

City of Highland Village

COMPREHENSIVE TRAIL SYSTEM MASTER PLAN: 2011 UPDATE

A FUNCTIONAL PLAN ELEMENT OF THE COMPREHENSIVE PLAN OF THE CITY OF HIGHLAND VILLAGE



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City of Highland Village



COMPREHENSIVE TRAIL SYSTEM

MASTER PLAN 2011 UPDATE

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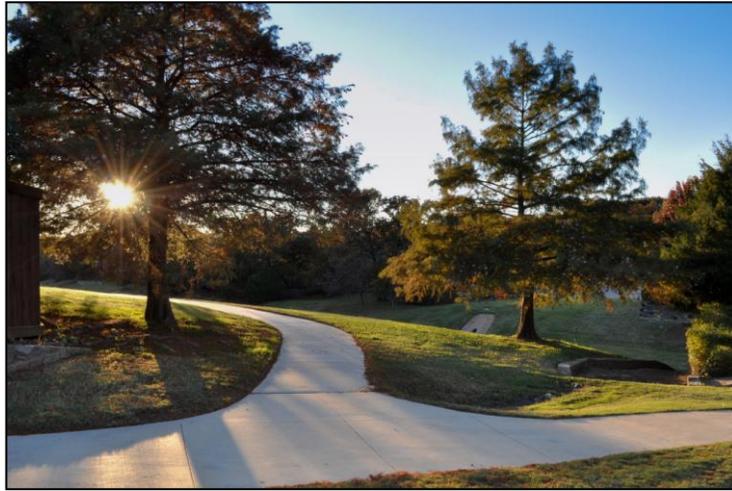
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City of Highland Village

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I. INTRODUCTION

The *Highland Village Comprehensive Trail System Master Plan* is a component of the *Comprehensive Plan of the City of Highland Village*. This *2011 Update* is intended to identify existing trails, evaluate current conditions, anticipate future growth, and recommend innovative alternative transportation solutions in the city through the year 2030. From the 2000 to the 2010 census, Highland Village grew 24 percent; from 12,173 to 15,056. By 2025, according to the North Central Texas Council of Governments, the population in Highland Village is forecast to increase by almost another 30%, to 19,500.

Recommendations in this *Update* address local, intercity, county, regional, state and federal coordination considerations for trail funding and development. The recommendations are intended to steer decisions about the development and preservation of the City's resources with respect to trails, on-street bikeways and sidewalks, parks, recreation, and open spaces, and their relationship to the city's residential and commercial interests. This plan is prioritized in a very general way (see Appendix E.) to allow flexibility and to aid the City in executing its ongoing capital program.

GOAL AND OBJECTIVES

The goal of this Comprehensive Trail System Master Plan is to update the City’s Inland Trail System blueprint called for in the *Highland Village Parks & Open Space Master Plan* for creating a network that gives residents convenient pedestrian and bicycle access to schools, parks, passive areas, Lewisville Lake, retail centers, the Municipal Complex, the recently opened DCTA “A-Train” station, and other key activity nodes. It recognizes the long term vision for these trails, and seeks to contribute to the area’s sustainability by identifying other connections that enhance opportunities for human and ecological health through expansion of non-motorized mobility and access between community neighborhoods and parks, schools and other common destinations.



The Inland Trail System is identified by its various segments that make up the citywide system, and much of the language in the City’s Code of Ordinances uses this term in reference to this system. An important objective of this *Update* is to formalize this reference, and tie the



development of this citywide non-motorized system network to remaining growth of community infrastructure – streets, utilities, schools, parks and open space. Upon adoption on September 9, 2003, by the City Council, this *Highland Village Comprehensive Trail System Master Plan* became a functional plan element of the *Comprehensive Plan of the City of Highland Village*. After review by

the Highland Village Park Advisory Board and the Highland Village Community Development Corporation, this *Comprehensive Trail System Master Plan: 2011 Update* was adopted by the Highland Village City Council on September 13, 2011.



II. THE PLANNING PROCESS

This *Update* expands on the City's long-range plan that considers existing resources and plans as well as future needs – including active transportation access to the now-open Denton County Transportation Authority's A-Train station in nearby Lewisville. Already many elements are in place to support a citywide non-motorized system. The primary component of the multiuse spine – the City Trail, from Village Parkway to Sellmeyer Boulevard – has been completed, along with Victoria Trail, the Village Trail, the Market Trail and Market Trail Commercial extensions. The Highland Shores subdivision, an area encompassing approximately 60 percent of the City's residents, has an extensive pedestrian path system in place, which connects to the City's multiuse spine trail.

PLAN COORDINATION

This *2011 Update* project was approved by the City Council on November 9, 2010. The public meeting for this *Update* was conducted on February 16, 2011. An agency coordination meeting also was conducted on February 24, 2011 between City staff, Texas Department of Transportation (TXDOT), U.S. Army Corps of Engineers (USACE), Denton County Transportation Authority (DCTA), the City of Lewisville and the consultant for the project.



The 1998 Parks & Open Space Plan, the 1997 Comprehensive Plan, and the 2008 Thoroughfare Plan were referenced for this Update. City staff and elected officials, Park Board members, and residents have provided feedback and the knowledge of local needs and resources critical to the development of this Update.

PUBLIC INVOLVEMENT

At a February 16, 2011 public meeting for this Update project, residents were asked to provide comments and mark up maps to provide information and insights about their general attitudes and specific concerns. Aside from removal of a planned extension from Victoria Park into Lewisville east of Sellmeyer, no other major deletions were requested. Other connections added or refined are included on the map and discussed later in this document.



SITE REVIEWS

Site specific visits with City staff were conducted during the project planning to establish familiarity with local opportunities and constraints. Major features and landmarks were reviewed, as were other current and planned origins and destinations. Existing and planned trails in and adjacent to Highland Village were examined to determine potential tie-ins, including plans adopted by Lewisville (2011), Town of Flower Mound (2010), and Copper Canyon (2004); plus a connection to DCTA’s new Highland Village/Lewisville Lake A-Train commuter rail station just east of IH 35E, via Garden Ridge in Lewisville.



EXISTING CONDITIONS

The Kansas City Southern rail line continues to be a significant barrier to pedestrians in Highland Village. The only fully-accessible pedestrian crossing of the rail line within the City is on Briarhill Boulevard near the middle school. All other street crossings of this rail



corridor are still in need of pedestrian pavement treatments if these routes are to be fully accessible. Recent meetings between the railroad and the City have resulted in productive dialogue that may help address these concerns, including a potential connection beneath the tracks at Silverthorne Park.

In addition to the Inland Trails System, some parks have walkways or “greenwalks” leading from the street system, but residents in some neighborhoods must walk in the street for the distance between their homes and nearby parks. A network of 8-foot wide paths leads through Unity Park between McAuliffe Elementary and Briarhill Middle Schools. The subdivision of Highland Shores has an almost 6-mile asphalt-paved footpath system.



TRAILS NEEDED

While the National Recreation and Parks Association (NRPA) has not adopted a standard applicable specifically to citywide trail systems, the Town of Flower Mound, TX recommends a mile of bicycle/jogging (multiuse) trail for every 1,950 population; a mile of hiking trails for every 4,000 population; a mile of nature/interpretive trails per 2,500 population; and a mile of equestrian trail for every 6,250 population. In comparison, Highland Village has generally exceeded these benchmark standards, although Highland Village’s trails function for transportation as well as recreational purposes.

TABLE 1. BENCHMARK COMPARISON OF TRAIL MILES NEEDED PER CAPITA

TRAIL CATEGORY	Example ratios of population per mile of trail	Benchmark miles needed based on year 2010 population of 15,056	Total current miles available within Highland Village	Current Percent of Benchmark	Benchmark miles needed based on city's 2025 projected population of 19,500	Total miles in completed Year 2025 system	Year 2025 Percent of Benchmark
MULTIUSE (BIKE/JOG)	1,950	7.7	8.1	105%	10	12.9	129%
HIKING (PED ONLY) ¹	4,000	3.8	6.7	176%	4.9	9.7	198%
NATURE/INTERPRETIVE	2,500	6.0	7.1	118%	7.8	7.1	126%
EQUESTRIAN	6,250	2.4	.5	21%	3.1	.5	16%
TOTALS		19.9	23.6	119%	25.8	31.4	122%

¹ – Includes Enhanced Sidewalks plus Highland Shores subdivision walking paths. Traditional sidewalks are not included in these totals.

EXISTING PLANS AND REGULATIONS

Existing planning documents (the comprehensive plan, including the thoroughfare plan, parks and open space plan), and completed segments of the City Trail, the Village Trail, the Market Trails and Victoria Trail provided the framework to guide this planning effort. Since 1994, Highland Village residents have shown strong support for the development of a citywide trail system. Community participation included public surveys and meetings leading up to a successful 1996 Bond Program for major park improvements, and subsequent funding for design and construction using 4B funds from local sales tax revenues ensures the system's buildout.



The City's *1997 Comprehensive Plan*, in *Section V. Facilities and Services*, adopts a policy of endeavoring to increase the quality of life through the up-grading of existing services and the provision of new services to meet the specific needs of the community. The first of the Inland Trail projects, now completed, were also listed as top priorities in the *1998 Parks & Open Space Master Plan*. City Council Resolutions in 1994, 1995, 1996, 1999 and 2001 have each reaffirmed Highland Village's financial commitment to the Inland Trail System. The comprehensive plan highlights the Inland Trail System as a key city asset.

NETWORK PLAN DEVELOPMENT

This *Update* identifies potential additional connections from residential neighborhoods to local schools, parks, and other key destinations – described in Appendix E. To achieve these connections, this *Update* delineates additional sidewalks along roadways and new pathway facilities along greenways and roads and proposes dedicated on-street bikeways that connect residents to these resources. This *Update* also



acknowledges the jurisdiction the U. S. Army Corps of Engineers has over its lake shoreline hiking and equestrian systems, including beneath FM 2499 (Village Parkway), which has been widened and extended northward across Lewisville Lake.

TRAIL SEGMENT SELECTION CRITERIA

To provide for the orderly and efficient development of the citywide bicycle and pedestrian network, additional and currently planned pathways were selected based on the following criteria:

- Connections to existing and programmed trail segments
- Access from/to residential neighborhoods, schools, parks, transit, other key destinations
- Potential connections to existing, programmed, planned or proposed pathways
- Potential for pathway corridor width (construction, maintenance, buffers, etc.)
- Site development potential based on existing natural or topographic features
- Existing public support for making the corridor accessible to non-motorized travel.

TRAIL PRIORITY RANKINGS

In collaboration with City of Highland Village staff, proposed and planned segments have been ranked to reflect present and potential development patterns, along with timing of thoroughfare and other current roadway upgrade plans, timing of other planned or anticipated capital projects, and the degree of public interest in particular segments as expressed in public forums conducted for the project. For example, Unity Park is a primary park destination, as will be Doubletree Ranch Park as plans there progress; plus commercial areas along FM 407 and Village Parkway are key shopping destinations. Connections to both of these are considered a high priority. Trail development is dependent on funding and the City's financial ability.

ON-STREET BIKE ACCOMMODATION

A preliminary Bicycle Level of Service (BLOS) evaluation was conducted in 2003 on selected road segments within the City of Highland Village to evaluate existing conditions related to potential future on-street bicycle routes – detailed in Appendix D. For the *2011 Update*, this on-street analysis was not repeated. Prior to any on-street treatment decisions, a BLOS evaluation of the roadway under consideration should be done. Since 2003, the North Central Texas region has moved away from the use of 14'-15' wide outside lanes. The current NCTCOG *Mobility 2035's* Active Transportation section for bicycle and pedestrian facilities calls for promoting the integration of complete streets (streets



that serve all mode of transportation) through the use of designated on-street bicycle facilities, including bike lanes, buffered bike lanes, climbing lanes, cycle tracks, shoulders, and bike routes indentified by signage and/or pavement markings. On-street facilities are used in Highland Village to connect the off-road bike paths (multi-use trails) to achieve an integrated on-street bikeway system.

Recommendations in this *Update* include modifications to the City's current on-street bikeway striping and pavement markings so that current standards for bikeway accommodation are utilized and to foster a more contiguous citywide on-street bikeway network.

With completion of most of the Inland Trail System, and the currently bike-accessible residential streets, Highland Village has become a fairly easy community in which to bicycle. The key challenge for cyclists as well as pedestrians is *getting to* the shops and services along FM 407 from neighborhoods to the north of the railroad corridor that bisects the city. The next chapter covers the recommended system and phasing for making these connections.





III. RECOMMENDED SYSTEM

The *2011 Update* process has resulted in an updated map of capital improvement recommendations for the non-motorized recreation and transportation network. The City's *Existing Street System 10-Year Restoration Plan* was referenced in developing the previous phasing recommendations for the trail plan, as it related to on-street bikeway and sidewalk elements. Progress and plans for FM 2499, FM 407 and IH 35E were considered for this *Update*, along with reconstruction of a section of the northeast end of Highland Village Road.

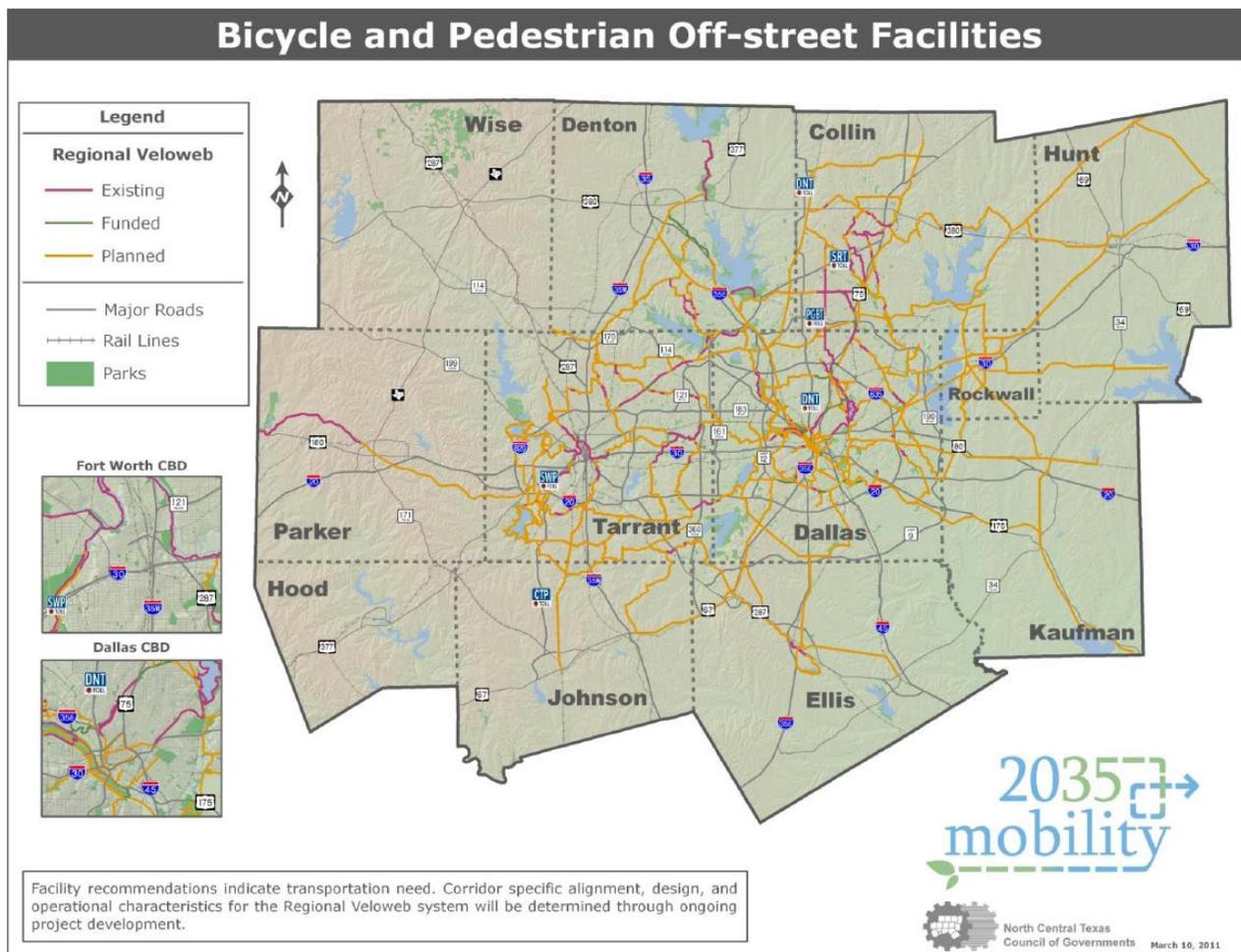
SYNTHESIS OF TRAIL MILES PER CAPITA COMPARISON

The proposed benchmarks described in the previous chapter (Table 1 on page 5) for recreational trail miles were exceeded once the City Trail was completed; however, these benchmarks were intended to serve only as a general guideline for trail facilities within parks, and did not take into consideration the need for transportation oriented trails or sidewalks which provide non-motorized connections to commercial and retail areas along FM 407 and FM 2499.

Conversely, the abundance of hiking trails available to Highland Village residents reflects the presence of the Corps-designated low-impact uses allowed along the meandering shoreline. The shortage of nature/interpretive trails has been mitigated by formalizing the trails within the Wichita Forest Park Nature Preserve. This plan seeks to exceed traditional goals in the context of community recreation standards by including functional, non-motorized connectivity for purposeful trips.

REGIONAL CONNECTIONS

The Inland Trail System is part of the planned “Regional Veloweb,” a region-wide network of transportation-oriented spine trails first adopted in 1995 by the Regional Transportation Council of the North Central Texas Council of Governments (NCTCOG). An expanded version of the Regional Veloweb is included in *Mobility 2035*, the region's long-range transportation master plan, adopted by the Regional Transportation Council in March 2011, and approved for conformity by the Federal Highway Administration on July 14, 2011. See the region's *Mobility 2035 Off-Street Facilities* map in Appendix F, as well as below.

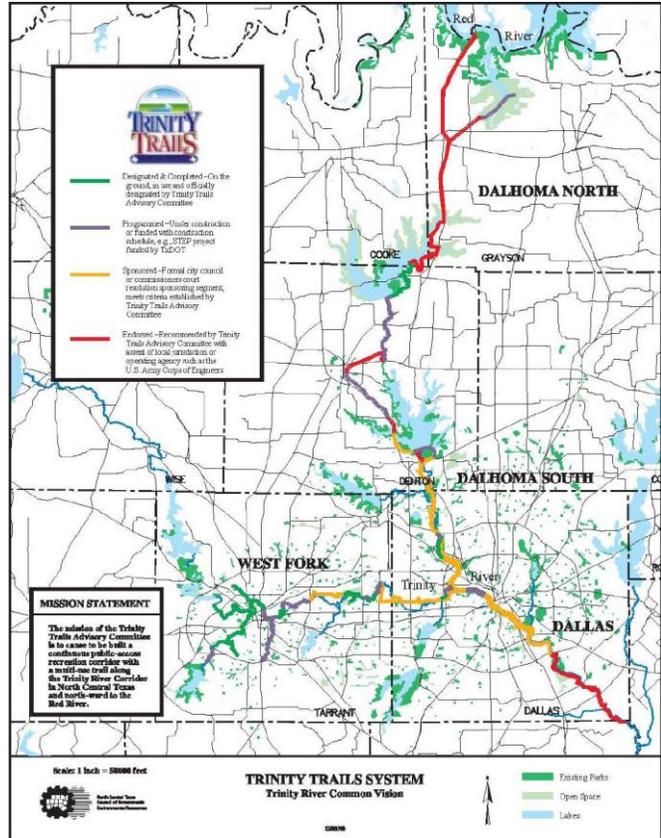


The nearly completed Inland Trail System stands to benefit many residents of Denton County as part of the regional trail network, which includes spanning Lewisville Lake as well as connecting to the DCTA A-Train Highland Village/Lewisville Station in Lewisville which began service in June 2011. The Regional Veloweb includes the planned Trinity Trails System, which has the support of all of the cities, counties and utility districts directly along the proposed routes. From the city of Corinth to downtown Denton, the Denton Branch Trinity Trails segment is already being reconstructed to parallel the A-Train rail line to downtown Denton, and is planned to eventually tie

into the popular Ray Roberts Greenbelt Trail along the Elm Fork between Ray Roberts and Lewisville Lakes. The Inland Trails can also be connected to other existing and planned inter-jurisdictional connections in Flower Mound, Lewisville, Corinth, Copper Canyon, and Lake Dallas. A larger version of the Trinity Trails System Map is shown in Appendix G.

