
STREETSCAPES, PARKS & TRAILS

This chapter provides guidance for design and approval of landscaped areas within streetscape corridors, developing park master plans and individual park designs and creating non-paved, non-motorized and shared use trails throughout the city.

8-1 LANDSCAPED MEDIANS/ROWS

8-2 PARKS

8-3 NON-PAVED TRAILS

DRAFT

LANDSCAPED MEDIANS/ROWS

This section is intended to aid designers in developing hardscape, landscape, irrigation and general aesthetic improvements for areas within the city's streetscape corridors. It recommends plants for special character areas, provides landscape, irrigation, design, and sight distance guidelines and requirements for inspections and as-built submittals.

DS&PM 2014 UPDATE NOTES OCTOBER 28, 2014:

The revisions shown in red bold font (new language) and red bold font strike-through (deleted language) were made after publishing for the September 15, 2014 Open House meeting and public review.

- There was no public input on this document.
- The revisions shown are staff review revisions. These revisions primarily consist of replacing the Suburban Character Shrubs list with the corrected list; and the insertion of inadvertently deleted text for Transitional Arid Character Trees and Shrubs.

DRAFT

LANDSCAPED MEDIANS/ROWS

8-1.000

GENERAL INFORMATION

A. Median & Streetscape Character Areas

There are different median design standards for each character area within the city; contact the City of Scottsdale's Plan Review office to determine which character area designation to use for each specific project. Streetscape information is available at www.ScottsdaleAZ.gov/planning/corridorplans.

Medians within Commercial Cores as identified in the General Plan will be allowed a higher percentage of plant coverage with the plant materials for the character area in which they are located.

B. Downtown and Urban Character

The Downtown and Urban Character classification is given to the areas of the city in which pedestrian comfort is a primary consideration. When designing these areas concentrate on elements such as covered walkways, shade, decorative paving, and landscaping so that a comfortable setting can be created for this pedestrian area.

1. Balance the use of plant material with decorative paving (stamped concrete, exposed aggregate, and pavers, etc.) to minimize the exposure of decomposed granite.
2. Median landscaping in the Downtown couplet system must conform to specifications in Appendix 8-1A and the Downtown Urban Design and Architectural Guidelines, refer to www.ScottsdaleAZ.gov/planning/policycards/pc_downtowndesign.
3. Plant palette and quantities must also conform to the Downtown Urban Design and Architectural Guidelines and Appendix 8-1A.

Downtown guidelines can be found online at www.ScottsdaleAZ.gov/downtown.

C. Suburban Character

The suburban character applies to areas of the city where compatibility should be achieved between pedestrians and transportation routes within a medium density development pattern. Using trees that are native and/or desert adapted and which achieve a broad, dense canopy is encouraged for the main theme of the streetscape. Separating pedestrians from vehicular traffic can be accomplished through landscape areas and sidewalk alignment.

1. Use decomposed granite, exposed aggregate, and grouted riprap in place of decorative paving.
2. Plant palette should begin to incorporate more arid-type materials or desert adapted, as shown in Section 8-1.100.

D. Transitional Arid Character

For areas of the city where the development pattern is medium to low, and the streetscape serves as a buffer between traffic and adjacent land uses, the transitional arid character classification is applied. Landscape materials should include native plants or plants compatible with a desert environment. Special care should be given to

protect existing vegetation and natural features that can be incorporated into the design.

1. Handset riprap and decomposed granite are to be the primary inorganic materials.
2. Plant palette shall consist of indigenous and desert-compatible materials, refer to Section 8-1.100.

E. Natural Character

A goal of the natural streetscape designation is to keep the streetscape compatible with the natural desert. For this reason, the applicant should select plants that are native to the Upper Sonoran desert and match densities to the existing and adjacent desert environment. The design elements for the Natural Character area are governed in part by the city’s Environmentally Sensitive Lands Ordinance (ESLO). Refer to this ordinance for specific requirements on plant and materials selection, www.ScottsdaleAZ.gov/codes/eslo.

1. Native stone and indigenous decomposed granite are to be primary inorganic materials.
2. Plant palette is to consist of indigenous materials only, and shall conform to the native distribution patterns, densities and maturity, refer to Section 10-1.

F. Blending of Abutting Character Areas

Where two different character areas adjoin, a blending of the two categories should occur to prevent a marked difference between opposing sides of streets. These guidelines apply to all landscaped areas within the public rights-of-way. Areas between the rights-of-way and building setback lines are encouraged to use the guidelines as well. Transitional areas which abut Environmentally Sensitive Lands (or the Natural Character) should primarily use native plants in order to strengthen the tie to the natural desert and to prevent the spread of invasive, non-native species into natural areas.

RECOMMENDED PLANTS

DOWNTOWN AND URBAN CHARACTER

See Appendix 8-1A for Downtown Area recommended plants; other plants will be considered on an individual basis. The Downtown Guidelines contain recommended plants to be used in the Urban Character Area, www.ScottsdaleAZ.gov/downtown.

SUBURBAN CHARACTER

The following native and desert compatible plants, trees and shrubs are recommended for Suburban Character areas within the city.

A. TREES

| BOTANICAL NAME | COMMON NAME |
|--------------------------------------------|------------------------|
| <i>Acacia aneura</i> | Mulga |
| <i>Acacia berlandieri`</i> | Guajillo/Plains Acacia |
| <i>Acacia farnesiana v. ‘Sierra Sweet’</i> | Podless Sweet Acacia |

8-1.100

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8-1.102

LANDSCAPED MEDIANS/ROWS

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| <i>Acacia rigidula</i> | Blackbrush Acacia |
| <i>Acacia salicina</i> | Willow Acacia/Australian Willow |
| <i>Acacia stenophylla</i> | Shoestring Acacia |
| <i>Bauhinia lunarioides</i> | Anacacho/Orchid Tree |
| <i>Caesalpinia cacalaco</i> ‘Smoothie’ | Cascalote (“Sierra Sun”) |
| <i>Caesalpinia Mexicana</i> | Mexican Bird of Paradise |
| <i>Chilopsis lenearis</i> | Desert Willow |
| <ul style="list-style-type: none"> • ‘Bubba’ • ‘Arts Seedless’ • ‘Lucretia Hamilton’ • ‘Warren Jones’ | |
| <i>Chitalpa tashkentensis</i> | Chitalpa |
| <i>Cordia boissieri</i> | Texas Olive |
| <i>Dalbergia sisso</i> | Sisso |
| <i>Ebenopsis ebano</i> | Texas Ebony |
| <i>Eucalyptus camaldulensis</i> | Red Gum |
| <i>Eucalyptus papuana</i> | Ghost Gum |
| <i>Eucalyptus salmonophloia</i> | Salmon Gum |
| <i>Eucalyptus salubris</i> | Gimlet |
| <i>Eucalyptus sargentii</i> | Salt River Mallet |
| <i>Eucalyptus spathulata</i> | Narrow Leaf Gimlet |
| <i>Fraxinus velutina</i> v. <i>Fan West</i> | Fan West Ash |
| <i>Lysiloma thornberi</i> | Desert Fern |
| <i>Olea</i> ‘Swan Hill tm’ | Olive |
| <i>Parkinsonia hybrid</i> ‘Desert Museum’ | Palo Verde |
| <i>Parkinsonia praecox</i> | Palo Brea |
| <i>Parkinsonia floridum</i> | Blue Palo Verde |
| <i>Parkinsonia microphyllum</i> | Foothills Palo Verde |
| <i>Pistacia chinensis</i> | Chinese Pistache |
| <ul style="list-style-type: none"> • v. ‘Sarah’s Radiance’ | |
| <i>Pistacia hybrid</i> ‘Red Push’ | Red Push Pistache |
| <i>Plantanus Mexicana</i> | Mexican Sycamor |
| <i>Plantanus wrightii</i> | Arizona Sycamor |
| <i>Prosopis glandulosa</i> | Native Honey Mesquite |
| <i>Prosopis glandulosa</i> ‘Maverick’ | Mesquite |
| <i>Prosopis glandulosa hybrid</i> ‘Phoenix’ | Mesquite |
| <i>Prosopis juliflora</i> | Arizona Native Mesquite |
| <i>Prosopis pubescens</i> | Screwbean Mesquite |
| <i>Prosopis velutina</i> | Velvet Mesquite |
| <i>Quercus polymorpha</i> | Monterrey Oak |
| <i>Quercus buckleyi</i> | Texas Red Oak |
| <i>Quercus emoryi</i> | Live Oak |
| <i>Quercus engelmannii</i> | Engelman Oak |
| <i>Quercus fusiformis</i> | Texas Live Oak |
| <i>Quercus muhlenbergia</i> | Chestnut Oak |
| <i>Quercus virginiana</i> | Southern Live Oak |

LANDSCAPED MEDIANS/ROWS

| | |
|---------------------------------------------------------------------------------------|-----------------------|
| <i>Sophora secundiflora</i> | Texas Mountain Laurel |
| <i>Tipuana tipu</i> | Tipu Tree |
| <i>Ulmus parviflora</i> | Chinese Elm |
| <ul style="list-style-type: none"> • v. 'Bosque' • v. 'Drake' | |
| <i>Vitex agnus-castus</i> | Chaste Tree |

B. SHRUBS

| BOTANICAL NAME | COMMON NAME |
|---------------------------------------------------------|---------------------------------------|
| <i>Acacia cultriformis</i> | Knife Acacia |
| <i>Agave bracteosa</i> | Squid Agave |
| <i>Ambrosia ambrosioides</i> | Giant Bursage |
| <i>Ambrosia deltoidea</i> | Triangle Leaf Bursage |
| <i>Ambrosia dumosa</i> | White Bursage |
| <i>Asclepias subulata</i> | Desert Milkweed |
| <i>Baileya multiradiata</i> | Desert Marigold |
| <i>Buddleja marrubifolia</i> | Wooly Butterfly Bush |
| <i>Caesalpinia mexicana</i> | Mexican Bird-of-Paradise |
| <i>Caesalpinia pulcherrima</i> | Red Bird-of-Paradise |
| <i>Calliandra californica</i> | Red Fairy Duster |
| <i>Calliandra eriophylla</i> | Pink Fairy Duster |
| <i>Calliandra hybrid</i> | 'Sierra Starr' |
| <i>Celtis pallida</i> | Desert Hackberry |
| <i>Chrysactinia mexicana</i> | Damianita |
| <i>Cordia parvifolia</i> | Little Leaf Cordia |
| <i>Dalea capitata</i> | Lemon Dalea |
| <i>Dalea greggi</i> | Trailing Indigo Bush |
| <i>Dasyliirion texanum</i> | Desert Spoon |
| <i>Encelia farinose</i> | Brittle Brush Bush |
| <i>Ericameria laricifolia</i> | Turpentine Bush |
| <i>Eriogonum fasciculatum</i> | Flattop Buckwheat |
| <i>Fouquieria macdougalii</i> | Mexican Tree-Ocotillo |
| <i>Fouquieria splendens</i> | Ocotillo |
| <i>Guaiacum coluteri</i> | Guayacan |
| <i>Hesperaloe parviflora, red</i> | Red Yucca |
| <i>Hesperaloe parviflora, yellow</i> | Yellow Yucca |
| <i>Hesperaloe parviflora</i> | 'Brakelights' |
| <i>Hesperaloe funifera</i> | Giant Hesperaloe |
| <i>Hesperaloe nocturna</i> | Night Flowering Hesperaloe |
| <i>Hyptis emoryi</i> | Desert Lavender |
| <i>Justicia californica</i> | Chuparosa |
| <i>Justicia spicigera</i> | Mexican Honeysuckle |
| <i>Larrea tridentate</i> | Creosote Bush |
| <i>Leucophyllum candidum</i> | Violet Texas Ranger |
| <i>Leucophyllum compacta</i> | Texas Ranger Sage |
| <i>Leucophyllum frutescens 'Green Cloud'</i> | Texas Ranger Sage |

LANDSCAPED MEDIANS/ROWS

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|----------------------------------------|---------------------------------|
| <i>Leucophyllum laevigatum</i> | Chihuahuan Sage |
| <i>Leucophyllum langmaniae</i> | Rio Bravo Sage |
| • v. 'Lynn's Legacy' | |
| <i>Leucophyllum pruinatum</i> | Bubblegum Sage |
| <i>Leucophyllum revolutum</i> | Houdini Sage |
| <i>Leucophyllum zygophyllum</i> | Cimmaron Dwarf Sage |
| <i>Lycium andersonii</i> | Desert Wolfberry |
| <i>Malpighia emarginata</i> | Barbados Cherry |
| <i>Nolina nelsoni</i> | Blue Beargrass Tree |
| <i>Nolina microcapra</i> | Beargrass |
| <i>Nolina texana</i> | Beargrass |
| <i>Nolina matapensis</i> | Sonoran Tree Beargrass |
| <i>Oenothera caespitosa</i> | White Evening Primrose |
| <i>Opuntia basilaris</i> | Beavertail Prickly Pear |
| <i>Opuntia ficus indica</i> | Indian Fig |
| <i>Opuntia santa-rita</i> | Purple Prickly Pear |
| <i>Penstemon eatonii</i> | Firecracker Penstemon |
| <i>Penstemon parryi</i> | Parry's Penstemon |
| <i>Penstemon superbus</i> | Coral Penstemon |
| <i>Podranea ricasoleana</i> | Pink Trumpet Vine |
| <i>Russelia equisetiformis</i> | Coral Fountain |
| <i>Salvia clevelandii</i> | Chaparral Sage |
| <i>Salvia X 'Trident'</i> | Salvia |
| <i>Simmondsia chinensis</i> | Jojoba |
| <i>Sphaeralcea ambigua</i> | Globe Mallow |
| • v. 'Louis Hamilton' | |
| <i>Vauquelinia californica</i> | Arizona Rosewood |
| <i>Viguiera parishii</i> | Goldeneye |
| <i>Yucca baccata</i> | Banana Yucca |
| <i>Yucca elata</i> | Soaptree Yucca |
| <i>Yucca carnerosana</i> | Spanish Dagger |
| <i>Yucca pallida</i> | Pale Leaf Yucca |
| <i>Yucca rupicola</i> | Twisted Leaf Yucca |
| <i>Zinnia grandiflora</i> | Prarie Zinnia |
| <i>Agave desmettiana</i> | Agave |
| <i>Agave gemniflora</i> | Twin Flower Agave |
| <i>Agave parryi v. truncata</i> | Artichoke Agave |
| <i>Agave vilmoriniana</i> | Octopus Agave |
| <i>Aloe barbadensis</i> | Aloe Vera/Medicinal Aloe |
| <i>Aloe X 'Blue Elf'</i> | Aloe |
| <i>Aloe striata</i> | Coral Aloe |
| <i>Baileya multiradiata</i> | Desert Marigold |
| <i>Buddleja marrubifolia</i> | Wooly Butterfly Bush |
| <i>Caesalpinia gilliesii</i> | Yellow Bird of Paradise |
| <i>Caesalpinia mexicana</i> | Mexican Bird of Paradise |
| <i>Caesalpinia pulcherrima</i> | Red Bird of Paradise |

LANDSCAPED MEDIANS/ROWS

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|------------------------------------------------------|------------------------------------|
| <i>Calliandra californica</i> | Red Fairy Duster |
| <i>Calliandra eriophylla</i> | Pink Fairy Duster |
| <i>Calliandra hybrid</i> | 'Sierra Starr' |
| <i>Caryopteris clandonensis</i> | Bluemist |
| <i>Cordia parvifolia</i> | Little Leaf Cordia |
| <i>Dalea frutescens var 'Sierra Negra tm'</i> | Black Dalea |
| <i>Dalea greggii</i> | Trailing Indigo Bush |
| <i>Dasyilirion texanum</i> | Desert Spoon |
| <i>Dodonaea viscosa</i> | Hopbush |
| <i>Euphorbia rigida</i> | Gopher Plant |
| <i>Euphorbia antisyphilitica</i> | Candelilla |
| <i>Encelia farinose</i> | Brittle Brush Bush |
| <i>Eremophila hygrophana</i> | Emu Bush |
| <i>Eremophila maculate</i> | Valentine Bush |
| <i>Hamelia patens</i> | Mexican Firecracker |
| <i>Hesperaloe parviflora, red</i> | Red Yucca |
| <i>Hesperaloe parviflora, yellow</i> | Yellow Yucca |
| <i>Hesperaloe parviflora</i> | 'Brakelights' |
| <i>Hesperaloe funifera</i> | Giant Hesperaloe |
| <i>Hesperaloe nocturna</i> | Night Flowering Hesperaloe |
| <i>Hyptis emoryi</i> | Desert Lavender |
| <i>Justicia californica</i> | Chuparosa |
| <i>Justicia spicigera</i> | Mexican Honeysuckle |
| <i>Lantana species</i> | Gold, Yellow, Red, Purple Trailing |
| <i>Leucophyllum candidum</i> | Violet Texas Ranger |
| <i>Leucophyllum compacta</i> | Texas Ranger Sage |
| <i>Leucophyllum frutescens 'Green Cloud tm'</i> | Texas Ranger Sage |
| <i>Leucophyllum laevigatum</i> | Chihuahuan Sage |
| <i>Leucophyllum langmaniae</i> | Rio Bravo Sage |
| • v. 'Lynn's Legacy' | |
| <i>Leucophyllum pruinoseum</i> | Bubblegum Sage |
| <i>Leucophyllum revolutum</i> | Houdini Sage |
| <i>Leucophyllum zygophyllum</i> | Cimmaron Dwarf Sage |
| <i>Manfreda maculosa</i> | Texas Tube Rose |
| <i>Oenothera caespitosa</i> | White Evening Primrose |
| <i>Parthenocissus, variety 'Hacienda Creeper tm'</i> | Virginia Creeper |
| <i>Pedilanthus macrocarpus</i> | Slipper Plant |
| <i>Penstemon eatonii</i> | Firecracker Penstemon |
| <i>Penstemon parryi</i> | Parry's Penstemon |
| <i>Penstemon superbus</i> | Coral Penstemon |
| <i>Podranea ricasoleana</i> | Pink Trumpet Vine |
| <i>Portulacaria afra</i> | Elephant Food |
| <i>Ruellia peninsularis</i> | Desert Ruellia |
| <i>Russelia equisetiformis</i> | Coral Fountain |
| <i>Salvia clevelandii</i> | Chaparral Sage |
| <i>Salvia X 'Trident tm'</i> | Salvia |

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| <i>Simmondsia chinensis</i> | Jojoba |
| <i>Sphaeralcea ambigua</i> | Globe Mallow |
| <i>Tecoma stans</i> | Yellow Bells |
| <ul style="list-style-type: none"> • v. 'Orange Jubilee' • v. 'Gold Star' • v. 'Sun Rise' • v. 'Crimson Flare' • v. 'Solar Flare' • v. 'Sierra Apricot' | |
| <i>Vauquelinia californica</i> | Arizona Rosewood |
| <i>Verbena goodingii</i> | Gooding Verbena |
| <i>Zephyranthes species</i> | Rain Lily |
| <i>Zinnia grandiflora</i> | Prairie Zinnia |

TRANSITIONAL ARID CHARACTER

8-1.103

The following native and desert compatible plants, trees and shrubs are recommended for Transitional Arid Character areas within the city.

A. TREES

| BOTANICAL NAME | COMMON NAME |
|--------------------------------------------|---------------------------------|
| <i>Acacia aneura</i> | Mulga |
| <i>Acacia berlandieri</i> | Guajillo/Plains Acacia |
| <i>Acacia farnesiana</i> v. 'Sierra Sweet' | Podless Sweet Acacia |
| <i>Acacia rigidula</i> | Blackbrush Acacia |
| <i>Acacia salicina</i> | Willow Acacia/Australian Willow |
| <i>Acacia schaffneri</i> | Twisted Acacia |
| <i>Acacia willardiana</i> | Palo Blanco |
| <i>Acacia stenophylla</i> | Shoestring Acacia |
| <i>Caesalpinia cacalaco</i> 'Smoothie tm' | Cascalote |
| <i>Caesalpinia mexicana</i> | Mexican Bird of Paradise |
| <i>Chilopsis lenearis</i> | Desert Willow |
| • 'Bubba' | • |
| • 'Arts Seedless' | • |
| • 'Lucretia Hamilton' | • |
| • 'Warren Jones' | • |
| <i>Cordia boissieri</i> | Texas Olive |
| <i>Ebenopsis ebano</i> | Texas Ebony |
| <i>Ebenopsis mexicana</i> | Texas Ebony |
| <i>Eucalyptus camaldulensis</i> | Red Gum |
| <i>Eucalyptus erythrocorys</i> | Red Cap Gum |
| <i>Eucalyptus salmonophloia</i> | Salmon Gum |
| <i>Eucalyptus fromanii</i> | Forman's Mallee |
| <i>Eysenhardtia orthocarpa</i> | Kidneywood |
| <i>Fouquieria macdougalii</i> | Mexican Tree Ocotillo |
| <i>Fouquieria splendens</i> | Ocotillo |

LANDSCAPED MEDIANS/ROWS

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|------------------------------------------------|-------------------------|
| <i>Havardia pallens</i> | Tenaza |
| <i>Lysiloma thornberi</i> | Desert Fern |
| <i>Olneya tesota</i> | Ironwood |
| <i>Parkinsonia hybrid 'Desert Museum'</i> | Palo Verde |
| <i>Parkinsonia praecox</i> | Palo Brea |
| <i>Parkinsonia floridum</i> | Blue Palo Verde |
| <i>Parkinsonia microphyllum</i> | Foothills Palo Verde |
| <i>Prosopis glandulosa</i> | Native Honey Mesquite |
| <i>Prosopis glandulosa 'Maverick tm'</i> | Mesquite |
| <i>Prosopis glandulosa hybrid 'Phoenix tm'</i> | Mesquite |
| <i>Prosopis juliflora</i> | Arizona Native Mesquite |
| <i>Prosopis pubescens</i> | Screwbean Mesquite |
| <i>Prosopis velutina</i> | Velvet Mesquite |

B. SHRUBS

| BOTANICAL NAME | COMMON NAME |
|--------------------------------------|----------------------------|
| <i>Acacia cultriformis</i> | Knife Acacia |
| <i>Agave bracteosa</i> | Squid Agave |
| <i>Ambrosia ambrosioides</i> | Giant Bursage |
| <i>Ambrosia deltoidea</i> | Triangle Leaf Bursage |
| <i>Ambrosia dumosa</i> | White Bursage |
| <i>Asclepias subulata</i> | Desert Milkweed |
| <i>Baileya multiradiata</i> | Desert Marigold |
| <i>Buddleja marrubifolia</i> | Wooly Butterfly Bush |
| <i>Caesalpinia mexicana</i> | Mexican Bird of Paradise |
| <i>Caesalpinia pulcherrima</i> | Red Bird of Paradise |
| <i>Calliandra californica</i> | Red Fairy Duster |
| <i>Calliandra eriophylla</i> | Pink Fairy Duster |
| <i>Calliandra hybrid</i> | 'Sierra Starr' |
| <i>Celtis pallida</i> | Desert Hackberry |
| <i>Chrysactinia mexicana</i> | Damianita |
| <i>Cordia parvifolia</i> | Little Leaf Cordia |
| <i>Dalea capitata</i> | Lemon Dalea |
| <i>Dalea greggi</i> | Trailing Indigo Bush |
| <i>Dasyliirion texanum</i> | Desert Spoon |
| <i>Encelia farinose</i> | Brittle Brush Bush |
| <i>Ericameria laricifolia</i> | Turpentine Bush |
| <i>Eriogonum fasciculatum</i> | Flattop Buckwheat |
| <i>Fouquieria macdougalii</i> | Mexican Tree Ocotillo |
| <i>Fouquieria splendens</i> | Ocotillo |
| <i>Guaiacum coluteri</i> | Guayacan |
| <i>Hesperaloe parviflora, red</i> | Red Yucca |
| <i>Hesperaloe parviflora, yellow</i> | Yellow Yucca |
| <i>Hesperaloe parviflora</i> | 'Brakelights' |
| <i>Hesperaloe funifera</i> | Giant Hesperaloe |
| <i>Hesperaloe nocturna</i> | Night Flowering Hesperaloe |

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|-------------------------------------------------|-------------------------|
| <i>Hyptis emoryi</i> | Desert Lavender |
| <i>Justicia californica</i> | Chuparosa |
| <i>Justicia spicigera</i> | Mexican Honeysuckle |
| <i>Larrea tridentate</i> | Creosote Bush |
| <i>Leucophyllum candidum</i> | Violet Texas Ranger |
| <i>Leucophyllum compacta</i> | Texas Ranger Sage |
| <i>Leucophyllum frutescens 'Green Cloud tm'</i> | Texas Ranger Sage |
| <i>Leucophyllum laevigatum</i> | Chihuahuan Sage |
| <i>Leucophyllum langmaniae</i> | Rio Bravo Sage |
| • v. 'Lynn's Legacy' | • |
| <i>Leucophyllum pruinsum</i> | Bubblegum Sage |
| <i>Leucophyllum revolutum</i> | Houdini Sage |
| <i>Leucophyllum zygophyllum</i> | Cimmaron Dwarf Sage |
| <i>Lycium andersonii</i> | Desert Wolfberry |
| <i>Malpighia emarginata</i> | Barbados Cherry |
| <i>Nolina nelsoni</i> | Blue Beargrass Tree |
| <i>Nolina microcapra</i> | Beargrass |
| <i>Nolina texana</i> | Beargrass |
| <i>Nolina matapensis</i> | Sonoran Tree Beargrass |
| <i>Oenothera caespitosa</i> | White Evening Primrose |
| <i>Opuntia basilaris</i> | Beavertail Prickly Pear |
| <i>Opuntia ficus indica</i> | Indian Fig |
| <i>Opuntia santa-rita</i> | Purple Prickly Pear |
| <i>Penstemon eatonii</i> | Firecracker Penstemon |
| <i>Penstemon parryi</i> | Parry's Penstemon |
| <i>Penstemon superbus</i> | Coral Penstemon |
| <i>Podranea ricosoleana</i> | Pink Trumpet Vine |
| <i>Russelia equisetiformis</i> | Coral Fountain |
| <i>Salvia clevelandii</i> | Chaparral Sage |
| <i>Salvia X 'Trident tm'</i> | Salvia |
| <i>Simmondsia chinensis</i> | Jojoba |
| <i>Sphaeralcea ambigua</i> | Globe Mallow |
| • v. 'Louis Hamilton | • |
| <i>Vauquelinia californica</i> | Arizona Rosewood |
| <i>Viguiera parishii</i> | Goldeneye |
| <i>Yucca baccata</i> | Banana Yucca |
| <i>Yucca elata</i> | Soaptree Yucca |
| <i>Yucca carnerosana</i> | Spanish Dagger |
| <i>Yucca pallida</i> | Pale Leaf Yucca |
| <i>Yucca rupicola</i> | Twisted Leaf Yucca |
| <i>Zinnia grandiflora</i> | Prarie Zinnia |

LANDSCAPLE GUIDELINES

All streetscape designs must meet the following minimum requirements based upon the city's ordinances. Refer to COS Supplement to MAG Section 430 and related details for

8-1.200

more specific information, www.ScottsdaleAZ.gov/design/COSMAGSupp.

