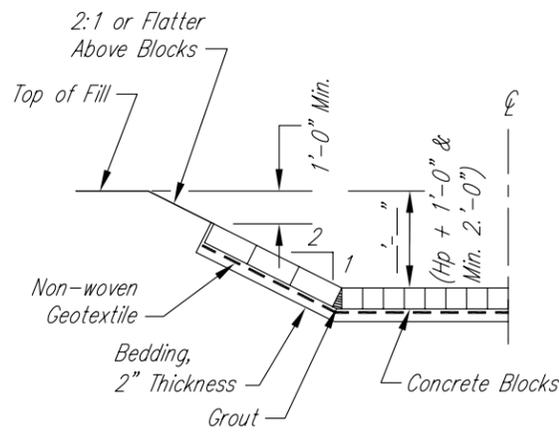
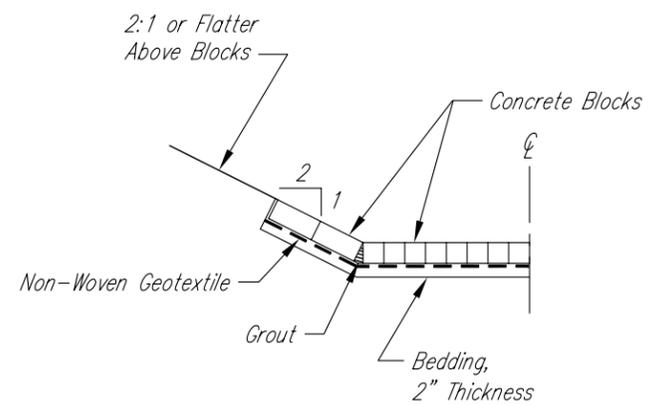


