

ISOMETRIC VIEW

DESIGN FOR WIDTH (b):

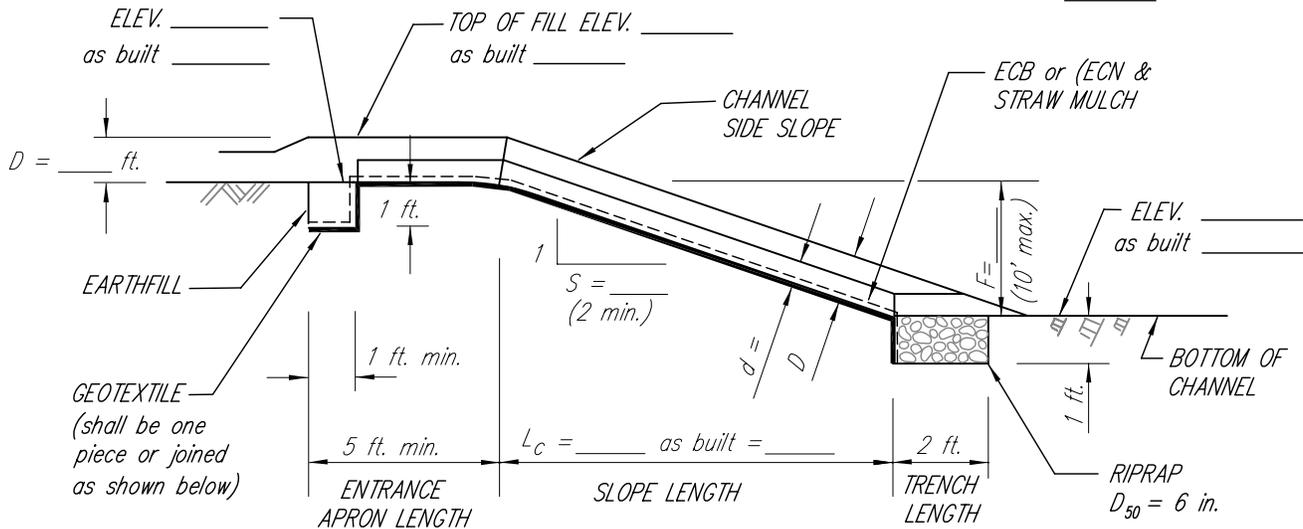
$Q = \text{_____ cfs, (80 max.)}, S = \text{_____}:1$

Unit Capacity (CFS/ft. width) <i>q</i>	Slope (H:V) <i>S</i>	Entrance Depth(ft.) <i>D</i>	Chute Depth(ft.) <i>d</i>
2	2:1 to 7:1	1.0	0.5
2.5	2.5:1 to 7:1	1.0	0.5
3.5	3:1 to 7:1	1.25	0.7
4	4:1 to 7:1	1.5	0.8
5	6:1 to 7:1	1.75	1.0

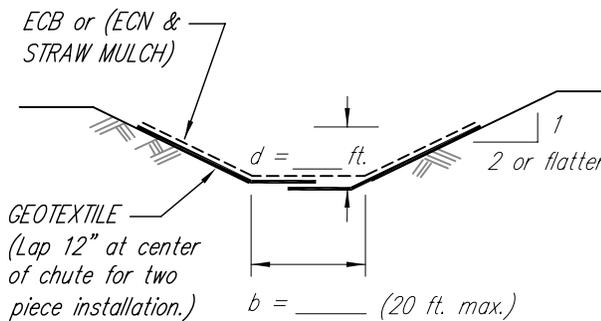
Minimum Chute Width "b" = $Q/q = \text{_____ ft.}$

ESTIMATE OF QUANTITIES

- RIPRAP ($D_{50} = 6 \text{ IN.}$) _____ TONS
- GEOTEXTILE $W = \text{_____ FT.} \times L = \text{_____ FT.}$
- EROSION CONTROL BLANKET _____ SQ. YDS.
- STAPLES OR STAKES _____ EACH
- SEEDING & MULCHING _____ SQ. FT.



SECTION ON CENTERLINE



TYPICAL CROSS SECTION

NOT TO SCALE

MICHIGAN ENGINEERING STANDARD DRAWING		
FILE NAME	MI-315-A 8-05.dwg	
STANDARD DWG. NO.	MI-315-A	
DATE	8-05	SHEET 1 OF 3

Sheet _____ of _____

Drawing Name _____

File Name _____

Natural Resources Conservation Service
United States Department of Agriculture

GEOTEXTILE REINFORCED
VEGETATED CHUTE (WITHOUT TAILWATER)

Co., Michigan
Twp., T. -R. Sec.