MAINTENANCE RESONSIBILITY

The purpose of these maintenance requirements is to keep city rights-of-way attractive, sustainable, safe, and clear for their designated and normal transportation uses. Maintenance of landscape medians and rights-of-ways will be the responsibility of the developer, property owner, or a homeowners association for a given period of time (usually 3 years). Prior to the City accepting maintenance responsibility of irrigation systems more than 5 years old, the owners shall upgrade the systems as necessary to comply with current City standards. For a Capital Improvement Project this period of time will be for 90 days after final inspection. This period will begin and end following inspections and acceptance of installation by a representative of Inspection Services and Capital Projects or an owner's representative from Parks Department. It is the developer's responsibility to schedule the inspections.

If a developer, property owner or homeowners association transfers maintenance of landscape medians and rights-of-way after acceptance, then the developer, property owner or homeowners association must upgrade the irrigation systems to current city standards as outlined in the most current DSPM before the transfer. The property owner's responsibility to maintain the right-of-way from the back of the curb remains as set forth in the city code.

Maintenance responsibility includes:

1. Pruning and maintaining all plants, shrubs, bushes, trees and ground cover to (i) keep all plants behind sidewalks and curbs, and (ii) prevent sign obstructions and sight distance hazards. Pruning shall be done in conformance with the standards of ANSI A300 and Arizona Certified Landscape Professionals.
2. Weeding-by hand or with herbicides labeled "Caution" only. Herbicide application shall be performed by a certified applicator registered with the State of Arizona Office of Pest Management.
3. Removing dead plants and replacing them with low water use plants of a similar size and type.
The replacement plants shall be selected from the Arizona Department of Water Resources list of low water use plants.
4. Removing litter and debris, which includes, without limitation, fallen leaves, trimmings, wind blown material, trash, cigarette butts, downed or broken tree limbs, and small dead animals (i.e., under 25 pounds).
5. Sweeping.
6. Removing all landscape maintenance equipment.

Maintenance must be conducted under the proper permits. Refer to Section 5-2.000, Rights-of-Way Management.

The maintenance duration/responsibility of medians and rights-of-ways are to be stated on the final landscape plans submittal. Figure 8.1-1 below shows the standard landscape maintenance block. Any deviation from this standard requires city approval and shall be

8-1.201

defined in a separately recorded document.

ALL LANDSCAPED AREAS AND MATERIALS, INCLUDING THOSE LOCATED IN THE PUBLIC RIGHT-OF-WAY (INCLUDING MEDIANS), SHALL BE MAINTAINED IN A HEALTHY, NEAT, CLEAN, LITTER AND WEED-FREE CONDITION. IN ADDITION TO THE STANDARDS IN THE SCOTTSDALE DESIGN STANDARDS AND POLICIES MANUAL, ANSI A300 STANDARD PRACTICES FOR PRUNING, SUPPORT SYSTEMS, AND SAFETY SHALL BE USED FOR MAINTENANCE CRITERIA. THIS SHALL BE THE RESPONSIBILITY OF THE

(Property Owner, Developer or Homeowner’s Association)

FIGURE 8.1-1 STANDARD LANDSCAPE MAINTENANCE BLOCK

MEDIAN WIDTHS

8-1.202

1. Median width is measured from back of median curb to back of median curb (inside to inside).

The minimum width for a median is 4 feet. Within the city’s Hillside Area, 8 feet is the minimum requirement.

2. Medians less than 4 feet in width will either be **Portland cement concrete**, stamped concrete, exposed **aggregate** concrete or **concrete** pavers; no plant material will be allowed.

PLACEMENT OF TREES AND SHRUBS

8-1.203

For landscape and planting details of trees, cacti, shrubs and groundcovers, refer to COS Supplement

Details Nos. 2620, 2621, 2622 & 2623, www.ScottsdaleAZ.gov/design/COSMAGSupp.

Trees should be located so that the expected mature tree canopy does not ultimately extend into the street rights-of-way as shown in Figure 8.1-2 and Figure 8.1-3. Consider the mature tree height and placement of trees to minimize potentially adverse effects on above-ground utilities or signage. Select a tree genus or species with rapid vertical growth, columnar shape, or which develops a canopy rapidly when planting trees less than 10 feet from back of curb. Tree density must be no less than 25 feet on center along pedestrian corridors.

Trees should not be planted within 15 feet of an existing private wall, sign or light pole. Separation distances between walls and trees for infill projects will be determined by staff on a case-by-case basis.

Planting distance between trees shall be no less than the mature canopy width.

LANDSCAPED MEDIANS/ROWS

Shrubs shall be planted no less than 5 feet from tree trunks to prevent overwatering.

Natural growth habits shall be taken into consideration to minimize maintenance frequency and intensity.

Shrub **spacing** shall be no less than mature size.

Shrubs and groundcovers shall be planted no less than 2 feet from sidewalks or paths.

Landscaping clearance shall be provided to prevent conflict with signs, lighting, sidewalks/paths, fire equipment or median crossings.

Landscaping must not create hazards to public safety through either plant growth habit, structure, or location.

There shall be a physical separation (concrete curbing) provided between public and private landscaping/irrigation systems.

For Saguaro relocation procedures, refer to Section 10-1.300.

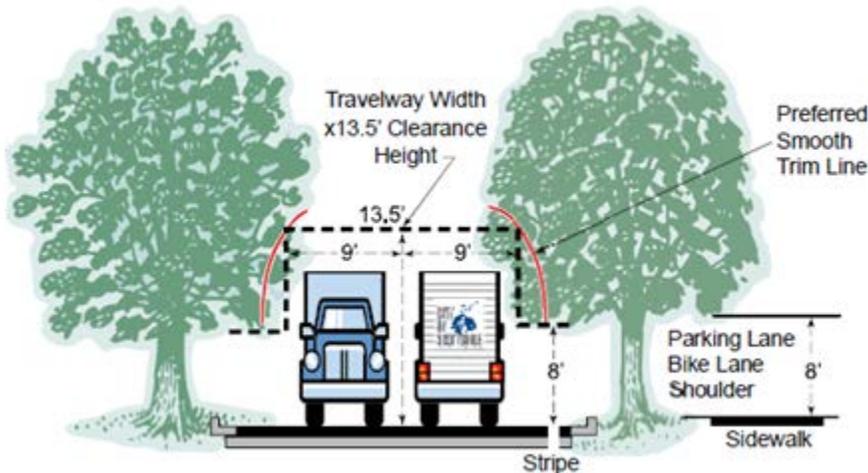


FIGURE 8.1-2 RESIDENTIAL ROADWAY CLEARANCES (30 MPH OR LESS)

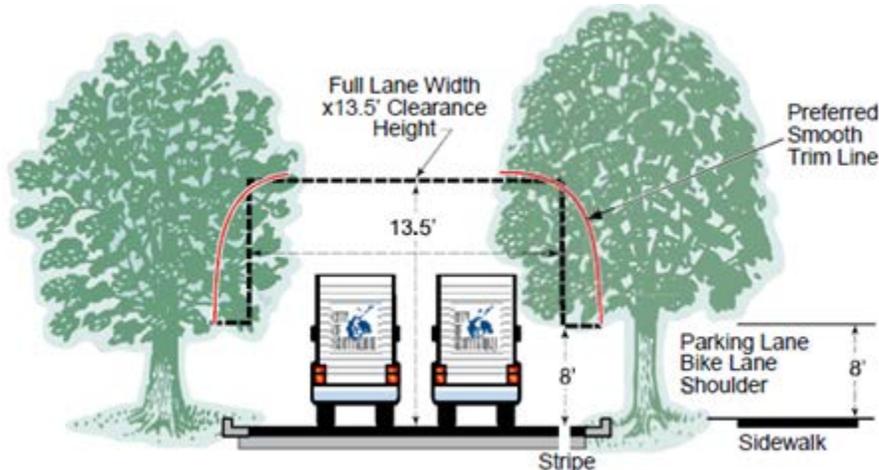


FIGURE 8.1-3 ARTERIAL OR COLLECTOR ROADWAY CLEARANCES (35 MPH OR GREATER)
LANDSCAPED MEDIANS/ROWS

TREE QUANTITIES AND SIZES

8-1.204

Trees should be provided at the rate of 1 tree per each 35 linear feet of median length. The minimum size is 15 gallon with 50 percent to be provided as mature trees or larger (as defined in Article III of the Zoning Ordinance). Salvaged trees must meet ANSI A300 (Part 1) Pruning Standards and ANSI A300 (Part 6) Transplanting Standards with a minimum of 2 ½ inch trunk caliper.

GRADING

8-1.205

1. Mounding should not be used in the areas designated as Downtown and Urban Character zones. Care should be taken when designing landscaping within the sight distance triangles. Mounds within sight distance easements must not exceed a height of 18 inches as measured above the final grade elevation. All mounding should blend with the adjacent existing terrain.
2. The maximum slope of any mounding shall be 1:4 (25%).
3. The finished landscape grade with decomposed granite should be smooth, uniform, and a minimum of 2 inches below the top of curb.

DECOMPOSED GRANITE

8-1.206

1. Size must be ½ inch screened Desert Gold or of a matching color to that of adjacent landscaped areas. The decomposed granite color must match native earth tones.
2. For installation and details for public works construction, refer to COS Standard Detail No. 2620-1, www.ScottsdaleAZ.gov/design/COSMAGSupp.
3. A sample will be submitted to a representative from Parks Department for approval prior to the contractor ordering and bringing it onto the site. Color shall match what exists in the area.
4. Decomposed granite will be distributed uniformly to a depth of 2 inches covering the entire landscape area.

BOULDERS

8-1.207

Boulders are not acceptable for City of Scottsdale landscaped medians and rights-of-way, unless otherwise approved by Risk Management. Call 480-312-5082 for more information.

PLANT SELECTION

8-1.208

All plant materials used in a median are required to come from the Arizona Department of Water Resources low water use plant list for the Phoenix Active Management Area. The

selected plant materials are also to be consistent with the appropriate character areas described in Section 8-1.

Public rights-of-way that are located in the Environmentally Sensitive Lands (ESL) Upper Desert and Hillside landforms must be landscaped with plants from the City of Scottsdale's Indigenous Plants for Environmentally Sensitive Lands list and www.ScottsdaleAZ.gov/codes/nativeplant/ESLO. This list is available in the city's One Stop Shop. Refer to the Scottsdale Revised Code Section 49-78 and 49-79, Scottsdale Landscape Ordinance and the ESLO for additional specific plant selection requirements, www.ScottsdaleAZ.gov/codes.

HYDROSEEDING & NAOS RESTORATION

8-1.209

Seed mix shall be composed of native species as defined in the Environmentally Sensitive Lands Ordinance, www.ScottsdaleAZ.gov/codes/eslo.

IRRIGATION GUIDELINES

8-1.300

See the City of Scottsdale's most current supplement to MAG Section 440 and related details for more specific information.

- A. Approved Irrigation System Types: Centralized control or solar powered.
- B. Controllers
 1. Place controllers in the center of the median, a minimum of 50 feet before the beginning of the turn bay.
 2. Approved controllers are either centralized in type or Leit/DIG X series solar. Contact COS Irrigation Department for specific centralized controller type.
 - ~~3. Delete as there is no turf in medians/ROWS~~
- C. Power Source
 1. The contractor is responsible for initiating account and service connection.
 2. If the power source cannot be placed within the median or the rights-of-way, a utility easement must be provided. This location is to be indicated and noted on the final irrigation plans and also inside of the controller cabinet.
- D. Water Source
 1. Show both the water source and location of the proposed tap on the final irrigation plans.
 2. Contact Water Resources at 480-312-5650 for information on tapping into city waterlines.
 3. Plans must indicate existing and design operating water pressure requirements.
 4. The water meter should be located within a median wherever possible.
- E. Remote Control Electric Valves
 1. Valves are to be of brass construction, and a minimum size of 1 inch.
 2. An approved valve is Hunter IBV
 3. Full Port brass ball valves must be installed immediately upstream of all control valves.
 4. All direct buried control valve wiring shall be a minimum 14 gauge.
 5. ~~A master valve/flow meter is to be installed on all irrigation mainlines~~ Master valves are to be installed on all irrigation mainlines. Contact COS Community

Services Parks and Recreation Irrigation Department for specific master valve type.

- F. Back Flow Prevention Devices
 - 1. Only reduced pressure assemblies will be used.
 - 2. Irrigation backflow preventers are to be installed inside an approved lockable enclosure.
 - 3. A certified tester, recognized by the City of Scottsdale, must test backflow prevention devices before the city will accept responsibility for maintaining the system.

GENERAL IRRIGATION DESIGN CRITERIA

8-1.301

- 1. The irrigation system is to be located entirely within the median. Sleeving from median-to- median is acceptable.
- 2. The contractor is responsible for initiating the account and having the water meter set.
- 3. Trees, shrubs and cactus shall be valved separately.
- 4. The entire irrigation system must be independent of other users. For example, landscape dedicated to the City of Scottsdale for maintenance must have separate power and water meters from other irrigation systems.
- 5. Plans must indicate valve flow rates, size, designation (tree, shrubs and cactus) and station number.

FINAL PLAN SUBMITTAL

8-1.302

Final submittal for irrigation and landscape plans must show related details.

SIGHT DISTANCE

8-1.400

Any plant material installed in a questionable area (such as safety triangles, sight lines) will be identified by traffic engineering and removed by the contractor. Sight distance must be considered for vehicles entering and exiting adjacent properties, as well as for vehicles using abutting roadways.

- A. Sight Distances & Safety Triangle
 - 1. To determine sight distances, use the criteria specified in Section 5-3.119.
 - 2. The sight line, as shown in Figure 5.3-26, shall be clearly indicated and delineated on the final landscape plan submittal.
- B. Planting within the Sight Triangle
 - 1. Shrubs planted within the sight triangle are to have a mature height of not more than 18 inches. Height will be from edge of pavement, and total height will include the height of any mounding.
 - 2. Trees planted within the safety triangle are to have a canopy pruned to a height of 8 feet or greater upon installation. Height will be from edge of pavement, and total height will include the height of any mounding.

ALTERATIONS & AS BUILTS

8-1.500

If field conditions require relocating a water meter, backflow prevention device, controller, valve, or any other major component of the irrigation system as shown on approved plans, contact Inspection Services at 480-312-5750 or Capital Projects Management at 480-312-7250 prior to any installation.

The contractor must provide an accurate set of as-built Mylar drawings and CAD format per Section **5-2.400 of this manual** to the Parks Department representative prior to the final acceptance of a system.

SPECIFIC AREA DESIGN GUIDELINES

8-1.600

In circumstances where a special theme is desired, the city may designate specific design standards to be implemented on select streets. Contact the One Stop Shop at 480-312-2500 for more information.

SCOTTSDALE GATEWAYS

8-1.700

Scottsdale shares common boundaries with several municipalities. When entering Scottsdale from a neighboring community, it is helpful for residents and visitors to have a sense of arrival into the city. Through the use of a city limits identification system, those entering the city should be able to readily recognize their entrance into Scottsdale. The Gateways Map shows the locations of city entrance points. Refer to the city's General Plan Environmental Design Element, www.ScottsdaleAZ.gov/generalplan.

MEDIAN INSPECTIONS

8-1.800

1. City staff will arrange a pre-construction meeting with the contractor to review approved plans, MAG requirements, testing, maintenance responsibility, etc.
2. City staff will inspect the following items before and during construction for compliance with city approved plans and city addendums to MAG:
 - Water meter and backflow preventer and master valve location
 - Controller type and location
 - Remote control valve type, location and operation
 - Source of power (inside enclosure)
 - Type of pipe and trench depth
 - Laterals and trench depth
 - Emitters and flush pits
 - Sleeves under asphalt
 - Pressure check system
 - Backflow preventer and enclosure (Notify City of Scottsdale Cross Connection Control for inspection and testing)
 - Plant palette and location
 - Planting depth
 - Tree staking
 - Sight distance triangles
 - Pre-emergent
 - Decomposed granite

LANDSCAPED MEDIANS/ROWS

3. Irrigation and Median Maintenance staff will perform a walk-through with the contractor after completion of work to begin warranty period (one to three years typical).
4. City staff will issue a Maintenance Period Notification letter to permittee (encroachment permit) to start warranty period.
5. Irrigation and Median Maintenance staff will perform a final walk through with the permittee at the end of the warranty period.
6. City staff will issue the Final Letter of Acceptance to permittee to end the warranty period and begin city maintenance of median.

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|----------------|----------------|-------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
|----------------|----------------|-------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|

DS&PM 2014 UPDATE NOTES OCTOBER 28, 2014:

The revisions shown in red bold font (new language) and red bold font strike-through (deleted language) were made after publishing for the September 15, 2014 Open House meeting and public review.

- There was no public input on this document.
- The revisions shown are staff review revisions.

| OLD TOWN | | | | | | | | | |
|------------------------------|---|---------------------------|---|---|---|---|---|---|---|
| GROUNDCOVERS, VINES & OTHER | | | | | | | | | |
| <i>Agave murpheyi</i> | ✓ | Murphy's Agave | | ● | ● | ● | | | |
| <i>Aloe</i> | ✓ | Blue Elf | | ● | ● | ● | ● | | |
| <i>Aloe mawei</i> | ✓ | Dawe's Aloe | | ● | ● | ● | ● | | |
| <i>Antigonon leptopus</i> | ✓ | Coral Vine/Queen's Wreath | | | | ● | ● | | |
| <i>Baileya multiradiata</i> | ✓ | Desert Marigold | ● | ● | ● | | | ● | |
| <i>Cereus hildemannianus</i> | ✓ | Night Blooming Cereus | ● | ● | ● | | | | |
| <i>Dalea capitata</i> | ✓ | Sierra Gold | ● | ● | ● | ● | ● | ● | ● |
| <i>Dyssodia pentachaeta</i> | | Golden Fleece | | ● | ● | ● | ● | ● | |
| <i>Hymenoxys acaulis</i> | | Anjelita Daisy | | ● | ● | ● | ● | ● | ● |
| <i>Lantana montevidensis</i> | ✓ | Trailing Lantana | ● | ● | ● | ● | ● | | |
| <i>Podranea ricasoliana</i> | ✓ | Pink Trumpet Vine | | | | ● | ● | | |
| <i>Stenocereus thurberi</i> | ✓ | Organ Pipe Cactus | ● | ● | ● | | | | |
| <i>Yucca aloifolia</i> | ✓ | Spanish Bayonet | | | ● | ● | ● | ● | |
| <i>Yucca baccata</i> | ✓ | Banana Yucca | ● | ● | | | | ● | |
| SHRUBS | | | | | | | | | |
| <i>Encelia farinosa</i> | ✓ | Brittlebush | ● | ● | ● | | | ● | |
| <i>Guaiacum coulteri</i> | ✓ | Guayacan | ● | ● | ● | ● | | ● | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|-----------------------------------|----------------|-------------------------------------------------------------------------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Lantana camara</i> | ✓ | Lantana, Shrub Verbena | ● | ● | ● | ● | ● | | |
| <i>Leucophyllum frutescens</i> | ✓ | Texas Sage | ● | ● | ● | | | ● | |
| <i>Maytenus phyllanthoides</i> | ✓ | Mangle Dulce | ● | ● | ● | | | ● | |
| <i>Muhlenbergia rigens</i> | | Deer Grass | | ● | ● | | | ● | |
| <i>Salvia clevelandii</i> | ✓ | Cleveland Sage | ● | ● | ● | | | | |
| Salvia x trident | ✓ | Trident Sage | | ● | ● | ● | ● | | |
| <i>Simmondsia chinensis</i> | ✓ | Jojoba | ● | ● | ● | ● | | | |
| <i>Tecoma stans v.</i> | ✓ | Yellow Bells Crimson Flare Gold Star Orange Jubilee Sierra Apricot Sunrise | | ● | ● | ● | ● | | |
| SMALL TREES | | | | | | | | | |
| <i>Acacia willardiana</i> | ✓ | Palo Blanco | | | ● | ● | ● | | |
| <i>Bauhinia blakeana</i> | | Orchid Tree | | | | ● | ● | | |
| <i>Caesalpinia mexicana</i> | ✓ | Mexican Bird Of Paradise | | ● | ● | ● | ● | | |
| <i>Caesalpinia platyloba</i> | ✓ | Palo Colorado | | ● | ● | ● | ● | | |
| <i>Chamaerops humilis</i> | ✓ | Med. Fan Palm | | | | ● | ● | | |
| <i>Eucalyptus erythrocorys</i> | ✓ | Red Cap Gum | | ● | ● | ● | | ● | |
| <i>Lysiloma thornberi</i> | ✓ | Fern Of The Desert | | ● | ● | ● | | | |
| <i>Sophora secundiflora</i> | ✓ | Texas Mountain Laurel | | ● | ● | ● | ● | | |
| OLD TOWN continued | | | | | | | | | |
| SMALL TREES | | | | | | | | | |
| <i>Eucalyptus erythrocorys</i> | ✓ | Red Cap Gum | | ● | ● | ● | | ● | |
| <i>Lysiloma thornberi</i> | ✓ | Fern Of The Desert | | ● | ● | ● | | | |
| <i>Sophora secundiflora</i> | ✓ | Texas Mountain Laurel | | ● | ● | ● | ● | | |
| MEDIUM TREES | | | | | | | | | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|---------------------------------------------|----------------|--------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Acacia smalli farnesiana</i> | ✓ | Podless Sweet Acacia | ● | ● | | ● | | ● | |
| <i>Acacia stenophylla</i> | ✓ | Shoestring Acacia | | ● | ● | | | ● | |
| <i>Cercidium parkinsonia Hybrid</i> | ✓ | Desert Museum | | ● | | | | | |
| <i>Chorisa speciosa</i> | ✓ | Floss Silk Tree | | | | ● | ● | | |
| <i>Eucalyptus spatulata</i> | ✓ | Narrow-Leaf Gimlet | ● | ● | ● | ● | | | |
| <i>Eucalyptus torquata</i> | ✓ | Coral Gum | | | ● | ● | ● | | |
| <i>Geijera parviflora</i> | ✓ | Australian Willow | | | ● | ● | ● | | |
| LARGE TREES | | | | | | | | | |
| <i>Jacaranda mimosifolia</i> | ✓ | Jacaranda | | | ● | ● | ● | ● | |
| <i>Pistacia chinensis</i> | ✓ | Sarah's Radiance Pistache | ● | ● | ● | ● | | ● | |
| <i>Pistacia x 'Red Push'</i> | ✓ | Red Push Pistache | ● | ● | ● | ● | | ● | |
| <i>Ulmus parvifolia</i> | ✓ | Evergreen Elm | ● | ● | ● | ● | | ● | |
| <i>Ulmus parvifolia 'Bosque'</i> | ✓ | Bosque Elm | ● | ● | ● | ● | | ● | |
| <i>Washingtonia robusta</i> | ✓ | Mex. Fan Palm | ● | | | | | | |
| MAIN STREET | | | | | | | | | |
| GROUNDCOVERS, VINES & OTHER | | | | | | | | | |
| <i>Agave murpheyi</i> | ✓ | Murphy's Agave | | ● | ● | ● | | | |
| <i>Agave weberii</i> | ✓ | Weber's Agave | ● | ● | | | | | |
| <i>Aloe</i> | ✓ | Blue Elf | | ● | ● | ● | ● | | |
| <i>Aloe dawei</i> | ✓ | Dawe's Aloe | | ● | ● | ● | ● | | |
| <i>Antigonon leptopus</i> | ✓ | Coral Vine/Queen's Wreath | | | | ● | ● | | |
| <i>Dasylyrion wheeleri</i> | ✓ | Desert Spoon | ● | ● | | | | | |
| <i>Gazania hybrids</i> | ✓ | Harlequin Hybrids | | ● | ● | ● | | | |
| <i>Lantana montevidensis</i> | ✓ | Trailing Lantana | ● | ● | ● | ● | ● | | |
| <i>Opuntia basilaris</i> | ✓ | Beaver Tail Prickly Pear | ● | ● | ● | | | | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|----------------------------------|----------------|-------------------------------------------------------------------------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Opuntia santa-rita</i> | ✓ | Purple Prickly Pear | ● | ● | ● | | | | |
| <i>Podranea ricasoliana</i> | ✓ | Pink Trumpet Vine | | | | ● | ● | | |
| <i>Yucca recurvata</i> | ✓ | | | | ● | ● | ● | | |
| MAIN STREET continued | | | | | | | | | |
| SHRUBS | | | | | | | | | |
| <i>Asclepias subolata</i> | ✓ | Desert Milkweed | | ● | ● | ● | | | |
| <i>Caesalpinia mexicana</i> | ✓ | Mexican Bird of Paradise | ● | ● | ● | | | | |
| <i>Dalea frutescens</i> | ✓ | Black Dalea | ● | ● | | ● | | ● | |
| <i>Dalea pulchra</i> | ✓ | Bush Dalea | ● | ● | | | | ● | |
| <i>Encelia farinosa</i> | ✓ | Brittlebush | ● | ● | ● | | | ● | |
| <i>Guaiacum coulteri</i> | ✓ | Guayacan | ● | ● | ● | ● | | ● | |
| <i>Justica candicans</i> | ✓ | Red Justica | ● | ● | ● | ● | ● | | |
| <i>Lantana</i> | ✓ | Red/Pink Forms | | ● | ● | | | ● | |
| <i>Maytenus phyllanthoides</i> | ✓ | Mangle Dulce | ● | ● | ● | | | | |
| <i>Ruellia brittoniana</i> | ✓ | Ruellia 'Katie' Pink/White Forms | | ● | ● | ● | | ● | |
| <i>Salvia clevelandii</i> | ✓ | Cleveland Sage | ● | ● | ● | | | | |
| <i>Salvia x 'Trident'</i> | ✓ | Trident Sage | | ● | ● | ● | ● | | ● |
| <i>Simmondsia chinensis</i> | ✓ | Jojoba | ● | ● | ● | ● | | | |
| <i>Tecoma stans-v</i> | ✓ | Yellow Bells Crimson Flare Gold Star Orange Jubilee Sierra Apricot Sunrise | | ● | ● | ● | ● | | |
| SMALL TREES | | | | | | | | | |
| <i>Caesalpinia mexicana</i> | ✓ | Mexican Bird of Paradise | | ● | ● | ● | ● | | |
| <i>Caesalpinia platyloba</i> | ✓ | Palo Colorado | | ● | ● | ● | ● | | |
| <i>Chamaerops humilis</i> | ✓ | Med. Fan Palm | | | | ● | ● | | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|----------------|----------------|-------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
|----------------|----------------|-------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|

| | | | | | | | | | |
|--------------------------------|---|-----------------------|--|---|---|---|---|---|--|
| <i>Eucalyptus erythrocorys</i> | ✓ | Red Cap Gum | | ● | ● | ● | | ● | |
| <i>Lysiloma thornberi</i> | ✓ | Fern of the Desert | | ● | ● | ● | | | |
| <i>Sophora secundiflora</i> | ✓ | Texas Mountain Laurel | | ● | ● | ● | ● | | |

