

3-5 STREET DRAINAGE

A. Access

Generally, street improvements for New Development shall provide access to properties during a Base Flood. To prove access, an engineer must demonstrate at least one structural roadway section with asphalt, concrete or compacted aggregate has a depth of flow no greater than 1 foot during a Base Flood. Refer to Figure 3b, Street Hydraulic Design Criteria, for inundation limits for specific street sections.

B. General Design Standards

Streets may carry water from adjacent property and from local areas, but they should not be used as major water carriers in lieu of Natural Washes or man-made channels. The design criteria below imply that water may flow deeper than a normal vertical curb height for a short distance over sidewalk or other back-of-curb areas, but the flow is always confined to the right-of-way or Drainage Easements. For New Developments, Developers should provide catch basins, scuppers, or similar facilities, together with necessary channels, at appropriate locations (particularly street sag areas) to remove water flow in streets and comply with MAG, DDM and the below design criteria.

STREET HYDRAULIC DESIGN CRITERIA			
dmax = maximum depth at any point within the right-of-way			
Drainage Feature	Peak Frequencies		
	10-Year	25/50-Year	100-Year
Street with Curb & Gutter	Contain runoff within street curbs. For collector and arterial streets maintain one 12-foot-wide dry driving lane in each direction.	N/A	Contain runoff below the building's lowest floor. Confine runoff to street rights-of-way or Drainage Easements. dmax = 8 inches.
Street without Curb & Gutter (Dirt Roads, Ribbon Curbs)	Contain longitudinal runoff within roadside channels with water surface elevation below pavement subgrade.	N/A	Contain runoff below the building's lowest floor. Confine runoff to street rights-of-way or Drainage Easements. dmax = 8 inches.
Street without Storm Drain System	Add pipes or roadside channels if runoff from 10-year flood exceeds street capacity, unless waived.	N/A	Add storm drain systems if a Base Flood inundates building's lowest floor. Provide catch basins, scuppers, etc. to remove water so dmax = 8 inches.
Cross Road Culvert or Bridge for Collector & Arterial Streets	N/A	Convey runoff by culvert or bridge under street with no flow overtopping the street for a 50-year flood.	Convey runoff by culvert and flow over the street so dmax = 6 inches.
Cross Road Culvert or Bridge for Collector Streets, and Local Streets	Convey runoff by culvert or under bridge with no flow overtopping the street.	For a 25-year event, convey runoff by culvert or bridge and by flow over the street with so dmax = 6 inches.	dmax = 12 inches.
Any street or watercourse crossing that provides the only access to residential area.	N/A	N/A	Make all lots and structures accessible by at least 1 street with dmax = 12 inches for a Base Flood.
Local Streets with Low Volume Average Daily Trips	N/A		

FIGURE 3b STREET HYDRAULIC DESIGN CRITERIA

C. Valley Gutters

Valley gutters are permitted on local streets to transport runoff when a storm drain system is not required. Valley gutters are generally not acceptable on collector or arterial streets. In unusual cases, valley gutters may be necessary to convey runoff across a collector or arterial street. In such situations, the valley gutter shall be a minimum of 8 feet wide to lessen impact on traffic. Refer to Figure 3c below.

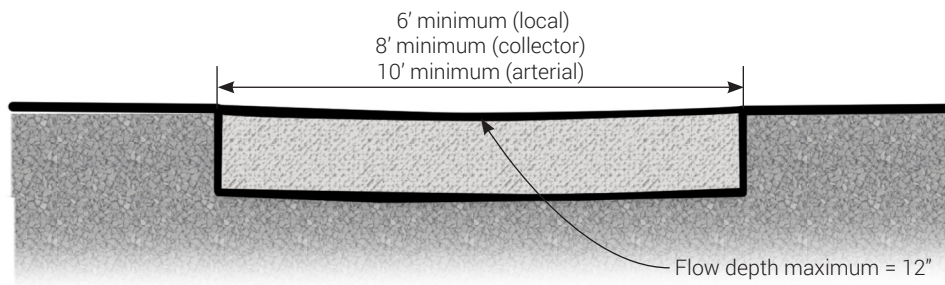


FIGURE 3c TYPICAL SECTION FOR VALLEY GUTTER

D. Roadside Swales

Unless waived by Town staff, swales must intercept and safely convey flow to the nearest recognized watercourse within the same watershed. If velocities exceed 5 feet per second, then the Engineer must design the swale to provide erosion and scour protection. Swales are necessary to prevent:

1. Runoff and debris from washing onto the roadway,
2. Erosion of roadway areas adjacent to the edge of pavement or curbing, and
3. Roadway runoff from flowing into front yards, driveways, garages and homes. Refer to Figure 3d Typical Cross Section for Roadside Swales, on non-raised curb street or straight cross slope.

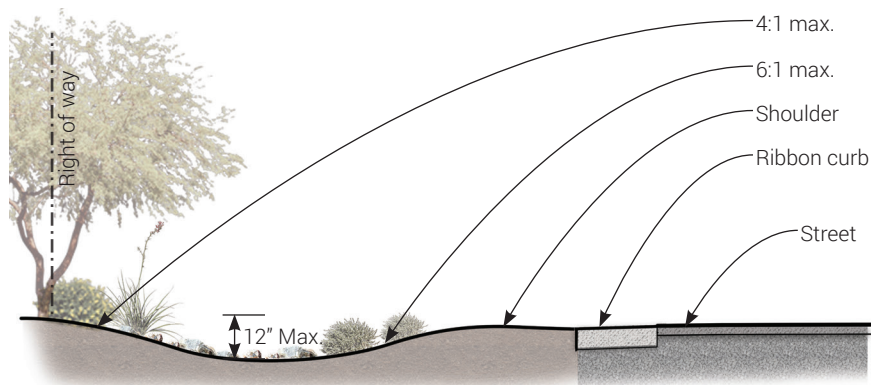


FIGURE 3d TYPICAL CROSS SECTION FOR ROADSIDE SWALES

E. Wet Crossings

1. For wet crossings of road, calculate flow velocity for sediment erosion. Erosion control measures for scour protection must be evaluated and documented.
2. Wet crossings shall be constructed from concrete paving or include continuous ribbon curb per MAG standard details.