

Efficient Park Maintenance Operations

Currently the parks maintenance crew is able to keep the parks in Casa Grande clean and safe for public use. However, there is competition for resources to make improvements or updates. The maintenance department is small and efficient communication allows for work distribution, equipment allocation and passing along standards of care for park maintenance. As the community grows, the maintenance department will also grow. The department will need to establish standards and a staffing plan to provide a smooth transition for the growing department.

Creating a unique identity for Casa Grande Community Services

The Community Services Department should build upon its unique function in the community by continuing partnerships with in the community to create a system that is built upon resources that are available to the department. This identity can be further bolstered by creating artful and identifiable facilities and providing Casa Grande specific programs and opportunities. Efforts such as these will foster public pride and participation. Included in the cost estimates for CIP projects is a 1% public art fee that will encourage the development of creative parks.

2. Open Space

Currently Casa Grande has several open space properties and corridors. Both mountain parks, although considered parks, function as large tracts of open space and will remain example of the native landscape as the region grows. The City has identified the Santa Cruz Wash as a natural corridor that need to be preserved and planned to increase access to the area by adding a trail thought the corridor.

Key Issues for Open Space

A Proactive Approach

Rapid development of open land is occurring in Casa Grande. A proactive program is needed that identifies lands worth preserving for the benefit of future generations, and outlines the tools and strategies for protecting these lands.

Protection and Enhancement of Natural Areas

Lands which are not threatened by development due to their location in floodplains or other factors may be in need of stabilization or restoration. Areas which may have once been rich in ecological or scenic value, but have been degraded, could become valuable once again through cleanup and restoration. Designating these lands as open space would provide the impetus needed for this to occur.

Open Space Connections

Open space can serve as both separator and connector simultaneously. Linking open lands together creates a network of corridors that allow for the movement of wildlife and people along greenways of natural space. These corridors can link communities together at the same time that they separate them and allow them to keep their identities.



Integration of Human Use with Preservation of Natural Qualities

Planning and management of open space areas must balance activities such as low-impact recreational use with preservation of habitats and protection of sensitive species.

3. Trails

In the survey that was conducted in the summer of 2005 as a part of this study, respondents showed high interest in using, creating, and funding walking and biking trails in the City of Casa Grande. Sixty percent of respondents have a need for walking and biking trails and 58% of respondents felt that their needs are being only minimally met. Walking and biking trails are the most important recreational facility in the Community Services Department according to respondents in the survey. The survey also showed that citizens are most willing to fund the improvement and expansion of walking and biking trails over all other recreational improvements. In addition to the survey, citizens in focus groups and at public meeting also showed interest in expanding and improving trails within the community.

Participants at the public meetings also expressed a strong interest in trails in the mountain parks. The mountain bike community, as well as hikers in the area see the benefits of developing a more extensive and trail system in the two mountain parks. Ideally these trails would connect to other regional trails and public lands.

Key Issues for Trails

Connectivity

The goal is to create a system of connected trails that link to open space, parks, schools, and other community features. Current plans for The Santa Cruz wash will serve as a good start in the creation of a spine trail running east and west across the City, but for this to become a system, a network of trails will be needed that create looped routes and connect to one another. Connections to other trails beyond the borders of The City of Casa Grande are also needed to make the trail network part of a regional system of trails.

Environmental Sensitivity

Trail development should occur in a way that provides access and connectivity to open space areas without undue disturbance or impact to wildlife habitat and plant species.

Education

The trail system should maximize opportunities to inform the public about the natural and cultural heritage of The City of Casa Grande, by exposing people to the natural and agricultural lands within the area and providing interpretive experiences.

F. Design Guidelines for Parks and Open Space

In order to address design and level of service equity, the City of Casa Grande needs to put into place parks and open space design guidelines that can be used both for new construction and to keep existing parks up to the same standards. The following section



is intended to address the need for these guidelines, and is intended to be available as a stand alone section utilized for addressing future development ordinances and in relation to decision-making for planned development. The following guidelines, when combined with the Capacities LOS, Score Analysis and **GRASP**[®] Mapping analysis can provide a comprehensive guide to park and trail planning and design.

Partner Documents

These guidelines for parks, trails, and open space address several of the policy recommendations of the *Casa Grande General Plan 2010* – particularly in **Section 6.4, Goals 1 and 2**. Specifically the guidelines: List “typical” park components (1.1.6), provide design guidelines for developers to develop parks (1.1.10), provide flexibility to address the unique needs of each neighborhood (1.2.2.)

In addition to these Design Guidelines, which provide guidance for component selection and park placement, the City may also want to consider developing *construction standards* which deal with specific construction methods, materials and specifications of components.

1. Recommended Amended Design Guidelines for Parks Land

This recommendation proposes amending and detailing the *Residential Design Standards for Planned Area Developments, City of Casa Grande, 2003*, Section 1A. Mandatory PAD Layout and Design Standards, 1. Open Space.

The section states:

- A minimum of fifteen percent open space shall be provided within the single-family residential portions of a PAD.
- At least fifty percent of the required open space must include parks, multi-use trails, bike paths, turfed retention areas, tot lots, and/or other outdoor active or passive recreational improvements.

The proposed amendment would state that:

- Of the required open space, 50% *of the area* (or as approved by the City) shall be developed as usable for parks and trails. Useable open space does not include detention or retention areas unless approved by the Community Services and Planning Departments. Regardless, in each retention area, a minimum of one operational drywell shall be installed and maintained in perpetuity. In addition, during construction, all subdivisions are required to comply with the S.W.P.P.P., Storm Water Prevention Protection Plan.
- Within the developed area, 25% (or as amended) shall be set aside for trail corridors (assuming a 25' R.O.W. - or as approved by the City). The remainder of the useable open space shall be developed for recreational improvements subject to the requirements as it is written below.
- Generally, golf courses do not fall into the open space category.



For Example:

A developer comes to the City with a Planned Area Development (PAD) that will be one square mile. As stated the current PAD development the following acreages would be as follows:

Total PAD acreage = 640 ac.

15% required Open Space = 96 ac. dedicated to open space

50% developed Open Space (7.5% of total PAD) = 48 ac. developed Open Space

25% trail dedication (1.875% of total PAD) = 12 ac. dedicated trail ROW

When looked at in terms of linear feet (lf.) of trail in the same development, it looks like this:

12 acres of 25' trail ROW =

12 ac. * 43,560 sf. per acre = 522,720 sf.

522,720 sf. / 25' width of trail ROW = 20,908.8 linear feet of trail

20,908.8 lf. / 5,280 ft. per mile = 3.96 miles of trail.

