

Grand Prairie

T E X A S

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City of Grand Prairie Transit Oriented Development Planning Report



North Central Texas
Council of Governments

What is NCTCOG?

The North Central Texas Council of Governments is a voluntary association of cities, counties, school districts, and special districts which was established in January 1966 to assist local governments in **planning** for common needs, **cooperating** for mutual benefit, and **coordinating** for sound regional development.

It serves a 16-county metropolitan region centered around the two urban centers of Dallas and Fort Worth. Currently the Council has **240 members**, including 16 counties, 170 cities, 24 independent school districts, and 30 special districts. The area of the region is approximately **12,800 square miles**, which is larger than nine states, and the population of the region is over **6.5 million**, which is larger than 38 states.

NCTCOG's structure is relatively simple; each member government appoints a voting representative from the governing body. These voting representatives make up the **General Assembly** which annually elects a 15-member Executive Board. The **Executive Board** is supported by policy development, technical advisory, and study committees, as well as a professional staff of 315.



NCTCOG's offices are located in Arlington in the Centerpoint Two Building at 616 Six Flags Drive (approximately one-half mile south of the main entrance to Six Flags Over Texas).

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NCTCOG's Department of Transportation

Since 1974 NCTCOG has served as the Metropolitan Planning Organization (MPO) for transportation for the Dallas-Fort Worth area. NCTCOG's Department of Transportation is responsible for the regional planning process for all modes of transportation. The department provides technical support and staff assistance to the Regional Transportation Council and its technical committees, which compose the MPO policy-making structure. In addition, the department provides technical assistance to the local governments of North Central Texas in planning, coordinating, and implementing transportation decisions.

Prepared in cooperation with the Texas Department of Transportation and the U. S. Department of Transportation, Federal Highway Administration, and Federal Transit Administration.

"The contents of this report reflect the views of the authors who are responsible for the opinions, findings, and conclusions presented herein. The contents do not necessarily reflect the views or policies of the Federal Highway Administration, the Federal Transit Administration, or the Texas Department of Transportation."

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Council of Governments

March 2012

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EXECUTIVE SUMMARY

During the 2005-2006 Sustainable Development Call for Projects, funding was allocated to a Transit-oriented Development (TOD) Implementation Group to support a regional effort to analyze, market, and implement TODs. The Grand Prairie Rail Station Concept Plan report was prepared to provide planning assistance to the City of Grand Prairie. This report provides a summary and recommendation of transit options, TOD site options, an audit of existing conditions, a zoning analysis, and design guidelines and pedestrian connectivity. Three sites for TOD were identified and data was gathered for a one-quarter to one-half mile buffer zone around each site. Commuter rail is being considered for future operation along the Union Pacific Mainline (UP Mainline). The line would run from Downtown Fort Worth to Downtown Dallas with stops in a number of cities including the city of Grand Prairie.

PART ONE: TRANSIT OPTIONS

What is Commuter Rail?

Commuter rail (also called metropolitan rail, regional rail, or suburban rail) functions on an electric or diesel-propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs. Service must be operated on a regular basis by or under contract with a transit operator for the purpose of transporting passengers within urbanized areas, or between urbanized areas and outlying areas. The Trinity Railway Express (TRE) is an example of commuter rail in the Dallas-Fort Worth area. The TRE runs from Downtown Fort Worth to Downtown Dallas. The proposed commuter rail on the existing Union Pacific Mainline (UP Mainline) would be located south and parallel to the TRE line.

Commuter Rail Along the UP Mainline

This study builds on the Regional Rail Corridor Study (RRCS) that was developed in 2005. The RRCS included the UP Mainline among eight other freight rail corridors that were studied for the feasibility of implementing transit. Various transit options including bus rapid transit and commuter rail were studied for the UP Mainline. The study showed that adding a third continuous parallel track to the existing double tracks for commuter rail was the best option for this rail line.

What is Bus Rapid Transit?

Bus Rapid Transit (BRT) is an innovative, high-capacity, lower-cost public transit solution that can achieve the performance and benefits of more expensive rail modes. This integrated system uses buses or specialized vehicles on roadways or dedicated lanes to quickly and efficiently transport passengers to their destinations while offering the flexibility to meet a variety of local conditions. Some elements of BRT include: running ways, stations, vehicles, fare collection, Intelligent Transportation Systems, and service/operations plan.

Bus Rapid Transit Along the UP Mainline

BRT along the existing UP Mainline was studied as an alternative transit mode in the RRCS. BRT would operate along a fixed guideway located within the right-of-way of State Highway (SH) 180 (also known as Main Street in the city of Grand Prairie) between Downtown Dallas and Downtown Fort Worth. Bus rapid transit could potentially be utilized as a staging service before commuter rail becomes available.

Other Transit Modes

Other transit options include regular bus, express bus and shuttle service. The advantages to these alternative services are route flexibility and inexpensive transportation costs compared to rail alternatives. These services could be utilized before and during commuter rail on the UP Mainline. Overall, capital and operating costs will be one of the determining factors for deciding the type of transit that the city could offer.

PART TWO: TRANSIT-ORIENTED DEVELOPMENT AND BICYCLE AND PEDESTRIAN BEST PRACTICES

What is Transit-Oriented Development?

Transit-oriented development (TOD) is a style of land planning and building orientation that is geared towards encouraging pedestrian activity that results from the passenger rail station. The boundary of a TOD can extend at least from a one-quarter to one-half mile radius around the passenger rail station depending on the walkability of the area. The main form of development present in the boundary are ideally mixed-use and are designed to encourage people to bike and/or walk from the station and surrounding area to the development. A network of roadways, bike lanes, and sidewalks connect the developments to the station. The density of the development is moderate to high relative to each community. There are many benefits of TOD that include, but are not limited to, more land use efficiency, improving air quality, and addressing changes in residential market demands. TOD's can provide unique places to live, work, and play by the surrounding amenities available to the neighborhood.

Form-Based Codes/SmartCode Overview

Form-based Codes (FBC) offer an alternative to conventional zoning regulations. Form-based codes have been emerging as the preferred alternative to conventional zoning for some locations, mainly because of the prescribed outcome resulting from FBC. SmartCode is a type of form-based code. The SmartCode provides design criteria for streets, blocks, open spaces and buildings based on their geographic location from rural, preserved land to urban core, central business districts through transects or zones of increasing density/use. Development along the UP Mainline in Grand Prairie already exists and therefore the building standards appropriate to the study area are compatible with transects or zones that vary from sub-urban zone to urban core zone.

Bicycle and Pedestrian Best Practices

A successful TOD needs to provide housing, commercial, and retail uses that support transit and generate pedestrian activity. Transit supportive uses are high pedestrian generators that

directly promote greater transit ridership and provide opportunities for multi-purpose trips.

A summary of best practices for various amenities including sidewalks, crosswalks, on- and off-street bicycle facilities, traffic signals, curb cuts and driveways, parking, and street furnishings is provided.

PART THREE: EXISTING CONDITIONS

Transit-Oriented Development Audit Highlights

Three study areas, Scenario A - Main Street and SH 161, Scenario B - Main Street and Center Street, and Scenario C - Main Street and East 5th Street, were chosen for further evaluation for TOD. The study areas were chosen based on the proposed stations in the RRCS and data gathered by staff. A TOD audit composed of several questions regarding the current and future conditions was performed for each of the three study areas.

Land Use and Zoning

The City of Grand Prairie 2010 Comprehensive Plan for each of the areas was examined to give more detail on the future land use. All the study areas are projected to be within a mixed-use district. The current zoning and land use from a one-quarter mile to one-half mile radius around each of the study areas was also examined.

Transit-Oriented Development Site Options

Opportunities and constraints were summarized for all the study areas. Parcel values and vacant lots immediately close to the proposed transit station were examined. The current conditions and land costs are highlighted to assist in evaluating which site would be feasible to redevelop into a TOD.

Existing Conditions and General Recommendations: Bicycle and Pedestrian Amenities

The design, scale, and quality of buildings, streets and landscaping can create TOD areas that are pleasant places to walk, bike, relax, and attract people. These amenities become more important within the pedestrian-oriented zone defined as a quarter-mile buffer (about a five- to seven-minute walk) around the transit station, and extending to the pedestrian connectivity zone defined as a half-mile buffer (about a 10- to 14-minute walk) around the transit station. Bicycle and pedestrian amenities opportunities and constraints around the pedestrian-oriented zone and the pedestrian connectivity zone were examined for each study area.

PART FOUR: RECOMMENDATIONS

Transit-Oriented Development Recommendations

Building use and forms were recommended based on the SmartCode model which could require an overlay district or special designation area to deviate from current zoning practices. After examining how the study area fits into the regional and community level, transect zones provide categories of appropriate building forms and uses for each area. All three study areas would need to increase density and have a greater mix of uses. Cost estimates for selected

parcels near the proposed transit station were calculated. Parcel locations were chosen based on the proximity to the proposed station and parcel value. An estimated four acres were selected for each study area for compatible cost comparison.

Site-Specific Bicycle and Pedestrian Recommendations

A list of bicycle and pedestrian amenities improvements are recommended for each study area. The improvements to consider range from traffic calming, bicycle parking, and sidewalk improvements. The recommendations may allow the study area to increase the foot traffic in the transit station location, thereby increasing the transit ridership. The costs of the recommended amenities are provided for each study area.

CONCLUSION

This report built on the RRCS. The RRCS recommended that commuter passenger rail be built parallel to the UP Mainline. The UP Mainline runs across the city of Grand Prairie. Implementing commuter rail on the UP Mainline may be complicated by funding and right-of-way access. These issues may prolong the implementation of passenger rail on the UP Mainline. It would be beneficial for the city to consider implementing other transit alternatives including but not limited to regular bus, express bus, or shuttle services. These transit alternatives can serve as a staging service and then provide feeder service once the passenger rail is implemented.

Planning services were requested from NCTCOG to review for potential TOD sites within the City. Three locations were found to have the potential to be revitalized into a TOD: Scenario A - Main Street and the future SH 161, Scenario B - Main Street and Center Street, and Scenario C - Main Street and East 5th Street (also known as 5th NE). This study examined the current and future conditions of each of the three study areas. Recommendations were made to improve each study area into a viable TOD based on information available. Recommendations range from increasing density, changing building form, allowing and disallowing uses, and increasing bicycle and pedestrian amenities. A summary of opportunities and constraints for each scenario is listed below.

Scenario A – Main Street and the future SH 161

Opportunities

- Vehicular north and south access via the future SH 161 and Carrier Parkway.
- Vehicular west and east access via Main Street/SH 180.
- Sidewalk on Carrier Parkway has recently been redeveloped.
- Supermarket and new development have a modern look to the building facades.

Constraints

- Existing businesses and land would need to be purchased.
- TOD location would not be available immediately adjacent to potential future station due to constrained land availability.
- Pedestrian overpass or roadway improvement would be needed to allow safe pedestrian access to future station.
- Development challenges going west of the future SH 161, possibly less land to redevelop.

Scenario B – Main Street and Center Street

Opportunities

- West and east mobility access via Main Street.
- North and south mobility access via Center Street.
- Downtown, which is known as “Uptown”, is undergoing revitalization.
- Sidewalks will be widened on the south side of Main Street between 14th NW to East 2nd Street for added streetscape.

Constraints

- No vacant land readily available, businesses/land would need to be acquired.
- Buildings may be of historical significance which cannot be demolished to place higher density. Retrofitting may be an alternative.
- Several store frontages need revitalization.

Scenario C – Main Street and East 5th Street

Opportunities

- North and south access via Belt Line Road.
- West and east access via Main Street.
- Within the Uptown revitalization plans.
- Within walking distance, defined as one-quarter mile, of Market Square.

Constraints

- The majority of the land is not vacant. Existing property would need to be acquired for redevelopment.
- Land needed for transit parking may not be available immediately close to the station.

Overall, the process to implement public transit requires various steps including incorporating transit options in the region’s mobility plan, conducting an alternatives analysis study, initiating a federal environmental process, and funding must be identified. Physical opportunities and constraints along with associated costs would also be evaluating factors for deciding the station location which would impact the opportunities for a transit-oriented development. Though it should be noted that as redevelopment occurs, density increases and potential ridership numbers increase, and this better positions the rail project for federal funding. The Federal Transit Administration is a primary source of funds for commuter rail implementation and potential ridership counts weigh heavily when New Starts funding and other funds are selected from projects across the country. Building for where you want to be, while being mindful of right-of-way requirements is a win-win for the city of Grand Prairie as they prepare for transit and receive the tax revenue of redeveloped increased property values and possible sales tax for new retail that is constructed.

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INTRODUCTION

The city of Grand Prairie, Texas, is centrally located in the Dallas-Fort Worth metroplex. The city stretches 26 miles long by about eight miles at its widest point. The city covers about 81 square miles (100 square miles including extraterritorial jurisdiction) and has an estimated 2011 population of 175,960 (North Central Texas Council of Governments 2030 Demographic Forecast).

The Grand Prairie Rail Station Concept Plan project is part of the North Central Texas Council of Governments' (NCTCOG) Transit-oriented Development (TOD) Implementation Plan Group. Planning assistance for the TOD Implementation Group is intended to support a regional effort to analyze, market, and implement TODs. The TOD Implementation Plan Group developed from the results of the 2005-2006 NCTCOG Sustainable Development Call for Projects. Projects in this group are eligible to receive technical planning assistance from NCTCOG Transportation Department Staff. Examples of planning assistance to be addressed under the various TOD Implementation Group projects can include various topics such as development code recommendations and urban design guidelines.

The Grand Prairie Rail Station Concept Plan project was prepared to provide planning assistance to the city of Grand Prairie. The goal of this plan is to examine potential TOD locations along the Union Pacific Mainline (UP Mainline) in Grand Prairie. This document is solely intended as planning guidance – it is not a guarantee that any of the transit options discussed will be implemented. The process to implement public transit requires various steps including incorporating transit options in the region's mobility plan, conducting an alternatives analysis study, initiating a federal environmental process, and funding must be identified. This document does not outline a process for transit decision making; its purpose is to lay out an assortment of options for transit and TOD along the UP Mainline in the city of Grand Prairie. The city of Grand Prairie is not currently a member of a designated transit authority or operating a fixed route system on its own. Once a transit authority is established or designated for the city, it would be that agency that is ultimately responsible for transit planning and decision making in the project area. Currently the only transportation service provided by the city is a paratransit demand response system for elderly and disabled residents known as the Grand Connection.

The city of Grand Prairie's desire to look at possible transit options and the potential associated development is to be commended. Transit is a more efficient transportation alternative to the automobile when transporting a large group of people traveling in the same direction, such as from home to an employment center. Automobiles tend to be driven alone. As the city's population and employment grows, so will congestion which leads to environmental problems ranging from degradation of air quality to an increase in pollutants in surface runoff which can enter the water systems. Therefore, providing transit choices becomes increasingly important. Exhibit I-1 shows the estimated growth in population, households, and employment that the city will experience through 2030.

Exhibit ii-1: City of Grand Prairie Demographic Forecast

	2005	2035	2040
Households	127,025	231,573	247,005
Employment	71,117	126,734	133,913

Source: North Central Texas 2040 Demographic Forecast.

PART ONE: TRANSIT OPTIONS

1.1 WHAT IS COMMUTER RAIL?¹

Commuter rail (also called metropolitan rail, regional rail, or suburban rail) functions on an electric or diesel-propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs. Service must be operated on a regular basis by or under contract with a transit operator for the purpose of transporting passengers within urbanized areas, or between urbanized areas and outlying areas. Such rail service, using either locomotive-hauled or self-propelled railroad passenger cars, is generally characterized by multi-trip tickets, specific station to station fares, railroad employment practices, and usually only one or two stations in the central business district. Intercity rail service is excluded, except for that portion of such service that is operated by or under contract with a public transit agency for predominantly commuter services, which means that for any given trip segment (i.e., distance between any two stations), more than 50 percent of the average daily ridership travels on the train at least three times a week.

The Trinity Railway Express (TRE) is an example of commuter rail in the Dallas-Fort Worth area. The TRE runs from Downtown Fort Worth to Downtown Dallas. The proposed commuter rail on the existing Union Pacific Mainline (UP Mainline) would be located south and parallel to the TRE line.

1.2 COMMUTER RAIL ALONG THE UP MAINLINE

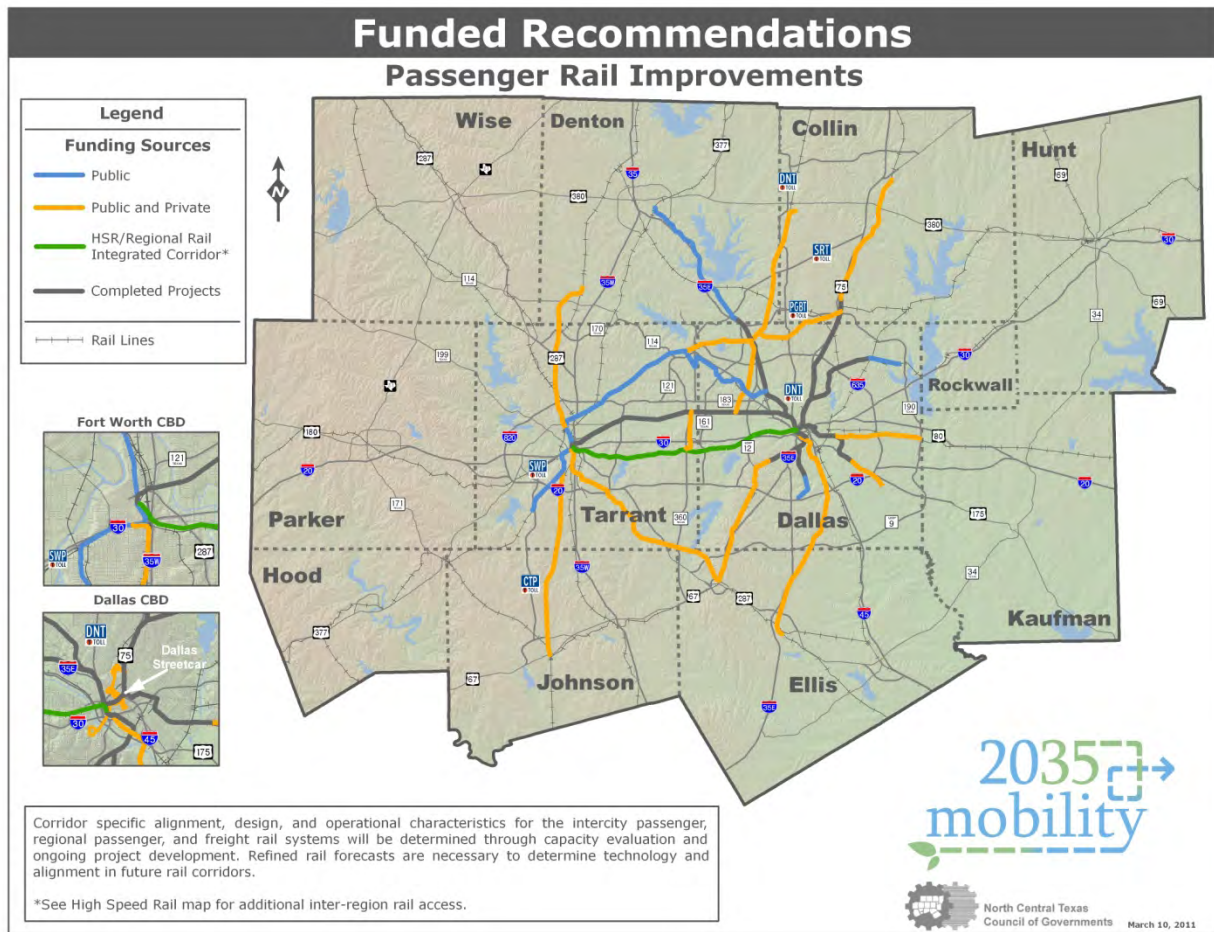
The UP Mainline railroad crosses the country from Louisiana to California, passes through the Texas cities of Dallas, Grand Prairie, Arlington and Fort Worth among others. Approximately 7.5 miles of the railroad pass east-west through the northern portion of the city of Grand Prairie. Adding passenger rail in or along the railroad corridor is a recommendation of the long-range transportation plan, Mobility 2035: The Metropolitan Transportation Plan for North Central Texas (MTP).

The MTP is the comprehensive, multimodal “blueprint” for transportation systems and services aimed at meeting the mobility needs of the Dallas-Fort Worth Metropolitan Area through the next 23 years. Policies, programs and projects are identified as transportation recommendations that reflect solutions to improve the overall quality of life for residents in the Dallas-Fort Worth area. The MTP recommends passenger rail service between the cities of Dallas and Fort Worth through Grand Prairie and Arlington in an east-west corridor likely to be in or near the UP Mainline Corridor. Exhibit 1-1 shows the Mobility 2035 passenger rail recommendations. The recommendations identified show a dual purpose corridor that can accommodate high-speed rail accessing the region through Dallas or Fort Worth and local commuter rail service accessing Dallas, Grand Prairie, Arlington, and Fort Worth.

The region has been discussing and making plans for commuter rail for many years. In 2003, the North Central Texas Council of Governments (NCTCOG) embarked on an effort to study the potential for commuter rail in the region. The Regional Rail Corridor Study (RRCS) evaluated the feasibility of implementing commuter rail, light rail, or other forms of transit services in the Dallas-Fort Worth area. The RRCS culminated in August 2004 at the Regional Transit Summit

which was attended by nearly 300 elected and appointed officials who unanimously embraced a statement of principles for seamless public transit in North Central Texas, complete with a local financing plan and governance structure. Their unanimous approval included a \$3.5 billion, 260-mile regional rail blueprint that would require an increase in the sales tax by half a percentage point. In August 2008, a following summit titled the Rail North Texas Town Hall Meeting was attended by elected officials, transportation partners, business leaders, and the public. The Rail North Texas initiative consisted of 215 miles of regional rail. The Regional Transportation Council (RTC) pursued legislation to support the Rail North Texas initiative for the 81st Texas Legislative Session. The initiative would have provided options by which to fund the regional rail system by authorizing metropolitan regions to enact a voter approved local transportation tax option. The initiative was not passed and future legislation will be pursued.

EXHIBIT 1-1: MOBILITY 2035 PASSENGER RAIL RECOMMENDATIONS



1.3 WHAT IS BUS RAPID TRANSIT?²

Bus Rapid Transit (BRT) is an innovative, high-capacity, lower-cost public transit solution that can achieve the performance and benefits of more expensive rail modes. This integrated system uses buses or specialized vehicles on roadways or dedicated lanes to quickly and efficiently transport passengers to their destinations while offering the flexibility to meet a variety of local conditions. BRT system elements can easily be customized to community needs and

incorporate state-of-the-art low-cost technologies that attract more passengers and ultimately help reduce overall traffic congestion.

Major Elements of BRT:³

Running Ways: Running ways drive travel speeds, reliability, and identity. Brand identity of BRT running ways distinguishes it from other public transit services, portraying a premium-type service, while integrating with the local environment. Running ways range from general traffic lanes to fully grade-separated BRT transitways with exclusive rights-of-way. BRT can also utilize high-occupancy vehicle lanes on the highway. A running way is shown in the following image.

- **Stations:** Stations, as the entry point to the system, are the single most important customer interface affecting accessibility, reliability, comfort, safety, and security, as well as dwell times and system image. Dwell time measures the time vehicles and passengers spend at stations while the vehicle is stopped to board and alight passengers. BRT station options vary from simple stops with basic shelters to complex intermodal terminals with many amenities.



Dedicated BRT running way has been implemented on the Orange Line by the Los Angeles County Metro Transportation Authority. The regular traffic lane cannot be seen in the picture but does run parallel to the BRT running way.

Source: Darrell Clarke - October 29, 2005

- **Vehicles:** BRT systems can utilize a wide range of vehicles, from standard buses to specialized vehicles. Options vary in terms of size, propulsion system, design, internal configuration, and horizontal/longitudinal control, all of which impact system performance, capacity, and service quality. Aesthetics, both internal and external, are also important for establishing and reinforcing the brand identity of the system. This will aid in the visibility of BRT as an attractive means of transportation.



Modern appearance of a BRT vehicle gives a more attractive look to BRT

Source: BRT Website

- **Fare Collection:** Fare collection affects customer convenience and accessibility, as well as dwell times, service reliability, and passenger security. Options range from traditional pay-on-board methods to pre-payment with electronic fare media (i.e., smart cards which can be the size of a credit card and contain embedded circuits that process data).
- **Intelligent Transportation Systems (ITS):** A wide variety of ITS technologies can be integrated into BRT systems to improve BRT system performance in terms of travel times, reliability, convenience, operational efficiency, and safety and security. ITS options include vehicle priority, operations and maintenance management, operator communications, real-time passenger information, and safety and security systems.
- **Service and Operations Plan:** Designing a service plan that meets the needs of the population and employment centers in the area and matches the demand for service is a key step in defining a BRT system. How it is designed can impact system capacity, service reliability, and travel times, including wait and transfer times.

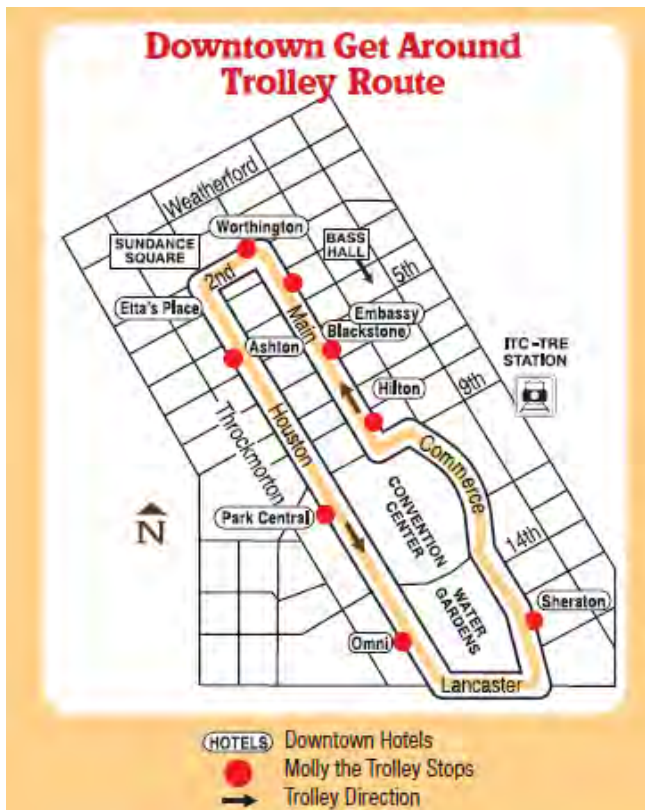
1.4 BUS RAPID TRANSIT ALONG THE UP MAINLINE

BRT along the existing UP Mainline was studied as an alternative transit mode in the RRCS. BRT would operate along a fixed guideway located within the right-of-way of SH 180 (also known as Main Street in the city of Grand Prairie) between Downtown Dallas and Downtown Fort Worth. The BRT service would operate within the roadway in mixed traffic approaching Downtown Dallas and approaching Downtown Fort Worth. Short segments of the BRT line might also operate within the roadway in mixed traffic within Downtown Grand Prairie and Arlington. Approximately 22 BRT passenger stations were identified to be constructed along the UP Mainline between Downtown Dallas at the DART Transfer Center and the Intermodal Transportation Center in Downtown Fort Worth. See Exhibit 1-2 for an illustration of the BRT station locations. The exact locations of new stations must be determined in later phases of project development. Proposed BRT stations in Grand Prairie along the UP Mainline include Carrier, Grand Prairie – Center Street, Belt Line, and the NAS. See Exhibit 1-3 for an illustration

of the BRT stations in Grand Prairie. This report looks at these locations, with the exception of NAS. City staff recommended that alternative locations besides NAS be evaluated for a transit-oriented development (TOD) site. BRT could potentially be utilized as a staging service before commuter rail becomes available.

1.5 OTHER TRANSIT MODES

Other potential transit modes that the city of Grand Prairie could consider include regular bus, express bus, and shuttle services. The advantages to these alternative services are route flexibility and inexpensive transportation costs compared to rail alternatives. These modes share the same elements of BRT as listed in Section 1.3 with the exception of operating on a dedicated lane. These alternative transit services operate in mixed traffic. Regular bus service has numerous stops along its route and is focused on inner city trips. Express bus has a limited amount of stops along a route which reduces the travel time and is often focused on connection trips outside Grand Prairie or to major destinations. Shuttle service, which can also include trolleys or streetcars, tends to serve an area with concentrated development such as a downtown, makes frequent stops along the route, and is focused on more economic development centered smaller trips. A local example is the city of Fort Worth's Molly the Trolley that is composed of a vintage-style trolley. There are three Molly routes: the Downtown Get Around, Sundance Lunch Line, and Stockyards Shuttle. The logo aids in branding the trolley service as a fun transit service.

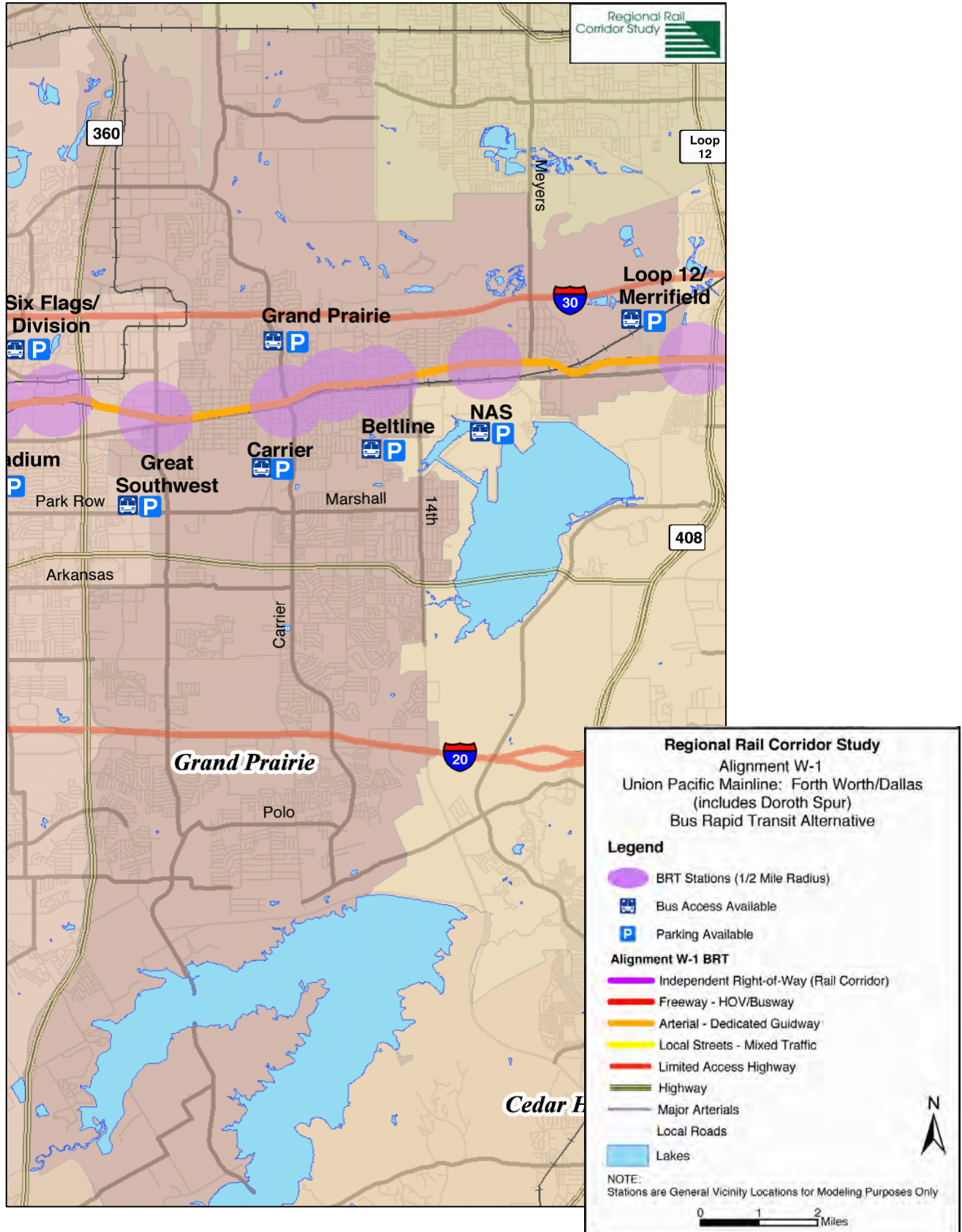


Molly the Trolley Downtown Get Around Route
 Source: City of Fort Worth



Molly the Trolley Logo
 Source: City of Fort Worth

EXHIBIT 1-3: BUS RAPID TRANSIT STATIONS IN GRAND PRAIRIE



Some of the following well-traveled local destinations could be serviced by bus before and after passenger rail on the UP Mainline becomes available. Bus service from the UP Mainline to these destinations would be necessary to provide transit patrons with the necessary mobility to reach different destinations without the use of their automobile. An available option that could be implemented in the near future would be transit connections from the existing Belt Line TRE station stop which is within the city of Irving but closely borders the northern boundary of Grand Prairie.

Starting from Belt Line Road and the TRE Line:

To Verizon Theater and Lone Star Park - 2.8 miles

To Main Street - 4.7 miles

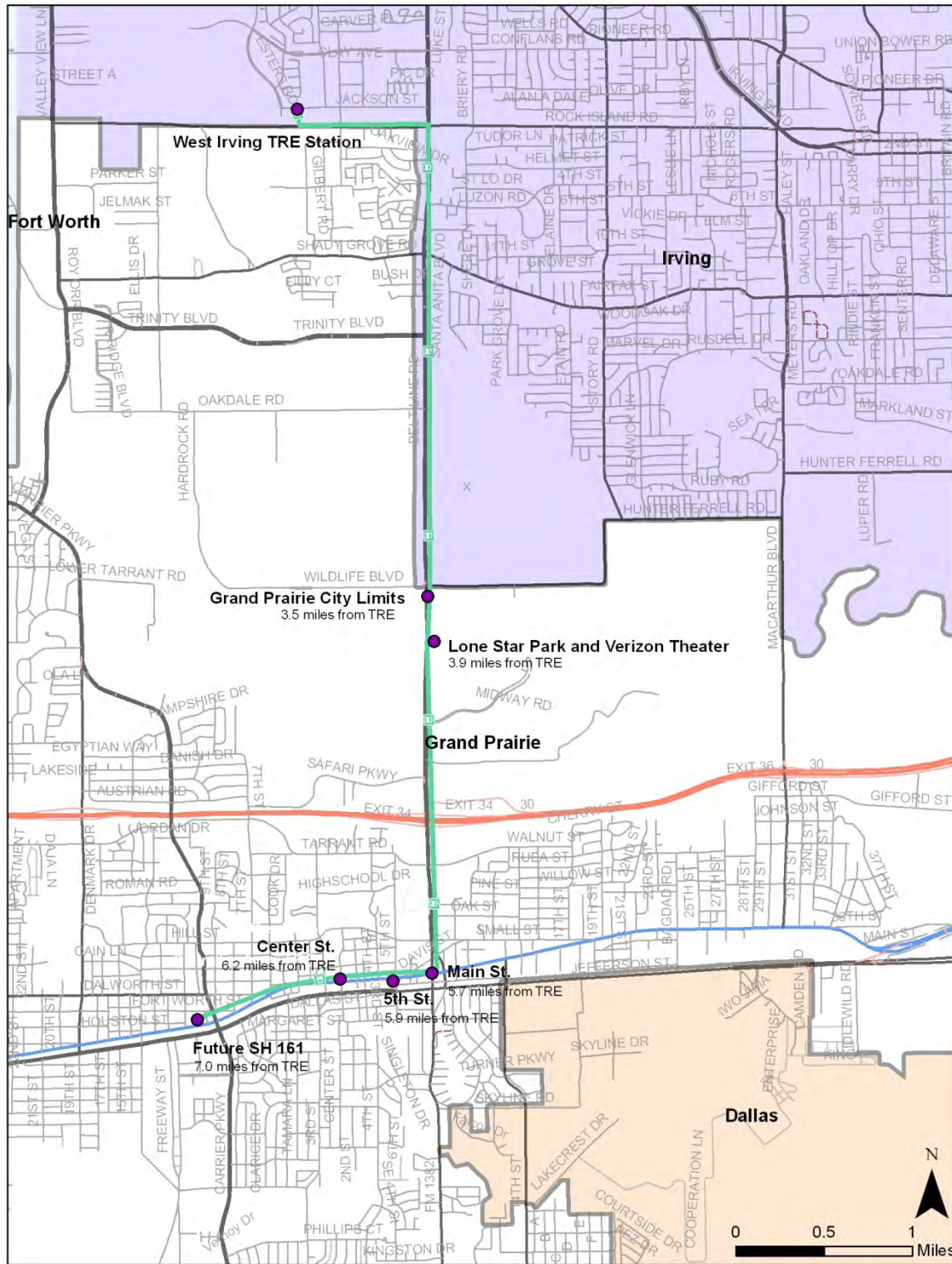
To 5th Street - 4.9 miles

To Uptown Theater/Center Street - 5.1 miles

To the future SH 161 - 6.1 miles

Exhibit 1-4 illustrates potential destinations along a proposed route.

EXHIBIT 1-4: DESTINATIONS ALONG A PROPOSED BUS ROUTE



- Key Transit Connections
- Suggested Bus Route from the TRE Station

The cost of operations would be a determining factor for deciding what type of transit and coverage area the city of Grand Prairie would pursue. Exhibit 1-5 provides an overview of the average capital and operating cost per travel mode.

EXHIBIT 1-5: CAPITAL AND OPERATING COSTS BY TRAVEL MODE

TABLE 5-4 Capital and operating costs by travel mode for medium cities (population >200,000 and <1,000,000) (1997\$)

	Travel Mode					
	Commuter Rail	Heavy Rail	Light Rail	Bus	Vanpool	Demand Responsive
Transit Agencies Reporting	4	3	5	156	8	155
<i>Medium City (Service Area Population 200,000-1,000,000)</i>						
Capital Costs						
Rolling Stock						
per passenger trip	\$ 4.63	\$ 0.22	\$ 1.27	\$ 1.35	\$ 1.57	\$ 3.89
per passenger mile	\$ 0.16	\$ 0.02	\$ 0.91	\$ 0.22	\$ 0.04	\$ 0.48
Total Capital Costs						
per passenger trip	\$ 10.09	\$ 1.61	\$ 7.49	\$ 1.61	\$ 1.48	\$ 4.95
per passenger mile	\$ 0.34	\$ 0.16	\$ 3.56	\$ 0.27	\$ 0.04	\$ 0.64
Operating Costs						
Labor (incl. fringe benefits)						
per passenger trip	\$ 0.91	\$ 2.83	\$ 1.18	\$ 1.37	\$ 0.47	\$ 4.66
per passenger mile	\$ 0.03	\$ 0.33	\$ 0.59	\$ 0.32	\$ 0.01	\$ 0.72
per bus/train mile	\$ 3.95	\$ 27.05	\$ 10.69	\$ 2.01	\$ 0.12	\$ 0.71
per bus/train hour	\$ 147.67	\$ 697.60	\$ 134.73	\$ 28.09	\$ 4.71	\$ 10.29
Total Operating Costs						
per passenger trip	\$ 12.73	\$ 3.33	\$ 1.57	\$ 4.26	\$ 1.82	\$ 16.97
per passenger mile	\$ 0.50	\$ 0.38	\$ 0.79	\$ 0.87	\$ 0.05	\$ 2.36
per bus/train mile	\$ 39.41	\$ 31.82	\$ 14.02	\$ 4.46	\$ 0.42	\$ 2.43
per bus/train hour	\$ 1,404.83	\$ 828.66	\$ 178.81	\$ 64.79	\$ 16.30	\$ 36.40

Source: ECONorthwest, National Transit Database, 1997.

Source TCRP Report 78 Estimating the Benefits and Costs of Public Transit Projects: A Guidebook for Practitioners.

Additionally, the city of Grand Prairie would need to explore options of coordination with DART, possibly expansion of services of the Grand Connection, or independent city operations, each of which has various pros and cons and levels of feasibility.

PART TWO: TRANSIT-ORIENTED DEVELOPMENT AND BICYCLE AND PEDESTRIAN BEST PRACTICES

2.1 WHAT IS TRANSIT-ORIENTED DEVELOPMENT?

Transit-oriented development (TOD) is a style of land planning and building orientation that is geared towards encouraging pedestrian activity that results from the passenger rail station. The boundary of a TOD can extend at least from a one-quarter to one-half mile radius around the passenger rail station depending on the walkability of the area. The main form of development present in the boundary is ideally mixed use and is designed to encourage people to bike and/or walk from the station and surrounding area to the development. A network of roadways, bike lanes, and sidewalks connect the developments to the station. The density of the development is moderate to high relative to each community.

