Corinth

INTEGRATED NON-MOTORIZED SYSTEM MASTER PLAN

Pedestrian • Bicyclist • Equestrian

AN ELEMENT OF THE COMPREHENSIVE PLAN OF THE CITY OF CORINTH

CORINTH

Gateway to Success

Bowman-Melton Associates, Inc.

Ordinance No. 06-02-16-05

February 16, 2006

ACKNOWLEDGEMENTS

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I. INTRODUCTION

This *Corinth Integrated Non-motorized System Master Plan* is to become a component of the *Comprehensive Plan of the City of Corinth*. This plan is intended to identify existing trails, evaluate current conditions, anticipate future growth, and recommend innovative alternative transportation solutions within the city through buildout with a population of 26,000. According to North Central Texas Council of Governments (NCTCOG) forecasts, buildout is anticipated to occur between 2020 and 2030. However, the population in Corinth has increased almost 57 percent since the 2000 Census population of 11,365. NCTCOG estimates the 2005 population to be 17,800. Should this trend continue, buildout could occur even before 2010.

Recommendations address local, intercity, county, regional, and state considerations for non-motorized travel, including potential funding sources and an overview of key design guidelines for non-motorized facilities. This plan is intended to help steer decisions about the development and preservation of the city's resources with respect to trails, on-street bikeways and sidewalks, and their relationship to the city's parks, recreation and open space, residential, educational, and commercial interests. This plan is intended to aid the City in the development of future capital programs.

GOAL AND OBJECTIVES

The goal of this integrated non-motorized system master plan is to provide a guide for creating a non-motorized system that will give citizens convenient access to schools and parks, as well as between existing and future residential, civic and commercial areas.

The major objective of this plan is to identify a conceptual citywide non-motorized transportation and recreation pathway system and to tie the development of this system network to future grants or community infrastructure improvements – streets, utilities, residential and commercial development, schools, parks and open space. It also identifies key connectivity projects which need to be retrofitted into previously developed areas.

It expands on the significant ongoing recreational trail development efforts of the volunteer Trails Committee and their long term vision for walking, bicycling and equestrian trails. This plan seeks to contribute to the Corinth's quality of life by identifying corridors that will enhance opportunities for residents to be more active through expansion of non-motorized mobility and access between neighborhoods and to these key destinations.

Upon adoption on February 16, 2006 by the City Council, the *Corinth Integrated Non-Motorized System Master Plan* becomes an element of the *Comprehensive Plan of the City of Corinth.*

II. THE PLANNING PROCESS

Non-motorized transportation and recreation system planning should result in a long-range plan that considers existing resources and plans as well as future needs, while maintaining flexibility for unknown future developments. In order to achieve this end, the major phases of the planning process, have included data collection, a current conditions assessment, community involvement, development of a conceptual network including alternatives, development of recommended phasing criteria to be used during implementation, as well as identification of potential funding sources.

DATA COLLECTION

This planning project began on May 3, 2005 with a coordination meeting between City staff, Trails Committee representatives, and consultants. The City provided available information including a city base map with floodplains, roads, lot lines, rail corridors, parks, and schools. The 2001 *Land Use Build Out*, *Zoning District* and *City Park and Trail Plan* maps by Kimley Horn, as well as selected subdivision plan maps, were transmitted.

The *Transportation Element of the City's Comprehensive Plan* [Ordinance No. 04-08-05-12]; 2004 *Roadway, Water, Waste Water, Drainage Capital Improvement Plan* [CTN03380] by Freese & Nichols, Inc, which includes traffic counts, and a thoroughfare map were used during plan development. Also provided early in plan development were engineering drawings for FM 2181 prepared by Huitt Zollers. Maps showing various trails as well as aerials showing sidewalks as inventoried by the Trails Committee were provided and used.

Demographic data was obtained from both the North Central Texas Council of Governments (NCTCOG) website as well as the City of Corinth web site.

CURRENT CONDITIONS ASSESSMENT

City staff and the Trails Committee provided the knowledge of local needs and resources critical to the development of this plan during several site visits and at meetings. Windshield site tours revealed that many elements are already in place to support a citywide non-motorized system. The existing Denton Branch Rail Trail, the Corinth Community Park trails and the Elm Fork and Pilot Knoll Horse and Hiking Trail, as well as the programmed nature trail connecting the Denton Branch Rail Trail with the Corinth Community Park trails represent a significant investment in trails in Corinth. Many newer neighborhoods have sidewalks throughout, and some streets, such as Meadowview Drive are already suitable for bicycling.

These field surveys, consisting of "windshield surveys," together with "walk throughs" of selected sites, were conducted to establish familiarity with local opportunities and constraints. Parks and schools were identified, as were other current and planned origins and destinations the plan may serve. Existing and programmed trails and land uses in and adjacent to Corinth were also examined to determine potential tie-ins.

MAJOR BARRIERS TO NON-MOTORIZED ACCESS

Interstate Highway 35E (IH 35E) is a major east-west barrier to pedestrian and bicyclist access in Corinth. As the city developed, bridges across this highway failed to accommodate pedestrian and bicyclist circulation. Currently there are no fully-accessible pedestrian crossings of IH 35E within the city. All street crossings of the IH 35E corridor barrier are in need of pedestrian upgrade treatments if these routes are to be fully accessible.

At the Post Oak / Shady Shores crossing and at Corinth Parkway, the only way a pedestrian can get across without walking in the roadway is a narrow raised area with a low railing, a significant safety hazard to pedestrian passage, and unusable for people in wheelchairs. For students attending Pecan Creek Elementary School just north of the Corinth city limit in Denton, the students need a safe crossing along the Post Oak / Shady Shores Road crossing of IH 35E.

For residents west of IH 35E, there is no provision for getting to the Denton Branch Tail Trail, City Hall or Corinth Community Park without an automobile. The FM 2181 underpass, has ADA

ramps, but sidewalks do not continue beyond the service roads. Recommendations in this plan address each of these crossing obstacles as opportunities to improve pedestrian safety. Bicyclists should be provided with wide curb lanes or bike lanes or a trail crossing, if a trail continues beyond the TxDOT right-of-way when these bridges are reconstructed.

EXISTING TRAILS

Currently, the Denton Branch Rail Trail, the Corinth Community Park trails and the Elm Fork and Pilot Knoll Horse and Hiking Trail, as well as the programmed nature trail connecting the Denton Branch Rail Trail with the Community Park trails provide the basis for an expanded trail system. Other parks, such as Meadowview Park and The Knoll & Briar Glen Park have walking paths leading from the street system. Existing trails are referenced in Table II-1, below.

Table II-1 **Existing Facilities and Parks in City**

Facility	Location	Size	Trails	Width	Length (Approximate)	Notes
Corinth City Hall	3300 Corinth Parkway	n / a				Nature trail is programmed behind city hall
The Woods Community Center & Park	1128 Postwood Drive	3.3 acres	Hard surface walking path	4'	1135'	
Crownover Recreation Center	1901 Creekside Drive	n / a				
Corinth Community Park	Corinth Parkway	116 acres	Hard surface paths and trails	6', 8', 10'	7560'	Walking / jogging trail, nature trail, boardwalk at pond
			Hard surface walking path (Dobbs Rd)	4'	800'	
			Soft surface trail	10'	3007'	
			Soft surface trail (off site)	10'	3000'	
The Knoll & Briar Glen Park	Knoll Ridge Circle	6.3 acres	Hard surface walking path	4'	6730'	100' linear park
Eagle Pass Park	Vintage Drive	2 acres	Hard surface walking path	4'	690'	
Windsor Ridge Park	Vintage Drive	2.2 acres				
Mulholland Park	Mulholland Drive	1.6 acres				
Meadowview Park	Meadowview Drive	11+ acres	Hard surface walking path	5'	1532'	exercise stations
			Soft surface nature trail	8'	1850'	
Meadow Oaks Park	Meadows Oak Drive & Alcove Lane	3.4 acres	Hard surface walking path	5'	1803'	
Fairview Park	Fairview Drive	3 acres	Hard surface walking path	4'	150'	
			Soft surface trail	8'	980'	
Thousand Oaks Park	Wandering Oak Drive	5.8 acres				
Kensington Park	Sussex Way	2.6 acres	Walking trail	5'	710'	
Denton Branch Rail Trail	Shady Shore Rd Southward to Burl Street		Natural surface hike and bike trail	100' ROW	2.7 miles within city	Constructed by City of Denton
Elm Fork and Pilot Knoll Horse and Hiking Trail	Lewisville Lake from Chinn Chapel Rd to Sycamore Bend Park		Natural surface multi-use trail	8' to 10'	4 miles in within city	Located within U.S. Army Corps of Engineers property boundaries

The 1997 *Corinth Master Plan Update* under Roadway Classifications and Criterion, emphasizes the importance of community trails. Since 2001, Corinth citizens have shown strong support for the development of a trail system by working through the Trails Committee to plan for and extend the trails available to the community. To date, primary emphasis of the Trails Committee has been on hiking and equestrian natural surface trails. However, this committee envisions a network of on- and off-street facilities that can be used to access schools and parks, as well as commercial and civic destinations for both recreation and transportation purposes.

COMMUNITY INVOLVEMENT

Following the development of the analysis maps for trails, sidewalks and on-road bikeways, the Trails Committee reviewed the plan on August 10, 2005, the map was subsequently placed on the city website for community review. This mapping was refined resulting in the Preliminary Recommendations maps for the citywide Pedestrian System and the citywide Bicycle System and presented on November 17, 2005 at Public Hearing held at Corinth City Hall, where the community was provided another opportunity to review and make comments.

An ongoing key community concern has been the critical need for access from Corinth along FM 2181 to Denton ISD's new John H. Guyer High School just north of the highway west of the Corinth city limit, where many Corinth students now attend. An opportunity exists to tie the development of non-motorized access to the high school with the widening of FM 2181, scheduled to begin construction in September 2007. Access to Lake Dallas High School and Corinth Elementary School just north of FM 2181 in the Lake Dallas ISD is also needed. Current plans are to include a sidewalk for pedestrians, but no bicyclist access along FM 2181.

ON-STREET BICYCLE ANALYSIS

A preliminary Bicycle Level of Service (BLOS) evaluation was conducted on selected road segments within the city of Corinth to evaluate existing conditions related to potential future on-street bicycle routes. This rating assists in identifying factors that cause bicyclists stress. Assessment of these factors (traffic volume, traffic speed, and potential lane width) is used to determine the bicycle level of service for a street or road segment (level A

being least stressful, followed by B, C, D and F). Streets with a BLOS D or F are considered to be inaccessible to bicyclists, and must be improved prior to signing as bicycle routes. The current BLOS is shown on the Recommended Bicycle System Map in Chapter III.

Secondary factors (street parking turn-over rates, truck traffic levels, commercial driveway spacing) were not evaluated for this planning document. Prior to any route signing, an on-site inspection should be conducted to confirm that secondary factors do not excessively impact conditions for bicycling.

For this plan, existing roadway widths and November 2003 traffic counts by V-TEC Engineering were obtained from Appendix A of the Freese & Nichols' *Roadway, Water, Waste Water, Drainage Capital Improvement Plan* [CNT03380]. Posted speed limits were obtained from *Chapter 72: Traffic Schedules* obtained from the City of Corinth website. For roadways without traffic counts, which have been used in this plan, traffic counts were estimated.

Good examples of bike-friendly streets. i.e., those with a Bicycle Level of Service (BLOS) A or B, include Meadowview Drive, Oakmont Drive, Blue Jay / Jesse Way, and most residential streets.

Streets suitable for experienced cyclists; i.e., those with a BLOS C, include Post Oak Drive south of Robinson Road, Robinson Road, Lake Sharon Drive / Meadow Oaks Drive, Parkridge Drive north of FM 2181, Dobbs Road, Corinth Parkway, Church Drive, Walton Drive, and Cliff Oaks Drive.

Roads Inaccessible to Cyclists; i.e., Bike-Unfriendly with a BLOS D or F, include Post Oak Drive north of Robinson Road, FM 2181, and Parkridge Drive south of FM 2181.

The following chapter describes the recommended trail, sidewalk and on-road bikeway system.

APPROVAL PROCESS

Following the Public Hearing on November 17, 2005, the plan document was provided to city staff and the Trails Committee for review and comment. Following incorporation of these comments, the proposed plan was presented to the Planning and Zoning Commission on January 23, 2006. On February 16, 2006, the plan was adopted by the Corinth City Council.