3.96 miles of trail will create (2) one-mile trails that run through the center of the above development and (2) perimeter trails. It is assumed that as the surrounding land develops, the other perimeter trails will be developed by surrounding developments.

All other provisions of the original document would remain in force, plus all other sections within this document relating to Parks, Open Space and Trails recommended Design Guidelines. In addition, developed recreational land shall adhere to the recommended 1,000 foot radius access distance from each dwelling unit as set out in the Design Standards (or as approved by the City). It is recommended that this standard also apply to Multi-family developments.

2. Recommended Design Guidelines for Park Components

Developed parks should be required to be made up of a combination of the following components upon approval by the Community Services Director, or designated representative, based on level of service, and according to the formula in the next section.

List A - Infrastructure – Required

Electricity

Irrigation

Security lighting

Trash receptacles (min. 1 per acre - no more than 6 per acre)

Landscaping (using plants from recommended plant list to be developed by the Community Services Department)

Water service

Pedestrian Trails as described in Figure 7 – Alternative Primary Trail (or as approved)

Trees (above and beyond City street landscaping requirements 17.52.510)



List B - Pre-selected components – Select 2

Group picnic ramada (min size 800 sf and 6 tables)
(2) Individual ramadas (min size 400 sf and 2 tables)
Open turf area (min size 3,000 sf., max size 10,000 sf)
Natural area (min size 10,000 sf)

List C - Components of choice – Select 2

Amphitheater
Basketball (one full court)
Bocce ball
Disc golf course (min 9 baskets)
Fitness course
Handball or racquetball
Horseshoe pits
Loop walk (min length 2000 lf.)
Natural area (if not used as pre-selected component)
Off-leash dog area – fenced (min size - 1 acre)
Open turf (if not used as pre-selected component)
Playground
Practice backstop (with turf size adequate for min. 200 ft. foul lines – may be on required turf area)
Other Sports Courts (i.e.; Pickle Ball, etc.)
Public Art
Shuffleboard
Spray ground
Tennis
Volleyball
Water feature (A passive water-based amenity that provides a visual focal point. Includes fountains, ponds, and waterfalls)

Or

(In lieu of 2 List B and 2 List C)

List D – Specialty components

Select 1 List B component and one item listed below with required parking and restrooms (can be enclosures for portable toilets) and 5 items from List E – Comfort and Convenience features

- Community Center
- BMX course
- Boating facilities
- Fishing facilities
- In-line hockey rink
- Outdoor pool
- Skate Park



List E - Comfort and Convenience Features – Select 5

All may be counted only once, except as noted

- BBQ grills (min. 1 per every 2 tables)
- Benches (min. 2 per acre)
- Bicycle Racks (min. to serve 8 bikes)
- Drinking fountains (min. 1 per every 4 acres)
- Lighting for night use – i.e. shielded sports lighting (counted 1 per item)
- Parking (min. 10 cars)
- Picnic tables (min. one per acre beyond those in List B)
- Portable restroom enclosures
- Restrooms with plumbing (counts as 2 items)
- Shade structures for components from List B, C, or D (other than List B ramadas) counted 1 per item.
- Trail head with parking (min. 4 cars)

Recommended Park Design Standards Formula

The following formula represents the *minimum* level of service that is to be provided in all parks in Casa Grande. Large parks (over 10 acres) or parks that are intended to serve a regional purpose may be required by the Community Services Department to include additional components. The exact quantity and nature of such parks will be determined in an additional review process conducted by the Community Services Department.

All proposed parks must have the following elements:

- Required infrastructure (all of the items on List A)
 - Components
 - (2) Pre-selected components (List B)
 - (2) Components of Choice (List C)
- OR-*
- Pre-selected Component (List B) and (1) Specialty Component (List D)
 - (5) Comfort and Convenient features of choice (List E)

In addition:

- 90% of the residences in proposed developments must be within 1/3 mile of a park containing the components as listed above (or as approved by the Community Services Department).
- 40% of the residences must be within 1/3 mile of two additional List B or C components and one component from List D (or as approved by the Community Services Department).
- Any property that will be dedicated to the City will be maintained by the developer for a two year period following the City's final written approval of the developed property.



3. Recommendations for Open Space Design Guidelines

The acquisition of open space should be a continuous process with all potential open space acquisitions passing through evaluations as outlined below to determine suitability for open space.

Casa Grande should coordinate with surrounding communities to develop a regional plan and strategies to finance and implement a regional open space and trails system.

Definition of Open Space

For the purposes of this plan, open space is defined as lands to be acquired and/or preserved in their current state or returned to a natural state. Open space lands may include natural areas, wildlife habitat, wetlands, agriculture, visual corridors, and urban shaping buffers. Open space lands should provide for low-impact recreation, where appropriate, compatible with resource protection goals. In addition to this definition, community needs and desires for open space should be included in the acquisition and development of open space. Generally golf courses do not fall into the open space category. Special circumstances may be considered by the Community Services Department.

Open space is increasingly becoming a component of community parks. This is in response to the public's desire for buffer space between community park activities and adjacent residences, along with a desire for natural areas within community parks that can be used for un-programmed and low-impact recreation. It is quite common for up to 30% or more of the land area of a new community park to be effectively left as open space. In light of this, the City should include open space in park planning and design.

Purposes of Open Space

Open space should address the goals and desires of the community. These goals can include separating communities to allow them to keep their individual identities; enhancing community gateways; conserving natural features and protecting lands of high ecological, scenic, or cultural value; providing visual separation between built areas; providing places for low-impact outdoor recreation; limiting development on lands that would adversely affect the community in some way; and creating corridors for the safe and enjoyable movement of people and animals.

Approach for the Open Space Acquisitions Program

Evaluating lands for open space potential is a three-step process. The first step is to identify in general terms the occurrence of attributes that contribute to the land's value for open space. The second step is to look at specific parcels to determine the level or degree to which they address these attributes. The third step is to determine the actions or strategies that will be taken to preserve a parcel of land that has been found through the previous steps to be worthy of preservation as open space.



G. Trails Program Analysis and Design Guidelines

1. Approach to Trails Program

In addition to the above amendments to the City's planning guidelines, the following information outlines the general approach to the building a trails system in Casa Grande.

As with the Park Design Guidelines, the city may choose to also create *construction standards* that reference materials in construction methods in more detail. Below is a list of resources that can be used for that purpose.

