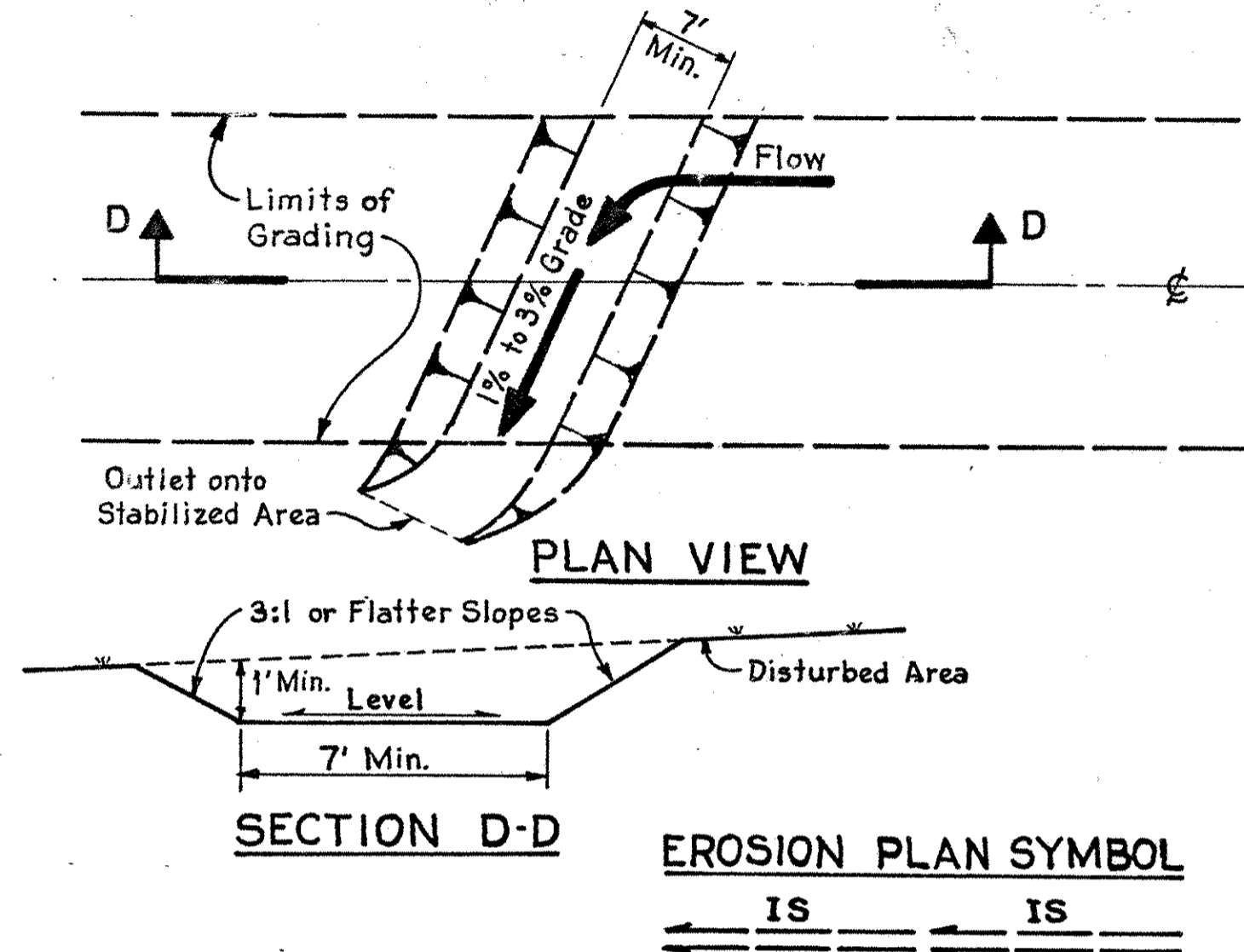


**TEMPORARY INTERCEPTOR SWALE**  
(DRAINAGE AREAS LESS THAN 5 ACRES)

A temporary excavated drainageway located across disturbed areas or rights of way. Used to shorten the length of exposed slopes, thereby reducing the potential for erosion by intercepting the storm runoff and diverting it to a stabilized outlet or sediment trapping device. The swale shall remain in place until the disturbed areas are permanently stabilized.



