

additionally function to slow and meander stormwater flow through the bioretention area.

- To preserve visibility, do not plant trees or shrubs that will encroach into travel lanes below a 14' height.

Materials

- In areas of higher flow (concentrated flow with depths >1"-2"), lay 4"-8" sized rock over soil surface to prevent scouring.
- Areas that experience lesser flows can use 1"-3" rock.
- Place larger boulders within the feature to increase visibility and prevent vehicle entry.
- Place 6" ceramic disks along the top of header curb to discourage entry by automobiles. Place flashing solar lights on the asphalt in front of discs to warn oncoming traffic of obstruction.

Maintenance

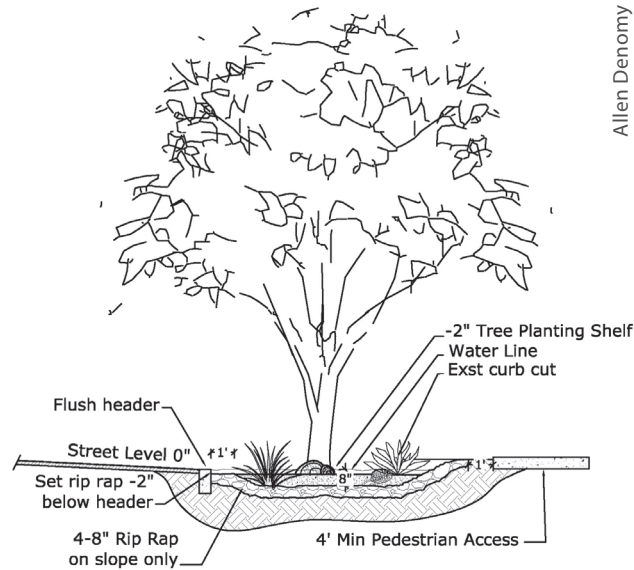
- It is the adjacent property owner's responsibility and liability to maintain the right-of-way.
- Check slopes, edges, etc. for signs of erosion and repair/reinforce as needed (seasonally).
- Observe bioretention feature during rain events to evaluate function and make necessary adjustments.
- Prune vegetation to preserve visibility and prevent obstruction of travel lanes and pedestrian pathways.
- Remove undesirable and invasive plants (weeds) on a regular basis.
- Remove accumulated sediment from bottom of basin to retain designed depth.

Adapting the practice to your site

- If chicanes are designed for concave streets (flow conveyed in the middle of the street), use a uniformly raised curb and a depressed planting area to capture and infiltrate storm-

water that falls on the chicane itself and the adjacent ROW.

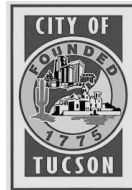
- In areas with higher sediment flows, consider using sediment traps (see handout GI-2) to facilitate maintenance.
- For streets where maintaining maximum stormwater conveyance is not an issue, chicanes with raised curbs and a flush stormwater inlet can also be used.



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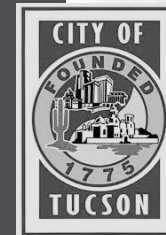
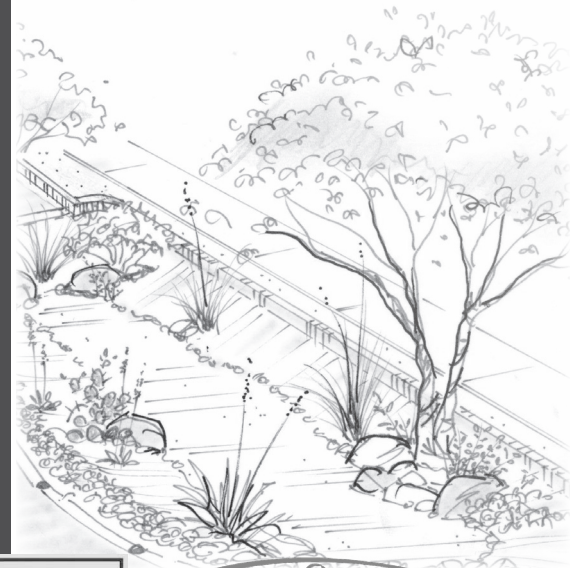
Funds for this project were provided by the Urban and Community Forestry Financial Assistance Program administered through the State of Arizona Forestry Division - Urban & Community Forestry, and the USDA Forest Service.



Green Infrastructure for Public Right-of-ways

An in-street practice: Chicane

Purpose: To collect and infiltrate stormwater flowing along street curbs, calm traffic, and provide shade for pedestrian pathways. Also called bump-outs or curb extensions.



A green infrastructure practice developed by Watershed Management Group in coordination with City of Tucson Department of Transportation.

Chicane, an in-street practice

All in-street practices need to have designs approved by a Dept. of Transportation Engineer.

