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# A TRAIL MASTER PLAN for the City of The Colony

## TABLE OF CONTENTS

<b>INTRODUCTION</b>	<b>1</b>
<b>PLANNING PROCESS</b>	<b>1</b>
BASED DATA AND INVENTORY ANALYSIS	1
FUTURE LAND USE AND PROJECTED POPULATION GROWTH	2
TRAIL NEED ASSESSMENT	3
CITIZEN PUBLIC HEARINGS	3
<b>TRAIL SYSTEM STRUCTURE</b>	<b>4</b>
TRAIL CORRIDOR OPPORTUNITIES	4
ONCOR TRANSMISSION LINE EASEMENT	5
ONCOR GAS LINE EASEMENTS	5
LAKE LEWISVILLE – ARMY CORPS OF ENGINEERS	5
THE BURLINGTON NORTHERN RAILROAD	6
STREETS AND THOROUGHFARES RIGHT-OF-WAY	6
THE LEGENDS TRAIL SYSTEM	6
<b>TRAIL DESIGN</b>	<b>6</b>
DESIGN CONSIDERATIONS	6
TYPES OF TRAILS	7
TRAIL SURFACES	7
MULTI-USE TRAIL WIDTH	10
Vertical Clearance	11
Longitudinal Slope (Grade)	11
Signage	11
Trail Head/Access Points	12
Lighting	12
Location of Trail in the Corridor	12
Traffic Control Devices	13



<b>TRAIL DESIGN RECOMMENDATIONS</b>	<b>14</b>
OFF-STREET TRAIL WIDTH	14
ON-STREET TRAIL WIDTH	14
TRAIL SURFACE	14
ACCESS POINTS/TRAIL HEADS	14
TRAIL SIGNAGE	15
<b>TRAIL PLAN</b>	<b>18</b>
BASE ELEMENTS	19
GOALS AND OBJECTIVES	19
PLAN ELEMENTS AND GRAPHIC PLAN	20
Phase I – Shoreline Trail	21
Phase II – Paved Inner City Trail	22
Phase III – Paved Austin Ranch Connection/Northeast Region Loop	22
Phase IV – North Colony Blvd, East/West Connection	23
Phase V – Shoreline Trail, Wynnewood Park Carrollton Connection	23
Memorial Drive Trail	24
South Colony Trail	24
Main Street Trail	25
Railroad Trail	25
Neighborhood Connection	26
Hidden Cove Park Shoreline	26
PRIVATE PROPERTY TRAIL CONNECTORS	26
<b>IMPLEMENTATION</b>	<b>28</b>
FUNDING SOURCES	28
PRIORITY LISTING	31
Table 1: Trail Development Listing, City of The Colony	32
CRITERIA FOR RANKING TRAIL CORRIDORS	33
<b>CONCLUSION</b>	<b>33</b>



# **A TRAIL MASTER PLAN for the City of The Colony**

## **INTRODUCTION**

The following document outlines the approach and process taken in preparing a City-wide Trail Master Plan for the City of The Colony.

There are three primary purposes for preparation of a Trail Master Plan: (1) to serve as a planning tool for Parks and Recreation Staff and the Community Development Corporation (CDC Board); (2) to create a vision for a city-wide trails and greenway network and assist public and private entities who wish to contribute funds or resources to development of the system; and (3) to serve as a basis for coordinating with other City departments and adjacent communities to reduce conflicts with their development activities.

Trails are an important component of a city's park system as they serve recreational, transportation and linkage purposes. The importance/significance of a properly designed city-wide trail system will increase substantially in the coming decade as The Colony's population continues to grow and the Metroplex's air quality requires stricter emission controls. The following plan outlines our unique and comprehensive approach to preparing the city-wide Trail Master Plan for the City of The Colony.

## **PLANNING PROCESS**

### **BASE DATA AND INVENTORY ANALYSIS**

The purpose of Phase 1 is to collect base data upon which to appropriately evaluate elements that influence trail development within The Colony. The following tasks have been addressed with appropriate data formulated either from a field survey, other prior documentation or staff sources. An evaluation and analysis has been made of the data in each task.



- Existing land use – residential and non-residential quantities, location, and undeveloped areas.
- Natural resources and physical features - assets and barriers, both natural and man-made, existing in the City of The Colony.
- Existing park facilities - location, classification, current improvements, and their distribution and accessibility throughout the City.
- Greenbelts, linear parks and open space easements.
- Schools - types, recreational facilities, and potential linkage.
- City property - identify properties owned or leased by the City for use as trail corridors, trail linkage or trail heads.
- Private or commercial recreational features and open spaces - types, location, ownership – for possible access via the trail system
- Location of any historical, cultural or recreational facility.
- City's Future Land Use Plan – anticipated population growth, timing, and expected urban residential and non-residential land use growth patterns.

Completion of this task provided a resource of data upon which to base decisions affecting the development and use of the trail system. Data has been presented graphically when possible, such as mapping of existing park locations, existing trails, physical features influencing municipal growth, and the existing and future residential land use as related to the trail system.

## **FUTURE LAND USE AND PROJECTED POPULATION GROWTH**

The city's trail system must be responsive to the population which it serves. The system has been planned to coincide with population growth and to have facilities provided within the City in proper locations to achieve maximum service; therefore, this work phase examines: (1) the location of existing population centers and their relationship to present recreational development; and (2) anticipated future growth patterns and locations; herein, the following tasks have been undertaken:

- Jointly determine with staff the existing and future population centers which comprise the City.
- Future residential growth assumptions have been evaluated, both within the Neighborhood Areas and the entire city.
- Existing parks and future parks which have been documented within the



Parks, Recreation and Open Space Master Plan will be evaluated for incorporation of trails and linkage to the city-wide trail system.

Completion of this phase provided delineation of existing and future residential population centers which need to be served by trail system. Many of the existing parks were evaluated as a potential trail head for citizens of The Colony. The Colony is unique with over 1500 acres of park land which is leased from the U.S. Army Corps of Engineers on Lake Lewisville, which offers tremendous potential recreational and tourism enhancements through development of trails.

### **TRAIL NEED ASSESSMENT**

The purpose of this phase is to assess from the community, Trail Master Plan Sub-Committee, Community Development Board and City staff those trail needs, preferences and/or desires which are not being met or are desired by the citizens. The activities outlined below have been undertaken to determine trail needs and priorities.

### **CITIZEN PUBLIC HEARINGS**

Two public hearings have been held to solicit input from citizens with regard to trail surface alternatives, locations, alignments, construction priorities and potential user groups. Particular care shall be taken to document the various trail user groups present, which include equestrian, roller-blading, skateboards, bicycling, jogging, walking, strolling, etc. The variety and size of these user groups have a large impact on the development of the city-wide trail system.