MEDIUM TREES

| | | | | | | | | | |
|----------------------------------------|---|-----------------------------|---|---|---|---|---|---|--|
| <i>Acacia smalli-farnesiana</i> | ✓ | Podless Sweet Acacia | ● | ● | | ● | | ● | |
| <i>Cercidium Parkinsonia Hybrid</i> | ✓ | Desert Museum | | ● | | | | | |
| <i>Chorisa speciosa</i> | ✓ | Floss Silk Tree | | | | ● | ● | | |
| <i>Eucalyptus spatulata</i> | ✓ | Narrow Leaf Gimlet | ● | ● | ● | ● | | | |
| <i>Eucalyptus torquata</i> | ✓ | Coral Gum | | | ● | ● | ● | | |
| <i>Geijera parviflora</i> | ✗ | Australian Willow | | | ● | ● | ● | | |

LARGE TREES

| | | | | | | | | | |
|-----------------------------------------|---|--------------------------|---|---|---|---|---|---|--|
| <i>Jacaranda mimosifolia</i> | | Jacaranda | | | ● | ● | ● | | |
| <i>Pistacia x 'Red Push'</i> | ✓ | Red Push Pistache | ● | ● | ● | ● | | ● | |
| <i>Ulmus parvifolia</i> | ✓ | Evergreen Elm | ● | ● | ● | ● | | ● | |
| <i>Ulmus parvifolia 'bosque'</i> | ✓ | Bosque Elm | ● | ● | ● | ● | | ● | |
| <i>Washingtonia robusta</i> | ✓ | Mexican Fan Palm | ● | | | | | | |

FIFTH AVENUE

GROUNDCOVERS, VINES & OTHER

| | | | | | | | | | |
|-------------------------------|---|---------------------------|---|---|---|---|---|--|--|
| <i>Aloe ferox</i> | ✓ | Cape Aloe | | ● | ● | ● | ● | | |
| <i>Aloe marlothii</i> | ✓ | Aloe Berger | | ● | ● | ● | ● | | |
| <i>Antigonon leptopus</i> | ✓ | Coral Vine/Queen's Wreath | | | | ● | ● | | |
| <i>Aquilegia chrysantha</i> | | Golden Columbine | | ● | ● | ● | | | |
| <i>Dasyliion wheeleri</i> | ✓ | Desert Spoon | ● | ● | | | | | |
| <i>Gazania hybrids</i> | ✗ | Harlequin Hybrids | | ● | ● | ● | | | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|-------------------------------------------|----------------|-------------------------------------------------------------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Lantana montevidensis</i> | ✓ | Trailing Lantana | ● | ● | ● | ● | ● | | |
| <i>Podranea ricasoliana</i> | ✓ | Pink Trumpet Vine | | | | ● | ● | | |
| <i>Wedelia trilobata</i> | ✓ | Yellow Dot | | ● | ● | | | ● | |
| <i>Yucca elephantipes</i> | | Spineless Yucca | ● | ● | ● | | | | |
| <i>Yucca recurvata</i> | ✓ | | | | ● | ● | ● | | |
| SHRUBS | | | | | | | | | |
| <i>Bougainvillea</i> | ✓ | Bush Types | | ● | ● | ● | ● | | |
| <i>Callistemon citrinus</i> 'Little John' | ✓ | Dwarf Bottle Brush | ● | ● | ● | ● | ● | | ● |
| <i>Cordia parviflora</i> | ✓ | Little Leaf Cordia | | ● | ● | | ● | | |
| <i>Dalea capitata</i> | ✓ | Golden Dalea | | ● | ● | ● | ● | ● | ● |
| <i>Guaiacum coulteri</i> | ✓ | Guayacan | ● | ● | ● | ● | | | |
| <i>Lantana</i> | ✓ | Red/Pink Forms | | ● | ● | | | ● | |
| <i>Maytenus phyllanthoides</i> | ✓ | Mangle Dulce | ● | ● | ● | | | ● | |
| <i>Muhlenbergia capillaris</i> | ✓ | Pink Mulhy/Gulf Mulhy | ● | ● | ● | ● | | ● | |
| <i>Muhlenbergia emersleyi</i> | ✓ | Bull Grass | ● | ● | ● | ● | | ● | |
| <i>Muhlenbergia rigens</i> | | Deer Grass | | ● | ● | | | ● | |
| <i>Salvia clevelandii</i> | ✓ | Cleveland Sage | ● | ● | ● | | | | |
| <i>Salvia x 'Trident'</i> | ✓ | Trident Sage | | ● | ● | ● | ● | | ● |
| <i>Senna phyllodemia</i> | ✓ | Silver-Leaf Cassia | | ● | ● | ● | | ● | |
| <i>Simmondsia chinensis</i> | ✓ | Jojoba | ● | ● | ● | ● | | | |
| <i>Tecoma stans</i> v. | ✓ | Yellow-Bells Crimson Flare Gold Star Orange Jubilee Sierra Apricot Sunrise | | ● | ● | ● | ● | | |
| SMALL TREES | | | | | | | | | |

RECOMMENDED PLANTS FOR DOWNTOWN

| *Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs. | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
| <i>Acacia willardiana</i> | ✓ | Palo Blanco | | | ● | ● | ● | | |
| <i>Bauhinia blakeana</i> | | Orchid Tree | | | | ● | ● | | |
| <i>Caesalpinia platyloba</i> | ✓ | Palo Colorado | | ● | ● | ● | ● | | |
| <i>Chamaerops humilis</i> | ✓ | Med. Fan Palm | | | | ● | ● | ● | |
| <i>Lysiloma thornberi</i> | ✓ | Fern Of The Desert | | ● | ● | ● | | | |
| <i>Sophora secundiflora</i> | ✓ | Texas Mountain Laurel | | ● | ● | ● | ● | | |
| FIFTH AVENUE continued | | | | | | | | | |
| MEDIUM TREES | | | | | | | | | |
| <i>Cercidium Parkinsonia Hybrid</i> | ✓ | Desert Museum | | ● | | | | | |
| <i>Chorisa speciosa</i> | ✓ | Floss Silk Tree | | | | ● | ● | | |
| <i>Eucalyptus spatulata</i> | ✓ | Narrow-Leaf Gimlet | ● | ● | ● | ● | | | |
| <i>Eucalyptus torquata</i> | ✓ | Coral Gum | | | ● | ● | ● | | |
| <i>Geijera parviflora</i> | ✓ | Australian Willow | | | ● | ● | ● | | |
| LARGE TREES | | | | | | | | | |
| <i>Dalbergia sisso</i> | ✓ | Sissoo Tree | ● | ● | ● | | | ● | |
| <i>Eucalyotus citriodora</i> | ✓ | Lemon Scented Gum | ● | ● | ● | ● | | | |
| <i>Eucalyptus salmonoploia</i> | ✓ | Salmon Gum | ● | ● | ● | | | | |
| <i>Jacaranda mimosifolia</i> | | Jacaranda | | | ● | ● | ● | | |
| <i>Ulmus parvifolia</i> | ✓ | Evergreen Elm | ● | ● | ● | ● | | ● | |
| <i>Ulmus parvifolia 'Bosque'</i> | ✓ | Bosque Elm | ● | ● | ● | ● | | ● | |
| <i>Washingtonia robusta</i> | ✓ | Mex. Fan Palm | ● | | | | | | |
| MARSHALL WAY | | | | | | | | | |
| GROUNDCOVERS, VINES & OTHER | | | | | | | | | |
| <i>Aloe ferox</i> | ✓ | Cape Aloe | | ● | ● | ● | ● | | |
| <i>Aloe marlothii</i> | ✓ | A. Berger | | ● | ● | ● | ● | | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|--------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Antigonon leptopus</i> | ✓ | Coral Vine/Queen's Wreath | | | | ● | ● | | |
| <i>Dasyliiron wheeleri</i> | ✓ | Desert Spoon | ● | ● | | | | | |
| <i>Gazania hybrids</i> | ✓ | Harlequin Hybrids | | ● | ● | ● | | | |
| <i>Lantana montevidensis</i> | ✓ | Trailing Lantana | ● | ● | ● | ● | ● | | |
| <i>Podranea ricasoliana</i> | ✓ | Pink Trumpet Vine | | | | ● | ● | | |
| <i>Yucca recurvata</i> | ✓ | | | | ● | ● | ● | | |
| SHRUBS | | | | | | | | | |
| <i>Bougainvillea</i> | ✓ | Bush Types | | ● | ● | ● | ● | | |
| <i>Callistemon citrinus 'Little John'</i> | ✓ | Dwarf Bottle Brush | | ● | ● | ● | ● | | ● |
| <i>Convolvulus cneorum</i> | ✓ | Bush Morning Glory | ● | ● | ● | ● | ● | | |
| <i>Eremophila maculata</i> | ✓ | Emu Bush-Valentine | | ● | ● | ● | | ● | |
| <i>Guaiacum coulteri</i> | ✓ | Guayacan | ● | ● | ● | ● | | | |
| <i>Justica sonorae</i> | ✓ | Sonoran Honeysuckle | | ● | ● | ● | | ● | |
| <i>Maytenus phyllanthoides</i> | ✓ | Mangle Dulce | ● | ● | ● | | | | |
| <i>Poliomintha maderensis</i> | | Mexican Oregano, Lavender Spice | | ● | ● | | | | |
| MARSHALL WAY continued | | | | | | | | | |
| SHRUBS continued | | | | | | | | | |
| <i>Salvia clevelandii</i> | ✓ | Cleveland Sage | ● | ● | ● | | | | |
| <i>Salvia x 'Trident'</i> | ✓ | Trident Sage | | ● | ● | ● | ● | | ● |
| <i>Simmondsia chinensis</i> | ✓ | Jojoba | ● | ● | ● | ● | | | |
| <i>Tecoma stans v.</i> | ✓ | Yellow Bells Crimson Flare Gold Star Orange Jubilee Sierra Apricot Sunrise | | ● | ● | ● | ● | | |
| SMALL TREES | | | | | | | | | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|---------------------------------------------------|----------------|-------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Acacia willardiana</i> | ✓ | Palo Blanco | | | ● | ● | ● | | |
| <i>Bauhinia blakeana</i> | | Orchid Tree | | | | ● | ● | | |
| <i>Caesalpinia platyloba</i> | ✓ | Palo Colorado | | ● | ● | ● | ● | | |
| <i>Chamaerops humilis</i> | ✓ | Med. Fan Palm | | | | ● | ● | ● | |
| <i>Lysiloma thornberi</i> | ✓ | Fern Of The Desert | | ● | ● | ● | | | |
| <i>Sophora secundiflora</i> | ✓ | Texas Mountain Laurel | | ● | ● | ● | ● | | |
| MEDIUM TREES | | | | | | | | | |
| <i>Cercidium parkinsonia hybrid</i> | ✓ | Desert Museum | | ● | | | | | |
| <i>Chorisa speciosa</i> | ✓ | Floss Silk Tree | | | | ● | ● | | |
| <i>Eucalyptus spatulata</i> | ✓ | Narrow-Leaf Gimlet | ● | ● | ● | ● | | | |
| <i>Eucalyptus torquata</i> | ✓ | Coral Gum | | | ● | ● | ● | | |
| <i>Geijera parviflora</i> | ✓ | Australian Willow | | | ● | ● | ● | | |
| LARGE TREES | | | | | | | | | |
| <i>Dalbergia sisso</i> | ✓ | Sissoo Tree | ● | ● | ● | | | ● | |
| <i>Eucalyptus citriodora</i> | ✓ | Lemon Scented Gum | ● | ● | ● | ● | | | |
| <i>Eucalyptus salmonoploia</i> | ✓ | Salmon Gum | ● | ● | ● | | | | |
| <i>Jacaranda mimosifolia</i> | | Jacaranda | | | ● | ● | ● | | |
| <i>Ulmus parvifolia</i> | ✓ | Evergreen Elm | ● | ● | ● | ● | | ● | |
| <i>Ulmus parvifolia 'Bosque'</i> | ✓ | Bosque Elm | ● | ● | ● | ● | | ● | |
| <i>Washingtonia robusta</i> | ✓ | Mexican Fan Palm | ● | | | | | | |
| DRINKWATER BOULEVARD | | | | | | | | | |
| GROUNDCOVERS, VINES & OTHER | | | | | | | | | |
| <i>Dasyliirion longissima</i> | ✓ | Mexican Grass Tree | ● | ● | | | | ● | |
| <i>Hesperaloe parviflora</i> | ✓ | Red Yucca | ● | ● | ● | ● | | ● | |
| <i>Hesperaloe parviflora 'Brakelights'</i> | ✓ | Brakelights hesperaloe | ● | ● | ● | ● | | ● | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|---------------------------------------------------|----------------|--------------------------------------------------------------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Lotus berthelotii</i> | ✓ | Parrot's-Beak | ● | ● | ● | ● | | | |
| <i>Nolina matapensis</i> | ✓ | Tree Bear Grass | ● | ● | | | | ● | |
| <i>Oenothera berlandieri</i> | ✓ | Mexican Evening Primrose | ● | ● | ● | ● | ● | ● | |
| <i>Penstemon spp.</i> | ✓ | Bearded Tongue | ● | ● | ● | | | | |
| DRINKWATER BOULEVARD continued | | | | | | | | | |
| GROUNDCOVERS, VINES & OTHER continued | | | | | | | | | |
| <i>Verbena rigida</i> | ✓ | Sandpaper Rigida | ● | ● | ● | | | ● | |
| <i>Yucca rupicola</i> | ✓ | Twisted Yucca | ● | ● | ● | | | ● | |
| SHRUBS | | | | | | | | | |
| <i>Bougainvillea</i> | ✓ | Bush Types | | ● | ● | ● | ● | ● | |
| <i>Caesalpinia pulcherimma</i> | ✓ | Red Bird Of Paradise | ● | ● | ● | ● | | | |
| <i>Cordia parviflora</i> | ✓ | Little-Leaf Cordia | | ● | ● | | ● | ● | |
| <i>Dalea pulchra</i> | ✓ | Bush Dalea | ● | ● | | | | ● | |
| <i>Lantana camara</i> | ✓ | Lantana, Shrub Verbena | ● | ● | ● | ● | ● | ● | |
| <i>Leucophyllum langmaniae</i> | ✓ | Cinnamon Sage | ● | ● | ● | | | ● | |
| <i>Leucophyllum langmaniae v. 'Lynn's Legacy'</i> | ✓ | Lynn's Legacy Sage | ● | ● | ● | | | ● | |
| <i>Ruellia peninsularis</i> | ✓ | Baja Ruellia | ● | ● | ● | ● | | | |
| <i>Salvia leucantha</i> | ✓ | Purple Mexican Bush Sage | | | ● | ● | ● | | |
| <i>Tecoma v.</i> | ✓ | Organ Jubilee Crimson Flare Gold Star Orange Jubilee Sierra Apricot Sunrise | | ● | ● | ● | ● | | |
| SMALL TREES (none) | | | | | | | | | |
| MEDIUM TREES | | | | | | | | | |
| <i>Prosopis alba</i> | ✓ | Argentine Mesquite | ● | ● | ● | | | ● | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|--------------------------------------------|----------------|-----------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Prosopis chilensis</i> | ✓ | Chilean Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa</i> 'Maverick' | ✓ | Maverick Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa</i> | ✓ | Honey Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis x 'Phoenix'</i> | ✓ | Phoenix Mesquite | ● | ● | ● | | | ● | |
| LARGE TREES | | | | | | | | | |
| <i>Eucalyptus citriodora</i> | ✓ | Lemon Scented Gum | ● | ● | ● | ● | | ● | |
| <i>Eucalyptus papuana</i> | ✓ | Ghost Gum | ● | ● | ● | | | | |
| <i>Eucalyptus salmonoploia</i> | ✓ | Salmon Gum | ● | ● | ● | | | | |
| <i>Phoenix dactylifera</i> | ✓ | Date Palm | ● | | | | | | |
| <i>Washingtonia filifera</i> | ✓ | California Fan Palm | ● | | | | | | |
| GOLDWATER BOULEVARD | | | | | | | | | |
| GROUNDCOVERS, VINES & OTHER | | | | | | | | | |
| <i>Baileya multiradiata</i> | ✓ | Desert Marigold | ● | ● | ● | | | | |
| <i>Dasyllirion acrotriche</i> | ✓ | Green Desert Spoon | ● | ● | | | | ● | |
| <i>Hesperaloe parviflora</i> | ✓ | Red Yucca | ● | ● | ● | ● | | ● | |
| <i>Hesperaloe parviflora</i> 'Brakelights' | ✓ | Brakelights Hesperaloe | ● | ● | ● | ● | | ● | |
| <i>Yucca aloifolia</i> | ✓ | Spanish Bayonet | | | ● | ● | ● | ● | |
| <i>Yucca baccata</i> | ✓ | Banana Yucca | ● | ● | | | | | |
| GOLDWATER BOULEVARD continued | | | | | | | | | |
| SHRUBS | | | | | | | | | |
| <i>Caesalpinia pulcherrima</i> | ✓ | Red Bird Of Paradise | ● | ● | ● | ● | | ● | |
| <i>Calliandra californica</i> | ✓ | Baja Fairy Duster | ● | ● | ● | ● | | ● | |
| <i>Calliandra x 'Sierra Star'</i> | ✓ | Sierra Star Fairy Duster | ● | ● | ● | ● | | ● | |
| <i>Lantana camara</i> | ✓ | Lantana, Shrub Verbena | ● | ● | ● | ● | ● | ● | |
| <i>Leucophyllum langmaniae</i> v | ✓ | Cinnamon Lynn's Legacy Sage | ● | ● | ● | | | ● | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|-----------------------------------------|----------------|--------------------------------------------------------------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>'Lynn's Legacy'</i> | | | | | | | | | |
| <i>Ruellia peninsularis</i> | ✓ | Baja Ruellia | ● | ● | ● | ● | | | |
| <i>Salvia leucantha</i> | ✓ | Purple Mexican Bush Sage | | | ● | ● | ● | | |
| <i>Tecoma v.</i> | ✓ | Organ Jubilee Crimson Flare Gold Star Orange Jubilee Sierra Apricot Sunrise | | ● | ● | ● | ● | | |
| SMALL TREES (none) | | | | | | | | | |
| MEDIUM TREES | | | | | | | | | |
| <i>Prosopis alba</i> | ✓ | Argentine Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis chilensis</i> | ✓ | Chilean Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa</i> | ✓ | Honey Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa 'Maverick'</i> | ✓ | Maverick Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis x 'Phoenix'</i> | ✓ | Phoenix Mesquite | ● | ● | ● | | | ● | |
| LARGE TREES | | | | | | | | | |
| <i>Eucalyptus microtheca</i> | ✓ | Coolibah | ● | ● | | | | ● | |
| <i>Eucalyptus papuana</i> | ✓ | Ghost Gum | ● | ● | ● | | | | |
| <i>Phoenix dactylifera</i> | ✓ | Date Palm | ● | | | | | | |
| <i>Washingtonia filifera</i> | ✓ | California Fan Palm | ● | | | | | | |
| CAMELBACK ROAD | | | | | | | | | |
| GROUNDCOVERS, VINES & OTHER | | | | | | | | | |
| <i>Dalea greggii</i> | ✓ | Trailing Indigo Bush | ● | ● | ● | | | ● | |
| <i>Dalea capitata v. 'Sierra Gold'</i> | ✓ | Sierra Gold | ● | ● | ● | | | ● | |
| <i>Dasyllirion longissima</i> | ✓ | Mexican Grass Tree | ● | ● | | | | ● | |
| <i>Hesperaloe parviflora</i> | ✓ | Red Yucca | ● | ● | ● | ● | | ● | |
| <i>Lantana montevidensis</i> | ✓ | Trailing Lantana | ● | ● | ● | ● | ● | | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Lotus berthelotii</i> | ✓ | Parrot's-Beak | ● | ● | ● | ● | | | |
| <i>Nolina matapensis</i> | ✓ | Tree Bear Grass | ● | ● | | | | ● | |
| <i>Oenothera berlandieri</i> | ✓ | Mexican Evening Primrose | ● | ● | ● | ● | ● | ● | |
| <i>Penstemon spp.</i> | ✓ | Bearded Tongue | ● | ● | ● | | | | |
| <i>Verbena rigida</i> | ✓ | Sandpaper Rigida | ● | ● | ● | | | ● | |
| <i>Yucca rupicola</i> | ✓ | Twisted Yucca | ● | ● | ● | | | | |
| CAMELBACK ROAD continued | | | | | | | | | |
| SHRUBS | | | | | | | | | |
| <i>Calliandra californica</i> | ✓ | Baja Fairy Duster | ● | ● | ● | ● | | ● | |
| <i>Calliandra x 'Sierra Star'</i> | ✓ | Sierra Star Fairy Duster | ● | ● | ● | ● | | ● | |
| <i>Dalea pulchra</i> | ✓ | Bush Dalea | ● | ● | | | | ● | |
| <i>Lantana camara</i> | ✓ | Lantana Shrub | ● | ● | ● | ● | ● | ● | ● |
| <i>Leucophyllum candidum</i> | ✓ | Violet Silverleaf | ● | ● | ● | | | | |
| <i>Leucophyllum langmaniae v. 'Lynn's Legacy'</i> | ✓ | Lynn's Legacy Sage | ● | ● | ● | | | | |
| <i>Tecoma stans v.</i> | ✓ | Yellow Bells Crimson Flare Gold Star Orange Jubilee Sierra Apricot Sunrise | | ● | ● | ● | ● | | |
| SMALL TREES | | | | | | | | | |
| <i>Bauhinia lunarioides</i> or <i>Bauhinia congesta</i> | ✓ | Chihuahuan Orchid Shrub | | ● | ● | ● | ● | | |
| <i>Eucalyptus erythrocorys</i> | ✓ | Red Cap Gum | | ● | ● | ● | | | |
| MEDIUM TREES | | | | | | | | | |
| <i>Acacia smallii farnesiana v. 'Sierra Sweet'</i> | ✓ | Podless Sweet Acacia | ● | ● | | ● | | ● | |
| <i>Cercidium praecox</i> or <i>Parkinsonia praecox</i> | ✓ | Palo Brea | ● | ● | ● | | | ● | |
| <i>Parkinsonia x 'Desert Museum'</i> | ✓ | Desert Museum Palo Verde | ● | ● | ● | | | ● | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|--------------------------------------------|----------------|------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Eucalyptus spatulata</i> | ✓ | Narrow-Leaf Gimlet | ● | ● | ● | ● | | | |
| <i>Eucalyptus torquata</i> | ✓ | Coral Gum | | | ● | ● | ● | ● | |
| <i>Prosopis alba</i> | ✓ | Argentine Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis chilensis</i> | ✓ | Chilean Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa</i> | ✓ | Honey Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa</i> 'Maverick' | ✓ | Maverick Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis x</i> 'Phoenix' | ✓ | Phoenix Mesquite | ● | ● | ● | | | ● | |
| LARGE TREES | | | | | | | | | |
| <i>Eucalyptus microtheca</i> | ✓ | Coolibah | ● | ● | | | | | |
| <i>Jacaranda mimosifolia</i> | | Jacaranda | | | ● | ● | ● | | |
| <i>Phoenix dactylifera</i> | ✓ | Date Palm | ● | | | | | | |
| <i>Washingtonia robusta</i> | ✓ | Mex. Fan Palm | ● | | | | | | |
| SCOTTSDALE ROAD | | | | | | | | | |
| GROUNDCOVERS, VINES & OTHER | | | | | | | | | |
| <i>Dasyllirion longissima</i> | ✓ | Mexican Grass Tree | ● | ● | | | | ● | |
| <i>Hesperaloe parviflora</i> | ✓ | Red Yucca | ● | ● | ● | ● | | ● | |
| <i>Hesperaloe parviflora</i> 'Brakelights' | ✓ | Brakelights Hesperaloe | ● | ● | ● | ● | | ● | |
| <i>Lotus berthelotii</i> | ✓ | Parrot's Beak | ● | ● | ● | ● | | | |
| <i>Nolina matapensis</i> | ✓ | Tree Bear Grass | ● | ● | | | | ● | |
| <i>Penstemon</i> spp. | ✓ | Bearded Tongue | ● | ● | ● | | | | |
| <i>Verbena rigida</i> | ✓ | Sandpaper Rigida | ● | ● | ● | | | ● | |
| <i>Yucca rupicola</i> | ✓ | Twisted Yucca | ● | ● | ● | | | | |
| SCOTTSDALE ROAD continued | | | | | | | | | |
| SHRUBS | | | | | | | | | |

RECOMMENDED PLANTS FOR DOWNTOWN

| *Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs. | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
| <i>Callistemon citrinus</i> 'Little John' | ✓ | Dwarf Bottle Brush | ● | ● | ● | ● | ● | | ● |
| <i>Guaiacum coulteri</i> | ✓ | Guayacan | ● | ● | ● | ● | | | |
| <i>Leucophyllum candidum</i> | ✓ | Violet Silverleaf | ● | ● | ● | | | | |
| SMALL TREES | | | | | | | | | |
| <i>Bauhinia lunarioides</i> or <i>Bauhinia congesta</i> | ✓ | Chihuahuan Orchid Shrub | | ● | ● | ● | ● | | |
| <i>Caesalpinia platyloba</i> | ✓ | Palo Colorado | | ● | ● | ● | ● | | |
| MEDIUM TREES | | | | | | | | | |
| <i>Acacia farnesiana</i> v. <i>Sierra Sweet</i> | ✓ | Podless Sweet Acacia | ● | ● | | ● | | ● | |
| <i>Cercidium Parkinsonia Hybrid</i> | ✓ | Desert Museum | | ● | | | | ● | |
| <i>Cercidium praecox</i> or <i>Parkinsonia praecox</i> | ✓ | Palo Brea | ● | ● | ● | | | ● | |
| <i>Prosopis alba</i> | ✗ | Argentine Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis chilensis</i> | ✗ | Chilean Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa</i> | ✓ | Honey Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa</i> 'Maverick' | ✓ | Maverick Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis x 'Phoenix'</i> | ✓ | Phoenix Mesquite | ● | ● | ● | | | ● | |
| LARGE TREES | | | | | | | | | |
| <i>Eucalyptus microtheca</i> | ✗ | Coolibah | ● | ● | | | | ● | |
| <i>Eucalyptus papuana</i> | ✓ | Ghost Gum | ● | ● | ● | | | | |
| <i>Washingtonia robusta</i> | ✓ | Mexican Fan Palm | ● | | | | | | |
| INDIAN SCHOOL ROAD | | | | | | | | | |
| GROUNDCOVERS, VINES & OTHER | | | | | | | | | |
| <i>Baileya multiradiata</i> | ✓ | Desert Marigold | ● | ● | ● | | | ● | |
| <i>Dalea greggii</i> | ✓ | Trailing Indigo Bush | ● | ● | ● | | | ● | |
| <i>Dalea capitata</i> v. 'Sierra Gold' | ✓ | Sierra Gold | ● | ● | ● | | | ● | |

RECOMMENDED PLANTS FOR DOWNTOWN

| *Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs. | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
| <i>Dasyliirion acrotriche</i> | ✓ | Green Desert Spoon | ● | ● | | | | ● | |
| <i>Hesperaloe parviflora</i> | ✓ | Red Yucca | ● | ● | ● | ● | | ● | |
| <i>Hesperaloe parviflora</i> v. 'Brakelights' | ✓ | Brakelights Hesperaloe | ● | ● | ● | ● | | ● | |
| <i>Penstemon</i> spp. | ✓ | Bearded Tongue | ● | ● | ● | | | | |
| <i>Yucca aloifolia</i> | ✓ | Spanish Bayonet | | | ● | ● | ● | ● | |
| <i>Yucca baccata</i> | ✓ | Banana Yucca | ● | ● | | | | ● | |
| SHRUBS | | | | | | | | | |
| <i>Cordia parviflora</i> | ✓ | Little-Leaf Cordia | | ● | ● | | ● | | |
| <i>Leucophyllum candidum</i> | ✓ | Violet Silverleaf | ● | ● | ● | | | ● | |
| <i>Ruellia peninsularis</i> | ✓ | Baja Ruellia | ● | ● | ● | ● | | | |
| <i>Salvia leucantha</i> | ✓ | Purple Mexican Bush Sage | | | ● | ● | ● | | |
| <i>Tecoma stans</i> | ✓ | Yellow Bells | | ● | ● | ● | ● | | |
| <i>Tecoma</i> v. | ✓ | Crimson Flare Gold Star Orange Jubilee Sierra Apricot Sunrise | | ● | ● | ● | ● | | |
| INDIAN SCHOOL ROAD continued | | | | | | | | | |
| SMALL TREES | | | | | | | | | |
| <i>Acacia rigidula</i> | ✓ | Blackbrush Acacia | ● | ● | | | | | |
| <i>Caesalpinia platyloba</i> | ✓ | Palo Colorado | | ● | ● | ● | ● | ● | |
| <i>Lysiloma thornberi</i> | ✓ | Fern Of The Desert | | ● | ● | ● | | ● | |
| MEDIUM TREES | | | | | | | | | |
| <i>Acacia smalli-farnesiana</i> v. 'Sierra Sweet' | ✓ | Podless Sweet Acacia | ● | ● | | ● | | ● | |
| <i>Cercidium praecox</i> or <i>Parkinsonia praecox</i> | ✓ | Palo Brea | ● | ● | ● | | | ● | |
| <i>Parkinsonia</i> x 'Desert Museum' | ✓ | Desert Museum Palo Verde | ● | ● | | ● | | ● | |

RECOMMENDED PLANTS FOR DOWNTOWN

*Plants listed on Arizona Department of Water Resources lists of native, drought tolerant and low water-use plants, trees and shrubs.

| BOTANICAL NAME | LOW WATER USE* | COMMON NAME | MAJOR STREET | LOCAL STREET | PEDESTRIAN STREET | PATIO / PLAZA | COURTYARD | PARKING LOT | ENTRYWAY |
|----------------------------------------------|----------------|---------------------------|--------------|--------------|-------------------|---------------|-----------|-------------|----------|
| <i>Eucalyptus spatulata</i> | ✓ | Narrow-Leaf Gimlet | ● | ● | ● | ● | | | |
| <i>Eucalyptus torquata</i> | ✓ | Coral Gum | | | ● | ● | ● | ● | |
| <i>Prosopis alba</i> | ✓ | Argentine Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis chilensis</i> | ✓ | Chilean Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa</i> | ✓ | Honey Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis glandulosa (Maverick)</i> | ✓ | Maverick Mesquite | ● | ● | ● | | | ● | |
| <i>Prosopis x 'Phoenix'</i> | ✓ | Phoenix Mesquite | ● | ● | ● | | | ● | |
| LARGE TREES | | | | | | | | | |
| <i>Dalbergia sisso</i> | ✓ | Sissoo Tree | ● | ● | ● | | | ● | |
| <i>Eucalyptus papuana</i> | ✓ | Ghost Gum | ● | ● | ● | | | | |
| <i>Washingtonia filifera</i> | ✓ | California Fan Palm | ● | | | | | | |
| <i>Washingtonia robusta</i> | ✓ | Mexican Fan Palm | ● | | | | | | |

PARKS

This section provides guidance for developing park master plans, identifies their review and approval process, and provides requirements for park designs. The design review of each park is done on an individual basis. These design standards and policies help assure that Scottsdale's parks and recreation facilities provide quality and safe experiences for its citizens.