**NOTES:**

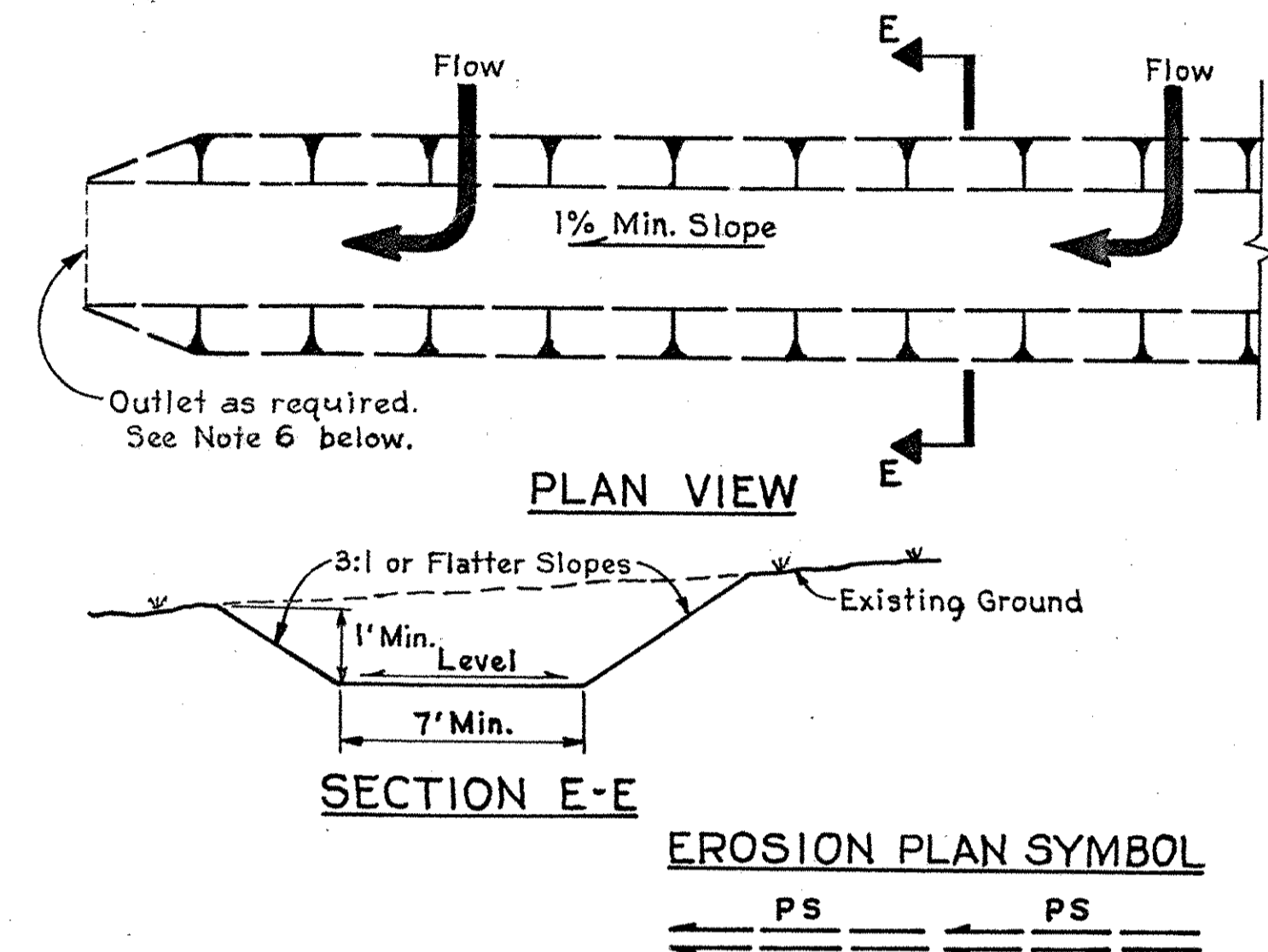
- All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
- The swale shall be excavated or shaped to line, grade, and cross section as required to meet the specified criteria and be free of bank projections or other irregularities which will impede normal flow. All earth removed and not needed in construction shall be spread or disposed of so that it will not interfere with the functioning of the swale. Fills shall be compacted to prevent unequal settlement that will cause damage in the completed swale.
- Interceptor swales shall have a minimum grade of one percent and the bottom of the swale shall be level.
- The spacing of the interceptor swales along the graded slope shall be as follows:  

Maximum slope of area above swale	> 10%	5 to 10%	< 5%
Distance between interceptor swales	100 Feet	200 Feet	300 Feet