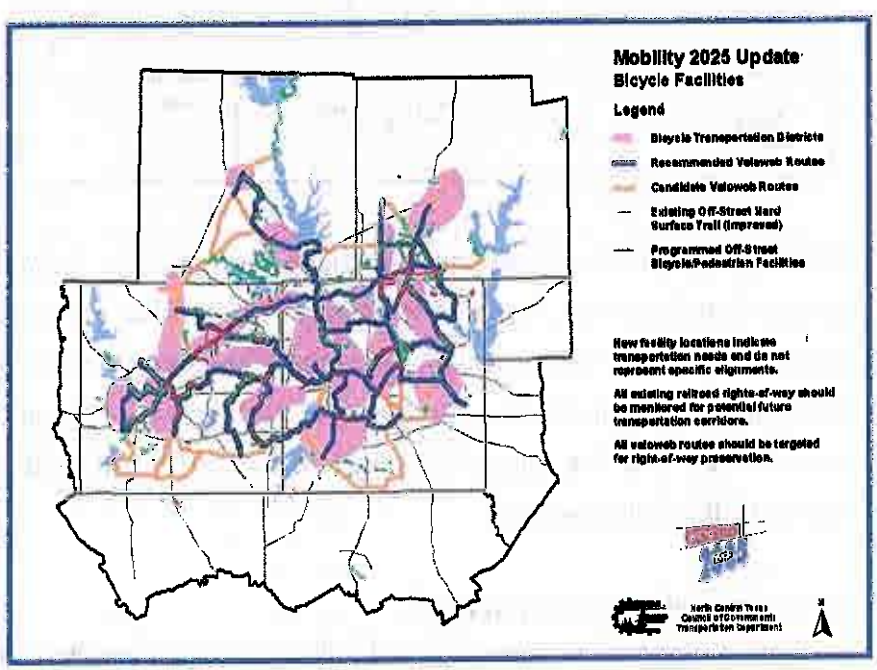
III. SYSTEM RECOMMENDATIONS

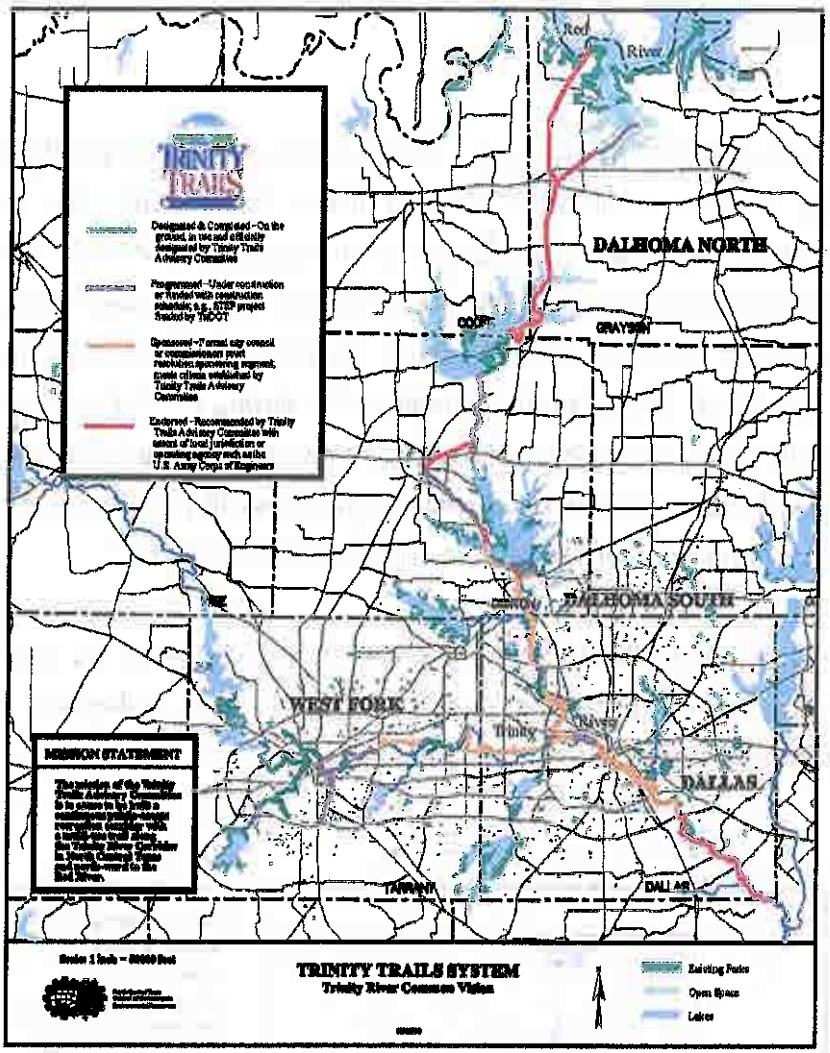
This study identifies potential connections from residential neighborhoods to schools, parks, and other key destinations serving Corinth. In order to achieve these connections, this plan delineates a sidewalk network along key roadways, together with pedestrian pathways along greenways, as well as identifying potential multi-use trail corridors along roadways and through properties which may be developed in the future. Potential on-road bike routes or bike-accessible roadways are also identified. This plan also identifies the strong need to preserve continuity of connections within the U. S. Army Corps of Engineers-owned lake shoreline hiking and equestrian systems when FM 2499 is extended northward from Lewisville Lake to FM 2181 beginning in September 2006, and from north of FM 2181 to Denton in October 2007.

Recommendations address regional connections, a citywide interconnected system, as well as major barriers to pedestrian and bicycle access throughout the city. Also addressed are recommended changes to existing city standards and ordinances.

REGIONAL CONNECTIONS

The Denton Branch Rail Trail is part of the planned "Regional Veloweb," a network of transportation-oriented spine trails first adopted in 1995 by the Regional Transportation Council of the North Central Texas Council of Governments (NCTCOG). The Regional Veloweb is included in the *Mobility 2025 Update*, the region's long-range transportation master plan, last updated in 2004.





A completed trail system stands to benefit many residents of Denton County as part of the regional trail network, which includes the Denton Branch Rail Trail.

One element of the Veloweb includes the planned Trinity Trails system, which has been adopted by all of the cities, counties and utility districts directly along the proposed routes. From Burl Street in the city of Corinth to downtown Denton, the Denton Branch Trinity Trails segment is planned to eventually tie into the popular Ray Roberts Greenbelt Trail along the Elm Fork between Ray Roberts and Lewisville Lakes. The Elm Fork Horse and Hiking Trail is also part of the existing or planned inter-jurisdictional Trinity Trails system, providing non-motorized connections from Corinth to existing and planned trails in Denton, Copper Canyon, Highland Village, Flower Mound, Lewisville, and Lake Dallas. See the adjacent Trinity Trails map for the 1998 status of Trinity Trails, formerly known as the Dalhoma Trail.

CITYWIDE SYSTEM PATHWAYS

Existing, programmed, and proposed pathways include multiuse hike and bike trails, equestrian trails, walking paths, sidewalks and bicycle-friendly streets that provide access to the off-street trail system as these areas are built out.

Maintaining and enhancing access to existing hiking and equestrian trails along Lewisville Lake and under the northward extension of FM 2499 and expanded FM 2181 is also included in this plan. The existing Elm Fork and Pilot Knoll Horse and Hiking Trail skirting the southern edge of the Kensington Estates subdivision along U.S. Army Corps of Engineers property provides significant current recreational access to Corinth residents.

In the area east of IH 35E, the Denton Branch Rail Trail will need to be reestablished within the rail corridor as plans for Denton County Transportation Authority (DCTA) move forward. It is anticipated that this commuter rail line will begin operation in 2010 or early 2011 according to a May 2005 Denton County Transportation Authority press release. Should Corinth decide to join the DCTA and secure a rail station within the city, this plan should be revisited to ensure non-motorized access opportunities to the rail station are not overlooked.

With implementation of this master plan and the currently available trails, sidewalks and bike-accessible streets, Corinth will become a fairly easy community in which to travel by foot or bicycle. As new development occurs or land uses change, non-motorized links between the city's residents and their commercial, civic and natural resources should be reviewed and included.

MAJOR BARRIERS TO NON-MOTORIZED ACCESS

This plan also identifies the critical need for access from within Corinth along FM 2181 to Denton ISD's new John H. Guyer High School just north of the highway west of the Corinth city limit, where many Corinth students west of Forest Glen Drive at FM 2181 now attend.

An opportunity exists to tie the development of non-motorized access to the high school with the future widening of FM 2181, scheduled to begin construction in September 2007. While current plans for FM 2181 include a sidewalk for pedestrians, a 10' sidepath is recommended along the south side of FM 2181 to provide both pedestrian and bicyclist access between Parkridge Drive and the future FM 2499, moving to the north side of FM 2181 at FM 2499 to the John H Guyer

High School. Sidewalks at key locations between future signalized crossings to the opposite side of FM 2181, are also recommended to provide access to these schools.

Without non-motorized access, parents will be required to transport non-drivers to and from school. Students within two miles of the school – which is most of the attendance zone within Corinth – are not eligible for bussing. Every effort should be made to include both bicycle and pedestrian access along FM 2181 with this TxDOT widening project. Two miles is a short bicycle ride, but a long walk to and from school. This is a project which Denton ISD and the Cities of Denton and Corinth should actively and persistently pursue with TxDOT.

Access to Lake Dallas High School and Corinth Elementary School north of FM 2181 in the Lake Dallas ISD is also needed from Forest Glen Drive eastward along FM 2181 to the ISD attendance zone boundary in Lake Dallas. The Lake Dallas ISD and the Cities of Lake Dallas and Corinth should actively and persistently pursue access to these schools as well.

The Bicycle Level of Service analysis conducted for this plan revealed that a key problem for cyclists will continue to be getting to the shops and services along FM 2181. Alternatives for bicyclist access in the commercial area to the west of IH 35E along FM 2181 should be explored with the city of Hickory Creek.

SCHOOL LINKS

This plan has focused on identifying 'safe routes to school' for all Corinth students. The need for improvements to school access along FM 2181 has been discussed above. These schools include John H. Guyer High School in Denton, just west of the Corinth city limit, Lake Dallas High School east of Parkridge Drive, and Corinth Elementary School on Cliff Oaks Drive one block north of FM 2181 between Mountainview Drive and Garrison Road.

The new Hawk Elementary School and Crownover Middle School east of Oakmont along Creekside Drive generally have pedestrian and bicycle access. Missing links in developed areas have been identified and trails in areas which may be developed in the future have been incorporated into the plan.

Access to the new elementary school north of Dobbs Road in Shady Shores, just east of the Corinth city limit could be provided along a proposed trail which extends the existing path along the easement east of Corinth Parkway as well as the existing Denton Branch Rail Trail.

Pecan Creek Elementary School in Denton just north of the Corinth city limit is currently inaccessible by foot to Corinth students. The IH 35E crossing at Post Oak Drive / Shady Shores Drive is dangerous. A trail crossing along the south side is proposed to accommodate both pedestrian and bicyclist access, as well as a sidewalk on the other side. The most likely scenario for development of the crossing is with reconstruction of the overpass itself in conjunction with other improvements to IH 35E.

Trail connections to North Central Texas College east of Corinth Street and north of Walton Drive are also proposed.

COMMERCIAL DISTRICT, CITY HALL AND PARK LINKS

Currently, the primary commercial district in Corinth lies along the north side of FM 2181 west of IH 35E. The south side of FM 2181 lies in Hickory Creek. Intermittent sidewalks at recently established businesses exist along the north side of FM 2181. This plan proposes an extension of the Denton Branch Rail Trail southward from Burl Street to FM 2181 and along FM2181 to west of IH 35E. In the commercial area sidewalks are proposed in Corinth.

Access to parks throughout the city and to Corinth City Hall has also been proposed. A northward extension of the Elm Fork Horse and Hiking trail beneath the future FM 2499 and under FM 2181 is currently in TxDOT plans for these highway expansions. The underpass of FM 2181, via an identified easement will connect to Meadowview Park, enabling pedestrian access to this Hiking Trail for most of the western part of Corinth.

PLAN FLEXIBILITY

Trails in undeveloped areas should be viewed as conceptual, and adjustments to proposed alignments should be anticipated and accommodated as these areas develop, provided reasonably direct connectivity to the citywide is maintained. With the plans for regional rail transit service through Corinth, it is important to keep in mind the potential for non-motorized access to rail stations in or near Corinth. The City should work with the Denton County Transportation Authority (DCTA) to ensure continued access along the Denton Branch Rail Trail corridor, including future trail extensions to rail stations, where feasible. The intent of this plan is to set the course for inclusion of non-motorized mobility and intermodal access leading to routine destinations throughout and beyond the city.

TRAIL SYSTEM

The recommended trail system is shown on both the Recommended Bicycle System Map and the Recommended Pedestrian System Map. Equestrian trails are shown on the Pedestrian System map, since these multi-use trails are intended for pedestrian and equestrian use. Both maps, located in Chapter III, detail existing, programmed and proposed off-road facilities, which may be either hard or soft surface, or for single or multiple user groups. Recommended trail segments are identified on the maps as T#. The *multi-use trails* hike and bike trails are recommended to be 10'-wide concrete facilities, but could be soft surface trails initially. Pedestrian *walking paths* may range between 6' – 8'-wide depending on anticipated user volume. Equestrian trails, depicted on the pedestrian map are soft surface pathways which may range from a minimum of 1.5' tread for a one-way trail in an environmentally sensitive area up to 10' in width for bi-directional equestrian only trails and up to 16' in width for multi-use equestrian trails.