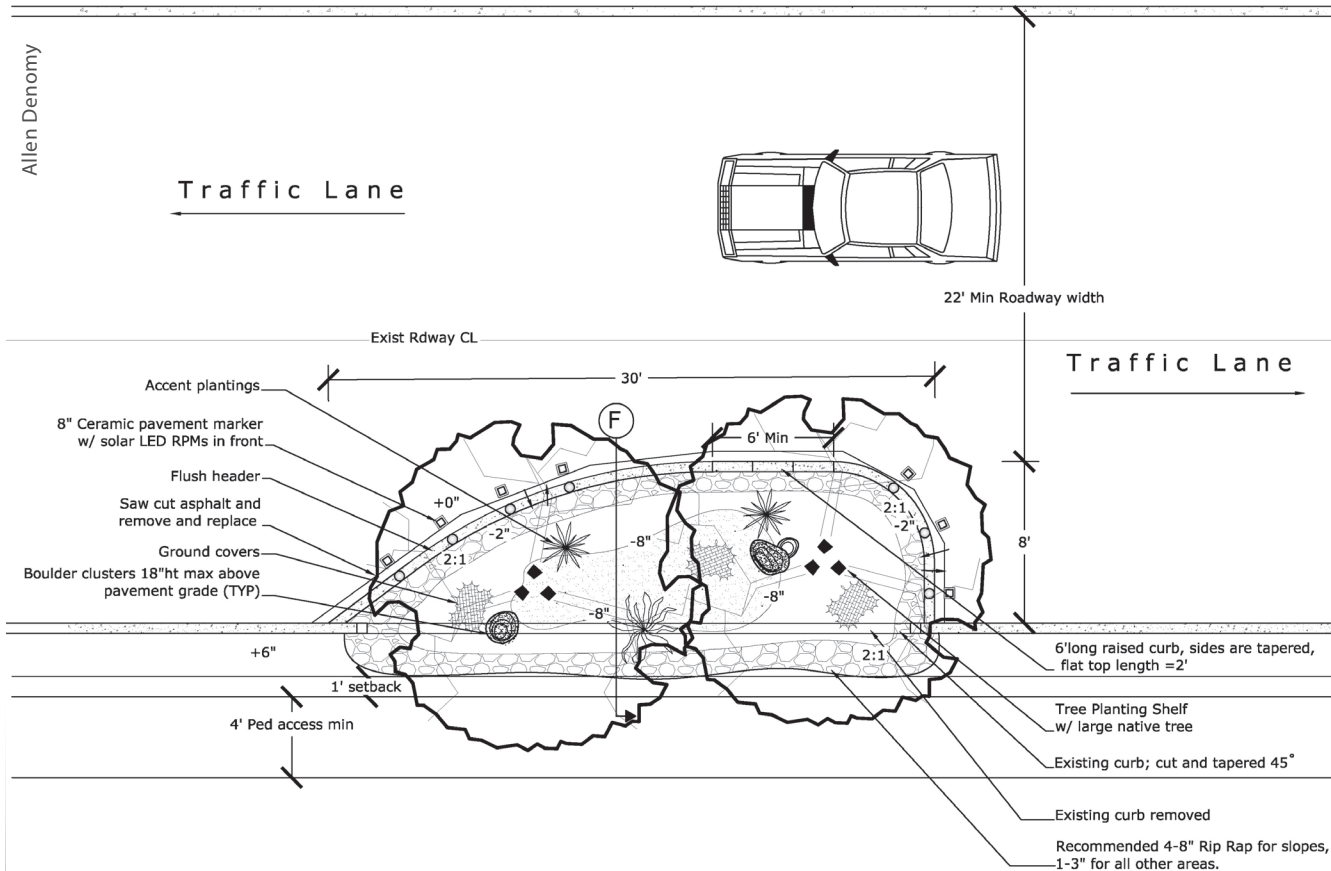
Site selection

- Chicanes are best suited for collecting stormwater on streets that are crested, or highest at the middle of the street, and that carry stormwater along the curb.
- Chicanes may be used effectively both mid-street and at corners of intersections. Consider incorporating chicanes with pedestrian crossings to shorten crossing distance and restrict parking near intersections.

- Most chicanes require a minimum of 8' of available (surplus) street width (a minimum of 30' of total roadway width).
- Take on-street parking needs into consideration. Chicanes will displace existing on-street parking.
- On steeper sloped roads (> 2%), raised berms within the chicane may need to be used to slow stormwater flowing through the infiltration features.
- Chicanes may not always be desirable for designated bicycle routes. However, when evaluating chicanes' effect on bicycle safety, consider the improved safety of slower traffic for bicyclists and pedestrians.
- Ensure the boundaries of the in-street bioretention area (vegetated basin) are well



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marked and visible to traffic, bicyclists, and pedestrians with the use of flashing/reflective markers.

