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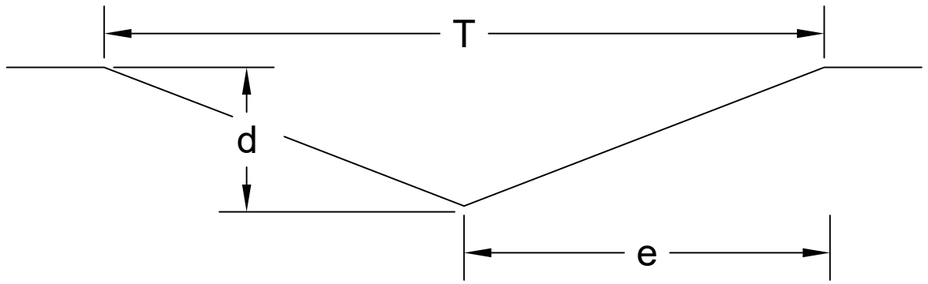
TRIANGULAR "V" CHANNEL CROSS SECTION

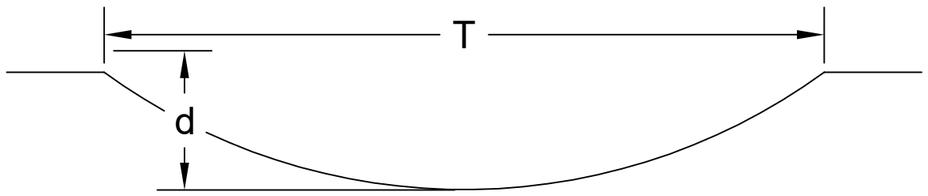


X-Section Area (A) = Zd^2

Top Width (T) = 2dz

$Z = \frac{e}{d}$

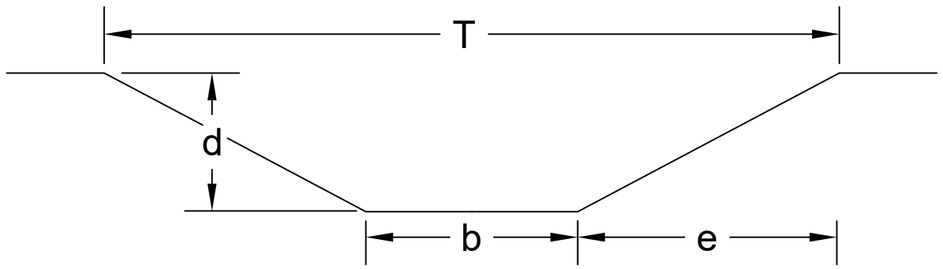
PARABOLIC CHANNEL CROSS SECTION



X-Section Area (A) = $\frac{2}{3}$ Td

Top Width (T) = $\frac{1.5\ A}{d}$

TRAPEZOIDAL CHANNEL CROSS SECTION



X-Section Area (A) = $bd + Zd^2$

Top Width (T) = b + 2dz

$Z = \frac{e}{d}$

NOTES:

1. At a minimum, grass-lined channels should carry peak runoff from the 10-year storm without eroding. Increase the capacity according to the potential damage if flood hazard exists.
2. If design velocity of the channel to be vegetated by seeding exceeds 2 feet per second, a temporary channel liner is required.
3. Channel side slopes should be 3:1 or flatter to aid in the establishment of vegetation and for maintenance. V-shaped channels along roadways should have side slopes of 6:1 or flatter for safety.
4. Remove all trees, brush, stumps, and other objectionable material from the foundation area, and dispose of properly.
5. Excavate the channel, and shape it to neat lines and dimensions shown on the plans plus a 0.2 foot overcut around the channel perimeter to allow for bulking during seedbed preparations and sod buildup.
6. Remove and properly dispose of all excess soil so that the surface water may enter the channel freely.
7. The procedure used to establish grass in the channel will depend upon the severity of the conditions and selection of species. Protect the channel with mulch or a temporary liner sufficient to withstand anticipated velocities during the establishment period.

Maintenance:

1. During the establishment period, check grass-lined channels after every rainfall.
2. After grass is established, periodically check the channel. check after heavy rainfall events and immediately make any necessary repairs.
3. Check the channel outlet and all road crossings for bank stability and evidence of piping or scour holes.
4. Remove all significant sediment accumulations to maintain the designed carrying capacity.
5. Keep grass in a healthy, vigorous condition at all times.

NORTH CAROLINA
Department of Environmental Quality

GRASS-LINED CHANNELS

Effective Date: 9/1/2023
In accordance with the 2013 Design Manual Updates