Soft surface trails may be either untreated (natural surface) or improved using decomposed granite or similar material.

Potential for incorporating trail projects with other capital improvement projects is included with Table III-1, Recommended Trail Segments.

EQUESTRIAN TRAILS

Corinth has access to a significant equestrian trail, of which more than four miles is within the

city of Corinth. The natural surface Elm Fork and Pilot Knoll Horse and Hiking Trail with the historic Old Alton Bridge trailhead just west of the city limit runs along U.S. Army Corps of Engineers Lake Lewisville property just south and west of Corinth. In this plan, access via a utility easement that runs from the existing trail through Kensington Park to Sussex Way in Kensington Estates is recommended. An opportunity exists for a trailhead serving equestrians, hikers as well as lake access via Creekside Court at a city-owned pump station. In addition a trail extension which would pass under the reconstructed FM 2181 to Meadowview Park is recommended. A request to TxDOT for this underpass has previously been made.

NATURE TRAILS

Corinth Community Park has a nature trail with a pavilion north of Corinth Parkway which is suitable for educational groups. Meadowview Park also has an existing nature trail. All soft surface trails in natural areas can appropriately be called nature trails.

The programmed trail running from near the Denton Branch Rail Trail behind Corinth City Hall to Corinth Community Park where it will connect to existing nature trails both north and south of Corinth Parkway is anticipated to be completed by August 2006. Nature trails are proposed to extend eastward along the wooded drainage ways to the Shady Shores city limit, where they could be extended to Lewisville Lake.

SIDEWALK SYSTEM

Since 1984, sidewalks have been built concurrently with development. In areas previously developed without sidewalks, provision of sidewalks will be key to the overall connectivity of the pedestrian system.

The 1999 Zoning Ordinance, Article XXII *IH 35E Business Overlay District and Design Standards* indicates sidewalks not only along IH 35E, but also eastward from the northbound service road to the Denton Branch Rail Trail (aka Dalhoma Trail) within the city as well as an area east of the trail both north and south of Corinth Parkway. West of the southbound service roads of IH 35E, sidewalks are indicated for the length of the city and extending to the west including areas with commercial, industrial or multi-family zoning. This district holds

tremendous economic development opportunity should Corinth decide to join the DCTA.

While residential developments since 1984 usually have good sidewalks throughout, and identifying safe routes to school in these areas is easily accomplished, residents of many neighborhoods built prior to 1984 can only rely on walking in the streets. While contiguous sidewalks are often considered a desirable neighborhood attribute, if subdivisions have been constructed without these, the task of retrofitting can be daunting. Many internal streets within subdivisions have low levels of motor-vehicle traffic, minimizing the danger of walking in the street. The primary safety hazard for walking which must be addressed is not on these internal residential streets, but along collectors and thoroughfares without sidewalks.

Current city ordinances address the need for sidewalks in future developments. Where traffic volumes and speeds have created a barrier to walking in streets, recommendations included in this plan provide guidance for creating the key connections. Sidewalk segments included in this plan are intended to address overall system continuity. Every existing sidewalk is not mapped. In order to meet regional guidelines *commercial sidewalks* should be a minimum of 6'-wide and *residential sidewalks* 5'-wide. For more information on recommended changes to the sidewalk ordinance, go to Chapter IV Implementation Recommendations.

A coordinated effort between City departments has been established to review proposed programming of non-motorized elements of roadway projects. This coordination should also regularly evaluate facility maintenance needs, as well as development and zoning proposals, for impacts on the City's annual operations and maintenance budgets.

For highway projects, Texas Department of Transportation has been working for some time to better integrate non-motorized modes into its transportation projects. On September 12, 2003, it provided guidance to both its District Engineers and the Texas Turnpike Authority Division on when it would be appropriate to include new sidewalks as part of a project. According to this guidance, if any of the following factors are present, sidewalks should be included in the project:

- Facility is part of a locally adopted sidewalk planning document
- There is evidence of pedestrian traffic (either pedestrians are observed, there is a beaten down path, or significant potential exists for pedestrians to walk in the roadway); or
- Facility is located on a route to school or a transit route.

Other times where new sidewalk construction *may be considered* include where pedestrian generators / attractors exist. These TxDOT sidewalk facilities must be usable by people with disabilities.

Map III-1

Recommended Pedestrian System

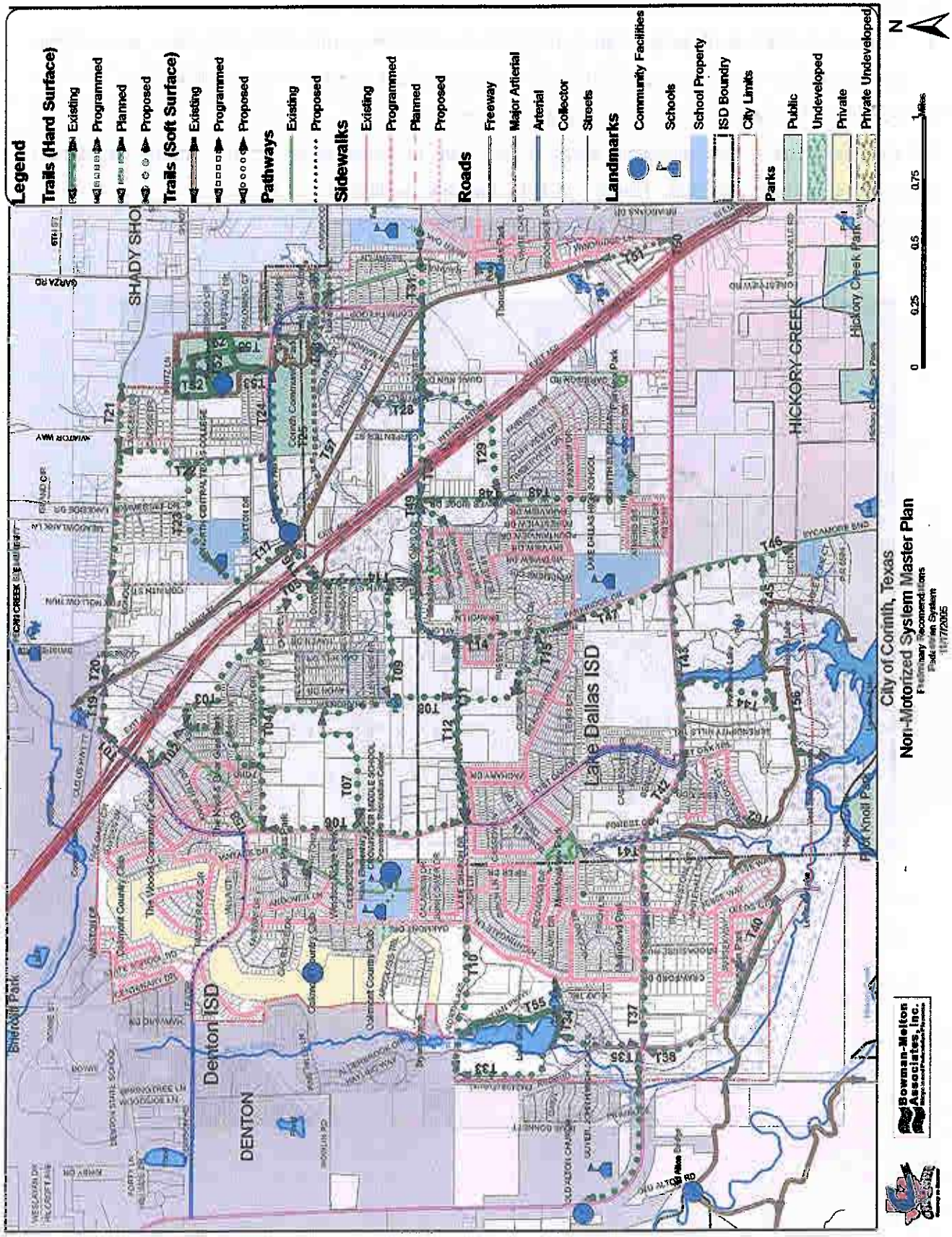


Table III-1

Trail Segment Data

Segment Id#	Status	Trail Location Identifier	E or N limit	W or S limit	Length (Linear Ft)	CIP	Notes
T01	Proposed	Shady Shores / Post Oak	Denton city limit	T2: Pecan Creek Dr	1,276	w/ TxDOT reconstruction	alternative is wide outside lanes (WOLs) & sidewalks (SWs)
T02	Proposed	Pecan Creek/ Ford	T1: Shady Shores Dr	T4: Church Dr at Ford	3,341		
T03	Proposed	35 -NW Development	T1: Pecan Creek Cir	T4: Church Dr at Haven Dr	2,990		
T04	Proposed	Church	T3: Haven Dr	T6: Post Oak Dr	4,095		Alternative is B34 WOLs & SWs
T05	Proposed	35 - Corinth Shores Development	Chapel Place	T14/T16: Wildwood St	1,073		
T06	Proposed	Post Oak Development	T 4: Church Dr	T11: Lake Sharon Dr	4,363		Alternative is B32.1 WOLs & SWs
T07	Proposed	City Central Development E-W / North	T8: City Central Development N - S	T6: Post Oak Dr	3,029		
T08	Proposed	City Central Development N - S	T4: Church Dr	T11: Lake Sharon Dr	4,289	wds 5, sw-Lynchberg 10, 15	
T09	Proposed	Nurikaba Development E-W/South	T14: Corinth St	T8: S of Valley View Dr	2,574	sw-Lynchberg 10, 15	
T10	Proposed	Lake Sharon W Development	Oakmont Dr	T33: Southlake Dr	3,201		
T11	Proposed	Lake Sharon E /N Development	T14: Parkridge Dr	T6: Post Oak Dr	3,899	wds 1	Alt for 50% of trail is B33 WOLs & SWs
T12	Proposed	Lake Sharon E /S Development	T13: E of Zachary Dr	Goodnight Trail	2,754	wds 1	wds 1 for ~ 50% of route. Alt is B33 WOLs & SWs
T13	Proposed	Lake Sharon Fairview W	T12: E of Zachary Dr	Post Oak Dr	1,287	wds 1	Alt is B33 WOLs & SWs
T14	Proposed	Corinth/ Meadow Oaks	T5: Wildwood	Meadowview Dr	6,382	wds 1, wds 12, sw-Lynchberg 9	wds 12 for ~ 70% of route. Alt is B39 & B40 WOLs & SWs
T15	Proposed	Forestwood	T14: Parkridge Dr	T12: N of Goodnight	1,693		
T16	Proposed	35 Corinth Pwy	T57: Denton Rail-Trail	T14: Corinth St	1,057	wds 12, w TxDOT reconstruction	wds 12 for ~ 50% of route. Alternative is B 41 WOLs and SW
T17	Proposed	Center City North Central Texas College S	North Central Texas College	T16: at Denton Rail Trail	2,044		

Segment Id#	Status	Trail Location Identifier	E or N limit	W or S limit	Length (Linear Ft)	CIP	Notes
T18	Proposed	Hidden Springs Connector	Meadowview Drive	Hidden Springs Drive	143		uses existing fire department emergency access. Dependent on community support
T19	Proposed	Shady Shores - W	T1 at City of Denton	T20 at T57: Denton Rail Trail	1,029		
T20	Proposed	Shady Shores - Central	T18: Corinth Street	T19 at T57: Denton Rail Trail	2,057		
T21	Proposed	Shady Shores - E	Shady Shores city limit	T18: Corinth Street	4,220		
T22	Proposed	Shady Rest Development	T21: Shady Shores Road	T24: Corinth Pwy	3,470		
T23	Proposed	Center City North Central Texas College E Development	T22: Shady Rest Lane	North Central Texas College	2,318		city needs to purchase corridor west of Corinth Community Park
T24	Proposed	Corinth Parkway	T52: Community Park Multi-use Trails	T57: Denton Rail Trail	3,882		Alternative is B42 WOLs and SWs
T25	Programmed - soft	Community Center Nature Tail	T53: Community Park Nature Trail	T24: Corinth Parkway	4,482		
T26	Proposed - soft	Lake Shore Park Nature Trail	T54: Corinth Farms Walking Path	T25: Community Center Nature Trail	1,642		
T27	Proposed - soft	Creekside Nature Trail	Shady Shores city limit	T53: Community Park Nature Trail	1,412		
T28	Proposed	Drainage East/ Dobbs N	T57: Denton Rail Trail	Dobbs Rd N at Quail Run	1,592	sw - Lynchberg 5	
T29	Proposed	Drainage East/ Dobbs S	Dobbs Rd S at T30	T48: Tower Ridge Road	3,419	w TxDOT reconstruction	requires crossing under IH 35E remain open
T30	Proposed	Meadow Oaks/ Dobbs	T57: Denton Rail Trail at T31	T14 at South Corinth St	5,824	w TxDOT reconstruction	w TxDOT reconstruction of I 35E and connecting Meadow Oaks and Dobbs per Thoroughfare Plan
T31	Proposed	Dobbs Road	Shady Shores city limit	T57: Denton Rail Trail at T30	1,297		
T32	Proposed	Thousand Oaks Park Connector	T57: Denton Rail Trail	Sunny Oaks Lane	932		
T33	Proposed	Southlake Dr Development	T10: at Southlake Dr	T34/T35: Indian Lake Trail	2,669	w TxDOT construction	