PLAN FLEXIBILITY

In undeveloped areas or areas to be redeveloped, trail alignments should be viewed as conceptual, and adjustments to proposed alignments should be anticipated and accommodated, provided connectivity is maintained. The intent of this plan is to continue the City’s course for inclusion of non-motorized mobility and intermodal access leading to routine destinations throughout and beyond Highland Village – based on availability of right of way, access and funding.



MAJOR BARRIERS TO PEDESTRIAN ACCESS

The KCS Railroad corridor is a major barrier to pedestrian access in Highland Village. As the City was developed and roadways were constructed across this rail line, pedestrian circulation was generally overlooked. At each crossing location, the only treatment applied other than the roadways, consists of coarse rock ballast, which acts as a considerable deterrent to pedestrian crossings, especially for people in wheelchairs. Except for the widened sidewalk at Briarhill, none of the other rail intersections currently accommodates wheelchairs or bicyclists using sidewalks. Proposed treatments in this plan address each of these pedestrian crossing obstacles, while at the same time creating attractive and landscaped community gateways.



SYSTEM PATHWAYS

Existing and planned 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 throughout the City in a network that makes up the citywide Inland Trail System. Sidewalks, called for in the current Code of Ordinances, support access to this pathway system. In this *Update*, traditional “neighborhood” sidewalks, typically 4-5 feet wide, are distinguished from enhanced or widened “commercial” sidewalks, which are typically wider than 6 feet, to as wide as 8 feet.

Existing pedestrian paths in the subdivision of Highland Shores extend the range of trails available to Highland Village residents. Throughout the rest of the City, multiuse pathways, sidewalks and spur trails enhance non-motorized connectivity, and are supplemented by connections from bike-friendly streets. As new development occurs and land uses change, non-motorized links between the City’s residents and their commercial, civic and natural resources should always be included.

SIDEWALK CONTINUITY

Pedestrian and bicycle access along and across FM 2499 is critical as expansion northward is completed through Highland Village and across Lewisville Lake. Segments in the previous plan continued south of the proposed Silverthorne Park pedestrian crossing to FM 407. This *Update* recommends contiguous 5’ to 8’ wide sidewalks along both sides of the entire length of FM 2499 within



Highland Village. Sidewalks are in design for much of Highland Village Road to the north and east of the Municipal Center. Wider enhanced sidewalks should be considered wherever space can be made available.

Residents of many established neighborhoods can only rely on walking in the streets, due to less demanding sidewalk ordinances of years past. While contiguous sidewalks are often considered a desirable neighborhood attribute, if subdivisions have been constructed without these, the task of

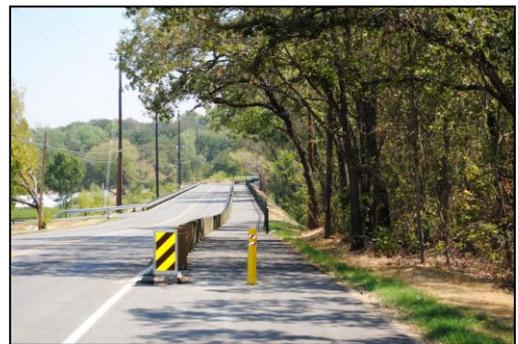


retrofitting can be daunting. Fortunately, many quieter streets within subdivisions have low levels of motor-vehicle traffic, minimizing the danger of walking in the street.

The current City Code of Ordinances addresses the need for sidewalks in future developments. Where traffic volumes and speeds have created a barrier to walking in streets, these recommendations provide guidance for creating these key connections, where feasible. Sidewalk segments included in this *Update* are intended to address overall system continuity. A coordinated effort between City departments should continue to review proposed programming of non-motorized elements of all roadway projects, including regular evaluations of facility maintenance needs, as well as development and zoning proposals, for determining impacts on the City's annual operations and maintenance budgets.

PLANNED TRAILS AND ADDITIONS

On the eastern side of the City, linkages are planned and being developed from the existing eastern City Trail terminus in Murray Park, northeastward through Wichita Forest Park to the new lake Overlook, and through Lions Club Park to the new Doubletree Ranch Park and to Copperas Branch Park. An eastward extension – a portion of which is currently under construction to, and



through the former Doubletree Ranch property – will eventually connect Highland Village residents via a scenic boardwalk to sidewalks leading to the Denton County Transportation Authority's new Highland Village/Lewisville Lake A-Train Station east of IH 35E, and to the major spine trail being constructed alongside the rail line for the Trinity Trails system. Trails planned within the new Doubletree Ranch Park are conceptually lengthened in this *Update* to allow future programming flexibility.

The Victoria Trail leads from the City Trail at Highland Village Road at Willow Creek Estates Drive, connecting southeastward to Medina, providing non-motorized connection between Willow Creek Estates Drive, Gayle Lane and Medina Drive. A remaining extension southeastward to Sellmeyer Lane via a modified alignment as shown on the map should be included in any reprogramming undertaken for Victoria Park.

Essential to the trail system implementation is installation of a north/south railroad crosswalk

along Highland Village Road, linking the eastside sidewalk from the Victoria Trail southward across the KCS railroad to the retail shopping areas along FM 407. This was described in the previous citywide plan, and is now being designed for construction to begin soon. A previously planned walkway from the east side of Unity Park is proposed now to extend eastward to Highland Village Road, providing improved east-west connectivity along the south side of the railroad corridor.



The trail segments on the west side of the City connect the more recently developed residential areas to the central trail spine. Key roadway crossings and contiguous sidewalks along FM 2499 are important connections in this *Update*. A grade separated crossing of Village Parkway near the KCS Railway will be provided by an already constructed pedestrian underpass - to an extension being designed that will connect to the Highland Shores pathway system and an existing leg of the Castlewood Trail west of Village Parkway. An amenity station on the west side of Village Parkway has been added to the *Update* for this connection.

An extended ADA ramp to an at grade crossing of Village Parkway to Marauder Park can be supplemented with a grade separated walkway beneath the roadway overpass leading northward from the corner of Northwood Drive and Village Parkway, subject to how the erosion impacts from the roadway’s construction can be addressed beneath the bridge.

To the southwest, several refinements to paved trail and sidewalk extensions have been added to better connect into the Marketplace Retail District from the Village Trail and Market Trail connections. Similar connections should still be included along all frontages as each new commercial property along FM 407 is developed or redeveloped.



SHORELINE TRAILS

Within the City limits of Highland Village there is 13.79 miles of shoreline along Lake Lewisville. Of that 5.2 miles falls within United States Corps of Engineers (USACOE) leased land managed by the City of Highland Village. All of the shoreline area is U. S. Government owned land which

is managed by the USACOE who serve as the stewards of lands and waters at Corps water resources projects. Most of the shoreline area in Highland Village has been classified as a wildlife management area (shown in yellow on adjacent map). These lands are available to the public for low-density recreational pursuits (i.e. hiking, picnicking, fishing, environmental education, bicycling, photography, bird watching, etc.) unless otherwise restricted by the Corps. Aside from several areas which are leased and/or have restricted use the USACOE land is open to the public and property owners bordering these areas cannot block or restrict access to the general public for recreational pursuits. Within the USACOE shoreline areas you will find well worn pathways which have created a network of primitive soft surface trails. These primitive trails are indicated on the City's trail master plan map. Any existing trails in these areas were not developed by the City nor does the City maintain them. Individuals or groups who may desire to create trails in these areas must submit formal requests to the USACOE for a full internal review prior to any trail work or clearing of any kind. The City does lease park land at Pilot Knoll and Copperas Parks and approved trails within these areas will be developed and maintained by the City.



ENVIRONMENTALLY SENSITIVE AREAS/ FOREST TRAILS



A forest-sensitive primary link is proposed to connect from Murray Park to the natural surface interpretive loops within Wichita Forest Park, a USACOE leased park site which is designated as an environmentally sensitive area, and across Highland Village Road

to the City's new parkland at 707 Highland Village Road at the lake shoreline overlook, plus eastward to Lion's Club Park, and ultimately to Copperas Branch Park. Careful drainage and surface treatments will help formalize these pathways and reduce additional intrusions into the environmentally sensitive areas. Formalizing these pathways with a paved primary link can help reduce incidences of littering, dumping and other inappropriate uses of this natural resource area.

RECOMMENDED SYSTEM IMPROVEMENTS

Appendix E, Recommended System Improvements, details the list of current programmed projects and planned trails not yet programmed. These programmed and planned projects expand on the now-constructed portions of the Inland Trail System of *multiuse* facilities. Additional 8'-wide *enhanced sidewalks* and pedestrian-oriented *paths*, plus additional 6'-wide *commercial sidewalks* and 4' to 5'-wide *residential sidewalks* will connect a large majority of the City's residents. The 3' -5' wide *natural surface* trail constructed along the City's northwest border can be either left untreated – or improved using crushed granite or similar material. In this *Update*, the trail alignment shown on the map connects at the northeast end along a designated easement indicated to the north side of Marauder Park.

Potential costs for each project detailed in Appendix E include estimates for both design and construction phases of projects. These planning-level estimates were developed using a combination of recent project and grant-writing experience, and by applying recently revised per-mile “rule of thumb” cost estimates recommended by NCTCOG in *Mobility 2035* – for typical state or federally funded bicycle and pedestrian projects along public rights-of-way.

Residents of Highland Village voted to construct the Inland Trail System using a portion of 4B funds in 2004. Initial funding for the City Trail spine was provided by the State Transportation Enhancement Program (STEP), but no further calls for STEP project nominations is presently anticipated unless this program is fully reauthorized. Another federally funded program, the Recreational Trails Program, is administered by the Texas Parks & Wildlife Department, with applications currently due on February 1 of each year – with an award limit of \$200,000.

The Highland Village City Council continues to be the leading, guiding force in the development of this system. Given the strong showing of citizen support for this plan, this body has undertaken aggressive strategies to implement the *Highland Village Comprehensive Trails System Master Plan* as a functional citywide active transportation system. The City's long term commitment has been key to its success.

RECOMMENDED ON-STREET BIKEWAYS

Any new roadway construction or reconstruction should routinely provide on-street bicycle accommodation, especially on collector and arterial roads. Some existing roadway cross-sections do not currently accommodate space for bicycles. Careful coordination is essential during implementation of a roadway reconstruction plan to ensure that the pedestrian and bicyclist mobility systems recommended in this plan are fully developed and integrated in any final thoroughfare construction designs.

Design treatments should be determined early during any further roadway upgrade planning phase. Best practices today use a variety of on-road designated facilities, including bike lanes where space is available, Shared Lane Markings (pavement markings) and the accompanying signage described in more detail in Chapter IV (see page 22). These bikeway routes should receive the bikeway and bike lane treatments indicated on the overall *2011 Update* map.



Most local and secondary collector streets could be signed as on-street bike routes. Sellmeyer is proposed to be converted to the Shared Lane Markings and R4-11 (shown below) signs that read “Bicycles May Use Full Lane” to designate it as a bike route. Briarhill from Foxmoor Drive to FM 407 also include these new Shared Lane Markings and signage to better accommodate bike access.

Many of Highland Village’s residential streets are already accessible to all types of bicyclists, including advanced and basic adult, and child bicyclists. This accessibility is due to those roadways’ adequate width and/or their low traffic volume with slower speeds. But even experienced, proficient adult cyclists will find some thoroughfares (such as FM 407) unusable or inaccessible at least during peak traffic periods, due to heavy traffic flows, high speeds, and/or narrow curb lane widths. Many cyclists will choose to ride off this roadway, and will benefit from enhanced sidewalk connections shown in this and the previous version of the plan.

On-street bikeway options depend on the entity that controls the roadway. For roadways controlled by the City, the options include:

- Bike Routes with signs along city streets using local funds

- May include wide outside lanes
- May include Shared Lane Markings on pavement with Bikes May Use Full Lane signs, or
- May include bike lanes where space is available.
- Where funds passing through TXDOT are used to establish bike routes either on city streets or along TXDOT-controlled roadways, the outside lanes must be at least 14-feet wide.

The arterial roadways, FM 407 and FM 2499 (Village Parkway), will require one of these treatments mentioned above to be considered useful by bicyclists. A study to determine potential Bicycle Level of Service should be made prior to construction/installation to determine the most appropriate on-street bicycle facility, and roadways with BLOS C or worse should not be signed as bike routes without consideration regarding which facility type is most appropriate, and whether speed limits need to be or can be reduced. Primary and secondary collectors are likely candidates for on-street bike routes, but need to be similarly evaluated on a case-by-case basis prior to installing any markings or signage.



IV. IMPLEMENTATION RECOMMENDATIONS

With the City Trail, the Village Trail, Victoria Trail and Market Trails materially complete, Highland Village has made significant progress in implementing its *Comprehensive Trail System Master Plan*. The system has connected sidewalks and bikeways in many areas of the City. Residents in these areas are able to access these pathways from their homes as pedestrians along quiet streets or sidewalks, or as bicyclists along existing bike-friendly roadways.

Continued trail development is dependent upon City funding, and the City's financial ability to do so. The priority groupings provide phasing guidance, but in no way are intended to obligate the City financially.

Key to effectively managing facilities and programs for implementing the transportation components of this plan is the City-assigned manager in Public Works charged with responsibility for coordinating bicycle and pedestrian facility programs. Active transportation goals in the North Central Texas Council of Government's *Mobility 2035* include:

- Increase accommodation and planning for active transportation (bicycling and walking)
- Improve safety and mobility for active transportation
- Increase active travel in NCTCOG's region as an alternative to (motor) vehicle trips.

As the region progresses toward more active transportation facilities, Highland Village has already devoted planning and transportation staff to implementing these bicycle and pedestrian objectives. The Public Works Department must coordinate routinely with the Parks and Recreation Department to assure that both the Inland Trail System and the recreational components are fully addressed in any roadway plans.

MARKETPLACE OVERLAY DISTRICT

Pedestrian connections created within and to the City's Marketplace Overlay Zoning District support the objectives of this plan. Pedestrian access between properties was a condition of site plan approval for this area. Mixed-use development in this district includes open space with Inland Trail System connections, together with links to other pedestrian friendly walkways to attract residents and visitors from surrounding communities to Highland Village businesses, retail shops and boutiques.



FINDING AVAILABLE RIGHT-OF-WAY SPACE

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 available in trail and road rights-of-way in already-developed areas. Creation of functional pathways in new developments can be fostered by increased partnering between the developers and the neighborhood or home-owner organizations of adjacent residents.

Highland Village has so few development opportunities remaining that City staff and residents must endeavor to continue vigilance in shaping the way future development looks and functions, especially to and along FM 407. With its mixed retail and office uses, this area provides a variety of services to area residents and visitors, who will benefit greatly from the pathways proposed in this plan.



Multi-use paths or sidewalks along both sides of the FM 2499 right-of-way are key to resolving the barrier created by this roadway that extends northward to Pilot Knoll Park, and across Lewisville Lake. As this area continues to develop, it is 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-feet of separate pavement along at least one side, with the AASHTO-recommended minimum setback for trails of 5' from the back of curb to the outside edge of the path pavement. If pavement is 8-feet wide or less, the adjacent roadway should include

treatments for cyclists. Properly designed and adequately wide, these pathways would serve as worthwhile alternatives for local traffic, and should be integral components of any road widening or development project along FM 407 to help relieve congestion generated by businesses there. In this *Update*, at a minimum, sidewalks are recommended along both sides of this entire corridor within Highland Village.

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 task for 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 *Update* to be successful, neighborhood or home-owner groups must demonstrate support for creating these pathways, resulting in City Council and staff actions to develop projects. However, residents and developers should be mindful that the process can sometimes take years from vision to reality.

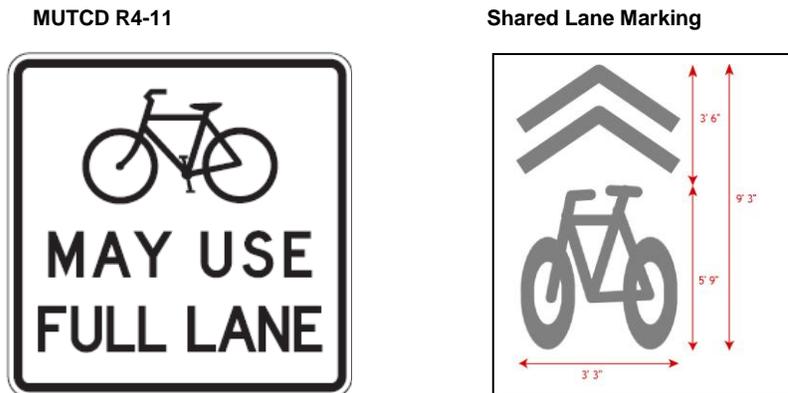
PATHS AND WALKWAYS IN FUTURE DEVELOPMENTS

The overlay zone outlined in the *Highland Village Marketplace Overlay District Ordinance* provided excellent opportunities for achieving a truly pedestrian-oriented environment in the western part of the City. Property owners in the area bordered by FM 407 and FM 2499 have, through this overlay, made numerous pathway and sidewalk connections between destinations. Adjacent cities have planned similar connections to intersections at City boundaries. This *Update* includes connections from the new neighborhoods north of this district.

ON-STREET BICYCLING

Sellmeyer Boulevard is recommended to provide designated bicycle facilities between FM 407 to the South, and Highland Village Road to the North by installing Shared Lane Markings and the companion Manual on Uniform Traffic Control Devices (MUTCD) number R4-11 "Bicycles May Use Full Lane" signs to designate this boulevard as a bike route. Bicyclists already use some thoroughfares and local streets, and these markings and signs will help educate both the motorists and the cyclists that bicyclists are to be expected. These signs and markings are not

described in the 1999 AASHTO *Guide for the Development of Bicycle Facilities*, though the update to the 1999 guide is in review and does make reference to these signs. The 2009 *Manual on Traffic Control Devices* (MUTCD) includes these signs, and this manual is currently in TXDOT review and scheduled for approval by January 2012. TXDOT has indicated that Part 9, Traffic Control for Bicycle Facilities will be adopted without changes.



The most cost effective strategy to increase the level of service provided to bicyclists is to reduce the posted speeds. In a City the size of Highland Village, reducing speeds on collectors and neighborhood streets can make a dramatic difference in the bicycle level of service on any local roadway. Standard warning signage may be an appropriate additional treatment along some of these routes.