DS&PM 2014 UPDATE NOTES OCTOBER 28, 2014:

The revisions shown in red bold font (new language) and red bold font strike-through (deleted language) were made after publishing for the September 15, 2014 Open House meeting and public review.

- **There was no public input on this document.**
- **The revisions shown are staff review revisions.**

DRAFT

PARKS

GENERAL INFORMATION

8-2.000

A. Neighborhood Parks

Neighborhood Parks provide primary park services and facilities, which are easily accessible and available to local residents. They are typically between 7 and 20 acres in size, not intended for large group use, and serve residents from 1 block away up to an entire neighborhood. Neighborhood parks are preferably located adjacent to elementary schools or neighborhood centers.

B. Community Parks

Community Parks provide a full range of centralized recreational activities for major portions of the city with capabilities of accommodating large group reservations. Generally, these parks feature a community center building designed to meet multi-generational recreation needs. They are typically between 20 and 80 acres in size, serving several neighborhoods or approximately 10,000 to 25,000 people. Community parks are preferably located in the center of several neighborhoods, adjacent to a middle school or high school where possible.

C. Specialty and Regional Parks

Specialty and Regional Parks provide specialized facilities and preserve significant unique features of the community, including environmentally sensitive areas. The size of these parks will vary as will the specific number of people served by these parks; however, the parks should be oriented to serve the entire community and beyond. Park locations will also vary depending on the dynamics of the park, such as park theme or mountain park.

PARK LOCATIONS

8-2.001

A. The General Plan

The Public Facility Element of the General Plan for Scottsdale provides the basis for identifying locations for the parks, refer to www.ScottsdaleAZ.gov/generalplan. A copy of the Public Facility Element is available at the One Stop Shop.

B. Community Services Facilities Master Plan

The Community Services Facilities Master Plan assists in defining park policy, delineates future park needs by acreage and facilities, and locates parks based on demographics. The Master Plan specifies standards to guide park development in Scottsdale. A copy of the Community Services Facilities Master Plan can be obtained on the City of Scottsdale internet site at:
www.ScottsdaleAZ.gov/Assets/documents/departments/d35d115pnullParksAndRec.pdf.

PARK MASTER PLANS

8-2.100

A master plan is developed for each park and the Public Facility Element of the General Plan, in conjunction with the Community Services Facilities Master Plan, helps guide the planning of facilities for each park.

MUNICIPAL USE MASTER PLAN APPROVAL PROCESS

8-2.101

1. Planning Consultant/Parks & Recreation Team
 - Prepares alternative development concepts
 - Conducts public input meetings with neighborhood and community
 - Develops a preliminary master development plan for presentation
2. Parks & Recreation Commission
 - Conducts a public hearing to review and recommend on the preliminary park master plan
3. Planning Consultant/Parks & Recreation Team
 - Prepares Final Park Master Plan from Parks & Recreation Commission recommendation
 - Makes application for municipal use permit to Planning Commission
4. Parks & Recreation Commission
 - Reviews the final park master plan and recommends action (approval or otherwise) to the Planning Commission and the City Council
5. Planning Commission
 - Reviews the municipal use permit and recommends action (approval or otherwise) to City Council, based on the recommended Final Park Master Plan
6. City Council
 - Reviews and approves, or rejects, the Final Park Master Plan and municipal use permit
7. Approved Park Master Plan

PARK DESIGN

8-2.200

Park designs must be approved by the Development Review Board before any development occurs on the park site (after City Council Master Plan approval). Whenever possible, parks should be located adjacent to school sites to create a fluid joint use between the park and school facilities.

WALKWAYS

8-2.201

1. Designated multiuse paths will be a minimum of 12 feet in width. Refer to Section 5-7.000 and Section 5-8.000 for shared-use paths and bikeways.
2. Sidewalks utilized specifically for pedestrians will be a minimum of 8 feet in width.
3. All multiuse paths will be located a safe distance away from active courts or fields.
4. Where concrete is used, it will be MAG “A” spec, 5 inch slump 3,000 psi, 6 inch deep or 4 inch deep with 6 inch turndowns. Curb ramps will be constructed in accordance with MAG Details.
5. Where concrete or asphalt is not used, walkways will be surfaced with stabilized decomposed granite.
6. Sidewalk slopes and cross slopes will comply with ADA standards, unless technically infeasible.
7. All walkways leading to, into, and throughout sporting areas will be ADA compliant unless to do so would fundamentally alter the nature of the facility/activity.

DRINKING FOUNTAINS

8-2.202

1. Ensure drinking fountains meet ADA guidelines by having a wheelchair accessible fountain installed at 34 inches AFF, (measured to the deck), and a standard height drinking fountain installed at 40 inches AFF. Do not construct drinking fountains with ferrous metals whether protected by galvanization, paint, or otherwise. Drinking fountains within 100 feet of playgrounds will have assessable sand traps installed on the drains. It is more desirable to install drinking fountains on a building than installing free-standing units. Locate chillers within 24 inches of the drinking fountains, and no recirculating pumps are allowed. Use copper water piping for the drinking fountains, and insulate chilled water tubing.
2. Install chilled drinking fountain(s) near the playground, but preferably not closer than 25 feet due to problems encountered with sand. In addition to the above, install a child-height drinking fountain at 28 inches AFF.

PLAYGROUNDS

8-2.203

1. Playgrounds must meet or exceed all current U.S. Consumer Products Safety Commission (CPSC), American Society of Test/Measurement (ASTM), Americans with Disabilities Act (ADA) and International Play Equipment Manufacturers Association (IPEMA) standards.
2. Upon completion/installation of new playground equipment, the installation will be inspected by a third party National Playground Safety Inspector (NPSI).
3. Ensure that playground equipment/play opportunities are available for preschool children (2 - 5 years old) and school-age children (5 - 12 years old).
4. Metal playground slides are unacceptable.
5. Install and/or use appropriate playground elements, equipment and materials to meet ADA access standards for accessible playgrounds.
6. Make sure that playground surface safety zones consist of double washed premium sand, with a minimum depth of 12 inches.
7. Make certain that there is some type of shade protection either from adjacent ramadas, (16 feet x 16 feet minimum) and/or non-deciduous trees on the perimeter of the playground (30 inch box).

SOFTBALL/BASEBALL FIELDS

8-2.204

1. Ensure that all fields are lighted to meet all current Illuminating Engineering Society (IES) standards, and utilize effective shielding systems to reduce spill light off play areas, such as the MUSCO Control Link Central series.
2. Construct infields with an approved non-toxic organic binder, red color mix material especially prepared for ballfields. Material will be a minimum of 4 inches in compacted depth. Bind by crushed aggregate screenings down to 1/4 inch or 3/8 inch fine particles.
3. Fill home plate and mounds with a minimum of 2 inches of fine grey brick clay incorporated at a uniform rate with established infield red mix. Infields and outfield turf areas will consist of a Tif Hybrid Bermuda Grass.
4. When grading playing fields, adhere to Sports Fields Manual for Design and Construction standards and requirements for design and construction.

- 5. Finish grade for sports fields must be no greater than 1% in slope.
- 6. Outfield warning tracks are not to be included in ballfield designs.

SPORTS FIELD LIGHTINING

8-2.205

Lighting shall be the following:

- Energy efficient and cost effective to operate.
- Proactively monitored to detect fixture outages.
- Installed with remote on/off controls.
- Designed such that the light levels and the entire system is guaranteed for a period of 25 years.
- Designed so playing surfaces will have guaranteed average constant light level and uniformity as follows:

| Area of Lighting | Average Constant Light Levels | Max. to Min. Uniformity Ratio |
|-------------------------|--------------------------------------|--------------------------------------|
| Infield | 50 foot-candles | 2.0 to 1.0 |
| Outfield | 30 foot-candles | 2.5 to 1.0 |
| Soccer/Football | 30 foot-candles | 2.5 to 1.0 |

Life cycle costs for the lighting system shall be calculated and include luminaries energy consumption, cost of maintenance, spot re-lamping, Group re-lamping all luminaires and total 25 year Life Cycle operating Cost.

Lighting system will not produce excessive spill-light or glare. Maximum vertical foot-candles for each field shall be determined per project with the primary goal to have levels as low as possible so as not to negatively impact neighbors with excessive spill-light or glare. No luminaires will be aimed less than 25 degrees below horizontal. All luminaires with have both internal and external shielding for glare and spill light control.

All poles will include a factory installed mounting bracket for security lights 20ft up the pole and infield poles will have a factory provided electrical outlet enclosure mounted on the lower portions of the pole.

Pole heights will vary depending on field size and location. Poles in general will be between 60 feet to 80 feet. General Pole locations are as follows for different fields.

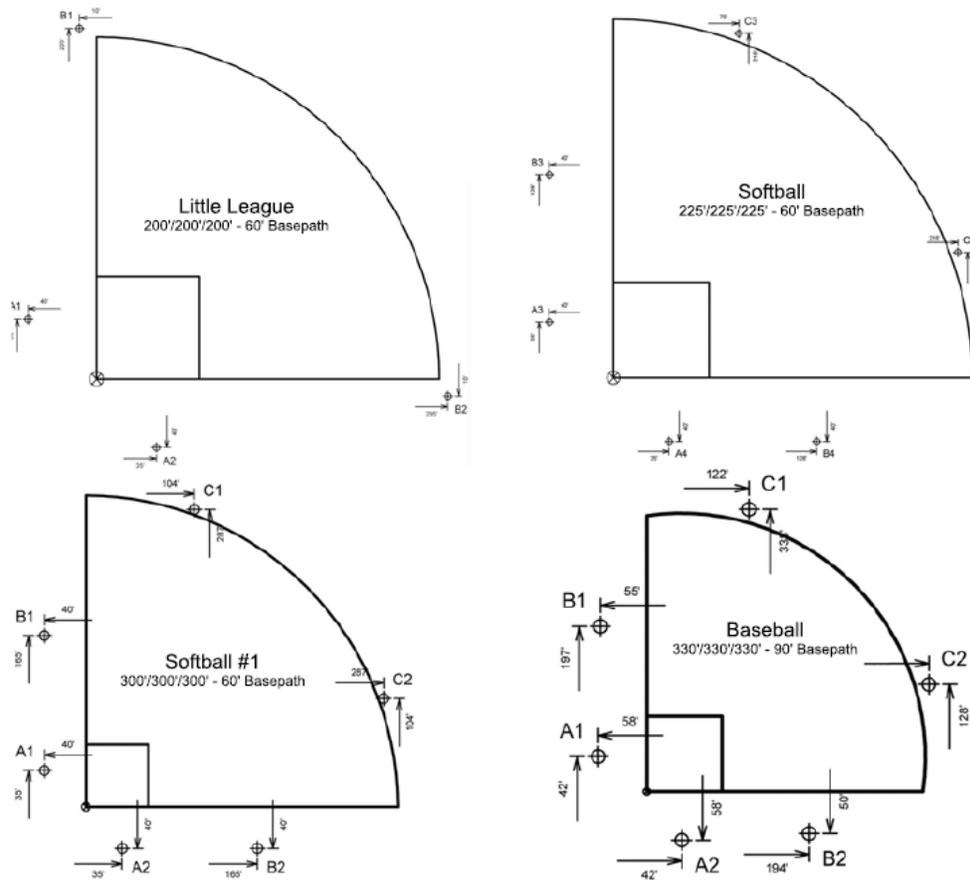


FIGURE 8.2-1 LITTLE LEAGUE, SOFTBALL, AND BASEBALL POLE LOCATIONS

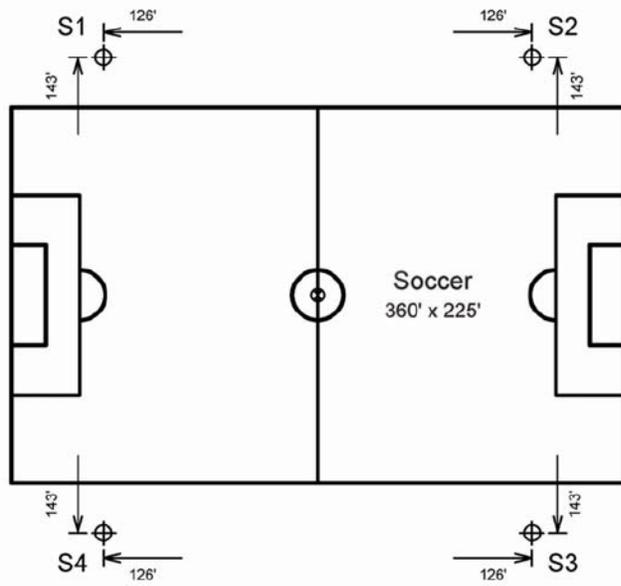


FIGURE 8.2-2 SOCCER POLE LOCATIONS

Lighting system shall consist of the following:

- Galvanized steel poles and cross arm assembly
- Pre-stressed concrete base embedded in concrete backfill.
- All luminaires shall be constructed with a die-cast aluminum housing to protect the luminaire reflector system.
- Manufacturer will relocate all ballasts and supporting electrical equipment in aluminum enclosures mounted approximately 10 feet above grade. The enclosures shall include ballast, capacitor and fusing for each luminaire. Safety disconnect per circuit for each pole structure will be located in the enclosure.
- Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections.
- Controls and Monitoring Cabinet to provide on-off control and monitoring of the lighting system constructed of NEMA Type 4 aluminum. Communication method shall be provided by manufacturer. Cabinet shall contain custom configured contactor modules for 30, 60, and 100 mps, labeled to match field diagrams and electrical design. Manual Off-On-Auto selector switches shall be provided.
- All components shall be designed and manufactured as a system. All luminaires, wire harnesses, ballast and other enclosures shall be factory assembled, aimed, wired and tested.
- All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed steel shall be hot dip galvanized per ASTM A123. All exposed hardware and fasteners shall be stainless steel of at least 18-8 grade, passivated and polymer coated to prevent possible galvanic corrosion to adjoining metals. All exposed aluminum shall be powder coated with high performance polyester. All exterior reflective inserts shall be anodized, coated with a clear, high gloss, durable fluorocarbon, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All wiring shall be enclosed within the cross arms, pole, or electrical components enclosure.
- Lightning Protection: All structures shall be equipped with lightning protection meeting NFPA 780 standards and be properly grounded.
- All system components shall be UL Listed for the appropriate application.

COURT FACILITIES

1. Make sure that all court facilities are lighted to meet all current IES standards. Tennis court lighting should also meet United States Tennis Association (USTA) standards.
2. Ensure that all tennis courts meet all other USTA standards. Concrete courts should be considered due to extended life in a desert environment.
3. Sand Volleyball courts should consist of Double Washed Mortar Sand Premium Grade at a depth of 12 inches.
4. For wetting courts, provide water in the net standards with a Hunter series head in each standard. Also, use domestic water as a source instead of water from the irrigation system. Make sure that all water piping is type L copper. Control the water with a system timer that allows for watering times up to 15 minutes, and locks out the controls for a minimum of 30 minutes between activations. Activation will be by a 24 volt momentary contact switch mounted on a net standard or other pole.

8-2.206

IRRIGATION GUIDELINES

Refer to the City of Scottsdale’s current supplement to MAG Section 440 and related details for more specific information.

- Irrigation backflow preventers to be installed inside an approved lockable enclosure.
- Only reduced pressure backflow preventer assemblies are to be used.
- Only centralized irrigation system controllers are to be used. Contact COS Irrigation Department for specific type.
- On controller cabinets install pushbuttons to activate ball field dust control valves.
- Ball fields to have irrigation installed for dust control.
- Master valve/flow meters (Hydrometers) to be installed on all irrigation mainlines.
- Drip irrigation systems shall be installed using rigid pvc piping.
- Valves are to be of brass construction and a minimum size of 1 inch.
- Trees, shrubs and cactus are to be valved separately.
- Plans must indicate existing and design operating water pressure requirements.
- Plans must indicate valve size, flow rates, designation (tree, shrub, turf, cactus etc.) and station number.
- Plans must include City details for all irrigation system components to be installed.
- Drip irrigation to be installed for all trees in turf areas for supplemental watering.
- **Minimum water coverage for turf/spray areas shall be 200% head to head coverage. Other planting areas shall receive 100% emitter coverage.**
- Top, bottom and middle of sloped turf areas 1:4 or greater shall be irrigated/valved separately.
- Drip irrigation for trees in turf areas shall be irrigated on a separate valve from trees in decomposed granite areas.

For a suggested Baseball Field Irrigation Design refer to Appendix 8-2A.

For a suggested Softball Field Irrigation Design refer to Appendix 8-2B. For a suggested Soccer Field Irrigation Design refer to Appendix 8-2C.

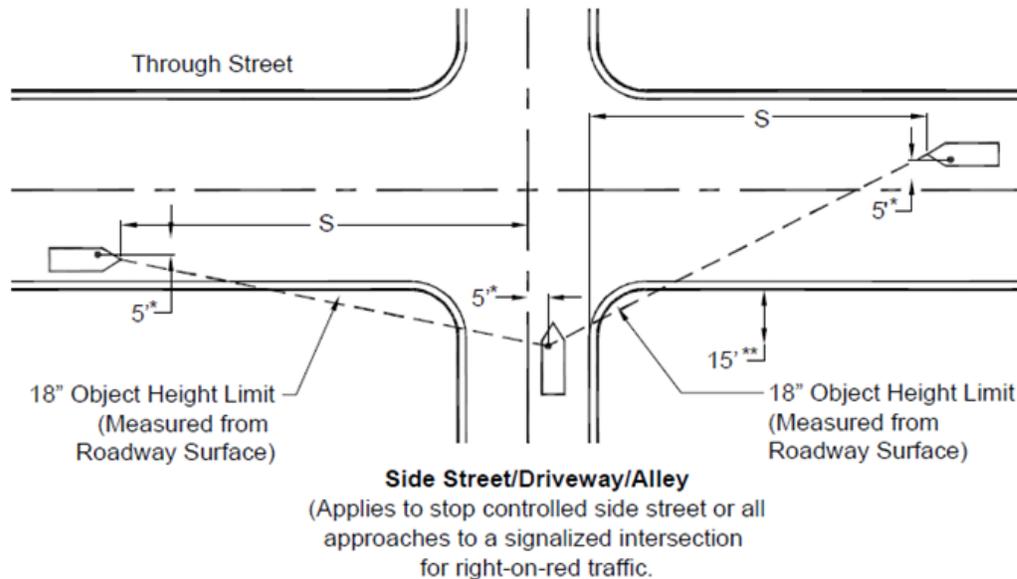
For a suggested Little League Field Irrigation Design refer to Appendix 8-2D.

LANDSCAING

For landscaping, use low-water use, drought-tolerant species that adhere to ADWR plant list. Plant material must be approved by Parks Department staff prior to installation. Refer to the City of Scottsdale’s most current supplement to MAG, Section 430, and related details for more specific information, www.ScottsdaleAZ.gov/design/COSMAGSupp. Refer to Sections 8-1.102 and 8-1.103 for suggested plant material to be used in parks per character area (Suburban and Transitional).

- Tree type to conform to the character area in which the park is located.
- Decomposed granite is to be ½ inch screened Desert Gold unless otherwise approved by COS
- Trees shall not be planted within 15 feet of an existing private wall, sign, or light pole.
- Landscape plans must provide COS planting details.

- Site distance standards shall be used for park entries. Refer to Section 5-3.119, 8-1.400 and



* 5 feet measured to nearest lane line or centerline.

**15 feet measured from face-of-curb or edge-of-travelway.

S = Intersection sight distance in feet on drivers left and right for right turns, left turns and through traffic. (See 2004 AASHTO Geometric Design of Highways and Streets for additional sight distance requirements.)

FIGURE 5.3-26 INTERSECTION DEPARTURE SIGHT DISTANCE REQUIREMENTS

- Natural growth habits shall be taken into consideration to minimize maintenance frequency and intensity.
- Planting distance between trees shall be no less than the mature canopy width.
- Shrubs shall be planted no less than 5 feet from tree trunks to prevent overwatering.
- Shrub spacing shall be no less than size at maturity.
- Shrubs and ground covers shall be planted no less than 2 feet from sidewalks or paths.
- Salvaged trees must meet ANSI A300 (Part 1) pruning standards and ANSI A300 (Part 6) transplanting standards with a minimum 2-1/2inch trunk caliper.
- For saguaro relocation procedures, refer to Section 10-1.300.
- Landscape clearances shall be provided to prevent conflict with signs, light poles, fire hydrants, sidewalks/paths or median crossings.
- Landscaping must not create hazards to public safety through plant growth habit, structure or location.
- Skateboard protection shall be provided on all seat wall caps and benches.
- There shall be a physical separation (concrete curbing) provided between public and private landscaping/irrigation systems.

CONSTRUCTION MATERIAL

1. Use steel, metal, aluminum, recycled material or approved equal for park fixtures and ramadas. Wood will not be permitted. Roofing material needs to be 20 year guaranteed metal, standing seam with Kynar finish.

PARKS

2. Between turf and landscaped areas install concrete headers.
3. Windscreen material to be double leno polypropylene, 85% shade open mesh. Color is to be dark green.
4. Wabash Manufacturing trash receptacles are to be installed or approved equal.

SIGNAGE

1. Place the standard park sign at the main entrance of every neighborhood and community park. The park sign mold can be obtained from Recreation or the Parks Department
2. Specialty parks may deviate from standard park signage with the approval from both Recreation and Parks Department. A marquee that meets the city's Sign Ordinance may be acceptable upon the approval of both Recreation and Parks Department and obtaining a city sign permit.
3. Certify that all signage meets the Scottsdale Sign Ordinance, and ADA signage specifications. Ordinance information can be obtained at the One Stop Shop and www.ScottsdaleAZ.gov/codes.

8-2.210

PARKING

1. Ensure that all parking meets ADA Guidelines and the City of Scottsdale's parking requirements stipulated in the Parks Master Plan and city zoning requirements. Preferred parking spaces utilize Universal Parking dimension specified in Section 12-1.000.
2. Ensure that parking lots lights meet all current IES standards.
3. Plant non-deciduous trees (24 inch boxes minimum) adjacent to parking lots to provide shading. An acceptable ratio is 1 tree per every 15 parking spaces.

8-2.211

PUBLIC POOLS

All public pool facilities must meet or exceed Maricopa County Environmental Health Code Section 1 General Provisions Regulation 1 - 15 for Pool and Facility Design, also all State of Arizona or City of Scottsdale codes or regulations. All pool main drains must comply with the Virginia Graeme Baker (VGB) Pool and Spa Safety Act ANSI/ASME A112.19.8-2007.

Refer to current City of Scottsdale Aquatic Maintenance Supplement for specific details.

Supplement may be obtained from COS Aquatic Maintenance Coordinator (480-312-4005).

1. Mechanical Room Controller Device (MRCD) to be by the BECKS Manufacture Model SYSTEM 7.
2. Commercial High Rate Sand Filters: EKO 3 Manufactured by NEMATO with an integrated automatic backwash control system.
3. Chlorine Gas CL2 Equipment by Capital Controls.
4. Emergency Vapor Scrubber Systems (EVSS) by Siemens Water Technologies.