Resources for construction standards

- Sahuarita, AZ - <http://www.ci.sahuarita.az.us/PDFs/ParksRec/RAM.pdf>
- Pima County, AZ
- Henderson, NV

The proposed planning process for trails has proceeded from some basic assumptions:

- The primary purpose of the trails planned for in this plan will be recreation rather than transportation, although the trails should allow for both uses. Primary trails should not be intended to preclude or substitute for an effective commuter bikeway system. (The transportation function of trails has been addressed in other studies. Whenever recreational trails are constructed, attempts should be made to satisfy both recreational and transportation goals whenever possible.)
- Trails should create a network of connected routes. Trails should provide for linkages to other trails and to existing and proposed trails outside of and beyond Casa Grande.
- Trails should fall into a variety of categories, depending on their role in the system. This includes Primary, Secondary, Primitive, and other categories of trails.
- The distribution and location of primary trails should be such that a primary trail is available within a reasonable distance of every home as much as possible. Typically, this would mean a travel time of 10 minutes or less, which translates into a grid of trails on a spacing of about one-half mile apart.
- Trails should be linked and combined with open space to create a system of Greenways. These are corridors that allow for the movement of people and wildlife, and connect open space areas to one another.
- The type of surfacing is secondary to the goal of providing adequate distribution of trails within the community and providing a connected network of trails.

2. Trail Routes and Classifications

A variety of trail types and configurations are recommended. Together, these make up an overall system to meet the needs of users. The system is hierarchical, consisting of Primary Trails that have an emphasis on enjoyment of the recreational experience of traveling by foot or wheel. When combined with drainage-ways, open space, or other amenities, these become Greenways. The emphasis for Secondary Trails is to connect the Primary trails to homes and other destinations. Primitive Trails are recommended for rural areas with lower frequency of use.



Selection of trail routes was conducted in conjunction with the city's current Multi-Use Path Plan. All known and existing trails within and adjacent to the study area were mapped in the Geographic Information System. This included trails within natural areas. Destinations such as existing parks, schools, and other features were also mapped.

This information was reviewed with City staff and other key stakeholders. The result is a schematic plan for the trail system. Segments were added to achieve the desired distribution of trails on an approximate 1 mile grid. The results were then refined by the consultants into a map of the proposed trail system. *Appendix VI: Map J– Neighborhood Access to All City Owned Components (Proposed Improvements)* shows the recommended plan. The plan identifies 55 miles of planned unpaved trails, 91 miles of potential bike routes, and 27 miles of recommended paths.

3. Trails System Methodology

a. Provide a Backbone of Primary Trails

Construct a connected network of Primary Trails and Greenways at an approximate spacing of every ½ mile across the City. The City's vision is to provide a one mile grid backbone of trails with the ½ mile infill being coordinated with the city and provided by developers and maintained by HOAs. This system would mirror the City's approach to providing parks throughout the community through the utilization of HOAs. The system will also utilize drainage ways and other off-street corridors where possible. Utilize rights-of-way for arterial streets when this is not possible.

The backbone of the trails system is the **Primary Trail**. Primary trails should follow routes along drainages, ditches, ridges, or other features with scenic or recreational value whenever possible. They may also parallel arterial or other streets if properly designed to provide an enjoyable recreational experience. The user expects to find a variety of views, landscapes, and amenities along the way, and ideally expects to travel a circuit and return to his starting point without having to backtrack. A choice of lengths and circuits is desirable. Bollards and signage to restrict vehicular/motorized access is required. Also, trail connectivity between developments is recommended, therefore access between developments will be necessary when this occurs. Insure you are showing trail relationships (existing and/or proposed) with neighboring developments as it relates to your plan.

The plan shows a series of primary trail routes throughout the study area that form an approximate grid with trails spaced roughly 1 mile apart. Drainage ways, canals, and arterial street corridors combine to form the basic template for the grid. Trails paralleling the Santa Cruz and San Carlos washes offer opportunities to create off-street Greenways running approximately east and west across the City. Greenways combine multi-use trails with streams, canals, ridges, or other scenic corridors. These greenway corridors will be completely separate trails with minimal street crossings. The surface of these paths can be a variety of hard and soft surfaces. In areas where high use is expected, a paved concrete path is preferred. Soft surfaces of crusher fines may be used in other areas.



The routes shown on *Appendix VI: Map J – Neighborhood Access to All City Owned Components (Proposed Improvements)* are intended to indicate the overall concepts of connectivity and level of service. The alignments are of a general nature and are deliberately shown at a coarse scale. Specific alignments and locations should be determined according to several criteria. These include the availability of suitable right-of-way for the trail, and the occurrence of conflicts with streets or other impediments to construction and safety. When ever possible the re-development or construction of new roads should include the addition of a Primary Trail with in the Right-of Way.

Locating trails along drainage ways offers an opportunity to bring people into some of the City’s most scenic and attractive natural areas. However, care must be taken in selecting the exact alignment and configuration of trails in order to protect the scenic and environmental resources found within these corridors. Trails should be routed so as to avoid areas with the highest habitat value. Trails should also be aligned to be near the edge of riparian zones rather than through the middle of them.

To accommodate a variety of users, the ideal primary trail should offer both hard and soft surfaces. It should be wide enough to accommodate the expected amount of traffic in both directions, and should provide separation between potentially conflicting uses where needed.

Primary Trails should be concrete, 10’ wide minimum, in most cases, although a combined 8’ hard-paved trail with an attached 3’ crusher fines trail is an alternative that is sometimes preferred by runners and others who like having a choice of surfaces along the route. The crusher fines offer a refuge from faster traffic on the paved surface. Trail alignments should follow AASHTO standards for multi-use trails. Because Primary trails are intended to be multi-use paths, they should also meet all requirements of the Americans with Disabilities Act. This would not apply if the trail was intended for bicycle use only. In such case the AASHTO standards for gradients would apply.

Although greenways enhance and augment the City’s transportation system, encouraging the use of alternative modes of travel, the primary intent of the greenway system is to provide opportunities for recreation. Greenway paths should be designed to offer pleasant recreational experiences for trail users, including views of the rivers and streams, and access to natural and open space areas. They should also provide pleasant connections for traveling to and from schools, parks, and other destinations.