The first public hearing was held at The Colony City Hall on August 13<sup>th</sup> 2003. Citizens were given the opportunity to request specific needs concerning the trail master plan. The comments received included a broad range of needs. Nature surface trail to hard surface trails were mentioned as well as various running and biking groups requesting needed trails. Below is a summary of the comments recorded at the public hearing.



Lake Shoreline Trails  
Soft Surface Trails  
Runners out of Public Streets  
Shoreline Trails Connection to Parks  
Trails on the Shoreline in adjacent Cities  
Long Distance Road Trails  
Trails for Inline Skaters  
Multi-Use Trails  
Denton & Collin County Trails Plans  
Avoid T.U. Electrical Easement Trails  
Use of T.U. Electrical Easement Trails  
Connect Neighborhoods to T.U. Electrical Easement Trails  
Trails to Commercial Property  
Hard Surface Trail 1<sup>st</sup> Priority  
Exercise Stations

Another public hearing was held on September 24, 2003 with The Colony Park and Recreation Board. This public hearing was attended by approximately 10 people and there were no new or significant different comments recorded at this public hearing.

## **TRAIL SYSTEM STRUCTURE**

City staff and the Consultant determined the user groups to be accommodated by the trail system. In addition, it was necessary to determine the structure of the trail system; will each user group have a separate trail system, will several user groups share separate trail systems or will all users share the same trails? As can be imagined each scenario has its own set of advantages and constraints which affect the development of the city-wide trail system.

## **TRAIL CORRIDOR OPPORTUNITIES**

Potential trail corridors were identified through a joint review of the city's digital base map, which delineates streets and subdivision configurations, and aerial photographs. Field investigations were performed in areas where existing



conditions are tight and cannot be ascertained by the previously described methods. Potential corridors include drainageways, utility easements/right-of-way, railroad corridors, street/roadway right-of-ways, U.S. Army Corps of Engineers property i.e. Lake Lewisville, etc. North Central Texas Council of Governments plans, the cities of Plano, Frisco and Lewisville trail master plans were also reviewed and their recommended alignments will be analyzed for inclusion in The Colony trail system. The City of Carrollton presently does not have a trail master plan. The following is a brief analysis of potential trail corridors.

### **ONCOR TRANSMISSION LINE EASEMENT**

Oncor maintains a transmission line easement which varies in width from 200' to 240' in width. The easement bisects the eastern section of the City from F.M. 423 (Main Street) northeast to the northern City limit line. This easement bisects numerous residential streets and subdivision thus providing a unique opportunity for citizens in The Colony to access a trail without a motorized vehicle.

In addition to accessing residential streets, the electrical easement and future trail will provide pedestrian access to North Colony Blvd. Park, Little League Complex, Bridges Parks, Greenway Park, Perryman Park and Camey Park.

### **ONCOR GAS LINE EASEMENTS**

The Oncor gas line easement is approximately 80' to 100' in width and is parallel with the Oncor Electrical Easement. As with the electrical easement, the gas line easement affords a unique opportunity for trail development. The gas line easement will allow pedestrian/bicycle patrons to access B.B. Owens Park, North Colony Park, The Aquatic Park, Slay Baker Park, Five Star East and the water park and will link to The Colony Five Star Park on the west side of Paige Road.

### **LAKE LEWISVILLE – ARMY CORPS. OF ENGINEERS**

The Colony is fortunate to access to Lake Lewisville via the U.S. Corps of Engineers. The City presently has over 1500 acres of property leased from the Corps. This includes the following parks: Stewart Creek Park, Eastvale Park, Wynnewood Park; and Hidden Cove Park.



## **THE BURLINGTON NORTHERN RAILROAD**

The Burlington Northern Railroad runs in a north south direction bisecting the Austin Ranch Development south of State Highway 121 and extending north on the eastern City limit line and into Frisco. This line is presently active and in used by the railroad however, should the line be abandoned in the future the vacated right-of-way could be utilized for a hike and bike trail.

## **STREETS AND THOROUGHFARES RIGHT-OF-WAY**

A majority of the remaining trails are within the parkway side of streets and thoroughfares. North and South Colony Boulevards have a thoroughfare cross-section which provides a parkway in which the trail could be placed. It is not recommended that the trails be placed within the pavement of existing thoroughfares. The Trail Master Plan also recommends using the floodplains and drainage ways of creeks within The Colony to place trails. Specifically, Office Creek adjacent to Memorial Drive and the greenbelts in the northern section of the City provide trail linkages to the Aquatic Park, North Colony Boulevard Park, and Dave Cowan Park.

## **THE LEGENDS TRAIL SYSTEM**

The Legends development in the northeastern quadrant of the City has existing trail for its residents. The trail is on the north parkway of Memorial Drive and continues north on Morning Star to just north of Crestwood Drive. Future trails can connect to the Legends Trail System and provide pedestrian access for citizens in the northeast and southeast quadrant of The Colony.

## **TRAIL DESIGN**

### **DESIGN CONSIDERATIONS**

Following is a general discussion of the parameters associated with trail design and construction. The conclusion of this section contains recommendations for the design and construction of the The Colony Trail System.



## **TYPES OF TRAILS**

### **Separated Trails –**

Separate trails and trail systems are provided for each type of trail user, e.g. bicyclist, pedestrian, skaters.

### **Shared Trails –**

Trails are shared by two or more user groups but design parameters restrict the use of the trail by some groups.

### **Multi-use Trails –**

All trail user groups occupy the same trail or trail corridor. The physical design of the trail must be modified accordingly, to accommodate the demands of the expected user groups.

## **TRAIL SURFACES \***

### **Natural Surface –**

Most of Denton County is on clay type soil, which is easily disturbed when wet. Side slopes should be stabilized to avoid being washed onto the trail during heavy rain. Drainage is key to trail corridor safety and maintenance. Use appropriate grading techniques and soil stabilization, such as, grass seeding, plantings, erosion control blankets or rock rip-rap to minimize hazards to users. Natural surface trails should not be used during periods of wet weather to prevent surface damage and should be so signed at trailheads.

### **Mulch –**

Mulching a trail can be an effective treatment for trails in clay soil areas. To avoid washouts and watershed deposits, mulching should be avoided in areas of steep terrain. Many types of mulch can work, but one of the most effective and least expensive, long-lasting treatments is hardwood mulch.

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\* Excerpted from the Dallas County Trail Plan – Trails for the Twenty-First Century, Prepared for the Dallas County Commissioners Court and Dallas County Park and Open Space Program, prepared by Half Associates, Inc. and Bowman – Melton Associates, Inc.



