

GENERAL DESIGN AND PERFORMANCE CRITERIA

DRAINAGE SYSTEM SIZING AND CAPACITIES

- Drainage systems shall accommodate the 10-yr, 24hr storm
- Drainage systems under a City (public or private) road shall accommodate the 25-yr, 24hr storm
- Drainage systems within the 100 Year Floodplain (provided that compensatory storage measures are accomplished) must accommodate the 100-yr, 24hr storm.
- Drainage systems passing more than 100 cfs for the 10-yr, 24hr storm shall be capable of accommodating a 50-yr, 24hr storm.
- Drainage systems passing more than 200 cfs for the 10-yr, 24hr storm shall be capable of accommodating a 100-yr, 24hr storm.
- Permanent stormwater controls and drainage systems shall be sized to prevent flooding of any new structures for the 100-yr, 24hr storm and have no additional adverse impact on existing structures.
- Any pipe or culvert (excluding small drains and driveway culverts) shall be 18" at a minimum.
- Any pipe or culvert dedicated to the city, whether inside or outside the right-of-way, shall be constructed of RCP.
- Minimum slope for pipes shall be 0.5% for sizes greater than or equal to 24". All pipes smaller shall be at a minimum 1% slope.
- Channels shall be trapezoidal with: minimum 2' wide base, 1' deep, 3:1 side slopes, and 0.5% slope. Slopes should not exceed 5%

DRAINAGE SYSTEM MATERIALS

- Cross drains, storm drains, and any other pipe within the roadway prism shall be RCP.
- Any pipe, culvert, or drainage system dedicated to the city, whether inside or outside the right-of-way, shall be constructed of RCP.
- RCP is required if the failure of the pipe would cause flooding or property damage on adjacent properties.
- RCP is required for all storm pipes and culverts that carry through water from adjacent properties.
- Material for driveway pipes may be RCP, CMP, or double-walled HDPE as desired. RCP is required underneath any driveways or entrances that are heavily traveled or which would have the potential to flood areas within the public right-of-way or any structure. The minimum size for driveway pipes is 15" with headwalls/endwalls constructed of concrete.
- Double-walled HDPE pipe and CMP may be used to convey stormwater generated on-site, such as parking lots, buildings, etc. Both pipe materials (HDPE and CMP) may be used to convey water under driveways in locations where a pipe is outside of the roadway prism, has adequate cover, and would not cause flooding of adjacent properties or rights-of-way in the event of pipe failure. Installation of all pipe must be done with adequate pipe bedding, backfill material, and coupling bands as recommended by the pipe manufacturer.

DETENTION/RETENTION BASIN GENERAL CRITERIA

- A box or riser weir structure with a pipe culvert shall be used to attenuate basin outflows. Alternative primary structures may be evaluated on a case-by-case basis.
- Removable trash-rack or grates shall be installed on top of box or riser.
- “V” notch or other open multi-stage weirs are preferred as the primary flow regulation device.
- The minimum basin primary spillway outlet pipe size allowed is 15”. The basin outlet pipe shall not be the primary flow controlling, barrel controlled, device prior to the 50-yr, 24hr storm.
- Side slopes shall be no steeper than 3:1.
- A minimum freeboard of 1’ must be provided, from the water surface elevation for the 100-yr, 24hr storm, to the lowest point of the dam embankment, excluding the emergency spillway.
- The emergency spillway must be capable of passing the entire 100-yr, 24hr storm without overtopping the embankment, in the event of the primary outlet structure clogging.
- RCP is required for all basin outlet structures and for all stormwater outlet pipes that drain through the berm of a detention pond

PIPE JOINTS, MANHOLES, AND BEDDING

- All pipes must be bedded in a manufacturer approved bedding material.
- All pipe joints and manhole joints must be sealed using a manufacturer approved method and material.
- All backfill materials must be a manufacturer approved material and meet minimum cover requirements
- All stormwater pipes must be installed correctly with adequate pipe bedding, backfill and stormwater joint techniques. See the following for proper installation practices:
 - Reinforced Concrete Pipe (RCP) –ASTM C 1479-01
 - Double Walled High-Density Polyethylene (HDPE) –ASTM D 2321
 - Corrugated Double Walled Polyvinyl Chloride (PVC) –ASTM D 2321
 - Corrugated Metal Pipe (CMP) –ASTM A 798
 - Non-Reinforced Concrete Pipe (NRCP) –ASTM C-14