Segment Id#	Status	Trail Location Identifier	E or N limit	W or S limit	Length (Linear Ft)	CIP	Notes
T34	Proposed	Indian Lake Trail	Oakmont Dr	T33/T35: Indian Lake Trail	1,238	wds 8	
T35	Proposed	Barrel Strap	T33/T34: Indian Lake Trail	T36: FM 2181	1,866		
T36	Proposed	FM 2181	T35: Barrel Strap Lane	Denton City limit	672	w TxDOT reconstruction	
T37	Proposed	FM 2181	Jesse Way/ Blue Jay Dr	T38 at Barrel Strap Lane	2,878	w TxDOT reconstruction	
T38	Proposed	Lake Lewisville W	T36/T37: FM 2181	T39: Kensington Park Easement Trail	3,056	w TxDOT construction	
T39	Proposed - soft	Kensington Park Easement	Sussex Way	T56 Elm Fork and Pilot Knoll Horse & Hiking Trail	412		
T40	Proposed	Lake Lewisville E	T39: Easement Trail through Kensington Park	Leeds Court	1,810	w TxDOT reconstruction	
T41	Proposed - soft	Elm Fork Trail extension	Meadowview Park	Elm Fork Trail S of FM 2181	2,332	sw - Veal Springs 23	
T42	Proposed	FM 2181 S	Post Oak Dr	Jesse Way/ Blue Jay Dr	3,268	wds 2,w TxDOT reconstruction	Warrant study for stop light at FM 2181 has been requested.
T43	Proposed	FM 2181 S	Parkridge Dr	Post Oak Dr	3,900	wds 2,w TxDOT reconstruction	wds 2 for ~ 75% of route. Warrant study for stop light at FM 2181 has been requested.
T44	Proposed	Horseshoe Lake Development	T43: FM 2181 S	Pinnell Pointe at Lake Lewisville	4,173		
T45	Proposed	Horseshoe Lake Dam Development	T46: Parkridge Drive	T44: Horseshoe Lake Trail	3,260	wds 13	
T46	Proposed	Parkridge S	T43: FM 2181 S	Scenic Dr at city limit	2,754		Alternative is B63 WOLs and SWs
T47	Proposed	Parkridge Central	T14 @ Meadowview Dr	T46 at FM 2181	2,179		Alt is B39 WOLs & SWs
T48	Proposed	Tower Ridge/ Cliff Oaks	T49: Meadow Oaks Dr	Corinth ES on Cliff Oaks Dr	5,208	STEP, SRS	
T49	Proposed	Mason extension	T48 at Tower Ridge	Mason Ave	951	STEP, SRS	
T50	Proposed	FM 2181 N	IH 35E SBSR	T57: Denton Rail Trail	242		
T51	Proposed - soft	Denton Rail Trail extension	T57: Denton Rail Trail at Burl	T50 at FM 2181 N	1,636		
T52	Existing	Community Park Multi-use Trails	Multiple Loop Trails in Corinth Community Park	T24: Corinth Parkway	7,511		do not score existing

Segment Id#	Status	Trail Location Identifier	E or N limit	W or S limit	Length (Linear Ft)	CIP	Notes
T53	Existing - soft	Community Park Nature Trail	Nature Trails N and S of Corinth Pwy	T25 N of Quail Run Drive	7,290		do not score existing
T54	Existing	Corinth Farms Walking Path	Lake Shore Park	Dobbs Dr	1,753		do not score existing
T55	Existing	Lake Sharon Trail	Lake Sharon Dr	Indian Lake Trail	2,441		do not score existing
T56	Existing - soft	Elm Fork Trail (Hiking &/or Equestrian	Denton city limit	Sycamore Bend Park	23,553		do not score existing
T57	Existing - soft	Denton Rail Trail extension	Denton city limit	T51 at Burl Street	14,527		do not score existing. Hike and bike trail, no equestrian use.
T58	Existing	The Knoll & Briar Glen Park Walking Path	The Knoll & Briar Glen Park		2,442		do not score existing
T59	Existing	Eagle Pass Park Walking Path	Eagle Pass Park		665		do not score existing
T60	Existing	Windsor Ridge Park Walking Path	Windsor Ridge Park		1,358		do not score existing
T61	Proposed 6'	Vintage Trail Connector	Eagle Pass Park	Windsor Ridge Park	666		
T62	Proposed 20'	Creekedge Equestrian Access	Creekedge Court at city-owned pump station	T 56	505		
				Total Feet:	193,774		
				Proposed Miles:	25.04		
				Existing Miles:	11.66		
				Total Miles:	36.70		

Endnotes
wds - water distribution system improvements 2004-2014
wcs - wastewater collection system 2004-14
sw - storm water CIP

ON-STREET BICYCLE SYSTEM ANALYSIS

Roadway construction or reconstruction should routinely provide roadway space for on-street bicycle accessibility. Special attention must be paid along collectors and thoroughfares. The need for design treatments should be determined during the design phase by conducting a *current* Bicycle Level of Service (BLOS) analysis, including both primary factors (traffic volumes, lane widths and speeds) as well as secondary factors (street parking turn-over rates, truck traffic levels, and commercial driveway spacing). Generally, collector streets will ultimately need at least 14'-wide outside (curb) lanes, and arterial streets, as well as freeway access roads, will ultimately need 15'-wide outside lanes, not including the curb gutter pan. State highways or farm-to-market roads should include flat, level shoulders at least 5'-wide in rural areas and 15' curb lanes or bike lanes in urban areas. Bike lanes may provide another alternative.

Adults and children with basic bicycling skills are usually comfortable riding on streets with a BLOS A or B rating, which is generally suitable for signed, on-street bicycle routes; while experienced adult cyclists operate comfortably on streets with up to a C rating. BLOS C streets, which are considered to be accessible to proficient cyclists, may also provide bike route continuity where needed. Streets ranked BLOS D or F are not considered to be bicycle accessible, but may be used by bicyclists without other alternatives.

Secondary BLOS design factors (street parking turn-over rates, truck traffic levels, commercial driveway spacing) are not applicable at this time and were not analyzed for this trail-planning document. Prior to route signing, however, an on-site inspection should be conducted to confirm that secondary factors do not excessively impact the potential for bicycling. In conjunction with implementation of the City's *2004 Land Use Assumptions, Capital Improvement Plan, and Impact Fees for Roads, Water, Wastewater, and Stormwater* by Freese and Nichols, Corinth street corridors should be constructed or reconstructed to accommodate bicyclists on the roads and pedestrians on the sidewalks.

Many of the existing cross-sections do not currently accommodate these modes. Careful coordination will be essential during implementation of the city's thoroughfare plan, to ensure that pedestrian and bicyclist mobility system recommended in this plan are fully developed and integrated in the final thoroughfare construction designs.

Currently, thoroughfare streets that could be signed as on-street bike routes suitable for all cyclists include the following bicycle-friendly streets:

- Meadowview Drive
- Oakmont Drive
- Blue Jay / Jesse Way
- Most residential streets.

Thoroughfares which are currently suitable for experienced or adult cyclists, but could become bicycle friendly and suitable for bike route signing with modification, include:

- Post Oak Drive south of Robinson Road
- Robinson Road
- Lake Sharon Drive / Meadow Oaks Drive
- Parkridge Drive north of FM 2181
- Dobbs Road
- Corinth Parkway
- Church Drive
- Walton Drive
- Cliff Oaks Drive.

Potential modifications include lowering posted speed limit, restriping with 14' curb lanes, or reconstructing with 14' curb lanes or bike lanes.

Many of Corinth's newer residential streets are accessible to all types of bicyclists, including adult and child bicyclists. This accessibility is due to the roadway's adequate width and / or its low traffic volume or slower speeds. But even experienced, proficient adult cyclists will find some thoroughfares (Post Oak Drive north of Robinson Road, FM 2181 and Parkridge Drive south of FM 2181) unusable or inaccessible at least during peak traffic periods, due to heavy traffic flows, high speeds, and / or narrow curb lane widths. Provision of access for bicyclists can only occur with reconstruction along these thoroughfares.

The routes with BLOS A, B, or C are identified by current levels of service on the Recommended Bicycle System map. On-street bikeway segments are shown as *B#*. Potential of incorporating on-street bikeway projects with other capital improvement projects is included in