#### Board Walk –

Trails should avoid sensitive environmental areas, low areas, wetlands or flood plains. However, trails in wetlands can be useful as educational corridors. Board walks allow existing drainage patterns and a site's hydrologic conditions to be preserved while providing access to areas of interest. Board walks minimize construction damage and prevent user disruption to fragile ecosystems. Areas for which boardwalks should be built include marshy or wet sites in the immediate vicinity.

#### Gravel –

Gravel is a granular rock material used in non-rigid paved surfaces and generally defined as having a particle size between 2mm (fine gravel) and 20mm (medium to coarse gravel). When considered as a paving material, gravel has several desirable characteristics. Gravel drains well and is a pervious material, and the coarser the material the less the likelihood that it will be washed away by rainfall or flooding. It is also readily obtainable in the Dallas/Fort Worth area.

Its usefulness as a trail paving material is limited however. Gravel is a non-compacting material that is loose and inhibitive to all forms of trail use other than casual foot traffic. Roller blades, bicycles and wheelchairs alike will not perform adequately on a gravel surface and are subject to skidding and a general lack of traction. Pedestrians tend to collect irritating gravel particles in their shoes, rendering the trail more or less a nuisance than an enjoyable outdoor amenity.

When mixed with other material such as clay and silt particles or other cementitious material, however, gravel can be stabilized as a semi-rigid to rigid paved surface. Such a surface would be more accepting of wheeled and foot traffic.

When adding gravel or mulch to a trail, care should be taken to avoid excessive material depth, as this can impair even the hardest pedestrian. Of the many different types of gravel treatments available, some are much more conducive to trail use. Avoid pea-gravel for anything other than equestrian trails, and even then, use should be sparing. Aggregate, crushed or decomposed granite is a very effective trail surface and can easily be



upgraded to hard surface. Although off road bicyclists can negotiate most well compacted gravel trails, access can be difficult for disabled users.

#### Caliche Base Trail –

The trails proposed for the U.S. Army Corps of Engineers property on Lake Lewisville shall be constructed of natural durable base. Concrete or asphalt trails are prohibited on Corps property in areas outside park boundaries. The trails proposed for this area of the City will be constructed of a caliche base material which is similar to the base material for asphalt roads. The trail will be excellent for walking and jogging and will accommodate bicycle travel. Heavy equipment may damage the trail. This type of trail will require more maintenance than the recommended concrete trails within the City.



#### Asphalt –

Hot mix asphalt can be cost effective to install, but in areas of full sun, decomposition is accelerated by maintenance vehicle traffic. Edges require containment for stability and long term viability. Surface is softer for walking or jogging. Cold-mix asphalt is suitable for patching but is labor intensive. Asphalt is easy to patch or expand, but care should be taken to ensure an even surface for road bicyclists and wheelchair users.

#### Concrete –

While initially more expensive than other material choices, concrete is the longest lasting trail surface with an expected life span of 25 years or more. It requires the least maintenance of any trail surface material. Only saw cut expansion joints should be used to avoid differential settling due to freeze/thaw and wet/dry cycles. Concrete is suitable for poor sub-soil conditions, but is more expensive to repair. Non-skid medium broom finish is ideal for bicycle traffic. Concrete is less desirable for jogging paths.





## MULTI-USE TRAIL WIDTH

The most appropriate width for multi-use trails has been one of the most discussed topics of parks and recreation construction. Following are the widths required for several different scenarios of common trail usage.

- The minimum width to meet ADA (American Disability Act) guidelines is thirty-six inches (36"); however, this width does not allow traffic flow in both directions and therefore should not be considered.
- A five-foot width is the minimum width to allow wheelchairs traveling in opposite directions to pass unimpeded, even so, at this width the occupants must maneuver to the very edge of the trail.
- Two people walking side by side meeting a bicycle from the opposite direction would require a minimum width of eight feet (8') and comfortable width of ten feet (10'). However, two people walking side-by-side would require a width of twelve feet (12') to be comfortable because the bicycle passing them on the narrower width will likely result in the pedestrians being startled or will require the bicyclist to slow excessively.
- Two bicyclists pedaling side-by-side require a minimum width of 5.3 feet and a comfortable width of eight feet (8').<sup>(1)</sup>

Two bicyclists traveling in opposite directions require a minimum of 6.5 feet to pass and a comfort width of 10.9 feet.<sup>(1)</sup>

Two bicyclists traveling side-by-side, meeting a bicyclist from the opposite direction or another bicycle passing them requires a minimum width of nine feet (9') and a comfort width of twelve feet (12').

The North Central Texas Council of Governments' "Bicycle and Pedestrian Facilities Planning and Design Guidelines" states "The minimum width required for two opposing bicyclists to pass and share the path with a pedestrian is 12.5 feet."<sup>(2)</sup> The NCTCOG guidelines do stipulate that widths less than 12.5 feet may be acceptable given the following circumstances: (1) bicycle traffic is expected to be low, even on peak days or during peak hours; (2) pedestrian use of the facility is not expected to be more than occasional; (3) there will be good horizontal and vertical alignment, providing safe and frequent passing opportunities; (4) the path will not be subjected to maintenance vehicle loading conditions that would cause



pavement edge damage and (5) access maintenance or emergency vehicles are not needed. A multi-use pathway should never be less than eight feet (8') wide.

- (1) Bicycle Transit, It's Planning and Design, Bruce L. Balshone, Paul L. Deering, Brian D. McCarl Praeger Publishers, New York, 1975\
- (2) Bicycle and Pedestrian Facilities Planning and Design Guidelines, North Central Texas Council of Governments, December 1995.

#### Vertical Clearance –

The absolute minimum vertical clearance for multi-use trails is 8.2 feet, 9.5 feet is the minimum comfortable height <sup>(1)</sup>. The vertical clearance may need to be greater to permit passage of maintenance vehicles. <sup>(2)</sup> Clearance in undercrossings and tunnels should be ten feet (10') for adequate vertical shy distance <sup>(2)</sup>.

#### Longitudinal Slope (Grade) –

Grades on off-street paths should be kept to a minimum, especially on long inclines. Grades greater than five (5) percent are undesirable because the ascents are difficult for many bicyclists and the descents cause some bicyclists to exceed the speeds at which they are competent. <sup>(2)</sup> ADA guidelines stipulate that anything exceeding five percent (1 foot rise in 20 horizontal feet) is a ramp and must be constructed with handrails, a maximum rise of thirty inches (30") in a maximum length of thirty feet (30') and must have a 60" x 60" landing at the base and the top. Therefore to be in compliance with ADA guidelines trail ramps can not exceed an 8.33% slope (1 foot rise in twelve horizontal feet).