LEGAL CONSIDERATIONS

In Texas, bicycles are classified as vehicles, and bicyclists have the same rights and responsibilities as motor vehicle operators using the road system.

The permissibility of using motorized wheelchairs on non-motorized trails was clarified in TEA-21, the federal funding program for transportation infrastructure. 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 weighing less than 100 pounds with a low-powered electric motor, 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.

On March 15, 2011, the U.S. Department of Justice revised its rules to allow “other power-driven mobility devices” to be used by individuals with mobility disabilities. The City is required to make

reasonable modifications to its policies, practices, or procedures. Refer to ADA Part 35 (Title II) 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 among the best exercises for people of all ages.

The BikeTexas *SafeCyclist program* for 4th and 5th grade students is an effort undertaken by BikeTexas since 1998 to certify 4th and 5th grade PE teachers to teach bicycle and pedestrian traffic safety and encourage physical activity. Funding is provided by the National Highway Traffic Safety Administration and administered by the Texas Department of Transportation. There is no direct cost to school districts for the training and materials. Contact BikeTexas at (512) 476-7433 or visit: <http://www.safecyclist.org>

Adult cyclist education is available through the League of American Bicyclists' *Smart Cycling* program – a series of curricula for all levels of experience and interest – including a Motorist Education program. These League Certification courses, taught by certified *League Cycling Instructors*, can be scheduled anytime throughout the year. Most courses take 8-16 hours to complete. For more information, visit: www.bikeleague.org/programs/education or www.BikeDFW.org.

V. FUNDING SOURCES



The City of Highland Village has designated use a portion of 4B sales tax revenues to construct facilities identified in the Inland Trails System. Additional strategies for leveraging the use of local funds are described below. Information about other funding sources is provided in Appendix H. Outside Funding Sources.

SECTION 4B SALES TAX REVENUES

The Highland Village Community Development Corporation was established on June 28, 2005. The election was held in November 2004 to approve the 1/2 cent sales tax with specifically identified uses for trails and a soccer complex. The concept of a trail system has been planned since 1994. At the completion of the Inland Trails System and the Soccer Complex, and the extinguishment of all related debt, the 4B sales tax would then be removed unless it is taken back to the voters to add or change proposed uses of the fund prior to that time. The funds are dedicated exclusively for the public purposes authorized under the provisions of Section 4B of the Development Corporation Act of 1979, Tex. Rev. Civ. Stat. Ann. Art. 5190.6, as amended (the Development Corporation Act) and may issue bonds on behalf of the City of Highland Village.

INCORPORATE LOW COST IMPROVEMENTS IN THE ANNUAL BUDGET

General funds are traditionally used for improvements to existing facilities by placing these projects in the annual budget. Low cost on-street bikeway improvements such as re-stripping can often be accommodated within the City's transportation operation budget.

PARTNER WITH VOLUNTEER GROUPS

Nature, equestrian and off-road bicycle trails can be built, maintained, and / or patrolled with the help of volunteer groups. Their efforts can be used as part of the required match for the Texas Parks and Wildlife's Recreational Trails Program, assuming inclusion of this program in the federal transportation funding reauthorization. There are a variety of sources for volunteers including user groups, local residents, corporate community service initiatives, and business and civic support groups.

Highland Village can support outreach efforts with local neighborhood groups and families with young children. Business and civic groups with an interest in the economic health and livability of Highland Village 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.

A great example of the potential power of Friends groups is the Friends of the Katy Trail in Dallas, where the Friends have raised funds for art and amenity stations, a parallel rubberized jogging track alongside the multi-use trail, and organized clean-ups, tree plantings, and a variety of other events.

UTILIZE PRIVATE SECTOR TO LEVERAGE PROJECTS OR FUNDS

Trails and sidewalks in new developments can be built more effectively in partnership with land developers, or in established neighborhoods with interested home owner associations. Financing partnerships for individual segments, such as bridges, trailheads or entry trails, will help expedite completion.

COORDINATE WITH ADJACENT CITIES ON GRANT APPLICATIONS

Working with adjacent cities on trail segments which connect across city boundaries will strengthen any funding application and possibly reduce overall construction costs. With intercity coordination prior to grant applications, these trails compete well for funding. The Inland Trail System can connect to adjacent cities including Lewisville, Town of Flower Mound and Copper Canyon.

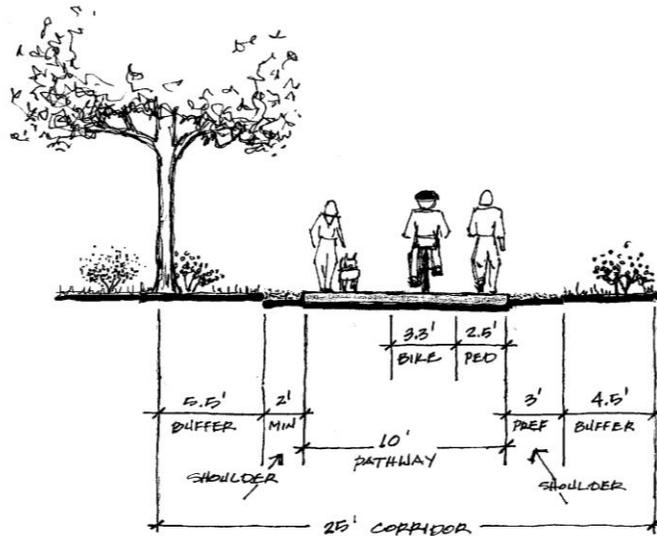
Appendix H. Outside Funding Sources details grant information for the North Central Texas Council of Governments (NCTCOG), Texas Department of Transportation (TxDOT) and Texas Parks and Wildlife Department (TPWD) and other sources.

GROUPING OF PROJECTS FOR OUTSIDE FUNDING APPLICATIONS

In this *2011 Update*, project segments are sub-grouped according to logical connections along a given corridor, with major structural components often detailed separately. When seeking leveraged funding, the contiguous project components should be bundled into construction packages that benefit from inclusion in a larger single project package. Implementing the different types of projects in this plan can take advantage of a variety of funding strategies. Trails along the North Central Texas Council of Governments' Regional Veloweb, including most of the City Trail and connections to the A-Train Highland Village/Lewisville Lake Station), can compete well for regional transportation funding, while most sidewalks will need to be built with local funds or in partnership with developers. However, some sidewalks leading to schools; can now compete well for Texas Department of Transportation's Safe Routes to School (SRTS) funds, assuming the SRTS program remains following reauthorization the federal surface transportation funding program.

For more information on Outside Funding Sources, see Appendix H.

VI. DESIGN GUIDANCE

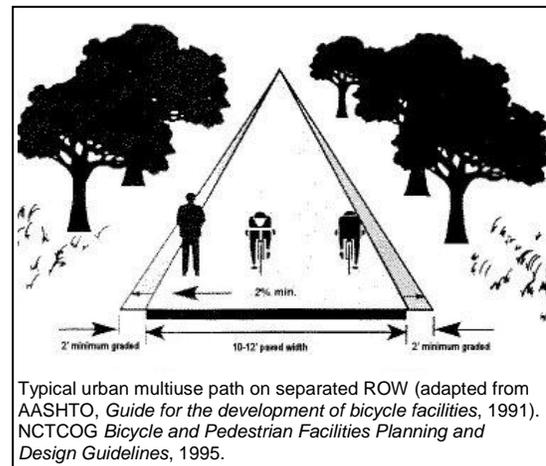


Different types of non-motorized facilities call for different design requirements. In this section, trails, sidewalks and on-street bikeways are addressed. Trail types include paved multi-use (hike and bike) trails, natural surface trails for all terrain (off-road) bicycles and/or pedestrians, equestrian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

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

CORRIDOR CRITERIA

A desired minimum corridor width of twenty-five feet (25') is recommended for most Highland Village pathways, but wider (32') 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 be narrower, but great care should be given to allow



sufficient setback from roadway traffic. Multi-use (hike and bike) paths along roadways must 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 motorized traffic is rarely expected, and 6-inches thick where the presence of motorized vehicles (police cars, ambulances, maintenance vehicles) is routinely 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 along the shoreline or the forest trails will provide a formalized yet pervious surface for pathways such as the interpretive loops planned in the Wichita Forest Park. An added advantage is that users have a keener sense of others around them due to the "crunchy" sound created by approaching users, however this can be a distraction in birding areas.

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 feet wide, and 12 feet (or more) if heavy, diverse traffic is anticipated. According to AASHTO guidance, trails 8 feet wide are generally not for multi-use designation, unless one-way.

Under certain conditions it may be necessary or desirable to increase the width of a shared use path due to substantial use by bicycles, joggers, skaters and pedestrians; use by large maintenance vehicles; and/or steep grades. NCTCOG's *Mobility 2035* recommends the paved width for a two-directional shared use path along the Veloweb be at least 12 feet, with 16 – 24

feet wide (or separated bicycle and pedestrian tracks) recommended for segments with high peak usage, such as near transit stations or major destinations.

In rare instances a reduced width of 8 feet can be adequate. This reduced width should be used only 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.

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 foot 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 feet. Shoulders should be wider (up to 5 feet) 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 25 mph should be used, particularly on 12' or wider Veloweb segments. In congested areas where pedestrians predominate, speeds can be limited to 15 mph or slower. 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-foot minimum residential width, with a minimum 2-foot wide (3-foot 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 feet in width is recommended, especially along collector and arterial thoroughfares, or in commercial areas. At least 4 feet of walkway must be kept clear of obstructions to accommodate accessibility by people in wheelchairs or using walkers. It is recommended that a six-foot sidewalk with at least a two-foot buffer be installed wherever sidewalks are recommended along arterials. Six-foot sidewalks are wide enough to allow two people to walk side by side, creating a more pedestrian friendly environment.

NATURAL SURFACE TRAILS

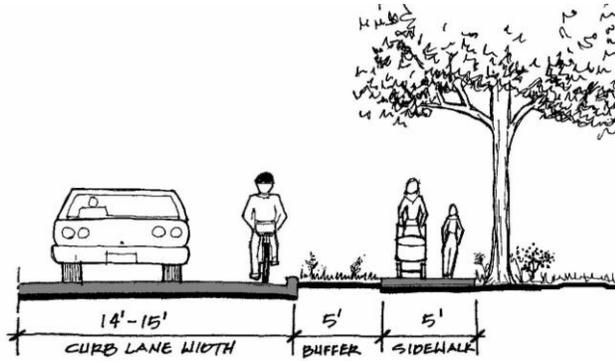
Natural surface nature trails should be in harmony with the surrounding environment. Care should be taken to fit the trail to the terrain, while taking advantage of scenic vistas, and considering the drainage characteristics during minor and major storm events. Erosion can be reduced by avoiding sharp 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% 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 feet 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.

ON-STREET BIKEWAYS

New roadway construction or roadway reconstruction routinely should provide on-street bicycle accessibility, especially collector and arterial roads. The need for design treatments should be reviewed during roadway design to determine the most appropriate bicycle facility.



Typical On-Street Shared Bikeway Width and Sidewalk

GENERAL ON-ROAD BIKEWAY AND PEDESTRIAN DESIGN GUIDANCE

Integrating trails with the on-street system for bicyclists and pedestrians is key to a successful system. Where trails merge with roadways, special consideration must be given to on-road segments to ensure bikeway and sidewalk continuity. While the proposed trail system provides access to most parks, schools and shopping areas in the City, in some instances connections will need to be made via on-street routes utilizing continuous sidewalks and bicycle-friendly streets. Sidewalks are a critical component in the citywide network for non-motorized transportation. They must continue along the roadway from where a trail ends.

It is also essential that the street system accommodate people on bicycles. On-street bikeways should be designed to integrate bicycle traffic into the roadway. For bike routes using shared lanes, these routes ideally will have low traffic speeds and low traffic volumes, and have the Shared Lane Marking along the pavement. For collectors or arterials designated facilities such as bike lanes, buffered bike lanes or cycle tracks should be used where feasible. Additionally, these on-road bikeways should have few stop signs or signal lights, encounter few driveways, and be subject to minimal interference from turning or parking traffic.

TRAIL TO ROADWAY TRANSITIONS

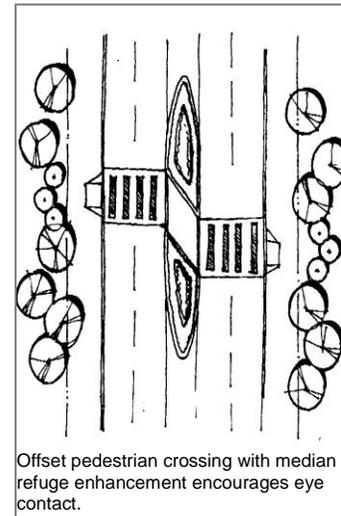
In planning for a trail's interface with an existing roadway, it is important to take into consideration the design requirements to accommodate bicyclists' transitions between the path and the roadway. Predictable crossings at established intersections are the most appropriate treatment in these situations. If trail/road intersections are required at mid-block, they should be clearly marked and located well away from intersections – 150' or more – to minimize the danger of distracted drivers engaged in turning maneuvers. However, each roadway crossing should be specifically

designed to account for traffic volumes and speeds, as well as that roadway's design and viewsheds. For the sake of safety — clear, open sightlines must be maintained near and at every intersection in the system. A very effective way to enhance intersection safety is to increase motorists' cone of vision by moving back the stop bar in the travel lanes. This allows a wider view of pedestrian and bicycle cross traffic approaching in the crosswalk.

AT-GRADE TRAIL INTERSECTIONS

Intersection treatments involve either "active" vehicle traffic controls, such as stop signs or signals, or passive treatments, such as warning signs, and perhaps flashing lights. Each intersection must be carefully reviewed prior to any modification from current status.

Where trails and sidewalks cross roadways – medians, ADA curb ramps, curb extensions and bulb-outs can all be effective design treatments. Median refuges are essential for roadways with pavement widths wider than about 40 feet. Any longer crossing should allow a refuge part of the way across for slower moving pedestrians. An angled walkway across the median, as shown in the figure above, forces path users to face oncoming traffic as they cross. This is especially effective for mid-block crossings, but can sometimes work at intersections, when the auto traffic stop-bar is set back. This configuration provides additional room on the median for queuing students, parents with baby joggers, and parents on bikes with trailers in tow.



Offset pedestrian crossing with median refuge enhancement encourages eye contact.

GRADE SEPARATED INTERSECTIONS

The recommended clear width for grade-separated trail structures should include both the paved and clear shoulder widths. This provides a minimum horizontal clear space from the railing or barrier, and provides maneuvering space to avoid conflicts with pedestrians and other bicyclists who may pause on the structure. Where practical, a vertical clearance of 10 feet is desirable to accommodate adequate overhead clearance for occasional maintenance or emergency vehicles using the path. Minimum vertical clearance should be 8 feet.

SIGNAGE

Wayfinding, warning and regulatory signs are as important to trails as they are to the road system. Warning signs should be used only where special regulations apply, or where hazards are not

self-evident. The use of warning signs should be kept to a minimum to avoid losing effectiveness. All of the Inland Trail system segments should have unified signage and wayfinding.

TRAIL HEADS

Trail heads are encouraged where indicated on the Plan map. In the Phase 1 Inland Trail project, several major and minor “amenity station” trail heads are being designed that will set the tone and feel for each of the entry portals entering the central spine trail. The primary recommendation here is that trail head designs should inspire the expectations of those who enter. Entries into the wooded segments, the public forests, for example, offer dramatic visual contrasts without substantial structural features. These trailheads should remain as natural as possible with perhaps only minor clearing of underbrush near entrances for security views, with large boulders and/or mature trees as the entry monuments. Almost always, a bench should be placed in proximity to primary spine nodes.

Other trail head elements to consider include traffic control, wayfinding, and informational signage; automobile and/or bike parking or hitching posts where appropriate; benches; drinking water; and lighting. Kiosks may be appropriate in locations where groups desiring them agree to maintain them.

TRAILS THROUGH PRIVATELY HELD PROPERTIES

Where potential critical linkages are currently privately held, it may be necessary to acquire pedestrian access easements. City ordinances should allow the City to grant access privileges on a temporary but renewable basis, such as every 3-5 years, or 10 or 20 years if required by particular funding, or permanently such as in a conservation easement. (Many grants require trails to be open to the public for a minimum of between 10 and 20 years.)

These “term easements” or “access agreements” allow developers (and ultimately a homeowners’ association) to retain continuing control over a corridor while granting access along certain critical sections through future subdivisions. In most cases, if problems arise, they could withhold a renewal unless these problems are corrected. Clearly it is in the best interest of all parties to strive to avoid problems or correct them quickly. Everyone benefits when trails in different subdivisions are connected with common destinations and with one another, providing longer, more useful and interesting walking or bicycling opportunities both for people in the proposed subdivision and those in adjoining neighborhoods. Prior to any major investment in construction costs i.e. concrete

for trails, etc., it may be in the best interest of the City to negotiate permanent access through dedicated easements, to ensure perpetual benefit to the public.

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*. 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. For additional information, or to obtain a guide, browse: <http://www.transportation.org/aashto/home.nsf/FrontPage> A newer version is currently being reviewed by TXDOT, with anticipated approval sometime in early 2012.

Useful design treatments can also be found in the National Highway Institute's 1996 *Pedestrian and Bicyclist Safety and Accommodation*. This plan does not attempt to detail these standards, but recommends that they be utilized whenever facilities for bicyclists are involved. Another important reference from the Federal Highway Administration (FHWA), Department of Transportation is *Designing Sidewalks and Trails for Access; Part II of II – Best Practices Design Guide*, Publication No.: FHWA-EP-01-027, HEPH/8-01(10M)E, Sept. 2001.

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 as outlined in the *Accessible Rights-of-Way: Sidewalks • Street Crossings • Other Pedestrian Facilities, A Design Guide*, a November 1999 publication of the U.S. Architectural and Transportation Barriers Compliance Board (The Access Board). The information in this guide is not regulatory except in TxDOT ROW projects, but is intended as a reference tool. 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.

VII. CONCLUSION



Highland Village has many opportunities to create pathways, but may encounter additional 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 Highland Village parents, their children and guests. The plan's vision is to provide recreation routes supporting active lifestyles while fostering accessibility for Highland Village residents to parks, schools and businesses, including the public amenities along IH 35E, FM 407/Justin Road, and FM 2499/Village Parkway.

This plan is intended to foster collaboration between the Parks and Recreation and Public Works Departments, and the general public and neighboring communities. While this plan provides for a more than 30-mile network of pathways and walkways throughout the City, specific alignments not yet built should be viewed as flexible, and adjusted as needed to achieve the objectives of residents, businesses and developers.

At full implementation, nearly 13 miles of multi-use trails will be available to Highland Village residents by the year of completion, along with more than 14½ miles of greenwalks and walkways along city streets and thoroughfares, and approximately 11½ miles of on-street bikeways. These are complemented by over 12 miles of primitive/natural or pervious-surfaced walking paths extending through wooded preserves, parks, and along the public shoreline of Lewisville Lake.

In light of continuing development in Highland Village, opportunities to create elements in this community-building, human-powered network may quickly disappear. Critical connections that

seem obvious one day may become blocked by commercial or neighborhood site plans the next. 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 Highland Village residents. This master plan should be made readily 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 the remainder of 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. Trail development is dependent on City funding, and the City's financial ability to do so.



