US 80 Corridor Study

Kaufman County, Texas

prepared for
Kaufman County

DRAFT
August 6, 2016

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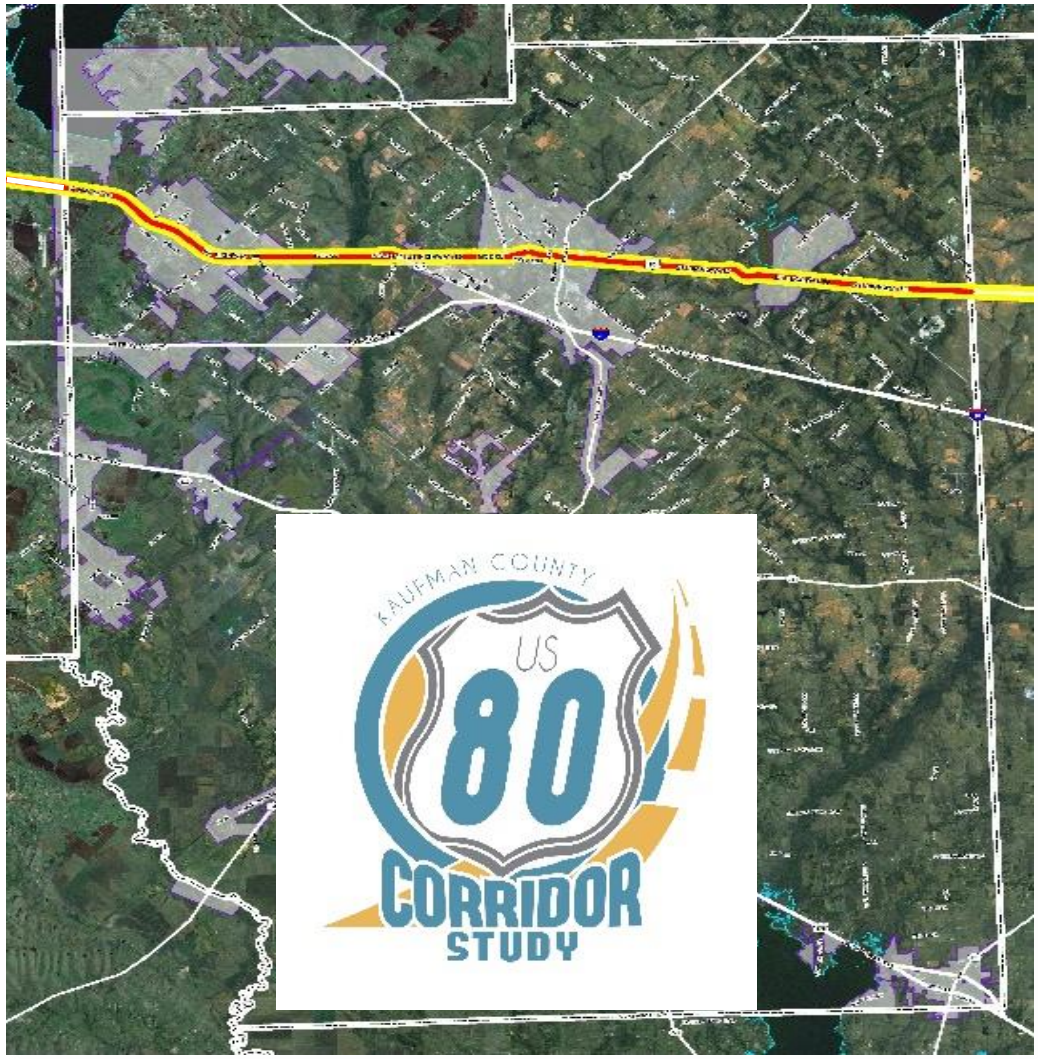

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Chapter 1 - Basis of the Plan

Transportation Planning for the US 80 Corridor

The US 80 corridor forms a transportation and commercial spine through Kaufman County and traverses the Cities of Forney and Terrell, as shown in **Figure 1**. Historically, US 80 has established the framework and has served as a catalyst for community growth and development in the two communities. By evaluating programmed land uses and densities of community future land use plans, strategies can be developed that maximize the land use/transportation relationship thereby facilitating the community's achievement of its overall economic development goals.

