**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 erosion 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 area is permanently stabilized.

**PLAN VIEW**

- Outlet end
- Stabilized Area
- Disturbed Area
- T.M.
- Note: Gravel to be laid prior to backfilling.

**SECTION D-D**

**EROSION PLAN SYMBOL**

**NOTES:**

1. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of as not to interfere with the proper functioning of the swale.
2. The swale shall be excavated or shaped to line, grade, and cross section as required to meet the specified criteria and be free of basic 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.
3. Interceptor swales shall have a minimum grade of one percent and the bottom of the swale shall be level.
4. The spacing of the interceptor swales along the graded slope shall be as follows:
   - Minimum slope of area slope > 10%: 3 per 100 feet
   - Maximum slope of area slope > 4%: 3 per 200 feet
   - Grades: 1 to 5%: 3 per 400 feet
5. Interceptor swales must have an outlet that functions with a minimum of erosion. Outlet should be conveyed to a sediment trapping device such as a sediment trap and/or the swale.
6. When it is deemed necessary by the preliminary inspections, the flow area of the swale shall be stabilized using "Stone Stabilization", consisting of a three inch thickness 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.
7. All points where several or more vehicle crossings per day will be made, the side slopes may be made flat to allow construction traffic to cross. The entire area in the vicinity of the opening shall be stabilized using "Stone Stabilization", consisting of stones that meet Delaware Standard Gradation Size No. 103, that is placed in two separate layers each three inches thick. Each layer is compacted to the soil after placement.
8. Periodic inspection and required maintenance shall be provided.

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**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 excessive storm runoff from entering the area and to prevent sediment taken storm runoff from leaving the construction sites or disturbed areas. The swale shall remain in place until the disturbed area is permanently stabilized.

**PLAN VIEW**

- Outlet end
- Stabilized Area
- Disturbed Area
- T.M.
- Note: Gravel to be laid prior to backfilling.

**SECTION D-D**

**EROSION PLAN SYMBOL**

**NOTES:**

1. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of as not to interfere with the proper functioning of the swale.
2. The swale shall be excavated or shaped to line, grade, and cross section as required to meet the specified criteria and be free of basic 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.
3. Interceptor swales shall have a minimum grade of one percent and the bottom of the swale shall be level.
4. The spacing of the interceptor swales along the graded slope shall be as follows:
   - Minimum slope of area slope > 10%: 3 per 100 feet
   - Maximum slope of area slope > 4%: 3 per 200 feet
   - Grades: 1 to 5%: 3 per 400 feet
5. Interceptor swales must have an outlet that functions with a minimum of erosion. Outlet should be conveyed to a sediment trapping device such as a sediment trap and/or the swale.
6. When it is deemed necessary by the preliminary inspections, the flow area of the swale shall be stabilized using "Stone Stabilization", consisting of a three inch thickness 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.
7. All points where several or more vehicle crossings per day will be made, the side slopes may be made flat to allow construction traffic to cross. The entire area in the vicinity of the opening shall be stabilized using "Stone Stabilization", consisting of stones that meet Delaware Standard Gradation Size No. 103, that is placed in two separate layers each three inches thick. Each layer is compacted to the soil after placement.
8. Periodic inspection and required maintenance shall be provided.

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

A temporary crushed stone dike installed in conjunction with and as 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 need of diversion of runoff to 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 desaturate.

**EROSION PLAN SYMBOL**

- 50S

**NOTES:**

1. 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.
2. The crest of the stone outlet structure shall be at least six inches lower than the lowest elevation of the top of the earth dike. The crest shall be level.
3. The stone outlet structure shall be embedded into the soil a minimum of four inches.
4. 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 basin.
5. The stone outlet structure shall be inspected after each rain, and the stone shall be replaced when the structure causes to function as intended due to soil accumulation along the stone, washout, construction traffic damage, etc.
6. When the drainage areas above the structure is not stabilized, a sediment basin or sediment trap must be used in conjunction with the stone outlet structure.

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**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 divert it into 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 an undisturbed area, where the area directly below the level spreader is stabilized by existing vegetation, where the drainage area above the spreader is stabilized by limiting vegetative growth, and where the water will not be recharged immediately before the point of discharge.

**EROSION PLAN SYMBOL**

- 50S

**NOTES:**

1. Level spreaders shall be constructed under the direct supervision of the Engineer.
2. Construct level spread at zero percent grade to insure uniform spreading of sediment-free runoff (converting channel flow to sheet flow).
3. Level spreader shall be constructed on an undisturbed soil (not on fill).
4. The entrance channel shall not exceed a 5% grade for at least 10 feet before spreading channel.
5. Storm runoff converted to sheet flow shall not enter stabilized areas. Water shall not be recharged immediately before the point of discharge.
6. Spreader length will be determined by estimating Qo (10-year frequency storm flow), and selecting the appropriate length from table below:
   - Design: Qo
   - Maximum Flow (Qf) (L/Sec)
   - Up to 10
   - 11 to 20
   - 21 to 50
   - 51 to 100
   - 101 to 200
   - 201 to 400
   - 401 to 1000
   - 1001 or more
7. Periodic inspection and required maintenance shall be provided.