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

This plan provides the blueprint called for in the *Highland Village Parks, Recreation and Open Space Master Plan* for creating a system that will give residents convenient pedestrian and bicycle access to schools, parks, passive areas, Lewisville Lake, retail centers, the municipal complex and other activity nodes. Fully implemented, non-motorized travel can become a routine part of daily life for Highland Village residents, helping enhance the quality of life for future generations.

APPENDICES

- A. POPULATION AND DEMOGRAPHICS
- B. TRAFFIC COUNTS BY VEHICLE CLASSIFICATIONS
- C. ON-STREET BICYCLE LEVEL OF SERVICE (BLOS) EVALUATION
- D. HIGHLAND VILLAGE SYSTEM – BLOS AND ANALYSIS MAP
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APPENDIX A. POPULATION & DEMOGRAPHICS

The United States Census 2010 data, compiled by the North Central Texas Council of Governments was used to update this file. Due to the way various races and ethnicities are aggregated in the 2000 Census data and the 2010 Census data, some comparisons cannot be made. Population growth projections for 2025 below continue to reference the City's *2000 Utility Rate Study and Future Land Use Assumptions*.

While NCTCOG forecasts Denton County household population to be 1,404,149 in 2035, and 1,526,634 in 2040 (Source: <http://www.nctcog.org/ris/demographics/forecast/County2040.pdf>; accessed 8/9/2011), no forecast updates to the 2025 population by city forecast could be located. The 2025 projections previously used in the Plan are used again below, but updated using the 2010 Census.

Highland Village Area Population Growth*

Population	2000 Census	2010 Census	2000-2010 Change (%)	2025 Projections	2010-2025 Projected Change (%)
Denton County	432,976	662,614	229,638 (58%)	784,700	122,086 (18%)
Highland Village	12,173	15,056	2,883 (24%)	19,500	4,444 (30%)
Copper Canyon	1,216	1,334	118 (05%)	12,000	10,666 (799%)
Double Oak	2,179	2,867	688 (31%)	5,950	3,087 (107%)

*Source: 2010 Census Data: <http://www.nctcog.org/ris/census/2010/>; accessed 8/9/2011.

Highland Village-Denton County Comparative Demographic Analysis*

Demographic Characteristic	Denton County				Highland Village			
	2000 Census	2010 Census	(% of total)	2000/2010 % Change	2000 Census	2010 Census	(% of total)	2000/2010 % Change
Total Population	432,976	662,614	(100%)	53%	12,173	15,056	(100%)	23.7%
White	353,855	497,260	(75.0%)	40%	11,468	13,649	(90.7%)	19.0%
Black/African American	25,369	55,534	(8.4%)	118%	179	389	(2.6%)	117%
American Indian & Alaska Native	2,533	4,551	(0.7%)	99%	49	59	(0.4%)	20.4%
..Asian, Native Hawaiian, other Pacific Islander	17,665	43,940	(6.6%)	148%	236	483	(3.2%)	105%
Some other race	24,072	Not available		--	97	Not available		--
..2 or more races	9,482	Not available		--	144	Not available		--
..Some other race alone	Not available	41,916	(6.7%)	--	Not available	175	(1.2%)	--
..Two or more races	Not available	19,413	(2.9%)	--	Not available	301	(2.0%)	--
..Hispanic (any race)	52,619	120,836	(18.2% of Total Population)	129%	421	953	(6.3% Of Total Population)	126%

*Source: 2010 Census Data: <http://www.nctcog.org/ris/census/2010/>; accessed 8/9/2011.

APPENDIX B. TRAFFIC COUNTS BY VEHICLE CLASSIFICATIONS

(1) TABLE 3 - VEHICLE CLASSIFICATIONS
from *Traffic Count Data Review* by GBW Engineers, July 2002
Data Sampled: Tuesday, May 21 & Wednesday, May 29, 2002

Site No.	Street	Location	Direction	24-Hour	Bicycle		Cars/Lg Axle		Buses & Larger	
				Volume	Volume	%	Volume	%	Volume	%
1	Briarhill Blvd.	Just N. of RR Tracks	NB	3,715	77	2.1	3488	93.9	150	4.0
			SB	2,956	155	5.2	2625	88.8	176	6.0
2	Brazos Blvd.	E. of Sellmeyer	EB	2,566	16	0.6	2392	93.3	158	6.1
			WB	2,578	13	0.5	2433	94.3	132	5.2
3	Brazos Blvd.	E. of Highland Village R.	EB	2,010	9	0.4	1922	95.6	79	4.0
			WB	1,668	4	0.2	1586	95.0	78	4.8
4	Highland Shores Blvd.	E. of Village Pkwy.	EB	1,884	5	0.3	1751	92.5	128	7.2
			WB	1,989	23	1.2	1844	92.6	122	6.2
5	Highland Village Rd.	Just S. of Brazos	NB	3,705	23	0.6	3490	94.0	192	5.4
			SB	3,728	31	0.8	3496	93.7	201	5.5
6	Highland Village Rd.	Just W. of I.H. 35E	EB	3,245	13	0.4	3074	94.8	158	4.8
			WB	2,713	24	0.9	2557	94.2	132	4.9
7	Sellmeyer Lane	S. of Highland Village R.	NB	337	3	0.9	315	93.5	19	5.6
			SB	273	1	0.4	261	95.6	11	4.0
8	Sellmeyer Lane	Just N. of FM 407	NB	2,256	77	3.4	2072	91.7	107	4.9
			SB	2,078	49	2.4	1935	93.1	94	4.5

Relevant comments from report:

1. The most unique finding in this table is the very large amount of bicycle traffic on Site No. 1, Briarhill Blvd. There were 77 bicycle trips recorded in the northbound direction and 155 bicycle trips recorded in the southbound direction. These values represent 2.1% and 5.2% of the total directional volumes. These are very high volumes. It appears that a significant amount of bicycle traffic (and probably pedestrian traffic) utilize Briarhill Blvd. to access Unity Park and Briarhill Middle School.
2. High bicycle volumes were also recorded at Site No. 8, Sellmeyer Lane (N of FM 407). Directional volumes of 77 bicycles (NB) and 49 bicycles (SB) were recorded at this location which represent 3.4% and 2.4% of the total directional volumes, respectively. Since there is no school or park near this testing location, it is unclear as to why this high amount of bicycle traffic was recorded. However, it may indicate a desire by residents to access the retail areas of Highland Village along FM 407 by bicycle rather than [motor] vehicle.

APPENDIX C. ON-STREET BICYCLE LEVEL OF SERVICE (BLOS) EVALUATION

The primary BLOS factors include velocity and volume of motorized traffic and the amount of space available for the bicyclist to operate. In short, streets with narrow lanes and high volumes of fast moving traffic are not bicycle friendly, while streets with wide outside lanes, light traffic volumes and slower traffic speeds are considered to be bicycle friendly. These primary factors are discussed below as velocity, volume, and curb lane width.

PRIMARY STRESS LEVEL (SL) FACTORS

Primary factors used in considering a street suitable for signing as a bike route:

- Determine curb lane traffic velocity stress level (Vel SL) by using the City of Carrollton Master Thoroughfare Plan Listing of posted speeds
- Calculate traffic volume stress level (Vol SL) for Peak Vehicles per Hour in the curb lane (PV/HCL) using City of Carrollton 24 Hour Traffic Counts. Assume that 10 per cent of the daily volume occurs in the peak hour(s).
- Identify the curb lane width (W SL) utilizing the City of Carrollton General Design Standards Paving Details for Lane Standards.

The method used for calculating the BLOS described in NCTCOG's 1995 *Bicycle and Pedestrian Facilities Planning and Design Guidelines* uses the following formula:

$$\text{PRIMARY STRESS LEVEL (PSL)} = (\text{Vel SL} + \text{Vol SL} + \text{W SL}) / 3$$

Table 1. Primary Stress Level (SL) Factors (Columns 1-3)

Column 1: Velocity Stress Level (Vel SL)	Posted Vehicle Speed Limit in Miles Per Hour	Column 2: Volume Stress Level (Vol SL)	Peak Vehicles per Hour in the Curb Lane (PV/HCL)	Column 3: Width Stress Level (W SL)	Curb Lane Width Feet
1	1-25	1	1-50	1	15'
2	26-34	2	51-200	2	14'
3	35-39	3	201-325	3	13'
4	40-44	4	326-449	4	12'
5	45+	5	450+	5	11'

Table 2. BICYCLE LEVEL OF SERVICE (BLOS) INDEX
(Reference the Stress Level (SL) for each road segment to the table below.)

<u>SL</u>	<u>BLOS</u>	<u>Traffic Characteristics</u>
1.0-1.49	A	Free traffic flow with bicyclists virtually unaffected by the presence of other types of vehicles in traffic.
1.50-2.49	B	Stable flow with a high degree of freedom for bicycle operation but with some influence from other vehicles. May have some on-street parking.
2.50-3.49	C	Restricted flow which remains stable but with significant interaction between bicyclists and motorists. May have sporadic on-street parking and a moderate level of mid-block commercial driveways.
3.50-4.49	D	High speed, high density flow in which freedom to maneuver is severely restricted and congestion is noticeable, although flow is stable. Interaction at intersections is unfavorable. Trucks, street parking and commercial driveways may be common.
4.50+	F	High speed flow with traffic volume at capacity or exceeding capacity with multiple conflicts at intersections. There may be frequent trucks, on-street parking and commercial driveways.

SECONDARY STRESS LEVEL (SL) FACTORS

Secondary Stress Level Factors were not evaluated as part of this master planning process. These should be incorporated as circumstances warrant prior to bike route implementation. If applicable, add these Secondary Stress Factors (Tables 3, 4 and 5) to the Primary Stress Level total determined above to establish the final SL for each given road segment. Reference this resulting SL number to the **BLOS Index** (Table 2).

Table 3.

FREQUENCY OF COMMERCIAL DRIVEWAYS (esp. those considered "common" e.g. shopping centers)	
Commercial Driveways Per Mile	Add Stress Level Factor
30-39	+0.1
40-49	+0.2
50+	+0.4

Table 4.

LEVELS OF TRUCK / BUS TRAFFIC (as percentage of overall traffic)	
Truck / Bus Traffic	Add Stress Level Factor
10%-12%	+0.1
12%-15%	+0.2
15%+	+0.4

Table 5.

ON-STREET PARKING (frequency of turnover - if present)	
Parking Turnover	Add Stress Level Factor
10-14 per hour	+0.1
15-19 per hour	+0.2
20+ per hour	+0.4

APPENDIX D. ON-STREET SYSTEM - BLOS ANALYSIS & MAP

D 1. <i>Highland Village BLOS Analysis (Preliminary) – 2003</i> Excel spreadsheet	1-6
D 2. <i>Short Term/Low Cost On-Street Elements – 2003</i> Excel spreadsheet	1-4
D 3. <i>Long Term/Infrastructure On-Street Elements – 2003</i> Excel spreadsheet	9-11
D 4. On-Street Bicycle Level of Service Evaluation Map	

Highland Village Trail Plan - BLOS Analysis (Preliminary)

updated using City 0502 traffic count data	Route Segment			Volume Stress Level (VolSL) is Peak Hr or 24-hr is (.1VPD/ #lanes) (If PV/HCL: 1-50=1, 51-200=2, 201-325=3, 326-449=4, 450+=5)					Velocity Stress Level 1-25=1, 26-34=2, 35-39=3, 40-44=4, 45+=5		Width Stress Level (Current Striping: M=median, S=paved shoulder) (PCLW = effective pavement width/#min std lanes) Width SL = 15'=1, 14'=2, 13'=3, 12'=4, 11'=5)				Preliminary Scores PSL=(VolSL+VelSL+WLS)/3 A=1.0-1.49, B=1.5-2.49, C=2.5-3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Roadway	Intersection West or North	Intersection East or South	Road Class A=Arterial PC=Primary Collector SC=Secondary Collector	Traffic Count Date	Traffic Count	Curr. # Thru Lanes	PV/HCL (Peak Vehicles per Hour in Curb Lane)	(#n)= VolSL	Velocity (posted speed limit) If none, 30mph	Velocity Stress Level (n)= VelSL	Effective Pavement Width	Current striping Configuration	(PCLW) Potential curb lane width	Width Stress Level (n)=WLS	Preliminary Stress Level (n)=PSL	Preliminary BLOS	Potential Actions	BLOS w/ recommendation
Chin Chapel Rd (Copper Canyon)	Orchid Hill	FM 407		TxDOT 99	1300	2	65	2	35	3	21	2	10.5	5	3.33	C		B
Chin Chapel Rd (Flower Mound)	Orchid Hill	FM 407		TxDOT 99	2430	2	122	2	35	3	21	2	10.5	5	3.33	C	15'cl or Shoulder w/other future project	B
Chin Chapel (Double Oak)	FM 407	Waketon		TxDOT 99	1380	2	69	2	35	3	21	2	10.5	5	3.33	C		B
FM 407	Chin Chapel	Morriss	A	TxDOT 99	11,333	2	567	5	45	5	40	S2S	20	1	3.67	D	lower sl 5 mph	C
FM 407	FM 2499	Morriss	A	TxDOT 99	15140	2	757	5	45	5	37	S2S	17.5	1	3.67	D	lower sl 5 mph	C
FM 407 (HV-Lewisville)	Morriss	Sellmeyer	A	est	21670	4	542	5	est	5	52	2M2	15	1	3.67	D	restripe to 11/15'; lower sl 5 mph, to 40 mph	C
FM 407 (Lewisville)	Sellmeyer	Garden Ridge	A	TxDOT 99	28200	4	705	5	40	4	52	2M2	15	1	3.33	C		C
Castlewood/ Northwood	Village Pwky	Highland Shores Bd	Local	est			199	2	np	2	36	2	18	1	1.67	B	ok	B
FM 2499 (Flower Mound)	FM 407	Waketon	TX FM	TxDOT 99	11070	2	554	5	40	4	44	S2S	22	1	3.33	C		
(FM 2499) Village Parkway	Highland Shores Bd	FM 407	new FM 2499	est	11070	2	554	5	40	4	23	2	11.5	5	4.67	F	15' cl w/ other future project	C
Morriss Rd (Flower Mound)	FM 407	Kirkpatrick		TxDOT 99	13910	4	348	4	est	5	48	2M2	14	2	3.67	D		
Highland Village Rd-NB	FM 407	Brazos	PC	City 2002 NB-A.M. Peak Hr	190	1	190	2	35	3	22	2	11	5	3.33	C		B
Highland Village Rd-SB	FM 407	Brazos	PC	City 2002 SB-A.M. Peak Hr	426	1	426	4	35	3	22	2	11	5	4.00	D		C

Highland Village Trail Plan - BLOS Analysis (Preliminary)

updated using City 0502 traffic count data	Route Segment			Volume Stress Level (VolSL) is Peak Hr or 24-hr is (.1VPD/ #lanes) (If PV/HCL: 1-50=1, 51-200=2, 201-325=3, 326-449=4, 450+=5)					Velocity Stress Level 1-25=1, 26-34=2, 35-39=3, 40-44=4, 45+=5		Width Stress Level (Current Striping: M=median, S=paved shoulder) (PCLW = effective pavement width/#min std lanes) Width SL = 15'=1, 14'=2, 13'=3, 12'=4, 11'=5)				Preliminary Scores PSL=(VolSL+VelSL+WLSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5-3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Roadway	Intersection West or North	Intersection East or South	Road Class A=Arterial PC=Primary Collector SC=Secondary Collector	Traffic Count Date	Traffic Count	Curr. # Thru Lanes	PV/HCL (Peak Vehicles per Hour in Curb Lane)	(#n)= VolSL	Velocity (posted speed limit) If none, 30mph	Velocity Stress Level (n)= VelSL	Effective Pavement Width	Current striping Configuration	(PCLW) Potential curb lane width	Width Stress Level (n)=WLSL	Preliminary Stress Level (n)=PSL	Preliminary BLOS	Potential Actions	BLOS w/ recommendation
Highland Village Rd-NB	FM 407	Brazos	PC	City 2002 NB-P.M. Peak Hr	373	1	373	4	35	3	22	2	11	5	4.00	D	Widened with 14' 15' cl, consider pavement bike arrow, traffic calming and lower sl to 30mph. Segment from RR to Brazos is included w/1st Reconstruction Bond Group	C
Highland Village Rd-SB	FM 407	Brazos	PC	City 2002 SB-P.M. Peak Hr	329	1	329	4	35	3	22	2	11	5	4.00	D		C
Highland Village Rd	no. of Brazos	Sellmeyer	PC	TxDOT 99	4680	2	234	3	35	3	22	2	11	5	3.67	D		B
Highland Village Rd	Brazos	e. of Sellmeyer	PC	TxDOT 99	4190	2	210	3	35	3	22	2	11	5	3.67	D		B
Highland Village Rd	Sellmeyer	IH 35	PC	City 2002 EB-A.M. Peak Hr	436	1	436	3	35	3	26	2	13	3	3.00	C		B
Highland Village Rd	Sellmeyer	IH 35	PC	City 2002 WB-A.M. Peak Hr	177	1	177	2	35	3	26	2	13	3	2.67	C		B
Highland Village Rd	Sellmeyer	IH 35	PC	City 2002 EB-P.M. Peak Hr	239	1	239	3	35	3	26	2	13	3	3.00	C		B
Highland Village Rd	Sellmeyer	IH 35	PC	City 2002 WB-P.M. Peak Hr	322	1	322	3	35	3	26	2	13	3	3.00	C	B	
Willow Creek Estates	Highland Village Rd	Medina	local	est	est	2	199	2	30	2	32	2	16	1	1.67	B	ok - in Second Reconstruction Bond Group	B
Eagle's Nest (Lewisville)	so. of Brazos	Sierra		est		2	49	1	25	1	26	2	13	3	1.67	B		B
Hillside/Lakeside	Highland Shores Bd	Highland Shores Bd	local	est		2	199	2	np	2	31	2	15.5	1	1.67	B	ok	B
Medina	Brazos	Sellmeyer	local	est		2	199	2	np	2	22	2	11	5	3.00	C	widen to 14' cl prior to signing	B