 The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.
- Interceptor swales must have an outlet that functions with a minimum of erosion. Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin.
- When it is deemed necessary by the periodic inspections, the flow area of the swale shall be stabilized using "Stone Stabilization", which consists of a three inch thick layer of stone (Delaware Standard Gradation Size No 103) that is pressed into the soil. The lining shall extend across the bottom and up both sides of the channel to a height of at least 8 inches vertically above the bottom.
- At all points where several or more vehicle crossings per day will be made, the side slopes may be made flatter to allow construction traffic to cross. The entire swale area in the vicinity of the crossing shall be stabilized using "Stone Stabilization", consisting of stone that meets Delaware Standard Gradation Size No 103, that is placed in two separate layers each three inches thick. Each layer is compacted into the soil after placement.
- Periodic inspection and required maintenance shall be provided.

**TEMPORARY PERIMETER SWALE**  
(DRAINAGE AREAS LESS THAN 5 ACRES)

A temporary excavated drainageway, located along the perimeter of the site or disturbed areas, that is used to prevent offsite storm runoff from entering the disturbed area and to prevent sediment laden storm runoff from leaving the construction site or disturbed area. The swale shall remain in place until the disturbed area is permanently stabilized.

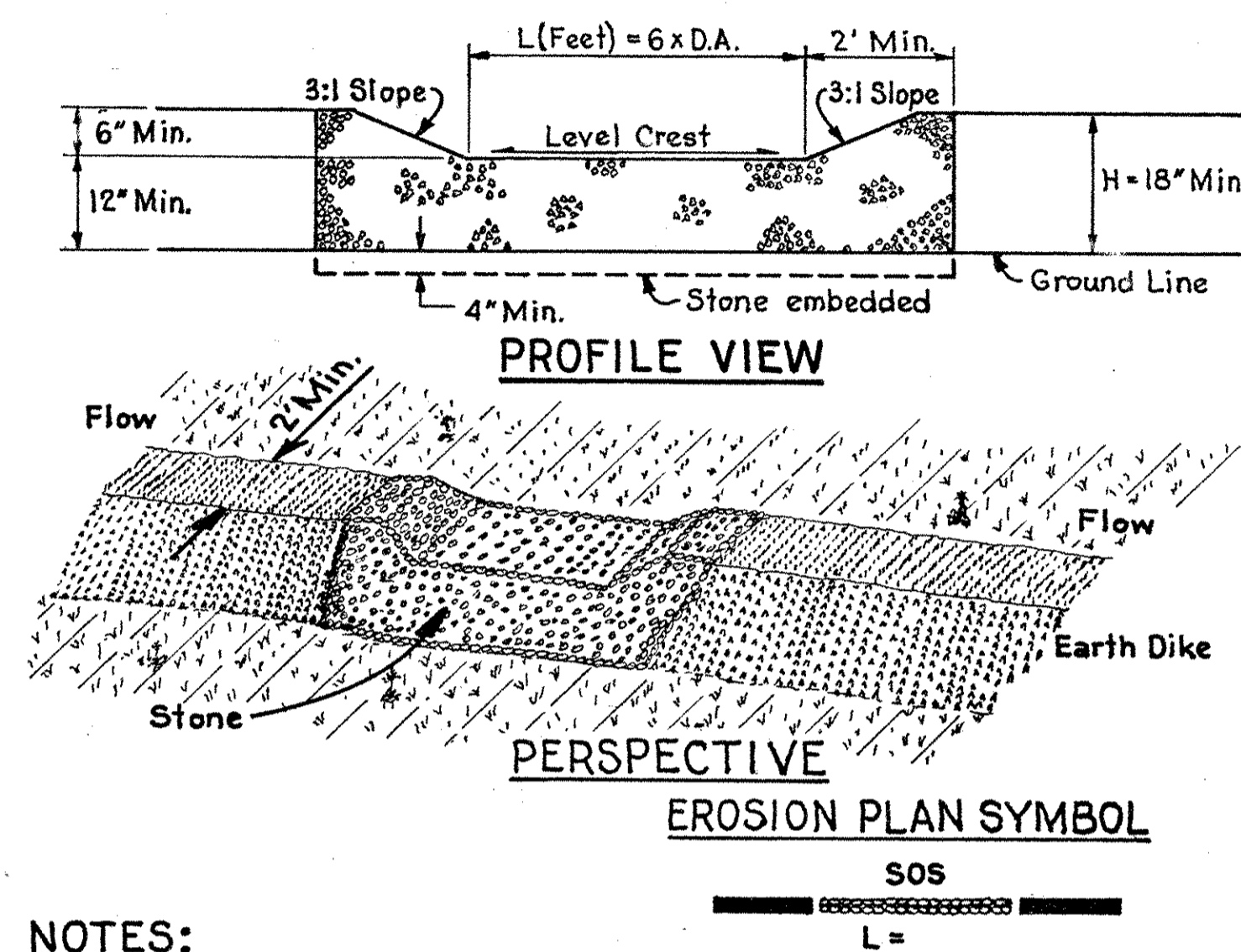


**NOTES:**

- All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
- The swale shall be excavated or shaped to line, grade, and cross section as required to meet the specified criteria and be free of bank projections or other irregularities which will impede normal flow. All earth removed and not needed in construction shall be spread or disposed of so that it will not interfere with the functioning of the swale. Fills shall be compacted to prevent unequal settlement that will cause damage in the completed swale.