TOD Requirements and Facilitators

- Regional population and economic growth: Area should have enough population to support the development, as well as be economically viable.
- Housing demand: Development should be located in an area that is already experiencing a large demand for housing and different housing types, or is projected to experience an increase in households in the future.
- Appropriate zoning and land use policies: Multi-family, mixed-use zoning produces favored results, as well as coordinated regional land-use transportation planning.
- Appropriate parking requirements:⁴ Parking management strategies include rightsizing the demand for parking at a TOD. The trips generated by the use of transit, walking, and biking reduce the need of an automobile which can result in reduced parking requirements.
- Community support: It is important to have the support of the community in order for the development to be successful.
- Long-term regional planning process: An extensive regional plan for the surrounding area of the development is beneficial in order to maximize its success.
- Public sector involvement or public-private partnerships: Government involvement is beneficial throughout implementation.
- Developer tax/permitting/financing incentives and density bonuses: Developer incentives for high density structures.

Features of a Successful TOD⁵ Include:

- A multi-modal experience with vehicular, bicycle, pedestrian, and rail modes of travel.
- Mixes of land uses aimed at reducing vehicle miles traveled by promoting pedestrian activity in the TOD area. This can be achieved by including retail that is needed for everyday living such as grocery stores, post offices, restaurants, public space, and entertainment, with office and housing.
- A unique community-created sense of place (e.g. theme, artwork, character, etc.)

- Development should be oriented to the street, the pedestrian, and the human scale. Buildings should have architectural features such as windows, balconies, and porches that create safe, functional, and interesting walking environments. The streets should contain street furniture and street art.

Benefits of a TOD:

- Decreasing traffic congestion by allowing destinations (e.g., employment, entertainment, daily needs) to be reached from the station to the destination through other non-motorized modes by having the appropriate infrastructure such as sidewalks and bike lanes in place. TOD commuters typically use transit two to five times more than other commuters in the region.⁶
- Providing housing alternatives for singles, young professionals, and empty-nesters/retirees that may have modified housing needs.⁷ These demographic groups may not need or want to live in large lot single-family homes and/or have the ability to own a vehicle; therefore, living in apartments, condos, townhomes, or small single-family homes near a train station would be a preferred housing option.
- Reducing household spending on transportation by increasing the use of transit for commute and therefore reducing the amount of driving.
- Improving air quality by driving less by commuting via transit which reduces the vehicle emissions that would otherwise be released.
- Utilizing land more efficiently by maximizing the use of public infrastructure where those amenities can be shared by a higher density of people on a smaller scale of land as opposed to developing infrastructure further out in a region where less people utilize the amenities.
- Reducing sprawl by utilizing TOD as a strategy to entice more development in inner-ring communities, those closest to the downtown, to better compete with sprawling communities on the city's outer edge.⁸ Cervero et al. (2004) states that TCRP Report 74: Costs of Sprawl – 2000 concluded that contiguous, compact development (which is how TOD is mainly composed) could save the United States nearly 25 million acres of land – much of it agricultural and environmentally sensitive – over the next 25 years.
- Promoting healthier lifestyle with opportunities for more walking and bicycling, if the proper infrastructure is in place, can help to reduce driving (shorter trips and/or option of driving shorter distances) and lead to less stress.
- Creating better places to live, work, and play by making neighborhoods a more desirable place to dwell. According to Brooke Ahlquist, MA, MPH from the Statewide Health Improvement Program of Minnesota, “Health problems are influenced by societal policies and environments that in some way either sustain behaviors or fail to foster healthier choices.” TOD’s strive to create a walkable environment which could lead to various health benefits such as reduce stress from driving, improve air quality, encourage physical activity (walking, biking), etc.

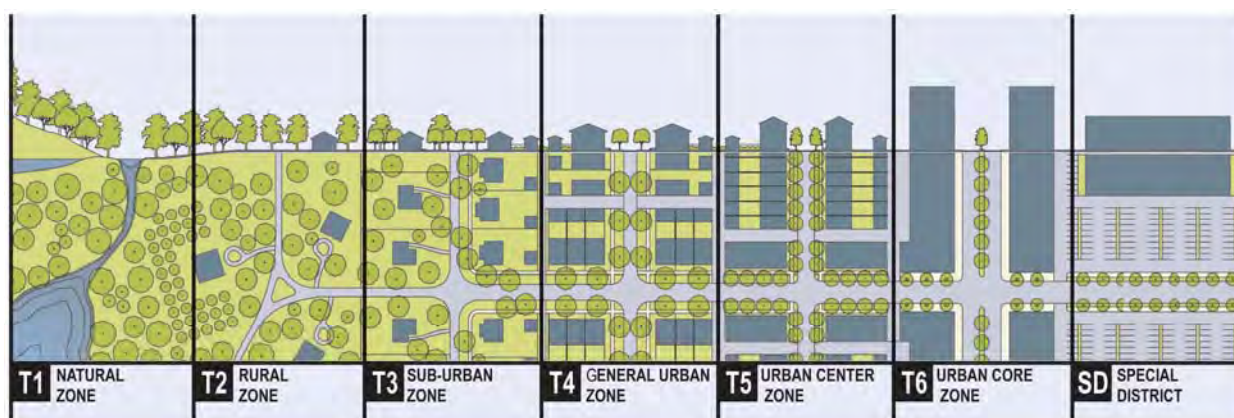
TOD has many benefits that it can contribute to a city. The Victoria Transport Policy Institute (VTPI) has compared TOD locations to waterfront property; both are valuable and scarce resources. VTPI goes on to describe that railway station surroundings are the “shop window” of a town, a place where many people see what the community has to offer. This highlights another importance for making stations attractive and inviting.

2.2 FORM-BASED CODES/SMARTCODE OVERVIEW

Often an impediment to implementing TOD is the restriction of adopted zoning and development codes. Form-based codes (FBC) offer an alternative to conventional zoning regulations. FBC have been emerging as the preferred alternative to conventional zoning mainly because of the prescribed outcome that emerges from FBC. Conventional zoning allows buildings to be placed anywhere within the developing envelope of a site whereas FBC are more strict on setback and building placement. Conventional zoning ignores the street and focuses on land use and FBC address the street, right-of-way, and building relation to the street. Conventional zoning gives the developer more flexibility on how a building will be developed and FBC have more regulations on the building details in order to ensure predictable results and community vision. The details on how a building relates to the street impact the likelihood of pedestrian activity. Several other cities in the Dallas-Fort Worth area have implemented FBC including, but not limited to, Carrollton, Dallas, Duncanville, Farmers Branch, Fort Worth, Frisco, Lancaster, McKinney, Mesquite, North Richland Hills, and Roanoke.

SmartCode is a type of form-based code. According to its lead author, Andrés Duany, the SmartCode is based on the traditional neighborhood model as it varies along the rural-to-urban transect or zones. In keeping with the new urbanism principle that the neighborhood is the basic unit of urban form, the SmartCode provides design criteria for streets, blocks, open spaces, and buildings based on their geographic location from the rural undeveloped preserve to urban core downtown. Municipalities can now adopt the SmartCode as a replacement for the aging zoning ordinances that can perpetuate sprawl or poor building construction and development.

Rural-Urban Transect Zones



Credit: Duany Plater-Zyberk & Company

SmartCode developed guidelines for selecting the proper transect of an area. The following text provides a summary of the different sector and community types which will result in the appropriate transect zone for the study area. The transect zones provide more guidelines on the standards to be applied. For this report we will provide only an overview of which to consider. It is recommended that the city of Grand Prairie form a Consolidated Review Committee comprised of various city staff and a consultant to form more specific form-based code.

Description of Transect Zones⁹

T-1 Natural Zone consists of lands approximating or reverting to a wilderness condition, including lands unsuitable for settlement due to topography, hydrology, or vegetation.

T-2 Rural Zone consists of sparsely settled lands in open or cultivated states. These include woodland, agricultural land, grassland, and irrigable desert. Typical buildings are farmhouses, agricultural buildings, cabins, and villas.

T-3 Sub-Urban Zone consists of low-density residential areas adjacent to higher zones that contain some mixed-use development. Home occupations and outbuildings are allowed. Planting is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

T-4 General Urban Zone consists of a mix of uses but primarily residential urban fabric. It may have a wide range of building types: single, side yard, and row houses. Setbacks and landscaping are variable. Streets with curbs and sidewalks define medium-sized blocks.

T-5 Urban Center Zone consists of higher density mix-of-use buildings that accommodate retail, offices, row houses, and apartments. It has a tight network of streets with wide sidewalks, steady street tree planting, and buildings set close to the sidewalks.

T-6 Urban Core Zone consists of the highest density and height, with the greatest variety of uses and civic buildings of regional importance. It may have larger blocks; streets have steady street tree planting and buildings are set close to wide sidewalks. Typically only large towns and cities have an Urban Core Zone.

Selecting the proper transect(s) requires that the study area be chosen from three scales of land use that impact one another: Regional Sectors, Community Units, and Transect Zones (see Appendix A.) Regional Sectors designate the patterns of development such as preserved or reserved open space and restricted, controlled, intended or infill growth. The Regional Sector for this study will utilize the Infill Growth Sector because development along the Union Pacific Mainline (UP Mainline) in Grand Prairie already exists. The Infill Growth Sector's Community Units consist of three types: infill traditional neighborhood development, infill regional center development, and infill TOD.

- Infill Traditional Neighborhood Development (TND) is assigned to neighborhood areas that are predominantly residential with one or more mixed-use corridors or centers.
- Infill Regional Center Development (RCD) is assigned to downtown areas that include significant retail uses, as well as government and other civic institutions of regional importance.






- Infill TOD is composed of any Infill TND or Infill RCD on an existing or projected rail or Bus Rapid Transit (BRT) network that may be designated in whole or in part as TOD. A higher density can be allowed.

All the study areas will be treated as Infill TOD; however, the basis for designating density can be started using TND or RCD guidelines and increasing the density to support TOD. Given that the study areas can have a Regional Sector classification of Infill Growth and Community Units ranging from Traditional Neighborhood Development to Regional Center Development, the Transect Zones can vary from T3 Sub-Urban Zone to T6 Urban Core Zone, as listed in Exhibit 2-1.

EXHIBIT 2-1: REGIONAL SECTOR, COMMUNITY UNIT, AND TRANSECT ZONES

Regional Sector	Community Unit	Transect Zones
Infill Growth	Traditional	T3 Sub-Urban Zone
	Neighborhood	T4 General Urban Zone
	Development	T5 Urban Center Zone
Infill Growth	Regional Center	T4 General Urban Zone
	Development	T5 Urban Center Zone
		T6 Urban Core Zone

Exhibit 2-2 provides an overview of the different TOD forms that are located throughout the Dallas-Fort Worth Metropolitan area. However, the Downtown Plano, Mockingbird Station, and Downtown Dallas development size may not be appropriate for the city of Grand Prairie along the UP Mainline due to the existing character. Exhibit 2-2 provides for a visualization of how T3 through T6 Transect Zones are applied in the Dallas-Fort Worth area.

Name	Sub-Urban	General Urban	Urban Center	Near Urban Core	Urban Core
Regional Examples	 <p>Illinois Station Hurst/Bell Station Parker Road Station</p>	 <p>CentrePort Station Kiest Station</p>	 <p>Downtown Plano Addison Circle</p>	 <p>Mockingbird Station Cityplace Station</p>	 <p>Downtown Dallas Downtown Fort Worth</p>
Building Height	Surface Parking to Single Story	2 Stories	4 Stories	11 Stories	18+ Stories
Residential Density (units/acre)	6	12	24	48	96
Office Employment (employees/acre)	100	225	450	900	1800
Retail Employment (employees/acre)	75	125	250	525	1050
Uses	sf residential, some retail, office, light to heavy industrial	sf residential, mf residential, retail, office, light to heavy industrial	sf residential, mf residential, retail, office, light industrial	sf residential, mf residential, high-density retail, office, entertainment	mf residential, high-density retail, office, entertainment
Smart Code ID	T3	T4	T5	T5.5	T6

2.3 BICYCLE AND PEDESTRIAN BEST PRACTICES

A successful TOD needs to provide housing, commercial, and retail uses that support transit and generate pedestrian activity. Transit supportive uses have the potential to be high pedestrian generators that directly promote greater transit ridership and provide opportunities for multi-purpose trips, much like those listed in Exhibit 2-3.

EXHIBIT 2-3: POTENTIAL MULTI-PURPOSE PEDESTRIAN GENERATORS

Walk-up Apartments	Government Centers
Condominiums and Townhouses	Offices
Healthcare Facilities	Medical Clinics
Schools	Daycare Facilities
Cultural Institutions	Hotels
Health Clubs	Personal Services
Retail Shops	Restaurants
Grocery Stores	Coffee Shops
Local Pubs	Outdoor Cafes
Entertainment Facilities	Neighborhood-oriented Businesses
Financial Institutions	Dry Cleaners

A TOD typically includes a quarter-mile buffer (roughly a five- to seven-minute walk) around the transit station that is oriented toward the pedestrian in order to facilitate the type of growth needed to support the development.

This is referred to throughout this document as the *pedestrian-oriented zone*. In addition, a half-mile buffer (about a 10- to 14-minute walk) that is centered on pedestrian connectivity is also crucial in order to encourage walking and bicycling to TOD conveniences and transit, while restricting automobile access. This is referred to as the *pedestrian connectivity zone* throughout this report. Pedestrians and bicyclists should feel physically comfortable and safe, and have direct and convenient access to the station platform. Pedestrians and bicyclists should also be effectively separated from moving traffic. Separation can be provided through the use of wide sidewalks, dedicated on-street bicycle facilities, on-street parking, landscaping, etc. Well-designed paving, street furniture, and lighting can create a welcoming environment as well. A more detailed discussion of the amenities that apply to each study area is included in Section 4.2, Site-Specific Bicycle and Pedestrian Recommendations. As the city of Grand Prairie begins to move forward with the creation of a TOD area and incorporating and modifying that area within the existing system, it is important to take into account the following best practices.



Streetscape - Plano, TX
Source: NCTCOG

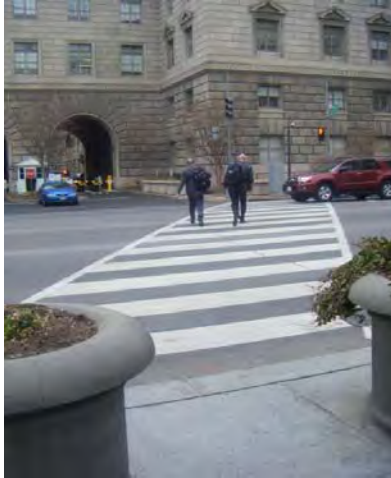
Pedestrian Improvements: To encourage use of the transit system, pedestrian accessibility to the TOD is integral. There are many factors that should be addressed to ensure pedestrians can safely and efficiently access the TOD and transit station. These varying components are described in the following sections.

Sidewalks:¹⁰ According to the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, separated sidewalks should have a minimum sidewalk width of seven feet with the width of the buffer strip between it and the street ranging from a minimum of four feet to a preferable six feet along arterial streets in non-commercial areas. Arterials where there is no buffer should offer curbside sidewalks 10 feet wide or greater. All streets within the pedestrian-oriented zone should have a minimum sidewalk width of 15 feet with an eight-foot buffer. The minimum usable width of these sidewalks should be at least seven feet to allow for wheelchair passage, etc. An additional 20-foot maximum supplemental zone should be considered on commercial streets where outside patios, sitting areas, or trellises might be located. Sidewalks should be included on both sides of the street. Curb ramps should be installed at each corner, one for each direction of travel, measuring four feet in width, and be located within the crosswalk in order to meet the Americans with Disabilities Act (ADA) Guidelines. Also the length of the ramp depends on curb height, with a maximum slope of 1:12. Tighter curb radii at intersections should also be considered in the range of five to 15 feet in order to shorten pedestrian crossing distances and force drivers to slow down to complete a turn. This also protects cyclists at intersections as it forces drivers to slow down and in turn makes them more aware of their surroundings (e.g., a bicycle going straight while the motorist is turning). Bulb-outs (also known as curb extensions) can also be constructed at intersections to prevent motor vehicles from parking at corners, narrow traffic lanes, and shorten pedestrian crossing distances and exposure.



Bulb-out - McKinney, TX
Source: NCTCOG

Crosswalks: Well-defined crosswalks are a key component to a walkable environment because they enhance pedestrian safety. Signage as well as crosswalks may be necessary for safety. In addition, bold patterns or textured crossings indicate to drivers that they need to proceed with caution. According to the Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition, crosswalk markings should be provided at locations controlled by traffic control signals or on approaches controlled by STOP signs; crosswalk lines should be installed where engineering judgment indicates they are needed to direct pedestrians to the proper crossing path(s); and across uncontrolled approaches provision of crosswalks based on engineering judgment and engineering studies which consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic, the posted speed limit, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.



Zebra stripes - Washington, D.C.
Source: NCTCOG

Two types of pavement markings include parallel lines and perpendicular zebra stripes. At a few locations, crosswalks are marked by special pavement materials. Special pavement materials for crosswalks should only be used in combination with traffic-calming devices; they need to be highly visible and not be a maintenance burden. By themselves, pavement markings are not enough. The motorist must be able to see the crosswalk. Drivers need to be able to see pedestrians who have entered the crosswalk or who are about to step off the curb. Side-mounted “Yield To Pedestrian” signs should be installed only at locations where visibility, traffic flow, or other circumstances create special safety problems. “Pedestrian Crossing” signs should be installed where the number of pedestrian crossings is high and motorists cannot easily see pedestrians.

Pedestrian Traffic Signals: Pedestrian signal indicators should be used at all traffic signals wherever warranted. According to the MUTCD 2009 Edition, countdown displays are now required for all new pedestrian signals. The pedestrian countdown signal tells the pedestrian how much time is left in the pedestrian clearance interval. This signal has been proven effective in reducing the number of pedestrians who initiate a crossing too late in the cycle. The international pedestrian symbol signal is preferable and is recommended in the MUTCD 2009 Edition; the WALK and DON'T WALK messages are allowable alternatives. Pedestrian signals should be clearly visible to pedestrians at all times when in the crosswalk or waiting on the far side of the street. Signals may be supplemented with audible messages to make crossing information accessible to all pedestrians, including those with visual impairments. A variety of traffic signal enhancements that can benefit pedestrians and bicyclists are available.



Pedestrian countdown signal - Dallas, TX
Source: NCTCOG

Pedestrian pushbuttons may be installed at locations where pedestrians are expected intermittently. Quick response to the pushbutton or feedback to the pedestrian (e.g., indicator light comes on) should be programmed into the system. When used, pushbuttons should be well-signed and within reach and operable from a flat surface for pedestrians in wheelchairs and with visual disabilities. They should be conveniently placed in the area where pedestrians wait to cross. Pushbuttons should be designed according to the standards and guidelines in the MUTCD 2009 Edition, including the positioning of pushbuttons and legends on signs that clearly indicate which crosswalk signal is activated by which pushbutton. In addition, pushbuttons should be a minimum of two inches across in at least one direction. The force required to activate the buttons should not be greater than five pounds. In general, if pedestrians are present during a majority of the signal phases during the peak hour for a particular leg of an intersection, the pedestrian signal phase should be automatic (i.e. traffic signals should allow for pedestrian crossing automatically through synchronization of

signals) and pedestrian pushbuttons should not be used. However, in areas with intermittent pedestrians, pushbuttons may be used to reduce delays to vehicular traffic. According to the MUTCD 2009 Edition, the recommended walking speed for calculating the pedestrian clearance time is 3.5 feet per second, except where extended pushbutton presses or passive pedestrian detection have been installed for slower pedestrians to request additional crossing time. In addition, the total of the walk phase and pedestrian clearance time should be long enough to allow a pedestrian to walk from the pedestrian detector to the opposite edge of the traveled way at a speed of 3.0 feet per second. The Lead Pedestrian Interval (LPI) helps reduce conflicts between turning vehicles and pedestrians when turning vehicles encroach onto the crosswalk before pedestrians leave the curb. The LPI releases pedestrians (WALK phase) three to five seconds prior to the green light for vehicles. This measurement should be utilized when there is a double right or left turn movement, or in an intersection with high concentrations of turning traffic.

Pedestrian Amenities: Benches are an important sidewalk amenity, providing pedestrians on a long walk with an opportunity to sit and rest, wait for a bus, meet a friend, or read the paper. Benches should only be installed on streets that have adequate sidewalk widths, and they should not interfere with curb ramps, fire hydrants, parking meters, or emergency access ways. Benches should be installed in the sidewalk buffer zone, a minimum of two feet from the curb, or in the building zone as long as they do not obstruct the pedestrian path of travel. Good lighting for pedestrians makes many people feel safer at night. Streetlights should also be installed in the sidewalk buffer zone, a minimum of two feet from the curb to avoid damage from trucks that pass close to the curb. Streetlights at intersections must be placed so that pedestrians are visible to motorists. Pedestrian light fixtures should direct the light toward the sidewalk and should be between 10 and 12 feet in height to help foster a sense of security and comfort. Trees should be pruned regularly to ensure that branches do not block streetlights. Plant material can help create a more attractive streetscape, adding color to the environment, improving air quality, and creating a buffer between pedestrians and automobiles. Planters should be installed in the curb zone a minimum of two feet from the curb, in the building zone, or within the property line.



Streetscape - Dallas, TX
Source: NCTCOG

Much like planters, trees can help create a more attractive streetscape, providing visual relief year round and shade from the Texas heat, improving air quality, and creating a buffer between pedestrians and automobiles. Trees should be pruned to ensure that their branches do not interfere with pedestrian and vehicular visibility and movement. On the sidewalk side, eight feet of clear space above the ground should be maintained; on the roadway side, 14 feet should be maintained with tree heights ranging from 30 to 50 feet. Trees should not be placed within 40 feet of an intersection or where they would interfere with people getting on and off buses. Other street furnishings to consider placing within the sidewalk buffer zone that add to a streetscape include kiosks, trash cans, newspaper boxes, and mailboxes.

Bicycle Improvements: As with pedestrian improvements, connectivity to transit should be a prime consideration in strategies for improving bike-transit commuting. Good sidewalk access and on-street bicycle facilities between destinations and transitway stations can encourage travelers to use transit, thereby reducing auto trips while supporting mixed-use transit-oriented developments. Further support for combined bicycle and transit trips can include extensive signage, an interconnected street system, bicycle lanes, marked crosswalks, bicycle racks and lockers, and other facilities for pedestrians and bicyclists at transit stations and at other major destination centers throughout the city. To encourage a strong intermodal link, the policy for all transit modes, including light-rail transit and commuter rail, should be to allow bicycles on board. Recognizing that some bicycles may not be able to travel with the transit vehicle, bicycle racks and lockers should be located at transitway stations. In addition, to allow for commuters from farther origins to reach the transit station, collector buses should allow bikes on board or offer carrier racks on the front of the bus. Covered waiting areas and bicycle parking at bus stops and transit stations should also be considered. There are a variety of bicycle facilities that can be implemented to encourage the use of bike-transit commuting. These facilities and design considerations are discussed in the following sections.

Shared Use Path: A Shared Use Path is a facility on an exclusive right-of-way and with minimal intersections with motor vehicles. Shared Use Paths are sometimes referred to as trails; however, the term trail can refer to a variety of facilities that do not necessarily meet the design criteria for Shared Use Paths, so care should be taken when using these terms interchangeably. Users are restricted to non-motorized forms of transportation (with the exception of maintenance vehicles) and may include, but are not limited to, bicyclists, in-line skaters, wheelchair users, and pedestrians, including runners, people with baby strollers, people walking dogs, etc. Shared Use Paths should not be used to preclude on-road bicycle facilities, but rather to supplement a system of on-road facilities. Shared Use Paths can serve a variety of purposes, from recreational facilities, to facilities along abandoned and active rail rights-of-way and utility corridors, to facilities that provide bicyclists access to areas that are otherwise served only by limited access highways closed to bicycles or that are limited by barriers.



Shared Use Path - North Richland Hills, TX
Source: NCTCOG

Design Considerations: A recommended minimum width for two-directional travel on a Shared Use Path is 10 feet with a two-foot shoulder on either side. However, NCTCOG strongly encourages two-directional travel paths be implemented at a width of 12 feet. Under certain circumstances where high volumes of bicycles, joggers, skaters, and pedestrians are expected, a desired width is 14 feet with two-foot shoulders on either side. Additional clearance of one foot for signage is recommended.

Sidepath: A Sidepath is a Shared Use Path marked for bicycle (and sometimes pedestrian) use that is adjacent to a roadway, and are most appropriate in corridors where there are limited driveway crossings and intersections, or adjacent roadway speeds and volumes are higher. This facility offers an option for those not comfortable riding on the road with traffic. However, careful facility design is needed to minimize conflicts between motorists and bicyclists at intersections. In addition, where Sidepaths are present, bicyclists should not be prohibited from the roadway.



Sidepath - Watertown, MA
Source: City of Watertown

Design Considerations: A recommended width for two-directional travel on a Sidepath is 10 feet with two-foot shoulders on either side. The minimum width of a one-directional Sidepath is six feet with two-foot shoulders on either side (in instances when Sidepaths are to be implemented on both sides of the roadway). Sidepaths should be separated from the roadway by a five-foot buffer. If this is not possible, a physical barrier not less than 42 inches high is recommended between the Sidepath and roadway to prevent path users from making unwanted movements between the path and the roadway. Additional clearance of one foot for signage is recommended.

Bicycle Lane: Bicycle Lanes are portions of the roadway that have been designated for the preferential or exclusive use of bicyclists through striping, signage and other pavement markings. On two-way streets, bike lanes should be provided on both sides of the road so that bicyclists can ride in the same direction as adjacent motor vehicle traffic.

Design Considerations: Bicycle Lanes should be at least four feet wide on roadways with open shoulders and five feet wide on roadways with curb and gutter or on-street parking. Pavement markings should appear at intervals not to exceed one-half mile. Five-foot wide bicycle lanes are typical, but wider lanes (e.g., six foot) are often used on roadways with high motor vehicle traffic volumes.



Bicycle Lane - Vancouver, WA
Source: City of Vancouver

Buffered Bicycle Lane: The Buffered Bicycle Lane is a Bicycle Lane that is buffered by a two- to six-foot wide striped cross-hatched “shy zone” between the bicycle lane and the moving vehicle lane or the parking lane. This design makes movement safer for both bicyclists and vehicles. With the shy zone on the left of the bicyclist, the buffered lane offers a more

comfortable riding environment for bicycle riders who prefer not to ride adjacent to traffic; with the shy zone on the right of the bicyclist, it puts the riders outside of the 'door zone' of parked cars. This system allows motorists to drive at a normal speed; they only need watch for cyclists when turning right at cross-streets or driveways and when crossing the Buffered Bicycle Lane to park.

Design Considerations: For use on streets with high bicycle volume and/or high motor vehicle volumes and speeds. Bicycle Lanes should be five feet wide with a two to six foot wide striped cross-hatched buffer, and bicycle pavement markings appearing more frequently than standard bicycle lanes (every 50 to 100 feet) to prevent vehicles from driving in the lane.



Shy zone on left - Brooklyn, NY
Source: New York Department of Transportation



Shy zone on right - Tucson, AZ
Source: Arizona Department of Transportation

Cycle Track: The Cycle Track is an exclusive bicycle facility adjacent to, but separated from, the roadway by a physical barrier. The facility is also separated from the sidewalk. The Cycle Track combines the user experience of a separated path with the on-street infrastructure of a Bicycle Lane. For use on arterial roadways with high motor vehicle speeds and volumes and roads with fewer cross-streets and longer blocks.

Design Considerations: Between six and eight feet wide, with a two-foot buffer on the vehicle side. Separation from the vehicle lane is channelized (elevated or at-grade), a mountable curb, or bollards/markings.



Cycle Track - New York, NY
Source: New York Department of Transportation

Climbing Lane: Uphill Bicycle Lanes (also known as "Climbing Lanes"), separate vehicle and bicycle traffic and enable motorists to safely pass slower-speed bicyclists, thereby improving conditions for both travel modes. While descending bicyclists are often able to maintain vehicular travel speeds, bicyclists ascending hills tend to lose momentum, especially on longer street segments with continuous uphill grades. This speed reduction creates greater speed differentials between bicyclists and motorists, creating uncomfortable and potentially unsafe

riding conditions. The right-of-way or curb-to-curb width on some streets may only provide enough space to stripe a Bicycle Lane on one side. Under these conditions, Bicycle Lane striping could be added to the uphill side of the street, and Shared Lane Markings on the downhill side of the street.

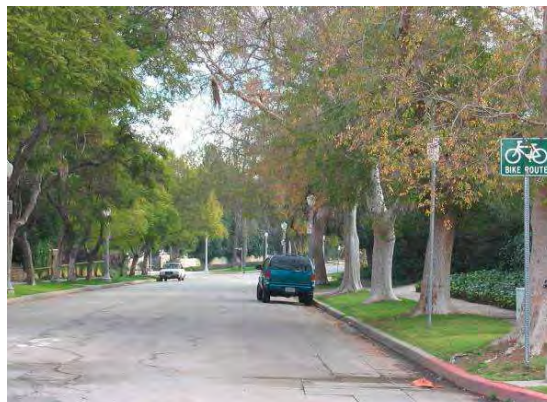


Climbing Lane - Portland, OR
Source: Portland Department of Transportation

Design Considerations: The uphill Bicycle Lane should be five to six feet wide. On the downhill side, the bicycle lane should be five to six feet wide if room permits; otherwise, a Shared Lane Marking should be installed according to the design guidelines outlined for Shared Lane Marking facilities.

Signed Bicycle Route: A Signed Bicycle Route is a shared roadway without any designated bicycle facilities, (i.e., no roadway striping or markings.) Many non-arterial roadways with low traffic volumes and low speeds, such as neighborhood connectors, are ideal as a Signed Bicycle Route.

Design Considerations: Provide Bicycle Route Signs every one-third to one-half mile on straight segments of the route, depending on the locations of crossings with other Bicycle Routes, locations of primary arterial roadway crossings, sight distance, and the overall frequency of street crossings.



Signed Bicycle Route - Seattle, WA
Source: Seattle Department of Transportation

Shared Lane Marking: Shared Lane Markings (sometimes referred to as a “sharrow”) are pavement symbols consisting of a bicycle with two chevron markings above the bicycle. The Shared Lane Marking is utilized on roadways where bicyclists and motorists share the lane, of which the intent of the Shared Lane Marking is to improve bicyclist and bicyclist-motorist positioning. Traffic lanes are often too narrow to be shared side-by-side by bicyclists and passing motorists. Where parking is present, bicyclists wishing to stay out of the way of motorists often ride too close to parked cars and risk being struck by a suddenly-opened car door (being “doored”).



Shared Lane Marking - San Francisco, CA
 Source: San Francisco County Transportation Authority

Where no parking is present, bicyclists wishing to stay out of the way of motorists often ride too close to the roadway edge where they run the risks of being run off the road, being clipped by overtaking motorists who misjudge passing clearance, or of encountering drainage structures, poor pavement, debris, and other hazards.

Riding further to the left avoids these problems, and is legally permitted where needed for safety. However, this practice can run counter to motorist expectations. The Shared Lane Marking, therefore, indicates the legal and appropriate bicyclist line of travel, and cues motorists to pass with sufficient clearance, as needed.

Design Considerations: The Shared Lane Marking should not be placed on roadways that have a speed limit above 35 mph. If used in a shared lane with on-street parallel parking, Shared Lane Markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb or from the edge of the pavement where there is no curb. If used on a street without on-street parking that has an outside travel lane measuring less than 14 feet wide, the centers of the Shared Lane Markings should be at least four feet from the face of the curb or from the edge of the pavement where there is no curb. If used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.

Paved Shoulder: Typically found in rural areas, shoulder bikeways are paved roadways with striped shoulders wide enough for bicycle travel. In some cases, the opportunity to develop a standard Bicycle Lane on a desirable street may not be possible. However, it may be possible to stripe the shoulder in lieu of Bicycle Lanes by reducing the outside lane width to the AASHTO minimum. Where feasible, extra width should be provided with pavement resurfacing, but not exceed desirable bicycle lane widths.

Design Considerations: Striped shoulders should be four feet minimum without a curb; five feet minimum with a curb. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Below four feet should not be designated or marked as a bicycle facility.



Paved Shoulder – FL
 Source: Federal Highway Administration

Exhibit 2-4 lists bicycle facility types and characteristics of each one.

EXHIBIT 2-4: BICYCLE FACILITY TYPES AND CHARACTERISTICS

Facility Type	Location	Design Considerations
Shared Use Path (Class I Bikeway)	Exclusive right-of-way	Shared Use Paths should be 10 to 14 feet depending on volume of users with 2-foot shoulders on either side. Supplemental on-road system.
Sidepath (Class I Bikeway)	Exclusive right-of-way	Sidepaths should be 10 feet min. for two-way travel with 2-foot shoulders on either side; 6 feet min. for one-way travel with 2-foot shoulders on either side. 5-foot buffer between path and roadway, or a physical barrier.
Bicycle Lane (Class II Bikeway)	On roadways: minor arterials, arterials	Bike Lanes should be at least 4 feet wide on roadways with open shoulders and at least 5 feet wide on roadways with curb and gutter or on-street parking. Pavement markings should appear every one-half mile.
Climbing Lane (Class II Bikeway)	On roadways with hills where adequate right-of-way for bike lanes on both sides of the roadway cannot be acquired	The uphill Bike Lane should be 5 to 6 feet wide. On the downhill side, the bike lane should be 5 to 6 feet wide if room permits, or Shared Lane Markings should be installed according to recommendations.
Buffered Bicycle Lane (Class II Bikeway)	On roadways with high motor vehicle volumes and/or speeds; on roadways with on-street parking that has a high turnover	Buffered bike Lanes should be 5 feet wide with a 2- to 6-foot wide striped cross-hatched buffer, and bicycle pavement markings should be placed every 50 to 100 feet.
Cycle Track (Class II Bikeway)	On roadways with high motor vehicle volumes and/or speeds	Cycle Tracks are between 6 to 8 feet wide, with a 2-foot buffer on the vehicle side. Separation from the vehicle lane is channelized (elevated or at-grade), a mountable curb, or bollards/ markings.
Signed Bicycle Route (Class III Bikeway)	On lower volume roadways that have lower speeds: neighborhood streets, collectors, etc.	Provide bike route signs every one-fourth mile and at intersections.
Shared Lane Marking (Class III Bikeway)	On lower volume roadways that do not have a speed limit over 35 mph: arterials, minor arterials, collectors, neighborhood streets, etc.	Shared Lane Markings on roadways with on-street parallel parking: should be placed 11 feet from edge of curb or edge of pavement. Without on-street parallel parking: 4 feet from curb or edge of pavement. Pavement markings immediately after an intersection and at least every 250 feet.
Paved Shoulder (Class III Bikeway)	On rural roadways, or on roadways where adequate right-of-way for on-street facilities cannot be acquired	Striped shoulders should be 4 feet min. without a curb; 5 feet min. with curb. Signage optional.

Additional Considerations: In addition to bicycle and pedestrian facilities, there are a number of components that should be taken into consideration when developing a successful TOD, including street network, building placement, and parking. Best practices for implementing these components successfully are covered in the remaining sections.

Parking: Because density, building up rather than out, is a key strategy for clustering growth, the extra land area devoted to parking can cause a serious problem. If densities are increased, more land area must be devoted to parking and the distance between buildings increases, making the environment more hostile to pedestrians. Under many current parking standards used within the region, it would be nearly impossible to achieve pedestrian-scaled environments or transit-supportive densities at station areas. The best solution for station area development is to lower parking ratios and put as much parking as possible on the street, in garages or, better yet, underground. Lowering parking ratios can be achieved by utilizing a shared parking factor. Both maximum parking allowances and minimum parking requirements for all commercial and employment development should be established within the station area. Minimum requirements help to avoid spillover parking in retail areas or nearby neighborhoods; maximums guard against overly generous parking supplies that discourage transit use. Short-term parking controls should be utilized in commercial core areas to discourage commuter parking near retail uses.



On-street Parking - Fort Worth, TX
Source: NCTCOG

On-street parking is critical to keeping the focus of a community on the street rather than the interior of lots. On-street parking slows vehicle speeds and helps to create street activity as well as buffer the pedestrian from vehicle traffic. It provides convenient access for guests or patrons, reinforcing the orientation of building entries to the street. On-street parking can be compatible with bicycle travel, provided that auto speeds are slow enough to allow bicyclists to travel safely in the street. While the goal is to reduce automobile traffic within the TOD, sufficient parking for those who must use this mode of travel should be provided. However, there are several techniques that can be implemented to deter those individuals who use the automobile needlessly. This can be in the form of reducing minimum parking requirements, reducing maximum parking allowances, requiring individuals to pay to park, requiring payment for an automobile to enter the TOD, or any combination of the aforementioned. Implementing these techniques will discourage individuals from using the automobile unnecessarily and help promote alternative modes of transportation.

Driveways: Driveways should be clearly marked and designed to look like driveways, not intersections. Sidewalks should continue through the driveway and the driveway should be sloped to establish a clear right-of-way for pedestrians, and ultimately slowing down the motorist to allow for increased pedestrian safety. Driveways should be located away from intersections and consolidated or narrowed where possible to reduce the number of conflict points for pedestrians.

Parking access on streets located within the pedestrian-oriented zone ideally should be restricted to on-street parking or via alleyways. For residential uses, minimum driveway width should be set at 10 feet with a maximum of 14 feet. For commercial uses, the minimum driveway width for two-way traffic should be 22 feet.



Limited Driveways - Fort Worth, TX
Source: NCTCOG

Street Network: When redeveloping groups of parcels it is important to create good block form, often in a grid or other highly connected pattern which should offer multiple access points to the station and other uses within the development. Block distances should range from 300 to 500 feet in order to keep walking distances short and provide alternative route options for pedestrians. Frequent, interconnected streets increase the efficiency of transit and circulation, and offer more choices for pedestrians. Street links to trails within surrounding neighborhoods should be considered priority as they allow for an alternate accessibility route for adjacent communities. In addition, land use and zoning policies can also provide backing behind the development of a stronger non-motorized network. Safe and convenient access from a bicycle and pedestrian network to an entrance should be provided. Buildings should be as close to the transportation network as possible and provide safe entrances to the building which minimizes interaction between vehicles, pedestrians and bicyclists.

Building Placement and Features: Street-facing buildings with articulated façades should be oriented toward the pedestrian with minimal setbacks. Recurring windows and multiple entries should be prevalent with the minimum amount of ground-floor window space area equal to 40 percent of a building's length. Mixed-use and commercial buildings are desirable in the pedestrian-oriented zone. For added definition and a sense of enclosure to the street, multi-story buildings should be present along with shelters such as arcades, awnings, trellises, and other overhangs to protect pedestrians from the effects of the region's changing seasons. Greater detail is discussed in Section 2.2 Form-Based Codes/SmartCode Overview.



Mixed-use Development - Plano, TX
Source: NCTCOG

Traffic-Calming Measures: Medians, bicycle lanes, narrow and reduced numbers of travel lanes, as well as on-street parking have all been proven effective means for creating a more pedestrian-friendly environment. The benefits for pedestrians include lower motor vehicle traffic speeds, more attentive motor vehicle operators, and shorter, more effective crossings. In general, on-street parking should be implemented on at least one side of the street at a width of eight feet, along with a six foot wide bicycle lane. Narrowing travel lanes to 10 or 11 feet will slow motor vehicle traffic speeds and create space for bicycle lanes, which also act as a buffer for pedestrians, and create a safer environment for cyclists. Medians can create pedestrian crossing islands at large intersections or in the event that a crossing needs to occur at an uncontrolled location. They can be signalized or non-signalized, but should at least include zebra striping across the entire length of the pedestrian crossing. In general, pedestrian crossing islands should only be constructed when pedestrian volumes are high and crossing poses a safety concern for pedestrians. Within neighborhoods, traffic-calming measures can be used to slow motor vehicle traffic with techniques such as speed humps and traffic circles. These methods are also beneficial in breaking up long stretches of straight streets.



Traffic Circle - McKinney, TX
Source: NCTCOG

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PART THREE: EXISTING CONDITIONS

3.1 TRANSIT-ORIENTED DEVELOPMENT AUDIT HIGHLIGHTS

Three sites with transit-oriented development (TOD) potential along the Union Pacific Mainline (UP Mainline) were selected by North Central Texas Council of Governments (NCTCOG) staff, with input from city of Grand Prairie staff, for a closer examination: Scenario A - Main Street and the future State Highway (SH) 161; Scenario B - Main Street and Center Street; and Scenario C - Main Street and East 5th Street (also known as 5th NE). These sites may be referred to as “study areas” in this report. The three sites contain benefits for locating the transit station: Scenario A has close access to SH 161, Scenario B is in the core of the downtown, and Scenario C has close access to Belt Line Rd a main arterial that provides north/south mobility. A TOD audit composed of several questions regarding the current and future conditions was performed for each of the three study areas. Results of the audit will be highlighted here. To see the full results per study area please refer to Appendices B-1, B-2 and B-3.