8-2.212

DECORATIVE FOUNTAINS/WATER FEATURES

8-2.213

The City of Scottsdale will not incorporate any additional Decorative Fountains or Water Features into its future projects in the interest of water conservation and safety concerns. However, if a fountain/water feature is approved for a project, City of Scottsdale Aquatic Maintenance will provide a set of mechanical guidelines to the designer.

Refer to current City of Scottsdale Aquatic Maintenance Fountain/Water Feature Supplement for specific details. Supplement may be obtained from COS Aquatic Maintenance Coordinator (480-312-4005)



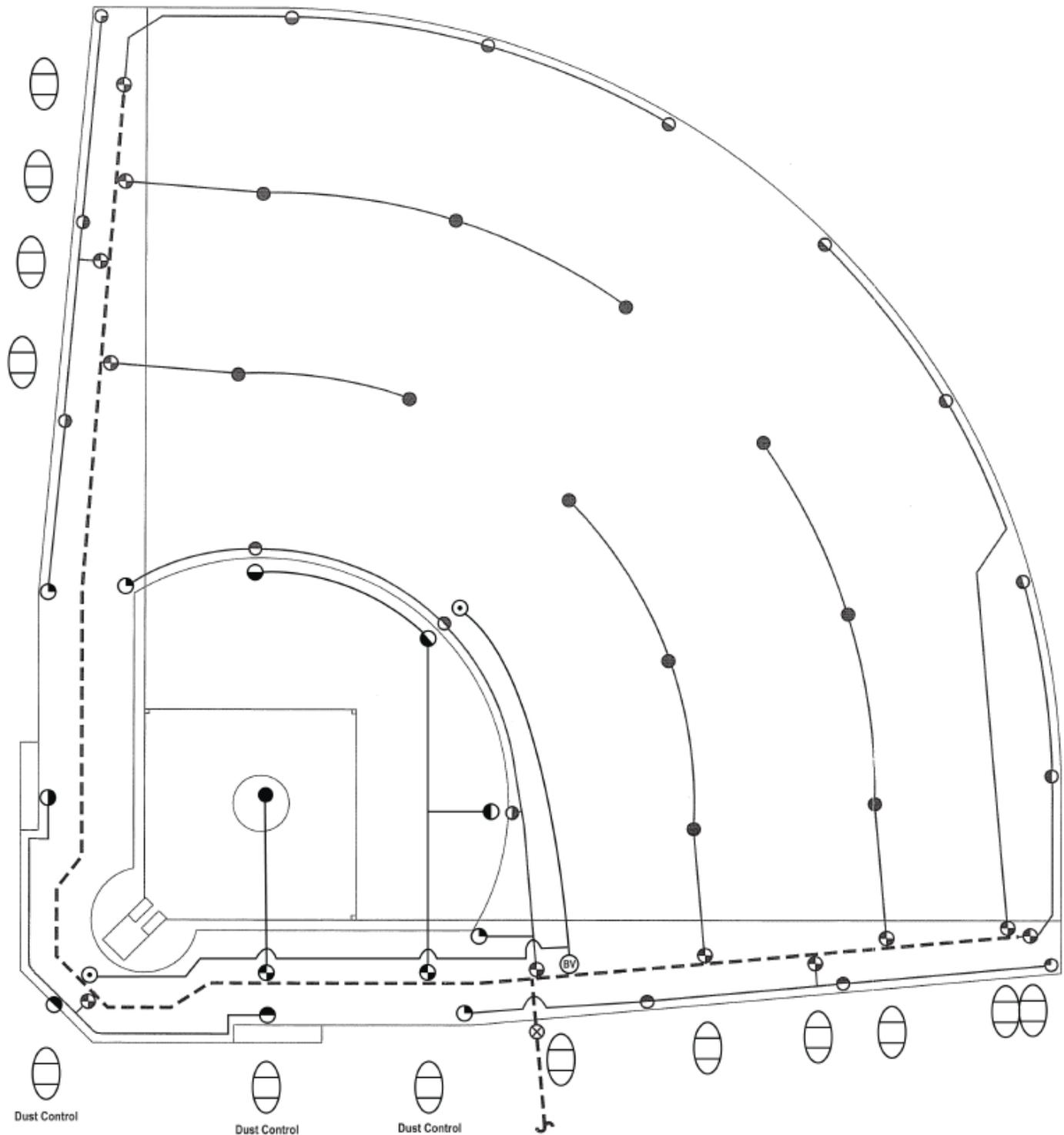
SOFTBALL FIELD IRRIGATION DESIGN

DS&PM 2014 UPDATE NOTES OCTOBER 28, 2014:

The revisions shown in red bold font (new language) and red bold font strike-through (deleted language) were made after publishing for the September 15, 2014 Open House meeting and public review.

- There was no public input on this document.
- The revisions shown are staff review revisions. The revision to this Appendix replaced the graphic with a higher resolution copy.

SOFTBALL FIELD IRRIGATION DESIGN





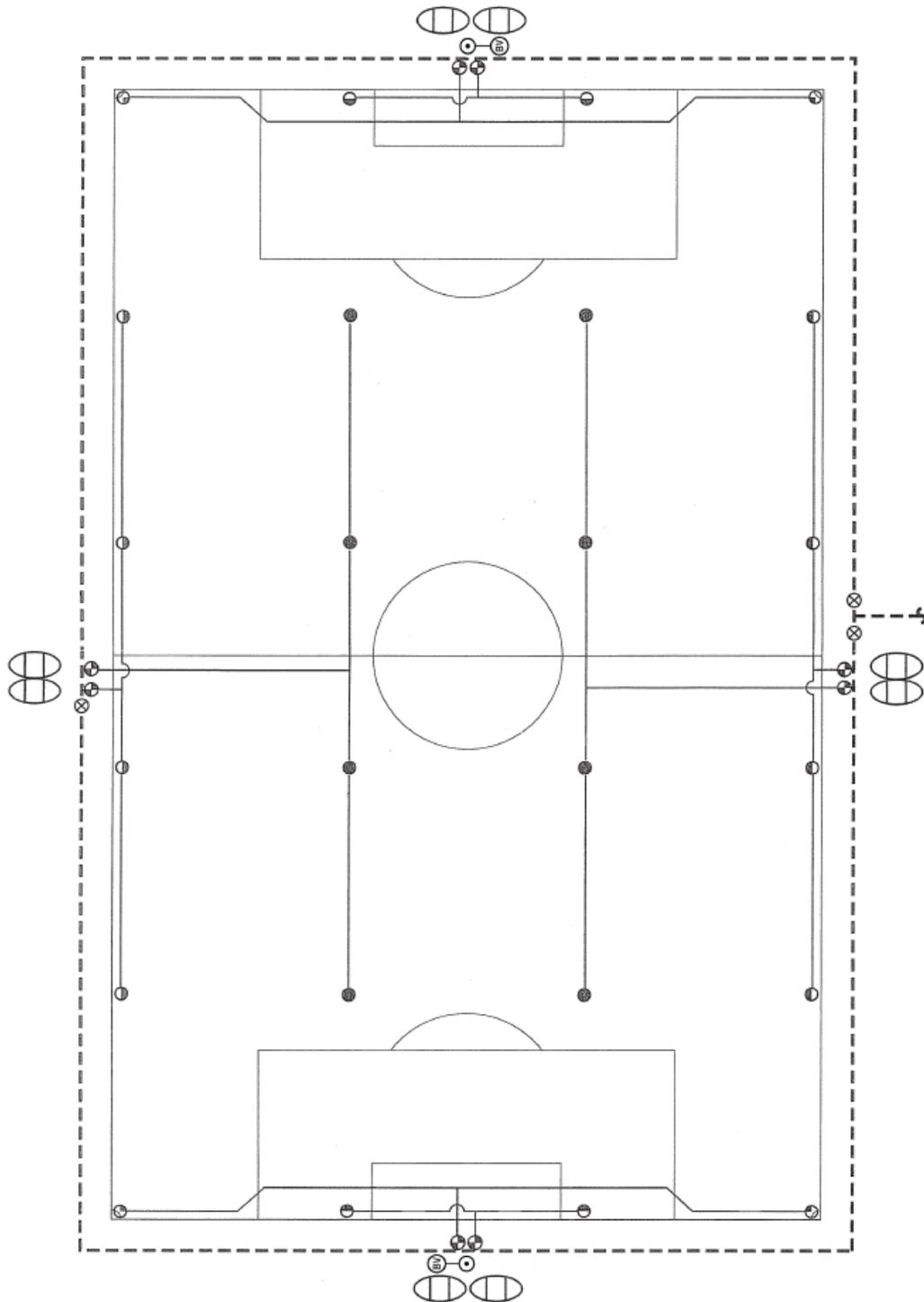
SOCGER FIELD IRRIGATION DESIGN

DS&PM 2014 UPDATE NOTES OCTOBER 28, 2014:

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SOCCER FIELD IRRIGATION DESIGN





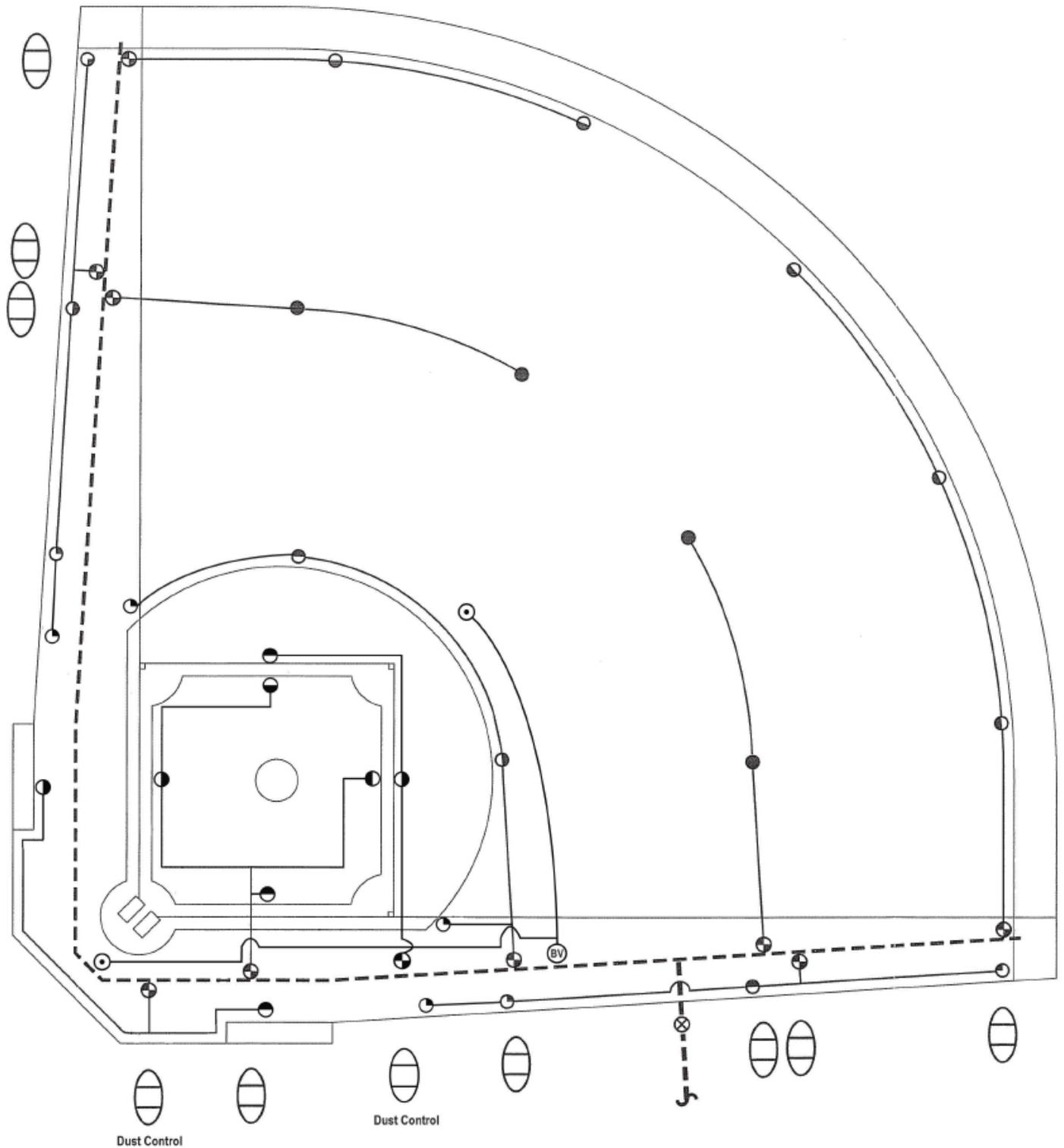
LITTLE LEAGUE FIELD IRRIGATION DESIGN

DS&PM 2014 UPDATE NOTES OCTOBER 28, 2014:

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LITTLE LEAGUE FIELD IRRIGATION DESIGN



NON-PAVED TRAILS

This section addresses the planning, design, maintenance and construction of trails within the city excluding the Scottsdale McDowell Sonoran Preserve trails. The term “trails” refers to unpaved, non-motorized, shared-use trails, which are legally accessible by the general public.

DRAFT

NON-PAVED TRAILS

GENERAL INFORMATION

The City of Scottsdale's goal is to develop and maintain a citywide interconnecting network of trails to provide valuable recreation and transportation opportunities for city residents and visitors. Trails function as transportation links between schools, residential areas, parks, places of employment, shopping areas and other areas of interest. Trails also provide hikers, walkers, joggers, equestrians, mountain bicyclists, and people with disabilities opportunities to improve health and fitness, spend time with family and friends, enjoy the natural environment and escape the stress of everyday life.

Several trails plans must be consulted for identifying trail alignments within the city. The Trail Master Plan approved by the City Council in February 2004 identifies trail locations citywide, see www.ScottsdaleAZ.gov/trails/plan. City of Scottsdale staff may allow deviations from the Trail Master Plan under special conditions with the approval of the Transportation Director.

In 2008, the Ad Hoc Citizen Trails Task Force began meeting at Council's direction to update existing trail classifications and design guidelines. Their recommendations were approved by Council in March 2009 and are reflected in this document. Additional detailed plans provide guidance for developing trails specifically within the McDowell Sonoran Preserve; contact Preserve staff.

REFERENCES

The following publications or their current revisions are to be used in conjunction with the design criteria in this manual when designing unpaved trails for the City of Scottsdale:

- Public Rights-of-Way Access Advisory Committee's Accessible Public Rights of Way Planning and Design for Alterations (2001) and Access Board's Outdoor Developed Areas (1999)
- United States Access Board Revised Draft Guidelines for Accessible Public Rights-of-Way <http://www.access-board.gov/guidelines-and-standards>.
- Forest Service Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds (2008).
- Rails-to-Trails Conservancy Trails for the Twenty-First Century (2006).
- USDOT Designing Trails and Sidewalks for Access Parts 1 and 2 (2001).
- USFS Trail Construction and Maintenance Notebook (2007), at www.fhwa.dot.gov/environment/fspubs/07232806/index.htm.
- Pedestrian and Bicycle Information Center, www.walkinginfo.org.

TRAIL CLASSIFICATIONS

A. Primary Trails

The management objective for Primary Trails is to provide both transportation and recreation links between residential areas, schools, businesses, parks, places of employment and other areas of significant community activity. Primary Trails will typically experience the highest use levels. User groups include hikers, equestrians and

Section 8.3

8-3.000

8-3.001

8-3.002

NON-PAVED TRAILS

bicyclists. Motorized vehicles are only permitted for maintenance and emergency purposes. The trail surface may be comprised of either native soil or decomposed granite. Urban Trails have the greatest width of all trail classifications and therefore accommodate leisurely side-by-side travel and easy passing for multiple user types. These trails are typically located within areas of relatively level topography.

B. Secondary Trails

The management objective for Secondary Trails is to provide secondary transportation and recreation links through areas such as desert washes, scenic and vista corridors, and other desert open space areas. Secondary Trails typically experience a lower level of use than Primary Trails. User groups include hikers, equestrians and bicyclists. Motorized vehicles are only permitted for maintenance and emergency purposes and where trail widths allow. Secondary Trails are narrower than Primary Trails; therefore, occasional single-file travel by users may be required. These trails are typically located within areas of level to moderate topography.

C. Neighborhood Local Trails

The management objective for Neighborhood Local Trails is to provide access in and around neighborhood areas and provide connections to Primary and Secondary Trails. These trails typically act as “feeder” trails to the more regional trail network and may provide close-to-home recreational opportunities. User groups include hikers, equestrians and bicyclists. Motorized vehicles are only permitted for maintenance and emergency purposes, and where trail widths allow.

D. Minimally Improved/Rugged Trails

The management objective for Minimally Improved/Rugged Trails is to provide a minimally improved non-paved trail for recreation use designed for equestrian, hiker, runner and mountain bike, placed as far away from traffic as possible. This type of trail is to be constructed in areas where there are other accessible trail options available or where the construction of an accessible trail will substantially alter the character of the surrounding area, will impact culturally significant areas, or is difficult to construct because of the terrain such as washes. Motorized vehicles are only permitted for maintenance and emergency purposes and where trail widths allow.

TRAIL DESIGN

The city’s objective is to design, construct and maintain trails that:

- A. Provide safe, non-motorized transportation links, and/or close-to-home recreation opportunities.
- B. Provide legal public access to destination points and other areas of interest.
- C. Blend with the surrounding environment.
- D. Minimize impacts on the natural environment.
- E. Minimize impacts on adjacent landowners.
- F. Require minimum levels of maintenance.

8-3.100

DESIGN CONSIDERATIONS

A. Human Factors

Trails must be planned and constructed with the needs of the trail user in mind. Trail users tend to desire routes that access and connect areas of significant community activity such as schools, businesses, shopping areas and parks, as well as other areas of interest such as viewpoints, water sources, natural areas, desert preserves, scenic and vista corridors, and interesting geologic features. Visual qualities are important to trail users, therefore trails should be designed to blend with the surrounding environment. Views from the trail to the surrounding environment should also be considered. Trail users enjoy changes in scenery, thus the increasing demand for loop trails and trail networks that allow the user to return to the starting point without traveling the same trail twice. Loop trails also provide the comfort of knowing that the trail will return to the starting point, thus reducing the chance of anyone becoming lost. Trail users tend to favor the easiest, most obvious route. If the designated trail is not the easiest and most obvious, trail users will begin to create new, unauthorized trails.

B. Coinciding Easements

Trails are frequently located within common tracts and easements dedicated for other purposes such as drainage, flood control, public utility, natural area open space, and scenic and vista corridors. In situations where these common tracts and easements are wider than that needed for a trail easement, it is recommended to dedicate the same area of these coinciding common tracts and easements for the purposes of public trail use. This will increase the flexibility to properly lay out, design and construct public trails, and will allow the trail to be positioned away from undesirable areas such as low-flow drainage channels, areas of extreme topography, dense vegetation, critical animal habitats and adjacent properties. This will also allow future realignment of the trail, should such a realignment become necessary. In cases where a separate width of trail easement is delineated within other easements or common tracts, it is extremely important that the alignment of the trail easement be reviewed in the field to assure suitability.

C. Trail Viewshed

The line of sight from a trail to the surrounding landscape and from the surrounding landscape to a trail are important design considerations. Views from the trail to the surrounding landscape improve the quality of the trail users' experience; therefore, trails should be designed to provide users varying views of the surrounding area. However, obscuring views of the trail from the surrounding landscape is also important, since adjacent landowners may not want to view the trail from their properties.

D. Native Plants

The design, construction and maintenance of trails within the City of Scottsdale must take into account the Native Plant Ordinance, Section 7.500 of the city's Zoning Ordinance, refer to www.ScottsdaleAZ.gov/codes/nativeplant. Trails should be aligned to avoid disturbance of, and have a minimum effect on the following plant species: whitethorn acacia, catclaw acacia, crucifixion thorn, hackberry, blue palo verde, foothill

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palo verde, desert willow, juniper, ironwood, cottonwood, mesquite, scrub oak, sugar sumac, Arizona rosewood, saguaro, barrel cacti, ocotillo, and soap tree yucca.

E. Sensitive Wildlife Habitat

Trail design and construction within natural desert park and preserve areas should be evaluated in terms of the effect that the trail will have on sensitive wildlife habitats. The Arizona Game and Fish Department should be consulted during the trail design process to assure that the trail will not have a negative impact on such resources. The best means of preventing negative impacts on wildlife is to simply avoid sensitive areas. Seasonal trail closures may be necessary in some situations.

F. Archaeological and Cultural Resources

Trail design and construction should be evaluated in terms of the effect the trail will have on archaeological and cultural resources. Such activities should be done in accordance with the City of Scottsdale Archaeological Ordinance, www.ScottsdaleAZ.gov/codes. Potential options to prevent and mitigate damage to these resources include:

1. Altering the trail alignment to avoid archaeological and cultural resources.
2. Protecting the resources by utilizing methods to obscure them from view.
3. Mitigating the cultural resource, which involves removal and thorough documentation of the items by a professional archaeologist. The documentation of the resource may then be interpreted as part of the trail opportunity.

G. Design for Shared-Use

Trails within the city are open to all non-motorized uses unless otherwise stated. Decisions to prohibit any non-motorized use from trails must be based on coordinated planning efforts involving appropriate user groups and city staff. Characteristics that should be considered as part of this process include, but are not limited to, longitudinal and cross slopes, surface materials, line of sight, amount of use, sensitivity of surrounding environment, soil types, and native plant and animal habitats.

The following means of preventing potential user conflicts are based on methods identified in "Conflict on Multiple Use Trails" (Moore, 1994), and should be considered when planning, designing, constructing and maintaining shared-use trails:

1. Separate user types at trailheads and along the first, most crowded, stretches of trail.
2. Provide adequate sight distances.
3. Build trails wide enough to accommodate expected levels and types of use.
4. Build and maintain trails wide enough for safe passing and/or provide periodic turnouts.
5. Design trails to control speeds where necessary by varying the trail surface and avoiding long, straight, downhill stretches.
6. Provide adequate trailhead facilities for all user types.

TRAIL LOCATIONS

Location work must begin early in the trail design process and be completed prior to construction.

The amount and level of work that is required varies depending on the type of trail being designed and the terrain on which the trail is being constructed. The necessary steps to properly layout the trail include the following: Reconnaissance, Grade, Drainage and Staking/Flagging, refer to Paragraphs A through D below.

A. Reconnaissance

The reconnaissance process includes the identification and evaluation of alternative routes, which leads to final selection of the best possible route to meet the established objectives. Application of sound principles of trail location, alignment and grade will minimize future operation and maintenance problems.

B. Grade

The first step is to examine the most recent topographic maps and aerial photos of the area to identify significant landforms, drainage patterns and vegetation. The next step, for which there is no substitute, is to walk the area and examine potential routes. Conduct a systematic study of the area by walking various routes and viewing the area from different vantage points. Control points, which are features that are favorable for or inhibit trail construction, should be identified through this process. The control points will help to identify the best possible route, with the understanding that situations may exist where a trail must pass through negative control points.

Control points that are favorable for trail construction:

- Existing road crossings (underpasses, overpasses and intersections with traffic lights or stop signs)
- Areas of light vegetation
- Natural desert wash crossings
- Scenic vistas
- Ridgelines
- Areas of well drained soils
- Hillside benches
- Good trailhead access
- Control points that inhibit trail construction and should be avoided:
- Wet areas and poorly drained flat areas
- Frequent desert wash crossings
- Sensitive wildlife habitats
- Locations requiring bridges or culverts
- Desert wash bottoms
- Areas of heavy or fragile vegetation
- Areas adjacent to sources of excessive noise, such as airports
- Areas requiring switchbacks
- Areas of archaeological/cultural sensitivity
- Areas adjacent to plants that are poisonous to horses, such as oleanders
- Steep rocky slopes

NON-PAVED TRAILS

- Lightning-prone areas
- Unstable or fragile soils
- Unsafe or uncontrolled road crossings
- Abrupt topographic changes
- Known habitats of threatened or endangered plant or animal species
- Bluffs, ledges and cliffs except where featured as scenic resources

C. Drainage

Proper drainage of surface water is the most important factor in design, construction and maintenance of trails. Surface erosion resulting from improper drainage will have a detrimental impact on the trail surface, causing damage to the natural environment and increasing maintenance requirements. The potential for erosion depends on three factors: soil type, velocity of water on the trail, and the distance water travels down the trail. Alteration of any of these factors can reduce the potential for erosion. Proper outsloping of the trail tread and the installation of grade dips or water bars will help decrease the potential for erosion of the trail surface. If distances allow, grade dips are preferred over waterbars. Existing drainage patterns of the surrounding area, such as concentrated drainage channels, must be maintained. Attempts to alter the existing drainage patterns will have a negative effect on the natural environment and will most likely result in severe damage to the trail.

D. Staking/Flagging

Stakes or flags act as a guide so that the alignment, grade and distances can be easily followed during construction. A clinometer, topographic map, compass, measuring tape and notebook are all necessary tools. Proper location of the flag line is easily accomplished with three people acting as surveyor, rod holder and recorder. Stakes or flags should be located along the trail centerline with the location of dips, walls and other special structures indicated with color-coded flagging. The trail alignment should pass through control points that are favorable for trail construction and avoid control points which will inhibit trail construction. Normally, trail alignments follow the contours of the land and consist of a series of gently sweeping curves. Long straight segments with sharp angular turns should be avoided.

TRAIL CLASSIFICATIONS

City of Scottsdale staff may allow deviations from the following guidelines under special conditions with the approval of the Transportation Director.

8-3.200

PRIMARY TRAILS

A. Grade

Maximum sustained grade should not exceed 5 percent. A maximum grade of 8 percent may be used for short distances not to exceed 200 linear feet.

B. Tread

The desired tread width for a Primary Trails is 12 feet with a minimum acceptable width of 10 feet. The trail tread should be comprised of native soils in undisturbed

8-3.201

NON-PAVED TRAILS

desert areas and decomposed granite in areas that have been graded, landscaped, or will otherwise remain significantly unnatural. Compaction of a native soil tread surface may be necessary to prevent damage from use and to increase resistance to erosion. If decomposed granite is used it must be ¼ inch minus, Madison Gold or similar, wetted and compacted to a 4 inch depth. A soil stabilizer may be added to the decomposed granite according to manufacturers' specifications. The trail tread must be smooth and free of all obstacles. The trail tread must be delineated from the surrounding terrain. For example, utilizing decomposed granite of a different size or color in the surrounding landscape will help distinguish the trail tread. The location of landscape plants, fences and other physical barriers can also be used to delineate the trail.

C. Vegetation Clearance

Trails should be designed to have a minimum impact on plants identified for protection in the Native Plant Ordinance, refer to www.ScottsdaleAZ.gov/codes/nativeplant. Trail alignments that avoid and have the least impact on surrounding vegetation are preferred. If the trail must pass within an unacceptable distance to any plants, the preference is to relocate the plants rather than destroy them.

Vegetation may not exceed a mature height of 3 feet within a 3-foot distance of the trail tread. Vertical clearance must be at least 10 feet above the trail tread, 12 feet is desired. This in no way implies that the trail corridor should be devoid of plants. Low growing desert shrubs such as bursage and brittlebush present no hazard to trail users; therefore, are acceptable to have within the clearing limits. The purpose of the vegetation clearing limits is to keep taller, potentially more dangerous plants such as thorny trees and larger cacti a safe distance from the trail. All remaining roots and stumps must be grubbed out of the trail surface to provide a smooth tread. No teddy bear cholla may be located within 3 feet of the trail tread. In areas where new landscaping is to be installed, trees, cacti and other spiny plants must be planted at least 5 feet from the trail tread.