- Perimeter swales shall have a minimum grade of one percent and the bottom of the swale shall be level.
- Runoff diverted from a protected or stabilized upland area shall outlet directly to an undisturbed stabilized area, into a level spreader, or to a grade stabilization structure. Runoff diverted from a disturbed or exposed upland area shall be conveyed to a sediment trapping device such as a sediment basin, sediment trap, or to an area that is protected by any of these practices.
- Where the slope of the swale is less than 2%, stabilization may not be required, but should be added if deemed necessary by the periodic inspections. When the slope is from 2% to 5% the channel (flow area) should be stabilized with Section 725, "Erosion Control, Excelsior Blanket, Net or Jute Mesh"; Section 725, "Chemical Erosion Control"; or "Stone Stabilization". Where the slope of the swale is greater than 5%, "Stone Stabilization", consisting of stone that meets Delaware Standard Gradation Size No 103 which is placed in a 3 inch thick layer and then is pressed into the soil, shall be used. The lining shall extend across the bottom and up both sides of the channel to a height of at least 8" vertically above the bottom.
- Periodic inspection and required maintenance shall be provided.

**STONE OUTLET STRUCTURE**  
(DRAINAGE AREAS LESS THAN 5 ACRES)

A temporary crushed stone dike installed in conjunction with and as a part of a diversion dike, interceptor dike, or perimeter dike that is used to provide a protected outlet for the dike. They apply to any point of discharge where there is a need to dispose of runoff at a protected outlet or to diffuse concentrated flow for the duration of the period of construction. Stone outlet structures also allow the area behind the dike to dewater.