#### Signage –

Adequate signing and marking are essential on multi-use trails, especially to alert users to potential conflicts and to convey regulatory messages to both users and motorist at street intersections. In addition, guide signing, such as those indicating destination, direction, distance, route numbers and names of cross streets, should be used in the same manner as they are on highways. <sup>(2)</sup>



#### Trail Head/Access Points –

Although access to the trail will be available at every road crossing and cul-de-sac some of the users of the trail will enter the trail at specific access points. By designating specific points of access, there may be an elimination of possible encroachment on private property, as well as, preventing possible congestion at busy road crossings. <sup>(1)</sup>

Designate points of access which provide vehicular parking, bicycle parking and directional signage are designated trail heads.

Trail heads typically provide ten to twenty vehicular parking spaces, bicycle parking and trail designation signage.

#### Lighting –

Lighting of the multi-use trail should be considered, especially if the off-street routes are intended for transportation purposes, many trail commuters may need to travel during poorly lit morning and evening hours. Fixed source lighting reduces conflicts along paths and at intersections. In addition, lighting allows the trail user to see the path direction, surface conditions and obstacles. Lighting should also be considered through underpasses or tunnels and when night time security could be a problem. <sup>(2)</sup>

The standard horizontal illumination level is 5 lux (0.5 foot candle) to 22 lux (2 foot candles). Where special security problems exist, height illumination levels may be considered. <sup>(2)</sup>

#### Location of Trail in the Corridor –

In addition to locating the trail corridor from point of origination to destination, the specific alignment of the trail within the corridor must be determined. Following is a listing of items for consideration when selecting the actual alignment of the trail within the corridor as excerpted from NCTCOG's "Bicycle and Pedestrian Facilities Planning and Design Guidelines."

- Always locate with trail drainage in mind; specifically water concentration, erosion control, sediment filtration, etc.
- Do not locate on extreme terrain.
- Locate at least one route which is suited to all-season use.



- Contour trail grades to fit existing topography and to reduce structures necessary to control drainage.
- Locate the trails far enough away from stream banks and shorelines of lakes to allow for natural vegetative filtration of the runoff water.
- Provide spur trails to points of interest in environmentally sensitive areas.
- Provide overlooks and observation points for scenic vistas and interpretive features.
- Provide safe, quick crossings of roads, railroads and utility rights-of-way.

#### Traffic Control Devices –

Pedestrian signalization designed to accommodate a one meter (3.2 feet) per second walking speed, should be provided at major streets where traffic volume and speed is high. ADA stipulates that where provided, buttons shall be raised or flush and a minimum of 1.9 centimeters (3/4 inch) in the smallest dimension. The force required to activate controls shall be no greater than 22.2 N (5 lbs). Additionally, controls shall be located as close as possible to the curb ramp and, to the maximum extent feasible, shall permit operation from a level area immediately adjacent to the controls and a maximum of 122.7 centimeters (48.3 inches) high. <sup>(2)</sup>

To provide clear visibility of pedestrians approaching intersection crosswalks at night, the approaches and all street corners should be well illuminated. All intersection lighting should illuminate the crossing and waiting areas and/or create backlighting to make the pedestrian silhouette clearly visible on approach. All commercial, entertainment, school and other pedestrian traffic generating corridors and spaces should be well illuminate. Raised islands in crossings should be cut through level with the street or have curb ramps or other sloped area at both sides. There should be a level area 121.9cm (48 in) long minimum and a minimum of 91.4cm (36 in) wide in the part of the island intersected by the crossings. <sup>(2)</sup>



## **TRAIL DESIGN RECOMMENDATIONS**

The above outlined design parameters which are specific in nature, shall be followed as delineated. The following recommendations delineate the selected design criteria for the above outlines parameters which were general in nature or which gave several options.

### **OFF-STREET TRAIL WIDTH**

In off-street applications the trails shall be a minimum of ten feet (10') wide; where feasible the more comfortable 12.5 foot width shall be used.

### **ON- STREET TRAIL WIDTH**

In on-street applications the ten-foot width will not be feasible due to the limited width of the parkway (street side right-of-way). A minimum width of six feet (6') shall be maintained for all on-street trails, where the locale allows trail width shall be expanded to eight feet (8') (ten feet (10') adjacent to large lot residential development). In most residential areas an eight-foot (8') maximum width should be maintained as it is felt this will tend to reduce the velocity of bicycle traffic.

This recommendation is for future trails on future thoroughfares where adequate right-of-way is provided. It is not the recommendation of this master plan to include trails in existing street or thoroughfare paving.

### **TRAIL SURFACE**

All multi-use trails within the The Colony trail system shall be constructed of concrete with the exception of any trails along the Lake Lewisville shoreline. The shoreline trails within the Corps of Engineers property line shall be constructed with a caliche base soft surface material or other approved materials.

### **ACCESS POINTS/ TRAIL HEADS**

Trail heads should be served by parking lots accommodating ten to twenty parking spaces. Trail heads should also be located adjacent or a short distance from main trail corridors and located at each main trail terminus. Design elements



of the trail head should include a drinking fountain, benches, stretch post or other equipment to encourage and facilitate stretching exercises and a mounted map of the trail system with their present location indicated.

## **TRAIL SIGNAGE**

Warning signs shall consist of the traffic control signage and devices indicated in the design guidelines.

Directional signage is imperative to facilitate user comfort and confidence, thereby, ensuring optimal use of the trail both from the standpoint of participation/occupancy levels and enjoyment level of the participants. At trail intersections signage should be provided that indicates destinations of the various trail branches and a distance to each destination. The cardinal directions should also be indicated. Consideration should be given to providing a map of the trail system at each intersection of major trail branches.

Within residential neighborhoods in addition to the aforementioned signage the pavement surface shall be demarked in such a manner that trail users will be able to follow the trail routing through the neighborhood without becoming confused and possibly taking a wrong turn.

Spur trails linking neighborhoods to parks and schools shall have a definite indication at the trail terminus so trail users unsuspectingly traveling into the neighborhood are made aware that the trail system ends at that location. Provision of a map indicating the direction to the main branch of the trail would be beneficial at these locations.

Illustrated on the following pages are typical hike and bike trail signs as designated by the *Bicycle and Pedestrian Facilities Planning and Design Guidelines*, prepared by the Department of Environmental Resources for the Department of Transportation – North Texas Council of Governments.