TOD Audit General Highlights for One-half Mile within All Three Study Areas:

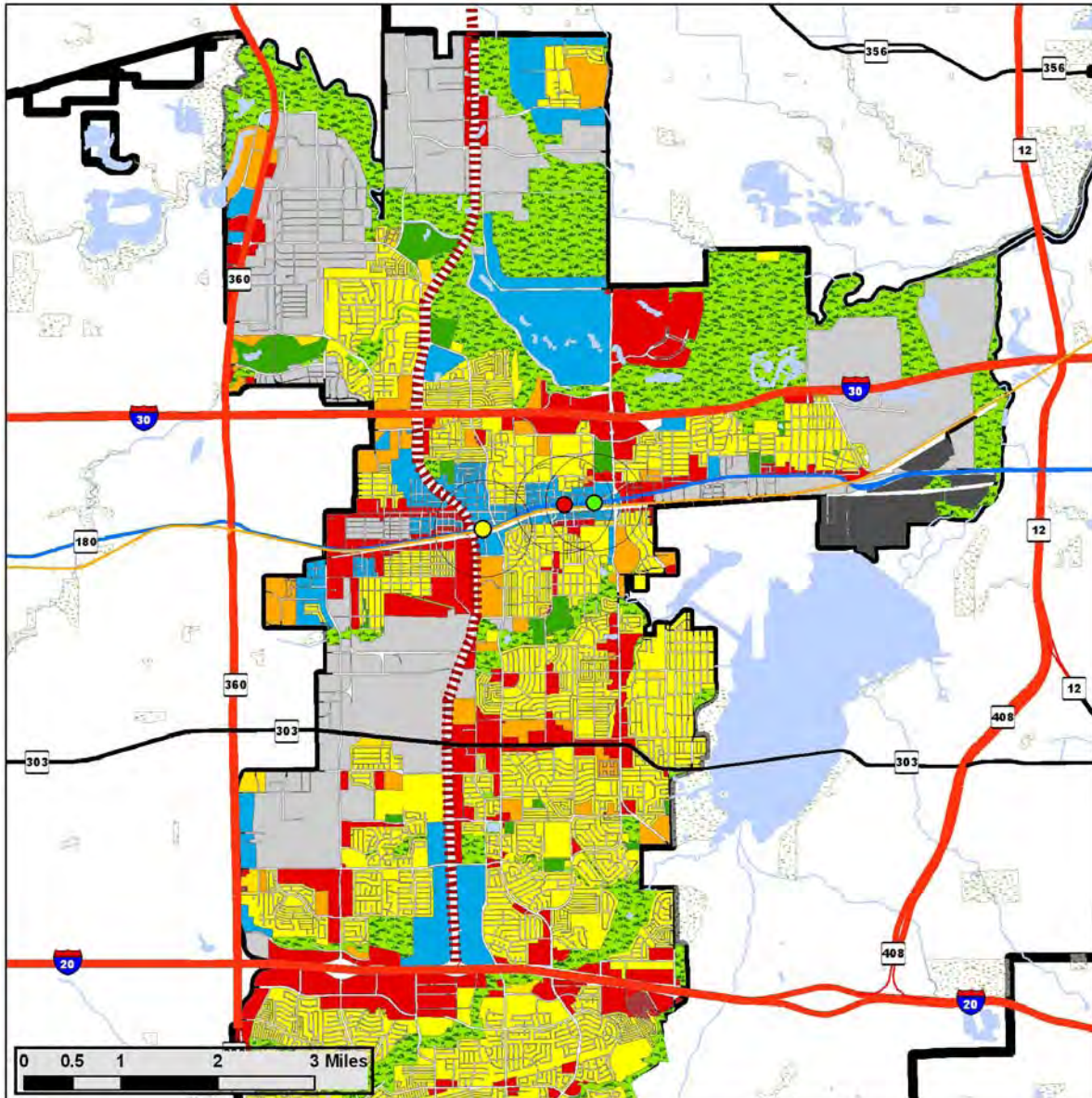
- No current mixed-use zoning.
- Predominant land uses consist of single-family and commercial uses.
 - Per Article 3 of the Grand Prairie Unified Development Code, the Commercial District (C) is intended to provide suitable areas for the development of medium intensity commercial uses such as automotive-related services.
 - Multi-family zoning and land use is present but in the minority.
- Vacant land for development is present; however, vacant land immediately close to the rail line is very limited.
- Bicycle paths have not been implemented; however, the Regional Veloweb indicates that multi-use trails have been identified for future implementation.
- Sidewalks are inadequate in certain portions of each study area. However, the city is currently working on improving sidewalks in some of the study areas.
- Density bonuses are not offered by the city at the present time.
- Enterprise zones are in close proximity to all three study areas. However, the study area locations are not within the enterprise zones.
- Tax Increment Financing (TIF) District 1 is within the one-half mile buffer of the study areas of Main Street and Center and Main Street and East 5th Street. However, the study areas themselves are not in the TIF District 1 boundaries.

3.2 LAND USE AND ZONING

Future Land Use

In accordance with the [City of Grand Prairie 2010 Comprehensive Plan](#), several locations along the UP Mainline have been identified as future mixed-use as shown in to Exhibit 3-1.

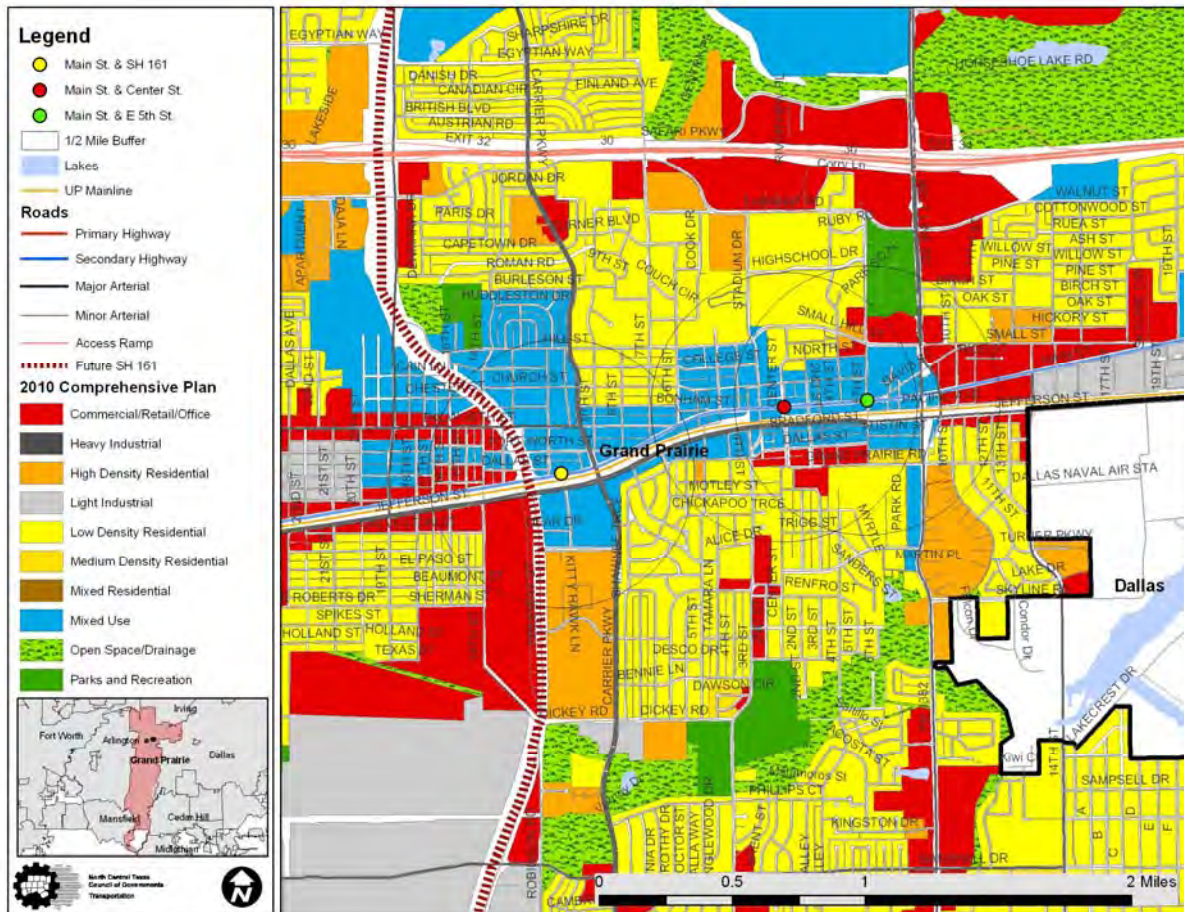
**EXHIBIT 3-1: FUTURE LAND USE PLAN FOR NORTHERN PORTION
OF THE CITY OF GRAND PRAIRIE**



Map created by NCTCOG
Source: [City of Grand Prairie 2010 Comprehensive Plan](#)

Scenario A - Main Street and the future SH 161 study area is projected to be within a mixed-use district. Surrounding land uses include commercial and low density residential. The study area is also included in the SH 161 Corridor Plan which was adopted in 2001. Scenario B - Main Street and Center Street study area is projected to be in a mixed-use area surrounded by low density residential and commercial/retail/office land uses. Scenario C - Main Street and East 5th Street is projected to be in a mixed-use area surrounded by low density residential and commercial/retail/office land uses. Exhibit 3-2 illustrates the future land uses around the study areas.

EXHIBIT 3-2: FUTURE LAND USE PLAN OF STUDY AREAS

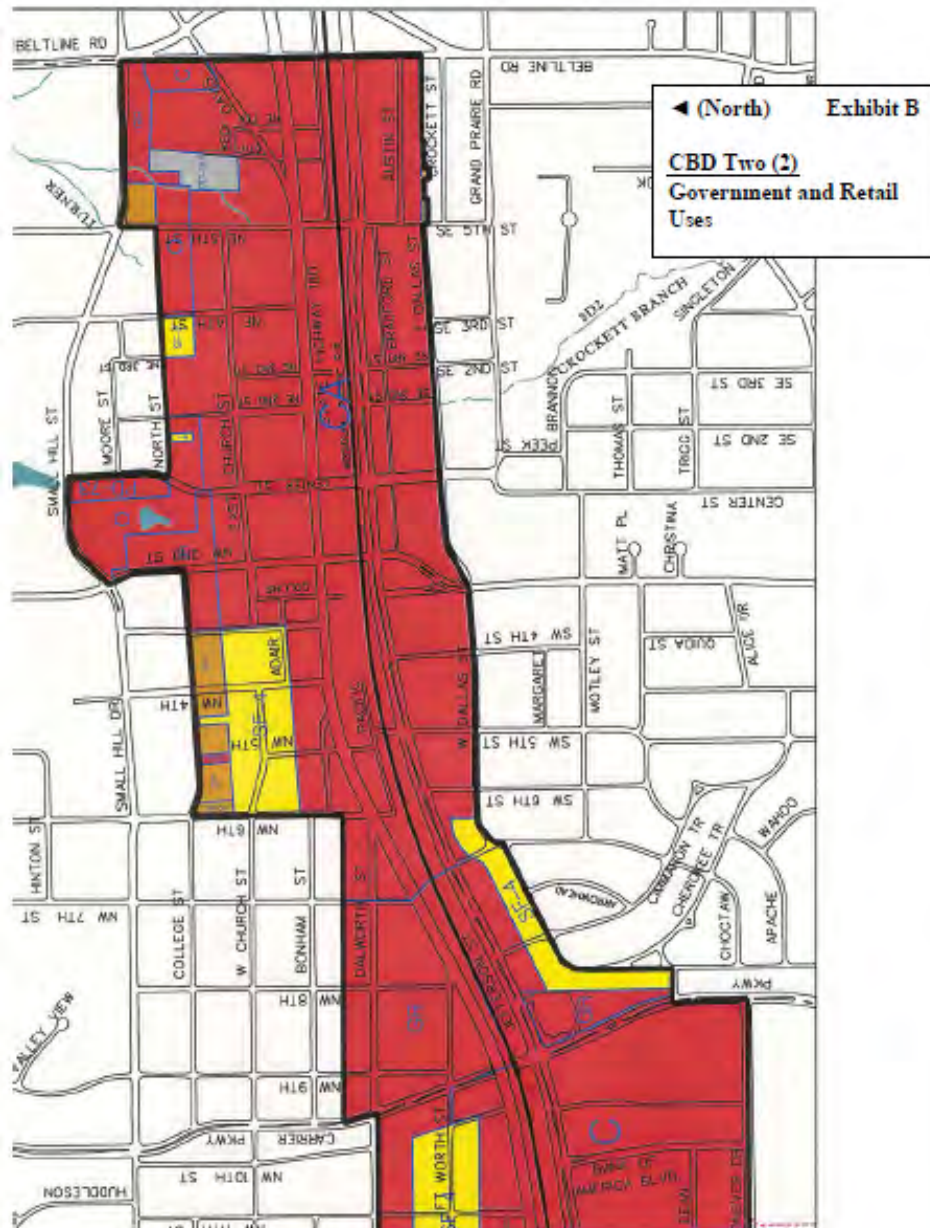


Map created by NCTCOG
 Source: [City of Grand Prairie 2010 Comprehensive Plan](#)

Central Business District

The Central Business District Two (CBD 2) overlay extends from future SH 161 to Belt Line Road along Main Street according to Appendix R – Central Business Districts Ordinance 7698 of the Unified Development Code (UDC), updated November 2007, as shown in Exhibit 3-3. All three study areas fall within the CBD 2 area. The CBD 2 area is projected as a mixed-use area including residential units above retail and commercial uses. There are various uses not authorized in the CBD 2 area. Auto-oriented uses that are not authorized, per Appendix R, include the following: auto auction, outdoor vehicle repair, vehicle sales, auto salvage/reclamation, used tire sales, self-service car wash, and vehicle wash/repair. Shared parking in the CBD 2 area will be considered on a case-by-case basis to reduce the overall amount of parking required. A reduction of over 40 percent of the required parking will not be approved per the City ordinance.

EXHIBIT 3-3: CENTRAL BUSINESS DISTRICT TWO



Article 6 of the UDC provides density and dimensional requirements for the CBD as listed in Exhibit 3-4.

EXHIBIT 3-4: DENSITY AND DIMENSIONAL REQUIREMENTS

	Central Business District Two
Minimum Front Setback (feet)	0
Maximum Height (feet)	50
Maximum Story Height	5 Stories (a)
Maximum Floor Area Ratio (FAR)	2:1 (b)

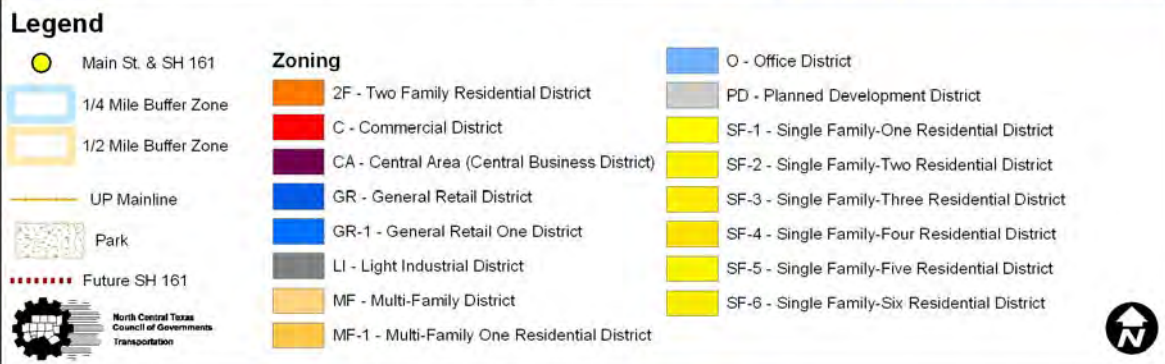
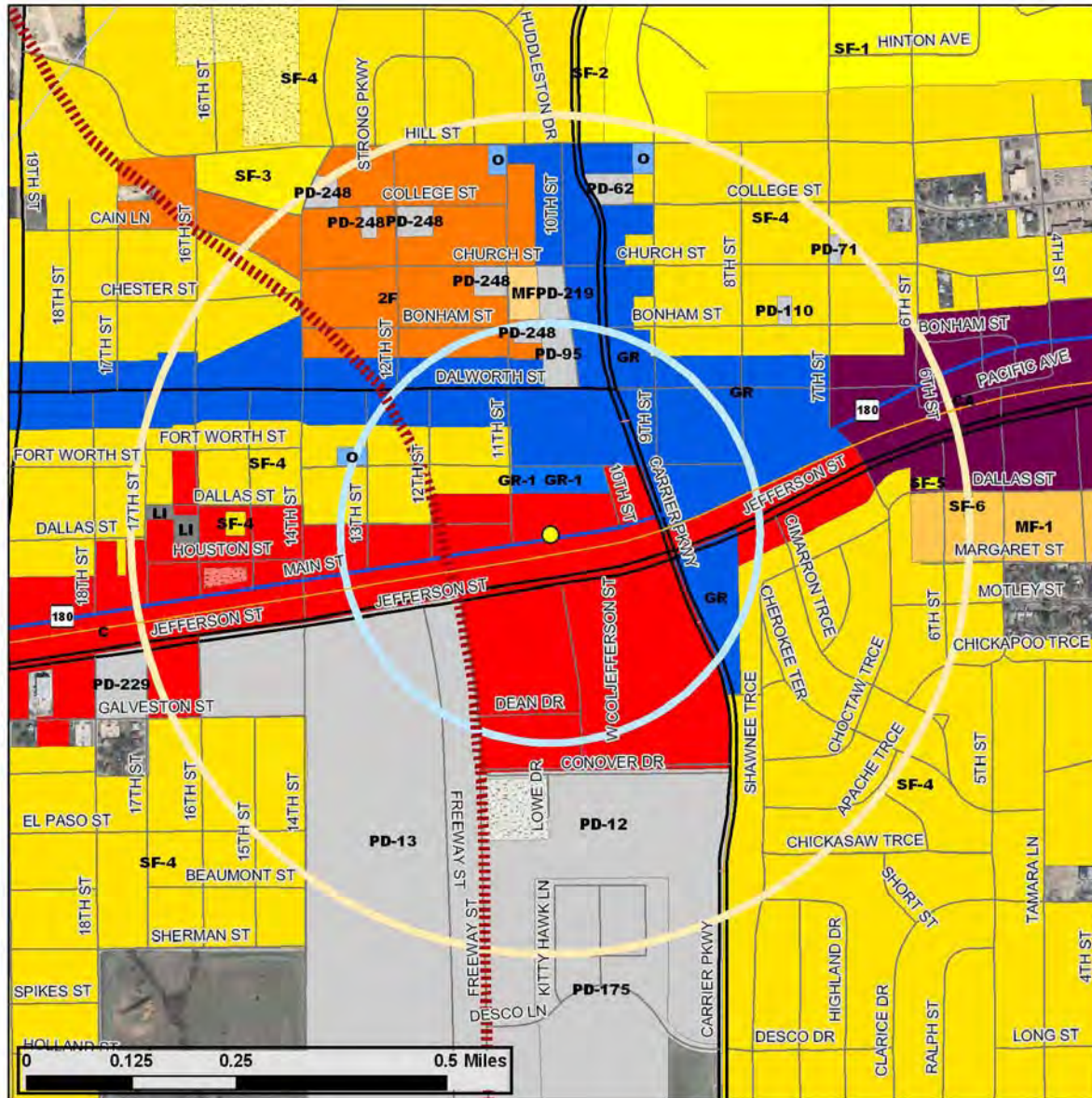
(a) 10 feet per story was calculated to give the Maximum Story Height. 10 feet was used to give the reader a height perspective. Please keep in mind that story heights may vary. For example a big box store height is known to range between 20-25 feet.

(b) FAR may be increased with approval of a Special Use Permit (SUP).

Current Zoning and Land Use – Scenario A

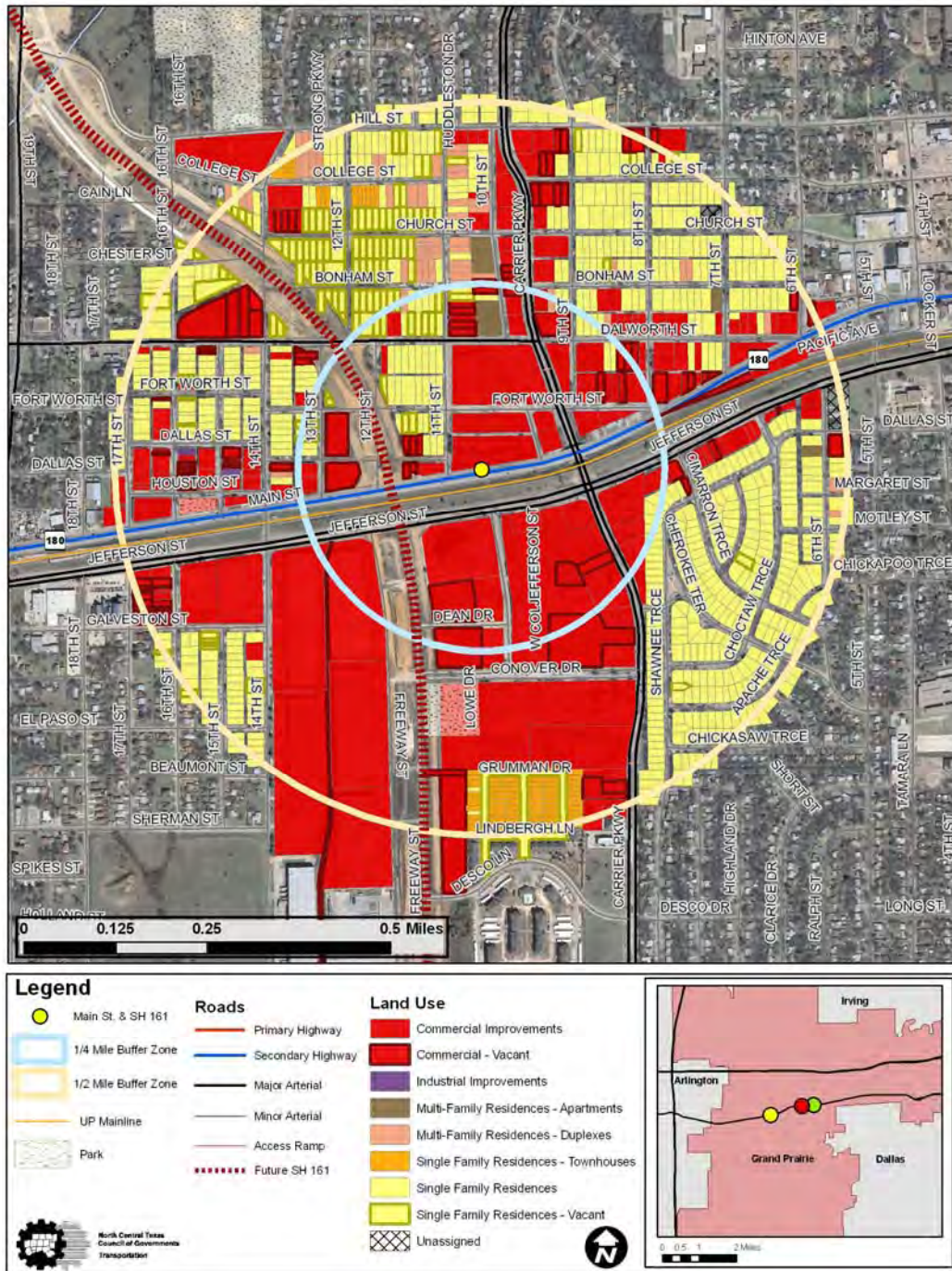
The current zoning within a one-quarter mile radius of Scenario A - Main Street and the future SH 161 study area consists of a commercial district, general retail district, single-family four residential district (SF-4), and planned developments 95 and 248. Exhibit 3-5 illustrates the current zoning. The SF-4 district becomes more prominent between the one-quarter and one-half mile radius.

EXHIBIT 3-5: SCENARIO A - MAIN STREET AND THE FUTURE SH 161 CURRENT ZONING



The current land use within a one-quarter mile radius of the study area is mainly composed of commercial uses and, to a lesser extent, single-family residential as illustrated in Exhibit 3-6. Single-family residential becomes more prominent within the one-quarter to one-half mile radius. A smaller amount of multi-family and duplex housing is present.

EXHIBIT 3-6: SCENARIO A - MAIN STREET AND THE FUTURE SH 161 CURRENT LAND USE

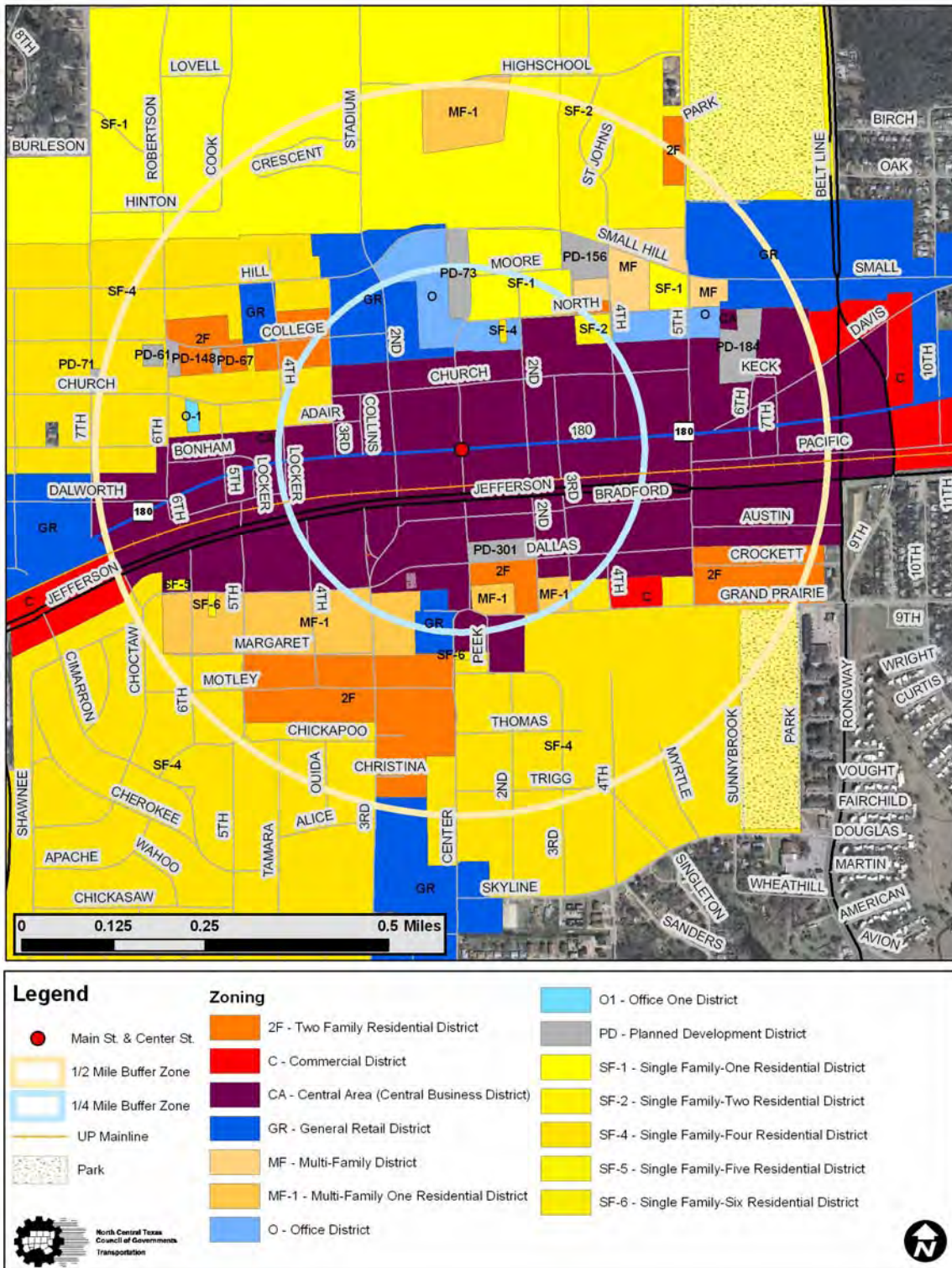


Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

Current Zoning and Land Use – Scenario B

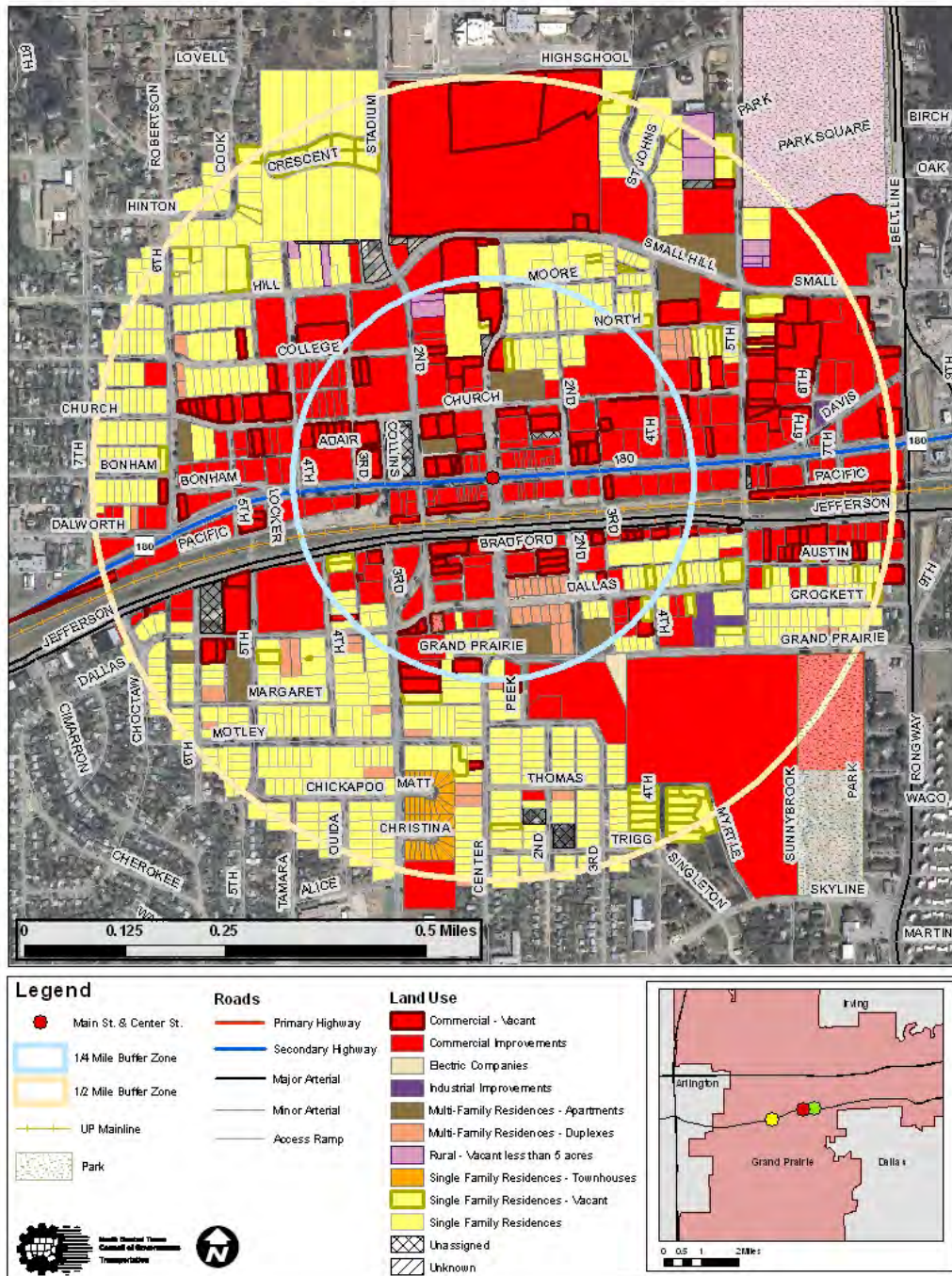
The current zoning within a one-quarter mile radius of Scenario B - Main Street and Center Street study area consists mainly of a central business district with a smaller amount of single-family and multi-family zoning as illustrated in Exhibit 3-7. The single-family four residential (SF-4) district becomes more prominent between the one-quarter and one-half mile radius.

EXHIBIT 3-7: SCENARIO B - MAIN STREET AND CENTER STREET CURRENT ZONING



The current land use within a one-quarter mile radius of the study area is mainly composed of commercial uses with a smaller amount of multi-family land use as illustrated in Exhibit 3-8. Single-family residential becomes more prominent within the one-quarter to one-half mile radius. Commercial uses are still present extending past the one-quarter mile radius.

EXHIBIT 3-8: SCENARIO B - MAIN STREET AND CENTER STREET CURRENT LAND USE

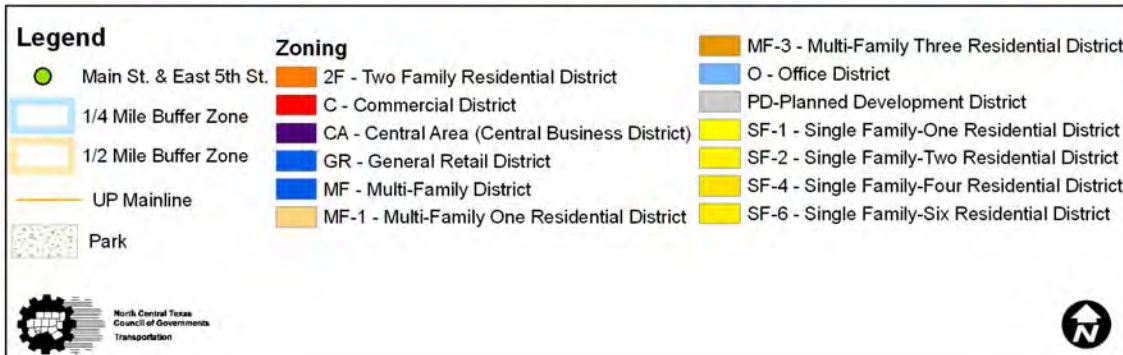
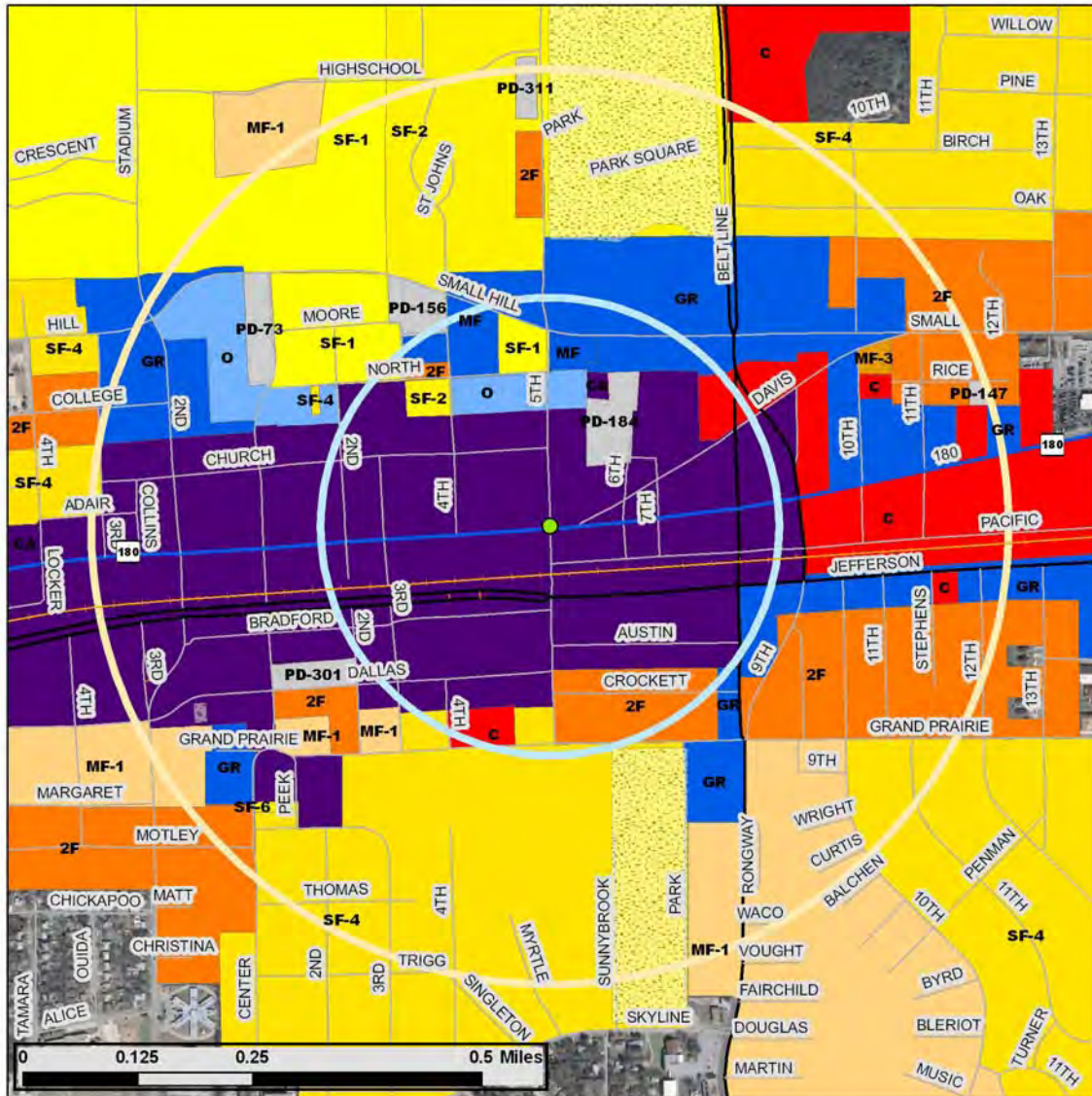


Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

Current Zoning and Land Use – Scenario C

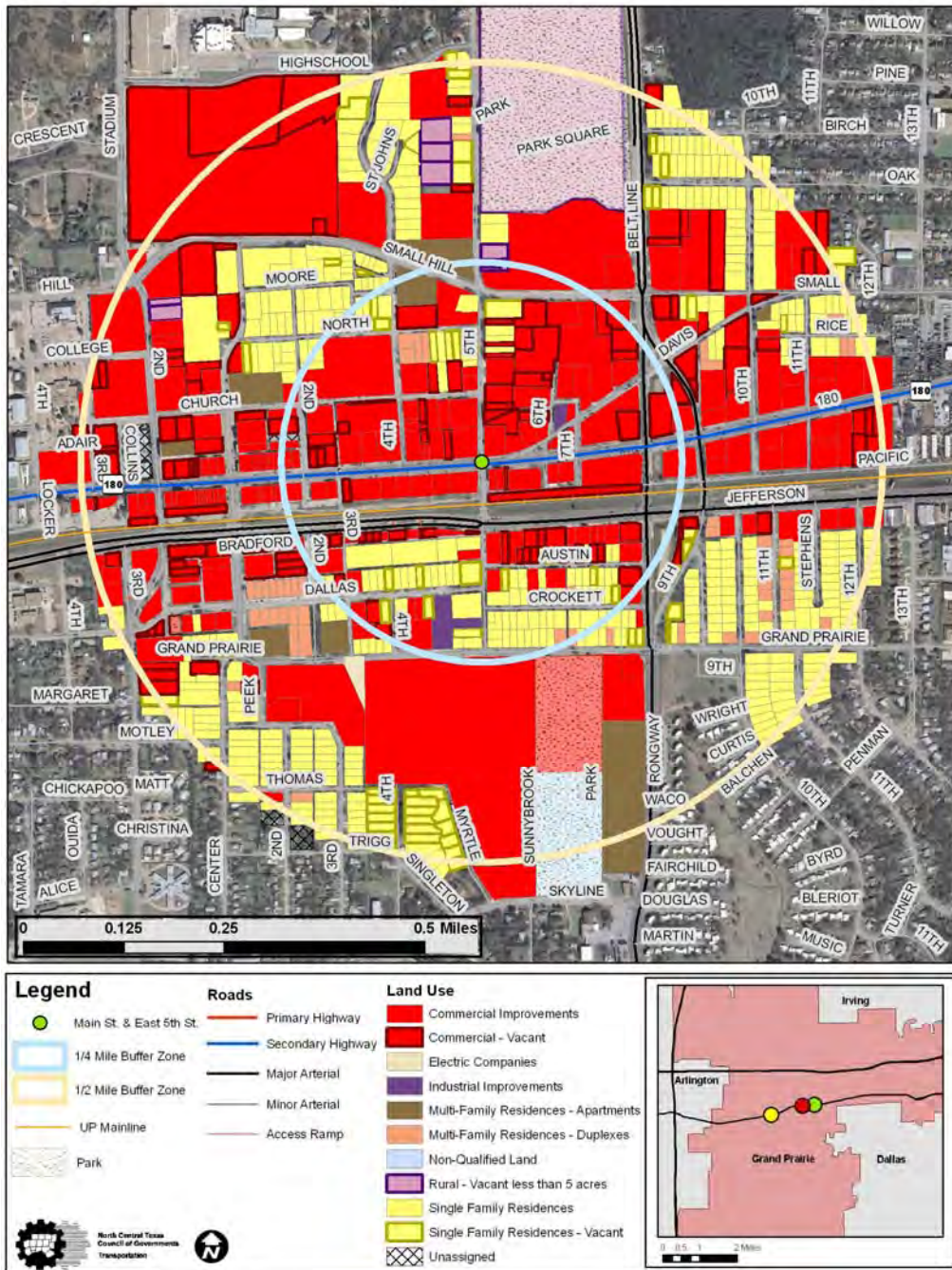
The current zoning within a one-quarter mile radius of Scenario C - Main Street and East 5th Street study area consists mainly of a central business district with a smaller amount of single-family and multi-family district zoning as illustrated in Exhibit 3-9. The single-family residential and, to a lesser degree, multi-family districts becomes more prominent between the one-quarter and one-half mile radius.