D. Drainage

The trail surface must have a cross slope of 3 to 5 percent. This is critical in preventing water from pooling on and channeling down the trail. If the trail traverses the side slope of a hill, the cross slope of the trail surface must be downward from the uphill to the downhill edge of the trail (outslope). This will allow surface water to drain off the edge of the trail rather than running down the length of the trail. The installation of erosion control structures such as water bars or grade dips may be required. The cross slope of such a trail tread must NOT be downward from the downhill to the uphill edge of the trail (inslope). Such a scenario will result in water channeling down the length of the trail, causing extreme levels of erosion. If the trail is located on level ground, the trail surface should be crowned to drain water off both sides of the trail and prevent pooling.

E. Easement Widths and Setback from Street

Primary Trails may be contained in a minimum 30-foot-wide trail or non-motorized public access easement or in ROW. In situations where a trail easement overlaps with common tracts or easements dedicated for other purposes, it may be beneficial to

dedicate the entire width for public trail purposes. For more detail refer to Section 8-3.101. Trails along streets should be placed the maximum distance possible from the back of curb. The preferred separation is 50 feet with a minimum separation of 25 feet.

SECONDARY TRAILS

8-3.202

A. Grade

Maximum sustained grade should not exceed 5 percent. A maximum grade of 8 percent may be used for short distances not to exceed 200 linear feet.

B. Tread

The desired tread width for a Secondary Trail is 10 feet with a minimum acceptable width of 8 feet. The trail tread should be comprised of native soils in undisturbed desert areas and decomposed granite in areas that have been graded, landscaped, or will otherwise remain significantly unnatural. Compaction of a native soil tread surface may be necessary to prevent damage from use and to increase resistance to erosion. If decomposed granite is used, it must be ¼ inch minus, Madison Gold or similar, wetted and compacted to a 4 inch depth. A soil stabilizer may also be added to the decomposed granite according to manufacturers' specifications. The trail tread must be smooth and free of all obstacles. The trail tread must be delineated from the surrounding terrain. For example, utilizing decomposed granite of a different size or color in the surrounding landscape will help distinguish the trail tread. The location of landscape plants, fences and other physical barriers can also be used to delineate the trail.

C. Vegetation Clearance

Trails should be designed to have a minimum impact on plants identified for protection in the Native Plant Ordinance, refer to www.ScottsdaleAZ.gov/codes/nativeplant. Trail alignments that avoid and have the least impact on surrounding vegetation are preferred. If the trail must pass within an unacceptable distance to any plants, the preference is to relocate the plants rather than destroy them.

Vegetation may not exceed a mature height of 3 feet within a 3-foot distance of the trail tread. Vertical clearance must be at least 10 feet above the trail tread, 12 feet is desired. This in no way implies that the trail corridor should be devoid of plants. Low growing desert shrubs such as bursage and brittlebush present no hazard to trail users; therefore, are acceptable to have within the clearing limits. The purpose of the vegetation clearing limits is to keep taller, potentially more dangerous plants such as thorny trees and larger cacti a safe distance from the trail. All remaining roots and stumps must be grubbed out of the trail surface to provide a smooth tread. No teddy bear cholla may be located within 3 feet of the trail tread. In areas where new landscaping is to be installed, trees, cacti and other spiny plants must be planted at least 5 feet from the trail tread.

D. Drainage

The trail surface must have a cross slope of 3 to 5 percent. This is critical in preventing water from pooling on and channeling down the trail. If the trail traverses the side

NON-PAVED TRAILS

slope of a hill, the cross slope of the trail surface must be downward from the uphill to the downhill edge of the trail (outslope). This will allow surface water to drain off the edge of the trail rather than running down the length of the trail. The installation of erosion control structures such as water bars or grade dips may be required. The cross slope of such a trail tread must NOT be downward from the downhill to the uphill edge of the trail (inslope). Such a scenario will result in water channeling down the length of the trail causing extreme levels of erosion. If the trail is located on level ground, the trail surface should be crowned to drain water off the trail and prevent pooling.

E. Easement Width and Setback from Street

Secondary Trails may be contained in a minimum 25-foot-wide non-motorized public access easement or in ROW. In situations where a trail easement overlaps with common tracts or easements dedicated for other purposes, it may be beneficial to dedicate the entire width for public trail purposes, refer to Section 8-3.101 for more detail. Trails along streets should be placed the maximum distance possible from the back of curb. The desired separation for a Secondary trail is 25 feet with a minimum separation of 10 feet.

NEIGHBORHOOD/LOCAL TRAILS

8-3.203

A. Grade

Maximum sustained grade should not exceed 5 percent. A maximum grade of 8 percent may be used for short distances not to exceed 200 linear feet.

B. Tread

The desired tread width for a Neighborhood/Local Trail is 8 feet with a minimum acceptable width of 6 feet. The trail tread should be comprised of native soils in undisturbed desert areas and decomposed granite in areas that have been graded, landscaped, or will otherwise remain significantly unnatural. Compaction of a native soil tread surface may be necessary to prevent damage from use and to increase resistance to erosion. If decomposed granite is used it must be ¾ inch minus, Madison Gold or similar, wetted and compacted to a 4 inch depth. A soil stabilizer may also be added to the decomposed granite according to manufacturers' specifications. The trail tread must be smooth and free of all obstacles. The trail tread must be delineated from the surrounding terrain. For example, utilizing decomposed granite of a different size or color in the surrounding landscape will help distinguish the trail tread. The location of landscape plants, fences and other physical barriers can also be used to delineate the trail.

C. Vegetation Clearance

Trails should be designed to have a minimum impact on plants identified for protection in the Native Plant Ordinance, refer to www.ScottsdaleAZ.gov/codes/nativeplant. Trail alignments that avoid and have the least impact on surrounding vegetation are preferred. If the trail must pass within an unacceptable distance to any plants, the preference is to relocate the plants rather than destroy them.

NON-PAVED TRAILS

Vegetation may not exceed a mature height of 3 feet within a 3-foot distance of the trail tread. Vertical clearance must be at least 10 feet above the trail tread. This in no way implies that the trail corridor should be devoid of plants. Low growing desert shrubs such as bursage and brittlebush present no hazard to trail users; therefore, are acceptable to have within the clearing limits. The purpose of the vegetation clearing limits is to keep taller, potentially more dangerous plants such as thorny trees and larger cacti a safe distance from the trail. All remaining roots and stumps must be grubbed out of the trail surface to provide a smooth tread. No teddy bear cholla may be located within 3 feet of the trail tread. In areas where new landscaping is to be installed, trees, cacti and other spiny plants must be planted at least 5 feet from the trail tread.

D. Drainage

The trail surface must have a cross slope of 3 to 5 percent. This is critical in preventing water.

E. Easement Width and Setback from Street

Neighborhood/Local Trails may be contained in a minimum 25-foot-wide non-motorized public access easement or ROW. In situations where a trail easement overlaps with common tracts or easements dedicated for other purposes, it may be beneficial to dedicate the entire width for public trail purposes, refer to Section 8-3.101 for more detail. Trails along streets should be placed the maximum distance possible from the back of curb. The desired separation is for a Neighborhood/Local Trail is 10 feet.

MINIMALLY IMPROVED/RUGGED TRAILS

8-3.204

A. Grade

Grade will match existing terrain.

B. Tread

The desired tread width is 4 feet. The trail tread is made up of native soils. Compaction may be used to prevent damage from use and to increase resistance to erosion.

C. Vegetation Clearance

Trails should be designed to have a minimum impact on plants identified for protection in the Native Plant Ordinance, refer to www.ScottsdaleAZ.gov/codes/nativeplant. Trail alignments that avoid and have the least impact on surrounding vegetation are preferred. If the trail must pass within an unacceptable distance to any plants, the preference is to relocate the plants rather than destroy them.

Vegetation may not exceed a mature height of 3 feet within a 3-foot distance of the trail tread.

Vertical clearance must be at least 10 feet above the trail tread, 12 feet is preferred. This in no way implies that the trail corridor should be devoid of plants. Low growing desert shrubs such as bursage and brittlebush present no hazard to trail users;

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therefore, are acceptable to have within the clearing limits. The purpose of the vegetation clearing limits is to keep taller, potentially more dangerous plants such as thorny trees and larger cacti a safe distance from the trail. All remaining roots and stumps must be grubbed out of the trail surface to provide a smooth tread. No teddy bear cholla may be located within 3 feet of the trail tread. In areas where new landscaping is to be installed, trees, cacti and other spiny plants must be planted at least 5 feet from the trail tread.

D. Drainage

The trail surface must have a cross slope of 3 to 5 percent. This is critical in preventing water from pooling on and channeling down the trail. If the trail traverses the side slope of a hill, the cross slope of the trail surface must be downward from the uphill to the downhill edge of the trail (outslope). This will allow surface water to drain off the edge of the trail rather than running down the length of the trail. The installation of erosion control structures such as water bars or grade dips may be required. The cross slope of such a trail tread must NOT be downward from the downhill to the uphill edge of the trail (inslope). Such a scenario will result in water channeling down the length of the trail causing extreme levels of erosion. If the trail is located on level ground, the trail surface should be crowned to drain water off the trail and prevent pooling.

E. Easement Widths and Setback from Street

Minimally Improved Trails must be contained in a minimum 25-foot-wide non-motorized public access easement if located in a trail corridor identified in the Trails Plan as a Secondary, Local, or Neighborhood trail. Minimally Improved trails must be contained in a minimum 30-foot-wide non-motorized public access easement if located in a trail corridor identified in the Trails Plan as a Primary trail. In situations where a non-motorized public access easement overlaps with common tracts or easements dedicated for other purposes, it may be beneficial to dedicate the entire width for public trail purposes, refer to Section 8-3.101 for more detail. Minimally Improved Trails must be located the maximum distance feasible from the edge of the street. The desired distance is 50 feet with the minimum distance 20 feet.

TREAD CONSTRUCTION

A. Surface Materials

Trail surface materials must correspond to the specification for the appropriate trail classification under Section 8-3.200.

B. Cross Slope

The cross slope, which is the slope of the tread surface perpendicular to the longitudinal slope, is a critical factor in the design, construction and maintenance of trails. The cross slope allows surface water to drain off the side of the trail rather than along the longitudinal slope. The three primary types of cross slopes are outslope, inslope and crowned. Outsloped and insloped trail surfaces typically occur on trails that traverse the side slope of a hill, and a crowned trail surface is typically found on trails that travel across relatively level ground, refer to Figure 8.3-1.

8-3.300

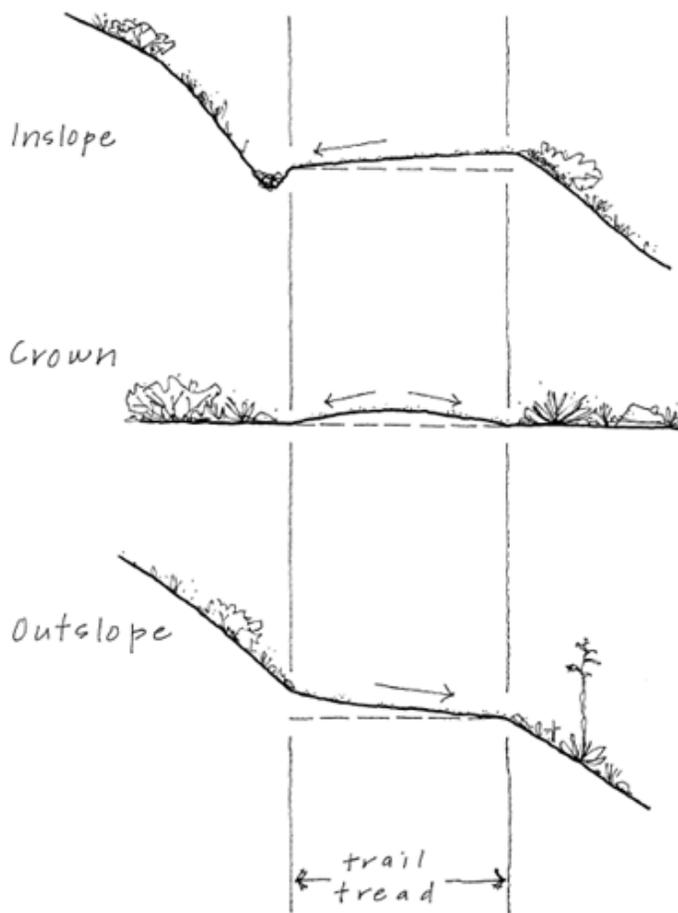


FIGURE 8.3-1. CROSS SLOPES

1. **Outslope**
Outslope is the most common type of cross slope used on trails that traverse the side slopes of hills, and occurs when the trail surface slopes downward from the uphill to the downhill edge of the trail. Standard outslopes range from 3 to 5 percent, depending on the trail classification.
2. **Inslope**
Inslope is the most infrequent variety of cross slope used on trails that traverse the side slopes of hills, and occurs when the trail surface slopes downward from the downhill to the uphill edge of the trail. Insloped trails are discouraged and only recommended when used as a component of switchback turns. Inslopes must be used in conjunction with rock-lined swales that collect the water and channel it away from the trail. The improper use of an insloped trail surface will cause extreme erosion to the trail surface and the surrounding environment; therefore, should not be built without consulting the city Trails Coordinator.
3. **Crowned**
A crowned surface is most commonly used on trails that traverse relatively level ground. A crowned trail surface slopes downward from the centerline to each

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outside edge for the purpose of preventing surface water from pooling on the trail surface. The slopes from the centerline to each edge should be 5 percent.

C. Backslope

The backslope is the area from which material is excavated on the uphill side of the trail tread. Backslopes range from steep to gentle depending on the side slope of the hill and the characteristics of the soil. As a general rule, the backslope cannot be steeper than the soil's ability to remain in place under typical climatic conditions. Riprap on moderate backslopes and retaining walls on steeper backslopes may be needed to stabilize the backslope in areas with steep side slopes or unstable soils. The use of retaining walls to support the backslope will require excavating less material. Refer to below Figure 8.3-2.

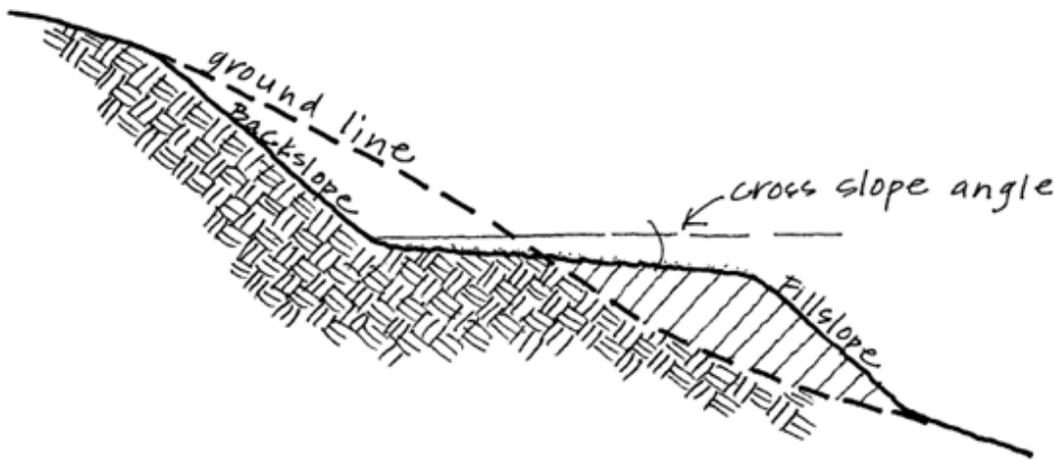


FIGURE 8.3-2 TYPICAL TRAIL PROFILE

D. Fillslope

Adding material to build up and support the downhill edge of the trail tread creates the fillslope. The material removed as part of the backslope or from nearby borrow pits is often used in the fillslope. Riprap on moderate fillslopes and retaining walls on steeper fillslopes may be needed to support the fillslope in areas with steep side slopes or loose soils. The fillslope should be revegetated following construction to regain its natural appearance and to reduce the potential for erosion, see above Figure 8.3-2.

E. Typical Trail Cross-sections

Refer to Figure 8.3-3 for examples of trail construction for various side slopes.

1. Full Bench

Full bench construction involves the greatest amount of soil removal, but provides the most stable trail surface. In this type of construction, soil is removed from the backslope and cast down the hill. The excavated material is not used as fill to support the trail tread. Instead, the entire trail tread is

NON-PAVED TRAILS

supported by solid mineral soil. Full bench construction is best suited for trails on steep side slopes greater than 50 percent because fill will erode easily.

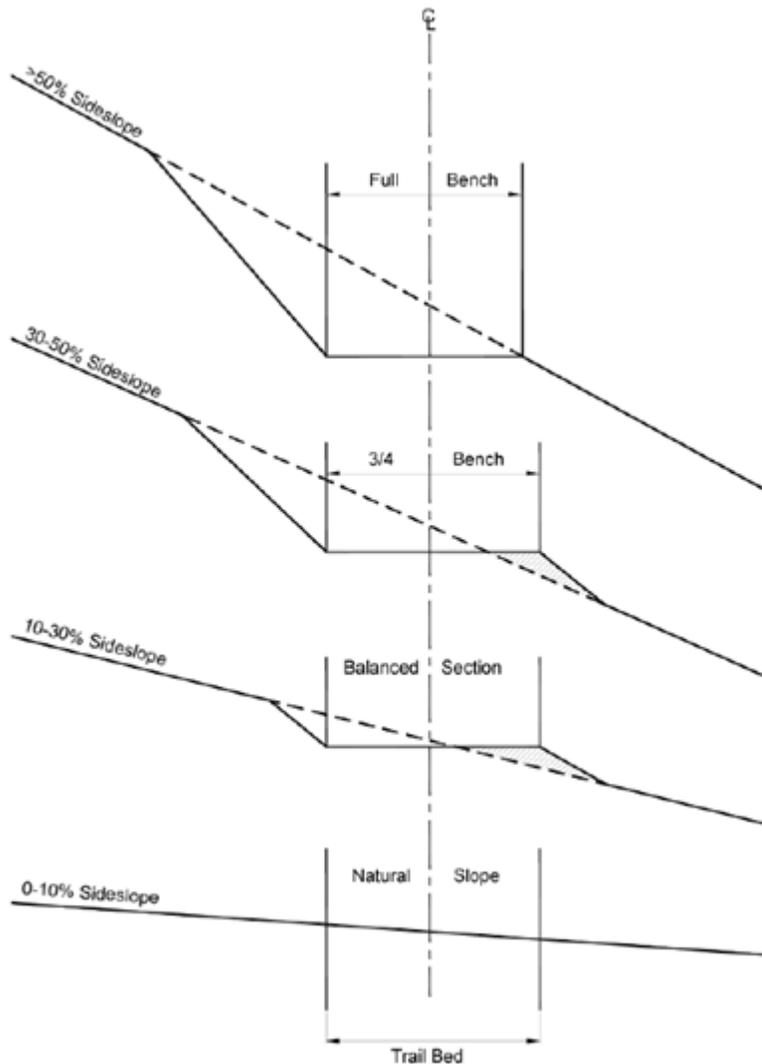


FIGURE 8.3-3 TYPICAL TRAIL CROSS SECTIONS

2. 3/4 Bench

This type of trail construction should be used on side slopes of 30 to 50 percent. The soil excavated from the backslope should be used for the fillslope. The fillslope should represent the downhill $\frac{1}{4}$ of the trail width. The fillslope should be revegetated to restore its natural condition and reduce the potential for erosion.

3. Balanced Section

Balanced section trail construction should be utilized on side slopes of 10 to 30 percent. The soil excavated from the backslope should be used for the

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fillslope. The fillslope should represent the downhill ½ of the trail width. The fillslope should be revegetated to restore its natural condition and reduce the potential for erosion.

4. Natural Slope

Natural slope construction is used when side slopes are less than 10 percent; it involves no cutting or filling, resulting in no backslope or fillslope.

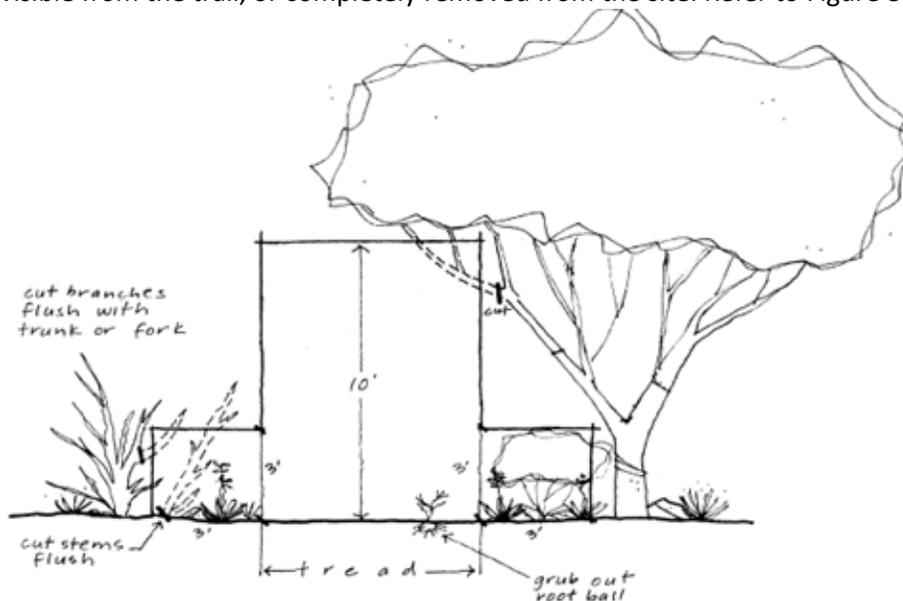
VEGETATION CLEARANCE

Vegetation clearance is the removal of vegetation within specified clearing limits, refer to Section 8-3.200 for specifications for each trail classification. The primary goal is to provide the specified clearance while maintaining the maximum amount of vegetation and the natural characteristics of the area. Trails shall be aligned to prevent disturbance to plants identified in the Native Plant Ordinance, refer to www.ScottsdaleAZ.gov/codes/nativeplant. The trail should be aligned to avoid large-scale removal of native plants not covered by the Native Plant Ordinance.

When branches must be removed, pruning shall comply with ANSI Standard #A300, otherwise known as the 3-cut pruning method:

- One partial cut from the underside of the branch 6 to 8 inches from the trunk,
- A second cut from the top of the branch above the first cut to remove the branch, and
- The third cut to remove the stub.

Be sure not to cut into the branch collar, as this will damage the tree and slow the healing process. Chemical sealants should not be applied to native trees. Cholla and prickly pear cacti should be trimmed at the segment joints. Plants that must be completely removed should be cut as close as possible to the ground surface and dispersed in areas not clearly visible from the trail, or completely removed from the site. Refer to Figure 8.3-4.



FIGURER 8.3-4 VEGETATION CLEARANCE

SURFACE WATER CONTROL

The proper control of surface water is a crucial element in trail design, construction and maintenance. Improper control will most likely have a negative effect on the surrounding environment and will result in damage to the trail that can be very expensive to repair. The need for surface water control structures depends on many different factors including, but not limited to soil type, longitudinal and cross slopes and existing drainage patterns. The most effective time to address surface water control issues is during initial trail design and construction.

A. Grade Dips

Grade dips are short segments of trail with a grade opposite to the prevailing longitudinal grade of the trail. They are most effective when installed during new trail construction and sited to take advantage of natural drainage patterns. The low point of the dip must be outsloped at the maximum percentage permitted for the given trail classification to assure that water will flow off and away from the trail. A rock apron may need to be constructed where the water flows out of the dip to prevent excessive erosion. Grade dips are generally more effective than waterbars, require less maintenance, and are more suitable for equestrians and mountain bicyclists. See Figure 8.3-5 on the following page.

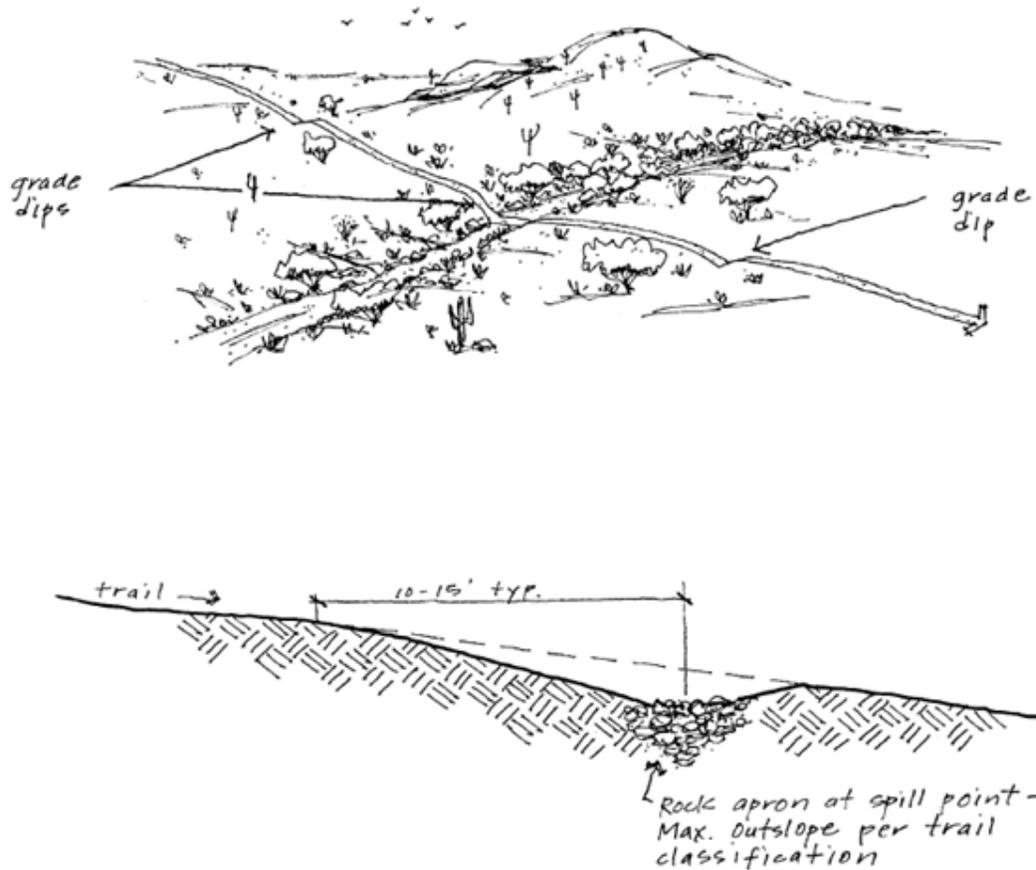


FIGURE 8.3-5 GRADE DIPS

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B. Waterbars

Waterbars are native rocks or logs embedded in the trail surface at a 45-degree angle for the purpose of directing surface water off the trail. Waterbars should extend at least 1-foot beyond each edge of the trail tread to ensure that water is diverted completely. Use fill material to build up the downhill side of the waterbar. Construct a drain ditch leading off the edge of the trail to ensure that runoff flows away from the trail. The drain should be at least 1-foot-wide and 8 inches deep. Rocks should be placed in the bottom of the drain ditch to lessen the amount of erosion. Place additional rocks, logs, brush, or other debris in locations that will prevent trail users from detouring around the waterbar. Waterbars are not the preferred drainage structures on trails with large amounts of equestrian and mountain bicycle use. Grade dips are more appropriate in such situations.

