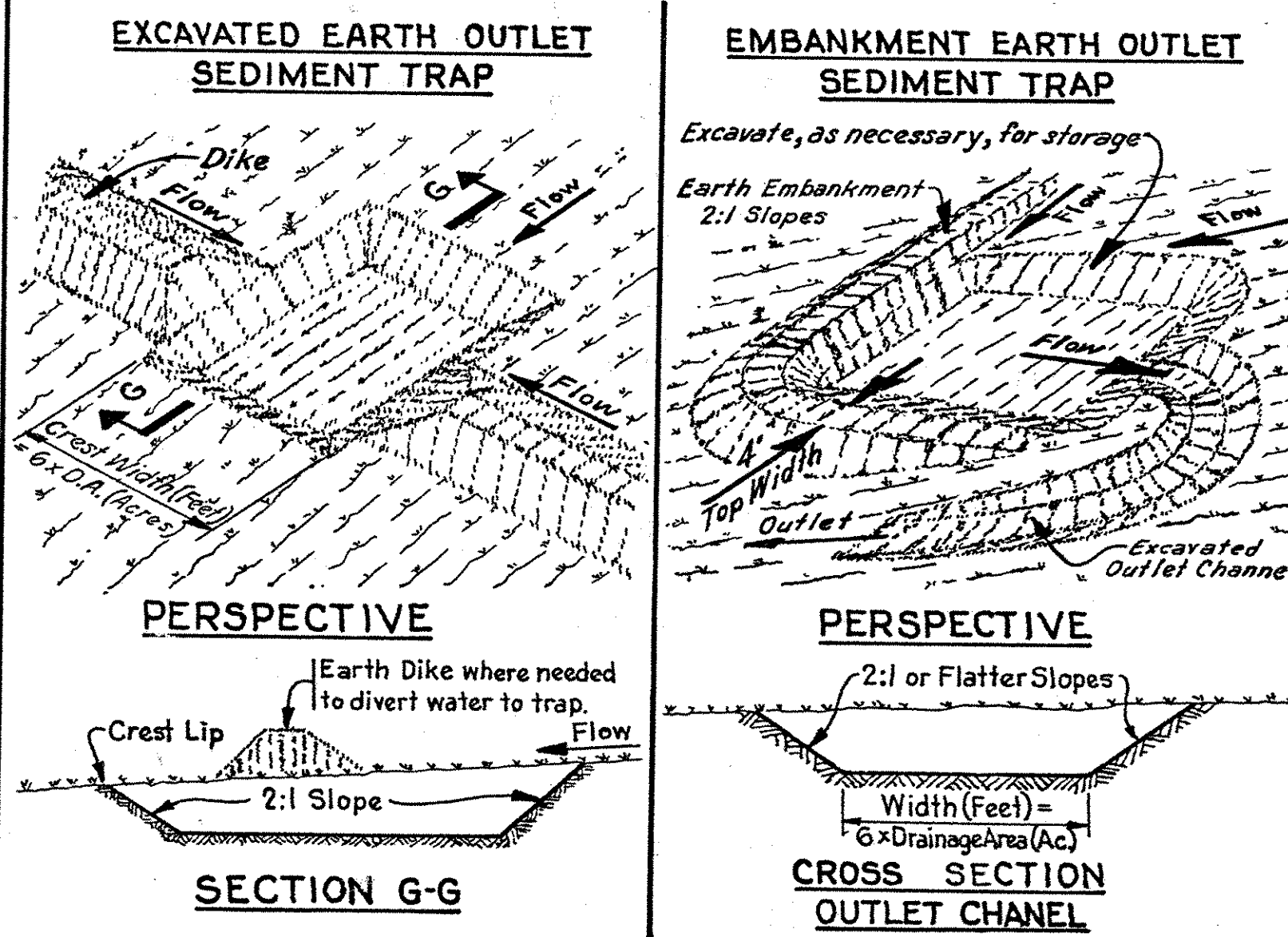


EARTH OUTLET SEDIMENT TRAPS (DRAINAGE AREA: 5 ACRES OR LESS)

An earth outlet sediment trap consists of a basin formed by excavation and/or embankment. The discharge point for the trap is over a crest and by an outlet channel that are cut into natural ground.