Designed _____	Date _____
Drawn _____	_____
Checked _____	_____
Approved _____	_____

MAINTENANCE REQUIREMENTS

A maintenance program shall be established by the land user to maintain capacity and vegetative cover. Items to consider are as follows:

1. Protect structure from damage by livestock, herbicide runoff, farm equipment and vehicles.
2. Maintain inlet and outlet areas free of any obstructions.
3. Repair structure as soon as possible after damage is noted.
4. Reestablish vegetative cover immediately where erosion has removed established seeding. Staple, seed and mulch areas where grass is not growing.
5. Mow and fertilize annually to maintain vigorous growth.

MATERIAL REQUIREMENTS

Geotextile:

The geotextile shall meet the requirements of Construction Specification MI-165, Nonwoven Geotextile, Class III. The geotextile material shall be 3.5 to 5.5 oz./sq.yd. The geotextile shall be one or two pieces. A single piece is preferred.

Erosion Control Netting (ECN) and Straw Mulch:

The netting shall be extruded oriented polypropylene netting. The mesh openings shall be 1/2 inch to 1.0 inch in each direction. The weight shall be approximately 3 lbs. per 1,000 sq/ft. Straw mulch shall be spread 1 inch to 2 inches thick before the netting is placed.

Erosion Control Blanket (ECB):

The erosion control blanket shall use straw or straw/coconut mulch at the rate of approximately 0.5 lb. per sq. yd. Additional straw may be placed between the geotextile and ECB to provide for better seed germination.

Riprap:

The riprap shall meet the requirements of Construction Specification MI-164, Loose Rock Riprap.

RIPRAP GRADATION

(D₅₀ = 6 inches)

SIZE (INCHES)	SIZE (POUNDS)	% SMALLER BY WEIGHT
12	125	100
9	50	60-100
6	16	30-50
1.5	0.2	5-25

CONSTRUCTION NOTES

1. Construction operations shall be carried out in such a manner and sequence that erosion and air and water pollution will be minimized and held within acceptable limits.
2. The completed job shall present an appearance of good workmanship and shall conform to the lines, grades, and elevations shown on the drawings or as staked in the field.
3. All operations shall be carried out in a safe and skillful manner. Safety and health regulations shall be observed and appropriate safety measures used.

MICHIGAN ENGINEERING STANDARD DRAWING

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of

Drawing
No.

File
No.



GEOTEXTILE REINFORCED
VEGETATED CHUTE (WITHOUT TAILWATER)

Co., Michigan
Twp., T. -R. Sec.

	Designed _____	Date _____
	Drawn _____	_____
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	Approved _____	_____

CONSTRUCTION SEQUENCE

1. Excavate to finished grade of required section and slope.
2. Dig trenches on upstream end and downstream toe.
3. Hand rake grade to prepare seedbed. If seedbed is difficult to rake, topsoil may be added. DO NOT use herbicide contaminated topsoil. Remove all rocks, clods, and clumps larger than 1/2 inch diameter. Spread fertilizer and lime and rake into seedbed. Fertilize according to soil tests or at a minimum rate of 2 lbs. of 12-12-12 fertilizer (or its equivalent) per 100 sq. ft.
4. Place geotextile on prepared grade. Extend geotextile into trenches for anchorage at upstream and downstream ends as shown on sheet 1 of 3. Staple geotextile at one to two foot intervals across the entrance apron and along overlap of geotextile pieces.
5. Seed onto geotextile at the following rates:

<u>SEED</u>	<u>RATE</u> (lbs./100 sq.ft.)
Perennial Rye	0.25
Tall Fescue	0.5
Smooth Brome	0.5
Creeping Red Fescue	0.5

6. Place Erosion Control Blanket (ECB) over seed. Straw mulch and Erosion Control Netting (ECN) may be used in lieu of ECB. The ECB or ECN shall extend into both trenches as shown on sheet 1 of 3.
7. Staple netting and geotextile at 2 ft. intervals starting at the centerline of the channel and working out toward each side. Additional staples shall be placed where the geotextile does not contact the soil.
8. Fill upstream trench with earth. Fill downstream trench with riprap. Geotextile shall have consistent soil contact. Stretch the geotextile as little as possible.

CONSTRUCTION TOLERANCES

Depth at Centerline: Grade to plus or minus 0.1 ft.

Width: 0 to 1 ft. wider

Side Slopes: plus or minus 0.5 ft./ft.
but not steeper than 2:1

FINISH AND CLEANUP

The site area and the designated spoil areas will be finished in a relatively smooth condition ready for seeding. All rocks 3 inches in diameter or larger and roots shall be removed from the disturbed areas adjacent to the geotextile reinforced waterway. All disturbed areas shall be smoothed, fertilized and seeded at the same rates as the geotextile reinforced vegetated chute.

MICHIGAN ENGINEERING STANDARD DRAWING

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