Highland Village Trail Plan - BLOS Analysis (Preliminary)

updated using City 0502 traffic count data	Route Segment			Volume Stress Level (VolSL) is Peak Hr or 24-hr is (.1VPD/ #lanes) (If PV/HCL: 1-50=1, 51-200=2, 201-325=3, 326-449=4, 450+=5)					Velocity Stress Level 1-25=1, 26-34=2, 35-39=3, 40-44=4, 45+=5		Width Stress Level (Current Striping: M=median, S=paved shoulder) (PCLW = effective pavement width/#min std lanes) Width SL = 15'=1, 14'=2, 13'=3, 12'=4, 11'=5)				Preliminary Scores PSL=(VolSL+VelSL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5-3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Roadway	Intersection West or North	Intersection East or South	Road Class A=Arterial PC=Primary Collector SC=Secondary Collector	Traffic Count Date	Traffic Count	Curr. # Thru Lanes	PV/HCL (Peak Vehicles per Hour in Curb Lane)	(#n)= VolSL	Velocity (posted speed limit) If none, 30mph	Velocity Stress Level (n)= VelSL	Effective Pavement Width	Current striping Configuration	(PCLW) Potential curb lane width	Width Stress Level (n)=W/SL	Preliminary Stress Level (n)=PSL	Preliminary BLOS	Potential Actions	BLOS w/ recommendation
Sellmeyer	Highland Village Rd	Foggy Glen	SC	City 2002 NB - A.M. Peak Hr	16	1	16	1	np	2	21.5	2	10.75	5	2.67	C	widen to 14' cl prior to signing; segment is in Second Reconstruction Bond Group	B
Sellmeyer	Highland Village Rd	Foggy Glen	SC	City 2002 SB - A.M. Peak Hr	23	1	23	1	np	2	21.5	2	10.75	5	2.67	C		B
Sellmeyer	Highland Village Rd	Foggy Glen	SC	City 2002 NB - P.M. Peak Hr	43	1	43	1	np	2	21.5	2	10.75	5	2.67	C		B
Sellmeyer	Highland Village Rd	Foggy Glen	SC	City 2002 SB - P.M. Peak Hr	32	1	32	1	np	2	21.5	2	10.75	5	2.67	C		B
Sellmeyer	Foggy Glen	Double Tree	SC	est (TxDOT 99)	3450	2	173	2	np	2	24.5	2	12.25	4	2.67	C		B
Sellmeyer	Double Tree	Brazos	SC	est (TxDOT 99)	3450	2	173	2	np	2	36	2	18	1	1.67	B	ok	B
Sellmeyer	so of Brazos	FM 407	SC	City 2002 NB - A.M. Peak Hr	100	1	100	2	np	2	36	2	18	1	1.67	B	ok	B
Sellmeyer	so of Brazos	FM 407	SC	City 2002 SB - A.M. Peak Hr	235	1	235	3	np	2	36	2	18	1	2.00	B	ok	B
Sellmeyer	so of Brazos	FM 407	SC	City 2002 NB - P.M. Peak Hr	284	1	284	3	np	2	36	2	18	1	2.00	B	ok	B
Sellmeyer	so of Brazos	FM 407	SC	City 2002 SB - P.M. Peak Hr	183	1	183	2	np	2	36	2	18	1	1.67	B	ok	B
Highland Shores Bd	(FM 2499) Village Parkway	Highland Village Rd	SC	City 2002 EB - A.M. Peak Hr	104	2	52	2	30	2	42	2M2	11	5	3.00	C	widen to 14' cl prior to signing; Section from FM 2499 to 11th side	B
Highland Shores Bd	(FM 2499) Village Parkway	Highland Village Rd	SC	City 2002 WB - A.M. Peak Hr	282	2	141	2	30	2	42	2M2	11	5	3.00	C		B

Highland Village Trail Plan - BLOS Analysis (Preliminary)

updated using City 0502 traffic count data	Route Segment			Volume Stress Level (VolSL) is Peak Hr or 24-hr is (.1VPD/ #lanes) (If PV/HCL: 1-50=1, 51-200=2, 201-325=3, 326-449=4, 450+=5)					Velocity Stress Level 1-25=1, 26-34=2, 35-39=3, 40-44=4, 45+=5		Width Stress Level (Current Striping: M=median, S=paved shoulder) (PCLW = effective pavement width/#min std lanes) Width SL = 15'=1, 14'=2, 13'=3, 12'=4, 11'=5)				Preliminary Scores PSL=(VolSL+VelSL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5-3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Roadway	Intersection West or North	Intersection East or South	Road Class A=Arterial PC=Primary Collector SC=Secondary Collector	Traffic Count Date	Traffic Count	Curr. # Thru Lanes	PV/HCL (Peak Vehicles per Hour in Curb Lane)	(#n)= VolSL	Velocity (posted speed limit) If none, 30mph	Velocity Stress Level (n)= VelSL	Effective Pavement Width	Current striping Configuration	(PCLW) Potential curb lane width	Width Stress Level (n)=W/SL	Preliminary Stress Level (n)=PSL	Preliminary BLOS	Potential Actions	BLOS w/ recommendation
Highland Shores Bd	(FM 2499) Village Parkway	Highland Village Rd	SC	City 2002 EB - P.M. Peak Hr	204	2	102	2	30	2	42	2M2	11	5	3.00	C	is in 1st Reconstruction Bond Group.	B
Highland Shores Bd	(FM 2499) Village Parkway	Highland Village Rd	SC	City 2002 WB - P.M. Peak Hr	169	2	85	2	30	2	42	2M2	11	5	3.00	C		B
Brazos	Highland Village Rd	Medina	PC	City 2002 EB - A.M. Peak Hr	147	2	74	2	30	2	42	2M2	10.5	5	3.00	C	consider restriping as 2 lane road	B
Brazos	Highland Village Rd	Medina	PC	City 2002 WB - A.M. Peak Hr	144	2	72	2	30	2	42	2M2	10.5	5	3.00	C		B
Brazos	Highland Village Rd	Medina	PC	City 2002 EB - P.M. Peak Hr	226	2	113	2	30	2	42	2M2	10.5	5	3.00	C		B
Brazos	Highland Village Rd	Medina	PC	City 2002 WB - P.M. Peak Hr	198	2	99	2	30	2	42	2M2	10.5	5	3.00	C		B
Brazos	Medina	Highland Hills	PC	City 2002 EB - A.M. Peak Hr	285	1	285	3	30	2	36	2	18	1	2.00	B	currently in design for 2M2, consider keeping as 1M1, included in 2nd Reconstruction Bond Group	B
Brazos	Medina	Highland Hills	PC	City 2002 WB - A.M. Peak Hr	112	1	112	2	30	2	36	2	18	1	1.67	B		B
Brazos	Medina	Highland Hills	PC	City 2002 EB - P.M. Peak Hr	235	1	235	3	30	2	36	2	18	1	2.00	B		B
Brazos	Medina	Highland Hills	PC	City 2002 WB - P.M. Peak Hr	382	1	382	4	30	2	36	2	18	1	2.33	B		B

Highland Village Trail Plan - BLOS Analysis (Preliminary)																		
updated using City 0502 traffic count data	Route Segment			Volume Stress Level (VolSL) is Peak Hr or 24-hr is (.1VPD/ #lanes) (If PV/HCL: 1-50=1, 51-200=2, 201-325=3, 326-449=4, 450+=5)					Velocity Stress Level 1-25=1, 26-34=2, 35-39=3, 40-44=4, 45+=5		Width Stress Level (Current Striping: M=median, S=paved shoulder) (PCLW = effective pavement width/#min std lanes) Width SL = 15'=1, 14'=2, 13'=3, 12'=4, 11'=5)				Preliminary Scores PSL=(VolSL+VelSL+WLSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5-3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Roadway	Intersection West or North	Intersection East or South	Road Class A=Arterial PC=Primary Collector SC=Secondary Collector	Traffic Count Date	Traffic Count	Curr. # Thru Lanes	PV/HCL (Peak Vehicles per Hour in Curb Lane)	(#n)= VolSL	Velocity (posted speed limit) If none, 30mph	Velocity Stress Level (n)= VelSL	Effective Pavement Width	Current striping Configuration	(PCLW) Potential curb lane width	Width Stress Level (n)=WLSL	Preliminary Stress Level (n)=PSL	Preliminary BLOS	Potential Actions	BLOS w/ recommendation
Brazos	Highland Hills	Highland Village city limit	PC	TxDOT 99	3800	2	190	2	30	2	36	2	18	1	1.67	B		B
Garden Ridge (Lewisville)	Brazos	FM 407		TxDOT 99	6950	4	174	2	35	3	46	2M2	13	3	2.67	C	work with Lewisville to restripe to 10/13'; lower sl 5 mph	B
Briarhill	Highland Shores Bd	RR	SC	City 2002 NB - A.M. Peak Hr	306	1	306	3	np	2	35	2	17.5	1	2.00	B	ok	B
Briarhill	Highland Shores Bd	RR	SC	City 2002 SB - A.M. Peak Hr	282	1	282	3	np	2	35	2	17.5	1	2.00	B	ok	B
Briarhill	Highland Shores Bd	RR	SC	City 2002 NB - P.M. Peak Hr	473	1	473	5	np	2	35	2	17.5	1	2.67	C	Should be ok if 20 mph school zone speed limit is enforced	B
Briarhill	Highland Shores Bd	RR	SC	City 2002 SB - P.M. Peak Hr	280	1	280	3	np	2	35	2	17.5	1	2.00	B	ok	B
Briarhill	RR	Foxmoor	SC	est		2	324	3	np	2	31	2	15.5	1	2.00	B	ok	B
Briarhill	Foxmoor	FM 407	SC	est		4	162	2	np	2	46	2M2	12	4	2.67	C	restripe to 10/13'	B
Double Tree	Sellmeyer	Highland Village Rd	SC	est				3	np	2	36	2	18	1	2.00	B	ok - is included in 1st Reconstruction Bond Group	B

Highland Village Trail Plan - BLOS Analysis (Preliminary)

updated using City 0502 traffic count data	Route Segment			Volume Stress Level (VolSL) is Peak Hr or 24-hr is (.1VPD/ #lanes) (If PV/HCL: 1-50=1, 51-200=2, 201-325=3, 326-449=4, 450+=5)					Velocity Stress Level 1-25=1, 26-34=2, 35-39=3, 40-44=4, 45+=5		Width Stress Level (Current Striping: M=median, S=paved shoulder) (PCLW = effective pavement width/#min std lanes) Width SL = 15'=1, 14'=2, 13'=3, 12'=4, 11'=5)				Preliminary Scores PSL=(VolSL+VelSL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5-3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Tartan Trail	FM 407	Briarhill Bd	SC	est	3450	2	173	2	est	2	27	2	13.5	3	2.33	B	ok	B
Silverthorne Trail	Shetland	Tartan	local	est				2	np	2	36	2	18	1	1.67	B	ok	B

Highland Village Trail Plan - Short Term/Low Cost On-Street Elements

updated -October 7, 2002 w/ City 0502 traffic count data	Route Segment			Volume Stress Level (VoISL) is Peak Hr or	Velocity Stress Level 1-25=1, 26- 34=2, 35-	Width Stress Level (Current Striping:	Preliminary Scores PSL=(VoISL+VeISL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5- 3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Roadway	Intersection West or North	Intersection East or South	Road Class A=Arterial PC=Primary Collector SC= Secondary Collector	(#n)= VoISL	Velocity Stress Level (n)= VeISL	Width Stress Level (n)=W/SL	Preliminary Stress Level (n)=PSL	Preliminary BLOS	Potential Actions	BLOS w/ recommen- dation
FM 407	Chin Chapel	Morriss	A	5	5	1	3.67	D	lower sl 5 mph	C
FM 407	FM 2499	Morriss	A	5	5	1	3.67	D	lower sl 5 mph	C
Castlewood/ Northwood	Village Pwky	Highland Shores Bd	Local	2	2	1	1.67	B	ok	B
Willow Creek Estates	Highland Village Rd	Medina	local	2	2	1	1.67	B	ok - in Second Reconstruction Bond Group	Bud to ck 100702
Hillside/Lakeside	Highland Shores Bd	Highland Shores Bd	local	2	2	1	1.67	B	ok	B
Sellmeyer	Double Tree	Brazos	SC	2	2	1	1.67	B	ok	B
Sellmeyer	so of Brazos	FM 407	SC	2	2	1	1.67	B	ok	B

updated -October 7, 2002 w/ City 0502 traffic count data	Route Segment			Volume Stress Level (VolSL) is Peak Hr or	Velocity Stress Level 1-25=1, 26- 34=2, 35-	Width Stress Level (Current Striping:	Preliminary Scores PSL=(VolSL+VelSL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5- 3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Sellmeyer	so of Brazos	FM 407	SC	3	2	1	2.00	B	ok	B
Sellmeyer	so of Brazos	FM 407	SC	3	2	1	2.00	B	ok	B
Sellmeyer	so of Brazos	FM 407	SC	2	2	1	1.67	B	ok	B
Brazos	Highland Village Rd	Medina	PC	2	2	5	3.00	C	consider restriping as 2 lane road	B
Brazos	Highland Village Rd	Medina	PC	2	2	5	3.00	C		B
Brazos	Highland Village Rd	Medina	PC	2	2	5	3.00	C		B
Brazos	Highland Village Rd	Medina	PC	2	2	5	3.00	C		B
Brazos	Medina	Highland Hills	PC	3	2	1	2.00	B		B
Brazos	Medina	Highland Hills	PC	2	2	1	1.67	B		B

updated -October 7, 2002 w/ City 0502 traffic count data	Route Segment			Volume Stress Level (VoISL) is Peak Hr or	Velocity Stress Level 1-25=1, 26- 34=2, 35-	Width Stress Level (Current Striping:	Preliminary Scores PSL=(VoISL+VelSL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5- 3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Brazos	Medina	Highland Hills	PC	3	2	1	2.00	B	currently in design for 2M2, consider keeping as 1M1, included in 2nd Reconstruction Bond Group	B
Brazos	Medina	Highland Hills	PC	4	2	1	2.33	B		B
Brazos	Highland Hills	Highland Village city limit	PC	2	2	1	1.67	B		B
Briarhill	Highland Shores Bd	RR	SC	3	2	1	2.00	B	ok	B
Briarhill	Highland Shores Bd	RR	SC	3	2	1	2.00	B	ok	B
Briarhill	Highland Shores Bd	RR	SC	5	2	1	2.67	C	Should be ok if 20 mph school zone speed limit is enforced	B
Briarhill	Highland Shores Bd	RR	SC	3	2	1	2.00	B	ok	B
Briarhill	RR	Foxmoor	SC	3	2	1	2.00	B	ok	B
Briarhill	Foxmoor	FM 407	SC	2	2	4	2.67	C	restripe to 10/13'	B

updated -October 7, 2002 w/ City 0502 traffic count data	Route Segment			Volume Stress Level (VoISL) is Peak Hr or	Velocity Stress Level 1-25=1, 26- 34=2, 35-	Width Stress Level (Current Striping:	Preliminary Scores $PSL=(VoISL+VelSL+WSL)/3$ A=1.0-1.49, B=1.5-2.49, C=2.5- 3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Double Tree	Sellmeyer	Highland Village Rd	SC	3	2	1	2.00	B	ok - is included in 1st Reconstruction Bond Group	B
Tartan Trail	FM 407	Briarhill Bd	SC	2	2	3	2.33	B	ok	B
Silverthorne Trail	Shetland	Tartan	local	2	2	1	1.67	B	ok	B

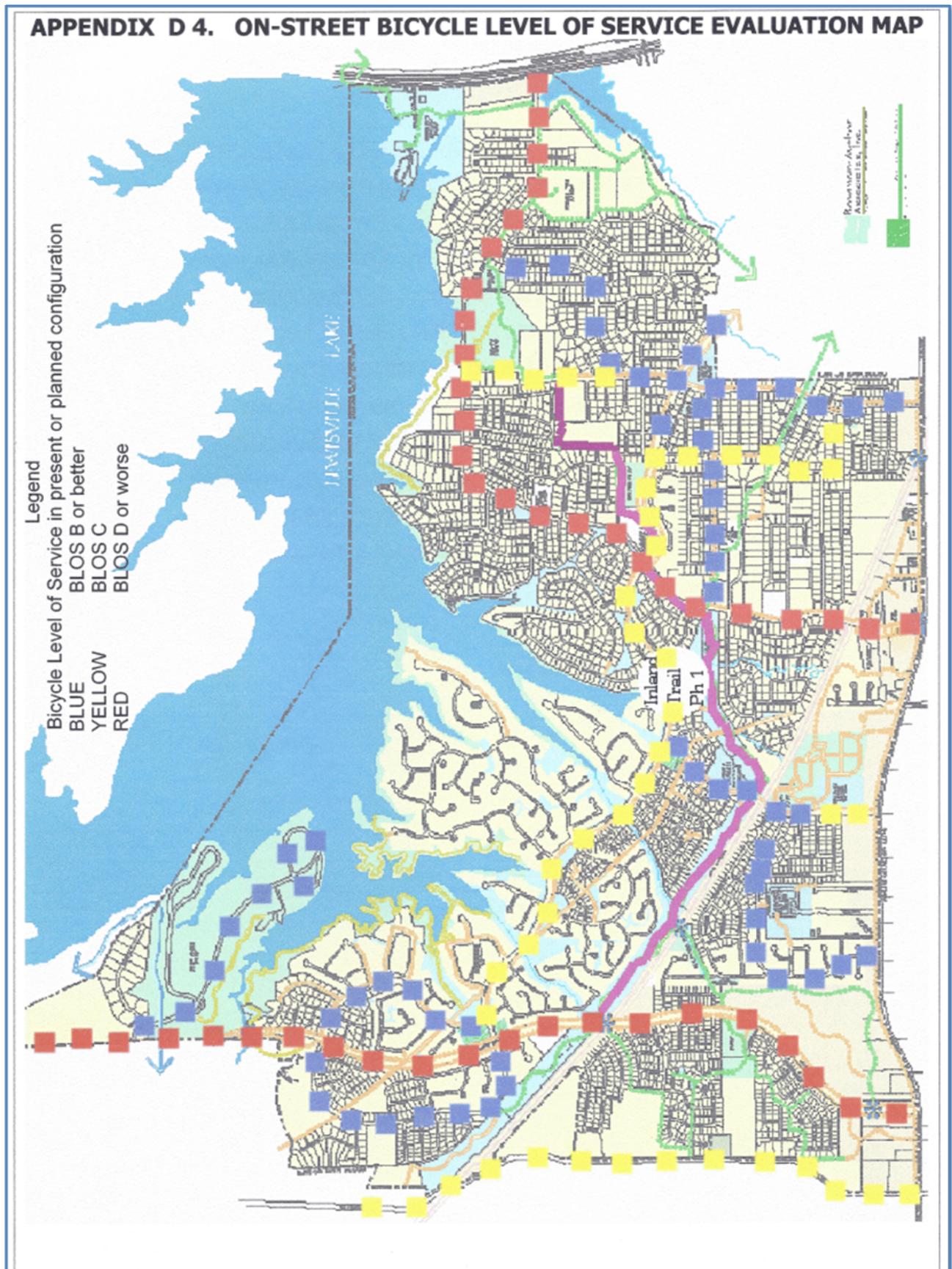
Highland Village Trail Plan - Long Term/Infrastructure On-Street Elements

updated -October 7, 2002 w/ City 0502 traffic count data				Route Segment			Volume Stress Level (VoISL) is Peak Hr or	Velocity Stress Level 1-25=1, 26- 34=2, 35-	Width Stress Level (Current Striping:	Preliminary Scores PSL=(VoISL+VeISL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5- 3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Roadway	Intersection West or North	Intersection East or South	Road Class A=Arterial PC=Primary Collector SC= Secondary Collector	(#n)= VoISL	Velocity Stress Level (n)= VeISL	Width Stress Level (n)=W/SL	Preliminary Stress Level (n)=PSL	Preliminary BLOS	Potential Actions	BLOS w/ recommen- dation			
(FM 2499) Village Parkway	Highland Shores Bd	FM 407	new FM 2499	5	4	5	4.67	F	15' cl w/other future project	C			
Highland Village Rd-NB	FM 407	Brazos	PC	2	3	5	3.33	C	Widened with 14- 15' cl, consider pavement bike arrow, traffic calming and lower sl to 30mph. Segment from RR to Brazos is included w/1st Reconstruction	B			
Highland Village Rd-SB	FM 407	Brazos	PC	4	3	5	4.00	D		C			
Highland Village Rd-NB	FM 407	Brazos	PC	4	3	5	4.00	D		C			
Highland Village Rd-SB	FM 407	Brazos	PC	4	3	5	4.00	D		C			
Highland Village Rd	no. of Brazos	Sellmeyer	PC	3	3	5	3.67	D		B			
Highland Village Rd	Brazos	e. of Sellmeyer	PC	3	3	5	3.67	D		B			
Highland Village Rd	Sellmeyer	IH 35	PC	3	3	3	3.00	C		B			