EXHIBIT 3-9: SCENARIO C - MAIN STREET AND EAST 5TH STREET CURRENT ZONING



The current land use within a one-quarter mile radius of the study area is mainly composed of commercial uses and single-family residential uses as illustrated in Exhibit 3-10. Single-family residential becomes more prominent within the one-quarter to one-half mile radius. Commercial uses are still present extending past the one-quarter mile radius.

EXHIBIT 3-10: SCENARIO C - MAIN STREET AND EAST 5TH STREET CURRENT LAND USE



Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

3.3 TRANSIT-ORIENTED DEVELOPMENT SITE OPTIONS

The recommendation in the Regional Rail Corridor Study (RRCS) contained one station in Grand Prairie for regional passenger rail, one near Main Street and the future SH 161 which in this analysis is Scenario A, and the next closest station would be at the Naval Air Station (NAS), Dallas (closed) which is located close to the border of Grand Prairie in the city of Dallas. See Exhibits 3-11 and 3-12 for illustrations of the recommended stations. A detailed alternatives analysis study would need to be conducted in order for a final recommendation of station location to be determined. City staff recommended that alternative locations beside the NAS be evaluated for a TOD site. For this study, NCTCOG staff assumed that the potential TOD site would be within one-half mile of an assumed transit station. Evaluation criteria that were considered when researching the potential locations that would support a future TOD site include pedestrian and vehicle access, ability to increase density in the area, and parking availability. Scenario A - Main Street and the future SH 161, Scenario B - Main Street and Center Street, and Scenario C - Main Street and East 5th Street (also known as 5th NE) were the sites that may have the greatest potential to serve as a TOD site. The TOD sites could first be served by bus as a staging process while commuter rail becomes available. Providing bus service in addition to rail is important due to schedule frequency and route flexibility. Opportunities and constraints are present for all potential TOD sites. See Exhibit 3-13 for an illustration of the station locations.

EXHIBIT 3-11: FINAL RECOMMENDATIONS FOR COMMUTER RAIL FOR THE UNION PACIFIC MAINLINE

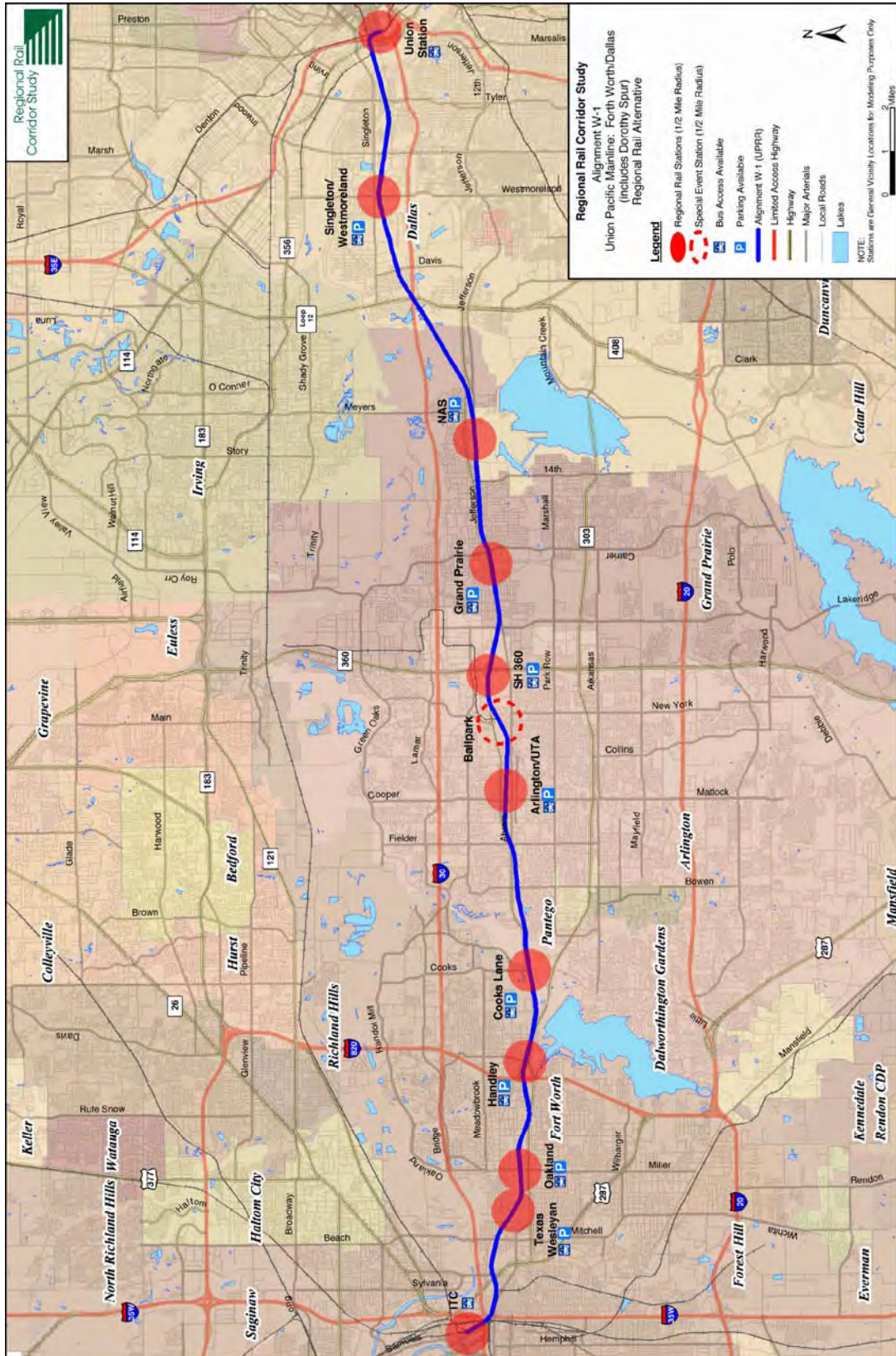


EXHIBIT 3-12: COMMUTER RAIL STATIONS FOR GRAND PRAIRIE

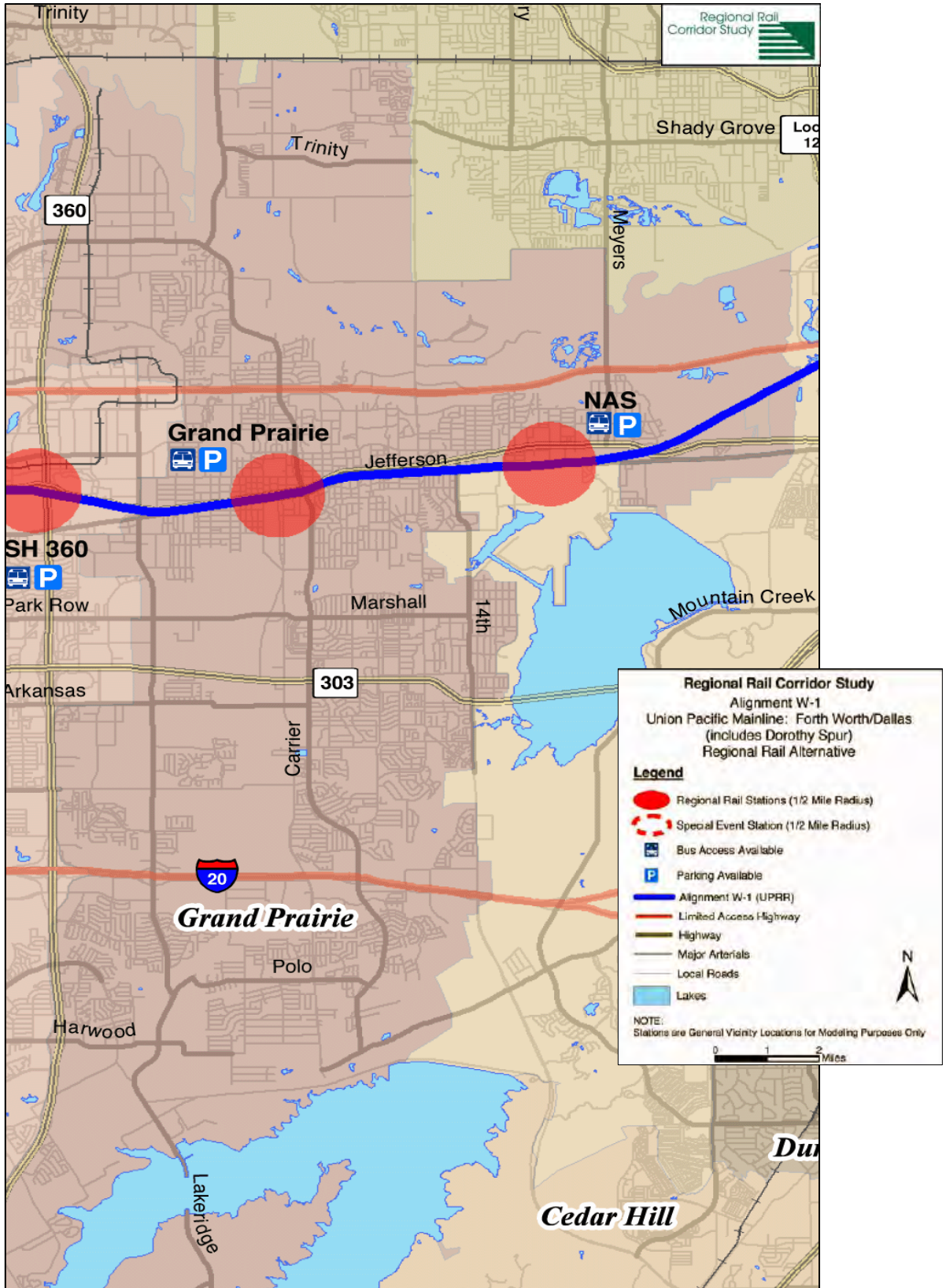
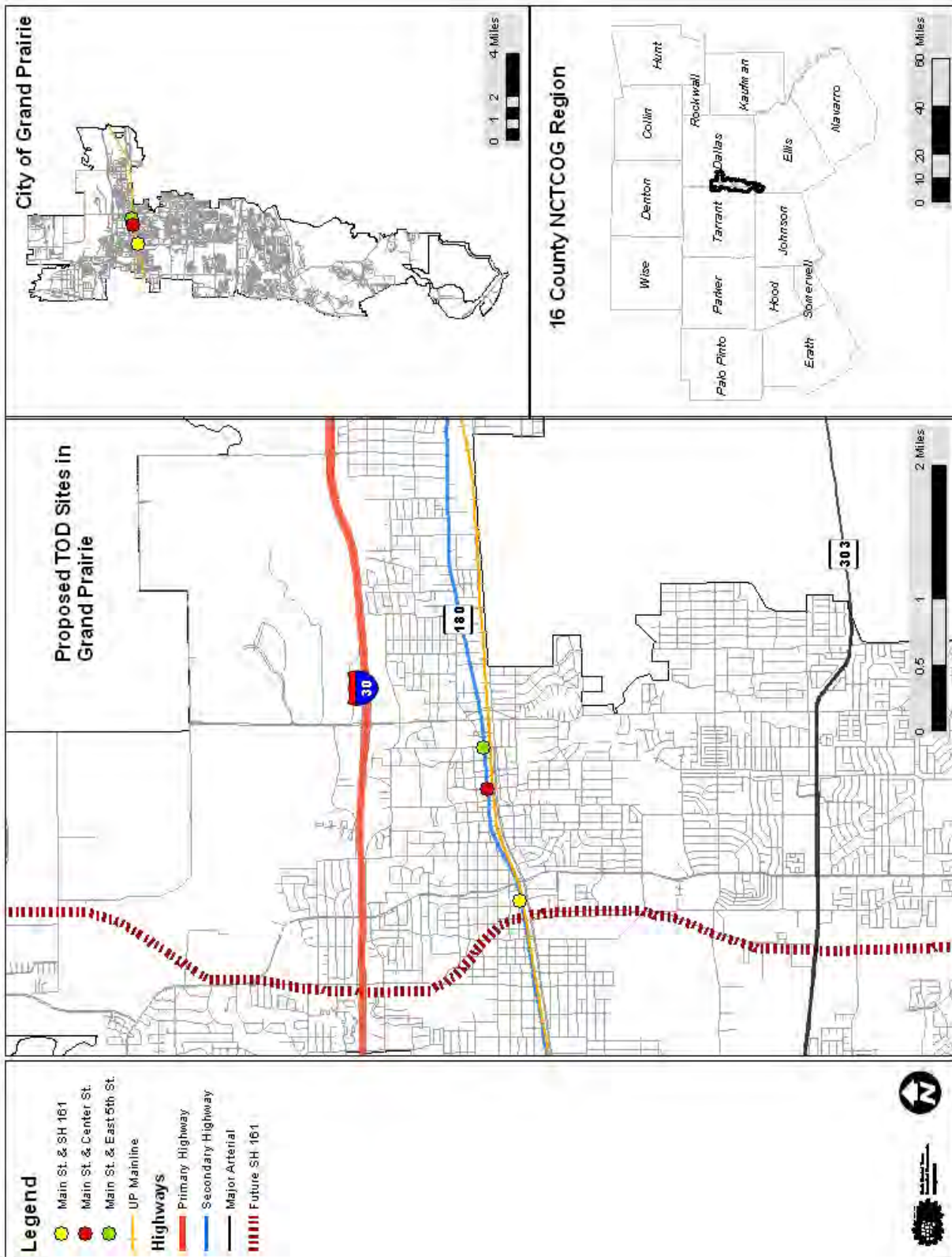


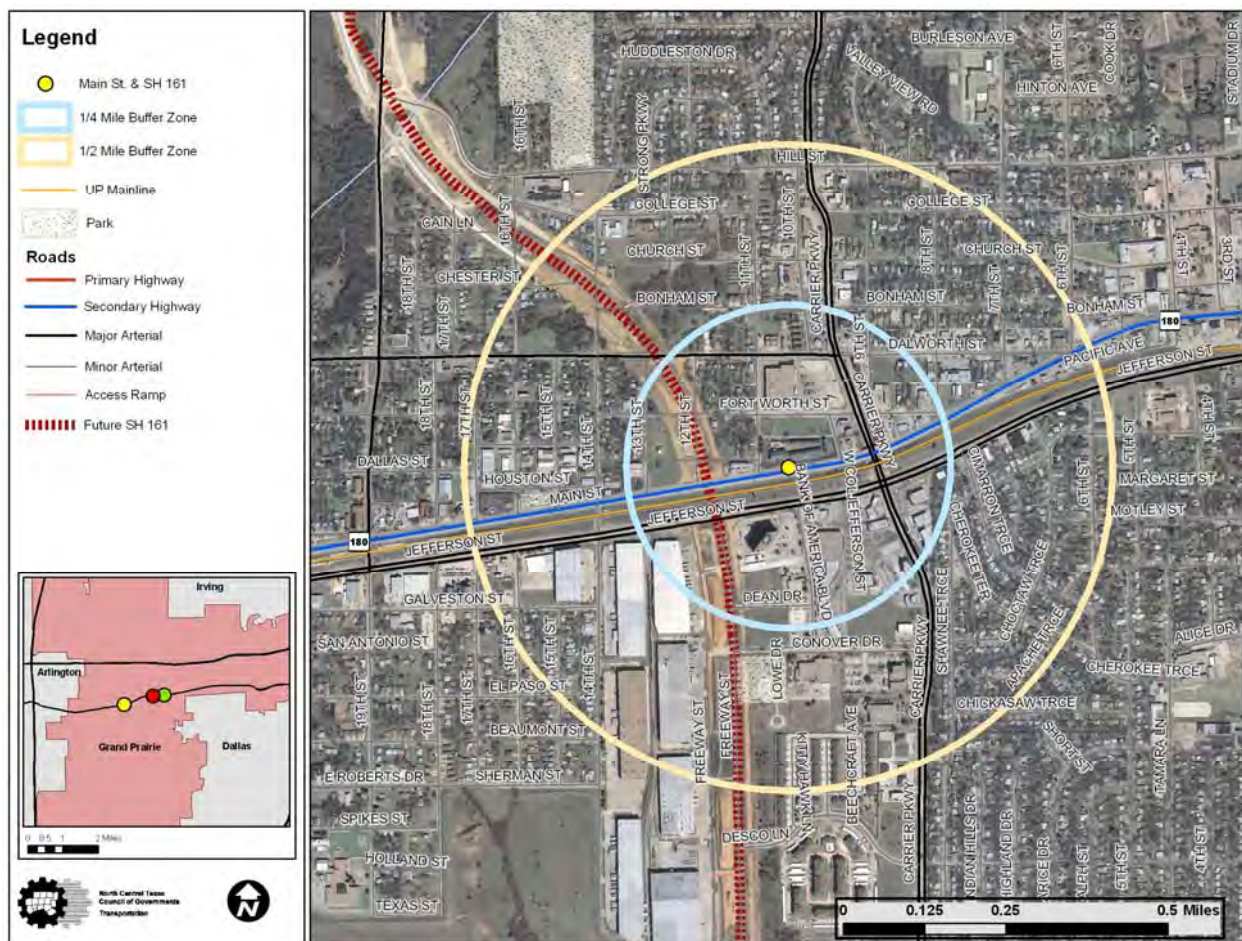
EXHIBIT 3-13: OVERVIEW OF TRANSIT-ORIENTED DEVELOPMENT STUDIED LOCATIONS IN THE CITY OF GRAND PRAIRIE



Scenario A - Main Street and the Future SH 161

- Recommended transit station site of the RRCS for commuter rail station and the NCTCOG staff for a TOD. See Exhibit 3-14 for illustration.
- Opportunities
 - Vehicular north and south access via the future SH 161 and Carrier Parkway.
 - Vehicular west and east access via Main Street/SH 180.
 - Sidewalk on Carrier Parkway has recently been redeveloped.
 - Albertsons supermarket and shopping center are within one-quarter mile of future site and have a modern look to the building façades. Images of the locations are shown on the next page.

EXHIBIT 3-14: OVERVIEW OF SCENARIO A - MAIN STREET AND THE FUTURE SH 161





Albertsons located at 215
N Carrier Parkway
Source: NCTCOG



New development located at Fort Worth
Street between NW 11th Street and
NW 10th Street
Source: NCTCOG

- Crown Inn, Relax Inn, and Williams Chicken, as seen in images on the following page, do not have the similar façade as the Albertsons and shopping center. Due to conditions the city may be able to easily acquire/purchase property.
- Constraints
 - Businesses/land would need to be purchased.
 - TOD location would not be available immediately adjacent to potential future station due to the close proximity of Main Street and Jefferson Street and the rail right-of-way. The image on the next page illustrates the current conditions.
 - Pedestrian overpass or roadway improvement would be needed to allow safe pedestrian access to future station as shown in an image on the next page.
 - Albertsons supermarket and shopping center are in parcels adjacent to the proposed TOD site. These sites provide essential services to potential residents of the future TOD in the short term. However, in the long term, it is a constraint on the ability of the TOD to expand due to the already established low density development.
 - Development challenges going west of the future SH 161, possibly less land to redevelop.



Crown Inn



Relax Inn



Williams Chicken



Overview of three potential locations for redevelopment

Main Street is a four-lane undivided roadway plus one turning lane in addition to shoulder lanes.

UP Railroad current conditions with about 100 feet total right-of-way. Additionally, railroad is limited by Main Street on the north and Jefferson Street on the south.

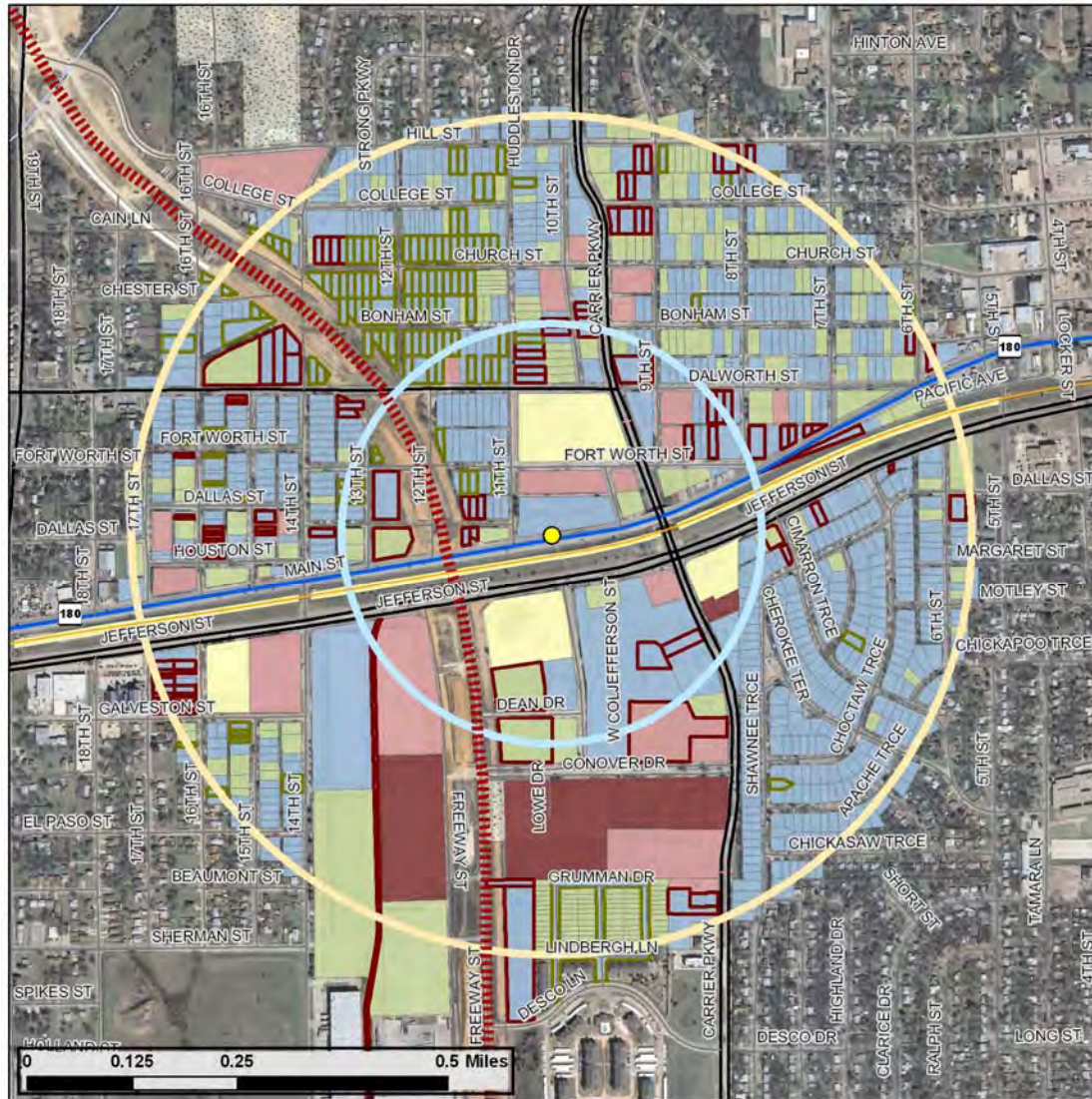
Jefferson Street is a six-lane divided roadway.



Street view of Main Street looking west
Source for all photos this page: NCTCOG

Exhibit 3-15 provides the opportunity and constraints of the land available for TOD within one-quarter and one-half mile radius around Scenario A - Main Street and the future SH 161 study area. Vacant land in the area ranges from \$100 to \$432,660 per parcel. However, there is no vacant land readily available directly near the UP Mainline.

EXHIBIT 3-15: SCENARIO A - MAIN STREET AND SH 161 PARCEL VALUE AND VACANT LOTS

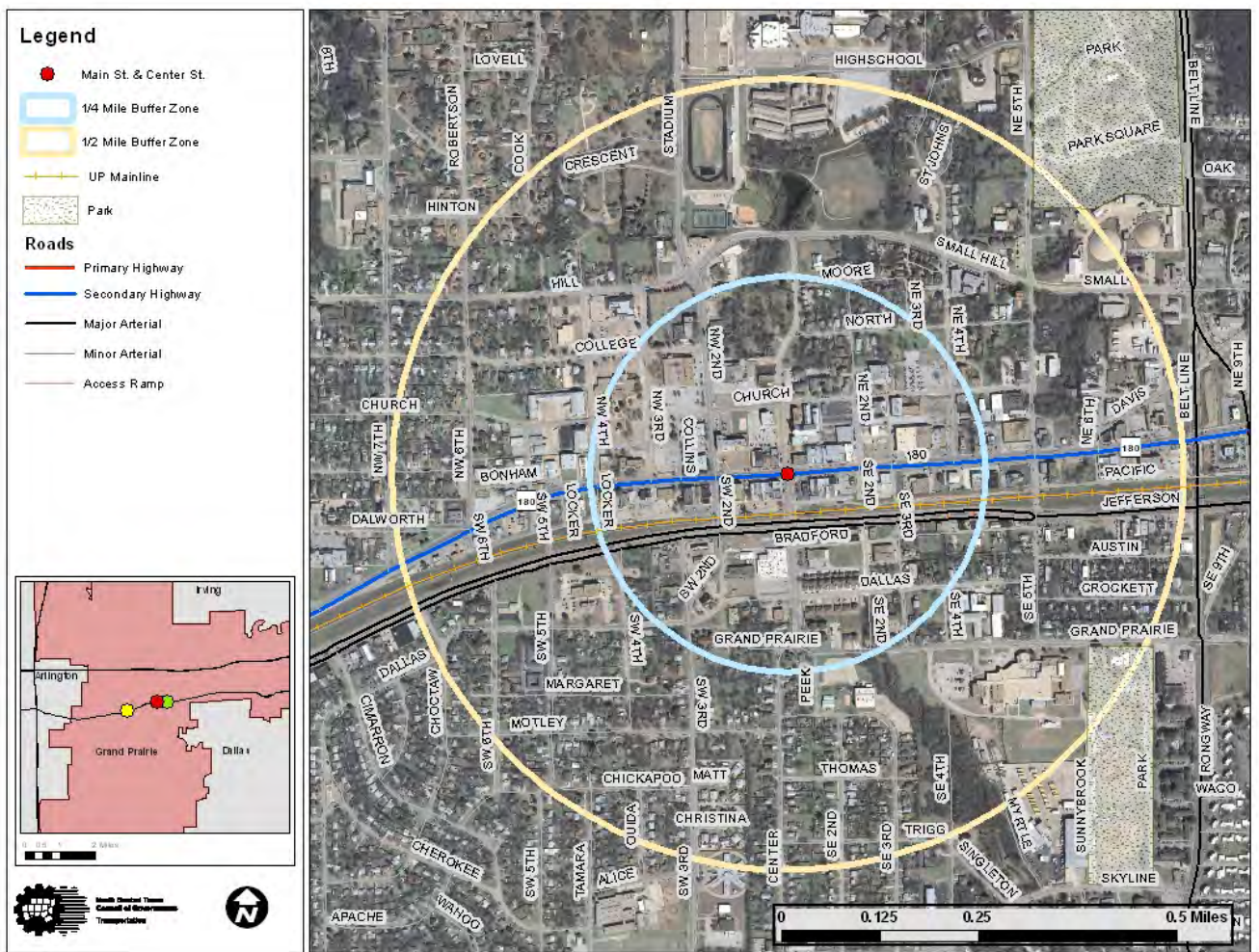


Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

Scenario B - Main Street and Center Street

- Recommended train station site by city and NCTCOG Sustainable Development staff for this study. See Exhibit 3-16 for an illustration.
- Opportunities
 - West and east access via Main Street. See page 3.21.
 - North and south access via Center Street. See page 3.21.
 - Public parking available, future station could be accessed by pedestrians as shown in images on the next page.

EXHIBIT 3-16: OVERVIEW OF SCENARIO B - MAIN STREET AND CENTER STREET





Front of Main Street and Center Street facing west



Center Street facing west between the back of the buildings that face Main Street and the UP Mainline



Front of Main Street and Center Street facing east



Front of Main Street and Center Street facing east



Center Street facing east between the back of the buildings that face Main Street and UP Mainline

Source for all photos this page: NCTCOG



Uptown Theater

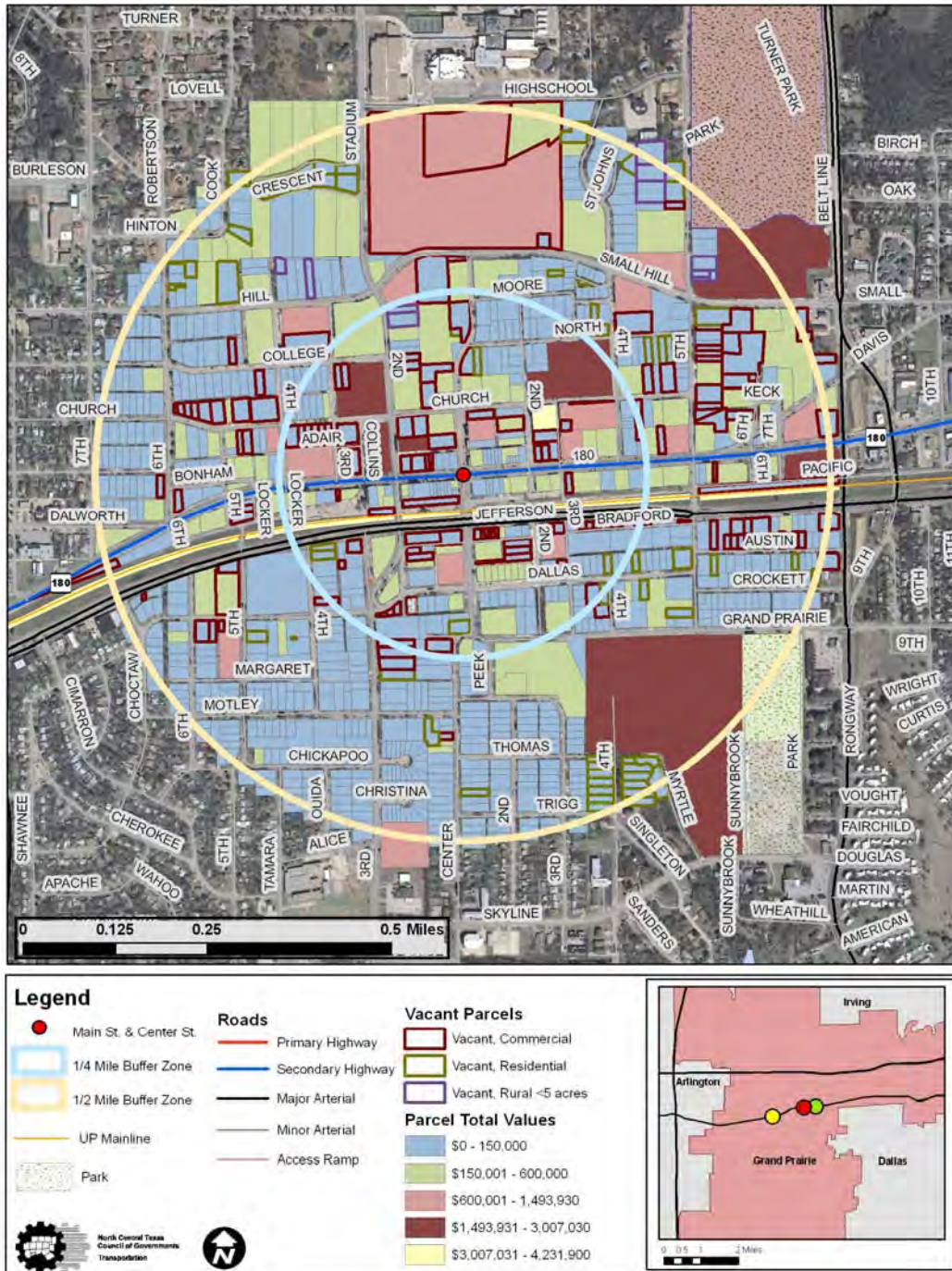
Source: NCTCOG

- Redevelopment already being planned by the city (The city has future plans for a consultant to provide recommendations on the modifications of the urban design façade in the Uptown area).
- Uptown Theater was restored and opened to the public in November 2008.

- Downtown, which is now known as “Uptown”, is undergoing revitalization.
- Sidewalks will be widened on the south side of Main Street between 14th NW to East 2nd Street for added streetscape. (See Appendix C for an illustration.)
- Current sidewalks are about 10 feet with plans to be widened to at least 20 feet, with 22 feet being ideal, per city staff. The expansion will allow for more pedestrian amenities such as street landscaping and street furniture.
- Within walking distance, defined as one-quarter mile, of Market Square.
 - On November 4, the City Council approved a \$1.25 million contract for construction of the Market Square. The Market Square is an open-air event center located on the corner of West 2nd Street (also known as 2nd NW) and Main Street.
- Constraints
 - No vacant land readily available, businesses/land would need to be acquired.
 - Buildings may be of historical significance which cannot be demolished to place higher density. Retrofitting may be an alternative.
 - The city has not designated a historic district. Appendix R of the Unified Development Code states that historic structures are within the central business districts; although no designation has been made, a few buildings have been identified as significant landmarks in the city a step in the right direction.
 - Within one-half mile there were numerous sites identified as historical significant landmarks. Some of those sites that are the closest to the study area include: Miller Drug Structure, 106 West Main Street; Sam R. Hamilton Masonic Lodge, 110½ N. Center Street; First United Methodist Church, 122 North Center Street; and Lennox House, 110 NW Second Street.
 - Several store frontages need revitalization.

Exhibit 3-17 provides the opportunity and constraints of the vacant land available within one-quarter and one-half mile radius around Scenario B - Main Street and Center Street study area. Vacant land in the area ranges from \$100 to \$2,194,840 per parcel.

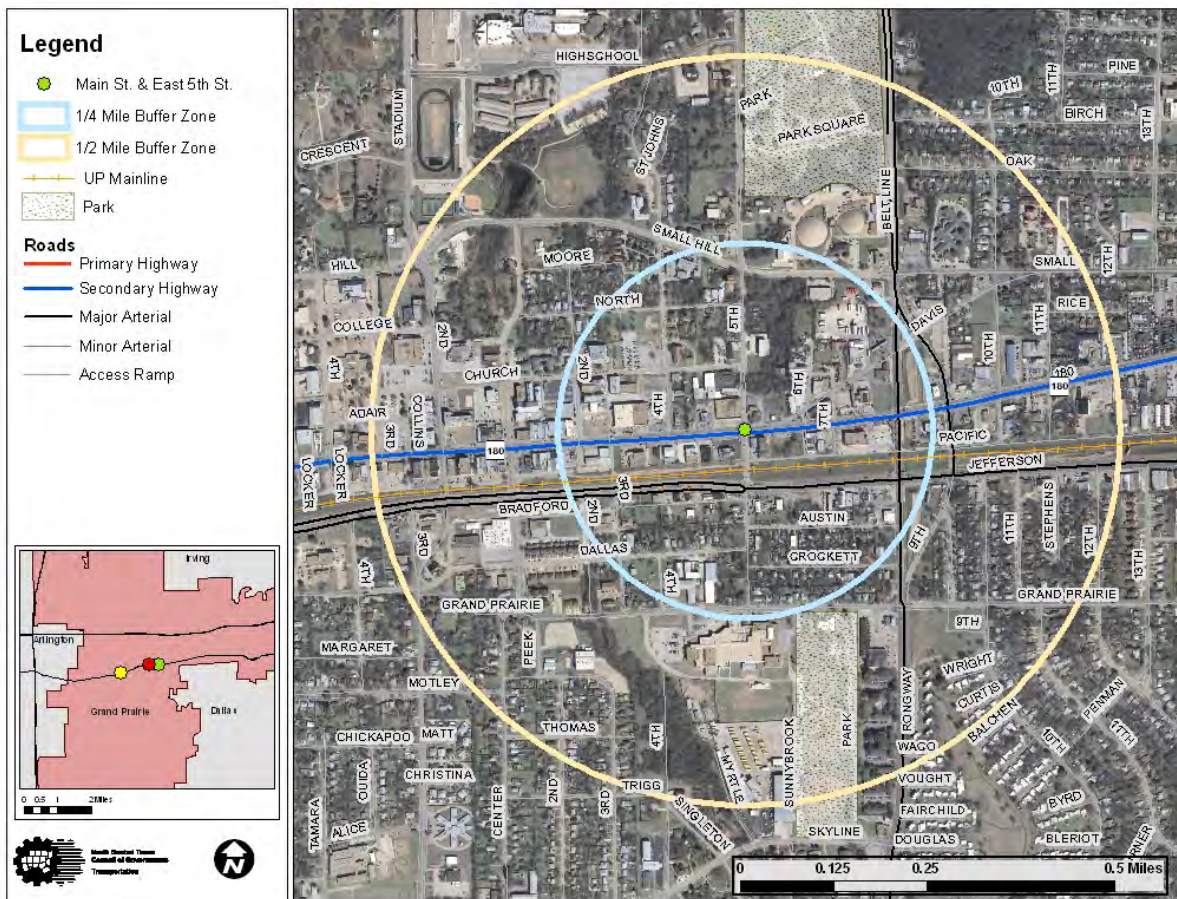
**EXHIBIT 3-17: SCENARIO B - MAIN STREET AND CENTER STREET
PARCEL VALUE AND VACANT LOTS**



Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

- Scenario C - Main Street and East 5th Street
 - Recommended by NCTCOG Sustainable Development staff for this study due to mobility access. See Exhibit 3-18 for illustration.
 - Opportunities
 - North and south access via Belt Line Road.
 - West and east access via Main Street.
 - Within the Uptown revitalization plans.
 - Within walking distance, defined as one-quarter mile, of Market Square.
 - Constraints
 - The majority of the land is not vacant. Existing property would need to be acquired for redevelopment.
 - Land available for parking may not be available immediately close to the station.