	<p><b>Purpose:</b> Directional guidance to bicycle parking locations.</p> <p><b>Status:</b> OFFICIAL: MUTCD-D4-3</p> <p><b>Size:</b> 30.3x45.7 cm (12 x 18 in)</p> <p><b>Legend:</b> Legend and border green on reflectorized white background</p>
	<p><b>Purpose:</b> Directional guidance to bicycle parking locations.</p> <p><b>Status:</b> CITY OF DALLAS</p> <p><b>Size:</b> 30.5x45.7 cm (12 x 18 in)</p> <p><b>Legend:</b> White on blue background</p>
	<p><b>Purpose:</b> Regulatory: Prohibition of motor vehicles</p> <p><b>Status:</b> OFFICIAL: Mandatory as designated in the Manual of Uniform Traffic Control Devices (MUTCD-R-5-3)</p> <p><b>Size:</b> 61x45.7 cm (24 x 18 in)</p> <p><b>Legend:</b> Black on white</p>
	<p><b>Purpose:</b> Warning: For use in advance of point where official bikeway crosses road</p> <p><b>Status:</b> OFFICIAL: (MUTCD-W-1-1)</p> <p><b>Size:</b> 76x76 cm (30 x 30in); diagonal position 61x45.7 cm (61 x 45.7 in)</p> <p><b>Legend:</b> Black on white</p>
	<p><b>Purpose:</b> Guidance: Activating a protected signal crossing at a pathway/roadway intersection</p> <p><b>Status:</b> Experimental</p> <p><b>Size:</b> 30.3x45.7 cm (30.4 x 45.7 in)</p> <p><b>Legend:</b> Black on white</p>
	<p><b>Purpose:</b> Advisory: Identification of right-of-way on a multi-use pathway</p> <p><b>Status:</b> Experimental: suggested by Rails-to-Trails Conservancy</p> <p><b>Size:</b> 61 cm (24 in)</p> <p><b>Legend:</b> Black on yellow</p>



	<p><b>Purpose:</b> Regulatory: Reminder of legal status of bicyclists</p> <p><b>Status:</b> Experimental: City of Dallas Sign</p> <p><b>Size:</b> 61x76 cm (24 x 30 in)</p> <p><b>Legend:</b> Black on white with borders</p>
	<p><b>Purpose:</b> GUIDANCE: Identification of predetermined route over any safe and suitable surface</p> <p><b>Status:</b> OFFICIAL: Mandatory as designated in the Manual of Uniform Traffic Control Devices (MUTCD-D11-1)</p> <p><b>Size:</b> 61x46 cm (24 x 18 in)</p> <p><b>Legend:</b> White on green w/border, 3: Series C letters w/bicycle symbol</p>
	<p><b>Purpose:</b> GUIDANCE: Bikeway system identification on route over any safe and suitable surface</p> <p><b>Status:</b> EXPERIMENTAL: Suggested to replace MUTCD-D11-1 as a more useful suitable tool for bicycle routes</p> <p><b>Size:</b> 61x76 cm (24 x 30 in)</p> <p><b>Legend:</b> Black on white w/ green border, bicycle symbol</p>
	<p><b>Purpose:</b> WARNING: For use in advance of point where official bikeway crosses road.</p> <p><b>Status:</b> OFFICIAL: MUTCD-W1-1</p> <p><b>Size:</b> 76x76 cm (30 x 30 in); Diagonal position 61x46 cm (24 x 18 in)</p> <p><b>Legend:</b> Black on Yellow w/border</p>
	<p><b>Purpose:</b> REGULATORY: Identification of beginning of suitable route</p> <p><b>Status:</b> OFFICIAL: MUTCD-M4-11</p> <p><b>Size:</b> 61x15cm (24 x 6 in)</p> <p><b>Legend:</b> White on green w/border</p>



	<p><b>Purpose:</b> REGULATORY: Identification of beginning of suitable route</p> <p><b>Status:</b> OFFICIAL: MUTCD-M4-12</p> <p><b>Size:</b> 61x15cm (24 x 6 in)</p> <p><b>Legend:</b> White on green w/border</p>
	<p><b>Purpose:</b> WARNING: Bicycle crossing of railroad tracks. Also provides cross guidance</p> <p><b>Status:</b> PROPOSED: MUTCD Sign</p> <p><b>Size:</b> 61x76 cm (24 x 30 in)</p> <p><b>Legend:</b> Black on yellow w/borders</p>
	<p><b>Purpose:</b> REGULATORY: Reminder of legal status of bicyclists</p> <p><b>Status:</b> EXPERIMENTAL: City of Dallas Sign</p> <p><b>Size:</b> 61x76 cm (24 x 30 in)</p> <p><b>Legend:</b> Black on white w/borders</p>

## TRAIL PLAN

Once the previously described elements were completed the research, analysis and recommendations could be evaluated and presented in the remainder of the Plan. The initial phases are necessary and important to the process leading to the development of final conclusions and recommendations. However, the activities undertaken and the interchange of ideas and facts between the Consultant, Staff and CDC Board in the next phases are considered the most important in the overall process. The Plan must be in scale to community needs and must be affordable to be developed by the community. The Final Plan will be completed in text and graphic format in such detail to illustrate the results of the process undertaken to achieve the Trail Master Plan. Graphics are used to illustrate Plan Elements where appropriate, to communicate the purpose and intent of Trail Master Plan.



## **BASE ELEMENTS**

The purpose of this task is to summarize work completed up to this point and document it in a manner that clearly defines the basis and direction for the Trail Plan. Specifically, the following will be prepared as a part of the Plan:

- Summary of inventory and analysis of existing trails.
- Summary of present and future population - land use relationships defining people, areas, and quantities to be served with strategies for providing service and meeting trail needs.
- Identification of needs determined from citizen public hearings, sub-committee meetings, development standards for trails and trail corridor opportunities.

## **GOALS AND OBJECTIVES**

Once there was a clear understanding of the basis for projecting future needs and desires of the Community for trails, a process was undertaken with the Staff to establish and define the final direction, purpose and scope for the Trail Master Plan.

In this task, a series of goals, objectives, and implementing strategies have been developed to establish the policy framework for the Trail Master Plan. The City-wide Trail System:

- Identifies types of trails as either a multi-purpose trail, for use along a natural feature or as a connector trail, serving transportation purposes. Paving standards and other design features should be adopted for construction of both types.
- Develops standards for incorporating hike and bike trails into existing streets where possible by including additional width in the pavement and/or parkway of proposed streets.
- Conducts in-depth analysis of the feasibility of separated crossings at vehicular arterials. The City should remain cognizant of the State Highway Departments anticipated changes to State Highway 121 and do everything within its power to have separated crossings of State Highway 121 and FM 423 provided in the Highway Departments construction documents.