The greenway paths are supplemented with proposed multi-use paths along new thoroughfares. These paths would be constructed parallel to the thoroughfare, either within the street right-of-way or along an adjacent street. Like the greenway paths, they should be planned and designed to meet AASHTO standards². The typical cross-section for an arterial street as shown in the Casa Grande Multi-Modal Transportation Study includes a 6-foot detached walk separated from the street by a typical 5-foot wide landscape strip. The total area between the curb and the edge of the Right-of-Way is 19

² See AASHTO Guide for the Development of Bicycle Facilities, 1999, pages 33 – 35 for a discussion of shared-use paths in relation to other bicycle transportation facilities)



feet. This is adequate in most situations to accommodate a primary trail that will fit the design criteria described below in the section on Trail Development Standards. The primary trail could be constructed along one side of the street with a normal sidewalk on the other side.

Minor Arterials are suitable for lower-use primary trails. The cross-section of these streets has an area that is 18 feet wide from curb to edge of R.O.W. Contained within this is a 6-foot wide path located typically 5 feet away from the curb. This walk can serve as a suitable secondary trail. If widened to match the design criteria described below, the walk would serve as a primary trail. Roads designated in this plan as proposed bike routes should include a primary trail as re-development and new construction occurs.

Major Collectors have a 5 foot wide walk as well, located 5 feet away from the curb, with a total width of 15' from back of curb to R.O.W. line. This makes it suitable for serving as a secondary path, as described below, or just barely wide enough for a primary trail in some situations. **Minor Collectors** are similar, but their walk is 5 feet wide and adjacent to the curb. There is an additional 7' from the back of the walk to the R.O.W. line, for a total width of 12'. This is too narrow for a primary trail, but if the walk is widened to 6 feet it can serve as a suitable secondary path.

In planning for new street extensions that will have primary and secondary paths along them, driveway cuts and other crossings should be minimized along the path. The paths can be designed to offer pleasant recreational experiences by maximizing the separation from the street and through proper landscaping of the ROW. Together, the greenway paths and the thoroughfare paths combine to create a series of interconnected loops, offering recreation enthusiasts a wide choice of routes and distances for recreational trips.

b. Provide Secondary Connections to Primary Trails and Greenways.

Not shown on the proposed map, but equally important, are the **secondary connections** from homes, businesses, and public places to the primary trails. Secondary connections need to be designed into all new developments, and their location and form will depend upon specific conditions on a case-by-case basis. A connection by way of secondary trails to the primary trail system should be provided throughout all new developments. These should be off-street multi-use paths, with a minimum width of 6 feet and paving of concrete or crusher fines. Sidewalks can serve as secondary trails if wide enough and if designed to minimize conflicts with streets and driveways.

In certain sections of the community low-traffic streets or existing sidewalks might serve as secondary connections to the primary trails. While not meeting AASHTO standards for bike trails, these can provide safe access for pedestrians and others to the multi-use primary trails. Such routes should not be signed or marked as bike paths, however, unless they are safe for such use according to AASHTO standards. Streets adjacent to these routes may be marked with signage to warn motorists to watch for people using the route.



c. Ancillary Features and Components

In addition to the trails, facilities should be provided that enhance the safety and enjoyment of the trail system.

Recommended Ancillary Features and Components for Trails

- **Provide Trailheads at Appropriate Locations**
Trailheads are the interface between Primary Trails and the city's transportation system. Trailheads should be provided at points where several primary routes converge, and in places where easy access from arterial streets to a parking area can be created. An adequate number of parking spaces should be provided to serve the projected use of the trailhead. Other features that can be provided include an information kiosk with a trails map posted on it, and trash receptacles. Benches and shade should also be provided. All of these features should be selected for consistency of materials, colors, and form.
- **Provide Waysides at Appropriate Locations**
Waysides are places along trails where travelers can stop to enjoy the shade or a pleasant view, or to read an interpretive sign. Waysides should be provided at places that offer these characteristics, or at least every ½ mile along the trail. Benches and/or picnic tables should be provided at waysides. Parks or other features along the trail can serve as waysides if properly designed and connected to the trail.
- **Implement an Effective and Consistent System of Signage**
All trails within the system should be marked with consistent signage to identify the trail, help users find their way along the trail, and provide regulatory information on allowable uses, trail courtesy, etc. Other types of signs include identification signs for trailheads and interpretive signs. All signs should be consistent in their materials, colors, and graphics. The City's logo should be included on all signs to clearly identify the trails as part of the City's trail system.

4. Trail Development Standards

Routes and locations for trails are discussed in **Section 3.A. above**. This section discusses standards for developing the trail surfaces and other features.

Proposed Residential Design Standards Amendment for Trails

Please see Park Design Standards for proposed amendments to the existing standards for parks. In addition to the park standards, it is recommended that the following trail design guidelines be added to the Park Design Standards.

- Trails shall be constructed according to City Construction Specifications (*sample details follow*). Trail layout and surfacing materials must be approved by the City of Casa Grande and shall meet the following requirements:
- Trails shall connect to other trails, bike lanes and parks where possible.
- Trail rest stations shall consist of one of each of the following components:



- Shade shelter (min size 6' x 8')
- Bench
- Bicycle parking (min. 2 bikes)
- Trash receptacle
- Trails shall pass through parks or have rest stations at 1/2-mile intervals or as directed by the City Community Services Department. In addition, drinking fountains shall occur at 4-mile intervals along the trail.

Recommendations for Trail Standards

Provide appropriate surfacing and dimensions for each type of trail constructed. Meet the requirements of the American Association of State Highway and Transportation Officials (AASHTO), the Americans with Disabilities Act (ADA) and other applicable codes.