EXHIBIT 3-18: OVERVIEW OF SCENARIO C - MAIN STREET AND EAST 5TH STREET





Main Street and East 5th Street facing west



The UP Mainline facing west and the back of the buildings which face Main Street



Main Street and East 5th Street facing east



Main Street and East 5th Street facing east

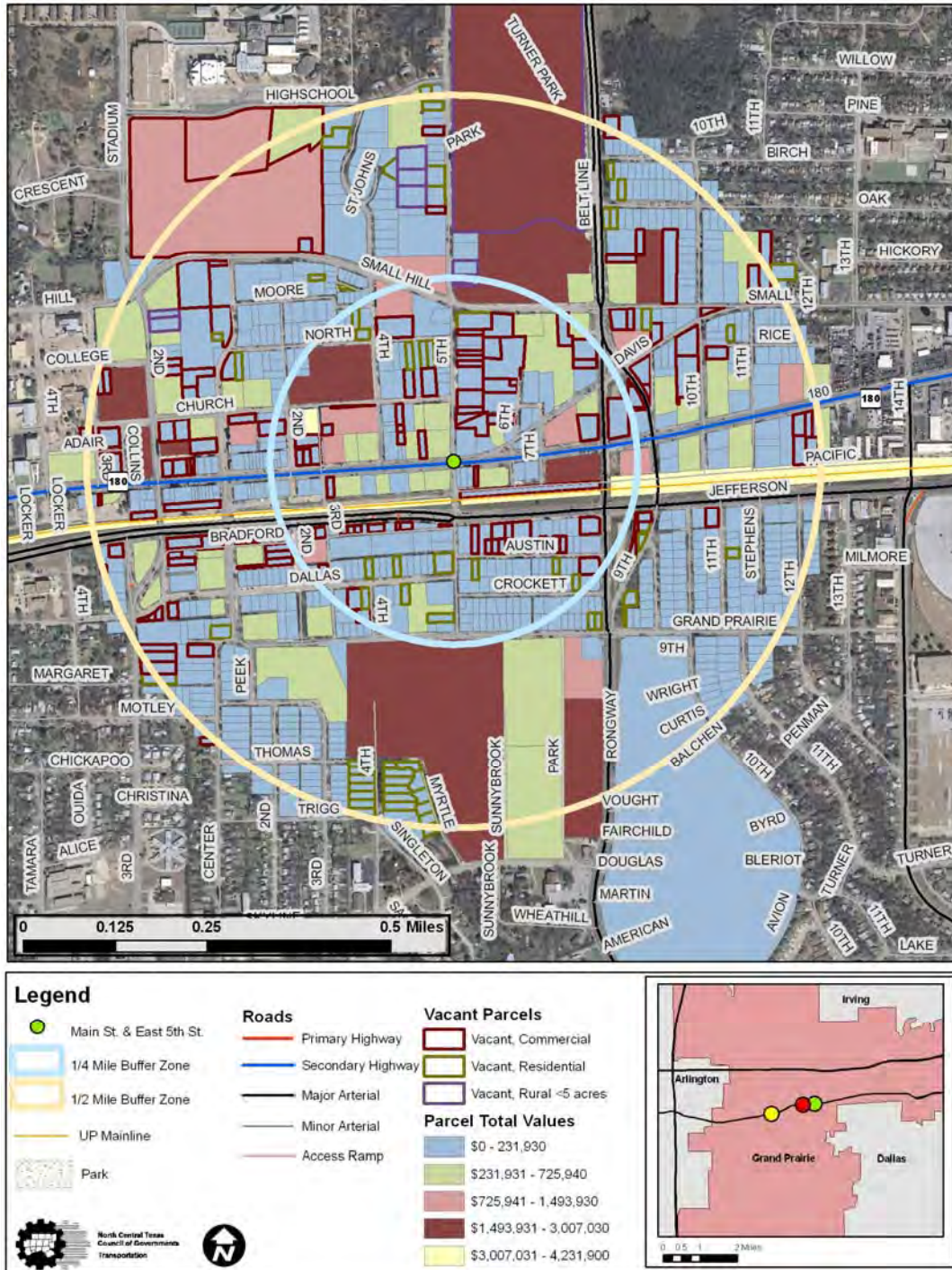


The UP Mainline facing east and the back of the buildings which face Main Street

Source for all photos this page: NCTCOG

Exhibit 3-19 provides the opportunity and constraints of the vacant land available within one-quarter and one-half mile radius around Scenario C - Main Street and East 5th Street study area. Vacant land in the area ranges from \$90 to \$2,194,840 per parcel.

**EXHIBIT 3-19: SCENARIO C - MAIN STREET AND EAST 5TH STREET
PARCEL VALUE AND VACANT LOTS**



Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

3.4 EXISTING CONDITIONS AND GENERAL RECOMMENDATIONS: BICYCLE AND PEDESTRIAN AMENITIES

The design, scale, quality of buildings, streets, and landscaping can create transit-oriented development areas that are pleasant places to walk, bike, relax, and become a regional destination. Pedestrian safety and comfort are crucial to the success of TOD. Public areas or places around the transit stations should create a sense of community, and surrounding neighborhoods should be included and connected to the development and the amenities it has to offer. Features that help facilitate this type of environment include public plazas, outdoor markets or venues, decorative gardens, or other public amenities. Increased pedestrian activity is beneficial not only to the TOD area, but also stimulates economic growth, an increased demand for housing, and the support for future development as it breathes life into new urbanism. Main Street appears to have sufficient pavement width to construct sidewalks and possibly add an on-street bicycle route and on-street parking, though coordination with the Texas Department of Transportation (TxDOT) throughout the planning and construction process is essential. An on-street bicycle route would be beneficial to the TOD as it would allow for accessibility by another means of transportation, and could reduce automobile trips to and from the TOD. On-street parking would increase safety for pedestrians and bicyclists as it has been proven to slow traffic and would create an extra buffer between pedestrians and the roadway. This image provides a current example of the condition of pedestrian amenities at Main Street near future SH 161. It is clear that this could potentially be an unsafe section of roadway for pedestrians as Main Street is four lanes undivided with a center turn lane, and there is no sidewalk or any type of buffer to shield pedestrians from automobile traffic.



Main Street at the Relax Inn facing west
Source: NCTCOG

In contrast, this image portrays a streetscape that is oriented towards the pedestrian and encourages foot traffic by means of wide sidewalks, well-designed paving, street furniture, planters, and buildings with street-facing façades. By adding on-street parking, landscaping, signage, bulb-outs, and crosswalks, a welcoming environment is created by addressing pedestrian safety concerns and providing separation from the street.



Avenue K near 14th Street – Plano, TX
Source: NCTCOG

Evaluation of the existing infrastructure at proposed TOD stations is necessary in order to determine ways to improve current conditions and facilitate future growth. Therefore, the following is an assessment of the three proposed TOD sites, and an evaluation of each.

Scenario A

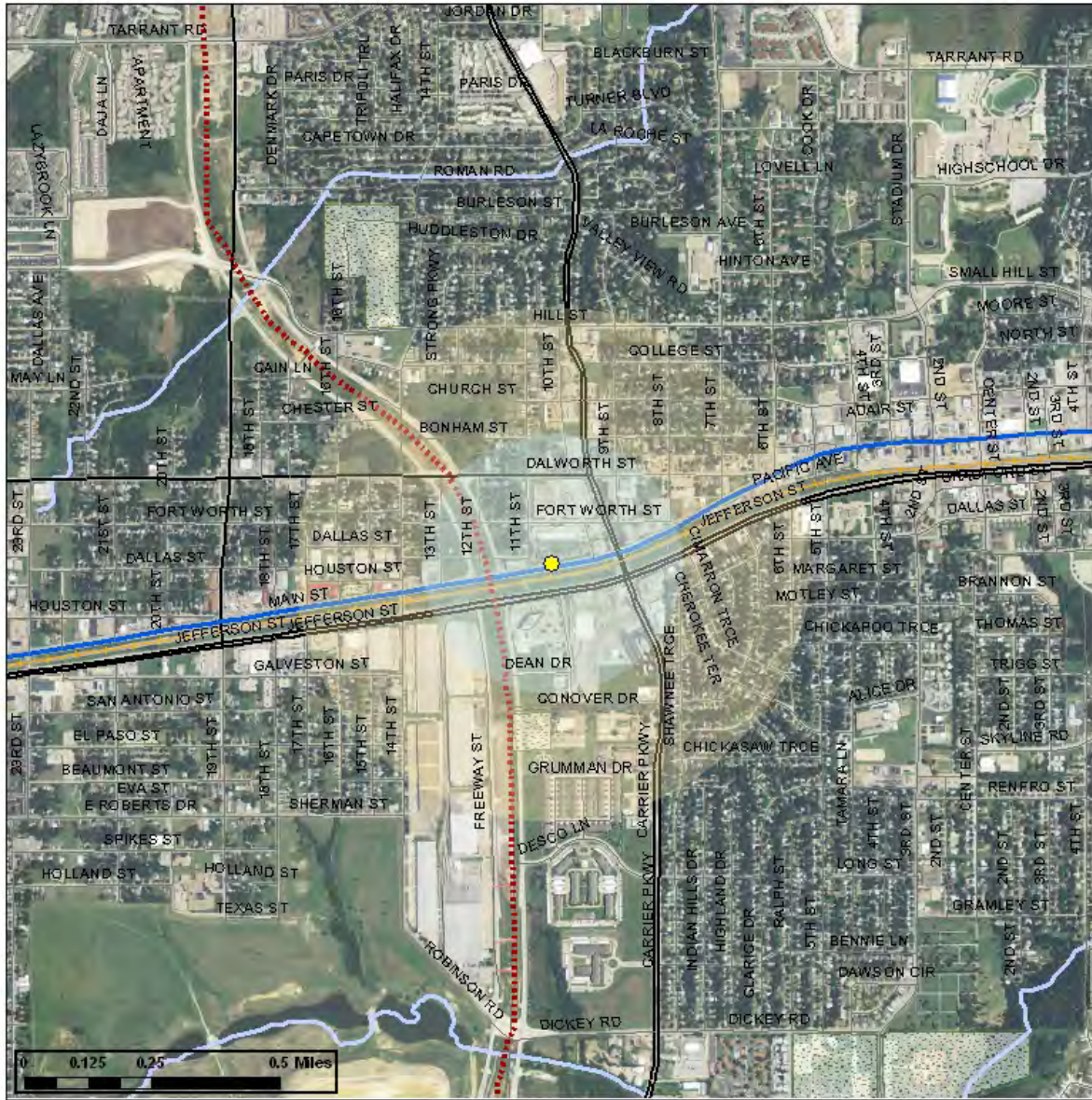
Located to the east of future SH 161 and north of Main Street, the TOD site at Scenario A has the potential for future development, but also has a unique set of challenges, mainly the separation of the TOD and the transit station by a four-lane, high speed, and high volume arterial. However, opportunities for development exist to the north and west of the TOD site, and the grid like layout of the surrounding roadways offer the connectivity that is needed to make a successful TOD.

Additionally, the expansion of SH 161 will create a major north/south thoroughfare, which could create the economic growth needed to support a TOD site at Scenario A - Main Street and the future SH 161. However, the existing conditions within the one-quarter and one-half mile buffer zones (Exhibit 3-20) currently do not encourage pedestrian activity. The image to the right demonstrates how numerous curb cuts and lack of sidewalks create potentially unsafe conditions for pedestrians and bicyclists alike.



Main Street at 10th Street
facing west
Source: NCTCOG

EXHIBIT 3-20: PEDESTRIAN ZONES FOR MAIN STREET AND SH 161



Legend		Roads		
<ul style="list-style-type: none"> Main St. & SH 161 Pedestrian Oriented Zone Pedestrian Connectivity Zone UP Mainline Water Bodies Park 	<ul style="list-style-type: none"> Primary Highway Secondary Highway Major Arterial Minor Arterial Access Ramp Future SH 161 			

While there are several new developments at this site that could spur additional development and revitalization of the proposed transit corridor, the existing conditions are inadequate including limited sidewalks, abandoned buildings with vacant parking lots, and roads that do not accommodate all users. The new shopping center on Fort Worth Street has a sidewalk to the north of the development, but the surrounding neighborhoods have limited connections to it as seen in the images below. In addition, the large setback of the building due to the parking lot in front of the shopping center creates a disconnect for pedestrians utilizing the sidewalk. Ideally, the existing sidewalk should be widened to create a streetscape that provides amenities and a buffer for pedestrians from automobile traffic, and parking should be relocated on-street or to the rear of the shopping center to prevent large setbacks. The main priority for the city should be to install sidewalks in areas that currently have none in an effort to increase safety for pedestrians. Retrofitting existing sidewalks to appeal to pedestrians should be a second priority for the city.



11th Street at Fort Worth Street facing north
Source: NCTCOG



11th Street at Fort Worth Street facing south
Source: NCTCOG

The Albertsons on Fort Worth Street and Carrier Parkway has similar characteristics as the recently constructed shopping center on Fort Worth Street. While there are plenty of pedestrian connections within the development, the surrounding neighborhoods have limited access to them as seen in the following images. The Albertsons shopping center would benefit from pedestrian connections throughout the surrounding neighborhoods as they would allow for increased accessibility to the development. Additional amenities such as public meeting spaces, recreational area, and pedestrian amenities would also help promote a TOD by encouraging pedestrian activity. As it stands, this development is primarily auto-oriented.



10th Street at Main Street facing northwest
 Source: NCTCOG



Dallas Street at 11th Street facing west
 Source: NCTCOG

Carrier Parkway, another north/south major arterial lying east of the proposed transit station, includes an underpass that could potentially connect neighborhoods south of Main Street to the proposed TOD. However, the following images illustrate a dangerous and uninviting pedestrian environment. Even though a walkway has been cleared under the overpass, there is no sidewalk, buffer, or pedestrian amenities. Also notable are the lanes which appear to be insufficient width for an on-street bicycle route, unless the road was reduced to one lane in each direction, which may significantly lower capacity.



Carrier Parkway at Main Street overpass
 facing east
 Source: NCTCOG



Carrier Parkway at Fort Worth Street
 facing south
 Source: NCTCOG

The TOD for Scenario A would have to be located on the opposite side of Main Street (a total of four lanes undivided plus one turning lane) from the proposed transit station as illustrated below. This creates a costly problem because the safest way to connect large numbers of pedestrians and bicyclists to the transit station would be via a pedestrian bridge. In addition, there are currently no traffic calming measures in place on this street leading to increased safety concerns and limited accessibility for pedestrians and bicyclists. Existing conditions include limited sidewalks and few, if any, of the following amenities: landscaping, pedestrian buffers from automobile traffic, on-street bicycle facilities, medians, and on-street parking or other traffic-calming measures; all of which increase pedestrian and bicycle safety. Though a

pedestrian bridge would allow access to the transit station from the proposed TOD site, additional measures would also need to be implemented in order to make Scenario A successful, such as those previously listed.



Scenario A - Proposed TOD Site at Main Street and Future SH 161
Source: NCTCOG

While there are various drawbacks to this proposed TOD site, there are also many opportunities. There are already several features in place that can be built upon to develop this site into a successful TOD. The pedestrian amenities at the existing Albertsons tie into those at the newly developed shopping center on Fort Worth Street, and with the extension of those sidewalks through surrounding neighborhoods, increased pedestrian accessibility would be achieved. The existing alleyway connections can be beneficial by breaking up the scale of mega-blocks, much like the one with the existing Relax Inn, as pedestrians tend to favor smaller scale blocks in the range of 300 to 500 feet. These alleyways



Alley behind the Relax Inn between
10th Street and 11th Street
Source: NCTCOG

could potentially be used as connector routes that filter back to through streets to minimize walking and cycling distances by offering alternative route options.

Cities such as Austin, TX and Los Angeles, CA have developed programs that turn alleyways into fully functioning walkways in areas of heavy foot traffic by means of the addition of signage, entrances to the rear of stores, and beautification. Maintenance issues along these routes would be similar to that of streets and should be planned for when considering this option.

Another positive feature of Scenario A is that the existing local street alignment is in a grid pattern which discourages high volumes of automobile traffic in the TOD. The lanes are also narrow which can help “tame the streets” by reducing speed limits. Landscaping exists on certain roads acting as a buffer to separate pedestrians from automobile traffic, thus increasing pedestrian safety. All of these elements combined together can produce an excellent starting point for generating pedestrian and bicyclist activity, which in turn has the potential to form the basis of a successful TOD.

Scenario B

Located at Main Street and Center Street, the proposed TOD site at Scenario B is in the heart of the city of Grand Prairie’s plan for an “Uptown” revitalization. If this site is selected, the city of Grand Prairie has plans to close the existing railroad crossing at Center Street and create public open space that would include an area for special events. While Scenario B presents some challenges, it also has many existing features that help to create successful TODs.

As part of the “Uptown” revitalization, recent renovations to the area include the restored Uptown Theater and widened sidewalks on Main Street between Center Street and East 2nd Street, with plans for the continuation of the sidewalks on Main Street from Center Street to West 2nd Street. If the station is placed at Main Street and Center Street the widened sidewalks would allow for easy pedestrian access to the transit station. The city’s plans to close the railroad crossing should this site be selected would allow for the area just north of the station (on Center Street) to be redeveloped into a pedestrian mall or plaza that could include pedestrian and bicycle amenities. This would be beneficial to the TOD as it would channel pedestrian and bicycle traffic along Main Street, and would allow for safe accessibility to those accessing the station via Main Street. The city of Grand Prairie also has plans to turn the area south of the buildings on Main Street and north of the UP Mainline between West 2nd Street and East 2nd Street into automobile parking. While it does not appear that there will be sufficient room to accommodate parking for the station and TOD, the city of Grand Prairie, in coordination with Dallas Area Rapid Transit (DART) and the Fort Worth Transportation Authority (The T), could acquire land and construct a parking garage, as long as



Jefferson Street at West 2nd Street
facing southeast
Source: NCTCOG

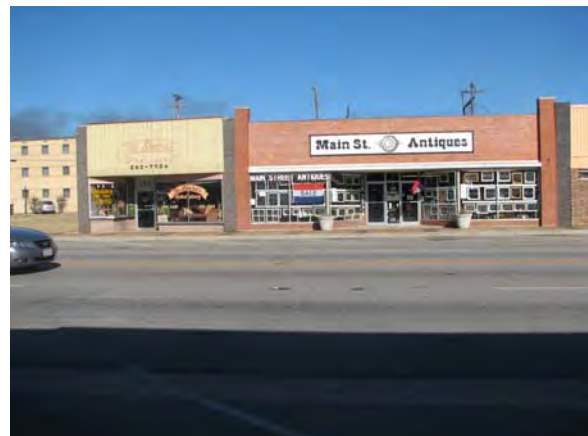
it was located within the quarter-mile buffer from the station and the TOD. This would also alleviate parking concerns within the proposed TOD. Ideally, automobile access should be limited to main arterials lying outside of the TOD. In this case, Jefferson Street, as seen in the image above, would be the arterial lying to the south of the proposed TOD and, if possible, automobiles should be diverted to this street as an alternative to Main Street.

While there are sidewalks throughout much of the pedestrian-oriented zone surrounding the Main Street and Center Street station, many of these sidewalks (other than those recently retrofitted between Main Street and East 2nd Street) do not meet standards as established in the Americans with Disabilities Act Accessibility Guidelines (ADAAG) due to obstacles such as light poles obstructing pathways, raised curbs, limited ramps, and multiple curb cuts. As shown here, these features raise an issue of concern for individuals with limited mobility. The TxDOT Dallas District is currently working on design plans to update curb ramps according to ADAAG standards along Main Street from Northwest 23rd Street to Northeast 36th Street. However, this update will only be along Main Street, as it is an on-system state highway managed by TxDOT, and the update only includes curb ramps. The remaining sidewalks within the pedestrian-oriented zone will still need to be updated to comply with all ADAAG standards, and the sidewalks that are included in TxDOT's plan to update curb ramps will need to be brought up to ADAAG standards by the city of Grand Prairie for the remaining features TxDOT has not addressed. Funding for the TxDOT project has been secured with a projected letting date of February 2011.



West 2nd Street facing west
Source: NCTCOG

The existing buildings surrounding the station are attached commercial and retail buildings, yet the current densities are not high enough to support a TOD as explained in more detail in Section 4, Exhibit 4-5. While there are a significant amount of street-facing buildings, the majority of the buildings are one story with outdated façades, and even with the addition of widened sidewalks, without added activity and architectural variety, an interesting environment for pedestrians may be limited. Some of the units along the stretch of businesses are also abandoned or have a less than desirable frontage creating an uninviting atmosphere for pedestrians. In order for Main Street to develop into a successful TOD, increasing densities and pedestrian activity within the corridor is vital. This can be done through a combination of improved building façades with architectural variety, providing pedestrian amenities, and offering incentives to developers to build up rather than out, all of which will help create a more pedestrian-friendly atmosphere.



Main Street near Center Street
facing north
Source: NCTCOG

A deficiency that the proposed TOD site at Main Street and Center Street faces is the lack of pedestrian and bicycle connections from adjacent areas limiting accessibility. Whereas the area immediately surrounding the station has the beginning characteristics of a TOD in terms of connectivity, the adjoining neighborhoods located within the pedestrian connectivity zone (see Exhibit 3-21) have few links to the core area. Continuous sidewalk and trail connections are needed to encourage pedestrian and bicycle trips to the core, and facilitate use of the TOD, transit, retail, and public facilities by surrounding area residents. There is also a scarcity of public space, amenities, and facilities within the pedestrian-oriented zone minimizing a pedestrian-friendly environment. While the presence of on-street parking in the pedestrian-oriented zone is a good way to calm traffic, the majority of the parking located within the proposed TOD site along Main Street is head-in diagonal, which can increase the danger for pedestrians and bicyclists as motorists cannot see individuals traveling to the rear of them. An alternative to conventional diagonal parking is back-in diagonal parking, which improves sight distance between drivers and bicyclists and has been shown to reduce parking-related crashes. While there is a learning curve for some drivers, using back-in diagonal parking is typically an easier maneuver than conventional parallel parking.



Main Street facing west towards West 2nd Street
Source: NCTCOG

While the presence of on-street parking in the pedestrian-oriented zone is a good way to calm traffic, the majority of the parking located within the proposed TOD site along Main Street is head-in diagonal, which can increase the danger for pedestrians and bicyclists as motorists cannot see individuals traveling to the rear of them. An alternative to conventional diagonal parking is back-in diagonal parking, which improves sight distance between drivers and bicyclists and has been shown to reduce parking-related crashes. While there is a learning curve for some drivers, using back-in diagonal parking is typically an easier maneuver than conventional parallel parking.



Before and After: Back-in Diagonal Parking in Vancouver, WA
Source: City of Vancouver

In contrast, on-street parallel parking narrows the driving lanes causing slower traffic movement, in addition to providing extra space for either an on-street bicycle route or a dedicated on-street bicycle facility. Currently, there are no on-street bicycle facilities or designated routes located in the pedestrian-oriented zone of Scenario B, making it very dangerous for bicyclists to access the transit station. Wide curb lanes are also limited (which are suitable for bicycle travel with the proper signage, but not ideal for a high volume roadway such as Main Street), leaving bicyclists to ride in lanes along with motorists without any signage or pavement markings. Shared Lane Markings are not an ideal on-street bicycle facility for this roadway since travel speeds are over 35 mph. However, designating an on-street bicycle route on lower volume secondary streets is an alternative to having bicyclists ride in the lane with automobile traffic if Main Street cannot

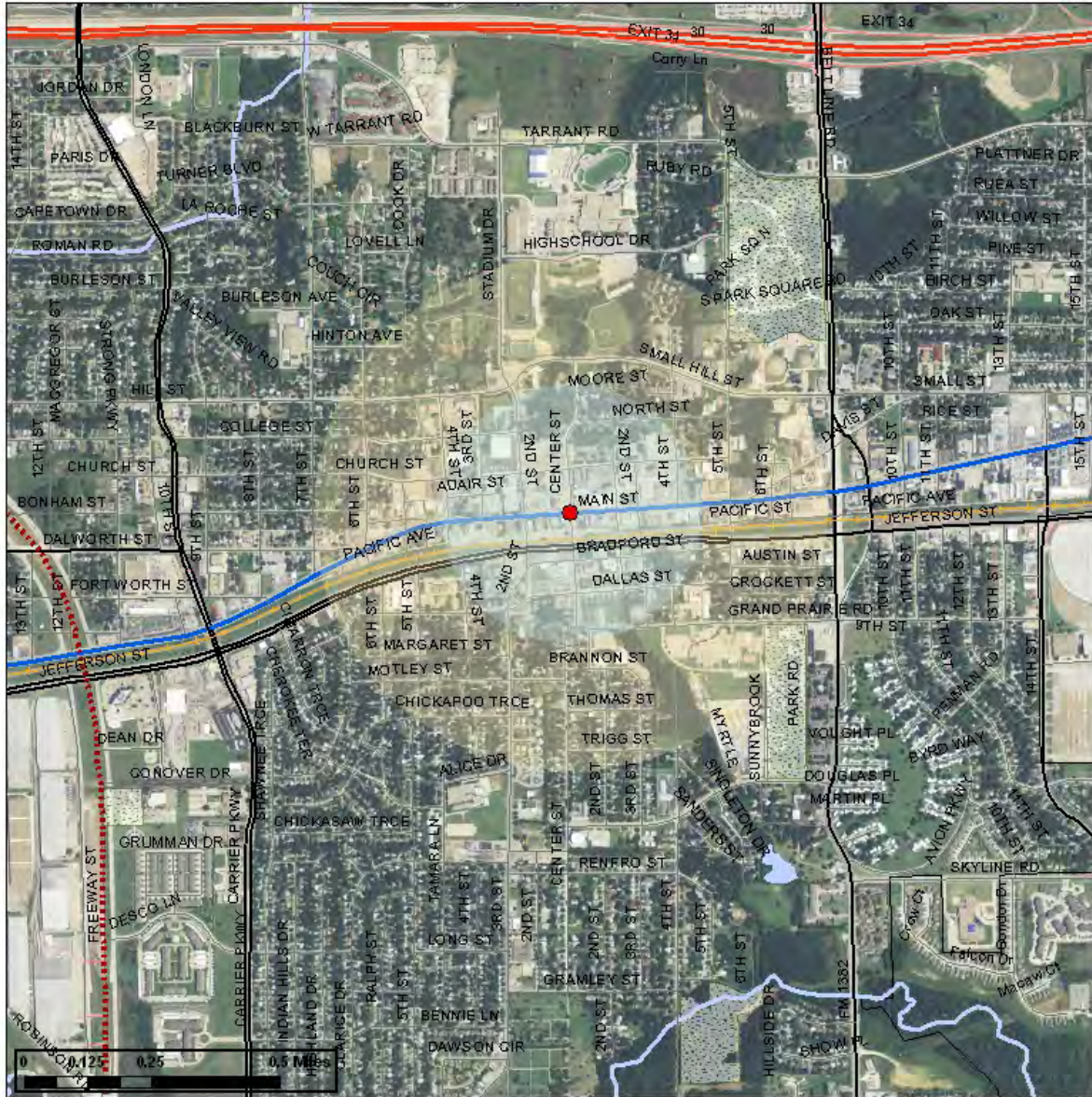
attain the right-of-way to accommodate an on-street bicycle lane. This can only be successful if the secondary streets are able to feed into the TOD. It is helpful for the proposed TOD to provide accessibility options for alternate forms of transportation, including bicycling, in order for it to experience success.

The proposed Scenario B TOD site has a few problems to address, but there are also many positive features already in place. As mentioned before, Main Street has adequate pedestrian amenities, and there is an abundant array of trees and plants on certain sections of the road creating a visual separation for pedestrians from the street. Pedestrian-scaled lighting is also present on the street aiding in the creation of a safe and comfortable atmosphere for pedestrians. Main Street also has significant width to narrow driving lanes and add an on-street bicycle route or designated on-street bicycle lane, though much coordination with TxDOT would be necessary to determine feasibility (see Section 4.2 Site-Specific Bicycle and Pedestrian Recommendations for more specific guidance). Furthermore, the pedestrian-oriented zone contains a grid of roads that can be easily manipulated to discourage through traffic. All of these measures help to encourage pedestrian-scaled streets by enhancing walkability. In addition, this proposed TOD location already has several existing multi-purpose pedestrian trip generating locations (as discussed in Section 2.3 Bicycle and Pedestrian Best Practices), including government centers, offices, medical clinics, and restaurants which spur pedestrian activity. Also, as mentioned previously, the city of Grand Prairie’s “Uptown” revitalization plans call for a staging area on Center Street north of the station for outside events. This would be a major attraction as it would allocate a designated area for public space and increase the likelihood of involving surrounding communities. The city is also considering a future plan that would involve hiring a consultant to design new building façades for Main Street, which would greatly add to a more defined and aesthetically pleasing environment for pedestrians. With many of the beginning steps taken to create a more pedestrian-oriented corridor, this proposed TOD site has great possibilities.



Pedestrian-scaled lighting on Main Street near Center Street facing east
Source: NCTCOG

EXHIBIT 3-21: PEDESTRIAN ZONES FOR MAIN STREET AND CENTER STREET

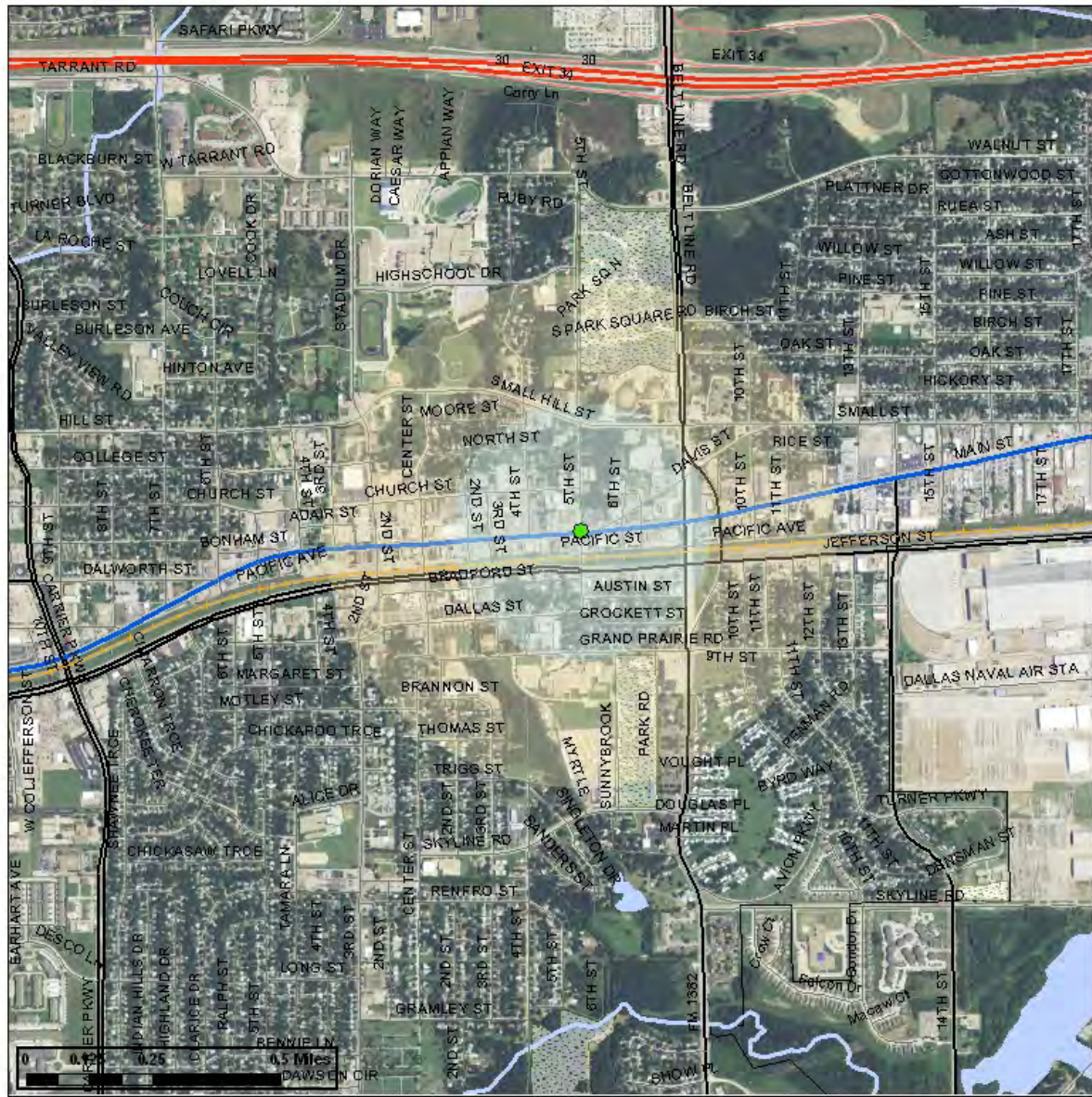


Scenario C

The proposed TOD site at Scenario C is located at Main Street and East 5th Street, and is an alternate site option that NCTCOG staff studied due in part to its location and also its existing infrastructure. This site location is in close proximity to Scenario B, but is on the outer edge of downtown, which places it in close proximity to Belt Line Road – a major north/south arterial that would allow direct access to the station. Additionally, this site is close enough to allow access to the “Uptown” revitalization area of downtown, and the area surrounding the site has recently experienced a boost in development.

Though significant amounts of land would have to be acquired to make this site a successful TOD, the majority of it may be relatively inexpensive to develop or redevelop as existing buildings could be retrofitted and built upon. The land value is also less than that at the proposed Scenario B site – Main Street and Center Street; refer to Appendix E-2 and E-3 for comparison. In addition, the eastern boundary of the “Uptown” revitalization lies within this site’s pedestrian-oriented zone, and the entire project lies within its pedestrian connectivity zone (see Exhibit 3-22), which is one-half mile or less than a 10-minute walk from the proposed site. The “Uptown” revitalization could be extended to this site creating, in essence, one large TOD. This site is located only five blocks (or one-third of a mile) from the proposed Scenario B - Main Street and Center Street TOD, yet this area’s location has an advantage over it since it has a major north/south arterial three blocks east at Belt Line Road. Not only would this allow for increased accessibility to the proposed station for the entire city of Grand Prairie, but also neighboring cities such as Irving, Cedar Hill, and Desoto which lie directly along the road. Belt Line Road also connects to major entertainment destinations such as Verizon Theatre and Lone Star Park, which patrons from across the region could easily access from this proposed station location if a circulating bus system was put into place. Additionally, this road could be a sufficient arterial to allow through traffic outside of the TOD while still allowing accessibility east/west via Main Street or Jefferson Street. Davis Street could also be used to filter in traffic from the northeast. If the city of Grand Prairie were to acquire light rail, as opposed to commuter rail, there could be multiple stops offered along the UP Mainline. If Scenario A were chosen as one of those stops, Scenario C would become slightly more desirable as a second option than Scenario B because the distance between the two stops would be greater, creating a more advantageous situation for the city. This is because Scenario C still allows access to the “Uptown” revitalization and other amenities the downtown has to offer, yet more people throughout the city can access stations that are farther apart. A more detailed discussion of the existing conditions at the proposed Scenario C site follows.

EXHIBIT 3-22: PEDESTRIAN ZONES FOR MAIN STREET AND EAST 5TH STREET

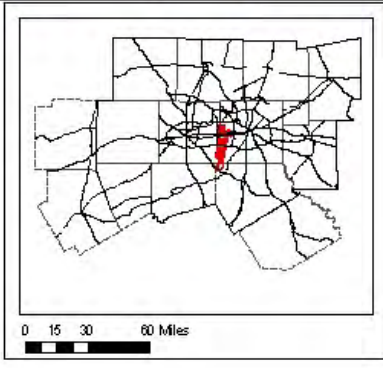


Legend

- Main St. & E 5th St.
- Pedestrian Oriented Zone
- Pedestrian Connectivity Zone
- UP Mainline
- Water Bodies
- Park

Roads

- Primary Highway
- Secondary Highway
- Major Arterial
- Minor Arterial
- Access Ramp



Existing sidewalks are in place, though some additional pedestrian and accessibility improvements are essential for compliance with ADAAG standards. TxDOT's project to update curb ramps along Main Street would extend throughout the pedestrian connectivity zone of this proposed site in addition to Scenario B. However, as stated before, the project only includes updating curb ramps, so additional accessibility improvements need to be made to sidewalks to be in full ADAAG compliance. In addition, more could be done on all of the sidewalks throughout the pedestrian-oriented zone to make them more pedestrian-friendly, including widening, adding landscape and amenities, and fostering a sense of place by restoring the store frontages. Significant density increases in the area would also need to be made in order for the proposed TOD site to reach its full potential. Currently, the businesses located within the pedestrian-oriented zone are too spread out and have large setbacks due to parking lots, creating a disconnect for those on foot. To provide a continuous frontage, parcel assemblage and land acquisition would be required. The roads located within the pedestrian-oriented zone are already in the proper alignment to discourage through traffic



East 5th Street and UP Mainline
facing north
Source: NCTCOG

though, and the majority are of sufficient width to allow for on-street bicycle facilities. In addition, Turner Park is located within the pedestrian connectivity zone and borders East 5th Street.

This makes for an excellent connection to the proposed TOD site by pedestrians and bicyclists alike. Also, Lone Star Trail, which is currently under construction, will run parallel to Belt Line Road and will connect Grand Prairie to the city of Irving, offering another connection for pedestrians and bicyclists to the proposed TOD site.

Parking becomes an issue for the proposed transit stop at Scenario C. Although there is none currently in place, there is adequate space located south of the businesses on Main Street and north of the proposed station as seen in the following two images. A parking lot could be provided in this area for automobile and bicycle parking, and accessibility would not be an issue as it would be convenient to anyone traveling on Main Street. However, right-of-way or land would have to be acquired in order for this to be accomplished. An alternative would be to build a parking garage within the pedestrian-oriented zone in order to serve the station, as well as the TOD, and still remain within walking distance. A prime location for this could be just east of the station and north of East Pacific Avenue. In order for the garage to be more pedestrian-friendly, shops could be located on the ground floor.



East 5th Street at UP Mainline facing west
 Source: NCTCOG



East 5th Street at UP Mainline facing east
 Source: NCTCOG

At Belt Line Road and Main Street, there are several vacant parcels that could be used for redevelopment. There is also a new CVS store that could spur other developments in the area. There are existing sidewalks to the north of the UP Mainline on Belt Line Road that continue through the intersection of Belt Line Road and Main Street with the exception of the northwest quadrant. These are important pedestrian amenities as they allow adjacent commercial, residential, and civic areas access to the TOD. There are also sidewalks on the south side of Jefferson Street at Belt Line Road that could tie into the existing sidewalks to the north, not to mention the direct pedestrian access that could be established by taking East 5th Street north from Jefferson Street. Sidewalk improvements along part of this route would be needed. The pedestrian connectivity zone encompasses several surrounding neighborhoods. Although residential densities have not reached desired levels, the grid pattern system of roads allows for easy accessibility by them. Substantial streetscaping along these streets would be necessary to create a buffer between pedestrians and automobile traffic, and to create beautification and shade for pedestrians during summer months.



East 5th Street and Jefferson Street
 facing south
 Source: NCTCOG

As discussed in a previous section, the City of Grand Prairie has plans to close the rail crossing at East 5th Street sometime in the near future. This would be greatly beneficial for the proposed station at Scenario C because it would greatly increase pedestrian and bicyclist safety. Of course, significant improvements, including the installation of an at-grade z-crossing, increased signage, pedestrian gates, and LED flashing train warning signs would be needed in order to provide for optimal pedestrian and bicyclist safety when crossing the track as seen in the image

above. In addition, with the closing of the crossing to vehicular traffic, the area just north of the proposed station on East 5th Street could be turned into a pedestrian mall or plaza, much like the one the city is proposing for Scenario B north of the station on Center Street. This would allow for increased public space, and would encourage pedestrian activity, as well as offer increased accessibility to the proposed station. If the parking garage were in fact to be built to the east of East 5th Street, this would create a pathway for patrons leaving the garage to access the proposed station and TOD at this site.

Although the bones of a successful TOD are already in position at this site, there are various improvements that should be made. The existing sidewalks do not comply with ADAAG standards, and increased width (at least seven feet) to allow for adequate maneuvering by pedestrians is needed. The lack of landscaping and lighting also needs to be addressed at this location, along with the addition of a buffer (at least four feet wide) between the sidewalk and roadway to separate pedestrians from automobile traffic and create a pleasant experience for pedestrians. The single-story businesses without street-facing frontages and with large setbacks detract from a pedestrian-friendly environment. Also, although there are several accessibility options for the surrounding neighborhoods located within the pedestrian connectivity zone to reach the TOD, there are not enough connections to existing sidewalks and trails within these neighborhoods to create a pedestrian-friendly street network. Public and private investments at this site are vital to its success, as well as increased intersection safety (most importantly Belt Line Road at Main Street and at Jefferson Street), and retrofitting the site to increase vitality and make for a more interesting and safer walking environment. However, the most important feature of this proposed TOD site is its location (within walking distance to the “Uptown” revitalization and has a major north/south arterial that defines the eastern edge). With the needed infrastructure improvements, this site has the potential to blossom into a successful TOD.

PART FOUR: RECOMMENDATIONS

4.1 TRANSIT-ORIENTED DEVELOPMENT RECOMMENDATIONS

As mentioned in Section 2.2 - Form-Based Codes/SmartCode Overview, the SmartCode can be a tool to assist the City in accommodating infill development. This information can aid in determining what recommendations are appropriate for each study area. Scenario A - Main Street and the future State Highway (SH) 161 has a mixture of single-family housing and commercial uses within a one-quarter mile buffer of the Union Pacific Mainline (UP Mainline) and therefore will be designated as a Traditional Neighborhood Development (TND). Scenario B - Main Street and Center Street and Scenario C - Main Street and East 5th Street are both within the Uptown boundaries and have a majority of existing commercial uses within the one-quarter mile buffer of the UP Mainline and are more appropriately designated as Regional Center Developments (RCD).

According to the SmartCode outline, included in this document as Appendix A, the sector and community type will guide in selecting the transect zone that contains the standards of which to follow. Exhibit 4-1 outlines the results.