- Identifies an opportunity for linking city property with Corps property to create a tourist destination along the shoreline of Lake Lewisville.
- Creates opportunities for pedestrians to access commercial property via a trail in lieu of streets and vehicular traffic.

## **PLAN ELEMENTS AND GRAPHIC PLAN**

Graphic plans were developed that depict the conclusions. These plans are supported by the following data:

- The identification of trail corridors
- The identification and location of park and school linkages
- Corps property around Lake Lewisville for trail development
- The identification of trail surfaces
- Linear park acquisition and development for trails
- Prioritized ranking of the various trail segments
- Identify potential linkage to surrounding communities and their trail systems

With the existing trails and previously planned trails located, trail alignments were studied which would implement the priorities as delineated. Specifically, alignments were charted which connected the residential neighborhoods to the parks and schools, provided linkage from park to park and finally loops were provided, facilitating movement throughout the City via non-motorized transportation.

With the use of the accurate base map of development provided by the City, each alignment scenario was examined. Field trips were conducted to observe difficult areas for determination of the best alignment scenario.

The resulting City-wide trail plan is shown on *Plate 1*. To facilitate comprehension of the proposed trail system the trails were placed into twelve possible trail projects.

Several definitions are offered to clarify the following discussion of the proposed City-wide trail system. This numerical phasing suggests a construction priority which was determined by the public hearing, land use and existing population. The master plan only prioritizes the first five potential projects. Construction of



the five projects would be based on available funding. The remaining seven projects would be built as funding becomes available.

### **Phase I – Shoreline Trail**

At the August 13, 2003 public hearing citizens strongly expressed the need for trail access to the Lake Lewisville shoreline. The potential views and accessibility to the lake were frequently mentioned. Based on these comments the Shoreline Trail was designated as Phase I within The Colony Trail System.



The trail will begin at Ridgepoint Park and end at Steward Creek Park. The trail may eventually extend southwest into the Lewisville Environmental Learning Area (LELA) of the City of Lewisville. This is significant because this may provide a trail link to the Trinity Trail System and the Dalhoma Trail. The Trinity Trail System eventually could connect to the Dalhoma Trail which extends from Oklahoma to Dallas.



Due to the requirement of the U.S. Army Corps of Engineers, the trail will have to be built with a caliche base material. The approximate length of the Trail is 21,500 lineal feet with an estimated construction cost of \$645,000.00.





## **Phase II – Paved Inner City Trail**

Based on the public comments, the next logical phase of construction was the trail within the Oncor electrical and gas easements. This trail provides pedestrian access to a majority of citizens in the northeastern section of The Colony.

This trail when completed would provide continuous pedestrian access to B.B. Owens Elementary School, B.B. Owens Park, North Colony Boulevard Park, the Aquatic Park, Slay Baker Park, TC Five Star East, the new water park, The Colony Five Star, The Colony High School, Camey Park, Greenway Park, Perryman Park, Historical Park, Bridges Park and the Little League Complex Recreational Center, and Service Center. A trail which provides pedestrian and bike traffic access to this number of parks and schools is a unique opportunity.



Another segment of the Phase II trail would be in the Right-of-Way of Memorial Drive and would connect to Cougar Alley and into Standridge. This would provide a trail connection from the Inner City Trail to the Lake Lewisville Shoreline.

The Inner City trail is recommended to be constructed of concrete with a minimum width of ten feet (10'). Because of the anticipated use of the trail, if feasible this section of trail could be twelve feet (12') in width. The approximate length of the trail is 42,800 lineal feet with an estimate cost of \$2,054,400.00.

## **Phase III – Paved Austin Ranch Connection/Northeast Region Loop**

The Austin Ranch Connection would be in the east right-of-way of Plano Parkway and in the right-of-way of Windhaven Road. This phase would provide access for citizens south of State Highway 121 access to The



Colony Five Star Complex and the inner city trail.

There is also a small section of Phase III trail which would connect B.B. Owen Park, Turner Street Soccer Complex, and Bill Allen Memorial Park. Construction of the trail would be based on available funding at the time of construction. The total approximate length of the trail segments are 32,100 lineal feet at the estimated construction cost of \$1,540,800.00.

#### **Phase IV – North Colony Blvd, East/West Connection**

The trail subcommittee considered this an important section in the overall Trail Master Plan. This section of trail would be built in the north parkway section of North Colony Blvd. and would provide east/west trail access from the east city limit line to Stewart Creek



Park. The trail is approximately 158,500 lineal feet in length and the estimated construction cost for the concrete trail is \$880,000.00.

#### **Phase V – Shoreline Trail, Wynnewood Park**

This section of trail would be built beginning at Eastvale northwest to Wynnewood and continue northeast on U.S. Army Corp. of Engineers property to Eastvale Park at the Blue Sky Soccer Complex. The trail would be a caliche base material 48,500 lineal feet with an estimated construction cost of \$1,455,000.00.

#### **Carrollton Connection**

This section of trail would be built in the floodplain of Indian Creek. The trail would provide passive opportunities within the floodplain. A trail head is also proposed at this section of trail with vehicular access from Plano Parkway. Although the City of Carrollton does not have an adopted



Trail Master Plan this section would provide a trail connection to The Colony and Carrollton. The concrete trail is approximately 8,700 lineal feet in length and the estimated construction cost is \$417,600.00.

### **Memorial Drive Trail**

Memorial Drive Trail is unique because it can provide access to the commercial corridor on State Highway 121 as well as access to The Colony Five Star and the new water park. The trail would be constructed in the north right-of-way of Memorial Drive. The Trail would cross F.M. 423, Main Street



at the intersection of Main and Memorial or underneath F.M. 423 at Office Creek. The intersection crossing would be a signalized at-grade crossing. The Office Creek crossing would occur with the drainage structures under F.M. 423 at Office Creek.

The City should contact the Texas Department of Transportation (TxDOT) to coordinate either crossing. The total length of the trail is approximately 12,200 lineal feet and the estimated cost for the concrete trail is \$585,600.00.

### **South Colony Trail**

The construction of the South Colony Trail section would begin at Memorial Drive to the east and extend west, crossing Main Street. A trail head is proposed on the west side of Main Street. This trail head would allow citizens to walk, bike



or drive to the trail head and access Lake Lewisville via the Shoreline Trail in Phase I. A majority of the South Colony trail would be built in the



South Parkway of South Colony Blvd. The approximate length of the trail is 8,600 lineal feet with an estimated cost of \$412,800.00.