Map III-2

Recommended Bicyclist System

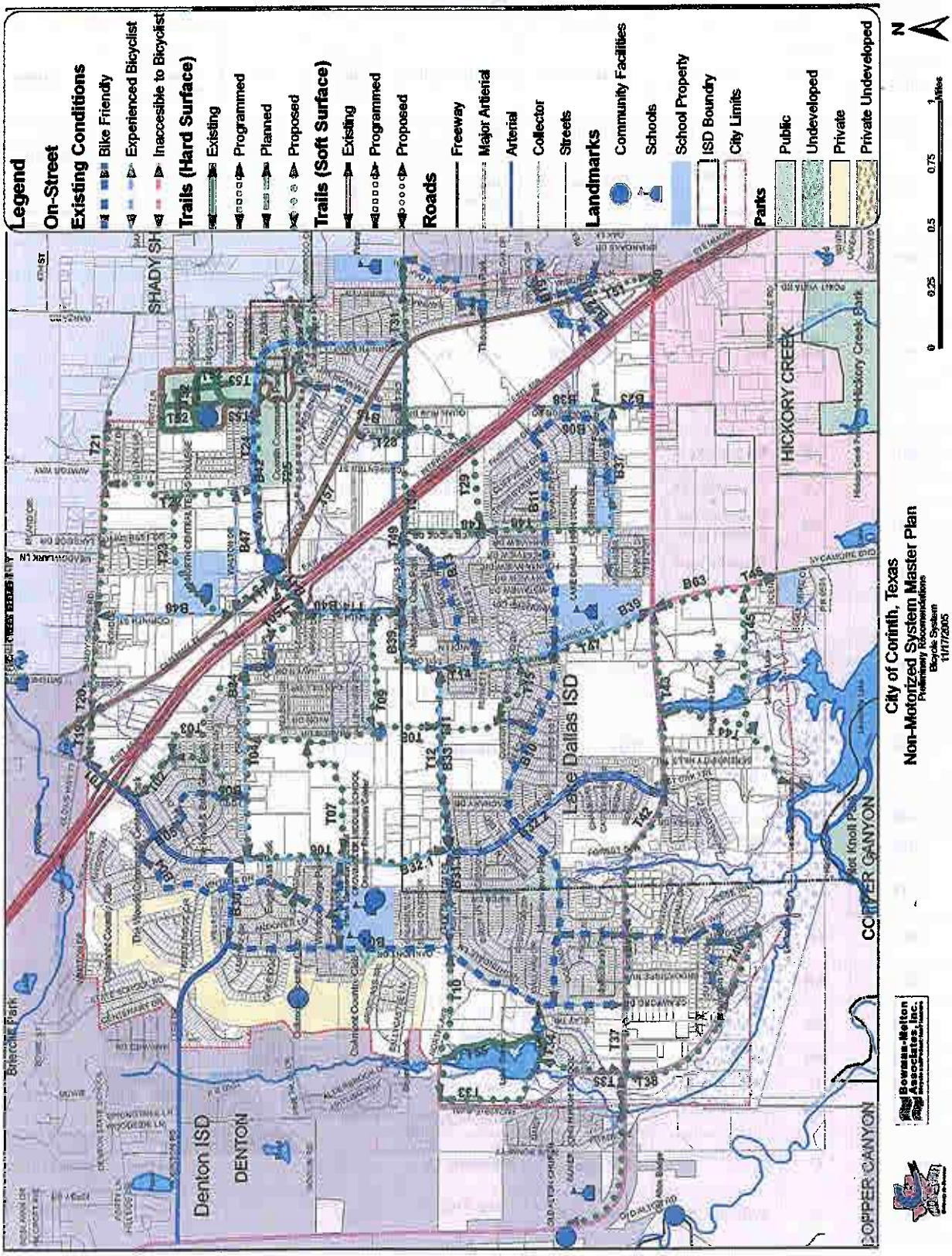


Table III-2

On-Street Segment Data

Segment Id#	BLOS Status	Street	E or N limit	W or S limit	Length (Linear Ft)	CIP	Possible Low Cost Treatments	Notes
B01	AB	Oakmont Dr.	Robinson Rd.	FM 2181	8,903			
B02	AB	Blue Jay / Leeds Ct /Jesse Way	Meadowview Dr.	Leeds Ct. cul-de-sac	4,500			stop light needed, probably warranted at FM 2181
B03	AB	Vintage Dr	Eagle Pass Park	Creekside	1,056			
B04	AB	Vintage Dr./ Postwood Dr.	Post Oak Dr.	Eagle Pass Park	4,179			
B05	AB	Ford / Knob Hill / Postwood	Post Oak Dr.	Church Dr.	2,786			
B06	AB	Fairview Dr	Meadowview Dr.	Cliff Oaks Dr.	2,246			
B07	AB	Goodnight Tr.	T15	Meadowview Dr.	568			
B08	AB	Creekside Dr.	Post Oak Dr.	Oakmont Dr.	1,887			
B09	AB	Sussex Way / Leeds Court	Jesse Way	T39	1,072			
B10	AB	Meadowview Dr.	Parkridge Dr.	Oakmont Dr.	8,297			
B11	AB	Meadowview Dr.	Fairview Dr	Parkridge Dr	4,725			
B12	AB	Chapel Pl. / Haven Dr.	T05	Church Dr.	1,102			
B13	AB	Warwick Dr. / Brandi Ln. / Mason Av. / Graystone Ln. / Berkshire Ln.	T49	Parkridge Dr	3,013			
B15	AB	Quail Run Dr.	T26	Dobbs Rd.	1,995			
B18	AB	Sunny Oak Ln.	City Limit	T32	209			
B19	AB	Brookside Dr.	City Limit	Lochwood Cir.	587			
B20	AB	Lochwood Cir.	Brookside Dr.	Owen Oaks Dr.	1,248			
B21	AB	Owen Oaks Dr.	City Limit	Windridge Ln	188			
B22	AB	Burl St.	Lochwood Cir.	IH 35 NB Access	1,064			
B23	AB	Garrison Rd.	Cliff Oaks Dr.	FM 2181	855	wds 2		
B30	C	Robinson Rd.	Post Oak Dr.	Oakmont Dr.	1,812			
B31.1	C	Lake Sharon Dr.	Post Oak Dr.	Blue Holly	866			
B31.2	C	Lake Sharon Dr.	Blue Holly	Oakmont Dr.	1,196			(experienced) cyclist takes lane
B32.1	C	Post Oak Dr.	Robinson Rd.	Lake Sharon Dr	4,731			Alternative to T06

Segment Id#	BLOS Status	Street	E or N limit	W or S limit	Length (Linear Ft)	CIP	Possible Low Cost Treatments	Notes
B32.2	C	Post Oak Dr.	Lake Sharon Dr.	FM 2181	5,198			(experienced) cyclist takes lane. Warrant study for stop light at FM 2181 has been requested.
B33	C	Lake Sharon Dr.	Parkridge Dr.	Post Oak Rd.	3,983	wds 1		WOLs and SW are Alternative to T11, 50% of T12, T13
B34	C	Church Dr.	Haven Dr.	Post Oak Rd.	4,177			WOLS and SW are Alternative to T04
B36	C	Meadow Oaks Dr.	IH 35 SB Access	S. Corinth St.	1,769	wds 6, sw32		
B37	C	Cliff Oaks Dr.	Garrison Rd.	Acropolis Dr.	3,710			
B38	C	Garrison Rd.	IH 35 SB Access	Cliff Oaks Dr.	1,746			
B39	C	Meadow Oaks Dr. / Parkridge Dr.	Corinth St.	FM 2181	6,560	wds 1		Alt is T14 & T47
B40	C	S Corinth St.	IH 35 SB Access	Meadow Oaks Dr.	2,189	wds 12, sw Lynchberg 9		Alternative is T14
B41	C	Corinth St.	IH 35 NB Access	IH 35 SB Access	787	wds 12		wds 12 along ~50% of route. Alternative is T16
B42	C	Corinth Loop	Corinth Community Park road (T52)	IH 35 NB Access	7,829		restripe w 13' curb lane for BLOS B	Alternative is T24
B43	C	Corinth Loop	Dobbs Rd.	Corinth Community Park road (T52)	6,747		restripe w 13' curb lane for BLOS B	
B46	C	N Corinth St.	Shady Shores Rd.	Walton Dr.	3,013		restripe w 13' curb lane for BLOS B	
B47	C	Walton Dr.	Shady Rest Ln	Corinth St.	2,720			
B63	DF	Parkridge Dr.	FM 2181	Scenic	2,780	wds 13		Alternative is T46
				Total Feet:	112,293			
				Proposed Miles:	21.27			

Endnotes
wds - water distribution system improvements 2004-2014
sw - storm water CIP

IV. IMPLEMENTATION RECOMMENDATIONS

An integrated citywide network of trails, sidewalks and on-street bikeways can be implemented with future development, incorporated with other capital improvement projects or built as stand alone projects. Trail alignments are intended to be flexible, and changes should be anticipated in order to accommodate developer needs while maintaining system connectivity.

Corinth has already taken significant steps that will support implementation of its integrated non-motorized system master plan. Sidewalks have routinely been built in residential areas since 1984, and an ordinance exists to support sidewalks in commercial areas as well. Many residential streets are already suitable for bicycling, and Meadowview Drive can serve as an east-west spine west of IH 35E. Walking paths have been built by residential developers in The Knoll, Briar Glen, and Windsor Ridge subdivisions in northwest Corinth as well as along the utility easement in Corinth Farms subdivision. The Denton Branch Rail Trail developed by the City of Denton serves as a major north-south spine east of IH 35E.

Future trail development is dependent upon private sector development or City funding. City funding is dependent on the City's ability to either build trails with local funds entirely or to secure grants and the required local match.

Key to effectively managing facilities and programs for implementing both the transportation and recreation components of this plan is a City-assigned manager, either within Public Works or within Community Services. This person should be responsible for coordinating bicycle and pedestrian facility programs with other affected departments to assure that plan components are fully addressed. The established regional goal for walking and bicycling is 8 percent of total trips. As the region gets closer to this goal, Corinth should expect to devote a similar portion of planning and transportation staff to bicycle and pedestrian objectives.

NON-MOTORIZED SYSTEM PHASING

To provide for the orderly and efficient phasing of the non-motorized system, recommended pathways should be prioritized initially by staff and ultimately by the City Council. In some areas of the city both trails and on-street bikeways are shown. Prior to implementation a decision will need to be made as to how these segments, shown in Table IV-1 below, will be implemented. In some cases only a trail may be developed, and in other cases on-street bikeways together with sidewalks or a trail may be desirable. For the purposes of this plan both options are depicted on the bicycle system map. Selection of trail, sidewalk or on-street bikeway segments for implementation is a City Council decision and as conditions change, priorities may also change. It is recommended that factors such as ***cost, improved mobility*** and ***quality of life*** be considered in making these selections.

When looking at the ***cost*** factor, it will be easiest to implement a trail, sidewalk, or on-street bikeway project if the land needed is already in public ownership – such as in existing parkland, roadway rights-of-way, or utility easements. Another method is to have non-motorized facilities built by the private sector in conjunction with residential or commercial land development. An ideal time to construct these facilities is in conjunction with other capital improvement projects such as local roadway design and construction or reconstruction, other public works projects, or in conjunction with a Texas Department of Transportation (TxDOT) project. In these cases, the incremental cost is much less than when designed and built as a stand alone project. Soft surface or natural surface trails can be developed at a low cost using Texas Parks and Wildlife Department's (TPWD) Recreational Trails grants utilizing volunteer labor as the match.

The potential for ***improved mobility*** is an important factor which enhances the likelihood of being awarded a TxDOT "Enhancements Grant" for a multi-use hike and bike trail or sidewalk development. Improved mobility includes projects that provide access to schools, parks, and other civic destinations; extend existing or programmed (funded and scheduled) facilities. The projects should extend to logical termini or destinations. Evidence of working with adjacent governmental entities to create interjurisdictional trails is also looked upon positively by granting agencies.

Quality-of-life factors relate to the benefits of the project. If a facility provides direct access to educational, recreational, commercial, civic, or cultural destinations and if it provides frequent connections (i.e., ¼ - ½ mile) it is more likely to be used. If there is a high level of local

stakeholder interest, the project is more likely to be supported and move forward easily. If the trail corridor has intrinsic scenic value or provides opportunities to connect to nature trails or if it has the potential to serve as a riparian corridor edge it has both quality of life and environmental benefits.

Table IV-1 **Alternatives for Trails and On-Street Bikeways in Same Corridor**

T#	B#	Street	East or North Limit	West or South Limit	Current On-Street Condition	On-Street Alternative to Trail
T04	B34	Church	Haven Dr	Post Oak Dr	BLOS C	WOLs + SWs*
T06	B32.1	Post Oak	Church	Lake Sharon Dr	BLOS C	WOLs + SWs
T11	~ .5 of B33	Lake Sharon Dr	Parkridge Dr	Post Oak Rd	BLOS C	WOLs + SWs
T12	B33	Lake Sharon Dr	E of Zachary	Goodnight Trail	BLOS C	WOLs + SWs
T13	B33	Lake Sharon Dr	E of Zachary	Post Oak Dr	BLOS C	WOLs + SWs
T14	B39, B40	Corinth / Meadow Oaks	Wildwood	Meadowview Dr	BLOS C	WOLs + SWs
T16	B41	Corinth Pwy	Denton Branch Rail Trail	Corinth St	BLOS C	WOLs + SWs
T24	B42	Corinth Pwy	Corinth Community Park	Denton Branch Rail Trail	BLOS C	WOLs + SWs
T46	B63	Parkridge S	FM 2181	Scenic Dr	BLOS D	WOLs + SWs
T47	B39	Parkridge Dr	Meadowview Dr	FM 2181	BLOS C	WOLs + SWs

*WOLs are 14' – 15' shared use on-street curb lanes; SWs are sidewalks.

FINDING AVAILABLE RIGHT-OF-WAY SPACE

Corinth is fortunate to have significant opportunities to shape the way future development looks and functions. A major opportunity to create retail, office and residential mixed-use areas along both sides of IH 35E, and even access to rail, if the city joins the Denton County Transportation Authority. There are also significant opportunities to create bicycle and pedestrian access to schools in as yet undeveloped areas

While creation of functional pathways in new developments can be fostered by increased partnering between the developers and the neighborhood organizations of adjacent residents.

One of the primary issues complicating the constructability of any non-motorized system is the quality, feel and appearance of the journey environment that is possible in the limited amount of space frequently available in trail and road rights-of-way in already-developed areas.

Multi-use pathways along FM 2181 right-of-way are key to resolving the barrier created by this immanent east-west roadway expansion. As areas along this highway develop, it will become increasingly important to provide formal pedestrian and bicyclist routing within this right-of-way for passage along and across the corridor. Ideal would be to provide 6', 8' or even 10' of separate pavement along at least one side, with the AASHTO-recommended minimum setback of 5' from the back of curb to the outside edge of the path pavement. If less than 8-feet wide, the adjacent roadway should include shoulders for cyclists (or 15'-wide curb lanes). Properly designed and adequately wide, these pathways could serve as worthwhile relievers of local traffic. They should be integral components of any road widening project along FM 2181 to help relieve congestion generated by businesses there.

Creating attractive, safe, predictable, intuitive and useful connections may require finding additional corridor space in some areas of the city, or perhaps a narrowing of planned or existing roadway designs to allow room within adjacent buffers for construction of pleasant, safe non-motorized pathway facilities. Careful monitoring of development conditions and proposals where trail space is tight will be an important duty of City staff in order to accommodate these proposed trails.

Property owners in each area of the city will need to embrace these proposed segments as development opportunities become available for trailheads and the connecting pathways, or from neighborhoods to common community resources. For this plan to be successful, neighborhood groups must demonstrate support for creating these pathways, resulting in City Council actions to develop projects. However, citizens and developers should be mindful that the process can sometimes take years from vision to reality.

GREENWAYS IN FUTURE DEVELOPMENTS

Residential developers on remaining undeveloped parcels in Corinth should be encouraged to create "single-loaded" streets in their subdivisions where appropriate to preserve greenway and trail corridors. Single-loading is a development term used to describe streets having houses constructed on only one side of a roadway in areas near protected or undevelopable open spaces. When houses are built along both sides of a street, greenways end up behind houses

and hidden from view, reducing the value to the neighborhood while potentially increasing security concerns.

By creating trails between the single-loaded street and undevelopable or open space land parcels such as flood plains, the sense of security for trail users is enhanced by placing them in view of residents and street users. Back yard privacy is also maintained. This concept is discussed at length in Randall Arendt's *Conservation Design for Subdivisions*. Sales records in such subdivisions show that houses along these single-loaded streets sell faster and at a premium, while providing all subdivision residents views of the greenway as they drive, bike, or walk along it, increasing the general public's quality of life and property values.

Yet to be developed areas offer excellent opportunities for achieving a truly pedestrian-oriented environment in many parts of the city. Property owners and developers should be encouraged or required to make pathway and sidewalk connections between each other wherever possible, even to existing residential and commercial areas.

USE OF MOTORIZED WHEELCHAIRS AND BICYCLES ALLOWED ON TRANSPORTATION-FUNDED TRAILS

The permissibility of using motorized wheelchairs on non-motorized trails was clarified in TEA-21, the federal funding program for transportation infrastructure that preceded SAFETEA-LU. It also permits the use of electric bicycles on these facilities where State or local regulations permit. Electric bicycles are defined as any bicycle or tricycle with a low-powered electric motor weighing under 100 pounds, with a top motor-powered speed of 20 miles per hour. Texas law classifies these electric bikes as bicycles and permits their use on trails paid for with transportation funds.