EXHIBIT 4-1: SMARTCODE OUTLINE FOR EXISTING DEVELOPMENT

Study Area	Regional Sector	Community Unit	Transect Zones
Scenario A Main Street and Future SH 161	Infill Growth	Traditional Neighborhood Development	T3 Sub-Urban Zone T4 Central Urban Zone T5 Urban Center Zone
Scenario B Main Street and Center Street	Infill Growth	Regional Center Development	T4 Central Urban Zone T5 Urban Center Zone T6 Urban Core Zone
Scenario C Main Street and East 5th Street	Infill Growth	Regional Center Development	T4 Central Urban Zone T5 Urban Center Zone T6 Urban Core Zone

Scenario A - Main Street and the future SH 161 study area is designated to have a mixed-use development as stated in the City of Grand Prairie 2010 Comprehensive Plan and the SH 161 Corridor Plan. As infill development or redevelopment of parcels occur it is recommended that the standards in transects T4 General Urban Zone and T5 Urban Center Zone be considered for this study area. Refer to Appendix D for additional details.

T4 General Urban Zone Standard Recommendations

- Base residential density: Four units/acre gross and 12 units/acre gross by Transfer of Development Rights (TDR).
 - The 2030 projected residential density, according to the Transit-oriented Development (TOD) Audit in Appendix B-1, is 7.85 households per acre.
- Civic spaces that are permitted include green, square, and playground spaces.
 - Plazas not permitted.
 - Parks by Warrant.
 - A Warrant is a ruling that would permit a practice that is not consistent with a specific provision of the SmartCode but is justified by the provisions of Section 1.3 Intent of the SmartCode. The city's Planning and Zoning Commission shall have the authority to approve or disapprove administratively a request for a Warrant pursuant to regulations established by the city.
- The setback of the principal building should be a minimum of 6 feet and a maximum of 18 feet.
 - For secondary buildings the setback should be a minimum of 6 feet and a maximum of 18 feet.
 - The side setback should be 12 inches minimum.
 - The rear setback should be 3 feet.
 - The frontage buildout should be 60 percent minimum.
- Private frontages that are permitted include: porch and fence, terrace or dooryard, forecourt, stoop, shopfront and awning, and gallery.
 - Common yard and arcade are not permitted private frontages.
- The principal building should range from the minimum of two stories and maximum of three stories.
 - The outbuilding should have a maximum of two stories.
- Residential: Dwellings on each lot are limited by the required 1.5 parking spaces/dwellings.
 - Examples of uses that are encouraged include flex building, apartment building, live/work, row house, duplex house, courtyard house, sideyard house, and cottage.
- Lodging: Up to 12 bedrooms are allowed and require 1.0 assigned parking spaces/bedroom.
 - Must be owner occupied.
 - Food service may be provided in the morning.
 - Maximum length of stay cannot exceed 10 days.

- Examples of specific uses that are encouraged include bed and breakfast and school dormitories.
- Office: Limited to the first story of the principal building and/or the accessory building.
 - Requires 3.0 assigned parking places per 1000 square feet of net office space in addition to the parking requirement for each dwelling.
 - Examples of specific uses include office building and live-work units.
- Retail: Limited to the first story of buildings at corner locations and not more than one per block.
 - Requires 4.0 assigned parking places per 1000 square feet of net retail space in addition to the parking requirement of each dwelling.
 - Examples of specific uses include open market building, retail building, display gallery, restaurant, and kiosk.
- Civic uses that are recommended include bus shelter, fountain or public art, library, playground, and religious assembly.
- Education uses such as childcare centers are recommended.

T5 Urban Center Zone Standard Recommendations

- Base residential density: Six units/acre gross and 24 units/acre gross by TDR.
 - The 2030 projected residential density, according to the TOD Audit in Appendix B-1, is 7.85 households per acre.
- Civic spaces that are permitted include green, square, playground, and plaza.
 - Parks by Warrant.
- The setback of the principal building should be a minimum of 2 feet and a maximum of 12 feet.
 - For secondary buildings the setback should be a minimum of 2 feet and a maximum of 12 feet.
 - The side setback should be 12 inches minimum to a 24 foot maximum.
 - The rear setback should be 3 feet.
 - The frontage buildout should be 80 percent minimum.
- Private frontages that are permitted include: terrace or dooryard, forecourt, stoop, shopfront and awning, and gallery.
 - Porch and fence, common yard, and arcades are not permitted private frontages.
- The principal building should range from the minimum of two stories and maximum of five stories.
 - The outbuilding should have a maximum of two stories.
- Residential: Dwellings on each lot are limited by the required 1.0 parking spaces/dwellings.

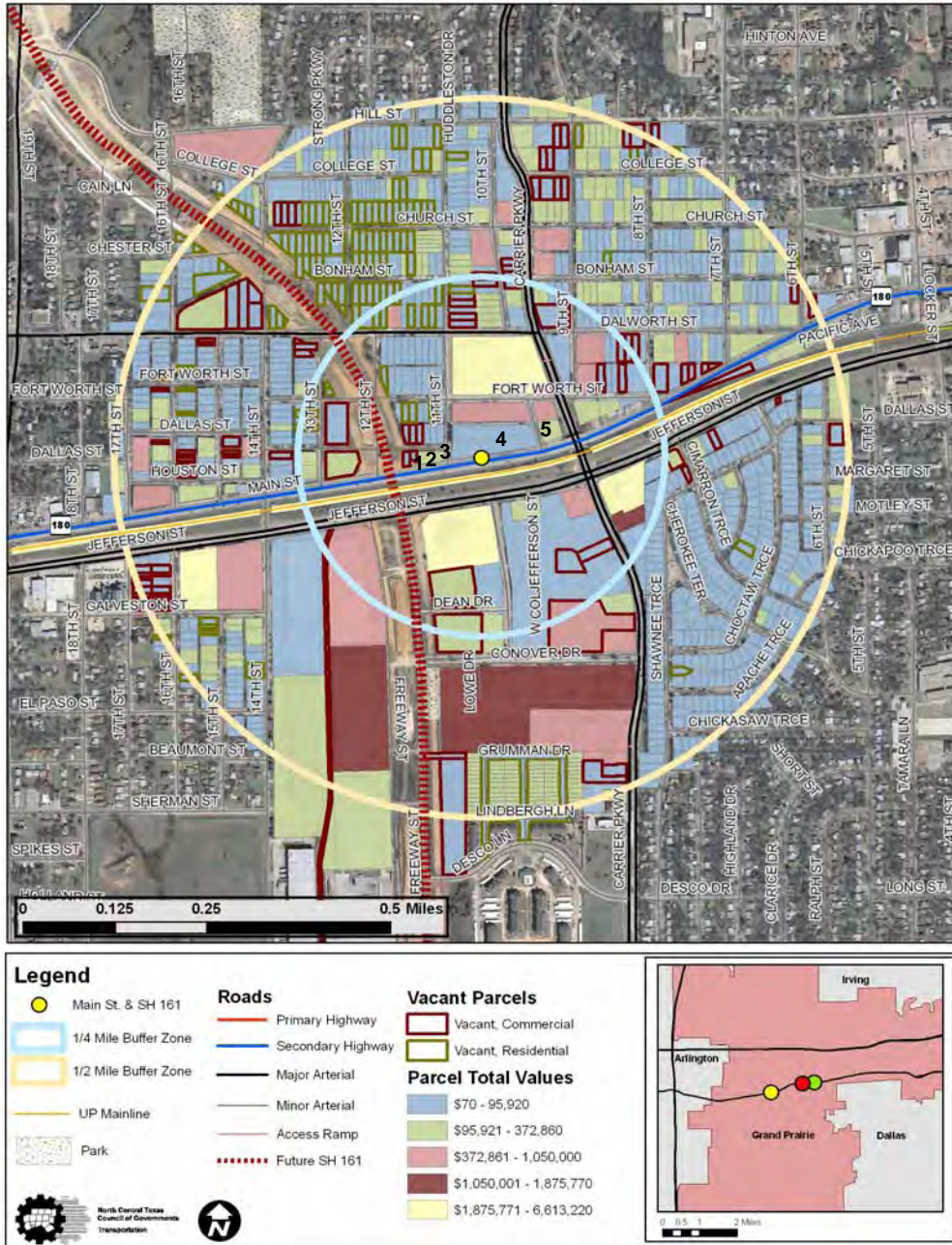
- Examples of uses that are encouraged include mixed-use block, flex building, apartment building, live/work, row house, duplex house, courtyard house, and sideyard houses.
- Lodging: Limited by the required 1.0 assigned parking spaces/bedroom.
 - No limit as to when food service may be provided.
 - Examples of specific uses that are encouraged include bed and breakfast and school dormitories.
- Office: Limited by the required 2.0 assigned parking places per 1000 square feet of net office space.
 - Examples of specific uses include office building and live-work units.
- Retail: Limited by the required 3.0 assigned parking places per 1000 square feet of net retail space.
 - Retail spaces under 1500 square feet are exempt from parking requirements.
 - Examples of specific uses include open market building, retail building, display gallery, restaurant, and kiosk.
- Civic uses that are recommended include bus shelter, fountain or public art, library, live theater, movie theater, museum, outdoor auditorium, parking structure, passenger terminal, playground, and religious assembly.
- Education uses such as childcare centers are recommended.

Multi-level structures composed of a mix of uses such as office and residential, retail and residential, or office, retail and residential are highly recommended for Scenario A - Main Street and the future SH 161 study area. Retail and offices should be as close to the transit station as possible. This would allow businesses the possibility of increased foot traffic as people tend to walk further to arrive at their dwelling than they would if walking for other purposes.¹¹ The balance of redevelopment and preserving the existing neighborhoods should be considered. The further you go from the UP Mainline, the more single-family housing is present. It is important to keep in mind that locations with single-family housing can face opposition to increased density and impact the overall redevelopment efforts.

Scenario A – Main Street and the Future SH 161 Cost Estimate for Land Acquisition

Form-Based Codes have the flexibility to be applied to an individual building or lot according to the Form-Based Code Institute. Therefore, there is not a great need for large land assembly to implement the Code. The city should consider hiring a master developer ready to redevelop the area. A master developer will be able to plan and implement phased-in redevelopment. This section provides a list of recommended sites that could be the starting point for the transit-oriented development as shown in Exhibit 4-2. The locations were chosen based on the proximity to the proposed station and parcel value. Appendix E-1 provides additional information per parcel such as the age of the existing building, size of the parcel, and total cost per numbered parcel as shown on the map. The building years range from 1962 to 1991. The total value for a little over four acres is about \$400,000.

**EXHIBIT 4-2: SCENARIO A – MAIN STREET AND THE FUTURE SH 161
RECOMMENDED SITES FOR TOD**



Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

Scenario B - Main Street and Center Street study area is designated to have future mixed-use land uses in the City of Grand Prairie 2010 Comprehensive Plan. As infill development or redevelopment occurs it is recommended that the standards in transects T5 Urban Center Zone and T6 Urban Core Zone be considered. Although not many buildings in this study area are designated as historical landmarks, the city should consider preserving those buildings that may have certain conditions such as interesting architecture, character, and are at least 50 years old.

In addition to the T5 standard previously outlined for Scenario A, the city should also consider the T6 standard recommendations. A significant increase in density would help generate the population density needed to support a TOD and new development would spur pedestrian-welcoming frontages.

T6 Urban Core Zone Standard Recommendations

- Base Residential Density: 12 units/acre gross and 96 units/acre gross by TDR.
 - The 2030 projected residential density, according to the TOD Audit in Appendix B-2, is 5.19 households per acre.
- Civic spaces that are permitted include square, playground, and plazas.
 - Park by Warrant.
 - Green space not permitted.
- The setback of the principal building should be a minimum of 2 feet and a maximum of 12 feet.
 - For secondary buildings the setback should be a minimum of 2 feet and a maximum of 12 feet.
 - The side setback should be 12 inches minimum to a 24 foot maximum.
 - The rear setback should be 0 feet.
 - The frontage buildout should be 80 percent minimum.
- Private frontages that are permitted are forecourt, stoop, shopfront and awning, gallery and arcades.
 - Porch and fence, terrace or dooryard, and common yard are not permitted private frontages.
- The principal building should range from the minimum of two stories and maximum of eight stories.
- Residential: Dwellings on each lot are limited by the required 1.0 parking spaces/dwellings.
 - Examples of uses that are encouraged include mixed-use block, flex building, apartment building, and live-work dwellings.
- Lodging: Limited by the required 1.0 assigned parking spaces/bedroom.
 - No limit as to when food service may be provided.
 - Examples of specific uses that are encouraged include bed and breakfast and school dormitory.
- Office: Limited by the required 2.0 assigned parking places per 1000 square feet of net office space.
 - Examples of specific uses include office building and live-work units.
- Retail: Limited by the required 3.0 assigned parking places per 1000 square feet of net retail space.
 - Retail spaces under 1500 square feet are exempt from parking requirements.

- Examples of specific uses include open market building, retail building, display gallery, restaurant, and kiosk.
- Civic uses that are recommended include bus shelter, fountain or public art, library, live theater, movie theater, museum, outdoor auditorium, parking structure, passenger terminal, playground, and religious assembly.
- Civil support such as a fire station, police station, and medical clinics are recommended.
- Education uses such as trade school or childcare centers are recommended.

Multi-level structures composed of a mix of uses such as office and residential, retail and residential, or office, retail and residential are highly recommended for Scenario B - Main Street and Center Street study area. The increase in density will help support the TOD and passenger ridership on bus or rail service. As previously mentioned, the retail and offices should be as close to the transit station as possible to increase the foot traffic to nearby businesses. Current buildings which consist of a zero foot side setback with shopfronts provide for a good base for infill development. Retrofitting the existing buildings to add additional density is another option if it is not cost prohibitive.

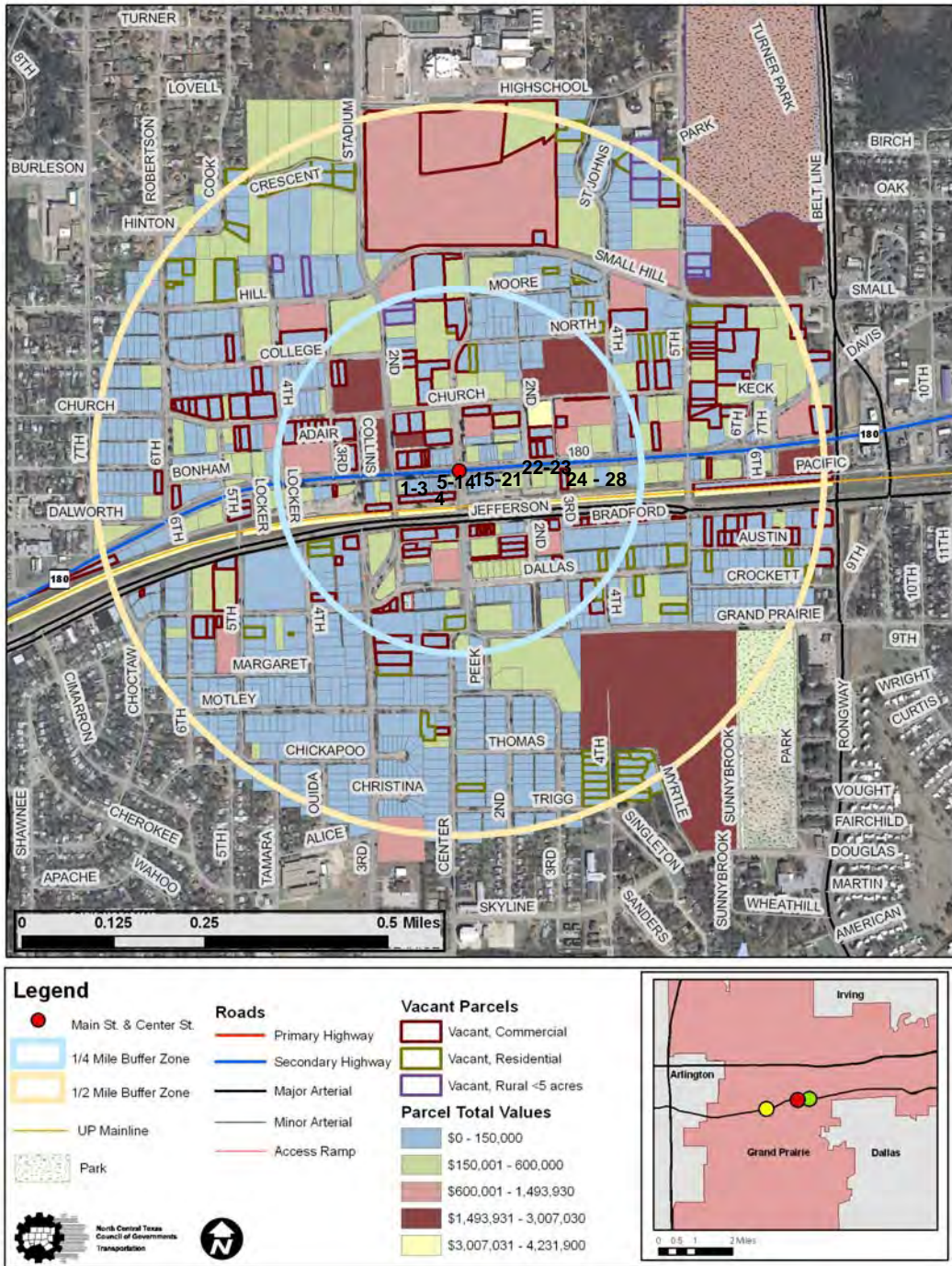


Current businesses near Main Street
and Center Street
Source: NCTCOG

Scenario B - Main Street and Center Street Cost Estimate for Land Acquisition

Recommended sites that could be the starting point for the TOD for this scenario can be seen in Exhibit 4-3. The locations were chosen based on the proximity to the proposed station and land value. Appendix E-2 provides additional information per parcel such as the age of the existing building, size of the parcel, and total cost per numbered parcel as shown on the map. Parcel value near the station ranges from \$1,800 to \$475,000. The dates of the buildings range from 1920 to 1985. The total value for a little over 4.5 acres is about \$3 million.

**EXHIBIT 4-3: SCENARIO B – MAIN STREET AND CENTER STREET
RECOMMENDED SITES FOR TOD**



Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

Scenario C - Main Street and East 5th Street study area is designated to have future mixed-use land uses as stated in the Comprehensive Plan. As infill development or redevelopment occurs it is recommended that the standards in transects T5 Urban Center Zone and T6 Urban Core Zone as previously mentioned should be considered. Overall, the study area should focus in increasing density through multi-level mixed-use buildings. The increase in density is needed to support the TOD and transit ridership and would allow the following to take place:

- more commercial and residential development along the TOD corridor,
- improved street facing frontages,
- multi-level buildings, and
- a variety of multi-purpose trip generating businesses.

Higher densities need to be achieved by building vertically, and pedestrian-oriented buildings should be a priority by adding the following features:

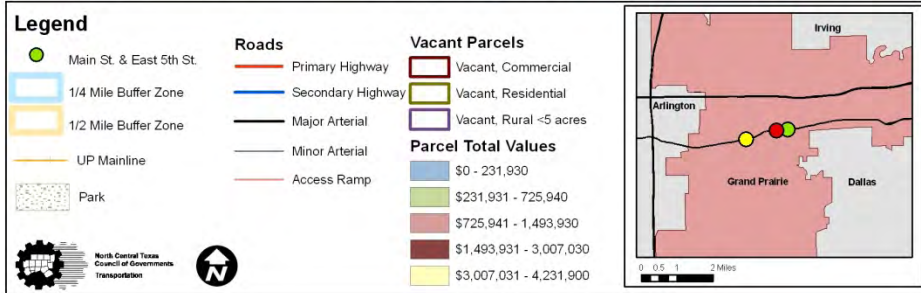
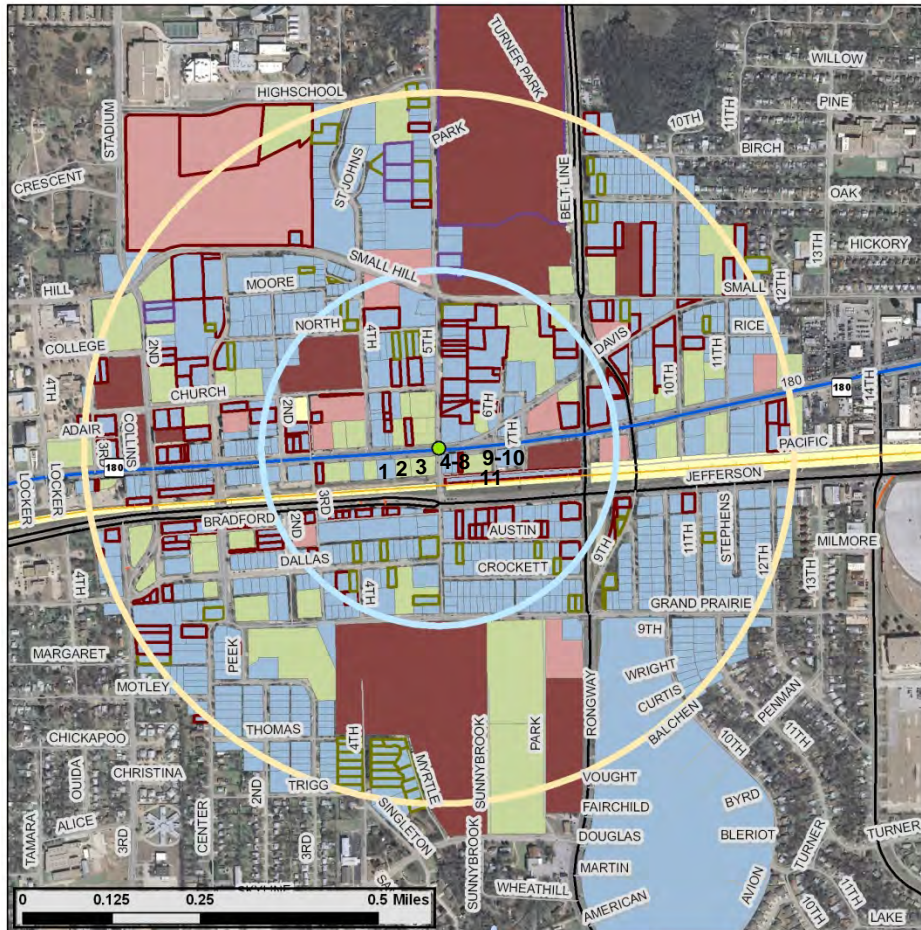
- awnings,
- articulated façades, and
- a minimum amount of ground-floor window space area equal to 40 percent of a building's length requirement.

Scenario C - Main Street and East 5th Street Cost Estimate for Land Acquisition

Recommended sites that could be the starting point for the TOD for this scenario can be seen in Exhibit 4-4. The locations were chosen based on the proximity to the proposed station and land value. Appendix E-3 provides additional information per parcel such as the age of the existing building, size of the parcel, and total cost per numbered parcel as shown on Exhibit 4-4. The dates of the buildings range from 1946 to 1981. The total value for about five acres is about \$1.5 million.

Recommendations for the standards that should be considered for infill or redevelopment will be based on Exhibit 4-5. A more extensive list of the SmartCode transect standards can be seen in Appendix D.

**EXHIBIT 4-4: SCENARIO C - MAIN STREET AND EAST 5TH STREET
RECOMMENDED SITES FOR TOD**



Please note that vacant parcels could have been occupied since the map was last created. Data was gathered from the 2007 Dallas County Parcels data.

EXHIBIT 4-5: SUMMARY OF RECOMMENDATIONS

	Parking	Residential Density	Total Land Value
Scenario A Main Street and the future SH 161	T4 – T5 T4 Standards: Residential 1.5 parking spaces/dwellings Lodging 1.0 parking spaces/bedroom Office 3.0 parking spaces/1000 sq. ft. Retail 4.0 parking space/1000 sq. ft.	Current: 7.85 HH per acre Current Zoning: SF1-MF1 SF1 3.6 dua MF1 12 net dua Recommended T4 –T5 T4: 12 units/acre T5: 24 unites/acre	Total Acres 4.034 Total Land Value (approximately) \$404,190
Scenario B Main Street and Center Street	T5 – T6 T5 Standards: Residential 1.0 parking spaces/dwellings Lodging 1.0 parking spaces/bedroom Office 2.0 parking spaces/1000 sq. ft. Retail 3.0 parking space/1000 sq. ft.	Current: 5.19 HH per acre Current Zoning: SF1-MF1 SF1 3.6 dua MF1 12 net dua Recommended T5 –T6 T5: 24 unites/acre T6:96 units/acre	Total Acres 4.619 Total Land Value (approximately) \$3,022,410
Scenario C Main Street and East 5 th Street	T5 – T6 T6 Standards: Residential 1.0 parking spaces/dwellings Lodging 1.0 parking spaces/bedroom Office 2.0 parking spaces/1000 sq. ft. Retail 3.0 parking space/1000 sq. ft.	Current: 6.42 HH per acre Current Zoning: SF1-MF3 SF1 3.6 dua MF3 24 net dua Recommended T5 –T6 T5: 24 unites/acre T6:96 units/acre	Total Acres 4.808 Total Land Value (approximately) \$1,497,470

4.2 SITE-SPECIFIC BICYCLE AND PEDESTRIAN RECOMMENDATIONS

The City of Grand Prairie has excellent opportunities for developing a good bicycle and pedestrian network. Many collectors and arterials are overly wide and can be restriped to add bicycle lanes. New paths on separate rights-of-way should be constructed where feasible. Short connecting paths, described in the Street Network section of 2.3 Bicycle and Pedestrian Best Practices, also serve to provide connectivity for bicyclists and pedestrians. Bicycle lanes should be provided on most arterial streets, and should measure four to six feet in width, in addition to sidewalks that are at least seven feet wide. The City of Grand Prairie has several overly wide arterials that can easily be restriped to include bicycle lanes. Main Street, Jefferson Street, and Carrier Parkway are all good candidates for restriping to add bicycle lanes. Bicycle lanes should also be added on a number of collectors, particularly those that are overly wide and currently invite speeding.

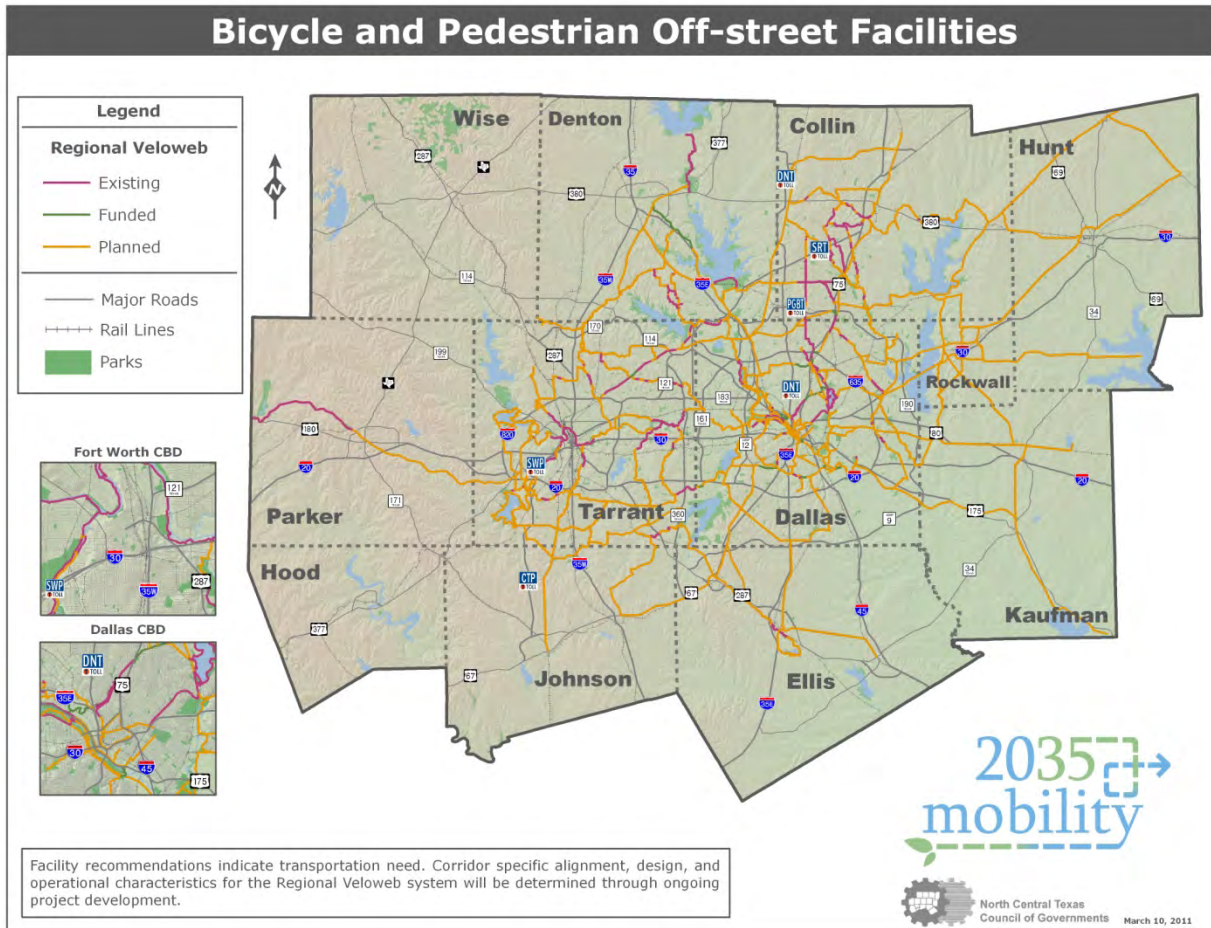
In the event that a bicycle lane is not a feasible option, a shared lane marking is an acceptable alternative on roadways that have motor vehicle speeds at or below 35 mph. The City of Grand Prairie has vast reserves of undeveloped land that can benefit from a well-planned system of greenways, open space, and multi-use trails. A significant trails network should be developed to form convenient connections between present day Grand Prairie services and future TOD sites. Trail art and trail interpretive programs can also be developed with participation of the arts community.



Shared Lane Marking - Fort Worth, TX
Source: NCTCOG

Trails should be specifically linked to the full system of routes included in the NCTCOG Regional Veloweb (see Exhibit 4-6). The Regional Veloweb includes routes that link cities and counties together in an effort to provide safe, efficient mobility to pedestrians and bicyclists. The Veloweb includes 1,200 miles of interconnected off-street trails designed to link the entire North Central Texas region together. Linkages between neighboring counties and cities are critical as they provide connections to the City of Grand Prairie, and ultimately the transit station, by maximizing use of the facilities and granting accessibility. The City of Grand Prairie has already taken this into consideration as a connecting portion of Fish Creek Trail has been recently completed. The trail is included in the Regional Veloweb and connects the cities of Grand Prairie and Arlington. The Lone Star Trail was completed in 2011 and runs south along Belt Line Road, turns east along the Trinity, and then turns back north to connect Grand Prairie to the city of Irving. In addition, the Good Link Trail which connects Grand Prairie's award winning Mike Lewis Park to C.P. Waggoner Park was completed in March of 2009.

EXHIBIT 4-6: NCTCOG REGIONAL VELOWEB



Furthermore, according to the City of Grand Prairie 2010 Comprehensive Plan,¹² Objective 22 states, “Make public facilities ‘people friendly’.” To achieve this objective, Policy 1 states, “the city will develop highly visible and easily accessible public facilities which promote pedestrian activity, are interactive with aesthetically pleasing interiors and exteriors, and can support special events, while being easily and economically maintained,” thereby reinforcing the city’s commitment to improving bicycle and pedestrian facilities and accommodations.

The following contains site-specific recommendations for the three proposed TOD sites based on evaluation of the existing conditions and general recommendations as outlined in Section 3.4 Existing Conditions and General Recommendations: Bicycle and Pedestrian Amenities. These recommendations are provided to assist engineers and designers in the development of bicycle and pedestrian facilities that meet all requirements set forth by the City of Grand Prairie, the Texas Department of Transportation (TxDOT), and federal guidance, as applicable. The recommendations are based on the following nationally adopted planning documents: the Texas Manual on Uniform Traffic Control Devices (Texas MUTCD) Part 9: Traffic Control for Bicycle Facilities, 2006; the Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition; and the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 1999. Guidelines provided in this document are a

supplement to the cited manuals. These guidelines are not design standards and should not be used as such. Application of guidance provided in this document requires the use of engineering judgment when retrofitting the City of Grand Prairie's roadways to provide bicycle and pedestrian facilities.

The MUTCD 2009 Edition is a document issued by the Federal Highway Administration (FHWA) of the United States Department of Transportation (USDOT) to specify the standards by which traffic signs, road surface markings, and signals are designed, installed, and utilized. These specifications include the shapes, colors, fonts, sizes, etc. used in road markings and signs. In the United States, all traffic control devices must generally conform to these standards. The manual is used by state and local agencies as well as private construction firms to ensure that the traffic control devices they use conform to the national standard. While some state agencies have developed their own sets of standards, including their own MUTCD (including TxDOT), these must substantially conform to the federal MUTCD and must be approved by FHWA. The National Committee on Uniform Traffic Control Devices (NCUTCD) advises FHWA on additions, revisions, and changes to the MUTCD.

AASHTO is a nonprofit, nonpartisan association representing state highway and transportation departments. It publishes a variety of planning and design guides including the AASHTO Guide for the Development of Bicycle Facilities, 1999. This guide provides planning and design guidance for on- and off-street bicycle facilities. It is not intended to set absolute standards, but rather to present sound guidelines that will be valuable in attaining good design sensitive to the needs of both bicyclists and other roadway users. The provisions in the guide are consistent with, and similar to, normal roadway engineering practices. Signs, signals and pavement markings for bicycle facilities should be used in conjunction with the Texas MUTCD.

The Texas MUTCD Part 9: Traffic Control for Bicycle Facilities, 2006 is based on the national MUTCD. Part 9 provides guidance on bicycle facilities and is based, in part, on the AASHTO Guide for the Development of Bicycle Facilities, 1999. The Texas MUTCD has not been updated to reflect changes in the MUTCD 2009 Edition. TxDOT has two years to update the Texas MUTCD when a new version of the MUTCD is published (likely in late 2011 or early 2012 in this instance), or they must adopt the national MUTCD and follow standards set forth in that document.

The City of Grand Prairie should coordinate with TxDOT before implementing any of the recommended infrastructure improvements to roadways that are on-system, or maintained by TxDOT, as the approval of TxDOT is required for any modifications. SH 180 (Main Street in Grand Prairie) is one such roadway, and while TxDOT has approved reductions in capacity in the city of Arlington in recent years, a special analysis by TxDOT is required to approve such requests. In order to receive approval from TxDOT, the City of Grand Prairie will need to submit to the TxDOT Dallas District explicit design plans for the entire corridor, including an assessment on the effects of reducing capacity and access management. The TxDOT Dallas District will then submit the plans to the District Traffic Operations division for review of the capacity analysis. Upon their approval, permitting will be granted to the City of Grand Prairie to allow for the infrastructure improvements.

Scenario A - Main Street and the Future SH 161

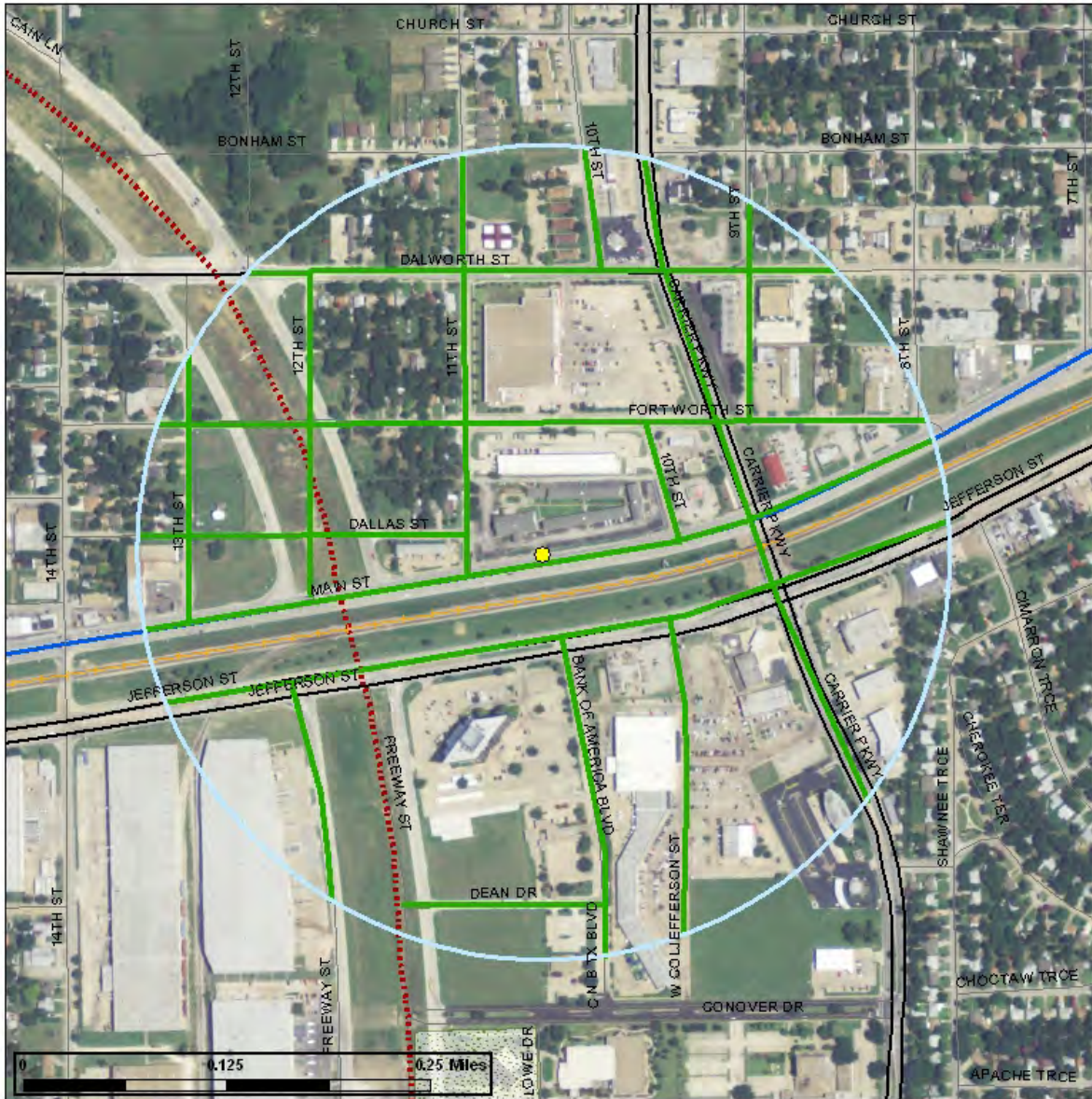
1. Traffic-calming measures need to be implemented on Main Street in order to make the roadway more pedestrian friendly. Addition of the following measures could be implemented to slow traffic on this road:
 - the addition of a center median
 - an 8-foot parallel parking lane on the north side of Main Street (where the development would be located)
 - two 4- to 6-foot striped bicycle lanes (one in each direction)
 - two narrow lanes of traffic in each direction (10 to 11 feet in width)

Each of these measures (on-street parking, bicycle lanes, and medians) has been proven to create a more pedestrian-friendly environment by reducing travel speeds and thus the occurrence of collisions.

2. The same measures should also be implemented on Carrier Parkway since it is a major north/south arterial. Adding bicycle lanes would reduce the width of the current travel lanes causing reduced traffic speeds, and would allow bicycle commuters access to the proposed TOD site.
3. Traffic-calming measures on neighborhood streets and collectors should also be implemented.
4. Within the proposed TOD, sidewalks need to be implemented according to the criteria discussed in Section 2.3 Bicycle and Pedestrian Best Practices. In addition, the following should be considered particularly at heavy intersections:
 - crosswalks
 - signage
 - pedestrian traffic signals
5. The existing Albertsons parking lot should be redeveloped with multi-use developments (unless private ownership precludes this from occurring).
6. Increased density in the area would improve streetscape quality and encourage pedestrian foot traffic (zoning allowances should be considered beforehand).
7. A pedestrian bridge from north of Main Street to the proposed transit station site (south of Main Street) could be constructed to allow safe bicycle and pedestrian access across the multi-lane road.
8. In addition, median islands (discussed in Section 2.3 Bicycle and Pedestrian Best Practices) could also be implemented to allow cross traffic access to the station.
9. The street network surrounding the proposed TOD is in good block form, but in areas where there are existing cul-de-sacs, large blocks, or dead ends, trails, and/or greenways should be created to allow neighboring communities pedestrian and bicycle access to the development.
10. Bicycle amenities should also be provided at desired destinations as discussed in Section 2.3 Bicycle and Pedestrian Best Practices:
 - bicycle parking
 - bicycle racks

- lockers
 - showering facilities
11. Priority should be given to updating bicycle and pedestrian amenities on roadways within the pedestrian connectivity zone that are shown in green in Exhibit 4-7.