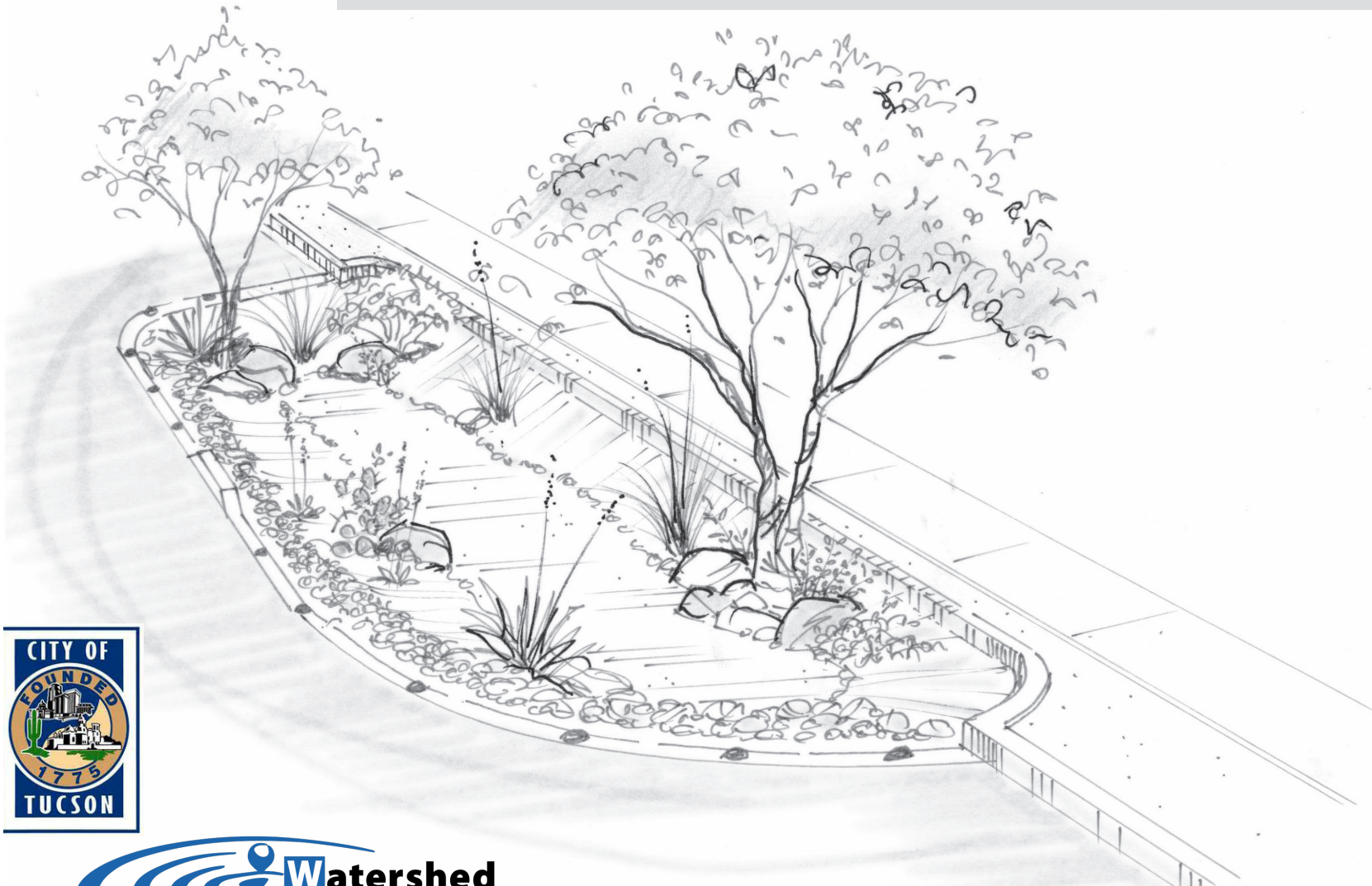
Design and Construction

- Chicanes should be sized as large as possible to increase stormwater mitigation and traffic calming effects. Typically they are about the size of a parking space (8'-10' wide by 18'-20' long).
- Excavate the inside of the chicane to a final depth of 8" (e.g. if adding 4"-8" rock to soil surface, excavate 4"-8" deeper to bring the final depth to 8").
- Where possible, extend vegetated and depressed bioretention areas into the adjacent ROW. This may be achieved by laying ROW slopes back, or by pouring a new curb deeper into the ROW.
- Maximize the area of level bottom of the chicane by using steep (up to 50%) side slopes armored with rock.
- Use flush header curbs (see cross section) 18" deep to protect the adjacent asphalt surface.
- Create planting areas for trees and shrubs that are elevated above the bottom. The raised planting areas can

Continued on back

Chicane with Water Harvesting - A Conceptual Drawing

Standard design details developed by Watershed Management Group in coordination with the City of Tucson to incorporate stormwater harvesting and native plantings in streetscape improvements.



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