1. Rock Waterbar

This type of waterbar is constructed by embedding large rectangular shaped rocks into the trail tread at a 45-degree angle to a depth roughly half their height. Rocks must be large enough to remain undisturbed by trail users and to effectively channel water off the trail. Rocks must be arranged in a shingle fashion, tightly overlapping each other towards the downhill side. Compact small rocks and fill around the base to ensure solid placement.

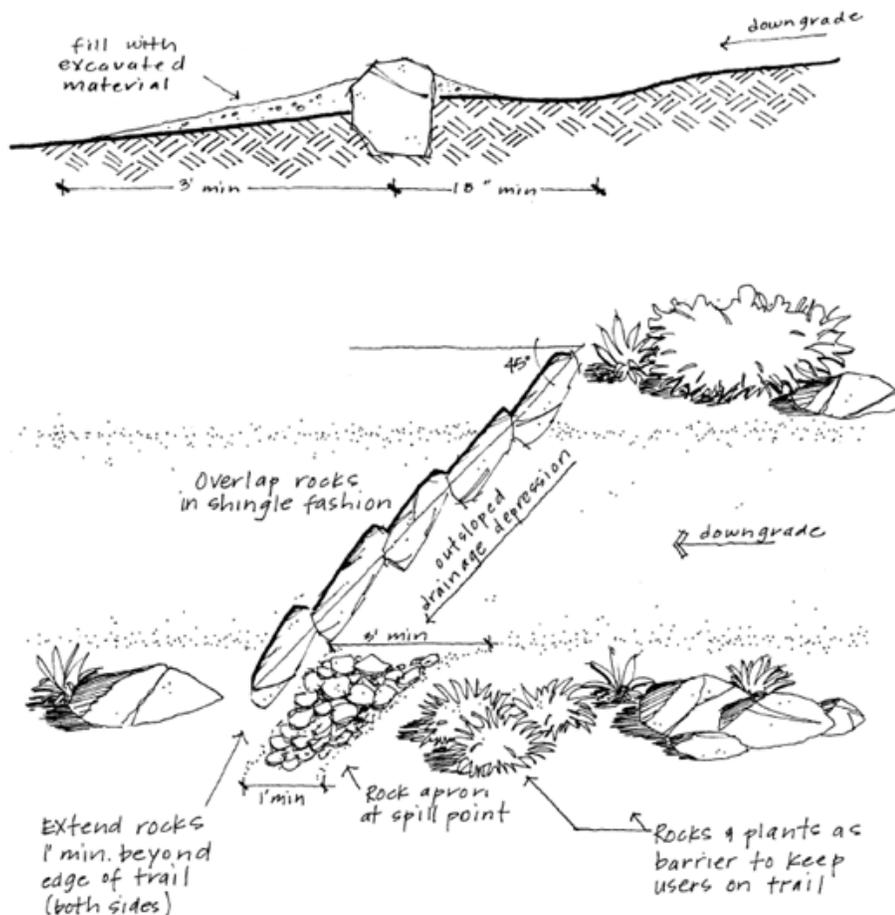


FIGURE 8.3-6 ROCK WATERBAR

NON-PAVED TRAILS

2. Log Waterbar

A log waterbar is constructed by embedding solid, bark-free, rot-resistant timber into the trail surface at a 45-degree angle. Creosote-treated railroad ties or telephone poles are not acceptable for use as waterbars. Logs must have a minimum of an 8 inch diameter and be embedded halfway into the trail surface. Log waterbars must be secured with two 18-inch-long, ½ inch-diameter pieces of rebar. Drill a 7/16 inch hole through the log, 8 inches from each end. Place the log in the desired location and drive the rebar through the holes into the trail surface until rebar is flush with the log surface. The Trails Planner must approve the use of log waterbars.

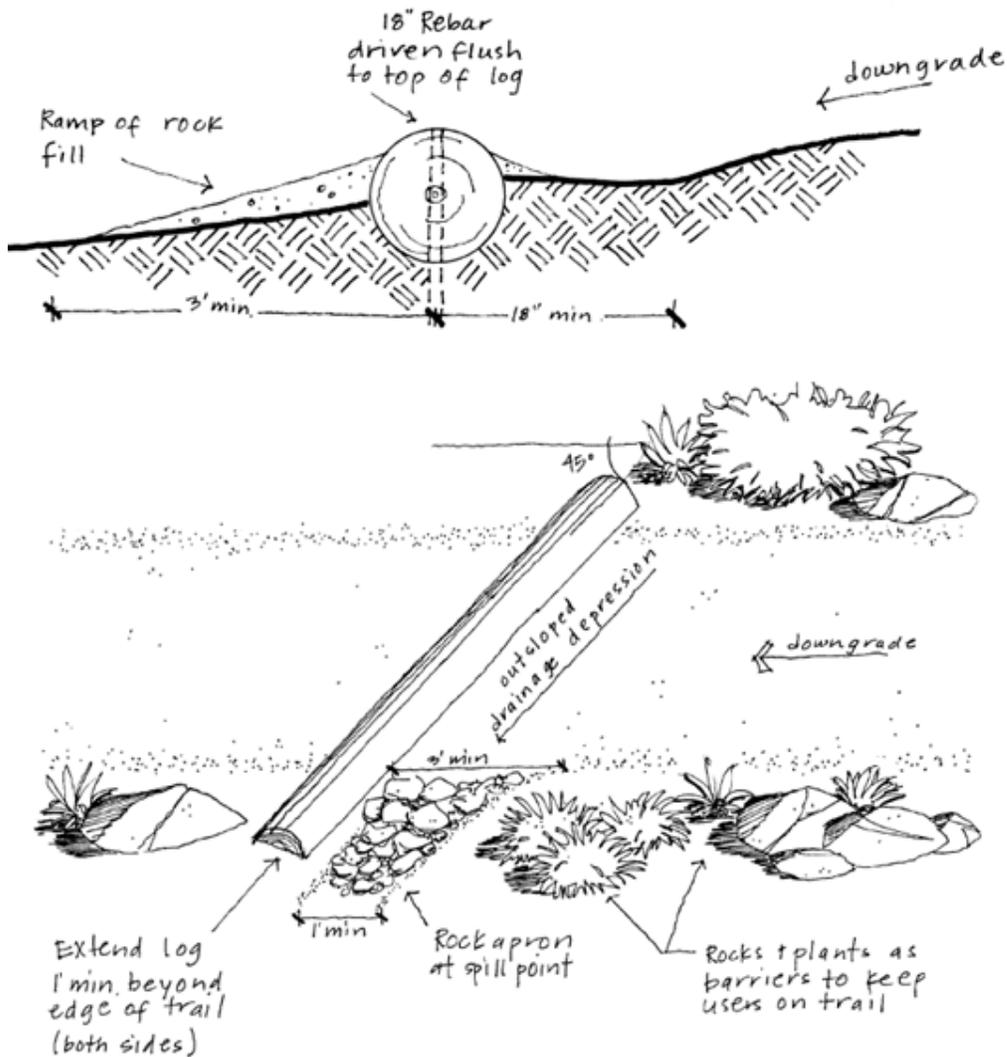


FIGURE 8.3-7 LOG WATERBAR

C. Culverts

In desert environments, most watercourses flow only seasonally, therefore culverts are usually not necessary. Culverts tend to be maintenance intensive and can detract from the aesthetics of the natural environment. Culverts should only be constructed where a

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gentle grade must be maintained such as with a Barrier-free Trail or where there is permanently flowing water. In all other situations, a desert wash crossing should be used, refer to Section 8-3.304. Rock or pipe culverts must match the downstream gradient and have a diameter of at least 12 inches to accommodate necessary cleaning. Improperly constructed culverts will clog with debris, causing water to flow over and damage the trail tread. All rock used in the construction of culverts must be native.

1. Rock Culvert

The proper construction of rock culverts depends greatly on the proper selection and placement of rocks of sufficient size and shape. The bottom surface of the drainage must be armored with rocks to prevent erosion. Stone headwalls must be placed to armor the outside faces of the crossing. All rocks must be firmly placed similar to the construction of a retaining wall. Refer to Figure 8.3-8 below.

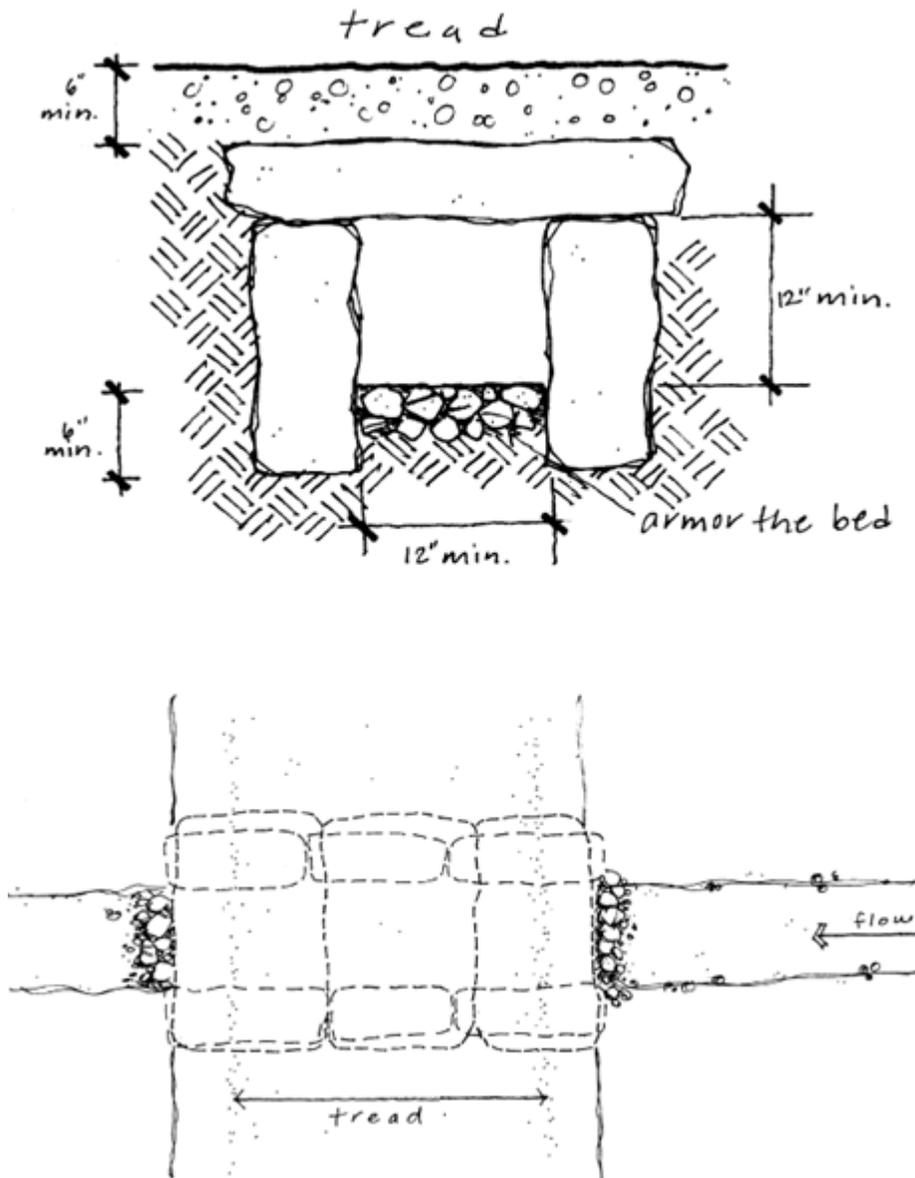


FIGURE 8.3-8 ROCK CULVERT

2. Pipe Culvert

Pipe diameter must be at least 12 inches. Embed the pipe in a stable foundation of gravel and soil, and backfill with compacted gravel and soil. Construct a headwall of firmly placed native stone to protect the outside faces of the tread crossing and cover the pipe so it cannot be viewed from the trail. The trail tread should be at least 6 inches higher than the top of the pipe. See Figure 8.3-9 below.

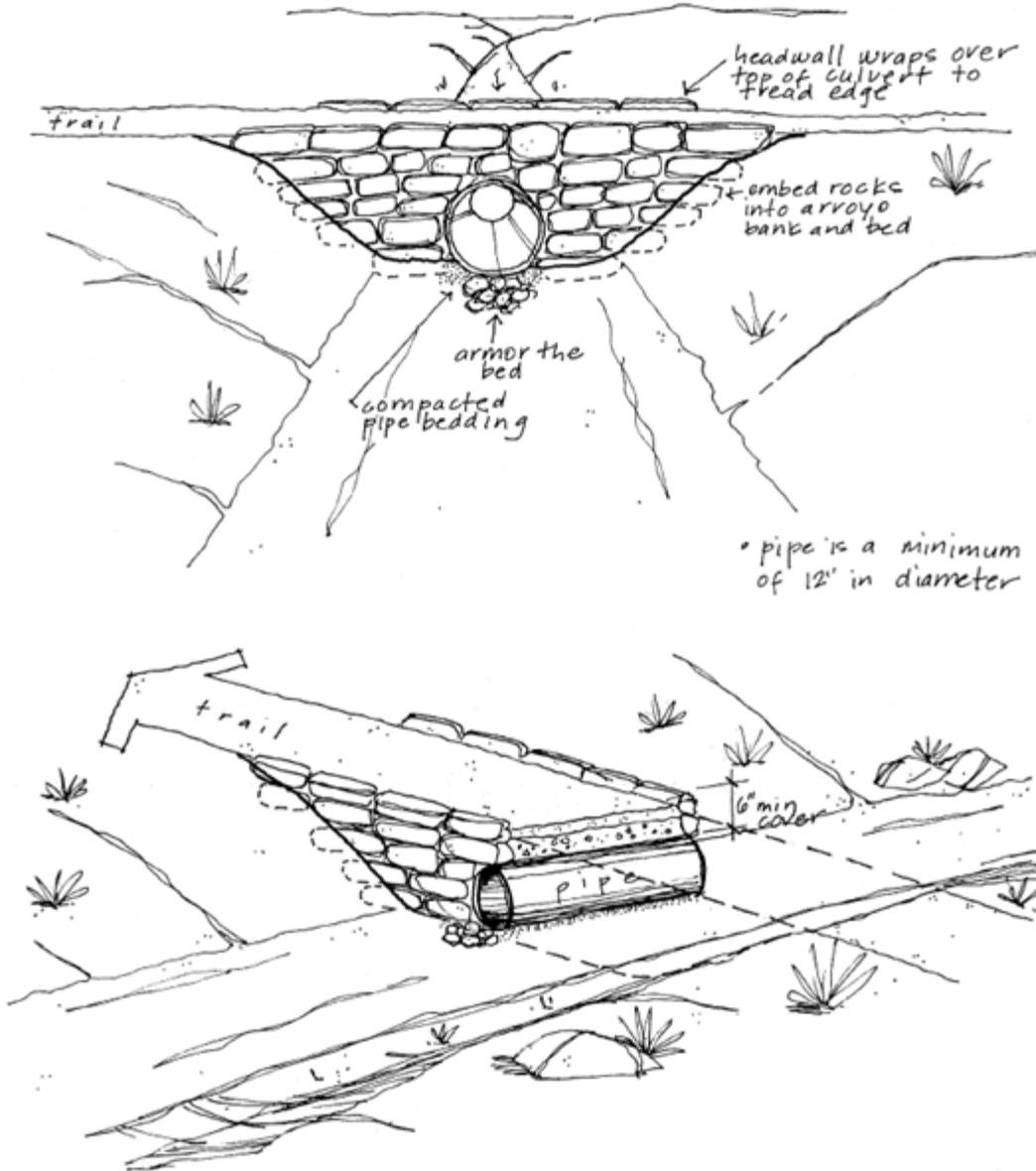


FIGURE 8.3-9 PIPE CULVERT

SPECIAL STRUCTURES

A. Retaining Walls

Retaining walls are stone structures used to stabilize trails on steep side slopes. A solid foundation is key to the strength and durability of a retaining wall. The foundation should be set in solid earth or rock, with the base sloped inward towards the hillside. Rock used in construction should be derived from the surrounding area. Ideal rocks are durable, weather resistant and free of structural defects. Large rocks should be used in the foundation, smaller rocks in the middle tiers and large rocks again for the upper tiers. Approximately 25 percent of the rocks used in the wall must be header stones. A header stone is a rock placed with its longest dimension extending into the hillside, perpendicular to the face of the wall. All other rocks should be placed with their longest dimension parallel to the face of the wall. Thickness of the wall should be at least ½ its height, or 2 feet thick if the height is less than 5 feet. The outer face of the wall should slope inward towards the hillside at a rate of 3 inches per every 12 inches in height. Joints should be staggered at least 6 inches horizontally. Each rock should contact the rock below in at least three places. Shims must not be used because they are prone to shifting. If cement is used to provide additional stability, it must be colored to match the native rock. Backfill the wall with small stones and cover with soil until the proper tread surface is established. Refer to Figure 8.3-10 below.

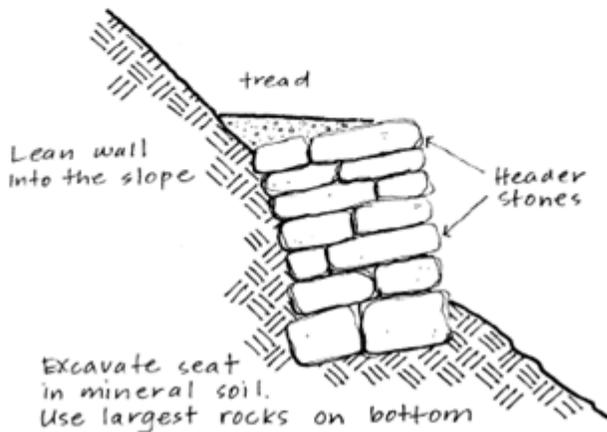
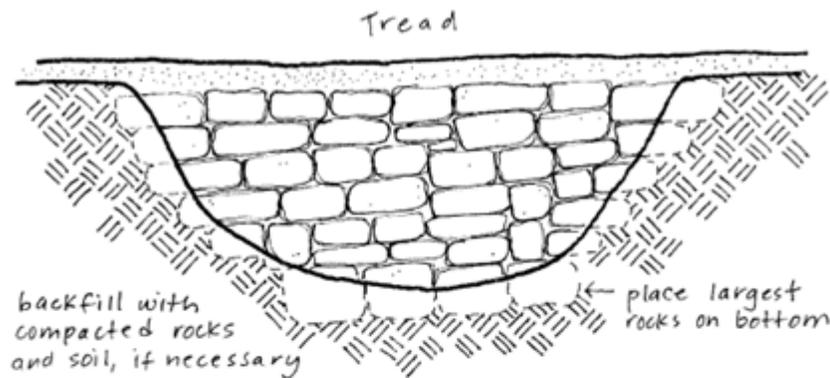


FIGURE 8.3-10 ROCK RETAINING WALLS

B. Riprap

Unlike a retaining wall, riprap does not support the weight of the trail tread. Instead, riprap is used to stabilize steep slopes above and below the trail tread (backslope and fillslope, respectively). Begin by clearing a firm foundation at the downhill edge of the riprap. Set the largest rocks in the foundation. Place smaller rocks on the surface of the slope continuing up the slope to the desired location. Be sure that the riprap does not impede the flow of surface water off the trail tread. Riprap can also be used to protect drainage and leadoff ditches from heavy erosion and to stabilize switchback turns. Riprap should be constructed of native rock. If cement is used to provide additional stability, it must be colored to match the native rock. Refer to Figure 8.3-11 below.

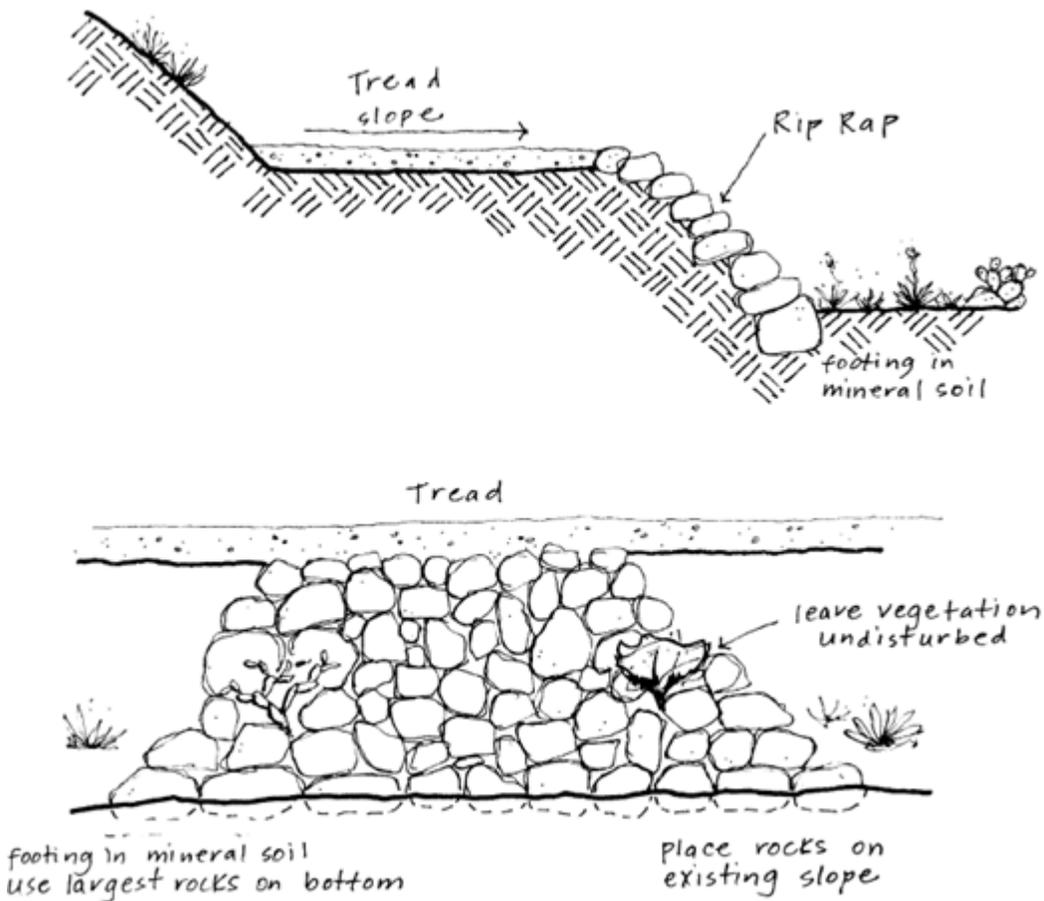


FIGURE 8.3-11 RIPRAP

C. Desert Wash Crossings

When trails cross washes, the greatest concern is protecting the trail from flowing water. The trail segments approaching the crossing and the location where the trail meets each edge of the desert wash must be stabilized with securely placed rocks. Trail segments approaching the desert wash should range from 5 to 15 percent for all trail classifications and cross at a 90 degree angle to the desert wash to prevent water from leaving the primary channel and flowing along the trail surface.

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The slopes adjacent to the trail may need to be stabilized with riprap. A row of large rocks should be embedded along the desert wash banks at the point of contact with the trail. Be sure that the flowing water will not undercut these rocks. Refer to Figure 8.3-12 below.

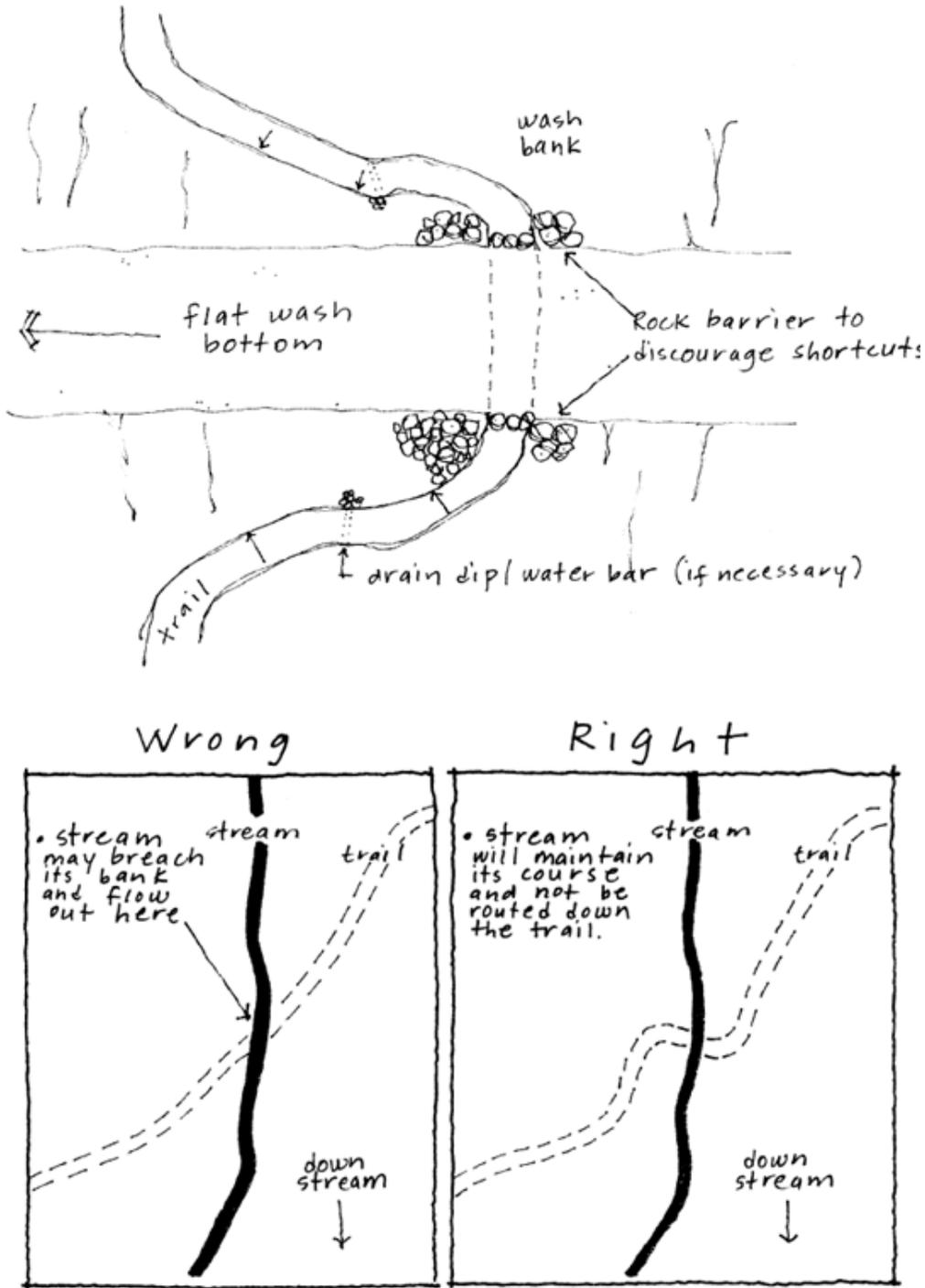


FIGURE 8.3-12 DESERT WASH CROSSING

D. Switchback and Climbing Turns

NON-PAVED TRAILS

These two trail design elements are used to change the direction of travel on a hillside and to gain elevation in a short distance. The difference between is that climbing turns maintain a consistent longitudinal slope through the turn, while switchbacks have a near level landing at the turning point. These structures can be very difficult to construct, therefore careful planning should be conducted to avoid using them. The city Trails Coordinator should be consulted in situations where switchbacks may be necessary.