EXHIBIT 4-7: MAIN STREET AND THE FUTURE SH 161 BICYCLE AND PEDESTRIAN OVERVIEW



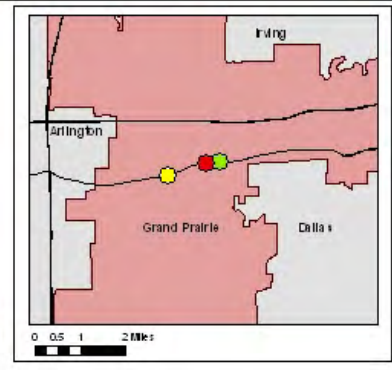
Legend

- Main St. & SH 161
- Priority Bike/Ped Improvements
- Pedestrian Oriented Zone
- Pedestrian Connectivity Zone
- UP Mainline
- Water Bodies
- Park



Roads

- Primary Highway
- Secondary Highway
- Major Arterial
- Minor Arterial
- Access Ramp
- Future SH 161



Scenario B - Main Street and Center Street

1. The well-connected street system surrounding the proposed TOD site at Main Street and Center Street ensures that attractive walking and bicycling routes are achievable. Priority should be given to bicycle and pedestrian amenity improvements along those routes shown in green in Exhibit 4-8, including the implementation of the following:
 - expanded sidewalks (at least 7 feet)
 - street furnishings including benches, kiosks, trash cans, planters, and landscaping
 - crosswalks and pedestrian traffic signals as needed
 - bicycle lanes or shared lane markings
 - traffic-calming measures including medians, a buffer (at least 4 feet wide), narrowed traffic lanes, and speed humps as warranted

Specific guidelines for these improvements are suggested in Section 2.3 Bicycle and Pedestrian Best Practices.

2. The following traffic-calming measures on Main Street should also be considered:
 - scale down Main Street from a four-lane road (two lanes in each direction) to a two-lane road (one 10- to 11-foot wide lane in each direction)
 - add a 4- to 6-foot wide striped bicycle lane in each direction
 - add adequate on-street parallel parking
 - add a center median

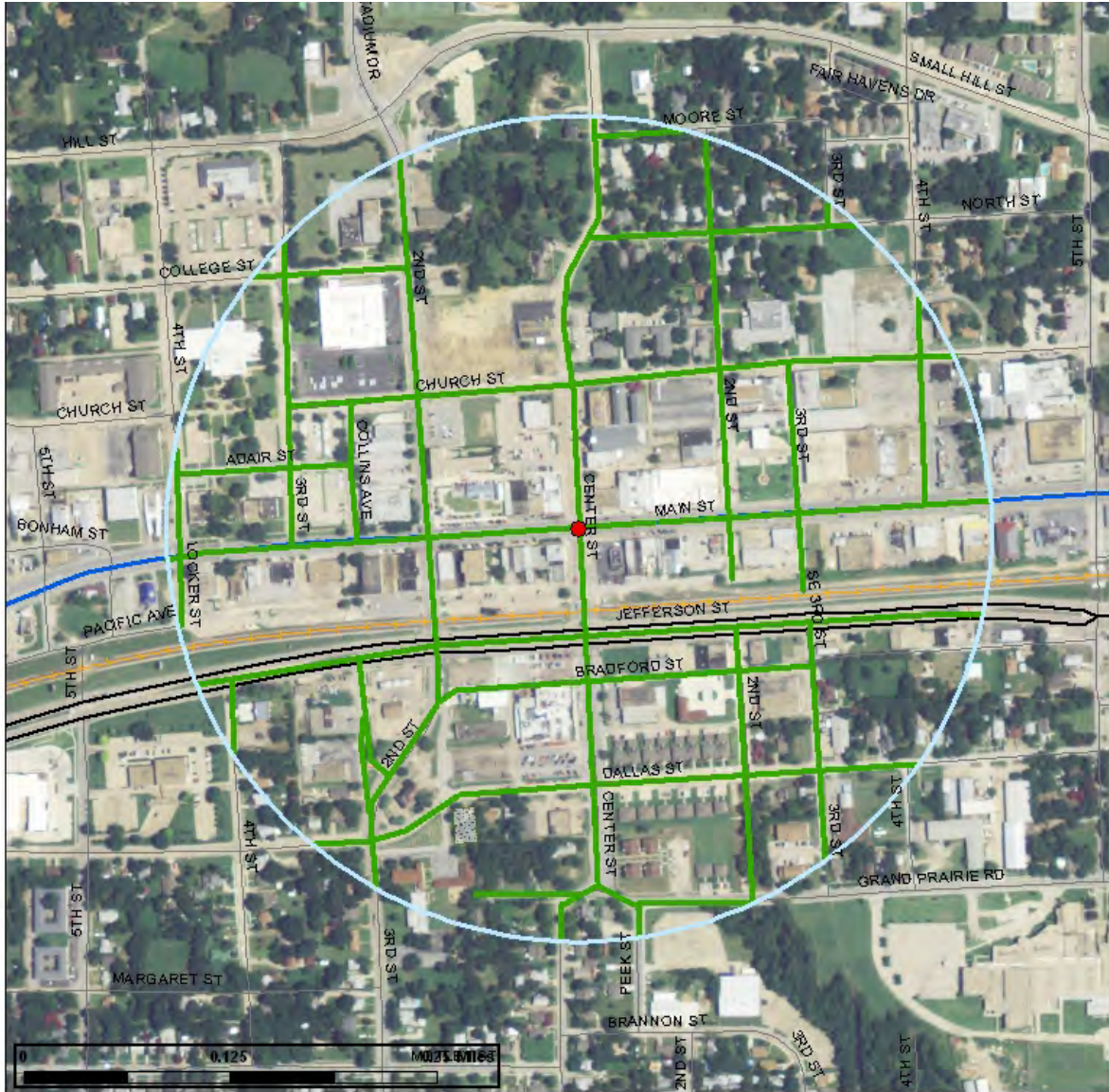
This would slow motor vehicle speeds, allow bicyclists access to destinations within the proposed TOD, and increase bicycle and pedestrian safety.

3. Jefferson Street also needs significant traffic-calming measures to make it more pedestrian friendly as it is a major arterial within the pedestrian-oriented zone. To improve conditions on the six-lane divided arterial, the following measures should be kept in mind:
 - reduction from three lanes in each direction to two lanes in each direction at a 10- to 11-foot width
 - addition of a bicycle lane measuring 4- to 6-feet wide in each direction
 - addition of on-street parallel parking on at least one side of the street
4. Enhanced intersections at Jefferson Street and East 3rd Street, as well as Jefferson Street and West 2nd Street should include the following:
 - marked crosswalks
 - pedestrian traffic signals with countdown signals
 - increased signage
 - American Disabilities Act (ADA)-approved sidewalk widths and ramps
5. The option to implement traffic-calming measures along West 2nd Street should be explored as this roadway would serve as a major north/south connection to the station. Because this road will need to stay at its current capacity to allow accessibility to the station and station parking, the number of lanes should not be reduced, but lanes can be

narrowed, and if enough right-of-way exists, a median should be installed to slow traffic. This road would also be ideal for a shared lane marking as discussed in Section 2.3 Bicycle and Pedestrian Best Practices. In addition, street furnishings and sidewalk expansion should be considered in order to promote a safe environment for pedestrians.

6. Driveways that separate many of the existing buildings on Main Street would need to be reconstructed for development, and parking should be diverted to an alleyway or on-street. In instances where this is not possible, the guidelines presented in Section 2.3 Bicycle and Pedestrian Best Practices should be considered for alternative options.
7. Ample bicycle parking and amenities should also be provided throughout the pedestrian-oriented zone according to the guidelines set forth in Section 2.3 Bicycle and Pedestrian Best Practices.
8. A public square located at Center Street and Main Street as proposed by the City of Grand Prairie would integrate the community into the proposed TOD, as well as serve as an attraction for pedestrians. Amenities at this site are crucial to ensure the safety and comfort of pedestrians, including the following:
 - o pedestrian traffic signals with countdown signals to access the public square
 - o extensive signage
 - o street furnishings including benches, kiosks, trash cans, planters, and landscaping
 - o a possible pedestrian scramble phase which allows pedestrian traffic to cross in all directions without the risk of motor vehicle conflicts as all motor vehicle traffic is stopped when pedestrians are in the walk phase
 - o bicycle facilities including racks and lockers.

EXHIBIT 4-8: MAIN STREET AND CENTER STREET BICYCLE AND PEDESTRIAN OVERVIEW



<p>Legend</p> <ul style="list-style-type: none"> ● Main St. & Center St. — Priority Bike/Ped Improvements Pedestrian Oriented Zone Pedestrian Connectivity Zone — UP Mainline Water Bodies Park 	<p>Roads</p> <ul style="list-style-type: none"> — Primary Highway — Secondary Highway Major Arterial Minor Arterial Access Ramp 	
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Scenario C - Main Street and East 5th Street

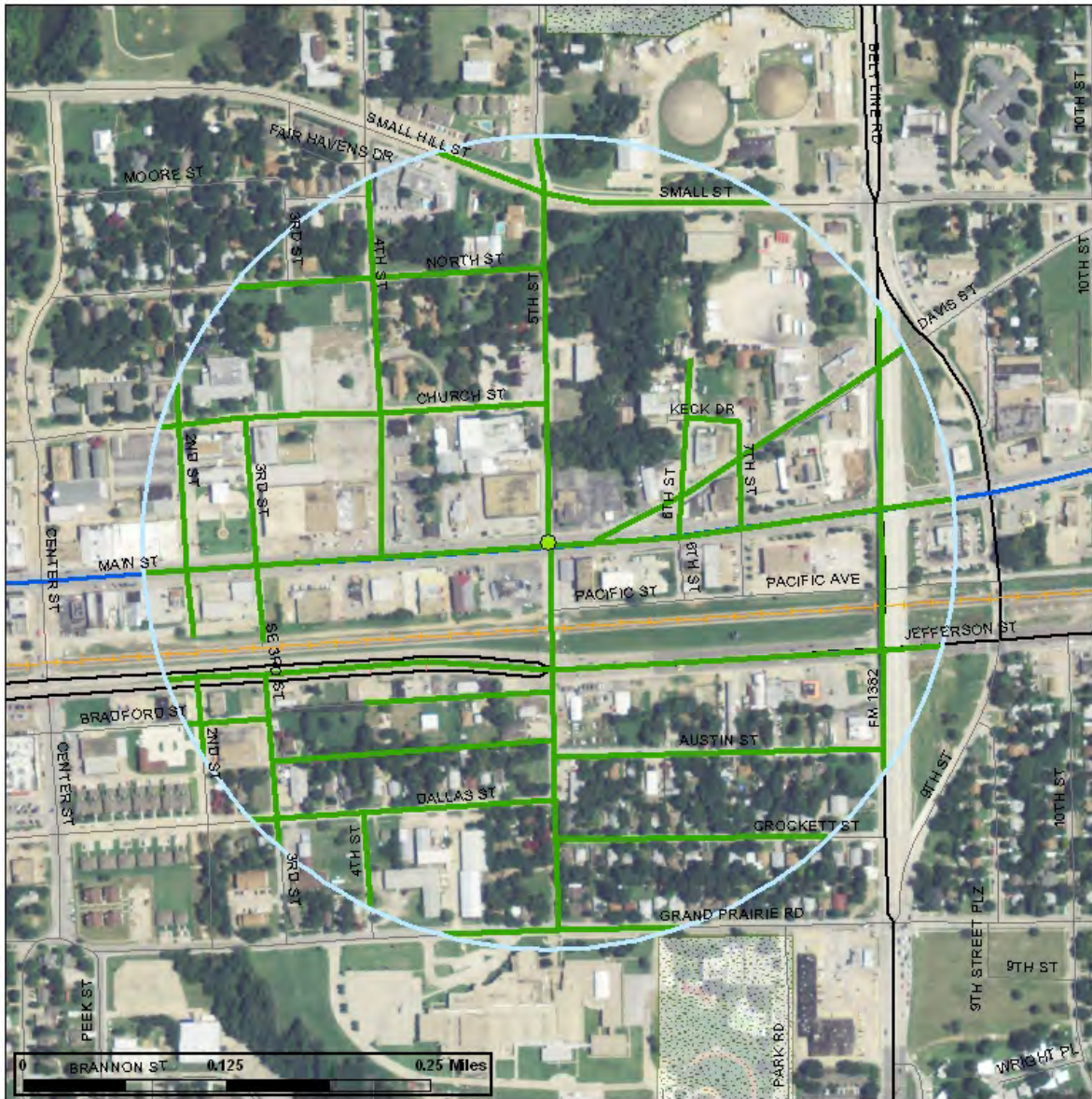
1. The proposed TOD site at Main Street and East 5th Street contains a major north/south collector, including a well constructed grid street network that allows surrounding areas many accessibility options. The neighborhood area to the south of Jefferson Street has access to the site via East 5th Street, while Belt Line Road serves as a major arterial that can carry large volumes of automobile traffic to the proposed TOD location. Davis Street, Main Street, Jefferson Street, and East 5th Street are all along the priority route for bicycle and pedestrian improvements as shown in Exhibit 4-9. In order for these roads to meet pedestrian and bicyclists' needs, each should be retrofitted to include the following:
 - center medians
 - narrowed motor vehicle travel lanes (10- to 11-feet in width)
 - widened sidewalks (at least seven feet)
 - street furnishings including benches, kiosks, trash cans, planters, and landscaping
 - addition of on-street parallel parking
 - addition of on-street bicycle routes or designated lanes per the guidelines set forth in Sections 2.3 Bicycle and Pedestrian Best Practices
2. The grade crossing on East 5th Street is in need of the following improvements:
 - increased signage, specifically an LED flashing train warning sign
 - pedestrian gates
 - at-grade z-crossing
 - "Stop Here" pavement markings
3. Major roads connecting to the proposed TOD (as mentioned above in Recommendation 1) should also connect to local residential streets that have been retrofitted to allow for increased pedestrian accessibility, as specified in Section 2.3 Bicycle and Pedestrian Best Practices.
4. In order to accommodate parking at this proposed transit station, parking south of the buildings on Main Street, east of East 5th Street, and north of the UP Mainline should be added. This would accommodate traffic traveling on Main Street, East Pacific Avenue, and/or East 6th Street, allowing for a variety of route options. If more parking is needed, a parking garage could be constructed with a possible location east of East 5th Street and north of East Pacific Avenue. Retail should be on the ground floor to ensure a pedestrian-friendly environment.
5. Extension of the TOD corridor west along Main Street to reach the "Uptown" revitalization and east past Belt Line Road would create a well-connected and more easily accessible TOD to surrounding neighborhoods.
6. Open space within the corridor should be preserved and made available to the public through parks, community gardens, or public plazas in an effort to create a more welcoming environment. A prime location for a feature such as a pedestrian plaza or mall would be north of the proposed station on East 5th Street and south of Main Street as the crossing will be closed in the future. This could serve as a waiting or recreational area for patrons utilizing the proposed transit station and/or the transit-oriented

development, as well as offer accessibility to the station. Pedestrian and bicycle amenities as discussed in Section 2.3 Bicycle and Pedestrian Best Practices should be included.

7. Surrounding trails should also feed into this site wherever connections can be made in an effort to increase pedestrian and bicycle traffic. Amenities along these trails should be considered a priority in order to encourage activity and filter pedestrians and cyclists from surrounding neighborhoods into the proposed TOD site. Turner Park and the Lone Star Trail should offer direct connections to the TOD.

Exhibit 4-10 provides a summary of the bicycle and pedestrian recommendations for all three study areas.

EXHIBIT 4-9: MAIN STREET AND EAST 5TH STREET BICYCLE AND PEDESTRIAN OVERVIEW



Legend

- Main St. & E 5th St.
- Priority Bike/Ped Improvements
- Pedestrian Oriented Zone
- Pedestrian Connectivity Zone
- UP Mainline
- Water Bodies
- Park

Roads

- Primary Highway
- Secondary Highway
- Major Arterial
- Minor Arterial
- Access Ramp

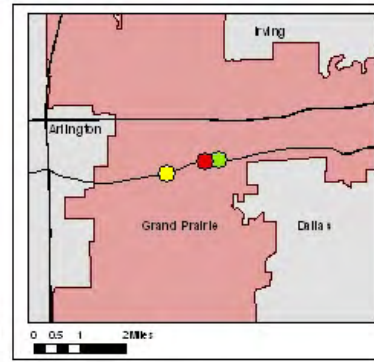


EXHIBIT 4-10: SUMMARY OF BICYCLE AND PEDESTRIAN RECOMMENDATIONS

Recommendations	Scenario A Main St. and Future SH 161	Scenario B Main St. and Center St.	Scenario C Main St. and East 5th St	Cost*
Lane and Path Treatments				
Shared Lane Marking	As warranted	As warranted	As warranted	\$200/marking
Dedicated Bicycle Lane	■	■	■	\$1,000 to \$50,000/mile, depending on the condition of pavement, the need to remove and repaint lane lines, and other factors
Dedicated Bicycle Route	■	■	■	\$100/sign
12-foot wide Off-street Multi-use Trail	Where on-street bicycle treatments are not feasible	Where on-street bicycle treatments are not feasible	Where on-street bicycle treatments are not feasible	\$500,000 to \$1 M/mile depending on retaining walls, bridges, amenities, etc.
Intersection Treatments				
Mid-block Crossing	As warranted	As warranted	As warranted	\$4,000 to \$30,000, depending on the design and site conditions
Crosswalks	■	■	■	\$100 for a regular striped crosswalk, \$300 for a zebra crosswalk
Pedestrian Traffic Signals	■	■	■	\$20,000 to \$140,000/ intersection, depending on signal equipment
Pedestrian Scramble	Intersections with 1,200 + pedestrian crossings/day	Intersections with 1,200 + pedestrian crossings/day	Intersections with 1,200 + pedestrian crossings/day	There is no extra cost when pedestrian traffic signals are present
Driveway Improvements	As warranted	As warranted	As warranted	Varies depending on the scope of work to be done
Signage Treatments				
Wayfinding Signage	■	■	■	\$50 to \$150/sign plus installation costs
Traffic Calming Treatments				
Roadway Narrowing (Lane widths reduced to 10- to 11-feet)	On roads with high volumes of traffic	On roads with high volumes of traffic	On roads with high volumes of traffic	\$5,000 to \$10,000/mile, depending on the number of old lanes to be removed
Reducing Number of Lanes	On roads with high volumes of traffic	On roads with high volumes of traffic	On roads with high volumes of traffic	\$5,000 to \$21,000/mile, depending on the number of lane lines that need to be repainted

EXHIBIT 4-10: SUMMARY OF BICYCLE AND PEDESTRIAN RECOMMENDATIONS, Cont.

Recommendations	Scenario A Main Street and Future SH 161	Scenario B Main St. and Center St.	Scenario C Main St. and East 5th St.	Cost*
Traffic Calming Treatments				
Bulb-out	Only used where there is a parking lane	Only used where there is a parking lane	Only used where there is a parking lane	\$2,000 to \$20,000/corner, depending on design and site conditions
On-street Parking	■	■	■	\$1,000 to \$10,000/mile, depending on the number of lane lines that need to be repainted; optional features: \$30 to \$150/sign, \$300/parking meter installation
Raised Median	■	■	■	\$15,000 to \$30,000/100 feet, depending on the design and site conditions
Pedestrian and Bicycle Amenities				
Pedestrian Bridge	■			\$500,00 to \$4 million, depending on site characteristics
Pedestrian Plaza		■	■	\$30,000 to several million dollars, depending on the design, site conditions, and materials used
Street Furniture	■	■	■	Varies depending on the extent of the treatment and the quality of the materials used
Landscaping	■	■	■	Varies depending on the type and the amount of planting material used
Widened Sidewalks (at least 7 feet wide with 4- to 6-foot buffer)	■	■	■	\$15/linear foot for curbing, \$11/square foot for walkways (new construction); \$100,000 or more/mile (retrofit)
ADA Approved Curb Ramps	■	■	■	ADA-approved curb ramps: \$800 to \$1,500/curb ramp (new or retrofitted)
Pedestrian Scaled Lighting	■	■	■	Varies depending on fixture type and service agreement with local utility company
Bicycle Parking	■	■	■	\$150 to \$300 each (parks two bikes), including installation costs
Bicycle Lockers	■	■	■	\$1,000 to \$4,000 each (parks two bikes), including installation costs

*All costs listed are estimates according to the US Department of Transportation Federal Highway Administration.

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CONCLUSION

This report built on the Regional Rail Corridor Study. The Study recommended that commuter passenger rail be built parallel to the Union Pacific Mainline (UP Mainline). The UP Mainline runs across the City of Grand Prairie. Implementing commuter rail on the UP Mainline may be complicated by funding and right-of-way access. These issues may prolong the implementation of passenger rail on the UP Mainline. It would be beneficial for the City of Grand Prairie to consider implementing other transit alternatives including, but not limited to, regular bus, express bus, or shuttle services. These transit alternatives can serve as a staging service and then provide feeder service once the passenger rail is implemented.

Planning services were requested from North Central Texas Council of Governments (NCTCOG) to review for potential transit-oriented development (TOD) sites within the city of Grand Prairie. Three locations were found to have the potential to be revitalized into a TOD: Scenario A - Main Street and the future State Highway (SH) 161, Scenario B - Main Street and Center Street, and Scenario C - Main Street and East 5th Street (also known as 5th NE). This study examined the current and future conditions of each of the three study areas. A summary of opportunities and constraints for each scenario is listed below.

Scenario A – Main Street and the future SH 161

Opportunities

- Vehicular north and south access via the future SH 161 and Carrier Parkway.
- Vehicular west and east access via Main Street/SH 180.
- Sidewalk on Carrier Parkway has recently been redeveloped.
- Supermarket and new development have a modern look to the building facades.

Constraints

- Existing businesses and land would need to be purchased.
- TOD location would not be available immediately adjacent to potential future station due to constrained land availability.
- Pedestrian overpass or roadway improvement would be needed to allow safe pedestrian access to future station.
- Development challenges going west of the future SH 161, possibly less land to redevelop.

Scenario B – Main Street and Center Street

Opportunities

- West and east mobility access via Main Street.
- North and south mobility access via Center Street.
- Downtown, which is known as “Uptown”, is undergoing revitalization.
- Sidewalks will be widened on the south side of Main Street between 14th NW to East 2nd Street for added streetscape.

Constraints

- No vacant land readily available, businesses/land would need to be acquired.
- Buildings may be of historical significance which cannot be demolished to place higher density. Retrofitting may be an alternative.
- Several store frontages need revitalization.

Scenario C – Main Street and East 5th Street

Opportunities

- North and south access via Belt Line Road.
- West and east access via Main Street.

- Within the Uptown revitalization plans.
- Within walking distance, defined as one-quarter mile, of Market Square.

Constraints

- The majority of the land is not vacant. Existing property would need to be acquired for redevelopment.
- Land needed for transit parking may not be available immediately close to the station.

Recommendations were made to improve each study area into a viable TOD based on information available. Recommendations range from increasing density, changing building form, allowing and disallowing uses, and increasing bicycle and pedestrian amenities.

Overall, the process to implement public transit requires various steps including incorporating transit options in the region's mobility plan, conducting an alternatives analysis study, initiating a federal environmental process, and funding must be identified. Physical opportunities and constraints along with associated costs would also be evaluating factors for deciding the station location which would impact the opportunities for transit-oriented development. Though it should be noted that as redevelopment occurs, density increases and potential ridership numbers increase, and this better positions the rail project for federal funding. The Federal Transit Administration is a primary source of funds for commuter rail implementation and potential ridership counts weigh heavily when New Starts funding and other funds are selected from projects across the country. Building for where you want to be, while being mindful of right-of-way requirements is a win-win for the City of Grand Prairie as they prepare for transit and receive the tax revenue of redeveloped increased property values and possible sales tax for new retail that is constructed.

APPENDICES

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Appendix A - SmartCode Outline

Outline of the SmartCode

	ARTICLE 2 REGIONAL SCALE	ARTICLE 3 & ARTICLE 4 COMMUNITY SCALE PLANS		ARTICLE 5 BUILDING SCALE	
	A. Sector Type	B. Community Type	C. Transect Zones	Standards	
Open Lands	O1 Preserved Open Sector	None	T1 Natural Zone		
	O2 Reserved Open Sector	None	T2 Rural Zone		
New Development	G1 Restricted Growth Sector	CLD Clustered Land Development	T2 Rural Zone T3 Sub-Urban Zone T4 General Urban Zone		Building Disposition Building Configuration Building Function Parking and Density Parking Location Standards Landscape Standards Signage Standards
	G2 Controlled Growth Sector	CLD Clustered Land Development	T2 Rural Zone T3 Sub-Urban Zone T4 General Urban Zone		
		TND Traditional Neighborhood Development	T3 Sub-Urban Zone T4 General Urban Zone T5 Urban Center Zone		
	G3 Intended Growth Sector	TND Traditional Neighborhood Development	T3 Sub-Urban Zone T4 General Urban Zone T5 Urban Center Zone		
		RCD Regional Center Development	T4 General Urban Zone T5 Urban Center Zone T6 Urban Core Zone		
			T3 Sub-Urban Zone T4 General Urban Zone T5 Urban Center Zone		
Existing Development	G4 Infill Growth Sector	TND Traditional Neighborhood Development	T4 General Urban Zone T5 Urban Center Zone T6 Urban Core Zone		
		RCD Regional Center Development	T4 General Urban Zone T5 Urban Center Zone T6 Urban Core Zone		
Other			CB Civic Building CS Civic Space	Warrants & Variances	
		SD Special District	SD Special District		

**APPENDIX B-1: NCTCOG TOD AUDIT
MAIN STREET AND THE FUTURE SH 161**

1) Is the zoning for the area mixed use? What density is it?

- One-quarter mile surrounding the study area zoning includes: 2F – Two Family Residential District, C - Commercial District, GR – General Retail District, GR 1 – General Retail One District, O – Office District, PD - Planned Development, PD 248 – Planned Development District, PD 95 - Planned Development District, SF 4 – Single Family Four Residential District
- One-half mile surrounding the study area zoning includes: CA – Central Area (Central Business District), LI – Light Industrial District, MF 1 – Multifamily One Residential District, MF – Multifamily District, PD (62, 248, 71, 219, 248, 110, 95, 248, 229, 012, 175) – Planned Development District, SF (1, 2, 3, 5, 6) – Single Family Residential District
- Density: Dwelling Units per Acre (dua)
 - i) SF 1 – Single Family One Residential District 3.6 dua
 - ii) SF 2 – Single Family Two Residential District 4.5 dua
 - iii) SF 3 – Single Family Three Residential District 5.2 dua
 - iv) SF 4 – Single Family Four Residential District 5.8 dua
 - v) SF 5 – Single Family Five Residential District 8.7 dua
 - vi) SF 6 – Single Family Six Residential District 8.7 dua
 - vii) MF 1 – Multifamily One Residential District 12 net dua

2) Is the household (HH) population (based on our forecasts) at a sufficient density to support transit? Minimum of 35 units per acre, assume HH contains three people.

- The 2030 Household Projection based on the 2030 Demographic Forecast for the study area is 5,368 household population around an estimated 684 acres.
5,368 HHPOP/684 acres= **7.85 households per acre**
Note: Household information is calculated in Traffic Survey Zones (TSZ). TSZ's are irregular shapes and therefore when selecting TSZs within a one-half mile buffer of the study area can result in data to be under- or over-calculated. 503 acres are included in a one-half mile radius.
- Reconnecting America, a national non-profit organization that works to integrate transportation systems and the communities they serve, has documented a wide range of dwelling units per acre (dua) that are sufficient to support TOD. Some existing land use patterns that have incorporated commuter rail have a range of 6.76 dua in Charlotte, NC to 39.13 dua in Portland, OR.

3) Does the zoning for the area allow auto-dependent uses by right (drive-through fast food, banks, gas stations, etc)?

- A site inspection revealed that auto-dependent uses, such as drive-through fast food restaurants, banks, and other establishments were present. Specifically, there was a Williams Chicken drive-through, a big box Albertson's with a large parking lot, and a multi-pump gas station all within two blocks of the proposed development site. More importantly, almost all establishments were auto-oriented.
- Per Article 3 of the Unified Development Code, the Commercial District (C) is intended to provide suitable areas for the development of medium intensity commercial uses, such as automotive-related services.
- This study area also falls under the SH 161 Corridor Plan. Policy 4.24 of the plan states that "convenience stores, gasoline service stations, fast food restaurants and the like

should not be located immediately adjacent, or have direct access, to major intersections of arterial thoroughfares or freeway frontage roads.”

4) Does the area have planned hike/bike trail connections, adequate sidewalks and other pedestrian amenities?

- A site inspection revealed both adequate and inadequate sidewalks. Localized disrepair was the greatest problem with the current sidewalk system while the occasional dead end sidewalk presented a greater problem for future transit and pedestrian-oriented development.
- As it pertains to future development, the City of Grand Prairie should look to widen those sidewalks that would become major arterials leading to and from the proposed rail station, area parks, and pedestrian-friendly retail and commercial.
- Currently there are no existing bike trails. However, the Veloweb indicates the following:
 - i) Within one-quarter mile of the study area there is a planned trail running east-west along Main Street.
 - ii) Within one-half mile of the study area there are two planned trails. Both trails run north-south, the first one on 14th Street and the other on 7th Street.

5) Is there a variety of land uses in the immediate area, or is the area mixed use?

- Land uses within one-quarter mile of the study area: A1-Residential Single Family, B1-Residential Multi-Family, B2-Residential Duplex, C1-Vacant Residential, C2-Vacant Commercial, F1-Industrial.
- Land uses within one-half mile of the study area that are not included above: A4-Residential Townhomes, F2-Industrial.
- Currently, the area is a mix consisting of mainly residential with some commercial.

6) Is the planned street grid density at least 20 centerline miles over total square miles – or at least 10 miles of streets for an area of .5 square miles?

- Yes. There are 23.504 centerline miles over a one-half mile radius around the study area.
There are .785 square miles in the one-half mile area and 18.451 centerline miles.
 $(1 \text{ sq. mi}/.785) * 18.451 \text{ centerline miles} = 23.504$
- The map below displays the roads that were included. The only roads that were included in the calculation are those that are completely within the one-half mile buffer. There are roads that were excluded from the calculation because the road section extends past the one-half mile buffer.



7) Are area/height/bulk restrictions adequate? Depending on transect: setbacks should be around two to 12 feet max, height should allow two to eight story buildings, lot coverage should be around 70 percent or higher.

- Article 6 of the Unified Development Code Exhibit 'A' – Table 6-C states the following density and dimensional requirements. Only the zoning that is found along Main Street in the study area is summarized:
 - i) Commercial zoning district: minimum front set back of 25 feet, maximum height 25 feet, and maximum floor area ratio .5:1
 - ii) General Retail zoning district: minimum front set back of 0 feet, maximum height 25 feet, and maximum floor area ratio .35:1

8) Is the station and surrounding area part of TIF, PID, BID, etc?

- No economic incentives are available within one-quarter mile of the study area.
- Three enterprise zones are located within one-half mile of the study area. The map below indicates the enterprise zone in blue.
 - The following information was gathered from the City's website. In the city's enterprise zone, projects with an investment level of \$1 million and 10 new jobs may qualify for abatement. The enterprise zone also has a sub-area in the central part of the city, where companies may be eligible for property tax abatement at a lower job requirement and investment level.

<http://www.gptx.org/EconomicDevelopment/PropertyTax.aspx>



9) How much land is zoned MF? Is there a shortage of MF in the area based on age distribution/income, etc.?

- Within one-quarter mile of the study area there is no MF – Multifamily District zoning.
- Within one-half mile of the study area there are about 1.46 acres of MF – Multifamily District zoning and about 3.55 acres of MF 1 – Multifamily One Residential District.
- Within one-half mile of the study area, according to the 2000 Census:
 - Household Income
 - 51.7% of households with an income ranging from less than \$10,000 to \$34,999
 - 38.8% of households with an income ranging from \$35,000 to \$74,999
 - 9.4% of households with an income ranging from \$75,000 to \$149,999
 - 16.5% of families were below the poverty level
 - Family Household Income
 - 50.6% of households with an income ranging from less than \$10,000 to \$34,999
 - 40.1% of households with an income ranging from \$35,000 to \$74,999
 - 9.2% of households with an income ranging from \$75,000 to \$149,999
 - Median Family Income \$38,313
 - Population Age
 - 35.4% of the population ranges from under 5 and up to 19 years
 - 24.8% of the population ranges from 20 to 34 years
 - 30.2% of the population ranges from 35 to 59 years
 - 9.6% of population ranged from 60 up to 85 years and over

10) What percentage of land is available for development in the station area?

- About 24 acres is vacant for development within a one-quarter mile of the study area. The data was obtained using the most current land use data.

11) What are the parking requirements in the zoning area?

- On-Site Parking Requirements, per Article 10 of the Unified Development Code:
 - Single Family, two non-stacked spaces in a garage per dwelling unit
 - Multi-Family, 1.25 spaces per each one bedroom unit/2.0 spaces per each unit containing two bedrooms or more
 - Industrial, varies with actual use, spaces can range from six spaces minimum to one space per 600 square feet

- Shared parking may be allowed if it is demonstrated that two or more specific uses occur at alternating time periods, and if the combined floor area of such uses occupies not less than 50,000 square feet, or where the aggregate required off-street parking for such uses would be at least two hundred spaces. The parking space requirements of the use requiring the greater number of spaces may be applied to the other uses in a combined parking area. Additionally, shared parking needs to demonstrate that it will result in a reduction of at least 10 percent of the aggregate required off-street parking for such uses.
 - Exemptions can be made for the required number of spaces required in shared parking if support is demonstrated by a parking demand study prepared by a qualified traffic engineer, and approved by the Planning and Zoning Commission.
 - The following uses do not require a parking demand study: office, retail, restaurant, theater, motel, and conference facility.
- Per the General Provisions, minimum parking space requirements can be reduced if the Development Review Committee is presented with findings that the particular use is served by public transit and will thus reduce the use of a car.

12) Is a public service facility (library, health center, community center) planned to be sited near the transit facility to demonstrate strength of public investment in the area, which will stimulate private investment?

- SH 161 is being planned to be built within one-quarter mile of the study area.

13) What are the regulatory and permitting procedures for a TOD? Can the time it takes to get said permits be reduced?

- Currently there are no regulatory or permitting procedures that could expedite the TOD development project.

14) Does the city offer density bonuses (increased number of units if a certain percentage is affordable, for example)?

- No density bonuses are currently offered in the immediate area surrounding the study area.

15) Has a station plan been completed?

- The Regional Rail Corridor Study identified a station within one-half mile of the study area for planning purposes only. An alternative analysis would need to be performed to identify a final transit station location.

APPENDIX B-2: NCTCOG TOD AUDIT MAIN STREET AND CENTER STREET

1) Is the zoning for the area mixed use? What density is it?

- One-quarter mile surrounding the study area zoning includes: 2F – Two Family Residential District, CA – Central Area (Central Business District), GR – General Retail District, MF 1 – Multifamily One Residential District, O – Office District, PD 301 and 73 – Planned Development District, SF (1, 2, 4) – Single Family Residential District
- One-half mile surrounding the study area zoning includes: C – Commercial District, MF – Multifamily District, PD (148,156,184,61,67,71) – Planned Development District, SF (5, 6) – Single Family Residential District
- Density: Dwelling Units per Acre (dua)
 - i) SF 1 – Single Family One Residential District 3.6 dua
 - ii) SF 2 – Single Family Two Residential District 4.5 dua
 - iii) SF 4 – Single Family Four Residential District 5.8 dua
 - iv) SF 5 – Single Family Five Residential District 8.7 dua
 - v) SF 6 – Single Family Six Residential District 8.7 dua
 - vi) MF 1 – Multifamily One Residential District 12 net dua

2) Is the household (HH) population (based on our forecasts) at a sufficient density to support transit? Minimum of 35 units per acre, assume HH contains three people.

- The 2030 Household Projection based on the 2030 Demographic Forecast for the study area is 3,366 household population around an estimated 649 acres.
3,366 HHPOP/649 acres= **5.19 households per acre**
Note: Household information is calculated in Traffic Survey Zones (TSZ). TSZs are irregular shapes and therefore when selecting TSZs within a one-half mile buffer of the study area can result in data to be under- or over-calculated. 503 acres are included in a one-half mile radius.
- Reconnecting America, a national non-profit organization that works to integrate transportation systems and the communities they serve, has documented a wide range of dwelling units per acre (dua) that are sufficient to support TOD. Some existing land use patterns that have incorporated commuter rail have a range of 6.76 dua in Charlotte, NC to 39.13 dua in Portland, OR.

3) Does the zoning for the area allow auto-dependent uses by right (drive-through fast food, banks, gas stations, etc)?

- A site inspection revealed that a Jack in the Box with a drive-through window, an auto parts store, and auto parts service were auto-dependent uses that were present within one-quarter mile of the study area.
- On Main Street between Collins Street and NE 2nd Street stores and services were also observed to be situated close together (0 feet between buildings) which contributes to the reduction for the need to drive from service to service.
- Area falls in the CBD 2 zoning area. Appendix R – Central Business Districts of the Unified Development Code section 6.2 states uses that are not authorized in the CBD 2 area that are auto-dependent such as: auto auction, outdoor vehicle repair, vehicle sales, auto salvage/reclamation, used tire sales, self-service car wash, and vehicle wash/repair.

4) Does the area have planned hike/bike trail connections, adequate sidewalks and other pedestrian amenities?

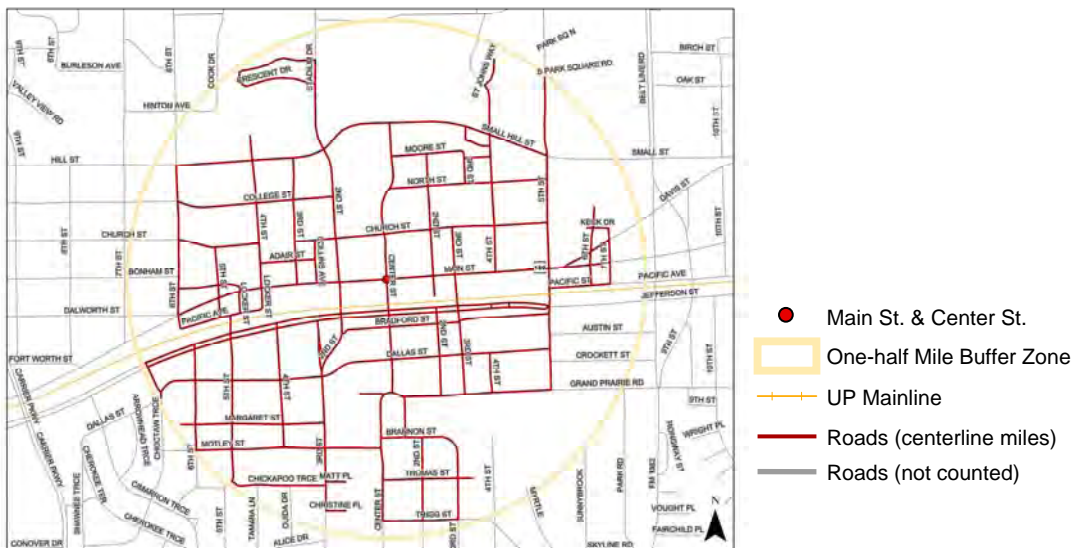
- The City is currently working on widening the sidewalks and adding pedestrian amenities such as trees along sidewalks.
- Currently there are no existing bike trails. However, the Veloweb indicates the following:
 - i) Within one-quarter mile of the study area there are two planned trails. The first planned trail runs east-west along Main Street. The second planned trail runs north-south along 2nd Street.
 - ii) Within one-half mile of the study area there are three planned trails. The first trail runs north-south on 5th Street from Small Hill Street to Main Street. The second trail runs north-south on 7th Street. The third trail runs west-east on High School Drive from Stadium Drive to 5th Street.

5) Is there a variety of land uses in the immediate are, or is the area mixed use?

- Land uses within one-quarter mile of the study area: A1-Residential Single Family, B1-Residential Multi-Family, B2-Residential Duplex, C1-Vacant Residential, C2-Vacant Commercial, C-3 Vacant, Rural, and F1-Industrial.
- Land uses within one-half mile of the study area that are not included above: A4-Residential Townhomes, F2-Industrial, J3-Utilities, and Electric Companies.
- Currently, the area is a mix of commercial and residential.
- Central Business District Two (CBD 2) extends from SH 161 to Beltline Road along Main Street. The study area falls in the CBD 2 area and is projected as a mixed-use area including residential units above retail and commercial uses.