Primary Trails

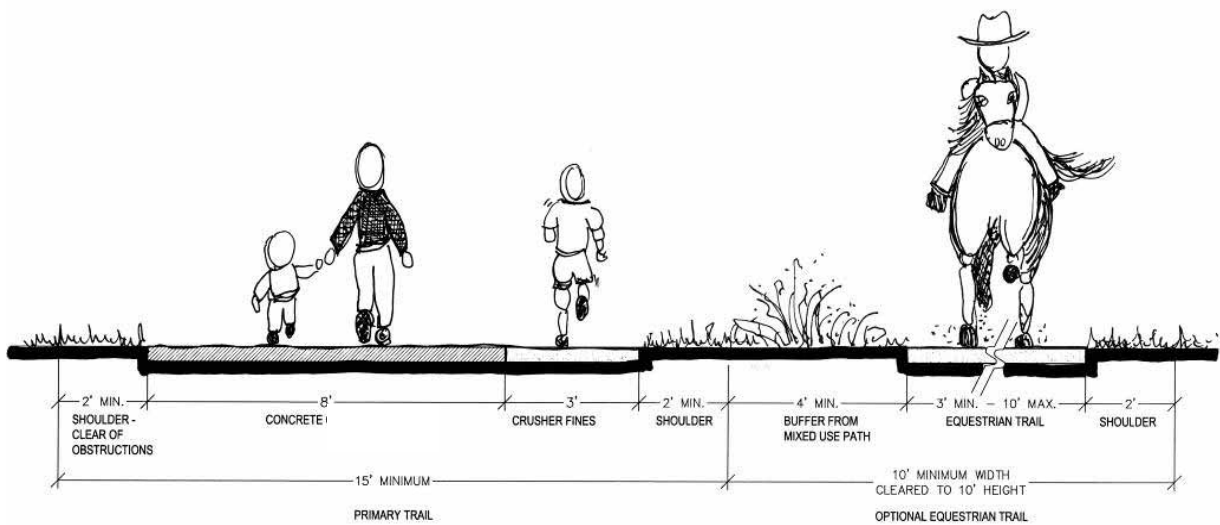
An ideal trail cross-section is shown on the following page in Figure 6: Primary Trail – High Use. It includes an 8-foot wide section of paved (preferably concrete) surface suitable for wheeled vehicles including strollers, bikes, and skates. An attached 3-foot soft surface of crusher fines provides a place for runners and pedestrians who want to stay out of the path of faster-moving cyclists or skater/bladers. A two-foot shoulder on the other side, kept clear of obstructions, provides a safety zone. All shoulders should have a maximum 1:6 slope. Wider shoulders of 3 feet or more are recommended to provide clearance from trees, poles, walls, fences, guardrails or other lateral obstructions. Where the path is next to a steep (1:3 or more) drop-off, a 5-foot separation between the path and the top of the embankment is recommended.³ The slopes across the travel surface of the path should not exceed 2%. Along the direction of travel, slopes should not exceed 5% in order to meet the requirements of the Americans with Disabilities Act.

An optional equestrian trail, separated by a four-foot buffer, allows horseback riders to use the corridor as well. The equestrian trail should be a minimum of 3' wide and up to 8' or even 10' wide if significant horseback traffic is expected. Regardless of the surface width, the equestrian route should provide a space free of obstructions that is at least 10' wide and 10' high. This will allow riders to pass safely in opposite directions.

³ AASHTO, pg 36.



Figure 6: Primary Trail – High Use



An alternative to the 8'+3' main cross-section described above is shown below in [Figure 7: Alternative Primary Trail](#). It consists of a single 10' foot width or wider paved trail with 2' shoulders on either side. This is useful when a high volume of bikes and other wheeled travelers is expected, or when the trail needs to accommodate service vehicles. In such a case, a 3' wide soft trail adjacent to one side is still recommended if possible. In areas of lower expected use, the entire trail surface may be paved with crusher fines instead of concrete.

Because of the rapid rate of growth in the City and current demand for additional trails and connectivity, it is recommended that surfacing requirements be flexible to allow for as many miles of trail to be set aside as possible. Providing a longer trail surfaced across its full width with crusher fines is likely to be preferable to a shorter concrete one if budget constraints are equal in either case. Trail surfaces can be improved at a later date, but acquiring adequate land for a trail might be impossible once the surrounding area is developed.

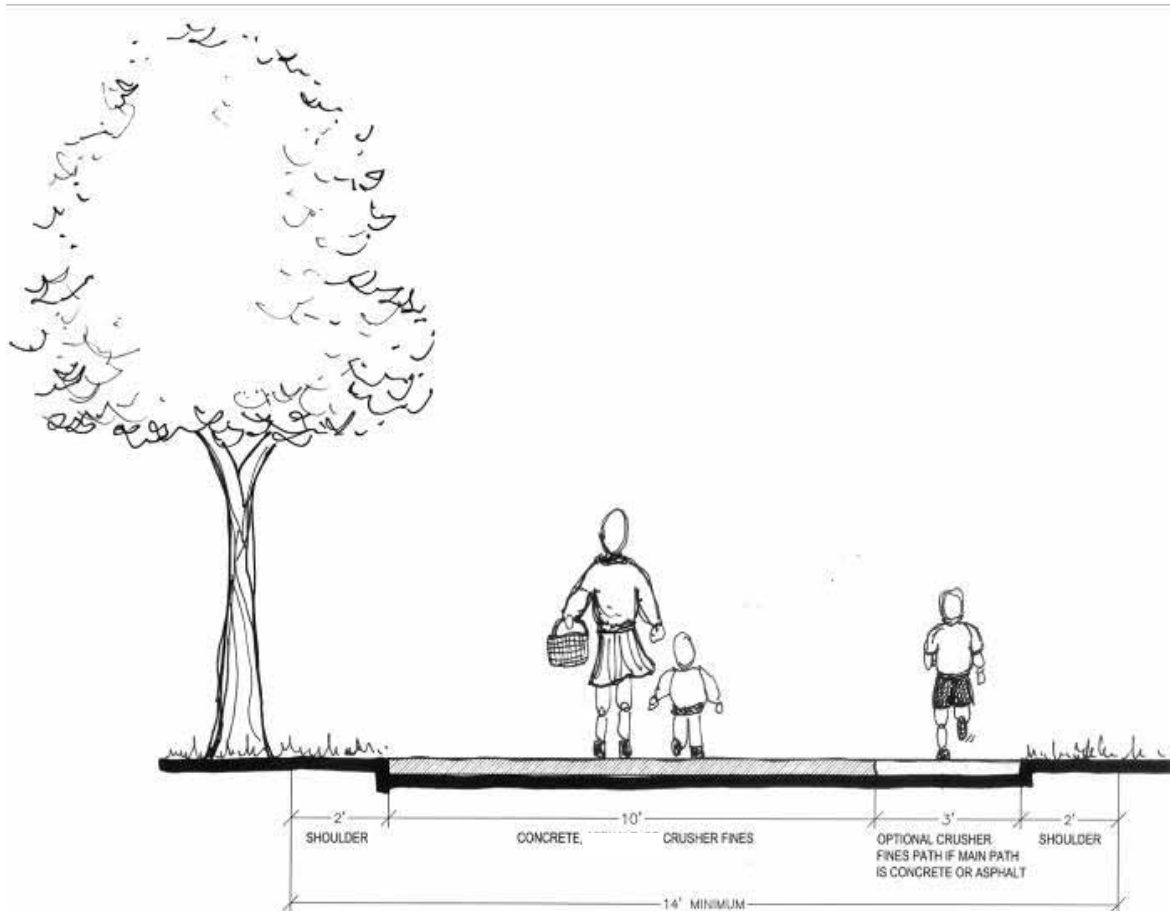
The trail configurations described above dictate a minimum of 15 feet and up to 25 feet of horizontal space needed to fit the trail's cross-section. Additional space will be needed to allow for the trail to be graded and to meet existing grades at the corridor's edge, and to fit around existing trees or other obstructions. The amount of additional space needed will increase with the steepness of the terrain and the density of existing vegetation or other obstructions. Providing adequate separation from roadways and other adjacent hazards may also dictate a wider corridor. Space for directional signs, trailside benches, and other amenities should also be taken into account.