CITY STANDARDS AND ORDINANCES

Opportunities exist to assure future facilities for pedestrians and bicyclists support quality of life and establish Corinth as a regional leader in its standards and ordinances related to trails, sidewalks and on-street bikeways. A review of current standards and ordinances revealed the opportunities described below. All changes would require City Council approval.

Definition of Trails

In the *Corinth Master Plan Update* of 1997, Community Trails are defined. To the extent that this may be considered current, it is recommended that the verbiage be changed to read:

> "A system of off-road trails is planned within the community to provide a designated corridor for biking, hiking, and walking. ~~—separate from vehicular lanes.~~ The purpose of the trails is to encourage outdoor activity ~~and~~ by connecting residential neighborhoods to schools, commercial, park areas and open space. Trails may be sidepaths within the roadway right of way, but at least 5-feet removed from the adjacent travel lane, or protected by a barrier. They may be ~~striped lanes along roadways, or separate~~ paved or unpaved surfaces ~~apart from roads~~. The trails may, in some cases, depart completely from roadway alignments to take advantage of scenic areas or recreation sites or to provide connectivity."

Other ordinances affecting this plan include Ordinance 03-06-05-16 which amends Title XIII (General Offenses), Chapter 131 providing regulations for public park areas, trails, and facilities. Since the bicycle is classified as a vehicle in Texas, it is recommended that Chapter 131.01 (B) Park Trails be amended as follows:

> A person commits an offense if the person operates or drives an automobile, motorcycle or other motorized vehicle over or on a park trail.

ON-STREET BIKEWAY IMPLEMENTATION

The most cost effective strategies to increase the level of service provided to bicyclists is to restripe streets currently with 3 or more lanes in order to provide more space for the bicyclist in the curb lane, or to reduce posted speeds. In a city the size of Corinth, reductions from 30mph down to 25mph, made possible by a vote of the City Council thanks to passage of HB No. 87 during the 79th Texas Legislature's regular session, can make a significant difference in the bicycle level of service (BLOS) on any given roadway. Standard warning signage may be an appropriate treatment along some of these routes. See text of this new state law below.

In Texas, bicycles are considered vehicles, and bicyclists have the right to use the road system. Texas law states that bicyclists have the same rights and responsibilities as drivers of motor vehicles.

NEW STATE LAW ALLOWING 25 MPH MAXIMUM SPEED

A new method for slowing traffic throughout the city is possible with the 2005 passage of H.B. No. 87 which allows cities to establish maximum speed limits of 25 mph instead of 30 mph along many roadways as described below. According to HB No. 87, Section 1:

> (b-1) Except as provided by Subsection (b-2), the governing body of a municipality, for a highway or a part of a highway in an urban district in the municipality that is not an officially designated or marked highway or road of the state highway system, is 35' or less in width, and along which vehicular parking is not prohibited on one or both sides of the highway, may declare a lower speed

limit of not less than 25 miles per hour, if the governing body determines that the prima facie speed limit on the highway is unreasonable or unsafe.
(b-2) Subsection (b-1) does not apply to a highway or part of a highway that has four or more lanes used for vehicular travel.

This has the effect of making streets safer, especially for pedestrians and bicyclists, for some of the roadways most vulnerable users. Should the City decide it is in its best interest to take advantage of this new opportunity revisions to *Chapter 70: Traffic Rules §70.01 SPEED LIMITS* will need revision.

STREET DESIGN REQUIREMENTS

The *City of Corinth Design Criteria* of December 1999 and the *Corinth Master Plan Update – 1997: Resolution No. 00-03-02-04R Exhibit* were reviewed in developing this plan. It is recommended that street design requirements be updated to include the following provisions for bicyclists and pedestrians as follows:

Thoroughfares (or arterials) with a minimum 84' ROW should include (14-foot) or 15-foot curb lanes to accommodate bicyclists. This may be accomplished by using a 15' / 12' / 12' Median / 12' / 15' gutter pan to gutter pan configuration, with 9' parkways. Sidewalks (SW) along arterials should be a minimum of 6' when a parkway is included, or 8' back of curb, leaving 1' to the property line. Such a configuration will improve conditions for both pedestrians and bicyclists and will support smooth motorized vehicle flow.

Collectors with a minimum 60' ROW with parking should include each side:

12' / 8'parking / 4'parkway / 5'SW / 1' to property line

Local Streets with a minimum 50' ROW should include each side:

15' / 4'parkway / 5'SW / 1' to property line

SIDEWALK IMPLEMENTATION

Sidewalks are a critical component in the citywide network for non-motorized transportation. Since 1984, sidewalks have been built concurrently with development. In areas previously developed without sidewalks, provision of sidewalks will be key to the overall connectivity of the pedestrian system.

This study identifies potential connections from residential neighborhoods to schools, parks, and other key destinations serving Corinth. They must continue along the roadway from where a trail

Many factors impact the cost of a particular trail segment, including the type of trail, its location in either an urbanized or undeveloped area, soils, typography, barriers it must cross, whether or not it will be built in conjunction with another capital project or as a stand alone project, as well as the source of funding.

Soft surface trails, either natural surface and decomposed rock, are frequently built by volunteers, with or without other funding. For hard surface trails using grant funds, federal and state guidelines must be followed. It is important that in developing cost estimates for these trails, professional cost estimates be obtained, since 100 percent of cost overruns are almost always borne by the local sponsor. Projects built in conjunction with other local capital improvement projects, using local funds can cost much less than when trail projects are implemented independently.

Estimates of probable cost should include amounts for both the design and construction phases of projects, and be developed by professionals using recent project experience based on not only the trail corridor itself, but also the type of funding to be used. If the land must also be purchased, that will also impact the cost of the trail.

Potential funding sources include the federal transportation program *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)* through 2009. Other funding might come from transportation project bond funds, or in a partnership with home owner or friends groups. Other potential candidates for sharing costs are the Denton and Shady Shores Independent School Districts. See Chapter V. Funding, for details.

BICYCLIST EDUCATION PROGRAM OPPORTUNITIES

The National Centers for Disease Control and Prevention warn that inactivity and sedentary lifestyles will be a major cause of death in the next thirty years. Studies show that physically fit children make better students, and that bicycling is one of the best exercises for people of all ages. To support safer bicycling, Bike Texas offers a number of venues for educating Texas bicyclists including the *Texas SuperCyclist Program, Texas SuperCyclist Curriculum, Texas SuperCollege Program,* all undertaken with support from the Texas Department of

Transportation.

The *Bike Texas Trail Doctors Program*, with funding from Texas Parks and Wildlife Department, provides community volunteers with training for natural surface trail building and maintenance for multiple and single user groups including off-road bicycling, hiking, and horseback riding. Other programs of interest are the BikeTexas Kids Kup Program, which conducts off-rode rides for children, and the Helmets by the Dozen Program. Contact Bike Texas at (512) 476-7433 or browse: http://www.biketexas.org.

Adult cyclist education is available from the League of American Bicyclists through their "Bike Ed" program modules, a series of programs for all levels of experience and interest, including a Motorist Education program. These courses, taught by certified instructors, can be scheduled anytime throughout the year. Most courses take 8-16 hours to complete. For more information, browse: www.bikeleague.org.

V. FUNDING SOURCES

The Corinth City Council, together with guidance of the Trails Committee, will be the leading, guiding force in the development of this system. With the strong support of the Trails Committee support for this plan, and the power to legislate action, this body should consider aggressive strategies to implement this plan as a functional, citywide system. Long term commitment is key to its success.

Implementing the different types of projects in this plan will require a variety of funding strategies. Trails along the Regional Veloweb, such as the existing Denton Branch Rail Trail for example, compete well for federal transportation funding, while most sidewalks will be built by developers, or in some cases by TxDOT. Some sidewalks, especially those providing access to schools, can now compete well for federal funds as a result of new federal legislation.

Historically, natural surface trails in Corinth have been built with the support of the Trails Committee and other community volunteers. Other trail corridors in this plan can be initially established as soft surface trails, then when funding becomes available be paved. Corinth is very fortunate to have the initiative and support of the Trails Committee, a community based group of trail champions, and should continue to encourage and support their efforts.

Low cost on-street bikeway improvements such as re-striping can often be accommodated within the transportation operation budgets. For streets requiring construction or reconstruction, space for on-road bicycling should be incorporated in the design and construction of these facilities. Streets built by developers to support their subdivisions should also incorporate space for bicyclists.

With support from volunteer or "friends" groups, nature interpretive, mountain-bike and equestrian trails can be built. The Elm Fork and Pilot Knoll Horse and Hiking Trail are examples of volunteer built and maintained trails. Trails and sidewalks in new developments can be built more effectively in partnership with land developers, or in older neighborhoods with interested home owner associations. Trails with potential of crossing city boundaries compete well for funding if coordination with the adjacent city is established prior to submitting applications. Cities with approved trail plans in place also compete more successfully. This chapter provides brief descriptions of funding assistance opportunities.

In general, the City should focus on extending its current trails and providing access to schools. Interjurisdictional coordination will be of primary importance in moving many of these projects forward. Many of the trails identified as Development Trails will most likely be undertaken in tandem with private sector development of as yet undeveloped areas. Ordinance language will need to be put in place for these to move forward with development.

In addition, strategically allocating capital for trail segments should be included in future bond programs. Tax Increment Financing (TIF) districts may also be established, and some of these funds can be dedicated to trail development, especially in commercial areas.

Other potential candidates for sharing costs are the Denton and Shady Shores Independent School Districts.

GENERAL FUND EXPENDITURES

General Fund expenditures are traditionally used for improvements to existing facilities. With increased tax base resulting from development, opportunities may exist for Corinth to upgrade certain facilities using this funding source.

BOND FUNDS

Other funding may come from bond funds, either in conjunction with roadway transportation projects, as park development projects, or as stand alone trail project. Corinth held a successful bond election on September 13, 1997, which resulted in the development of Corinth Community Park. Another bond election could be held to support the development of the trail system. Trails can be implemented using bond funds alone or as the local match in grant applications. These funds are usually targeted for new facilities. Bonds can be used as the local match in applying for reimbursement grants offered by the Federal Highway Administration through TxDOT or by Texas Parks & Wildlife Department's funding assistance programs.

DEVELOPMENT AND IMPACT FEES

Development fees can be used for park and trail development anywhere within the city. Impact fees can be used for sidewalks and street improvements for bicycling within the development area for which they were collected. These funds may also be used as the local match for projects when applying for reimbursement grants.

SAFE, ACCOUNTABLE, FLEXIBLE, EFFICIENT TRANSPORTATION EQUITY ACT: A LEGACY FOR USERS (SAFETEA-LU)

The federal transportation program *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)* provides a major source for trail funding through 2009. SAFETEA-LU continues programs established by ISTEA and TEA-21, its predecessors. Future renewals of this legislation are anticipated to continue these programs discussed below.

The text of the entire bill can be reviewed at www.house.gov/rules/109textTEALU.htm. Information below regarding this program is preliminary, as many program rules remain yet to be written or released.

SAFETEA-LU includes the Statewide Transportation Enhancement Program (STEP), Congestion Mitigation / Air Quality Improvement Program (CMAQ), Recreational Trails Program, the new Highway Safety Improvement Program and the new Safe Routes to School (SR2S) Program. While most programs are administered by the Texas Department of Transportation (TxDOT), the Recreational Trails Program (RTP) is administered by Texas Parks and Wildlife Department (TPWD). All funds are awarded through competitive reimbursement grants.

The local matches for different SAFETEA-LU programs vary. STEP projects and most other programs provide up to 80 percent of the project cost. Safe Routes to School (SR2S) projects are 100 percent federally funded. For projects requiring a match, exactly what may be counted toward credit for the local match varies by program.

Further, SAFETEA-LU and TxDOT call for bicycle and pedestrian projects to be considered in conjunction with all new transportation project construction and reconstruction. Transportation plans and projects must also consider the need for pedestrian and bicyclist safety, and contiguous routes. This information is important to obtaining inclusion of facilities as part of a TxDOT or NTTA projects, including any along IH 35E, FM 2181 and FM 2499.

STATEWIDE TRANSPORTATION ENHANCEMENT PROGRAM (STEP)

The Surface Transportation Program's Transportation Enhancement allocation is 10 percent of the overall national $32.5 billion program, or $3.25 billion. It is anticipated that more than $87 million each year for 5 years will be available throughout Texas, and about $20 million each year will flow to the North Central Texas region.

A call for STEP projects was released by TxDOT on November 1, 2005 and will close April 28, 2006. The average project grant is generally between $1 million and $3 million. Projects that are likely to be funded include those located near schools and those that attract tourists

Nomination instructions and forms can be found at www.dot.state.tx.us/te.