### **Main Street Trail**

The Main Street Trail would be built in the right-of-way of Main Street. TxDOT is planning to rebuild F.M. 423 – Main Street in the near future. During the planning stages the City should coordinate with TxDOT to determine the most advantageous side, (east or west right-of-way) which the trail should be built.

Factors which may influence the decision would be right-of-way width, grade elevation changes between the right-of-way and adjacent private property, infrastructure and potential overhead power lines.

The City should also request a hike and bike trail bridge extension be added to the bridge improvements at Lake Lewisville near Eastvale Park. The proposed length of the Main Street Trail is approximately 15,600 lineal feet and would extend from State Highway 121 to the North City limit line. The estimated cost of the concrete trail is \$748,000.00.

### **Railroad Trail**

The proposed trail in the Burlington Northern Railroad right-of-way would be built once the railroad line is abandoned. This section of trail could potentially provide another link to the Frisco trail system at the northeast corner of The Colony. Another trail link could also be connected to the Plano Trail System in the Austin Ranch section of the City. The railroad trail would border the cities east City limit line. The approximate length of this concrete trail is 18,400 lineal feet and would cost approximately \$883,200.00.

### **Neighborhood Connection**

This section of trail was designated to provide a contiguous trail for the residents north of North Colony Blvd. and east of Main Street. This



section of trail would be built in the existing parkways of the streets in the neighborhood. The trail width may vary from four feet (4') to six feet (6') wide depending on right-of-way and existing infrastructure.

The trail would have directional signage and provide access to Stewart Creek Park and the Main Street trail. The approximate length is 13,400 lineal feet. The trail would be constructed of concrete and cost approximately \$792,000.00.

### **Hidden Cove Park Shoreline**

This section of trail is similar to Phase V, Wynnewood Shoreline Trail. The trail would connect Hidden Cove Park through the U.S. Army Corps of Engineers shoreline to Wynnewood. The approximate length is 46,500 lineal feet and the trail would be built of a caliche base and cost approximately \$2,232,000.00.

## **PRIVATE PROPERTY TRAIL CONNECTORS**

The master plan illustrates four trail links which may connect the trail via private property which would be in a defined trail easement. The easements should be minimum of fifteen feet (15') in width, dedicated to the City.

There may be other opportunities available to the City as the trail system develops. Each should be evaluated on its own merits and benefit to the trail system. The following are examples of additional trails which may be included in The Colony Trail System.

### **In-Park Loop –**

A trail within a park which is intended primarily for park activities such as nature study, strolling, walking and jogging. Bicycling may be permitted on a case-by-case assessment.

### **Off-Street Trail –**

A multi-use trail located outside of street right-of-way. Off-street trails may be located in utility easements, greenbelts, creek corridors, linear parks, school property, parks, etc.



#### On-Street Trail –

A trail located within the right-of-way of streets beyond the back-of-curb; thereby, it may be located in the parkway or median. If located in the parkway the trail should have a minimum width of eight (8') feet and preferred width between ten (10') feet and twelve (12') feet.

#### Spur Trail –

A trail connecting neighborhoods to the City-wide trail system which functions as a local corridor and requires a return trip to return to the trail system.

Review of the City-wide trail plan demonstrates that with the complete development of the proposed trail system all portions of the City will be accessible by non-motorized transportation.



## **IMPLEMENTATION**

### **FUNDING SOURCES**

This Trail Master Plan recommends the development of new trails and further development in some existing parks. Once completed, these recommended improvements represent a substantial public investment in parks and open space as the City approaches development. The various sources of funds for these improvements are as important as the diversity of those sources. When there are several sources of funds for implementing the Plan no one source is overburdened and the Plan has a better probability of being implemented. The sources discussed below relate to the development and renovation/expansion of park- land and facilities and trails.

#### **General Fund –**

This source of funding is supported by ad valorem tax revenues and is generally the primary source of funds for maintenance and operation of the existing park system. The general fund is also the source for projects requiring smaller amounts of capital investment. Although projects funded by this source make a small annual contribution to the expansion of the park system and trail development analysis over a number of years usually reflects a major accomplishment in improvements to the park system.

#### **Bonds –**

Bonds are generally the most common source used by cities for the purchase of land and for providing development funds. There are two types of bonds which are used for parks, both of which must be approved by referendum.

#### **General Obligation Bonds –**

The General Obligation Bond is amortized using ad valorem taxes and is used for the funding of capital projects which are not supported by a revenue source. These projects include water service, sanitary sewer service, and park acquisition and development. The availability of bonding for parks is often dependent upon the overall municipal needs financed by this source. Capital items such as purchase of land and physical improvements with a useable life expectancy of 15 to 20 years can be funded with general obligation bonds.



#### Revenue Bonds –

Revenue bonds finance projects which produce enough revenue to retire their debt, such as, golf course and enterprise oriented park projects.

#### Private Donations –

This source of financial assistance would usually come from a citizen, organization, or business which has an interest in assisting with the development of the park system. Land dedication is not an uncommon occurrence when property is being developed. The location of a neighborhood park within a residential development offers additional value to residential units within that neighborhood, especially if the residential development is occupied by younger families with children.

Private donations may also be received in the form of funds, facilities, recreation equipment, art or in-kind services. Donations from local and regional businesses as sponsors for events or facilities should be pursued. A Parks Improvement Trust Fund may be set up to manage donations by service organizations, benevolent citizens, willed estates and other donated sources. The purpose of this trust is to establish a permanent source of principle value that will increase as donations occur. The principal can not be decreased; however, the annual interest can be used for park development.

#### Parkland Dedication Ordinance –

The parkland dedication ordinance is a device used by many cities to acquire and develop park land. The ordinance is written to require any new residential development to provide land or money in lieu of land in relationship to the final number of dwelling units being built within the residential development. This includes all types of residential construction. The City of The Colony has an adopted Park Dedication Ordinance in place.

#### Sales Tax Option –

The passage of Senate Bill 376 in 1992 gave cities an economic development tool which provided a sales tax that could be levied for park and recreation purposes.

Under S.B. 376, a corporation separate from the city must be created to manage the sales tax funds. The corporation's board of directors must have seven members, appointed by the City Council. At least three of the directors



must not be employees or elected officials of the city. The corporation then manages the revenue from the sales tax for parks and recreation improvements.

The Economic Development sales tax is generally one percent of the sales tax generated in the City. Normally one-half percent is dedicated to parks and recreation. The division of the one percent is at the City's discretion. The Economic Development sales tax can be used for new park improvements, existing park improvements, repair of existing park facilities, land purchase and park maintenance.

#### Grant – In – Aid –

Grant programs provide funding assistance for various aspects of parks and recreational facilities. The grant-in-aid programs are usually matched programs, meaning the grant matches municipal funds or services at a prescribed ratio, usually ranging from 50/50 to 80/20.