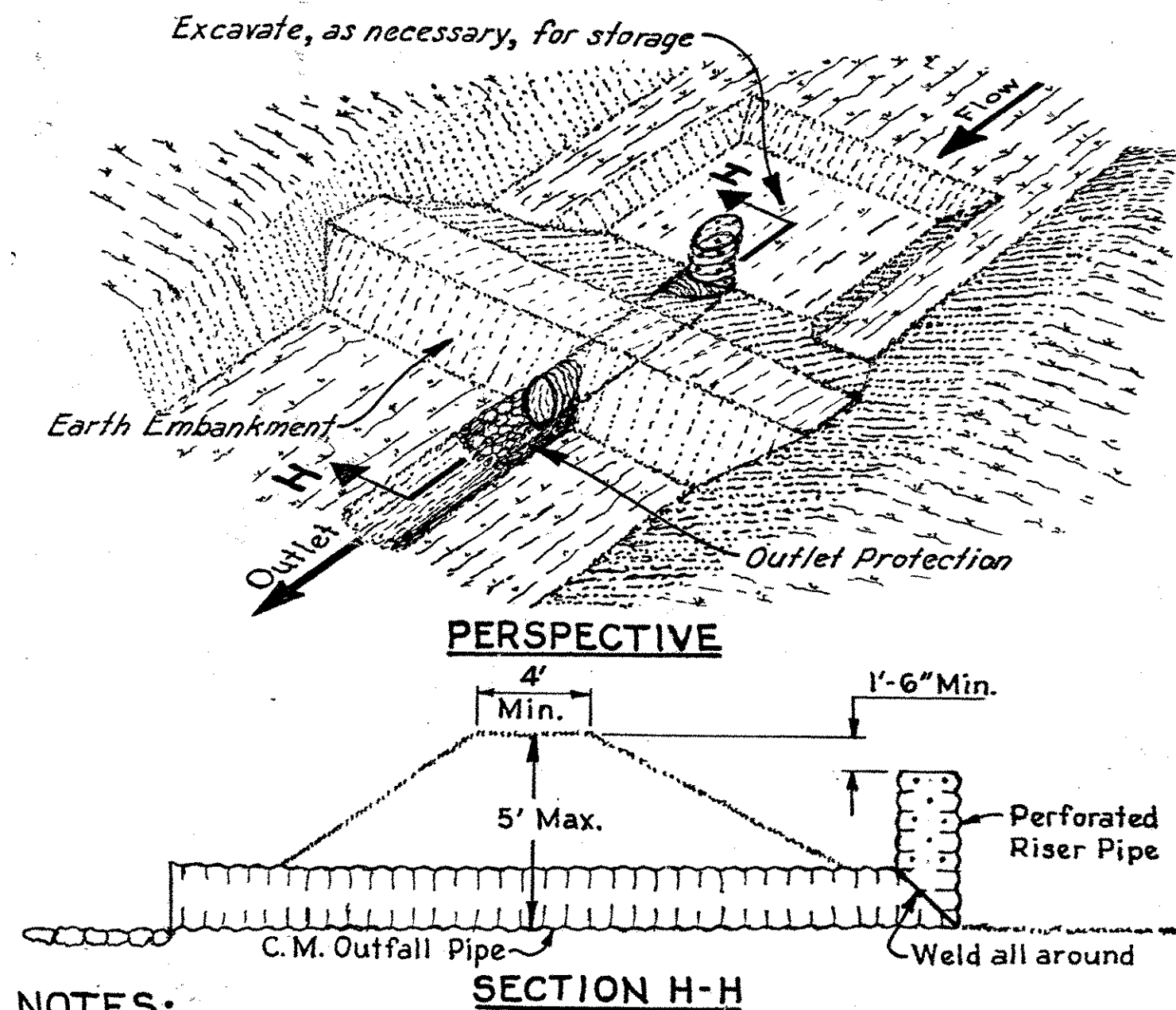


NOTES:

- The area under embankments shall be cleared, grubbed and stripped of all vegetation and root mat. The pool area shall be cleared.
- The fill material for embankments shall be free of roots or other woody vegetation, as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being placed.
- The crest of the earth outlet shall be level. The outlet width (feet) shall be equal to 6 times the drainage area (acres). If an embankment is used to form the sediment trap, the outlet crest shall be at least one foot below the top of the embankment. The outlet shall be free of any restrictions to flow.
- All cut and fill slopes used in the construction of sediment traps shall be 2:1 or flatter. The minimum top width of embankments used to form sediment traps shall be 4 feet.
- Sediment shall be removed and the trap restored to its original dimensions, when the sediment has accumulated to one-half of the design depth of the trap. Removed sediment shall be disposed of in a suitable area, as approved by the Engineer, and in such a manner that it will not erode.
- The structure shall be inspected after each rain and repairs shall be made when required.
- Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
- The sediment trap shall be removed and the area shall be stabilized after the drainage area above the trap has been properly stabilized.

PIPE OUTLET SEDIMENT TRAPS (DRAINAGE AREA: 5 ACRES OR LESS)

A pipe outlet sediment trap consists of a basin formed by an embankment or by excavation and embankment. The outlet for the trap is a perforated riser pipe with an outfall pipe through the embankment.