updated -October 7, 2002 w/ City 0502 traffic count data	Route Segment			Volume Stress Level (VolSL) is Peak Hr or	Velocity Stress Level 1-25=1, 26- 34=2, 35-	Width Stress Level (Current Striping:	Preliminary Scores PSL=(VolSL+VelSL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5- 3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Highland Village Rd	Sellmeyer	IH 35	PC	2	3	3	2.67	C	Bond Group	B
Highland Village Rd	Sellmeyer	IH 35	PC	3	3	3	3.00	C		B
Highland Village Rd	Sellmeyer	IH 35	PC	3	3	3	3.00	C		B
Medina	Brazos	Sellmeyer	local	2	2	5	3.00	C	widen to 14' cl prior to signing	B
Sellmeyer	Highland Village Rd	Foggy Glen	SC	1	2	5	2.67	C	widen to 14' cl prior to signing; segment is in Second Reconstruction Bond Group	B
Sellmeyer	Highland Village Rd	Foggy Glen	SC	1	2	5	2.67	C		B
Sellmeyer	Highland Village Rd	Foggy Glen	SC	1	2	5	2.67	C		B
Sellmeyer	Highland Village Rd	Foggy Glen	SC	1	2	5	2.67	C		B
Sellmeyer	Foggy Glen	Double Tree	SC	2	2	4	2.67	C		B

updated -October 7, 2002 w/ City 0502 traffic count data	Route Segment			Volume Stress Level (VoISL) is Peak Hr or	Velocity Stress Level 1-25=1, 26- 34=2, 35-	Width Stress Level (Current Striping:	Preliminary Scores PSL=(VoISL+VeISL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5- 3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Highland Shores Bd	(FM 2499) Village Parkway	Highland Village Rd	SC	2	2	5	3.00	C	widen to 14' cl prior to signing; Section from FM 2499 to Hillside is in 1st Reconstruction Bond Group.	B
Highland Shores Bd	(FM 2499) Village Parkway	Highland Village Rd	SC	2	2	5	3.00	C		B
Highland Shores Bd	(FM 2499) Village Parkway	Highland Village Rd	SC	2	2	5	3.00	C		B
Highland Shores Bd	(FM 2499) Village Parkway	Highland Village Rd	SC	2	2	5	3.00	C		B
Brazos	Highland Village Rd	Medina	PC	2	2	5	3.00	C	consider restriping as 2 lane road	B
Brazos	Highland Village Rd	Medina	PC	2	2	5	3.00	C		B
Brazos	Highland Village Rd	Medina	PC	2	2	5	3.00	C		B
Brazos	Highland Village Rd	Medina	PC	2	2	5	3.00	C		B
Brazos	Medina	Highland Hills	PC	3	2	1	2.00	B		B

updated -October 7, 2002 w/ City 0502 traffic count data	Route Segment			Volume Stress Level (VoISL) is Peak Hr or	Velocity Stress Level 1-25=1, 26- 34=2, 35-	Width Stress Level (Current Striping:	Preliminary Scores PSL=(VoISL+VelSL+WSL) /3 A=1.0-1.49, B=1.5-2.49, C=2.5- 3.49, D=3.5-4.49, F=4.5+		Potential Actions for achieving bicycle accessibility	
Brazos	Medina	Highland Hills	PC	2	2	1	1.67	B	currently in design for 2M2, consider keeping as 1M1, included in 2nd Reconstruction Bond Group	B
Brazos	Medina	Highland Hills	PC	3	2	1	2.00	B		B
Brazos	Medina	Highland Hills	PC	4	2	1	2.33	B		B
Brazos	Highland Hills	Highland Village city limit	PC	2	2	1	1.67	B		B



APPENDIX E - Recommended System Improvements

COLOR KEY TO FACILITY TYPE:

MULTIUSE TRAIL	ENHANCED SIDEWALK	SIDEWALK	NEW IN 2011 UPDATE
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Key to abbreviations: MUT=Multiuse Trail; SRTS=Safe Routes To Schools funding; DCTA=Denton County Transit Authority; TXDOT=Tx Dept of Transportation

Current Programmed Projects 2011									
Project Description		From	To	Length in LF	Type	Estimated Capital Budget	Funding Source	Notes	
CURRENTLY PROGRAMMED	Prog	Castlewood Trail	FM 2499 Ped. Tunnel	Castlewood HOA Enhanced Sidewalk	2,750	10' wide Multiuse Trail	\$83,850 \$833,380	4 B Funds	Eng. + Constr. - part of Inland Trail spine
	Prog	Highland Village Road Phase II - A	City Hall on Highland Village Rd.	948 Service Ctr. on Highland Village Road	1,272	5' Sidewalk	\$28,200 \$282,114	4 B Funds	Eng. + Constr. - connects city facilities, fills in missing portion of sidewalk
	Prog	Highland Village Road Phase II - B	Lions Club Park	Doubletree Ranch Park entry drive	1,911	10' Multiuse Trail	\$25,714 \$470,574	4 B Funds	Eng./ Constr. - Includes enhanced crosswalk at Oak St.
	Prog	FM 2499 Sidewalk	E. side of FM2499 Market Trail	City Trail	2,330	5' Sidewalk	\$12,500 \$117,678	4 B Funds	Eng./ Constr. - connects spine trails; provides safe crossing of KCS RR
	Prog	Marauder Park Lake Trail	St. James Ct. North (end of rd.)	Lake front	306	8' wide Enhanced Sidewalk	\$5,000 \$58,178	4 B Funds	Eng./ Constr. - provides access to lake front; link to nature shoreline trails
	Prog	Crosswalk at FM 2499	Castlewood HOA Sidewalk/Trail	Across FM 2499 to Highland Shores HOA Sidewalk/Trail	90	5' Sidewalk	\$3,800 \$14,620	4B Funds	Eng./ Constr. - links Castlewood HOA sidewalk/trail to FM 2499 Ped. Xing to Highland Shores HOA sidewalk/ trail; needs enhanced crosswalk
	Prog	Highland Village Road Sidewalk/KCS RR Crossing	Sidewalk from the shopping area	Over KCS RR connecting to existing sidewalk	219	5' Sidewalk	\$7,200 \$48,000	4 B Funds	Eng./ Constr. - Links existing sidewalks; provides safe RR Xing; links to commercial area
	Prog	Market Trail / Village Park Connection	Connects on W. side of park to existing Village Park Trail	Connects to hammerhead at Spring Oaks Dr.	115	8' Enhanced Sidewalk	\$5,200	4 B Funds	Construction budget only , connects missing links of Village Park Trail
TOTALS: CURRENTLY PROGRAMMED PROJECTS				8,993	LF or 1.70 mi.	\$1,996,008	(according to data provided by City)		
PRIORITIZED GROUPINGS FOR ALL PLANNED TRAILS NOT YET PROGRAMMED									
Priority 1 Group									
priority Group	Project ID	Project Description	From	To	Length in LF	Type	Estimated* Capital Budget (Thousands)	Funding Source	Notes
1	29	Doubletree Loop Trails	multiple loops	within Doubletree Park	5,460	10' Multiuse Trail	\$1,239	4B Funds	alignments subject to pending park plan
1	205a	Multiuse Trail to Highland Village/Lewisville Lake DCTA A-Train station	Trails within Doubletree Ranch Park	Utility access road leading to Garden Ridge Blvd sidewalks	613	12' Multiuse Trail	\$163	4B Funds	plus 205b Boardwalk connector
1	205b	A-Train Station boardwalk connector	west shoreline of Copperas Branch Lake	east shoreline of Copperas Branch Lake	351	Boardwalk structure	\$878	4B Funds	connects segments in 205a above
1	17a	Highland Shores Blvd sidewalk to City Hall	Remington Drive East	Highland Village Rd	679	8' Enhanced Sidewalk	\$106	4B Funds	connects Highland Shores pathways to City Hall
1	01b	Brazos Park south edge Multiuse Trail	City Hall amenity station at PD drive	SE corner of Brazos Park	1,071	10' Multiuse Trail	\$243	4B Funds	Upgrades the planned enhanced sidewalk within Brazos Park to multiuse trail
1	01d	and Brazos Blvd Sidewalk connector	SE corner Brazos Park	west side of Medina Drive	128	8' Enh. Sidewalk	\$20	4B Funds, SRTS	connects the missing sidewalk segment to the east to Medina.
1	220	west side Village Parkway sidewalks	KCS RR corridor	Fairland Drive	2,075	6' Sidewalk	\$332	TXDOT, 4B Funds	partial segment of contiguous sidewalks along west side of FM 2499
1	221	east side Village Parkway sidewalks with ret. wall adj.	Highland Shores Blvd	KCS RR corridor	1,723	5' Sidewalk	\$424	TXDOT, 4B Funds	partial segment of contiguous sidewalks along east side of FM 2499 - addresses problem area

Priority 1 Group - continued									
priority Group	Project ID	Project Description	From	To	Length in LF	Type	Estimated* Capital Budget (Thousands)	Funding Source	Notes
1	223	east side Village Parkway sidewalks with ret. wall adj.	Northwood Drive at east side of FM 2499	Highland Shores Blvd	3,079	5' Sidewalk	\$757	TXDOT, 4B Funds	partial segment of contiguous sidewalks along E side of FM 2499 - addresses problem area
1	225	east side Village Parkway enhanced sidewalk to Pilot Knoll Park	Castlewood/ Northwood at FM 2499	parking lot near entrance gate at Pilot Knoll Park	3,171	8' Enhanced Sidewalk	\$780	TXDOT, 4B Funds	completes contiguous sidewalks along W side of FM 2499 - may require bridge over drainageway - subject to USACE Approval
1	22a	Completes connection to sidewalks along FM 2499 and the crossing of KCS RR	Amhurst Drive	sidewalk along FM 2499	415	8' Enhanced Sidewalk	\$65	4B Funds	Addresses sidewalk connectivity from neighborhoods
1	22b	westside sidewalk across KCS RR ROW at FM 2499 - Village Parkway	Southside of ROW	Northside of ROW	211	6' Sidewalk	\$25	TXDOT, 4B Funds	completes sidewalks along west side of FM 2499
1	07a	Heritage ES east entry sidewalk school path	sidewalk within Heritage ES campus	Strathmoore Drive at Shanon Lane stub-out	397	6' Sidewalk	\$71	LISD, 4B Funds, SRTS	partnership with LISD for short connection for residents to Elementary School
1	08	Willow Creek Estates Drive and Medina Drive sidewalks	Highland Village Rd.	Victoria Trail at Victoria Park	3,147	4' Sidewalk	\$529	4B Funds, SRTS	residential sidewalk connection to ES
1	20a	Unity Park East Trail to Central Creek greenway	East side of Unity Park	Highland Village Rd	1157	12' Multiuse Trail	\$308	4B Funds	was enhanced sidewalk - now MUT + #211 is extended to HV Rd
1	211	Unity Park East Trail extension	connection with Central Creek pathway	Highland Village Rd	803	12' Multiuse Trail	\$214	4B Funds	completes connection from Unity Park to Highland Village Rd
1	26	Highland Village Business Park sidewalk - west side	Unity Park East Trail at KCS RR ROW	FM 407	1,228	6' Sidewalk	\$251	4B Funds	along west side of Highland Village Road
1	45a	new park pathway at 707 Highland Village Road	Enhanced Sidewalk Loop within park	provides access to future shoreline overlook	1,530	8' Enhanced Sidewalk	\$315	4B Funds	north side of Highland Village Road
1	02a	Wichita Forest Multiuse Trail	Sellmeyer at Murray Park	Chisum Trail Rd at Lion's Park	2,543	10' Multiuse Trail	\$676	4B Funds	With development - a paved spine trail through forest, includes budget for Sellmeyer X-walk treatment to Murray Park
1	45b	Crosswalk to new park at 707 Highland Village Road	Sellmeyer at Highland Village Rd	Trailhead at new park at 707 Highland Village Rd	1	Crosswalk	\$75	4B Funds	with WF MUT #02a - activated warning signals and/or warning flasher at 40' crosswalk
1	208	Highland Village Rd sidewalk ext	Duvall Center driveway entrance	Wichita Forest at Sellmeyer Lane	3,247	5' Sidewalk	\$662	4B Funds	utilizes limited space along east/south side of roadway
1	209	northern Sellmeyer Lane sidewalk - east side	northwest corner of Wichita Forest property at Highland Village Road	Trail crosswalk at Murray Park	924	5' Sidewalk	\$188	4B Funds	with street project/ development - was planned as MUT in previous plan - resized to better accommodate physical conditions
1	01c	Turpin Park wheelchair-accessible ramps (ADA ramps)	at Glenmere	and at Camden	2	2 ADA Ramps	\$9	4B Funds	When requested - ADA access to current sidewalk within the park
1	03a	IT3 Victoria Trail in Victoria Park	Medina Drive	Sellmeyer Lane	1,070	10' Multiuse Trail	\$201	4B Funds	realignment from previous plan - same length
1	09c	IT5 - eastern Highland Village Rd	Doubletree Park entrance	Copperas Branch Court sidewalk	1,237	10' Multiuse Trail	\$412	4B Funds	with renovation of park as result of IH 35E project - remaining MUT section along HV Rd
1	10a	IT6 - Copperas Branch Park Multiuse Trail link	USACE swale at Highland Village Rd	Copperas Branch Park entry road	1,609	10' Multiuse Trail	\$331	TXDOT, 4B Funds	with renovation of park as result of IH 35E project + #10c bridge across swale - with IH 35E widening?
1	10c	pedestrian bridge for Enhanced Sidewalk leading to Copperas Branch Park	USACE swale north of Highland Village Rd	spans drainageway	82	8' wide bridge over drainage	\$74	TXDOT, 4B Funds	with renovation of park as result of IH 35E project - 8' wide pedestrian bridge
1	10d	Enhanced sidewalk to Copperas Branch Park	spans drainageway between Copperas Branch Court cul de sac	Copperas Branch Park entry road	114	8' Enhanced sidewalk	\$18	TXDOT, 4B Funds	with renovation of park as result of IH 35E project - 8' wide Enhanced Sidewalk
PRIORITY 1 PROJECT TOTALS:					26,850	LF or 6.97 mi.	\$5,936		

Priority 2 Group									
priority Group	Project ID	Project Description	From	To	Length in LF	Type	Estimated* Capital Budget (Thousands)	Funding Source	Notes
2	37	Village Park trail connector	Village Park Trail	sidewalk along FM 2499	78	6' Sidewalk	\$16	4B Funds	connects Village Parkway sidewalk to park loop trail
2	23c	Market District Sidwalk access along west side of FM 2499	Fairland Drive	Market District shopping center	2,726	6' Sidewalk	\$556	TXDOT, 4B Funds	completes westside sidewalks along Village Parkway
2	05a	Sellmeyer Lane northern sidewalk	new X-walk from Murray Park	Brazos Blvd at HV ES	2,186	4' Sidewalk	\$393	4B Funds, SRTS	along East side of Sellmeyer Lane
2	06	Sellmeyer Lane southern sidewalk	southern corner of HV ES campus	FM 407	3,824	4' Sidewalk	\$688	4B Funds, SRTS	along East side of Sellmeyer Lane
2	214	Barnett Blvd sidewalk - east side	FM 407	Heritage ES campus	1,235	Sidewalk	\$252	4B Funds, SRTS	provides connection from the District Trail along Barnett Blvd to Heritage ES campus and FM 407
2	212	Briarhill Blvd - west side sidewalk connection	Shannon Lane	The District Trail	421	4' Sidewalk	\$76	SRTS, 4B Funds	Connects Shanon Ln to The District Trail along Briarhill Blvd
2	213	northern Briarhill Blvd west side sidewalk connection	Rosedale Street	existing sidewalk south of KCS RR corridor	1,108	Sidewalk	\$226	4B Funds, SRTS	extends sidewalk connectivity along the west side of Briarhill Blvd
2	27a	Enhanced Sidewalk to Marauder Park	Northwood Drive at east side of FM 2499	Marauder Park on west side of bridge	1,158	8' Enhanced Sidewalk	\$220	TXDOT, 4B Funds	subject to erosion mitigation beneath TXDOT's bridge
2	31b	Silverthorne Park KCS RR pedestrian underpass	Silverthorne Park trail	City Trail north of RR ROW berm	400	12' Multiuse Trail Extension	\$1,040	4B Funds	subject to RR approval - min. 14' w x 8+ ' h opening + must accommodate low flows below trail tread, plus storm flows
2	217	Live Oak Lane connection sidewalk	Butterfield Stage	FM 2499/Village Parkway	313	5' Sidewalk	\$53	4B Funds	creates walkable connection between neighborhood and sidewalks along FM 2499
PRIORITY 2 PROJECT TOTALS:					10,645	LF or 2.53 mi.	\$2,949		
Priority 3 Group									
priority Group	Project ID	Project Description	From	To	Length in LF	Type	Estimated* Capital Budget (Thousands)	Funding Source	Notes
3	215	Barnett Blvd sidewalk - west side	Sidewalk surrounding the Rambling Oaks Courtyard property	Heritage ES campus	491	Sidewalk	\$100	4B Funds	completes connection from FM 407 along west side of Barnett Blvd to Heritage ES campus
3	13a	Eastern FM 407 retail sidewalk	KCS RR ROW	Eastern HV City Limit	1,074	min. 5' sidewalk	\$262	TXDOT, 4B Funds	RR crossing structure is separate item (13b)
3	13b	FM 2499 sidewalk/bridge structure	west side of KCS RR ROW	east side of KCS RR ROW	360	structure over drainage	\$180	TXDOT, 4B Funds	may require relocation of RR arms, or a structure around them
3	13c	FM 407 retail sidewalk	Highland Village Rd.	west side of KCS RR ROW	2,596	6' Sidewalk	\$530	TXDOT, 4B Funds	with ADA access - incorporate into landscape buffers
3	14a	FM 407 retail sidewalk	Briarhill Blvd	Highland Village Rd	3,086	6' Sidewalk	\$630	TXDOT, 4B Funds	requires pedestrian bridge at Central Creek
3	14b	Central Creek pedestrian bridge	west side of creekway	east side of creekway	100	8' wide Pedestrian bridge	\$90	TXDOT, 4B Funds	keep at grade to span minimum of 25-year flood event
3	16	FM 407 retail sidewalk	Tartan Trail	Briarhill Blvd	2,371	6' Sidewalk	\$484	4B Funds	with retail development
3	20b	Central Creek Greenwalk	Unity Park East Trail	FM 407 retail sidewalk	1,615	8' Enhanced Sidewalk	\$333	4B Funds	connects access trail to FM 407 retail area
3	216	northern Quail Cove Enhanced Sidewalk extension	North end of Quail Cove	Enhanced Sidewalk leading to Mulholland Street	909	8' Enhanced Sidewalk	\$143	4B Funds	creates connection between residences and shopping district to the south
3	41	Wichita Forest Multiuse Trail to shoreline overlook at 707 HV Rd	southern edge of Forest - at Lion's Park/Forest Trail	Crosswalk at Highland Village Road at Sellmeyer	1,730	10' Multiuse Trail	\$424	4B Funds	Paved spine trail through western edge of forest - subject to USACE Approval
3	91	southwestern Village District Trail extension	built section along northern edge	Barnett Blvd sidewalks	772	10' Multiuse Trail	\$175	4B Funds	with development - routing is subject to remaining buildout on adjacent parcels
3	92	Briarhill MS sidewalk connection along east side	southwest corner of Briarhill MS campus	FM 407 sidewalks	340	5' Sidewalk	\$69	4B Funds	completes sidewalks along east side of Briarhill Blvd.