CONGESTION MITIGATION AND AIR QUALITY (CMAQ) IMPROVEMENT PROGRAM

CMAQ funds are awarded competitively through the North Central Texas Council of Governments (NCTCOG) utilizing SAFETEA-LU funds. An emerging NCTCOG SAFETEA-LU CMAQ program in the EPA-designated DFW Metropolitan Management Area (for air quality non-attainment) is the Sustainable Development Joint Venture program. *Mobility 2025 Update*, the region's current long-range transportation plan, establishes sustainable development as one of the region's strategic approaches to transportation planning, programming, and construction. Sustainable development leverages the land use / transportation relationship to improve mobility, enhance air quality, support economic growth, and ensure the financial stability of the transportation system. Joining a transit authority and planning for access by walking or

bicycling to a transit station would be key to successfully obtaining these Sustainable Development funds. A call for projects was issued by NCTCOG on November 1, 2005 with all funding requests due by January 20, 2006. For more information on CMAQ-funded programs go to www.nctcog.org/trans.

SAFE ROUTES TO SCHOOL (SR2S)

SR2S is a new program established by SAFETEA-LU with $612 million in funding nationwide over five years. Rules for this program are currently being promulgated at the national level. However, Section 1404 describes and defines this new program in some detail, including:

- Target audience and eligible schools are primary and middle school
- No state shall receive less than $1 million per fiscal year
- Between 10 percent and 30 percent of the funds must be used for noninfrastructure-related activities.

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

This new program replaces the Safety Set-aside program and provides $5 billion nationally between 2006-2009. About one percent of these funds are anticipated to go to bicycle and pedestrian projects. The detailed definition of "highway safety improvement projects" includes improvements for pedestrian or bicyclist safety, construction of traffic calming features, and installation and maintenance of fluorescent yellow-green pedestrian / bicycle crossing warning signs.

TRANSPORTATION, COMMUNITY, AND SYSTEM PRESERVATION PROGRAM

This TEA-21 pilot program has been made permanent with $270 million over five years nationally. Bicycle and pedestrian projects are eligible under this program, as well.

ALTERNATIVE TRANSPORTATION IN PARKS AND PUBLIC LANDS

This $96 million nationwide, four-year program is available to promote alternative transportation, including non-motorized modes, in national parks and on other public lands.

RECREATIONAL TRAILS PROGRAM (RTP)

The reauthorization of the RTP was incorporated into SAFETEA-LU. This 5-year program will distribute a total of $370 million nationwide, an increase of $100 million over TEA-21. During the life of SAFETEA-LU, it is anticipated that over $3 million will be available for distribution in Texas each year. The Recreational Trails Program (RTP) applications administered by TPWD are due June 1st of each year.

Thirty percent of the program funds must be spent for non-motorized trails, 30 percent for motorized trails, with the remaining 40 percent being allocated for either. New to SAFETEA-LU's is a strong emphasis on trail construction itself.

Funds can be spent to construct new recreational trails, improve or maintain existing trails, develop or improve trailheads or trailside facilities, install signage, purchase trail tools, and acquire trail corridors or easements. Currently, reimbursements from this program may range between $5,000 and $100,000, though the limits may be increased by TPWD in the future. Federal guidelines allow RTP funded trails to receive up to an 80 percent funding match, and other federal agencies, such as the Army Corps of Engineers can bring the total federal share up to 95 percent. Allowable costs for the sponsor's match can include appraised value of donated land or easement, service contracts, volunteer labor, materials, rental equipment, or money. Most funds are awarded to soft-surface trails. Other information important to the program, includes:

- Trails can be on public or private lands. However, to receive funding for trails on private lands, the sponsor must obtain a legally binding easement, lease, or license satisfactory to TPWD, and keep the trail open to the public for a minimum of twenty (20) years. Trails on private lands cannot be managed as a commercial enterprise.
- Development of urban trail linkages near homes and workplaces, including trail links to schools, parks and existing trails, must be for recreational purposes. A trail less than one-half mile long is eligible only if interpretation or disabled access is its primary recreational purpose. Trails or walkways to connect facilities within parks are not eligible.
- Trail restoration or rehabilitation includes rerouting or repair of areas damaged by trail use, flooding, or erosion.
- Eligible facilities include signs and displays, restrooms, parking areas, drinking water, horse-watering facilities, hitching posts / corrals, bike racks, benches, fencing and bollards. Ineligible facilities include those that support other recreation activities, landscaping, or buildings.

For additional Recreational Trails Program information, contact TPWD's Greenways Program Manager at 512 / 389-4735 or browse http://www.tpwd.state.tx.us/business/grants/trpa/#trail.

TEXAS PARKS & WILDLIFE DEPARTMENT – TEXAS RECREATION & PARKS ACCOUNT

This TPWD account, funded through a portion of the Texas sales tax on select sporting goods items provides funding for two programs which include trail development:

- *Outdoor Recreation Grants* provide a 50 percent match to acquire and develop parkland or to renovate existing public recreation areas. The maximum grant awarded is $500,000. Application deadlines are January 31st and July 31st.
- *Small Community Grants* provide a 50 percent match to develop and beautify parkland to meet the recreation needs of Texas communities with a population of 20,000 and under. The maximum grant awarded is $50,000. Application deadlines is January 31st each year.

Contact the TPWD Recreation Grants Branch for details at 512 / 912-7124 or visit: www.tpwd.state.tx.us/business/grants/trpa.

SAFETEA-LU's Recreational Trails Program is also administered by TPWD. See details above under SAFETEA-LU.

FOUNDATION AND CORPORATE GRANTS

Certain foundations and organizations exist which assist in direct funding for trail projects, while others exist to help citizen efforts get established with small seed funds or technical and publicity assistance. Before applying for any grant, it is crucial to review The Foundation Directory and The Foundation Grants Index published by the Foundation Center to learn if a particular project fits the requirements of the foundation. These publications are issued in electronic and printed forms and may be found in public libraries. Contact each foundation for clarification of their particular requirements prior to deciding to submit an application. More information about the Foundation Center services is available by calling 212-620-4230 or browse: http://www.fdncenter.org

BIKES BELONG COALITION

Bikes Belong Coalition is sponsored by members of the American Bicycle Industry, and has a mission of putting more people on bikes more often. They will accept applications for grants of up to $10,000 each, and will consider successor grants for continuing projects, subject to policy guidelines. Funding decisions are made on a rolling basis. Bikes Belong Coalition will consider grants from local organizations, agencies, and communities in developing bicycle facilities projects. Contact Bikes Belong before submitting a completed application. Direct inquiries to Grants Program Administrator at 303-449-4893, or browse: www.bikesbelong.org

GRANTS FOR GREENWAYS

This national listing, Grants for Greenways, provides descriptions of a broad spectrum of both

general and specific groups who provide technical and financial support for greenway interests. Call 703 / 525-6300 for more information, or browse: http://www.conservationfund.org

BIKETEXAS TRAIL DOCTORS

The Texas Bicycle Coalition a program with grants from Texas Parks & Wildlife's Department Recreational Trails Grant Program that will benefit Texas mountain bicyclists as well as hikers and / or equestrians. Call (512) 476-7433 for more information, or send an email to: traildocs@biketexas.org

PARTNERING WITH VOLUNTEER GROUPS

Corinth has an established history of developing trails through community volunteers, the Trails Committee has assisted with the development of natural surface trails in Corinth, including the Elm Fork Horse and Hiking Trail as well as natural surface trails and the boardwalk in Corinth Community Park.

Nature, equestrian and off-road bicycle trails can be built and maintained with the help of volunteer groups. Their efforts can be used as part of the required match for the Recreational Trails Program, generally at $10 per volunteer hour, unless a volunteer is providing pro bono services in his normal line of work, then at his standard hourly rate. There are a variety of sources for volunteers including user groups, local residents, corporate community service initiatives, and business and civic support groups.

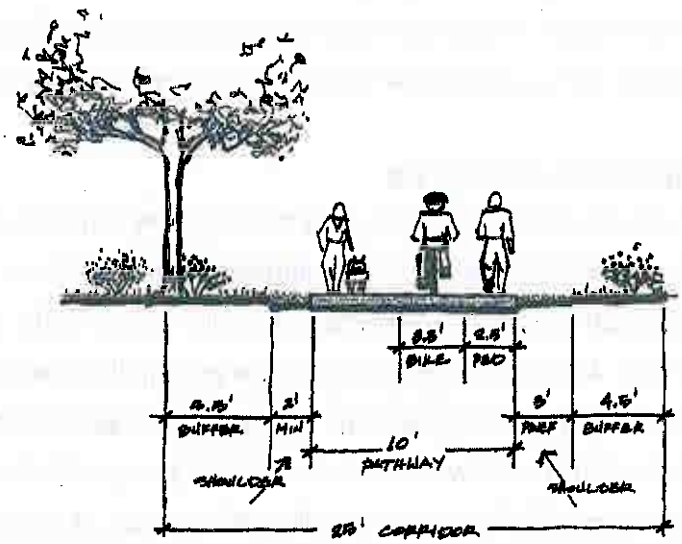
Friends groups can become part of Corinth's trail system development strategy. Corinth can expand outreach efforts with Keep Texas Beautiful, local neighborhood groups and families with young children. Business and civic groups with an interest in the economic health and livability of Corinth can be enlisted for projects of business or community importance. Trail development and maintenance volunteer support can be anticipated to grow as the community becomes more aware of the City's pathways initiative and the many benefits trails offer.

INTER-CITY COORDINATION

Working with adjacent cities on trail segments which could potentially cross city boundaries will strengthen any funding application and possibly reduce overall construction costs. Trails or pathways to schools just outside the Corinth city limit, including to Pecan Creek Elementary School and John H. Guyer High School in Denton, as well as to the new elementary school in Shady Shores, would be excellent inter-city initiatives.

VI. DESIGN GUIDANCE

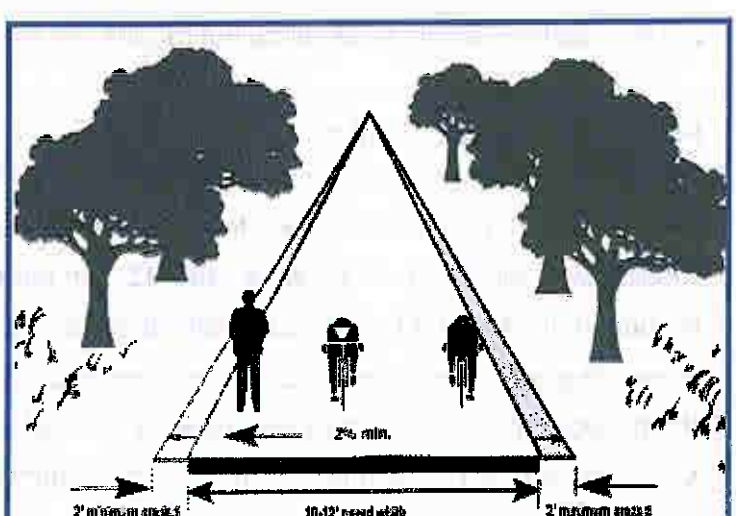
Different types of non-motorized facilities call for different design requirements. In this section, trails, sidewalks and on-street bikeways are addressed. Trail types include paved multi-use (hike and bike) trails, natural surface trails for all terrain (off-road) bicycles, equestrian trails, and nature trails. Generally, recommended pavement widths to match guidance are as follows:



- TWO-WAY MULTIUSE TRAILS 10-12'
- ONE-WAY MULTIUSE TRAILS OR "GREENWALKS" 8'
- COMMERCIAL SIDEWALKS 6'
- RESIDENTIAL SIDEWALKS 5'
- ON-STREET SHARED-USE CURB LANES (for cyclists) 14-15'.

CORRIDOR CRITERIA

A desired minimum corridor width of twenty-five feet (25') is recommended for most Corinth pathways, but wider is usually more desirable, to provide a cushion within which to adjust for landscape buffers, tree preservation and / or plantings, and to allow access to underground utilities. Sidewalks or multi-use trail corridors within the roadway rights-of-way can sometimes



Typical urban multiuse path on separated ROW (adapted from AASHTO, *Guide for the development of bicycle facilities*, 1991). NCTCOG *Bicycle and Pedestrian Facilities Planning and Design Guidelines*, 1995

be narrower, but great care should be given to allow sufficient setback from roadway traffic. Multi-use (hike and bike) paths along roadways should be at least 5' from the back of the curb, or a physical barrier will be needed between the path and the roadway, according to national, state and regional design guidelines. Sidewalks should have a minimum of 7' to 8' of available corridor width, while multi-use trails need at least 17-feet including the 5'-minimum back-of-curb setback, not counting any aesthetic considerations or space for utilities.

CHOICE OF SURFACES

Choice of paving relies in part on the soils beneath the trail. Actual soil types and drainage characteristics must be prime considerations as plans are developed for establishing a trail in any given corridor. Concrete trails are more likely to be serviceable during extended wet periods. Asphalt paving breaks down quickly if subjected to extended periods of wetness and in the absence of heavy vehicles to keep it compacted. Concrete pavement endures best if at least 5-inches thick where no motorized traffic is expected, and 6-inches thick where the presence of motorized vehicles (police patrols, ambulances, maintenance vehicles) is anticipated.