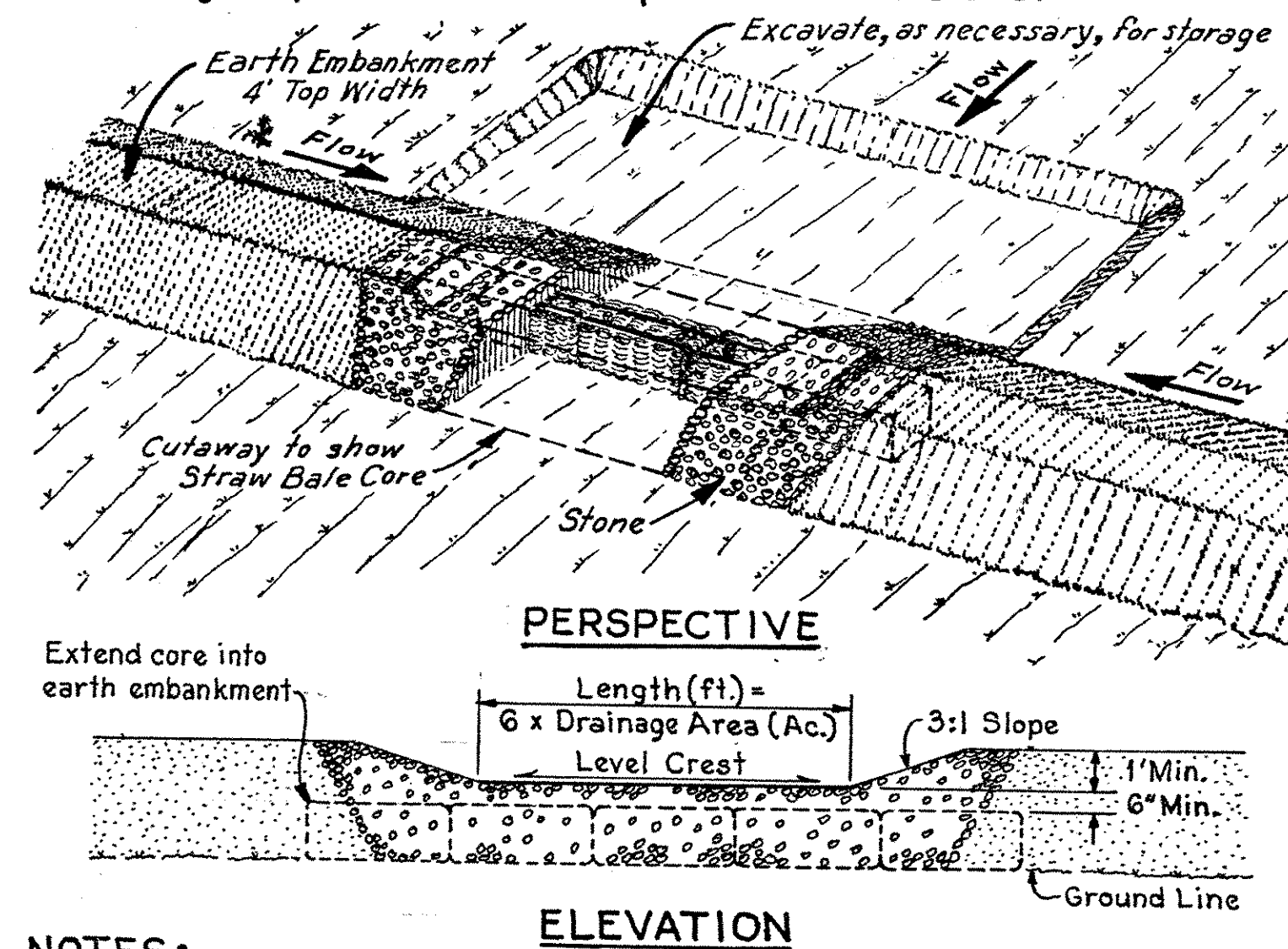
NOTES:

- The area under embankments shall be cleared, grubbed and stripped of all vegetation and root mat. The pool area shall be cleared.
- The fill material for embankments shall be free of roots or other woody vegetation, as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being placed.
- The top of the embankment shall be at least 1 1/2 feet above the crest of the riser.
- The outfall pipe and perforated riser shall be made from corrugated metal. All pipe connections shall be watertight.
- The diameter of the riser shall be the same or larger than the diameter of the outfall pipe. At least the top 2/3 of the riser shall be perforated with 1/2 inch diameter holes spaced 8 inches vertically and 10 to 12 inches horizontally. Select the required diameter for the outfall pipe from the following table:

Maximum Drainage Area (acres)	1	2	3	4	5
Minimum Pipe Diameter (Inches)	12	18	21	24	30
- All cut and fill slopes used in the construction of sediment traps shall be 2:1 or flatter. The minimum top width of embankments used to form sediment traps shall be 4 feet.
- Fill material around the outfall pipe shall be hand compacted in 4-inch layers. A minimum of 2 feet of hand compacted backfill shall be placed before construction equipment will be permitted to operate or cross over the pipe.
- Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
- The structure shall be inspected after each rain and repairs shall be made when required.
- Sediment shall be removed and the trap restored to its original dimensions, whenever the sediment accumulates to 1/2 of the design depth of the trap. Removed sediment shall be disposed of in a suitable area, as approved by the Engineer, and in such a manner that erosion will not occur.
- The sediment trap shall be removed and the area shall be stabilized after the drainage area above the trap has been properly stabilized.