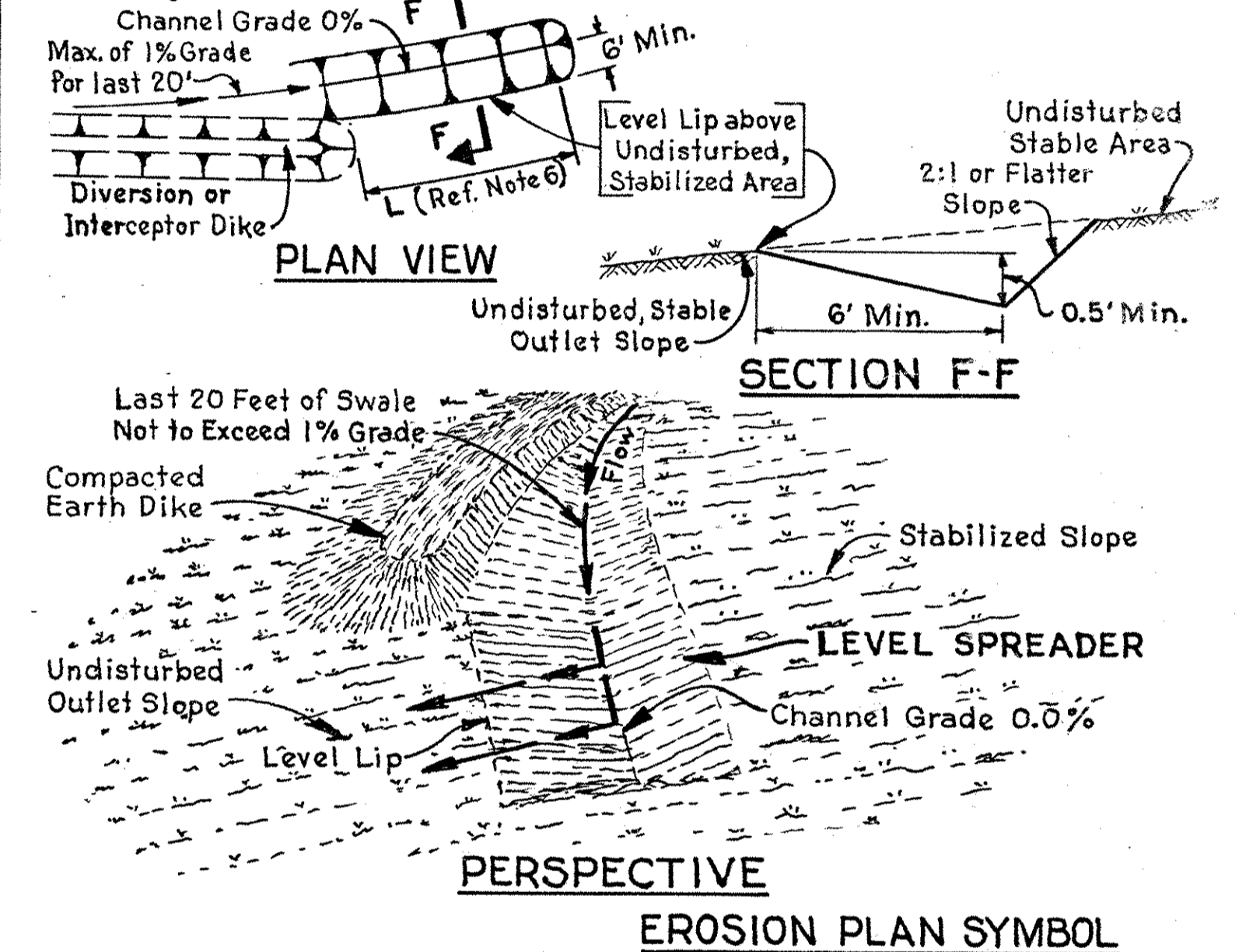
**NOTES:**

- The stone shall be crushed stone. Gravel may be used only when crushed stone is not available. The stone shall meet Delaware Standard Gradation Size No 103.
- The crest of the stone dike shall be at least six inches lower than the lowest elevation of the top of the earth dike. The crest shall be level.
- The stone outlet structure shall be embedded into the soil a minimum of four inches.
- The minimum length, in feet, of the crest of the stone outlet structure shall be equal to six times the number of acres of the contributing drainage area.
- The stone outlet structure shall be inspected after each rain, and the stone shall be replaced when the structure ceases to function as intended due to silt accumulation among the stone, washout, construction traffic damage, etc.
- When the drainage area above the structure is not stabilized, a sediment basin or a sediment trap must be used in conjunction with the stone outlet structure.

APPROVED: DATE:	STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION
DIRECTOR OF HIGHWAYS	STANDARD SHEET NUMBER EC-2 EROSION CONTROL DETAILS TEMPORARY SWALES and OUTLET STRUCTURES
RECOMMENDED: DATE:	PREL. TRACING YRU DESIGN YRU CHKD.
DEPUTY DIRECTOR OF HIGHWAYS	REVISIONS

**TEMPORARY LEVEL SPREADER**

An outlet that is constructed at zero percent grade across the slope whereby concentrated runoff may be discharged at non-erosive velocities onto an undisturbed area that is stabilized by existing vegetation. Used to convert a concentrated flow of sediment-free storm runoff into sheet flow and to outlet it onto areas that are stabilized by existing vegetation in a manner that does not cause erosion. Should be used only in those situations where the spreader can be constructed on undisturbed soil, where the area directly below the level lip is stabilized by existing vegetation, where the drainage area above the spreader is stabilized by existing vegetation, and where the water will not be reconcentrated immediately below the point of discharge.



**NOTES:**

- Level spreaders shall be constructed under the direct supervision of the Engineer.
- Construct level lip on zero percent grade to insure uniform spreading of sediment-free runoff (converting channel flow to sheet flow).
- Level spreader shall be constructed on undisturbed soil (not on fill).
- The entrance channel shall not exceed a 1% grade for at least 20 feet before entering the spreader.
- Storm runoff converted to sheet flow shall outlet onto stabilized areas. Water shall not be reconcentrated immediately below the point of discharge.
- Spreader length will be determined by estimating  $Q_{10}$  (10 year frequency storm flow) and selecting the appropriate length from table below:  

Design $Q_{10}$ (c.f.s.)	Maximum Length L (feet)
Up to 10	15
11 to 20	20
21 to 30	26
31 to 40	36
41 to 50	44
- Periodic inspection and required maintenance shall be provided.