For non-paved facilities, compacted crusher-fines (decomposed granite) has a low initial cost, but requires a commitment to provide ongoing maintenance / replenishment of this type of surface. Use of this material can provide wheelchair accessible trails, but regular maintenance is required to ensure ongoing accessibility. Crusher-fines will provide a formalized yet pervious surface for pathways. An added advantage is that users have a keener sense of others around them due to the "crunchy" sound created by approaching users. Finally, natural surface trails are the least expensive to develop, but require the most ongoing maintenance.

PAVED MULTI-USE TRAILS

To summarize the AASHTO guidelines for paved trails, multiuse trails are often intended for a variety of users from child cyclists to joggers with baby strollers. Suburban multiuse trail treads should be a minimum of 10'-wide, and 12' (or more) if heavy, diverse traffic is anticipated. According to AASHTO guidance, trails 8'-wide are generally not for multi-use designation, unless one-way. Under most conditions, the recommended paved width for a two-directional shared use path is 10'. In rare instances, a reduced width of 8' can be adequate. This reduced width should only be used where the following conditions prevail: (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, and (4) during normal maintenance activities the path will not be subjected to maintenance vehicle loading conditions that would cause pavement edge damage.

Under certain conditions it may be necessary or desirable to increase the width of a shared use path to 12', or even 14', due to substantial use by bicycles, joggers, skaters and pedestrians; use by large maintenance vehicles; and / or steep grades.

Concrete pavement is by far the most durable surface, especially in areas that flood. While asphalt is less expensive to install, it costs much more to maintain a smooth, even surface. A minimum 2 ' shoulder on each side of the trail with a maximum slope of 1:6 must be provided throughout the length if width is less than 12'. Shoulders should be wider (up to 5') if steeper side-slopes are present, such as when crossing over culverts or large drain pipes, or if adjacent to a roadway.

In general, a minimum design speed of 20 mph should be used, except on 12'-plus wide Veloweb segments – which should meet a 25 mph design speed. In congested areas where pedestrians predominate, 15 mph can be used. Multi-use paths can be problematic where transitions between the trail and a roadway occur. Signage for multi-use paved pathways must be carefully evaluated in the framework of the overall transportation plan for each particular corridor. Addressing these intersection issues is particularly important when developing trails planned within the roadway rights-of-way.

GREENWALKS

When wider sidewalks are provided in the form of pathways, they are sometimes referred to as "greenwalks" to imply their primary use as walkways rather than as bikeways. It is important to note that pathways of 8-feet or less in width, are not bicycle facilities, and should not be signed or designated as such. However, use by bicyclists is to be expected,

especially by children, where streets do not adequately accommodate bicycling. Therefore bicycling on these paths should not be forbidden. Greenwalk or sidewalk bicyclists are expected to yield to pedestrians and follow pedestrian laws at intersections.

SIDEWALKS

The NCTCOG regional guidance recommends 5-' minimum residential width, with a minimum 2' wide (3' desirable) buffer between the edge of the street (back of curb) and the edge of the sidewalk. If a sidewalk is adjacent to a curb, a minimum of 6' in width is recommended, especially along collector and arterial thoroughfares, or in commercial areas. At least 3' of walkway must be kept clear of obstructions to accommodate accessibility by people in wheelchairs or using walkers. It is recommended that a 6' sidewalk with at least a 2' be installed wherever sidewalks are recommended along arterials. Six-foot (6') sidewalks are wide enough to allow two people to walk side by side, creating a more pedestrian friendly environment.

NATURAL SURFACE TRAILS

Natural surface nature trails should be in harmony with the surrounding environment. Care should be taken to fit the trail to the terrain, while taking advantage of scenic vistas, and considering the drainage characteristics during minor and major storm events. Erosion can be reduced by avoiding sharp angular turns, and by crossing slopes diagonally. If possible, expose wet areas to sun, and dry areas to shade. Switchbacks should be avoided unless slope is 20 percent or more, or when needed for ADA access. Design should minimize excavation and cut-bank exposure.

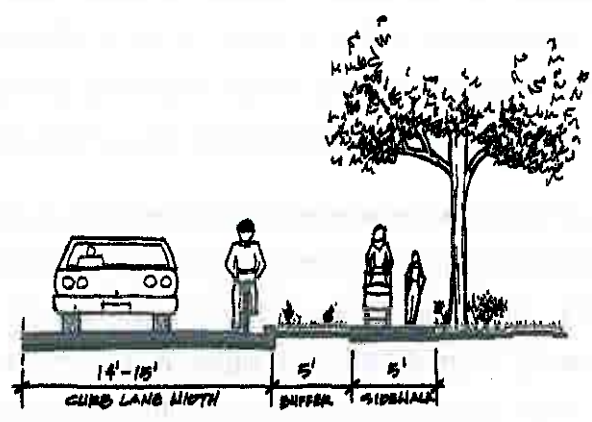
Extensive information on trails and greenways is available from the Trails and Greenways Clearinghouse. This web-based resource is a partnership between Rails-to-Trails Conservancy and The Conservation Fund. It provides a toolbox of information on how to make greenways a reality; facts to make the case for trails and greenways; and where funding is available, and how to get it. Call 877-GRNWAYS or browse: http://www.trailsandgreenways.org

EQUESTRIAN TRAILS

Low-water crossings are preferable to bridges for equestrians. Avoid boggy and wet areas whenever possible. Equestrian bridge railings should be a minimum of 5' high. Guidance for designing and maintaining equestrian and hiking trails is available in the *Trinity Trails Management Guide*, available from NCTCOG. For a free copy of the guide, call 817 / 695-9217 or browse: http://www.dfwinfo.com/publications.html

ON-STREET BIKEWAYS

On-street bikeways should be designed to integrate bicycle traffic into the normal vehicular flow of the roadway. Ideally these routes will have low traffic speeds, low traffic volumes, and wide outside lanes if traffic volumes warrant. Additionally, these on-road bikeways should have few stop signs or signal lights, few driveways, and minimal interference from turning or parking traffic.



On-Street Bikeway and Sidewalk

New roadway construction or roadway reconstruction should routinely provide on-street bicycle accessibility, especially on collector and arterial roads. The need for design treatments should be reviewed during the design phase and continued through technical analysis, which reviews traffic volumes and speeds to determine the needed lane widths. Generally, collector streets will need 14'-wide outside (curb) lanes, and arterial streets will need 15'-wide outside lanes, not including the curb and gutter. Another option is bike lanes on both sides of the street, generally 5'-wide from the curb face, with at least 3' of ridable surface. State highways or farm-to-market roads should include smooth, flat, level shoulders at least 5 ' in width.

TRAIL TO ROADWAY TRANSITIONS

Integrating trails with the on-street system for bicyclists and pedestrians is key to a successful system. Where trails merge with roadways, special consideration needs to be given to ensure their connectivity to the on-road bikeway and sidewalk system.

In planning for a trail's interface with an existing roadway, it is important to take into

DESIGN GUIDANCE SOURCES

The American Association of State Highway and Transportation Officials (AASHTO) provides the most current federal guidance for the development of on-road and trail facilities in its *1999 Guide for the Development of Bicycle Facilities*. AASHTO also provides the most current pedestrian facilities guidance in its 2004 *Guide for the Planning, Design, and Operation of Pedestrian Facilities*. The Texas Department of Transportation has adopted "the current version" of this guidance as the State standard for all projects involving state or federal funding. This plan does not attempt to detail these standards, but recommends that they be utilized whenever facilities for bicyclists are involved. For additional information, or to obtain a guide, browse: http://www.transportation.org/aashto/home.nsf/FrontPage

For signage requirements, the *MUTCD: Manual on Uniform Traffic Control Devises – Streets and Highways, Part 9, Traffic Controls for Bicycle Facilities*, 2003 Edition 2000 is available from the U.S. Department of Transportation, Federal Highway Administration, browse http://mutcd.fhwa.dot.gov/pdfs/2003r1/Ch9.pdf.

Two publications produced at NCTCOG can provide essential information for the design and management of non-motorized facilities: the 1995 *Bicycle and Pedestrian Facilities Planning and Design Guidelines*, and the *Trinity Trails Management Guide*. The former focuses predominately on transportation oriented facilities, while the latter is aimed at recreational facilities.

The *Bicycle and Pedestrian Facilities Planning and Design Guidelines* is intended for use by local governments within the North Central Texas Council of Governments' (NCTCOG) metropolitan planning boundaries. This comprehensive document provides guidance to assist planners, designers and engineers in selecting roadway and off-street design treatments for bicycle and pedestrian mobility and safety. Developed with the assistance of NCTCOG's Bicycle and Pedestrian Transportation Task Force, these guidelines have been selected on the basis of an established record of providing low-cost, effective bicycle and pedestrian mobility. This document is available from the NCTCOG Regional Information Center at http://www.dfwinfo.com or write P.O. Box 5888, Arlington, TX 76005-5888, or call metro 817 / 640-3300 or fax 817 / 640-7806. By following the regionally-adopted principles described in these documents, acceptable levels of accessibility can be provided. With adoption of this plan, the City of Corinth establishes these as the minimum standards recommended as citywide

guidelines.

Accessible curb ramps are necessary not only for people with disabilities, but also are of benefit to all wheeled users where transitions between the roadway and sidewalk or trail environment occur. Typical intersection ramp configurations shall meet TxDOT's adopted ramp standards TxDOT ROW projects, and can serve as a guide on locally funded projects. Questions about the ADA Accessibility Guidelines, including future rulemaking on public rights-of-way accessibility, should be addressed to The Access Board technical assistance line at 800 / 872-2253, or further information can be obtained at: http://www.access-board.gov/

OPERATIONS AND MAINTENANCE

Trails, pathways, sidewalks and streets should all be well maintained to ensure the safety and functionality of pedestrian and bicycle flow. Periodic refurbishing and debris removal will be necessary to assure ongoing serviceability. The degree of maintenance provided has a direct impact on facility service life, level of use, liability and community image. Inadequate facility maintenance conveys a feeling of lack of security or usability, resulting in fear for personal safety, and leading to decreased facility usage.

A strong maintenance regimen – for both on-street and off-street routes – is essential to the security and safety of users. A chart of recommended standard maintenance elements to help ensure the safety and functionality of the pedestrian transportation system is included in the NCTCOG *Bicycle and Pedestrian Planning and Design Guidelines*, Sect 4.5 Maintenance, pp. 4-25 thru 4-30.

VII. CONCLUSION

Corinth has many opportunities to create pathways, but may encounter obstacles as well. Each of the recommended pathway segments is a key linkage in the citywide system. Investment in the development of these pathways will foster the creation of a secure sense of place for Corinth parents, their children and guests. The plan's vision is to provide recreation routes supporting active lifestyles while fostering accessibility for Corinth residents to schools, parks, and businesses.

This plan is intended to foster collaboration between Community Services and Public Works departments, and the Trails Committee and the general public, including neighboring communities. While this plan provides for a network of pathways throughout the city, specific alignments should be viewed as flexible, and adjusted as needed to achieve the objectives of residents, businesses and developers.

Currently Corinth has over 8 miles of soft surface trails within the city limits, including the Denton Branch Rail Trail, the Elm Fork and Pilot Knoll Horse and Hiking Trail, as well as walking paths in most parks. At full implementation, residents of Corinth will have convenient interconnected trails throughout the city, connected to sidewalks and walking paths in linear parks.

In light of rapid development in Corinth, opportunities to create elements in this community-building, human-powered network may quickly disappear. Critical connections that seem obvious today may become blocked by commercial or neighborhood site plans in the future. This plan makes it easier for land planners and developers to access information necessary to address these quality-of-life and transportation-choice issues confronting Corinth. This master plan should be made widely available to residents and developers alike. While modifications to some alignments should be anticipated and accommodated as site plans are developed, the impacts of proposed modifications should be considered in the context of the overall non-motorized system, keeping in mind the need for system connectivity for both utilitarian and recreational trips.

Implementing this plan will require a range of strategies including the creation of partnerships with developers, property owners and neighborhood groups to assemble sufficient rights-of-way,

or to dedicate adjacent space where necessary for the development of a given pathway. It will be essential to pursue a variety of funding opportunities to ensure adequate financing. Trail development is dependent on obtaining necessary funding.

Ongoing implementation of these planned connections will enable residents to enjoy active, healthy lifestyles in a high quality environment throughout the city. As adjacent cities complete their connecting links, Corinth residents will have access to other parts of the region as well.

This plan provides for creating a system that will give citizens convenient pedestrian and bicycle access to schools, parks, passive areas, Lewisville Lake, retail centers, the municipal complex and other activity nodes. In addition, several equestrian and hiking soft surface trail extensions will enhance opportunities for these user groups. Fully implemented, non-motorized travel and recreation can become a routine part of daily life for Corinth residents, helping enhance the quality of life for current and future generations.