STONE OUTLET SEDIMENT TRAPS (DRAINAGE AREA: 5 ACRES OR LESS)

A stone outlet sediment trap consists of a basin formed by an embankment or by excavation and embankment. The outlet for the trap is over a level stone section. The stone outlet for a sediment trap differs from that for a stone outlet structure because of the intentional ponding of water behind the stone. To provide for the ponding, a relatively impervious core is placed in the stone.



NOTES:

- The area under embankments shall be cleared, grubbed and stripped of all vegetation and root mat. The pool area shall be cleared.
- The fill material for embankments shall be free of roots or other woody vegetation, as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being placed.
- The crest of the stone outlet shall be level and at least 1 foot below the top of the embankment. The crest width (feet) of the outlet shall be equal to 6 times the drainage area (acres).
- All cut and fill slopes used in the construction of sediment traps shall be 2:1 or flatter. The minimum top width of embankments, used to form sediment traps, shall be 4 feet.
- The crushed stone used to form the outlet shall meet Delaware Standard Gradation Size No. 103. Gravel meeting the above gradation requirement may be used if crushed stone is not available.
- The drawings above show straw bales being used to form the core. The bales shall be anchored in accordance with the details for Straw Bale Dike, shown on Standard Sheet Number EC-1. Other materials (timber, concrete block, etc.) may be used for the core. All core material must be firmly anchored to the ground. The core shall be covered by a minimum of 6 inches of stone.
- Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
- The structure shall be inspected after each rain and repairs shall be made when required.
- Sediment shall be removed and the trap restored to its original dimensions, whenever the sediment accumulates to 1/2 of the design depth of the trap. Removed sediment shall be disposed of in a suitable area, as approved by the Engineer, and in such a manner that erosion will not occur.
- The sediment trap shall be removed and the area shall be stabilized after the drainage area above the trap has been properly stabilized.

APPROVED: DATE:	STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION
DIRECTOR OF HIGHWAYS	STANDARD SHEET NUMBER EC-3 EROSION CONTROL DETAILS SEDIMENT TRAPS
RECOMMENDED: DATE:	PREL. TRACING WRD DESIGN WRD CHKD. REVISIONS
DEPUTY DIRECTOR OF HIGHWAYS	

GENERAL NOTES FOR SEDIMENT TRAPS

A sediment trap is a temporary basin of limited capacity formed by excavation and/or embankment, that is used to intercept sediment laden storm runoff and to trap and retain the sediment in order to protect drainageways, properties and rights of way below the sediment trap from sedimentation. They are usually installed in a drainageway, at a storm drainage inlet, or at other points of discharge from a disturbed area.

- The drainage area for a sediment trap shall not exceed 5 acres.
- The sediment trap should be located to obtain the maximum storage benefit from the terrain, for ease of cleanout of the trapped sediment and to minimize interference with construction activities.
- The volume of a sediment trap as measured at the elevation of the crest of the outlet shall be at least 1,800 cubic feet per acre of drainage area. The volume of the trap shall be calculated using standard mathematical procedures. The volume of a natural basin may be approximated by the equation:
Volume (cu. ft.) = 0.4 x surface area (sq. ft.) x maximum depth (ft.).
- All embankments for sediment traps shall not exceed 5 feet in height, as measured at the low point of the original ground along the centerline of the embankment. Embankments shall have a minimum top width of 4 feet.
- There are 4 types of outlets for sediment traps. Each sediment trap is named according to the type of outlet that it has. Each of the types have different design criteria and are discussed separately. The outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the trap and that erosion of the outlet does not occur.
- A trap may have several different outlets with each outlet conveying part of the flow based on the criteria for each outlet type, and the combined outlet capacity shall be adequate to carry the total required flow. For example, a 12 foot earth outlet (adequate for 2 acres) and a 12 inch diameter pipe outlet (adequate for 1 acre) could be used for a three acre drainage area.
- There is no standard symbol for a sediment trap. Each type shall be delineated on the Erosion Plan in such a manner that it will not be confused with any other features. Each trap in the plans shall be numbered consecutively and a summary table (on the same plan sheet) shall show the following information:
 - type of trap
 - size of outlet
 - trap dimensions
 - embankment height and depth of excavation
 - drainage area.