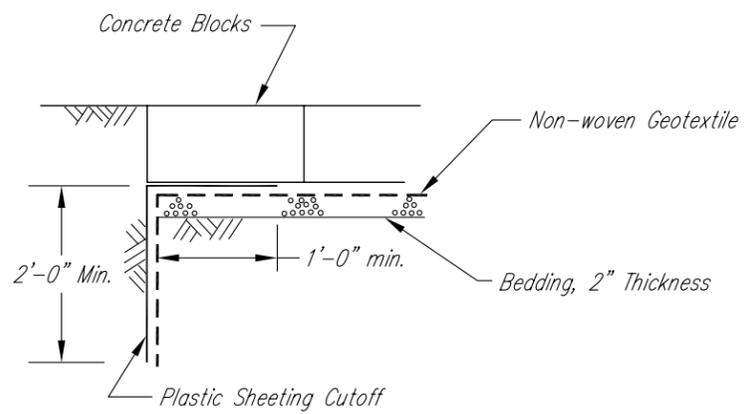
PLAN VIEW



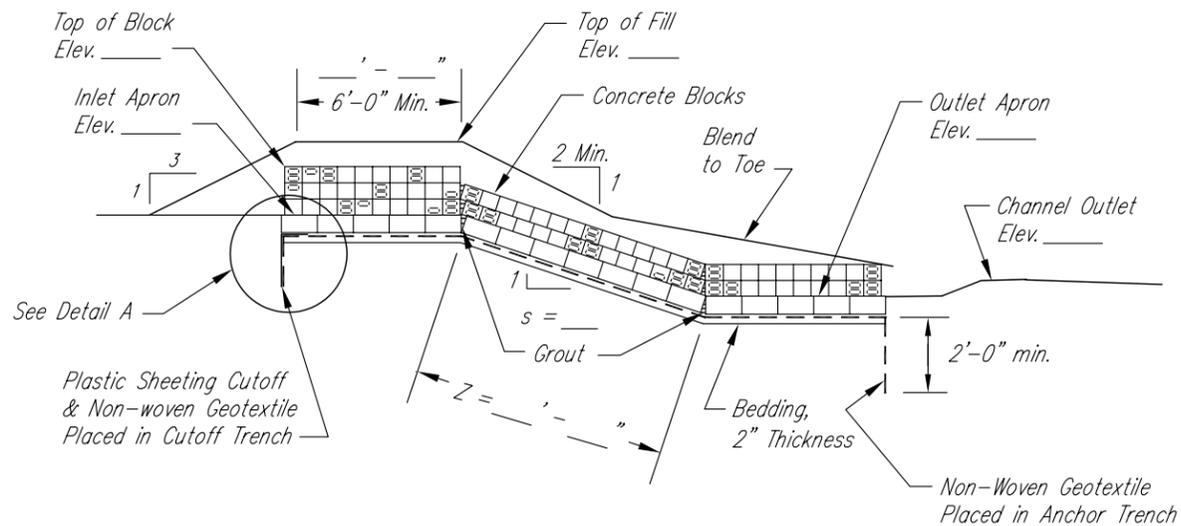
SECTION A-A



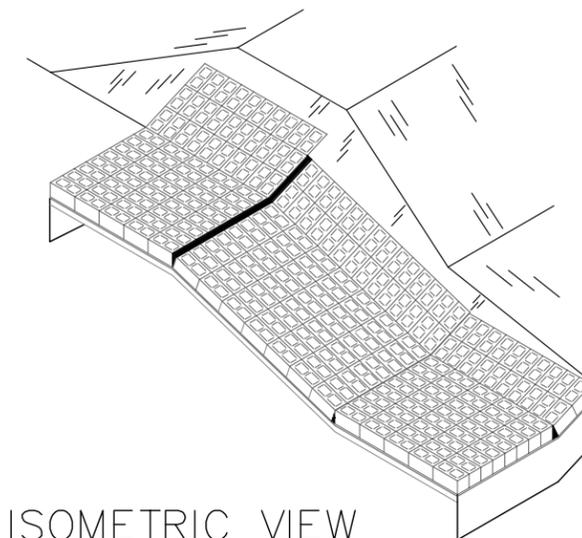
SECTION B-B



DETAIL A



PROFILE ALONG  $\phi$  CHUTE



MICHIGAN ENGINEERING STANDARD DRAWING	
FILE NAME	MI-310-B 11-07.dwg
STANDARD DWG. NO.	MI-310-B
DATE	11-07
SHEET	1 OF 2

Dimensions in inches or feet-inches

NOT TO SCALE

Date	
Designed	
Drawn	
Checked	
Approved	

CONCRETE BLOCK CHUTE  
 Co., Michigan  
 Township, T. -R., Sec.



File Name	
Drawing Name	
Sheet	of

CONSTRUCTION SEQUENCE

1. Site Preparation:
  - A. Remove all vegetation, roots and topsoil from chute site.
  - B. Excavate to chute slope and side slope subgrade (approx. 10 inches below finished grade). Chute slope shall be located completely in cut, (excavation of existing ground).
2. Cutoff Trench and Anchor Trench:
  - A. Excavate the anchor trench on the downstream end of the outlet apron, and the cutoff trench on the upstream end of the inlet apron. Trench depth shall be 2'-0" min. below the top of gravel bedding.
  - B. Trenches shall extend the full width of block placement (2'-4" min. beyond bottom width "W" on each side slope).
3. Non-Woven Geotextile:
  - A. Geotextile shall meet the requirements of Construction Specification MI-165 for non-woven geotextile, Class II.
  - B. Place geotextile to the bottom of the anchor trench and backfill with compacted earthfill.
4. Bedding:  
Place a 2 inch thick layer of bedding to the required grade over the entire chute bottom and side slopes. Bedding shall consist of gravel, MDOT Series and Class 6A or 17A coarse aggregate, or 2NS sand.
5. Non-Woven Geotextile:
  - A. Place geotextile over the gravel bedding subgrade and anchor with pins or staples in accordance with manufacturer's recommendations. If the geotextile is installed in more than one piece, use a minimum lap of 18 inches. Place the upstream lap over the downstream lap.
  - B. Place geotextile in cutoff trench and anchor with earth.
  - C. Do not place gravel or earth between the geotextile and block.
6. Plastic Sheeting Cutoff:
  - A. Plastic sheeting shall have a 10 mil minimum nominal thickness.
  - B. Place plastic sheeting against upstream side of geotextile 2'-0" down into the cutoff trench. It extends the full width of the inlet apron bottom and side slopes. Backfill with compacted earthfill.
  - C. The plastic sheeting above the trench (1'-0" min.) is folded over the geotextile on the inlet apron bottom and side slopes.
7. Concrete Blocks:
  - A. Place concrete blocks (holes facing up) starting at the downstream end of the chute slope and proceed upstream and downstream.
  - B. Concrete blocks shall be nominal 8" x 8" x 16", in good condition and free of excess mortar.
  - C. Concrete blocks shall not be driven on by any machinery during or after placement.
8. Grout:
  - A. Grout all triangular shaped voids between the concrete blocks of the chute slope and aprons, and the chute bottom and side slopes.
  - B. Grout shall be 3 parts sand to 1 part cement and enough clean water to make a paste. Bagged mortar mix may also be used.
9. Finish Operations:
  - A. Fill holes in concrete blocks with topsoil according to Construction Specifications MI-162 and MI-163. Seed with the same mixture used on disturbed areas.
  - B. Lime, fertilize, seed and mulch all disturbed areas according to Construction Specification MI-166, Seeding.