#### Texas Recreation and Parks Account (TRPA) Program –

Texas Local Parks, Recreation and Open Space Fund is administered by the Texas Parks and Wildlife Department (TPWD). The TPWD program allows a city to request matching funds for both the acquisition and construction of park facilities. Currently, funds are available on a fifty percent (50%) cost share basis; the maximum amount of a grant request can be for \$500,000. The grant is secured through submission of an application which follows a standard format for applicants. All applications received are ranked on a point system which is designed to evaluate the need for the purchase or construction being requested. Funds are distributed among the applicants having the greater number of points until all allocated funds are expended. Applications to TPWD can be made semi-annually with a six-month waiting period following the submission date before the successful applications are notified.

This funding source is used by many communities. The competitiveness of the program generally allows cities having bona fide park needs to prevail in obtaining funds.



#### The Landscape Cost Sharing Program –

The Landscape Cost Sharing Program is administered by the Texas Department of Transportation. Fifty percent (50%) cost sharing support is available for both highway and pedestrian landscape projects on routes within the designated permanent state highway system.

#### Urban and Community Forest Challenge Grant –

Matching grants are available on a 50/50 cost share basis from the Texas Department of Forestry. A variety of projects including: program development, beautification and staffing and training work shops are considered. These are small grants of \$5,000 to \$10,000.

#### Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) –

Approved in June 9, 1998 it made three billion dollars available to state and local agencies through June 2004. Funds will be available for “transportation enhancement” projects including, bicycle and pedestrian facilities, trails, rails-to-trails, historic preservation and similar projects.

#### Public Improvements District (P.I.D.) –

When authorized by City Council and in compliance with state laws, new developments can establish a Public Improvement District (P.I.D.). As a taxing district the P.I.D. provides funds specifically for the operation and maintenance of public facilities such as parks and major boulevards.

#### Tax Increment Financing District (T.I.F.) –

A T.I.F. is a tool used by local government to finance public improvements in a defined area as approved by the City Council. When an area is designated a T.I.F. district the tax base is frozen at the current level. As development occurs within the T.I.F., the increased value of property, the tax increment is captured. The tax increments are posted to a separate fund to finance public improvements’ within the district.

### **PRIORITY LISTING**

The expected timing for the acquisition and development of future trails is important to the City when programming capital funds, and when developing an acquisition program in which desirable land for trail purposes is not absorbed as other land uses and is not completely bypassed.



To establish a framework for identifying priorities for acquisition and development of future trails, a priority listing of trails was prepared (see *Table 1*). This listing provides a prioritized overview of needed trails, as well as estimates for construction timing and cost and ideas for possible funding sources. As documented in the planning process trails are an important recreation opportunity to the Citizens of The Colony.

**Table 1**  
**TRAIL DEVELOPMENT LISTING**  
**City of The Colony, Texas**

<b>Priority</b>	<b>Trail</b>	<b>Distance in Linear Feet/Miles</b>	<b>Estimated Cost</b>	<b>Possible Funding Source</b>
1.	Shoreline Trail	21,500 L.F./mile.	\$645,000.00	Bonds/Grants, Private Donations
2.	Inter-City Trail	33,700 L.F./mile	\$1,617,600.00	Bonds/Grants, Private Donations
3.	Austin Ranch Connection	17,500 L.F./mile	\$840,200.00	Bonds/Grants, Private Donations
4.	East/West Connection	18,500 L.F./mile	\$888,000.00	Bonds/Grants, Private Donations
5.	Shoreline Trail Wynnewood	48,500 L.F./mile	\$1,455,000.00	Bonds/Grants, Private Donations
	Carrollton Connection	8,700 L.F.	\$417,600.00	Bonds/Grants, Private Donations
	Memorial Drive Trail	15,900 L.F.	\$763,200.00	Bonds/Grants, Private Donations
	South Colony Trail	8,600 L.F.	\$412,800.00	Bonds/Grants, Private Donations
	Main Street Trail	15,600 L.F.	\$748,800.00	Bonds/Grants, Private Donations
	Railroad Trail	18,400 L.F.	\$883,200.00	Bonds/Grants, Private Donations
	Neighborhood Connection	16,500 L.F.	\$792,000.00	Bonds/Grants, Private Donations
	Shoreline Trail Hidden Cove	46,500 L.F.	\$2,232,000.00	Bonds/Grants, Private Donations

Segments of the trail corridors are prioritized relative to their significance to the citizens of The Colony as established by the criteria listed below and comments received in the citizen workshops.



## **CRITERIA FOR RANKING TRAIL CORRIDORS**

The following criteria will be used to prioritize the importance of the various trail segments and establish construction sequencing.

- **Residential Density:** The first criterion relates to the residential population served, both the existing population location and density will be considered as well as residential population growth forecasted within the next five years.
- **Access to School and Parks:** Emphasis is on connecting residential areas to parks and schools.
- **Potential Trail Connections:** Emphasis is given to trail segments which offer a high potential for connection to other trail segments within the city-wide trail system.
- **Undeveloped Land/Open Space within Residential Development:** Emphasis is placed on undeveloped property where parkland dedication might be used to develop the trail segment.
- **Cost Analysis:** Emphasis will be placed on cost development of various trails types, sizes and locations.
- **Potential for Transportation Equity Act (TEA-21) Funding:** Emphasis is placed on meeting regional criteria for transportation funding
- **Potential for Attracting Tourism for Economic Development in the Community:** Emphasis will be placed in the areas identified around Lake Lewisville as potential trails and their connection to Parks and adjacent communities.

## **CONCLUSION**

The City should review the progress of the Plan and park development annually. Regular updates for capital improvements and construction timing should also be evaluated and performed to ensure that the community's goals and objectives are being addressed.

The process outlined in this Trail Master Plan has had several check points during the plan preparation to ensure the plan is addressing the goals and objectives of the citizens. The plan has been submitted to the Park and Recreation Department, Trail Master Plan Committee, CDC and City Council for their review, comments and approval.



The Colony Trail Master Plan analyzed existing land uses, population and potential trail corridors for future trail opportunities. The Master Plan recommends trail locations, types of trails and construction estimates.

These recommendations are based on existing conditions and economics. The Master Plan is a fluid planning document and should be recognized as such. Construction phasing or sequences may change due to economic conditions, development tendencies and/or City priorities. Even though the trails may be constructed out of the recommended phase, the over all goal of the Trail Master Plan will eventually be accomplished and the primary beneficiary of this Plan and the trail system will be the citizens of The Colony.