3	201	Enhanced Sidewalk to Trinity Trails System - north side of HV Rd	Copperas Branch Court	future Trinity Trails System along east side of IH 35E	826	8' Enhanced Sidewalk	\$170	4B Funds	with project development, as IH 35E widening project proceeds
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Priority 3 Group - continued									
priority Group	Project ID	Project Description	From	To	Length in LF	Type	Estimated* Capital Budget (Thousands)	Funding Source	Notes
3	202	Enhanced Sidewalk to Trinity Trails System - south side of HV Rd	Copperas Branch Court	future Trinity Trails System along east side of IH 35E	911	8' Enhanced Sidewalk	\$188	4B Funds	with project development, as IH 35E widening project proceeds
3	210	Multiuse Trail along east side of Brazos Park	Penjay Lane trail entrance	Trail and sidewalk along southern edge of Brazos Park	548	10' Multiuse Trail	\$124	4B Funds	completes MUT loop within Brazos Park
3	222	west side Village Parkway sidewalks	Castlewood/ Highland Shores Blvd	KCS RR corridor	1,661	5' Sidewalk	\$249	TXDOT, 4B Funds	partial segment of contiguous sidewalks along west side of FM 2499
3	224	west side Village Parkway sidewalk	northern end of Castlewood/ Northwood at FM 2499	Highland Shores Blvd	3,118	6' Sidewalk	\$530 \$0	TXDOT, 4B Funds	partial segment of contiguous sidewalks along west side of FM 2499
3	227	Marauder Park sidewalk along north side of Castlewood	southwest corner of Marauder Park	intersection of Castlewood at FM 2499	301	Sidewalk	\$61	4B Funds	provides sidewalk connection out to sidewalks along FM 2499
3	40a	Copperas Branch Lake west shoreline trail	Highland Village Rd.	Doubletree Ranch Park boardwalk to Lewisville	2,089	10' Multiuse Trail	\$487	4B Funds	with development - - subject to USACE Approval
3	40b	Copperas Branch Lake west shoreline trail Bridge	spans drainageway out of Doubletree Ranch Park	north to south	172	12' pedestrian bridge	\$344	4B Funds	with development - completes connection into Doubletree Ranch Park
3	226	west side Village Parkway Enhanced Sidewalk	Orchid Hill Lane at FM 2499	Castlewood Blvd/ Northwood Drive	3,547	8' Enhanced Sidewalk	\$731	TXDOT, 4B Funds	final segment of contiguous sidewalks along west side of FM 2499
PRIORITY 3 PROJECT TOTALS:					22,318	LF or 5.66 mi.	\$4,642		
TOTALS FOR ALL PROJECTS NOT YET PROGRAMMED:					59,813	LF or 15.17mi.	\$13,526		

* These estimates of potential costs, rounded to the nearest thousands, were calculated based on recently estimated project costs provided by the City of Highland Village, web research and recent project experience by the consultant team.



0 250 500 1,000 1,500 2,000 Feet

Legend

Trails

- Existing Trail
- Equestrian Trail
- Planned Trail
- Soft Surface/Primitive Nature

- Soft Surface/ Primitive Nature Trail-Others
- Planned Crossing/Structure
- Existing Sidewalk/Paved Walking Path
- Planned Sidewalk
- Planned ADA Ramp
- Trail Amenity Stations

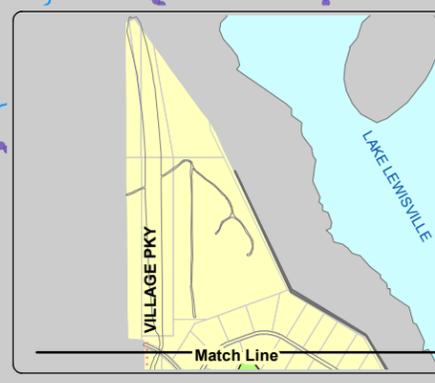
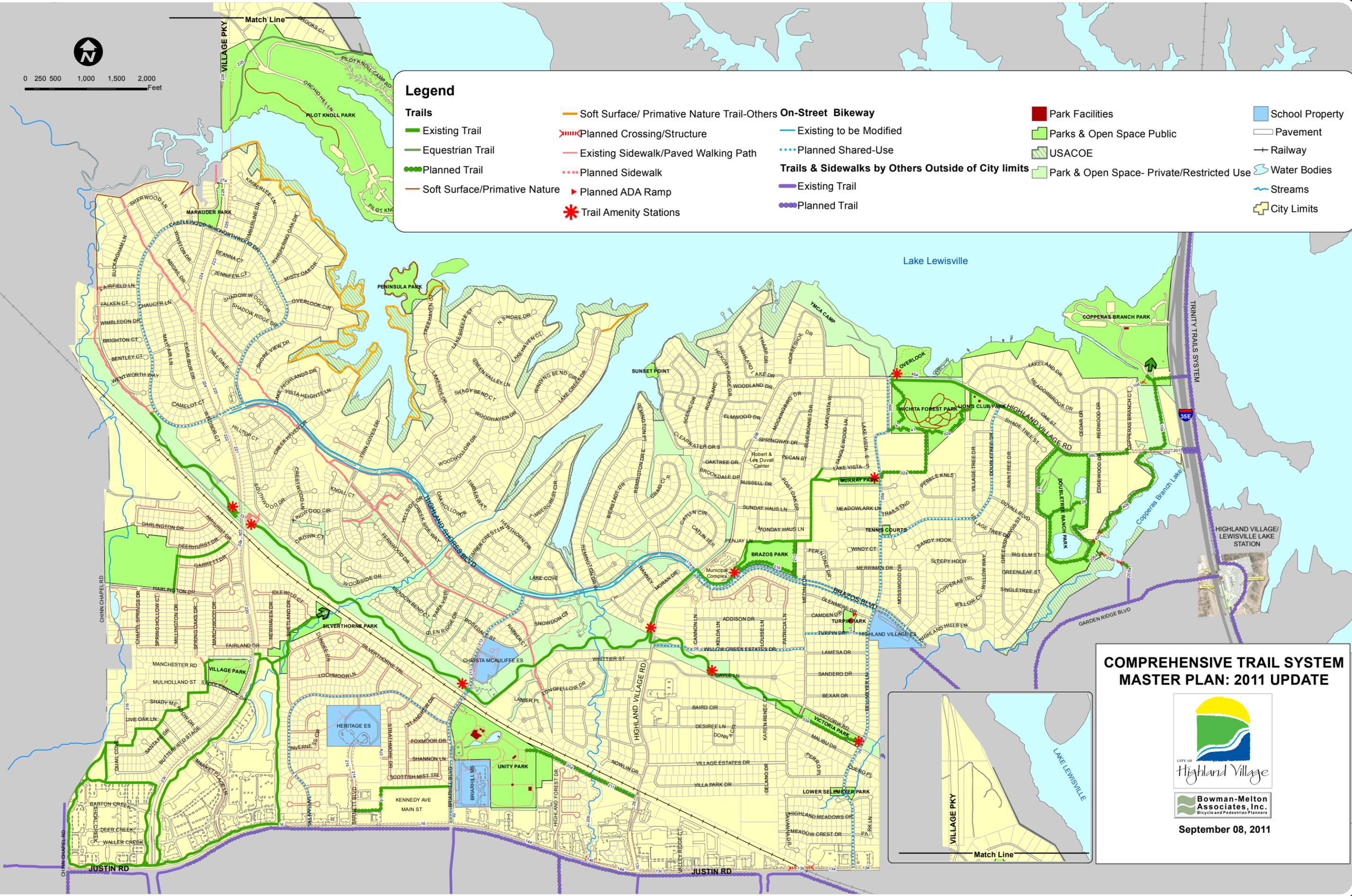
On-Street Bikeway

- Existing to be Modified
- Planned Shared-Use
- Existing Trail
- Planned Trail

Trails & Sidewalks by Others Outside of City limits

- Existing Trail
- Planned Trail

- Park Facilities
- Parks & Open Space Public
- USACOE
- Park & Open Space- Private/Restricted Use
- School Property
- Pavement
- Railway
- Water Bodies
- Streams
- City Limits



COMPREHENSIVE TRAIL SYSTEM MASTER PLAN: 2011 UPDATE

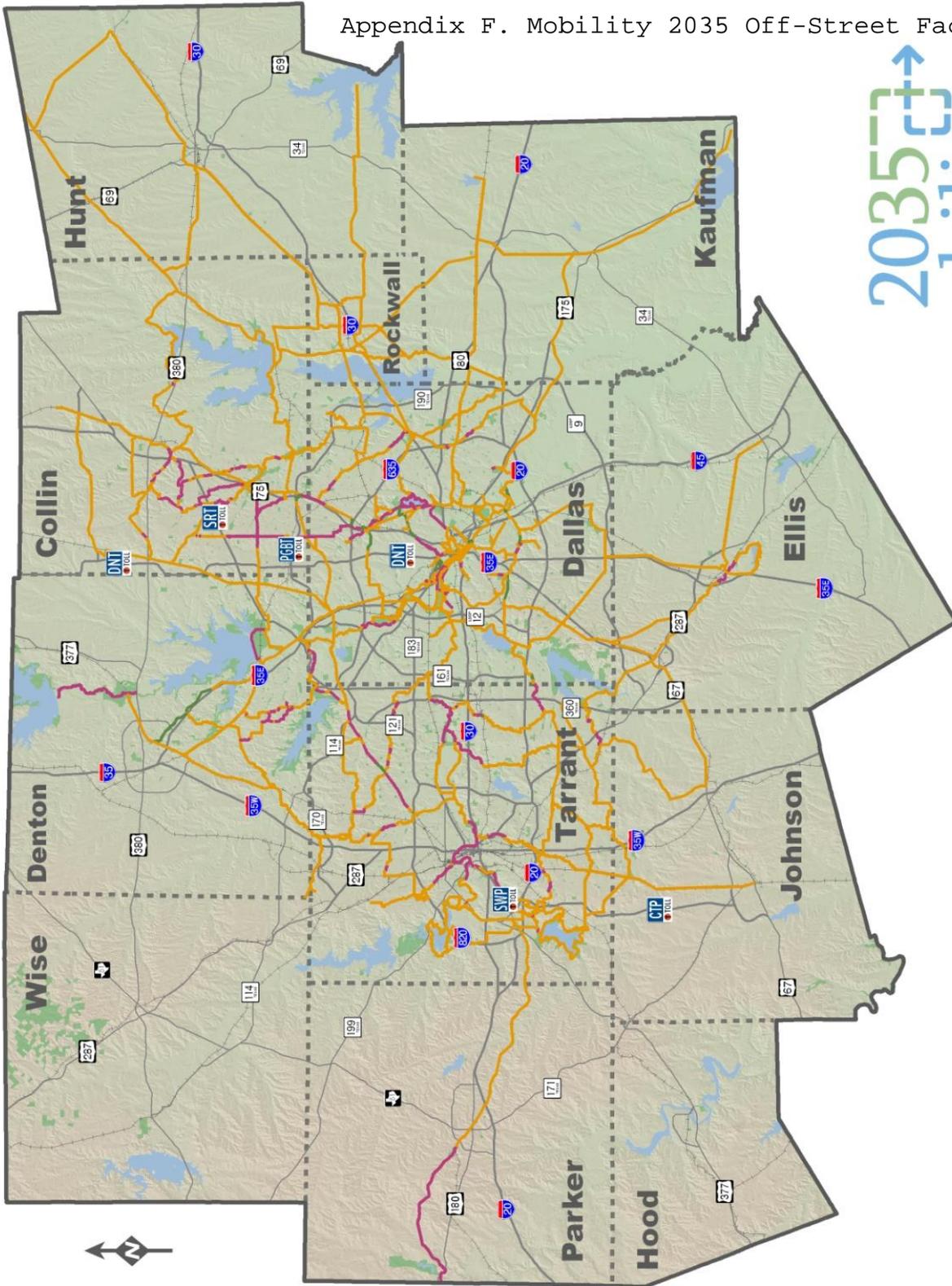


Bowman-Melton Associates, Inc.
Bicycle and Pedestrian Planners

September 08, 2011

Appendix F. Mobility 2035 Off-Street Facilities

Bicycle and Pedestrian Off-street Facilities

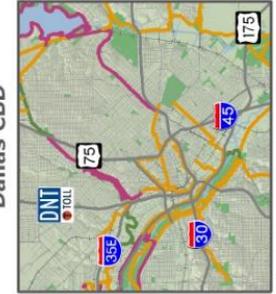


Legend

Regional Veloweb

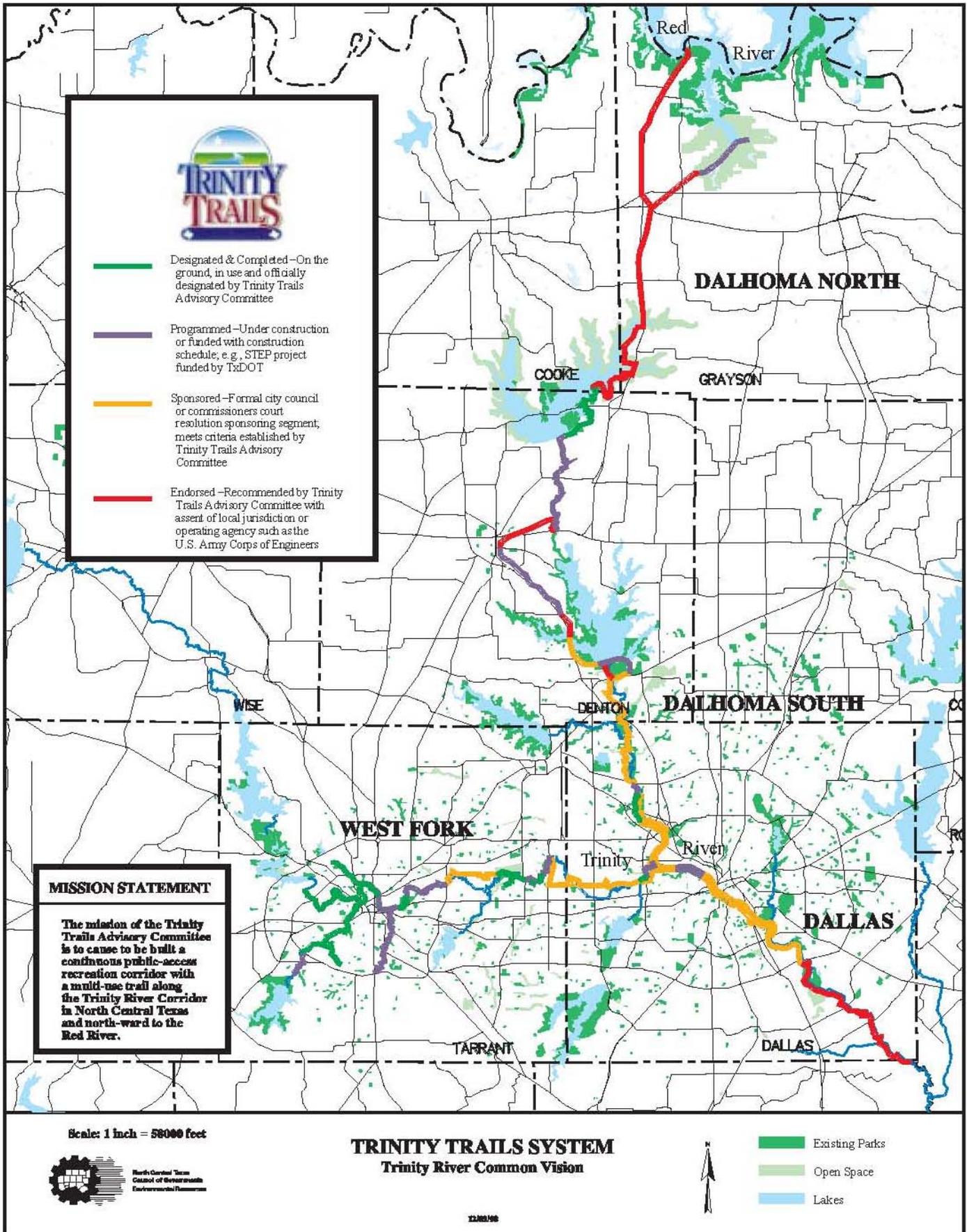
- Existing (purple line)
- Funded (green line)
- Planned (orange line)

- Major Roads (grey line)
- Rail Lines (black line with cross-ticks)
- Parks (green square)



Facility recommendations indicate transportation need. Corridor specific alignment, design, and operational characteristics for the Regional Veloweb system will be determined through ongoing project development.





APPENDIX H: Outside Funding Sources

This Appendix section details regional, state, and federal grant and technical assistance opportunities.

NCTCOG's Mobility 2035

North Central Texas Council of Governments' (NCTCOG's) Mobility 2035: The Metropolitan Transportation Plan has been adopted by the Regional Transportation Council and approved by the U.S. Department of Transportation. Trails in Mobility 2035's ten (10) county Regional Veloweb are considered high priority projects and are often used as part of the evaluation process when funding becomes available for various Regional Transportation Council (RTC) programs. (<http://www.nctcog.dst.tx.us/trans/mtp/2035/RTCFinalPoliciesMar2011.pdf> accessed March 22, 2011)

NCTCOG has designated funding for numerous trail construction projects within the region. Historically, Veloweb segments in proximity to high-density residential, large employers and transit, including bus routes and rail stations, especially in environmental justice areas, have been prioritized for funding.

Specific funding sources include:

Sustainable Development Calls for Projects

The NCTCOG Sustainable Development Program facilitated a Call for Projects in 2001, 2005 and again in 2009 to allocate transportation funds to land use projects promoting alternative transportation modes or reduced automobile use in an effort to address mounting air quality, congestion, and quality of life issues. Eligible project types included: infrastructure, land banking, Center of Development Excellence, and Sustainable Development projects. Through the 2009 Call for Projects, more than \$48.1 million of funding was awarded to Sustainable Development Projects with bicycle and pedestrian elements. The next call for project is anticipated to be in 2013.

Local Air Quality Funding Initiative

NCTCOG initiated the 2006 Local Government Air Quality Program in an effort to address the new federal 8-hour ozone standard, and the current non-attainment status of the Dallas-Fort Worth region. Eligible project types included: traffic signals, bicycle/pedestrian connections, park-and-ride reduction programs, air quality outreach and marketing programs, vanpool programs, and other air quality strategies. Bicycle and Pedestrian Projects received more than \$9 million in funding through the Local Government Air Quality Program in 2006. While no funding for this program is currently available, NCTCOG intends to issue a similar call when suitable funding is identified.

Regional Tollway Revenue Funding Initiative

NCTCOG announced the Regional Tollway Revenue Funding Initiative in April 2007 and closed the Call for Projects on August 3, 2007. The Regional Tollway Revenue initiative will distribute \$2.5 billion in toll proceeds from State Highway 121 to fund roadway, transit, air quality, safety,

sustainable development, and bicycle and pedestrian projects. Cost overruns and projects affected by federal recissions will receive priority funding. Of the 561 total projects submitted, the funding request for the 41 bicycle and pedestrian specific projects totals more than \$94 million. NCTCOG intends to continue the initiative when additional funds become available.

