



POLICY CLARIFICATION

SUBJECT: ALLOWABLE TYPES OF CHANNEL STABILIZATION

DATE: SEPTEMBER 10, 2018

OVERVIEW:

Additional clarity is needed to document the types of grade control and channel stabilization measures that are allowable according to City criteria.

DETAILS:

The DCM provides the following guidance:

Volume 1, Chapter 12, Section 1.6.1 states, "In general, major drainageways are streams with contributing drainage basin areas greater than approximately 130 acres. This threshold corresponds to the lower threshold for regional detention facilities as described in the Storage Chapter of this Manual. Other factors besides drainage area, such as the preservation of habitat or floodplains, may determine where a major drainageway begins. As a watershed urbanizes, providing detention storage upstream of major drainageways is necessary to minimize changes to hydrology that can cause instability, exceed its capacity and degrade its natural functions. The amount of sediment transport in these drainageways can vary greatly depending on their location relative to upstream detention storage and the level of development; therefore, sediment transport estimates and stable slope considerations can also be important factors for designing major drainageways.

Projects affecting major drainageways must be completed so that natural drainageway features and benefits are preserved (and enhanced when feasible) or restored, unless otherwise designated in an approved master plan. Planning documents shall accurately identify all existing drainageways, floodplains, and other site features that may have beneficial natural features. Features proposed to be left in place and preserved or restored shall be clearly shown on the planning and/or design documents. Areas identified as protected will be subject to review and acceptance. A key consideration in the preservation of natural drainageways is obtaining an adequate easement or tract of land that allows the drainageway to provide the natural function of flood storage and to allow the creation of open spaces that can provide habitat. This approach to channel design can also reduce the need to modify floodplain maps used in the administration of the National Flood Insurance Program (NFIP).

Improvements to natural drainageways should be limited to those necessary to stabilize the low-flow channel, establish riparian vegetation and stabilize channel banks for flood flows and infrastructure protection. Encroachments into the floodplain should be very limited and full-channel-width drop structures generally should not be necessary.

To the extent practical, major drainageway projects should protect and preserve these features, if present:

- Protected habitat for threatened and endangered or other protected species.
- Jurisdictional wetlands.

- Riparian vegetation such as cottonwood or willow trees, shrub willows, and wetland or transitional grasses.
- Baseflows.
- Overbank flood storage.
- Bedrock outcroppings or unique landforms.
- Historic, cultural, or archeological resources.

To complete the design of a major drainageway project, baseflows, low flows, flood flows, and sediment loads must be evaluated. The evaluation of flood flows will normally include delineation of the floodplain for land planning purposes and for maintaining adequate freeboard at structures on adjacent developments and may also include scour calculations for utility crossings, bridge abutments and other structures. When the floodplain for the project reach is defined on a Flood Insurance Rate Map (FIRM), a revision to the regulatory floodplain may be necessary as described in Chapter 5, Floodplain Management.”

POLICY:

Methods of channel stabilization that are always acceptable if designed and constructed according to criteria include grouted boulder drop structures (full width drops) and sculpted concrete drop structures (full width drops). Additionally, nearly all channels should have a bankfull channel included.

Methods of stand-alone channel stabilization requiring approval of the City Engineer prior to design / implementation include riffle structures, low-flow only drops, rock vanes, and J-hooks. Approval decisions will be based on channel stability metrics.

Methods of stand-alone channel stabilization that are not acceptable unless in extreme cases include log vanes and root wads.

Engineers who wish to use alternative stabilization methods are encouraged to begin discussions with review staff early to determine whether alternative methods will be allowed for the specific situation.