A minimum corridor width of 25 feet is recommended in order to account for the variables listed above, and a corridor width of at least 40 feet is recommended whenever possible. This corridor can be a dedicated easement or right-of-way, but the entire corridor width must be available for trail purposes.



Primary trails should be designed to minimize crossings with streets, driveways, and other hazards. Grade separated crossings are recommended whenever possible, and on-grade crossings should be clearly marked with caution signs for motorists and crosswalks on the street that is to be crossed, and stop signs on the trail where it crosses a street. Locating on-grade crossings at intersections, especially signalized ones, is preferred to mid-block crossings unless a pedestrian signal or other accommodations can be made.

Figure 7: Alternative Primary Trail



Secondary Trails

Secondary trails are ones that connect from residences, schools, and other locations to the primary trail. The width and surface of these can vary according to the expected type and amount of traffic. At a minimum, these trails should meet the requirements of the Americans with Disabilities Act. In some cases, secondary trails will need to meet the same standards for width and surface as the primary trail to which they connect. All new developments should be required to provide adequate secondary trails across their property to connect to any primary trails within ¼ mile of any given point within the development. In most cases this can be accomplished on sidewalks or similar paths,



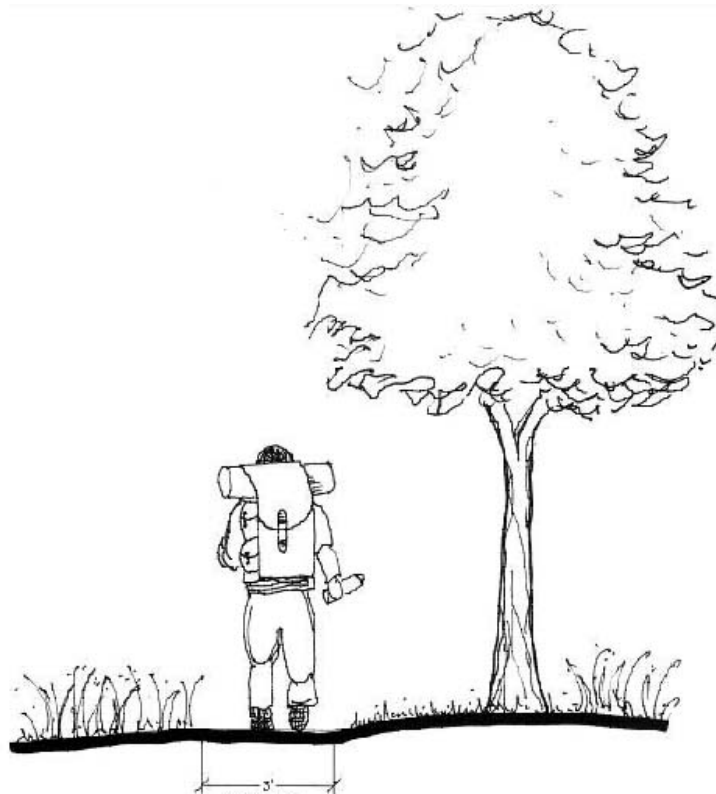
although in high-use locations a wider multi-use trail with a configuration similar to the Primary Trails described above may be required.

Primitive Trails

Primitive trails should also be a part of the recreational trail system. These are appropriate within open space lands or other situations where traffic is low or the goal is to provide a more natural experience. The cross-section for this type of trail is shown on the following page in Figure 8 – Primitive Trail (3' wide graded trail). It consists of native soil or crusher fines, with improvements made for trail stabilization and erosion control. This can include water bars, culverts, steps, or other elements.

While not required in all cases, at least some primitive trails should be designed with slopes and surfacing to allow for use by wheelchair occupants who desire and are able to handle a challenge that is beyond the standards of ADA, yet not beyond the capabilities of an athletic wheelchair operator. Like the rest of the population, people with disabilities differ in their stamina and capability to tackle challenging routes. For this reason, consideration should be given to creating a rating system for primitive trails that would be similar to that used for ski slopes, which would rate the degree of difficulty for various trail segments. This would allow all people, disabled or otherwise, to determine if a particular primitive trail route is suitable for them.

Figure 8: Primitive Trail (3' wide graded trail)



Trailheads

Trailheads should occur where roads intersect primary trails and a suitable pull-out or curb cut can be attained, especially in rural areas. Safe entry and exit for cars is a primary concern. Some trailheads may consist of little more than a safe parking space or two, with appropriate signage. In some locations greater use may be expected, and additional improvements such as trash bins and toilets may be necessary. Portable toilets in a permanent enclosure work well in this situation. Permanent structures of any type should be of a character and quality that fits with the overall character of the park system and will meet the maintenance requirements of the City.

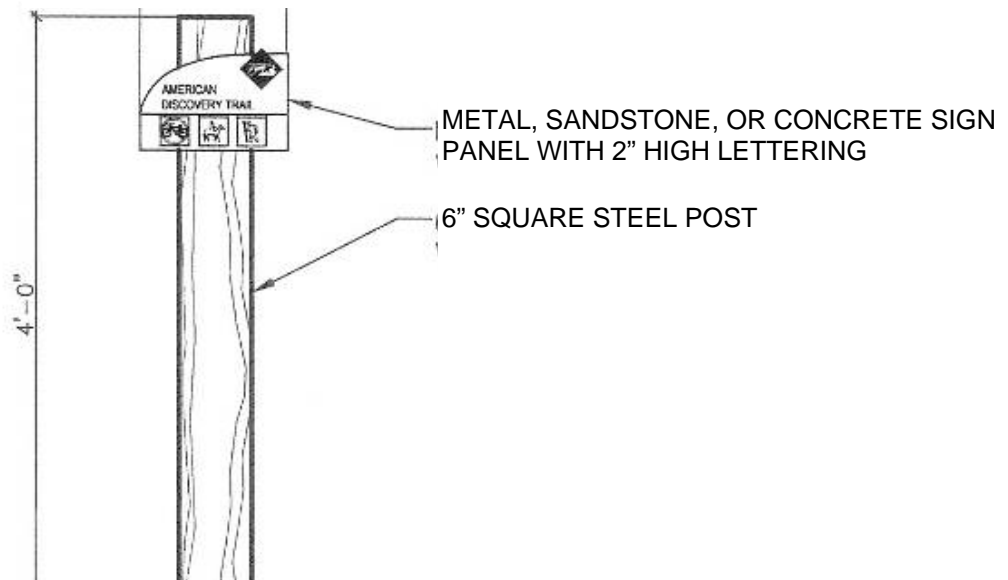
Signage

Signage serves a variety of functions for the trail system, and a variety of signs are needed to address these functions. Suggested configurations for these signs are shown following in Figures 9 through 13.