Avoid “stacking” a set of many short switchbacks and/or climbing turns on a hillside. Longer trail segments between switchbacks and/or climbing turns are less visible and reduce short cutting by trail users. Understanding the psychology of the trail user is important in the design of these structures. The layout must convince users that the established trail is the easiest, most convenient route to ascend the slope. If users feel it is not, they will create short cuts, refer to Figure 8.3-13 below.

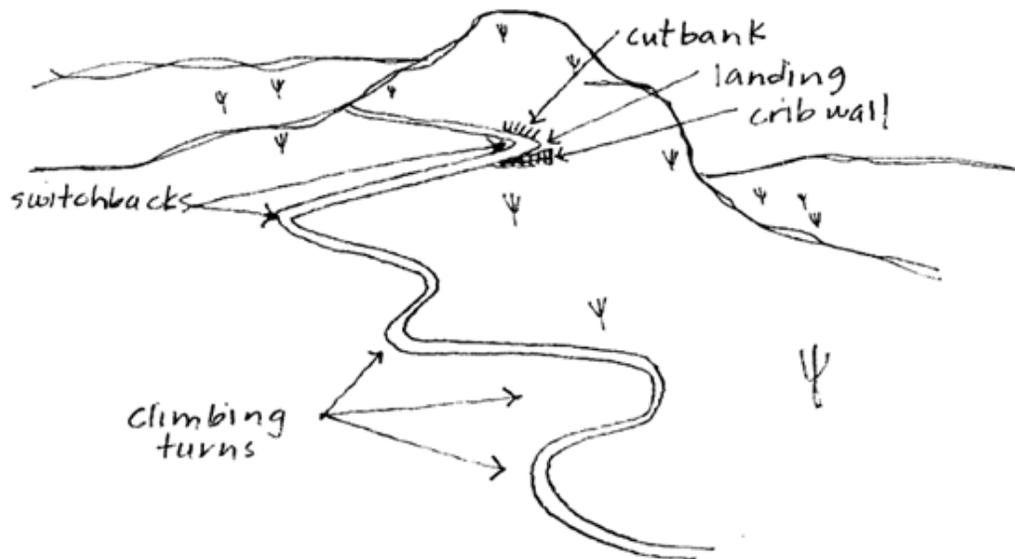


FIGURE 8.3-13 SWITCHBACK AND CLIMBING TURN CONCEPTS

1. Switchback Turn

Switchback turns are typically used on side slopes of 20 to 45 percent, but can be used on slopes up to 55 percent with the use of retaining walls. These structures are extremely difficult and expensive to construct. Trail routes should be planned carefully to avoid areas of steep, impassible terrain that would require switchbacks.

The key to a good switchback is proper placement on the terrain. Naturally occurring level areas or platforms are prime locations. Survey the hillside that the trail must ascend, locate the natural platforms and then connect the trail to these points. Trail segments leading to and away from the switchback must maintain the maximum longitudinal slope permitted for that trail classification. Locating switchbacks in areas where there are obstructions such as rock outcroppings or trees that will prevent short cutting is also desirable. Obstructions such as rocks, logs, or other debris may also be strategically placed to keep users from leaving the trail.

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Switchbacks consist of 2 approaches, a landing or turn platform, a drain for the upper approach and platform, and guide structures. The upper approach and the upper half of the turn platform are excavated from the hillside. The lower approach and the lower half of the turn platform are constructed on fill. The construction of switchbacks on a full bench can be very labor intensive and expensive. The last 65 feet of each approach before reaching the turn platform should be as steep as the trail classification will allow. The last 10 feet of the approaches should be smoothly transitioned into the grade of the turn platform. A flat grade approaching the turn platform must be avoided because it will cause trail users to short cut the switchback, refer to Figure 8.3-14 below.

As the upper approach descends toward the turn, a drain dip should be installed. Below this point, the tread and the upper half of the turn platform must be insloped towards a drain ditch. The ditch must be 1-foot-deep and 1-foot-wide and have a rock apron at the spill point.

The turn platform must not exceed a slope of 5 percent. The upper side is excavated from the hillside. The removed soil is then used to fill in the lower portion. Riprap or retaining walls may be required to provide stability to the backslope and fillslope. The turning radius must be no less than 8 feet to provide adequate turning area for equestrians and mountain bicyclists. The lower portion of the turn platform and the lower approach should be outsloped. Riprap or a retaining wall may be needed along the inner portion of the switchback to maintain the backslope of the lower approach.

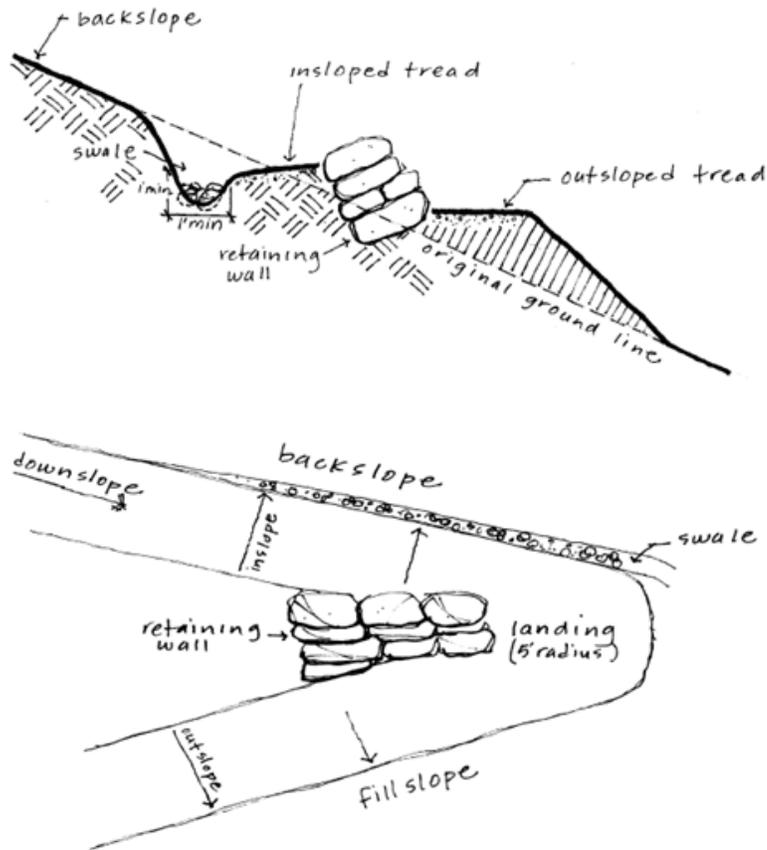


FIGURE 8.3-14 SWITCHBACK TURN

2. Climbing Turns

Climbing turns are similar to switchbacks because they are also used to reverse the direction of travel and gain elevation. Climbing turns differ however because they maintain a uniform longitudinal slope through the turn. There is no level turning platform. A climbing turn is built on the same slope as the hillside. Where the slope of the hillside turns, the climbing turn ascends at the same rate. Climbing turns must not be constructed on side slopes greater than 20 percent because they are prone to erosion. Climbing turns in appropriate terrain require very little work to construct. The approaches to the turn should be full bench construction. As the trail approaches the turn, the amount of excavation decreases. The turn itself requires no excavation other than the removal of the surface layer of leaf litter. Refer to Figure 8.3-15 below.



FIGURE 8.3-15 CLIMBING TURN

E. Steps

The use of steps should be avoided due to unsuitability for equestrians and mountain bicyclists and excessive maintenance requirements. Steps should be used on hiker-only trails when elevation must be gained rapidly over a short distance and there is no other option. Steps must not be used on trails intended for use by equestrians or mountain bicyclists. Steps should be constructed of rock collected from the surrounding area. Rocks should be rectangular in shape, large enough to maintain their position (50 to 100 pounds each), and wide enough to span the width of the trail. Choose a location that will prevent trail users from traveling around the steps. Construction should begin with the lower steps and continue up the slope. Each step must be placed in an excavated seat and backfilled with small rocks and soil to assure stability. Refer to Figure 8.3-16 below.

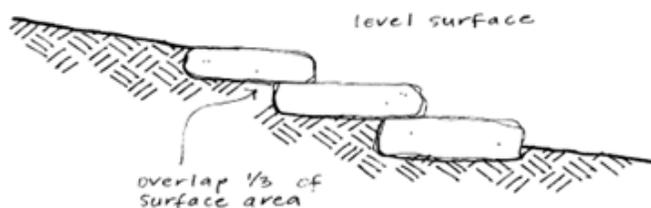


FIGURE 8.3-16 ROCK STEPS

F. Trail Safety Barriers

Trail Safety Barriers must comply with COS Standard Detail No. 2682 available online at www.ScottsdaleAZ.gov/design/COSMAGSupp.

1. Location

The location of safety barriers should not restrict sight distances for roadway traffic or trail users. Refer to Figure 5.3-46 for roadway sight distance requirements. Special attention to the design and construction of barriers is particularly important near intersections. Safety barriers must be installed between a trail and a roadway if the trail is located within an unsafe distance to the roadway, or if the trail shares an

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underpass or overpass with a roadway. Safety barriers must also be installed if the trail is elevated above an adjacent roadway and the side slope is greater than 6:1, or where trails are in close proximity to other steep drop-offs. All safety barriers must be at least 3 feet from the edge of the trail.

2. Design Criteria

Appropriate safety barriers include fences, railings, or suitably thick vegetation. Other types of materials may be suitable subsequent to approval of the city Trails Coordinator. The materials and character of the barrier must be compatible with adjacent development, landscaping and topography. The minimum height should be 4 feet for structural barriers and 5 feet for vegetation barriers.

3. Trail Access Gates

Trail Access Gates must comply with COS Standard Detail No's. 2680-1 and 2680-2, available online at www.ScottsdaleAZ.gov/design/COSMAGSupp.

These gates are designed to restrict motorized access to trails except as permitted for maintenance and emergency purposes. The gate design must permit equestrian passage without requiring the rider to dismount. These gates should be located at trailheads, where trails cross major roads, and at other points where motorized vehicles are likely to attempt to access a trail.

ROAD CROSSINGS

8-3.304

A. Overpasses

An overpass is a structure spanning a roadway, canal, or desert wash, etc. that functions exclusively as a crossing for a shared-use trail. There are many different varieties of overpasses that may be acceptable. The city Trails Planner must be involved in the planning and design process, and must approve all overpasses prior to construction. In general, minimum clearance is 10 feet both horizontally and vertically.

B. Bridges

A bridge is a structure spanning a roadway, canal, desert wash, or other obstacle that serves as a crossing for a roadway as well as a shared-use trail. The city Trails Planner must be involved in the planning and design process, and must approve all bridge crossings prior to construction. The minimum width of a trail crossing a bridge is 8 feet and the minimum vertical clearance is 10 feet.

C. Underpasses

These structures, used to provide passage for trail users under roadways, are typically constructed of pre-cast concrete box culverts. Other varieties of culverts are acceptable provided they meet the required dimensions and allow footing that is appropriate for all types of trail users. The width of a trail traveling through an underpass should not be less than 10 feet. Vertical clearance is an important concern, particularly for equestrian trail users. The minimum vertical clearance is 10 feet. Natural or vandal-resistant electric lighting should be installed for underpasses greater than 50 feet in length. Lighting shall achieve an average of 2-foot candles. Sight distances approaching and exiting the underpass must be adequate, to avoid creating a safety hazard. Underpass design should not allow for the accumulation of nuisance water on the trail. If water does not drain from the underpass by gravity flow, a pump

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system must be provided to remove the water. The surface of the underpass should be slip resistant, such as broom finished concrete.

D. At-Grade Crossings

An at-grade crossing occurs where a trail passes across the surface of a roadway. Safety of trail users is the primary concern when planning at-grade trail crossings. Ideal locations for such crossings are at roadway intersections with light amounts of traffic that have existing stop signs, traffic lights, or designated pedestrian crossings. Crossings should be on level grades where both trail users and motorists have long sight distances. Sight distances vary depending on the roadway classification, refer to Figure 5.3-26 for more details. Additional safety precautions include installing pedestrian activated traffic signals, signs warning motorists of the trail crossing and signs warning the trail users of the road crossing.

TRAIL ACCESS FACILITIES

The design criteria for trail access facilities addressed in this manual are conceptual. The planning, design and construction of such facilities will be conducted on a case-by-case basis and will require various levels of city review and approval beyond the scope of this manual. Potential trailhead amenities include, but are not limited to, pull-through horse trailer parking spaces; regular vehicle parking spaces; potable drinking water; water troughs for horses; hitching posts or corrals; year-round natural shade areas; bike racks; informational, interpretive and directional signage; entrance gates; restrooms; shade ramadas; and picnic tables. Refer to Figure 8.3-17 on the following page.

8-3.400

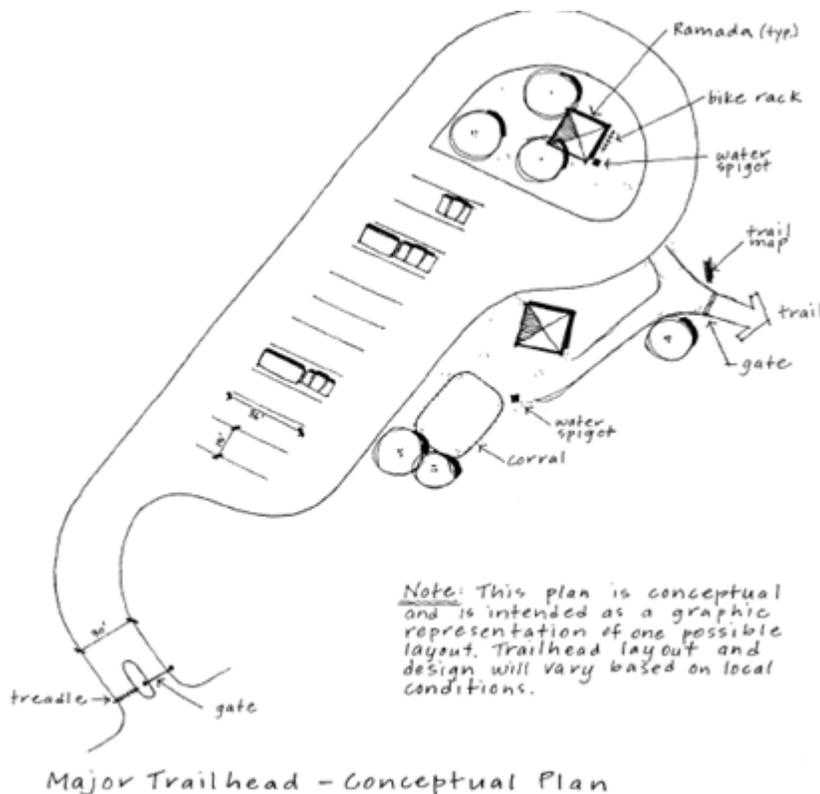


Figure 8.3-17 TRAIL ACCESS FACILITY CONCEPT

TRAIL SIGNS AND MARKERS

SIGN LOCATIONS

The proper location of signage is important in maintaining the safety of trail users, preserving the natural environment and promoting the presence of the trail. The number and location of signs should be carefully considered, as a lack of signage or poorly located signs can create hazardous situations for trail users. An overabundance of signs can also detract from the aesthetics of the trail and decrease the quality of the trail users' experience.

Trail signs are typically located at trail intersections, locations where trails cross roadways and any other areas where it may be difficult to follow the route of the trail. Trail signs should be placed 1.5 feet to 3 feet from the edge of the trail.

SIGN SPECIFICATIONS

This standard applies specifically to trails classified as Urban or Rural. Additional standards may be developed for Backcountry Primary and Secondary trails pending review and approval from the city's Preserve Division, refer to Figure 8.3-18 on the following page.

8-3.500

8-3.501

8-3.502



FIGURE 8.3-18 TRAIL SIGNS

A. Sign Specifications

NON-PAVED TRAILS

1. Blanks

Sign blanks must be 0.080-gauge aluminum. Thicker, 0.125 gauge aluminum should be used for signs prone to vandalism, such as the “No Motorized Vehicle” signs. Blanks must be covered with reflective sheeting of street transportation quality vinyl. There must be 2, predrilled, 3/8 inch holes. The holes must be centered horizontally with the center of each hole being ½ inch from the top and bottom edges. Corners must be rounded with a 1 inch to 1½ inch radius, depending on the size of the sign.

2. Lettering

- Font must be Garamond or similar style.
- Point size should be relative to the size of the sign.

3. Colors

Background must be dark brown with reflective white lettering and symbols. There must be a ¼ inch to ½ inch, white reflective border. For regulatory signs such as the “No Motorized Vehicle” sign, there shall be a white reflective background with red lettering.

4. Sign Mounting Hardware

- 3/8 inch, vandal resistant, steel drive rivets.

B. Post Specification

Posts shall be constructed of 1-¾ inches x 1-¾ inches, 12-gauge, square steel tubing with 7/16 inch, pre-punched knockouts on 1 inch centers. Post lengths must be 6 feet. All steel posts shall be powder coated with color to match natural rust as closely as possible. The trails planner must approve color samples prior to fabrication.

C. Sleeve and Anchor Specifications

Sleeves and anchors shall be used in locations where it is possible for a vehicle to come into contact with the signpost, such as adjacent to a street. The use of the sleeve and anchor promote easy breaking-away of the sign post in the event of a collision and increase the ease at which the sign can be replaced.

1. Anchors

Anchors shall be 2 inches x 2 inches x 30 inches, 12-gauge galvanized square tubing with 7/16 inch, pre-punched knockouts on 1 inch centers.

2. Sleeves

- Sleeves shall be 2-¼ inches x 2-¼ inches x 12 inches, 12-gauge, galvanized square tubing, with 7/16 inch, pre-punched knockouts on 1 inch centers.

3. Anchor Assembly Hardware

- 3/8 inch, vandal resistant, steel drive rivets.

4. Telescoping Properties

The finish post, anchor and sleeve must be straight with a smooth uniform finish to allow each component to telescope with each consecutive larger or smaller piece.

INSTALLATION

Signposts adjacent to streets are to be installed according to COS Standard Detail No. 2131 and 2683, available online at

8-3.503

NON-PAVED TRAILS

<http://www.scottsdaleaz.gov/design/detaildrawings/sd2600series> , and the Manual of Uniform Traffic Control Devices.

In non-roadside locations the signpost can be mounted directly into concrete. The finished height of the post should be 5.5 feet.

Various combinations of signs can be mounted on a single post to address the management needs of the particular area.

All signs are to be mounted to the posts with 3/8 inch, vandal resistant, steel drive rivets, refer to Figure 8.3-19.

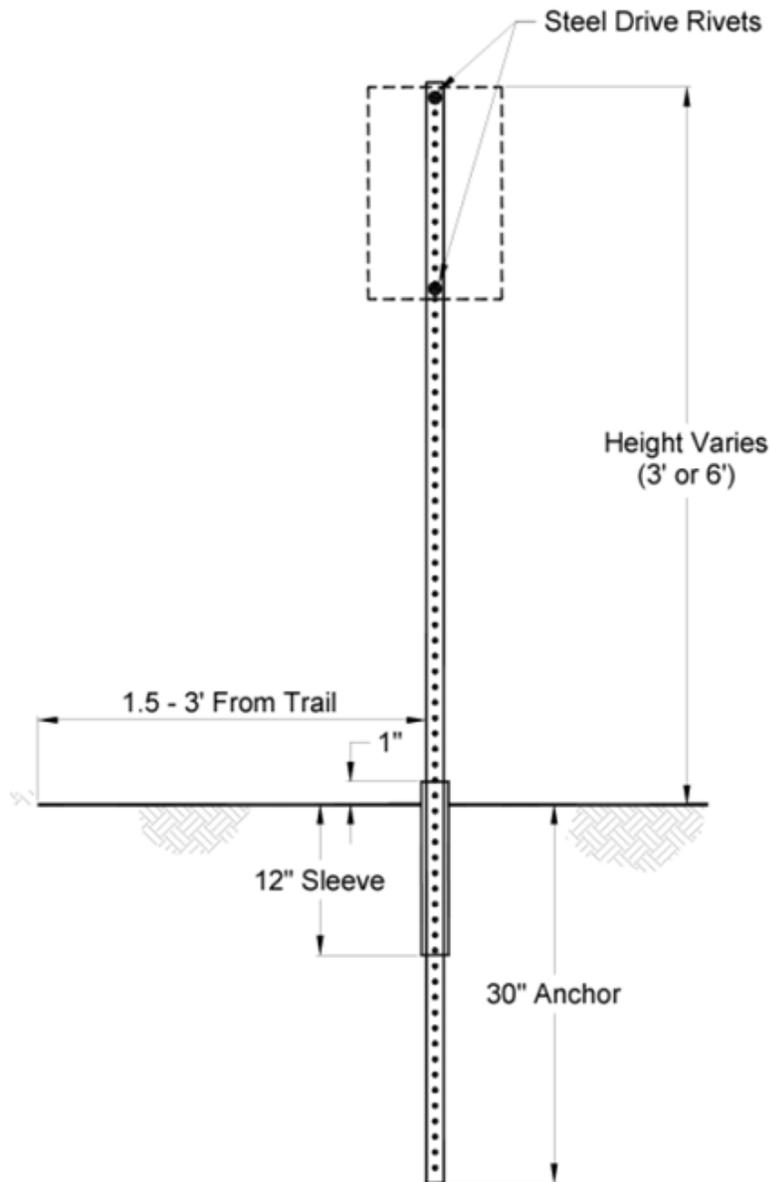


FIGURE 8.3-19 TRAIL SIGN INSTALLATION

DEVELOPER-PROVIDED SIGN STANDARD

8-3.504

Developers may provide their own signage consistent in color and theme with the surrounding development. At a minimum, these signs must be designed according to COS Standard Detail no. 2684, available online at available online at <http://www.scottsdaleaz.gov/design/detaildrawings/sd2600series> . The sign must accommodate the triangular “Trail Courtesy” graphic, the “City of Scottsdale Trail System” logo, and the standard hiker, equestrian and mountain bicycle icons. These required signs may be installed on the same post as developer-provided signs, or the graphics may be incorporated directly into the developer-provided sign.

TRAIL MAINTENANCE

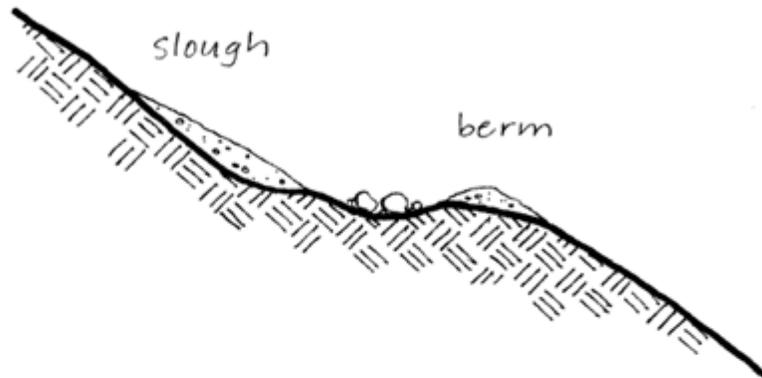
8-3.600

A. Slough and Berm Removal

Slough (pronounced “sluff”) is material that has moved downhill from the backslope and been deposited along the uphill edge of the tread. This process causes trail users to travel along the outside edge of the trail. The tread eventually narrows and moves downhill from its original location resulting in an unsafe situation. The slough must be removed to reestablish the proper backslope. The excess material may be used to fill holes in the trail tread and re-establish the outslope, or to build up the downhill side of waterbars.

Berm is soil that has built up on the downhill edge of the trail tread. Berm prevents water from flowing off the side of the trail and allows water to channel down the trail causing erosion. A berm may also cause nuisance water to pool on the trail surface resulting in soil saturation. Saturated soil is damaged easily and forces trail users to detour around the area causing the trail to widen. Berms should never be constructed intentionally and should be eliminated whenever present. Refer to Figure 8.3-20 below.

Before Reconstruction



After Reconstruction

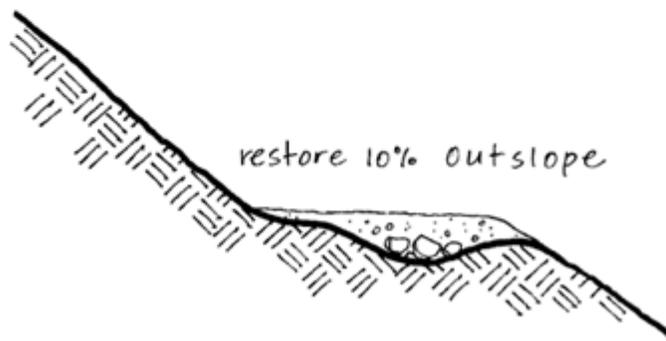


FIGURE 8.3-20 SLOUGH AND BERM REMOVAL

B. Vegetation Clearance Maintenance

All plants encroaching on the vegetation clearance limits for the particular trail classification must be cut back. Branches should be cut close to the main stem without cutting into the branch collar. Plants being removed must be cut flush with the ground and stumps must be removed to prevent safety hazards. All plants growing within the trail tread must be grubbed out.

Trails within landscaped areas may be sprayed with herbicide. All removed plant material must be scattered in a location not visible from the trail.

C. Tread Maintenance

In addition to slough and berm removal, the remaining trail tread should be restored to its original design condition. All loose rocks, rock points, stumps and roots protruding from the trail surface should be removed. All holes should be filled to create a smooth, obstacle-free trail tread. Maintaining a proper outslope is critical to the long-term condition of the trail.

NON-PAVED TRAILS

D. Drainage Maintenance

Special attention should be directed to the maintenance of drainage structures. These structures are extremely important in protecting the trail from erosion. If they are not maintained properly, the trail will be prone to erosion and may become unsafe for public use and require extensive amounts of labor to repair. All repairs to drainage structures must restore them to their original standard construction specifications.

E. Special Structure Maintenance

Structures such as waterbars, culverts, switchbacks, retaining walls, desert wash crossings, overpasses and bridges, etc. are rather expensive and labor intensive to construct. Proper maintenance will prolong the life of the structures and help prevent safety hazards. Structures should be inspected annually and maintenance performed as needed. All repairs to special structures must restore them to their original standard construction specifications.

F. Sign Maintenance

Sign maintenance includes replacing missing or damaged signs and assuring the accuracy of the information on the signs, as conditions may change over time. All signs that are damaged, weathered, or for any other reason do not serve their intended purpose should be repaired or replaced according to the sign standards described in this manual.