prevent sediment laden run-off from other construction from entering water sensitive areas.

Inspect temporary diversions, contour diversion ditches, berms and burlap tubes frequently to ensure that there are no breaks or underwashing of the structure.

Designed by: KBP Drawn by: GLD Checked by: WBW Previous Dwg. No. 215-01C	TEMPORARY PIPE DIVERSION CHANNEL	WYOMING DEPARTMENT OF TRANSPORTATION	TEMPORARY EROSION CONTROL MEASURES FOR STORM WATER POLLUTION PREVENTION STANDARD PLAN	STANDARD PLAN NUMBER 215-1 SHEET 11 of 11 Issued by: ENGINEERING SERVICES Date Issued: MARCH, 2004

Note: Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.

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