GENERAL

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. Construction methods that enhance wildlife habitat will be used where practical.

All operations shall be carried out in a safe and skillful manner. Safety and health regulations shall be observed and appropriate safety measures used.

EXCAVATION

To the extent needed, all suitable materials removed from the specified excavation shall be used in the construction of the earthfill areas of the structure. All spoil deposited adjacent to the structure and in the adjacent area shall be graded to drain toward the structure.

MOISTURE CONTROL

The minimum moisture content of the fill material and foundation shall be such that when kneaded in the hand, fill material will form a ball which does not readily separate. The maximum moisture content is when the conditions are too wet for efficient use of hauling and compacting equipment. Refer to Construction Specification MI-154, Earthfill.

CONSTRUCTION TOLERANCES

Depth at Centerline: Grade to 1 inch below  
 Width: 10% wider not to exceed 1'-0"  
 Top of Fill: Grade or above.  
 Side Slopes: ±0.1 ft./ft.  
 Chute Slope: ±0.1 ft./ft.

TABLE OF ESTIMATED QUANTITIES			
ITEM	UNIT	AMOUNT	AS BUILT
Concrete Blocks	Each		
Bedding: (gravel) (sand)	Tons		
Plastic Sheeting (3'-0" x lin. ft.)	Sq. Yds.		
Non-Woven Geotextile	Sq. Yds.		
Seeding Area	Acres		

MAINTENANCE RECOMMENDATIONS:

- A maintenance program shall be established by the land user to maintain capacity and vegetative cover. Items to consider are as follows:
1. Repair structure as soon as possible after damage is noted.
  2. Reestablish vegetative cover immediately where erosion has removed established seeding.
  3. Maintain structure inlet and outlet areas free of any obstructions.
  4. Prevent the establishment of woody vegetation on the structure and side slopes.
  5. Protect structure from damage by farm equipment and vehicles.
  6. Where livestock is a concern, fencing shall be placed no closer than 10 ft. from the top of the channel bank and structure side slopes.
  7. Maintain effective erosion control on the contributing watershed to prevent sedimentation and the resulting loss of capacity.

MICHIGAN ENGINEERING STANDARD DRAWING	
FILE NAME	MI-310-B 11-07.dwg
STANDARD DWG. NO.	MI-310-B
DATE	11-07
SHEET	2 OF 2

Dimensions in inches or feet-inches

Date \_\_\_\_\_

Designed \_\_\_\_\_

Drawn \_\_\_\_\_

Checked \_\_\_\_\_

Approved \_\_\_\_\_

CONCRETE BLOCK CHUTE

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



File Name \_\_\_\_\_

Drawing Name \_\_\_\_\_

Sheet \_\_\_\_\_ of \_\_\_\_\_