Trail Marker Signs

Trail marker signs are needed to identify trails as part of an overall trail system. These signs should provide the City's logo along with the name of the trail segment along which they are placed. These signs should be located at all trail intersections and at regular intervals of every ½ mile along the trail.

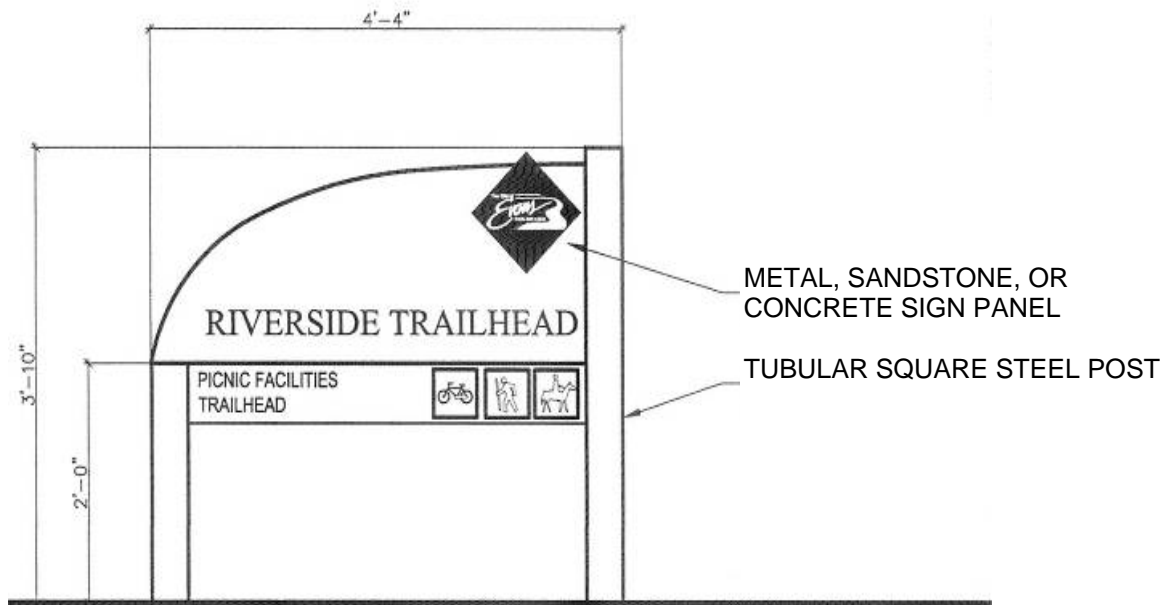
Figure 9: Trail Marker



Trailhead Signs

Trailheads should be identified with signs visible from the adjacent road. Such signs should be tall enough to stand above mature native vegetation in natural areas. They should include the trailhead name and City logo. If other entities are involved as partners in the provision of a trail or trailhead, their logo should be included on the trailhead sign.