Texas Parks and Wildlife Grants

The Texas Recreation and Parks Account (TRPA) is funded through a portion of Texas sales tax received on select sporting good items. TRPA is administered by TPWD's Recreation Grants Branch and funds five grant programs. These grant programs include: Outdoor Recreation, Indoor Recreation, Small Community, Regional, and Community Outdoor Outreach Program. TPWD also administers the Texas apportionment of the federal Land and Water Conservation Fund, which includes trails as a priority, through TRPA.

Texas Parks and Wildlife Department also administers the Recreation Trail Grants.

Grant Type	Annual Application Deadlines	Award Limit	Required Match
Outdoor Recreation	March 1 and August 1	\$500,000	50%
Small Community	March 1	\$75,000	50%
Urban Outdoor Recreation	March 1	\$1,000,000	50%
CO-OP	February 1 and October 1	\$50,000	50%
Recreation Trail	February 1	\$200,000	20%

TPWD Recreation Grants Branch sends out an electronic newsletter to announce grants, deadlines, and other related information. To subscribe to this (email) newsletter, send a request to mail_rec.grants@tpwd.state.tx.us to be added to the subscription list or call 512/389-8224.

Once a project has been approved, the applicant will receive the Instructions for Approved Projects, a booklet designed to provide step-by-step instructions for project administration through completion. It has several helpful flow charts and a number of checklists. This booklet can be downloaded at:

http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_p4000_1146.pdf.

Outdoor Recreation Grants

This grant provides funds to municipalities, counties, MUDs, river authorities, and other local units of government with populations less than 500,000 **to acquire and develop parkland or to renovate existing public recreation areas**. Projects must be completed within three years of approval. Master Plans must be submitted to TPWD sixty (60) days prior to the application deadline. Award notifications occur approximately 6 months after deadlines. For complete information on this grant, go to:

http://www.tpwd.state.tx.us/publications/pwdforms/media/pwd_1069_p4000_outdoor_grant_application.pdf.

Small Community Grants

This grant was created to meet the recreation needs of small Texas communities – municipalities, counties, and other political subdivisions with a maximum population of 20,000. Funds must be used for development or acquisition of parkland. Eligible projects include trails. For more information go to:

http://www.tpwd.state.tx.us/publications/pwdforms/media/pwd_1071_p4000_smallcommunity_grant_application.pdf.

Urban Outdoor Recreation Grants

Grants are available to cities and counties with populations over 500,000 for the acquisition and development of park land. Local governments must apply, permanently dedicate project areas for public recreational use, and assume responsibility for operation and maintenance. To download the grant application, go to:

http://www.tpwd.state.tx.us/publications/pwdforms/media/pwd_1189_p4000_urban_outdoor_recreation_grant_application.pdf.

Regional Grants

This grant program was created to assist local governments with the acquisition and development of multi-jurisdictional public recreation areas in the metropolitan areas of the state. It allows cities, counties, water districts, and other units of local government to acquire and develop parkland. The program, when active, provides 50% matching fund, reimbursement grants to eligible local governments for both active recreation and conservation opportunities. Master plans submission deadline is 60 days prior to application deadline. Grants are awarded yearly by TPW Commission when funds are available. This program is currently inactive.

Community Outdoor Outreach Program (CO-OP) Grants

The CO-OP grant helps to introduce under-served populations to the services, programs, and sites of Texas Parks & Wildlife Department. This is not a land acquisition or construction grant; this is only for programs. Grants are awarded to non-profit organizations, schools, municipalities, counties, cities, and other tax-exempt groups. Minimum grant requests are \$5,000 and maximum grant requests are \$50,000. The purpose of the grants is to expose participants to environmental and conservation programs as well as outdoor recreation activities. For more information, go to:

http://www.tpwd.state.tx.us/publications/pwdforms/media/pwd_1066_p4000_coop_grant_application.doc.

Recreational Trail Grants

TPWD administers the National Recreational Trails Fund in Texas under the approval of the Federal Highway Administration (FHWA). Both non-motorized and motorized trails are eligible for funding, with a maximum grant amount for non-motorized trails currently set at \$200,000. This federally funded program receives its funds from a portion of federal gas taxes paid on fuel used in non-highway recreational vehicles. The grants can be up to 80% of project cost. Funds can be spent on construction of new recreational trails, to improve existing trails, to develop trailheads or trailside facilities, and to acquire trail corridors. The grant application is available at:

http://www.tpwd.state.tx.us/publications/pwdforms/media/pwd_1067_p4000_trails_grant_application.doc.

Texas Department of Transportation

Transportation Enhancement Program

Through the Transportation Enhancement (TE) program, the Texas Department of Transportation (TxDOT) periodically makes funds available for the construction of dedicated on-street bicycle facilities, hike and bike trails, pedestrian safety enhancements, and landscaping of transportation facilities. To date, there have been seven program calls (1993, 1994, 1996, 1999, 2001, 2005-cancelled, and 2009) totaling \$533.4 million worth of grant dollars awarded. Grant selection and administration goes through the North Central Texas Council of Governments (NCTCOG), which reviews the projects within the Metropolitan Planning Area for eligibility, ranks the projects, and provides the State-required Letter of Transportation Improvement Program Placement.

TE provides monetary support for transportation activities designed to strengthen the cultural, aesthetic, and environmental aspects of the transportation system. Funding is on a cost reimbursement basis and projects selected are eligible for reimbursement of up to 80%. Cost overruns are not eligible for reimbursement. Historically, this is one of the most important grants for trail projects. Additional information is available at: <http://www.txdot.gov/business/governments/te.htm>.

Safe Routes to School Program

The Safe Routes to School (SRTS) Program in Texas is based upon Federal funding and is administered by TxDOT. The overall purpose of this program is to improve safety in and around school areas. Projects eligible for SRTS funding are those that reflect one or more of the “5 Es” (engineering, education, encouragement, enforcement, and evaluation). Funds are available for use around schools that enroll kindergarten through eighth grade students and the amount of funding each State receives from the Federal government is based on percentage of student enrollment. This grant program is a 100% Federally-funded cost reimbursement program, which means there is no required match from the local government.

The following guidelines determine what projects can be submitted:

- Projects may be located on or off the State highway system, but must be located on public property
- Projects must be located within a two mile radius of a school
- Projects can cover multiple school sites if similar work is performed at each site
- Infrastructure projects can be awarded a maximum of \$500,000 per application
- Non-infrastructure projects can be awarded a maximum of \$100,000 per application

Infrastructure projects must fall within one of six categories to be eligible for funding:

- Sidewalk improvements
- Pedestrian and bicycle crossing improvements
- On-street bicycle facilities
- Off-Street bicycle and pedestrian facilities
- Traffic diversion improvements
- Traffic calming measures for off-system roads
- Secure bicycle parking facilities.

Non-infrastructure project types eligible for funding include:

- Education on bicycle and pedestrian safety, health, and the environment
- Traffic education and enforcement in the vicinity of identified school(s)
- Creation and reproduction of promotional and educational materials
- Public awareness campaigns and outreach efforts to the news media and community leaders
- Modest incentives for SRTS contests and incentives that encourage more walking and bicycling over time
- Safety and educational tokens that also advertise the program
- Cost for additional law enforcement or equipment needed for enforcement activities.

Additional information may be found at http://www.txdot.gov/safety/safe_routes/default.htm.

Texas Bicycle Tourism Trails Act

The Texas Bicycle Tourism Trails Act took effect September 1, 2005. The act created Section 201.9025 of the Texas Transportation Code to facilitate development of an on- and off-road statewide network of bicycle trails that reflect the geography, scenery, history, and cultural diversity of Texas and may include multiuse trails to accommodate pedestrians and equestrians. This infrastructure can serve local bicycle and pedestrian transportation network needs. The act specifically says:

§ 201.9025. TEXAS BICYCLE TOURISM TRAILS. (a) The Texas Department of Transportation Bicycle Advisory Committee shall advise and make recommendations to the commission on the development of bicycle tourism trails in this state.

Recommendations on bicycle tourism trails developed under this section:

- (1) shall be made in consultation with the Parks and Wildlife Commission and the Texas Economic Development and Tourism Office;
- (2) shall reflect the geography, scenery, history, and cultural diversity of this state;
- (3) shall maximize federal and private sources of funding for the designation, construction, improvement, maintenance, and signage of the trails and the promotion of bicycle tourism; and
- (4) may include multiuse trails to accommodate equestrians, pedestrians, and other nonmotorized trail users when practicable.

(b) The department may contract with a statewide bicycle nonprofit organization for assistance in identifying, developing, promoting, or coordinating agreements and participation among political subdivisions of this state to advance bicycle tourism trails.

Added by Acts 2005, 79th Leg., ch. 161, § 1, eff. Sept. 1, 2005.

For more information about Texas Bicycle Tourism Trails contact BikeTexas at (512) 476-7433 or email mail@biketexas.org.

Other Federal Transportation Funding Sources

Where bicycle and pedestrian projects serve primarily a transportation function and conform to State and NCTCOG transportation plans under the current federal transportation act, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), bicycle and/or pedestrian projects are eligible for funding in many programs. Funding programs include not only the TE and SRTS programs discussed above but also other federally funded projects, which require a 20 percent match, unless otherwise noted.

- **Highway Bridge Replacement and Rehabilitation Program** – includes a requirement that bridge replacement or rehabilitation include safe bicycle accommodation if bicyclists are allowed to use the abutting roadway, if cost is reasonable
- **Highway Safety Improvement Program** – funds can be used for bicycle and pedestrian safety improvements, both on- and off-road
- **National Highway System (NHS)** – funds can be used for the construction of bicycle and pedestrian facilities within NHS corridors, including bike lanes, shoulders, and sidewalks on major arterials that are along the NHS. These funds can also be used to fund bridges or tunnels that cross NHS facilities. Interstate Highway facilities can include multi-use trails.
- **Surface Transportation Program (STP)** – funds are flexible and can be used to fund on- and off-road bicycle and pedestrian facilities, including bicycle and pedestrian signals, crosswalks, and bike parking. These funds may also be used for local and collector street facilities. They may also be used to fund bicycle coordinator positions, encouragement programs and maps.
- **Federal Transit Administration Programs (FTA)** – including Capital Investment Grants and Loans, Formula Program for Other Urbanized Areas, and Urbanized Area Formula Grants and Loans are available for improving bicycle and pedestrian access to transit, including on-board accommodation.
- **Interstate Maintenance (IM)** – funds may include bicycle and pedestrian facilities incorporated into the design of resurfacing, restoration, rehabilitation and reconstruction projects, including new overpasses and interchanges. The local match for this program is 10 percent.
- **Transportation and Community and System Preservation (TCSP)** – provides funding for a comprehensive initiative including planning grants, implementation grants, and research to investigate and address the relationships among transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve those relationships. Applications submitted should support planning, development, and implementation of strategies to integrate transportation, community and system preservation plans and practices. The program can be administered by TxDOT or FHWA Division offices. The local match is 20 percent cash or other allowable match such as eligible non-cash donations.

Other Federally Funded Programs including Bicycle and Pedestrian Opportunities

Other federal funds are available for bicycle and pedestrian projects through a variety of sources. These include:

- **Energy Efficiency and Conservation Block Grant (EECBG)** – provides funding for implementing programs that conserve energy, including bicycle and pedestrian facilities. This program is administered by the State Energy Conservation Office. Fort Worth has used these funds to implement designated bicycle facilities and bike parking in downtown Fort Worth; while the City of San Antonio has implemented a city employee bike share program. No local match is required.
- **U.S. Army Corps of Engineers (USACE)** – may provide up to a 50 percent match for trails within a congressionally authorized project. It also forms partnerships with volunteer trail groups who create and maintain hiking, mountain biking, and/or equestrian trails.
- **U.S. Department of Interior (USDOI)** – The National Parks Service’s Rivers, Trails and Conservation Assistance Program offers technical assistance to local groups and cities to preserve and develop trails, greenways and open space. This program does not provide monetary funds. The National Parks Service’s Land and Water Conservation is administered by Texas Parks and Wildlife.

Other Sources of Funding for Trail Development

- **Land Trusts** – Land trusts provide a valuable service to municipalities across the country in helping to acquire natural areas, open space, and other land for public use. Typically, land trusts not only assist in funding land acquisition but also assist in managing the transaction and financing. Often, each land trust will have a specific set of requirements for the types of land they are willing to help acquire and/or how that land will be used. Contact the Texas Land Trust Council for more information (<http://www.texaslandtrustcouncil.org>).
- **Grants for Greenways** – The Kodak American Greenways Program –Eastman Kodak Company, the Conservation Fund and the National Geographic Society team up each year to present the Kodak American Greenways Awards Program. One major element of the Program involves “seed” grant awards to organizations that are growing our nation’s network of greenways, blueways, trails and natural areas. For this grant, non-profit organizations receive preference, but local and regional agencies may also apply. For more information, go to http://www.conservationfund.org/kodak_awards.
- **Communities Foundation of Texas** – The CFT is a hub for collaboration between donors, nonprofits and other funders to stimulate creative solutions to key community challenges. It has awarded funds to Friends Groups in North Central Texas. For more information go to www.cftexas.org , email the Philanthropy Department at grants@cftexas.org or by phone at 214-750-4222.
- **Meadows Foundation** – The Meadows Foundation has provided grants for Trail Development under both its Arts & Culture category (for signage and exhibits along trails) and its Civic and Public Affairs category (for studies, landscaping and construction). For more information, go to: <http://www.mfi.org>.

- **Recreational Equipment, Inc.** – REI focuses its philanthropic efforts on supporting and promoting participation in active volunteerism to care for public lands, natural areas, trails and waterways. Annually, REI dedicates a portion of its operating profits to help protect and restore the environment, increase access to outdoor activities, and encourage involvement in responsible outdoor recreation. REI employees nominate organizations, projects, and programs in which they are personally involved to receive funding or gear donations. For more information, go to <http://www.rei.com/aboutrei/grants02.html>. REI employees also participate in service projects; contact the nearest REI store to learn more about their hands-on service projects, which are dedicated to restoring and improving areas for outdoor recreation.
- **Bikes Belong Coalition** – Bikes Belong Coalition, sponsored by members of the American Bicycle Industry, 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 (617)734-2111, or visit: www.bikesbelong.org
- **Foundation Directory On-Line** – 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. The On-line Foundation Directory resource provides information on project requirements, and should be evaluated prior deciding to submit an application to a particular foundation.. The Foundation Center's an on-line directory is fee based, but may be available at the local library. Otherwise, go on-line to sign up at <http://fconline.foundationcenter.org/>.
- **Private Donations** – This source of financial assistance would usually come from a citizen, organization, or business which has an interest in assisting with the development of the park system. Land dedication is not an uncommon occurrence when property is being developed. The location of a trail within a residential development offers additional value to residential units within that neighborhood. Private donations may also be received in the form of funds, facilities, recreation equipment, art or in-kind services. Donations from local and regional businesses as sponsors for events or facilities should be pursued. A Parks Improvement Trust Fund may be set up to manage donations by service organizations, benevolent citizens, willed estates and other donated sources. The purpose of this trust is to establish a permanent source of principle value that will increase as donations occur. The principal cannot be decreased; however, the annual interest can be used for park development.
- **Partnerships with Volunteer Groups** – Friends of the Trail Groups are usually set up for an individual trail or trail segment. Friends groups in North Central Texas have been formed to develop trail master plans that have then been adopted by a local government agency, such as the Parks Department. They have been formed to raise funds for trail tread construction, land donations or easements, and/or amenities such as benches, rest plazas, water fountains, and art installations. They also lead athletic events and trail corridor clean-ups and plantings. And they frequently provide volunteer safety patrols. A Friends Group should be encouraged for every trail!

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0 250 500 1,000 1,500 2,000
Feet

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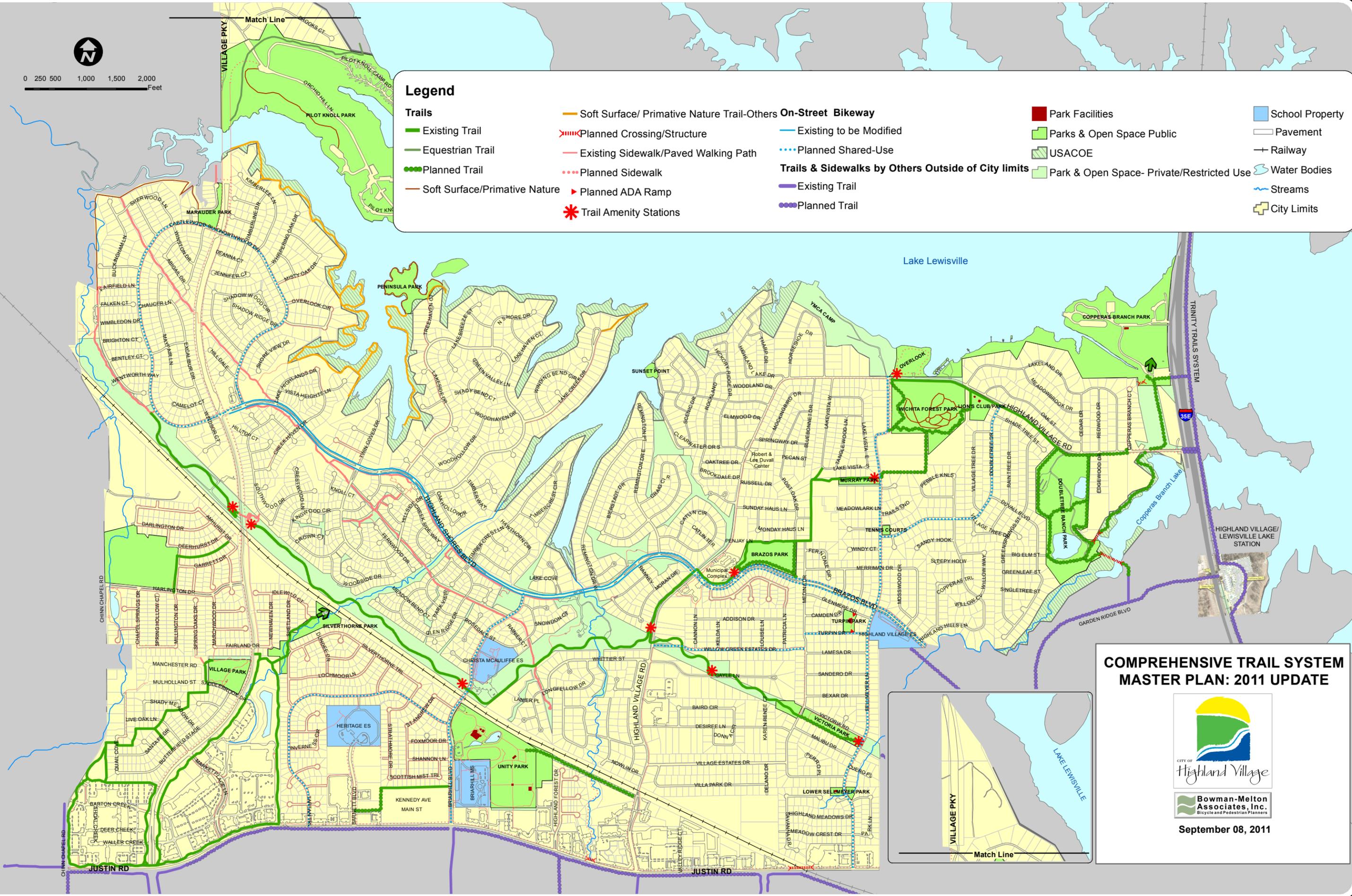
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