6) Is the planned street grid density at least 20 centerline miles over total square miles – or at least 10 miles of streets for an area of .5 square miles?

- There are 18.731 centerline miles over one-half mile radius around the study area. There are .785 square miles in the one-half mile area and 14.704 centerline miles. $(1 \text{ sq mi} / .785) * 14.704 \text{ centerline miles} = 18.731$
- The map below displays the roads that were included. The only roads that were included in the calculation are those that are completely within the one-half mile buffer. There are roads that were excluded from the calculation because the road section extends past the one-half mile buffer.



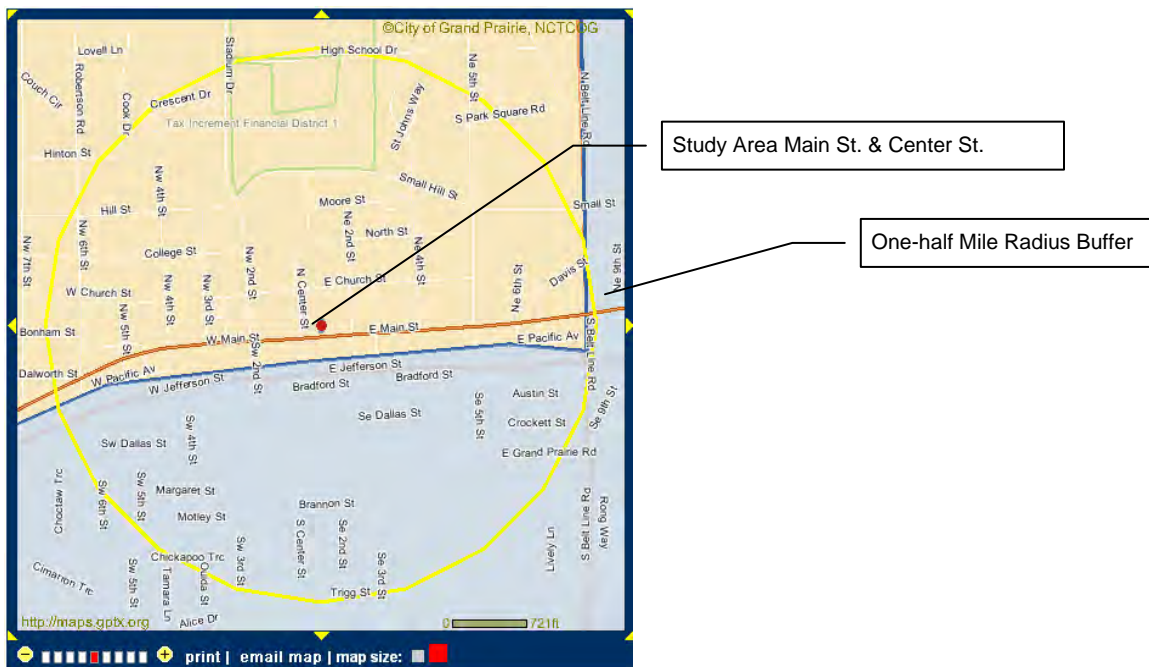
7) Are area/height/bulk restrictions adequate? Depending on transect: setbacks should be around 2 to 12 feet maximum, height should allow 2-8 story buildings, lot coverage should be around 70 percent or higher.

- Article 6 of the Unified Development Code Exhibit 'A' – Table 6-C states the following density and dimensional requirements. Only the zoning that is found along Main Street in the study area is summarized:
 - i) Central Business District zoning district: minimum front set back of 0 feet, maximum height 50 feet, and maximum floor area ratio 2:1. The floor area ratio can be increased with approval.

8) Is the station and surrounding area part of TIF, PID, BID, etc?

- The Tax Increment Financial (TIF) District 1 is located in the northern portion of the one-half mile buffer of the study area. The map below indicates the TIF district in a green outline.
- One enterprise zone is located within the one-half mile buffer of the study area. The map below indicates the enterprise zone in blue.
- The following information was gathered from the City's website. In the city's enterprise zone, projects with an investment level of \$1 million and 10 new jobs may qualify for abatement. The enterprise zone also has a sub-area in the central part of the city, where companies may be eligible for property tax abatement at a lower job requirement and investment level.

<http://www.gptx.org/EconomicDevelopment/PropertyTax.aspx>



9) How much land is zoned MF? Is there a shortage of MF in the area based on age distribution/income, etc.?

- Within one-quarter mile of the study area there are about three acres of MF 1 – Multifamily One Residential District
- Within one-half mile of the study area there are about 26 acres of MF 1 – Multifamily One Residential District and there are about eight acres of MF – Multifamily District zoning.
- Within one-half mile of the study area, according to the 2000 Census:
 - Household Income
 - 56.4% of households with an income ranging from less than \$10,000 to \$34,999
 - 33.2% of households with an income ranging from \$35,000 to \$74,999
 - 10.3% of households with an income ranging from \$75,000 to \$200,000 or more
 - 19% of families were below the poverty level
 - Family Household Income
 - 50.3% of households with an income ranging from less than \$10,000 to \$34,999
 - 38.6% of households with an income ranging from \$35,000 to \$74,999
 - 11% of households with an income ranging from \$75,000 to \$200,000 or more
 - Median Family Income \$33,477
 - Population Age
 - 36.7% of the population ranges from under 5 to 19 years
 - 22.1% of the population ranges from 20 to 34 years
 - 27.7% of the population ranges from 35 to 59 years
 - 13.5% of population ranged from 60 up to 85 years and over

10) What percent of land is available for development in the station area?

- About 14 acres is vacant for development within one-quarter mile of the study area. The data was obtained using the most current land use data.

11) What are the parking requirements in the zoning area?

- On-Site Parking Requirements, per Article 10 of the Unified Development Code:
 - Single Family, two non-stacked spaces in a garage per dwelling unit
 - Multi-Family, 1.25 spaces per each one bedroom unit/2.0 spaces per each unit containing two bedrooms or more
 - Industrial, varies with actual use, spaces can range from six spaces minimum to one space per 600 square feet
- Shared parking may be allowed if it is demonstrated that two or more specific uses occur at alternating time periods, and if the combined floor area of such uses occupies not less than 50,000 square feet, or where the aggregate required off-street parking for such uses would be at least 200 spaces. The parking space requirements of the use requiring the greater number of spaces may be applied to the other uses in a combined parking area. Additionally, shared parking needs to demonstrate that it will result in a reduction of at least 10 percent of the aggregate required off-street parking for such uses.
 - Exemptions can be made for the required number of spaces required in shared parking if support is demonstrated by a parking demand study prepared by a qualified traffic engineer, and approved by the Planning and Zoning Commission.
 - The following uses do not require a parking demand study: office, retail, restaurant, theater, motel, and conference facility.

- Per the General Provisions, minimum parking space requirements can be reduced if the Development Review Committee is presented with findings that the particular use is served by public transit and will thus reduce the use of a car.

12) Is a public service facility (library, health center, community center) planned to be sited near the transit facility to demonstrate strength of public investment in the area, which will stimulate private investment?

- The City of Grand Prairie recently renovated Uptown Theater located at 120 E. Main Street.
- The public investment highlights Grand Prairie's financial commitment to restoring historic Main Street.
- The City of Grand Prairie is also planning on building a market square close to Main Street and Center Street.

13) What are the regulatory and permitting procedures for a TOD? Can the time it takes to get said permits be reduced?

- Currently there are no regulatory or permitting procedures that could expedite the TOD development project.

14) Does the city offer density bonuses (increased number of units if a certain percentage is affordable, for example)?

- No density bonuses are currently offered in the immediate area surrounding the study area.

15) Has a station plan been completed?

- The Regional Rail Corridor Study identified a station within one-half mile of the study area for planning purposes only. An alternative analysis would need to be performed to identify a transit station location.

**APPENDIX B-3: NCTCOG TOD AUDIT
MAIN STREET AND EAST 5TH STREET**

1) Is the zoning for the area mixed use? What density is it?

- One-quarter mile surrounding the study area zoning includes: 2F – Two Family Residential District, C – Commercial District, CA – Central Area (Central Business District), MF – Multifamily District, O – Office District, PD 184 – Planned Development District, SF (1, 2) – Single Family Residential District
- One-half mile surrounding the study area zoning includes: GR – General Retail District, MF 1 – Multifamily One Residential District, MF 3 – Multifamily Three Residential District, PD (147,156,301,311,73) – Planned Development District, SF (4, 6) – Single Family Residential District
- Density: Dwelling Units per Acre (dua)
 - i) SF 1 – Single Family One Residential District 3.6 dua
 - ii) SF 2 – Single Family Two Residential District 4.5 dua
 - iii) SF 4 – Single Family Four Residential District 5.8 dua
 - iv) SF 6 – Single Family Six Residential District 8.7 dua
 - v) MF 1 – Multifamily One Residential District 12 net dua
 - vi) MF 3 – Multifamily Three Residential District 24 net dua

2) Is the household (HH) population (based on our forecasts) at a sufficient density to support transit? Minimum of 35 units per acre, assume HH contains three people.

- The 2030 Household Projection based on the 2030 Demographic Forecast for the study area is 6,006 household population around an estimated 935 acres.
6,006 HHPOP/935 acres = **6.42 households per acre**
Note: The smallest area that projected household information is calculated is in Traffic Survey Zones (TSZ). TSZs are irregular shapes and therefore when selecting TSZs within one-half mile buffer of the study area can result in data to be under- or over-calculated. 503 acres are included in a one-half mile radius.
- Reconnecting America, a national non-profit organization that works to integrate transportation systems and the communities they serve, has documented a wide range of dwelling units per acre (dua) that are sufficient to support TOD. Some existing land use patterns that have incorporated commuter rail have a range of 6.76 dua in Charlotte, NC to 39.13 dua in Portland, OR.

3) Does the zoning for the area allow auto-dependent uses by right (drive-through fast food, banks, gas stations, etc)?

- A site inspection revealed that a Firestone Complete Auto Care, an auto parts store, an auto parts service, and a drive-through bank were auto-dependent uses that were present within one-quarter mile buffer of the study area.
- Area falls in the CBD 2 zoning area. Appendix R – Central Business Districts of the Unified Development Code section 6.2 states uses that are not authorized in the CBD 2 area that are auto-dependent such as: auto auction, outdoor vehicle repair, vehicle sales, auto salvage/reclamation, used tire sales, self-service car wash, and vehicle wash/repair.

4) Does the area have planned hike/bike trail connections, adequate sidewalks and other pedestrian amenities?

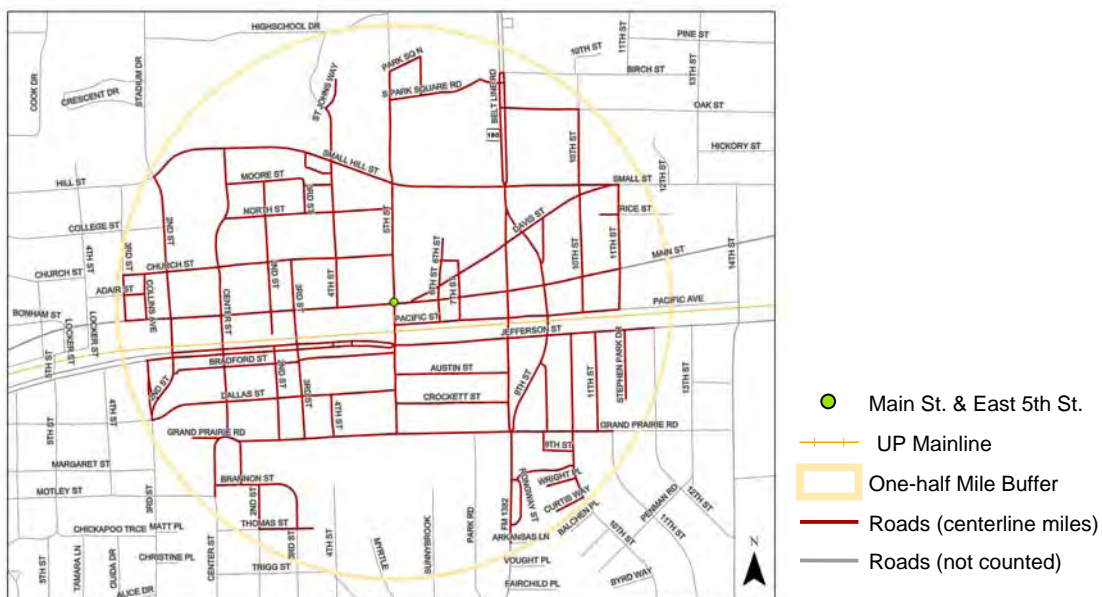
- Currently there are no existing bike trails. However, the Veloweb indicates the following:
 - i) Within one-quarter mile of the study area there are two planned trails. The first planned trail runs east-west along Main Street. The second planned trail runs north-south along 5th Street from Small Hill Street to Main Street.
 - ii) Within one-half mile of the study area there is one trail that runs north-south on 2nd Street.

5) Is there a variety of land uses in the immediate area, or is the area mixed use?

- Land uses within one-quarter mile of the study area: A1-Residential Single Family, B1-Residential Multi-Family, B2-Residential Duplex, C1-Vacant Residential, C2-Vacant Commercial, C-3 Vacant Rural, F1-Industrial Commercial, F2-Industrial, J5-Utilities Railroads.
- Land uses within one-half mile of the study area that are not included above: A5-Residential Condominiums, D2-Acreage Timberland, and J3-Utilities Electric Companies.
- The commercial and single family land uses are the predominant land uses within the one-half mile buffer of the study area.
- Central Business District Two (CBD 2) extends from SH 161 to Beltline Road along Main Street. The study area falls in the CBD 2 area and is projected as a mixed-use area including residential units above retail and commercial uses.

6) Is the planned street grid density at least 20 centerline miles over total square miles – or at least 10 miles of streets for an area of .5 square miles?

- There are 18.462 centerline miles over one-half mile radius around the study area. There are .785 sq miles in the one-half mile area and 14.493 centerline miles. $(1 \text{ sq mi}/.785) * 14.493 \text{ centerline miles} = 18.462$
- The map below displays the roads that were included. The only roads that were included in the calculation are those that are completely within the one-half mile buffer. There are roads that were excluded from the calculation because the road section extends past the one-half mile buffer.



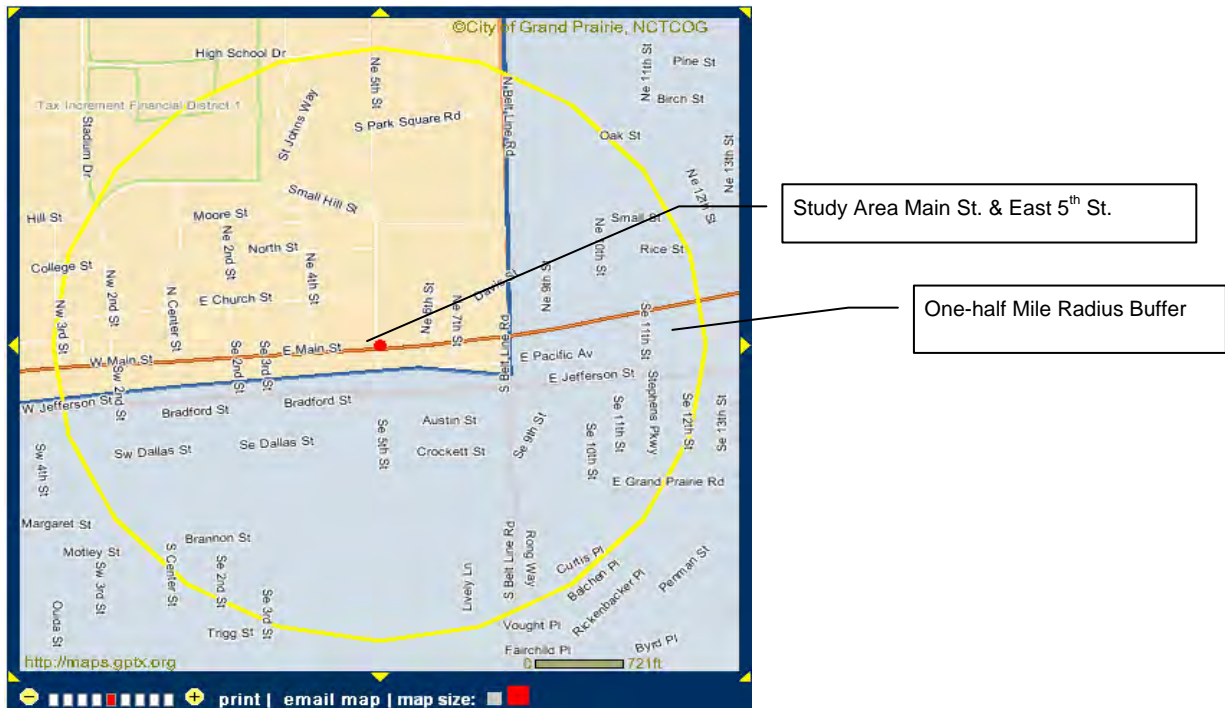
7) Are area/height/bulk restrictions adequate? Depending on transect: setbacks should be around two to 12 feet maximum, height should allow two- to eight-story buildings, lot coverage should be around 70 percent or higher.

- Article 6 of the Unified Development Code Exhibit 'A' – Table 6-C states the following density and dimensional requirements. Only the zoning that is found along Main Street in the study area is summarized:
 - i) Central Business District zoning district: minimum front set back of 0 feet, maximum height 50 feet, and maximum floor area ratio 2:1. The floor area ratio can be increased with approval.

8) Is the station and surrounding area part of TIF, PID, BID, etc?

- The Tax Incremental Financial (TIF) District 1 is located in the northwest portion of the one-half mile buffer of the study area. The map below indicates the TIF district in a green outline.
- One enterprise zone is located within the one-half mile buffer of the study area. The map below indicates the enterprise zone in blue.
- The following information was gathered from the City's website. In the city's enterprise zone, projects with an investment level of \$1 million and 10 new jobs may qualify for abatement. The enterprise zone also has a sub-area in the central part of the city, where companies may be eligible for property tax abatement at a lower job requirement and investment level.

<http://www.gptx.org/EconomicDevelopment/PropertyTax.aspx>



9) How much land is zoned MF? Is there a shortage of MF in the area based on age distribution/income, etc.?

- Within one-quarter mile of the study area there are about eight acres of MF – Multifamily District
- Within one-half mile of the study area there are about 9.8 acres of MF 1 – Multifamily One Residential District and there are about .79 acres of MF 3 – Multifamily Three Residential District zoning.
- Within one-half mile of the study area, according to the 2000 Census:
 - Household Income
 - 55.7% of households with an income ranging from less than \$10,000 to \$34,999
 - 36.9% of households with an income ranging from \$35,000 to \$74,999
 - 7.4% of households with an income ranging from \$75,000 to \$200,000 or more
 - 16% of families were below the poverty level
 - Family Household Income
 - 47.2% of households with an income ranging from less than \$10,000 to \$34,999
 - 45.3% of households with an income ranging from \$35,000 to \$74,999
 - 7.5% of households with an income ranging from \$75,000 to \$200,000 or more
 - Median Family Income \$36,674
 - Population Age
 - 36.5% of the population ranges from under 5 and up to 19 years
 - 22.6% of the population ranges from 20 to 34 years
 - 27.5% of the population ranges from 35 to 59 years
 - 13.4% of population ranged from 60 up to 85 years and over

10) What percent of land is available for development in the station area?

- About 20 acres is vacant for development within one-quarter mile of the study area. The data was obtained using the most current land use data.

11) What are the parking requirements in the zoning area?

- On-Site Parking Requirements, per Article 10 of the Unified Development Code:
 - Single Family, two non-stacked spaces in a garage per dwelling unit
 - Multi-Family, 1.25 spaces per each one bedroom unit/2.0 spaces per each unit containing two bedrooms or more
 - Industrial, varies with actual use, spaces can range from six spaces minimum to one space per 600 square feet
- Shared parking may be allowed if it is demonstrated that two or more specific uses occur at alternating time periods, and if the combined floor area of such uses occupies not less than 50,000 square feet, or where the aggregate required off-street parking for such uses would be at least 200 spaces. The parking space requirements of the use requiring the greater number of spaces may be applied to the other uses in a combined parking area. Additionally, shared parking needs to demonstrate that it will result in a reduction of at least 10 percent of the aggregate required off-street parking for such uses.
 - Exemptions can be made for the required number of spaces required in shared parking if support is demonstrated by a parking demand study prepared by a qualified traffic engineer, and approved by the Planning and Zoning Commission.
 - The following uses do not require a parking demand study: office, retail, restaurant, theater, motel, and conference facility.

- Per the General Provisions, minimum parking space requirements can be reduced if the Development Review Committee is presented with findings that the particular use is served by public transit and will thus reduce the use of a car.

12) Is a public service facility (library, health center, community center) planned to be sited near the transit facility to demonstrate strength of public investment in the area, which will stimulate private investment?

- Within walking distance of the recently renovated Uptown Theater and the proposed market square on Main Street and Center Street.

13) What are the regulatory and permitting procedures for a TOD? Can the time it takes to get said permits be reduced?

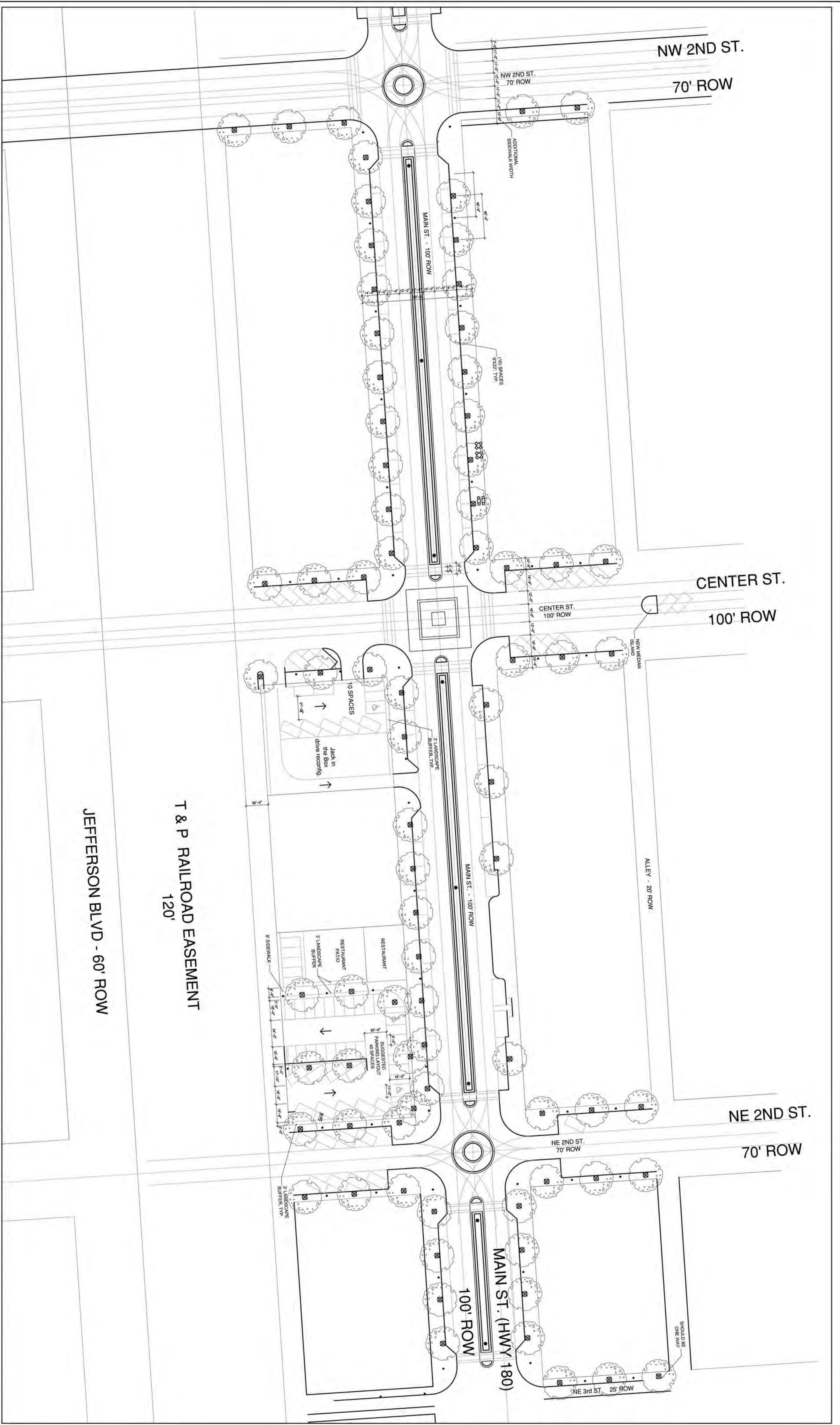
- Currently there are no regulatory or permitting procedures that could expedite the TOD development project.

14) Does the city offer density bonuses (increased number of units if a certain percentage is affordable, for example)?

- No density bonuses are currently offered in the immediate area surrounding the study area.

15) Has a station plan been completed?

- An alternative analysis would need to be performed to identify a final transit station location. This site was not included in the Regional Rail Corridor Study.



01 Main St. at Center St.



SCALE: 1"=40'

GRAND PRAIRIE UPTOWN STREET RENOVATION

GRAND PRAIRIE, TEXAS

ma architects
meriman associates
interior design
300 N. FIELD ST.
DALLAS, TEXAS 75202
214.987.1299
214.987.2138 (FAX)

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REVISIONS

PROJECT NUMBER: 2008747
DATE: MARCH 6, 2009
SHEET NAME: PROPOSED STREET RECONFIGURATION

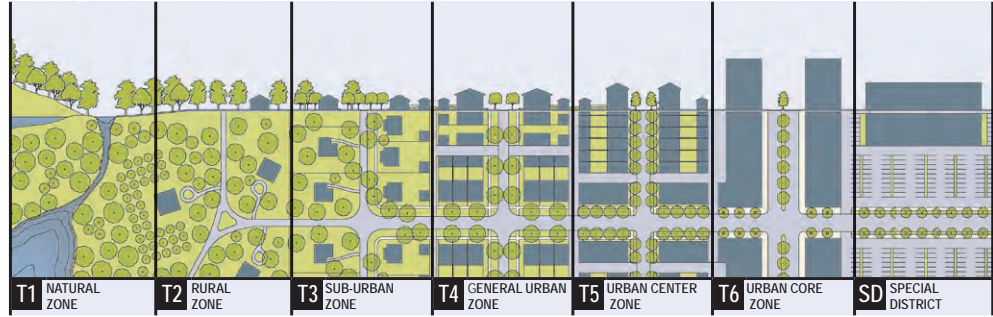
Appendix D - SmartCode Summary

SMARTCODE

TABLE 14. SMARTCODE SUMMARY

Municipality

Note: All requirements in this Table are subject to calibration for local context.



	T1 NATURAL ZONE	T2 RURAL ZONE	T3 SUB-URBAN ZONE	T4 GENERAL URBAN ZONE	T5 URBAN CENTER ZONE	T6 URBAN CORE ZONE	SD SPECIAL DISTRICT
a. ALLOCATION OF ZONES per Pedestrian Shed (applicable to Article 3 only) (see Table 16)							
CLD requires	no minimum	50% min	10 - 30%	20 - 40%	not permitted	not permitted	
TND requires	no minimum	no minimum	10 - 30%	30 - 60%	10 - 30%	not permitted	
RCD requires	no minimum	no minimum	not permitted	10 - 30%	10 - 30%	40 - 80%	
b. BASE RESIDENTIAL DENSITY (see Section 3.4)							
By Right	not applicable	1 unit / 20 ac. avg.	2 units / ac. gross	4 units / ac. gross	6 units / ac. gross	12 units / ac. gross	
By TDR	by Variance	by Variance	6 units / ac. gross	12 units / ac. gross	24 units / ac. gross	96 units / ac. gross	
Other Functions	by Variance	by Variance	10 - 20%	20 - 30%	30 - 50%	50 - 70%	
c. BLOCK SIZE							
Block Perimeter	no maximum	no maximum	3000 ft. max	2400 ft. max	2000 ft. max	2000 ft. max	* 3000 ft. max with parking structures
d. THOROUGHFARES (see Table 3 and Table 4)							
HW	permitted	permitted	permitted	not permitted	not permitted	not permitted	
BV	not permitted	not permitted	permitted	permitted	permitted	permitted	
AV	not permitted	not permitted	permitted	permitted	permitted	permitted	
CS	not permitted	not permitted	not permitted	not permitted	permitted	permitted	
DR	not permitted	not permitted	permitted	permitted	permitted	permitted	
ST	not permitted	not permitted	permitted	permitted	permitted	not permitted	
RD	permitted	permitted	permitted	not permitted	not permitted	not permitted	
Rear Lane	permitted	permitted	permitted	permitted	not permitted	not permitted	
Rear Alley	not permitted	not permitted	permitted	required	required	required	
Path	permitted	permitted	permitted	permitted	not permitted	not permitted	
Passage	not permitted	not permitted	permitted	permitted	permitted	permitted	
Bicycle Trail	permitted	permitted	permitted	not permitted	not permitted	not permitted	
Bicycle Lane	permitted	permitted	permitted	permitted	not permitted	not permitted	
Bicycle Route	permitted	permitted	permitted	permitted	permitted	permitted	
e. CIVIC SPACES (see Table 13) * permitted within Open Spaces							
Park	permitted	permitted	permitted	by Warrant	by Warrant	by Warrant	
Green	not permitted	not permitted	permitted	permitted	permitted	not permitted	
Square	not permitted	not permitted	not permitted	permitted	permitted	permitted	
Plaza	not permitted	not permitted	not permitted	not permitted	permitted	permitted	
Playground	permitted	permitted	permitted	permitted	permitted	permitted	
f. LOT OCCUPATION							
Lot Width	not applicable	by Warrant	72 ft. min 120 ft. max	18 ft. min 96 ft. max	18 ft. min 180 ft. max	18 ft. min 700 ft. max	
Lot Coverage	not applicable	by Warrant	60% max	70% max	80% max	90% max	
g. SETBACKS - PRINCIPAL BUILDING (see Table 15)							
(g.1) Front Setback (Principal)	not applicable	48 ft. min	24 ft. min	6 ft. min 18 ft. max	2 ft. min 12 ft. max	2 ft. min 12 ft. max	
(g.2) Front Setback (Secondary)	not applicable	48 ft. min	12 ft. min	6 ft. min 18 ft. max	2 ft. min 12 ft. max	2 ft. min 12 ft. max	
(g.3) Side Setback	not applicable	96 ft. min	12 ft. min	0 ft. min	0 ft. min 24 ft. max	0 ft. min 24 ft. max	
(g.4) Rear Setback	not applicable	96 ft. min	12 ft. min	3 ft. min	3 ft. min	0 ft. min	
Frontage Buildout	not applicable	not applicable	40% min	60% min	80% min	80% min	
h. SETBACKS - OUTBUILDING (see Table 15)							
(h.1) Front Setback	not applicable	20 ft. min + bldg setback	20 ft. min + bldg setback	20 ft. min + bldg setback	40 ft. max from rear prop	not applicable	
(h.2) Side Setback	not applicable	3 ft. or 6 ft.	3 ft. or 6 ft.	0 ft. min or 3 ft.	0 ft. min	not applicable	
(h.3) Rear Setback	not applicable	3 ft. min	3 ft. min	3 ft.	3 ft. max	not applicable	
i. BUILDING DISPOSITION (see Table 9)							
Edgeyard	permitted	permitted	permitted	permitted	not permitted	not permitted	
Sideyard	not permitted	not permitted	not permitted	permitted	permitted	not permitted	
Rearyard	not permitted	not permitted	not permitted	permitted	permitted	permitted	
Courtyard	not permitted	not permitted	not permitted	not permitted	permitted	permitted	
j. PRIVATE FRONTAGES (see Table 7)							
Common Yard	not applicable	permitted	permitted	not permitted	not permitted	not permitted	
Porch & Fence	not applicable	not permitted	permitted	permitted	not permitted	not permitted	
Terrace or Dooryard	not applicable	not permitted	not permitted	permitted	permitted	not permitted	
Forecourt	not applicable	not permitted	not permitted	permitted	permitted	permitted	
Stoop	not applicable	not permitted	not permitted	permitted	permitted	permitted	
Shopfront & Awning	not applicable	not permitted	not permitted	permitted	permitted	permitted	
Gallery	not applicable	not permitted	not permitted	permitted	permitted	permitted	
Arcade	not applicable	not permitted	not permitted	not permitted	permitted	permitted	
k. BUILDING CONFIGURATION (see Table 8)							
Principal Building	not applicable	2 Stories max	2 Stories max	3 Stories max, 2 min	5 Stories max, 2 min	8 Stories max, 2 min	
Outbuilding	not applicable	2 Stories max	2 Stories max	2 Stories max	2 Stories max	not applicable	
l. BUILDING FUNCTION (see Table 10 & Table 12)							
Residential	not applicable	restricted use	restricted use	limited use	open use	open use	
Lodging	not applicable	restricted use	restricted use	limited use	open use	open use	
Office	not applicable	restricted use	restricted use	limited use	open use	open use	
Retail	not applicable	restricted use	restricted use	limited use	open use	open use	

DISPOSITION

CONFIGURATION

FUNCTION

ARTICLE 5
ARTICLE 2, 3, 4

**APPENDIX E-1: TOD RECOMMENDED SITES FOR
SCENARIO A – MAIN STREET AND THE FUTURE SH 161**

Map #	Address	Owner Name	Year Built	Acres	Improved Value	Land Value	Total Value
1	1130 Main St.	Perry, Bettye	0	0.125	\$0	\$16,350	\$16,350
2	1126 Main St.	Perry, Bettye	0	0.070	\$0	\$9,090	\$9,090
3	1100 Main St.	Karv Investment Corp	1991	0.366	\$179,920	\$47,820	\$227,740
4	1000 Main St.	Leon, Rosa	1962	2.936	\$8,700	\$0	\$8,700
5	902 Main St.	Ho, Linh	1968	0.537	\$72,090	\$70,220	\$142,310
Total:				4.034	\$260,710	\$143,480	\$404,190

**APPENDIX E-2: TOD RECOMMENDED SITES FOR
SCENARIO B – MAIN STREET AND CENTER STREET**

Map #	Address	Owner Name	Year Built	Acres	Improved Value	Land Value	Total Value
1	129 Main St.	Chokas, John	1974	0.098	\$140,850	\$12,750	\$153,600
2	110 2nd St.	Herring, Lee D	1985	0.034	\$63,180	\$4,490	\$67,670
3	127 Main St.	Five Star Flooring	1943	0.070	\$137,560	\$9,210	\$146,770
4	101 Jefferson St.	Missouri Pacific RR Co	0	0.459	\$0	\$6,000	\$6,000
5	115 Main St.	Cook, Coni T	1975	0.048	\$65,340	\$6,280	\$71,620
6	113 Main St.	Bixel, David W Jr	1958	0.033	\$70,900	\$4,280	\$75,180
7	111 Main St.	Barbosa, Sandra	1920	0.032	\$23,440	\$4,140	\$27,580
8	109 Main St.	Wahlert, Mary Sue	1958	0.051	\$33,770	\$6,730	\$40,500
9	109 Main St.	Magdas Bridal Boutique	1958	0.066	\$117,510	\$8,630	\$126,140
10	105 Main St.	Enriquez, Eliu	1958	0.066	\$84,180	\$8,630	\$92,810
11	101 Main St.	Hepworth, Mark	1954	0.066	\$33,900	\$8,630	\$42,530
12	101 Center St.	Sawicki, Charles J Trust	1959	0.057	\$177,500	\$7,500	\$185,000
13	105 Center St.	Koerth, Charles D	1959	0.019	\$17,010	\$2,480	\$19,490
14	113 Center St.	Grand Prairie Boys Baseball Inc	1959	0.057	\$1,800	\$0	\$1,800
15	101 Main St.	Jack in the Box Eastern	1972	0.264	\$108,140	\$34,500	\$142,640
16	109 Main St.	NationsBank TX TR Et al	1944	0.066	\$46,060	\$8,630	\$54,690
17	113 Main St.	Pleasant, Ethalue	1944	0.066	\$5,060	\$0	\$5,060
18	115 Main St.	Flannery, Liz	1950	0.132	\$66,180	\$17,250	\$83,430
19	117 Main St.	Villarreal, Maria B	1947	0.066	\$121,370	\$8,630	\$130,000
20	121 Main St.	Global Staffing Dynamic Temporaries	1920	0.132	\$165,050	\$17,250	\$182,300
21	125 Main St.	Juarez, Jorge	1976	0.330	\$131,240	\$43,130	\$174,370
22	201 Main St.	Alila Inc	1982	0.264	\$117,400	\$34,500	\$151,900
23	209 Main St.	Botanica, Ashe	1951	0.186	\$165,890	\$24,260	\$190,150
24	301 Main St.	SS World Enterprise Inc	0	0.168	\$0	\$21,900	\$21,900
25	315 Main St.	Rent a Center Inc	1962	0.670	\$387,400	\$87,600	\$475,000
26	325 Main St.	Parker, John	1950	0.333	\$16,960	\$0	\$16,960
27	329 Main St.	DEW CEL Corp	1980	0.333	\$246,950	\$43,500	\$290,450
28	409 Main St.	Amigos Restaurant Food Inc	1956	0.452	\$46,870	\$0	\$46,870
Total:				4.619	\$2,591,510	\$430,900	\$3,022,410

**APPENDIX E-3: TOD RECOMMENDED SITES FOR
SCENARIO C - MAIN STREET AND EAST 5TH STREET**

Map #	Address	Owner Name	Year Built	Acres	Improved Value	Land Value	Total Value
1	409 Main St.	Amigos Restaurant Food Inc	1956	0.452	\$46,870	\$0	\$46,870
2	419 Main St.	Torres, Arturo	1981	0.385	\$199,630	\$50,370	\$250,000
3	425 Main St.	Agua Azul Seafood	1955	0.603	\$246,710	\$78,790	\$325,500
4	Information Not Available		0	0.000	\$0	\$0	\$0
5	501 Main St.	Snodgrass, Tom	1971	0.162	\$114,130	\$21,170	\$135,300
6	505 Main St.	Snodgrass John Mark	0	0.097	\$0	\$12,680	\$12,680
7	505 Main St.	Snodgrass, Tom	1946	0.323	\$117,790	\$42,210	\$160,000
8	507 Main St.	Barbosa, Juan	1959	0.678	\$179,410	\$88,600	\$268,010
9	605 Main St.	Seafarer LLC & ETAL	1967	0.238	\$92,870	\$31,170	\$124,040
10	609 Main St.	BFS Retail & Commercial OPS LLC	1980	0.320	\$154,830	\$0	\$154,830
11	200 Pacific Ave	Missouri Pacific RR Co	0	1.549	\$0	\$20,240	\$20,240
Total:				4.808	\$1,152,240	\$345,230	\$1,497,470

ENDNOTES

- ¹ American Public Transportation Association, 2008 Public Transportation Fact Book, 59th Edition (June 2008).
- ² National Bus Rapid Transit Institute, 2008. < <http://www.nbrti.org/learn.html>>.
- ³ Roderick B. Diaz et al., Characteristics of Bus Rapid Transit for Decision-Making, (August 2004).
- ⁴ Arrington, G.B., Cervero, R., "Effects of TOD on Housing, Parking, and Travel," Transit Cooperative Research Program Report 128, (Washington, D.C.: Transportation Research Board, 2008) p. 22.
- ⁵ Bus Rapid Transit – The Orange Line. The Transit Coalition. 19 March 2009. < http://thetransitcoalition.us/TTC_BRT_Orange.htm>
- ⁶ Arrington, G.B., Cervero, R., "Effects of TOD on Housing, Parking, and Travel," Transit Cooperative Research Program Report 128, (Washington, D.C.: Transportation Research Board, 2008) p. 2.
- ⁷ Ibid., p. 26.
- ⁸ Cervero, R. et al., "Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects," Transit Cooperative Research Program Report 102, (Washington, D.C.: Transportation Research Board, 2004) p. 318.
- ⁹ SmartCode Version 9.2 (The Town Paper, 2009).
- ¹⁰ Americans with Disabilities Act Accessibility Guidelines (ADAAG) (Washington, D.C., Access Board, 2002).
- ¹¹ Arrington, GB. Transit Oriented Development Right Sizing TODs & Travel [Presentation slides]. PB Placemaking (2010).
- ¹² City of Grand Prairie, Planning and Development Department, City of Grand Prairie 2010 Comprehensive Plan, (Grand Prairie, Texas, November 2010).