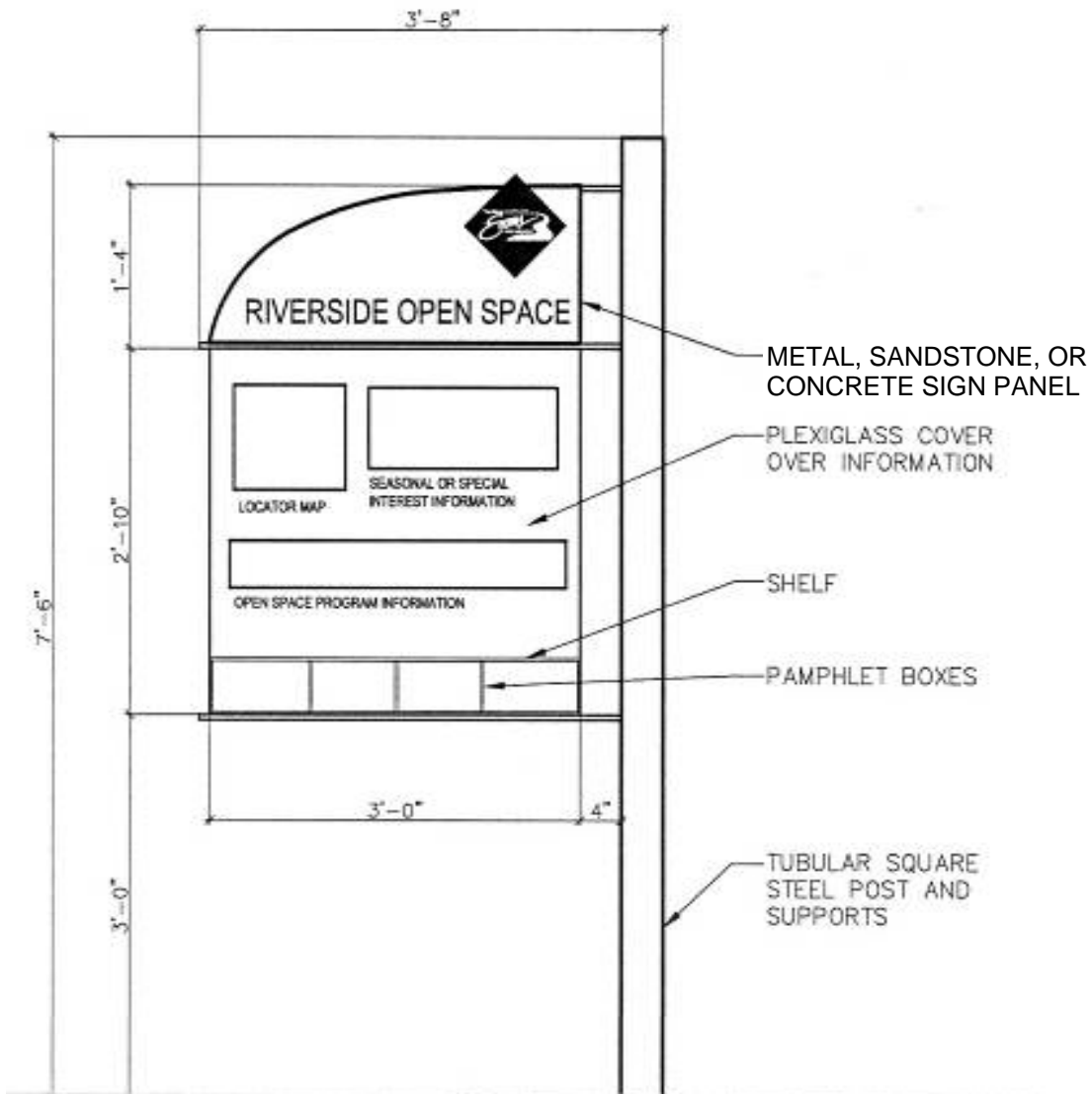
Figure 10: Trailhead Sign



Information Kiosks / Regulatory Signs

Information kiosks may be used to accommodate maps, seasonal information, rules and regulations, or other information. Kiosks should have a shadow-box design and protective covering for printed materials. Pamphlet boxes for trails maps or other handouts may also be included. All signs need to be maintained.

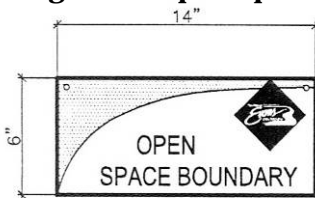
Figure 11: Regulatory Sign



Open Space Boundary Signs

In addition to trail signage, boundary signs are needed to identify lands belonging to the Open Space System. Information on the sign should include a statement indicating that the property belongs to the public and is part of the open space system. In some cases, land may be part of the system but not open to the public. For example, protected wildlife preserves, conservation easements, or agricultural lands may be protected as open space yet under private ownership or closed to the public for some other reason. In such cases, the boundary sign should identify the land as part of the open space system and state the land's status. Reference should be made on the sign to the ordinance or statute that prevents public access.

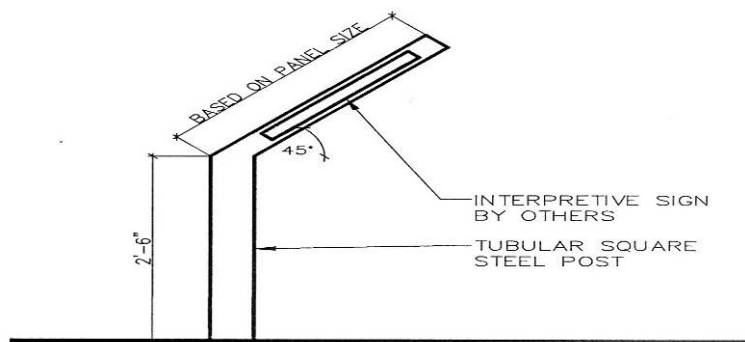
Figure 6: Open Space Boundary Sign



Interpretive Signs

Signs will be needed to inform and educate the public about the natural and cultural history of the region and specific features along the trail. These signs need to be suitable for more detailed graphics such as photographs and illustrations, but also need to fit the design character and theme of the rest of the system signs.

Figure 7: Interpretive Sign



5. Protect and Restore Existing Features

The City has a wonderful opportunity to develop a significant trail network encompassing the City, linking citizens to each other and the natural world around them. Utilizing the natural pathways of the Santa Cruz and San Carlos washes, and interesting terrain features, coupled with the man-made opportunities provided by ditches and canals, the future trail system could weave nature throughout the City. It is vitally important to plan to protect the habitats through which the trail may proceed.

System Methodology and Recommendations

a. Inventory and monitor resources so that trail planning is based on actual field conditions.

In general, it is recommended inventory and monitoring efforts to ascertain existing and future conditions, and engagement of knowledgeable people and agencies in resource analysis and decision making. Be conservative and cautious in planning trails proximal to wildlife habitat and recognize that the impacts of human use on wildlife differ between individuals and species.

Use vegetative screening to reduce the visual impact of trails on both humans and wildlife. Restore areas to more natural or native conditions as you construct trails, giving special attention to native plant species that can accommodate heavier human use and high nitrogen contents.

b. Ensure that trail routing avoids the most valuable habitat and in general, protects wildlife habitat and plant cover as much as possible.

Know your resources so trails can be routed around, rather than through, the highest value habitats. Avoid putting trails near critical feeding or breeding habitat, and consciously choose to route trails away from such areas. Allow trails to touch riparian habitats briefly rather than to continuously intrude into them.

c. Practice a knowledge-based, minimal disturbance trail building protocol to avoid disturbing native vegetation and creating an environment for noxious weeds.

Unless the area is already heavily disturbed and full of invasive plants, disturb as little vegetation as possible in construction activities. Disturbed ground creates a haven for non-native, invasive plant species. Protect and preserve native trees, shrubs, forbs and grasses as it is far easier to maintain these through management than to attempt to restore them. Know and observe critical distances to protect nesting areas, particularly of birds of prey.

d. Protect and restore existing features affected by trail construction, and improve degraded areas along the trail corridor as part of implementing the trail system.

All construction associated with trails should be sensitive to the natural resources and other features that make use of the trail an enjoyable experience. This includes protecting and restoring the landscape as well as historic and cultural features.



Screening should be used to reduce the visual impacts of trails in natural areas. When disturbance of natural areas during construction of the trail is unavoidable, this can be used as an opportunity to enhance or improve upon the existing condition in the restoration of the area.

H. Developer Guidelines for Libraries

The anticipated population, retail, and commercial growth that is probable in Casa Grande presents an opportunity for the City of Casa Grande and its Public Library system to develop guidelines that developers should be expected to adhere to if they wish to develop tracts of property in the area. The following guidelines should be considered:

- For a residential population of 30,000 to 40,000 a public library facility of no less than 0.8 square feet (SF) per capita should be planned.
- A site of no less than four times the SF of the library facility should be identified and reserved for future library development.
- The site that is set aside should have frontage on a major street, and ideally be located on a corner or adjacent to a planned retail development.

As growth continues the long-range planning for public library services in Casa Grande would have the library facilities (Central Library and the branch libraries) located approximately eight to ten miles apart. That is, no person would have to travel more than five miles to reach a public library facility.

A set of *Library Site Evaluation Criteria* can be found in **Appendix IV. (f)**.