It is important to consider other planning efforts that have taken place, or are underway, involving the US 80 corridor. Many of these plans will feed this corridor study with existing conditions data, planned roadway improvements, planned development, and other pertinent information. Strategic coordination with local, county and state agencies responsible for land use management and transportation investments is key to successful implementation of improvements in the US 80 corridor in Kaufman County.

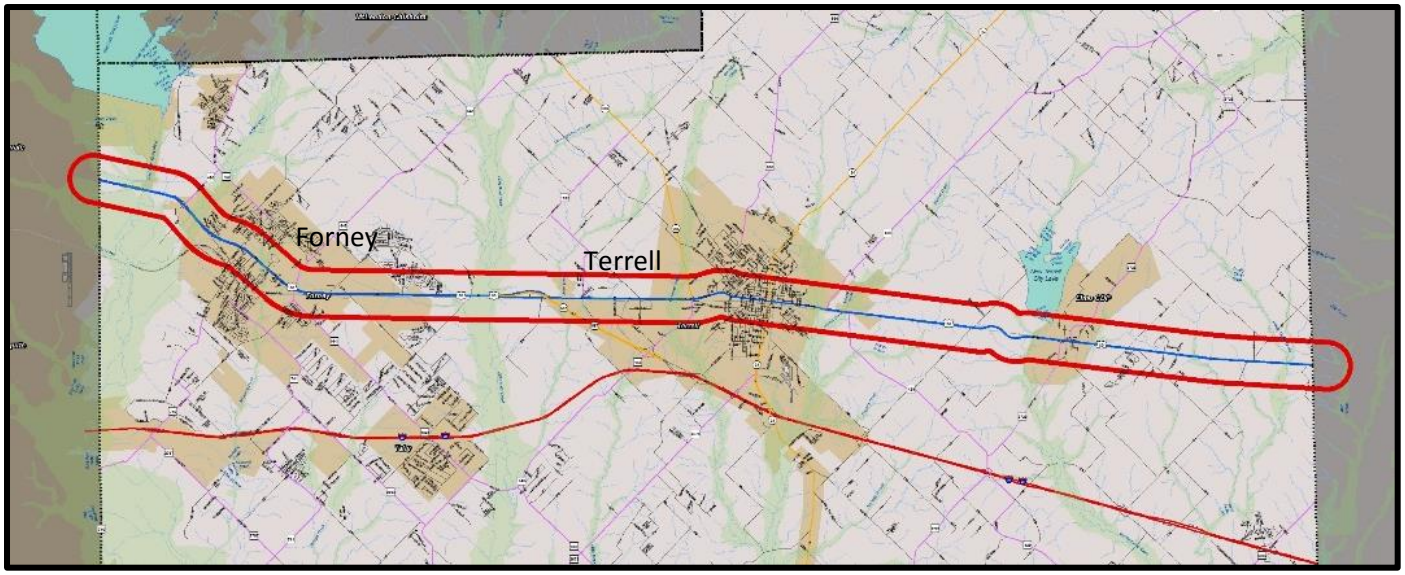


Figure 1. US 80 Corridor Study Area

Kaufman County Bond Program

The countywide transportation bond program for Kaufman County includes the development, management and implementation of 26 projects, many of which are along or adjacent to the US 80 corridor, as shown in **Figure 2**. The transportation bond program allowed for two planning studies - the Kaufman County Transportation Plan and the US 80 Corridor Study – and several projects that are within the Influence area of the US 80 corridor:

- US 80 Ramp Relocations, FM 460 to FM 740 – eastbound ramp reconfigurations to improve safety and operation; Budget $2.5 Million
- FM 428, US 80 to Reeder Lane, 1.3 miles - widen two-lane roadway to four-lane divided roadway; Budget $8.5 Million
- FM 428, Forney city limit to SH 205 – advance planning for improvements
- FM 1641, FM 428 to I-20 – advance planning for improvements; Budget $1.8 Million
- Spur 557 eastbound frontage road and ramps to bridge at CR 305; Budget $6.5 Million – under construction as a TxDOT pass-thru project with Kaufman County. County is paying for city unfunded margin and assuming proportional payback of $5.1M.
- FM 148, Spur 557 to Industrial – widen two-lane roadway to four-lane undivided roadway plus two-way center left turn lane and shoulders with bridge over Spur 557. Budget $6.7 Million
- SH 205/FM 148 at US 80/UPRR intersection – operational improvement; Budget $6.6 Million
- FM 986, north of Terrell to SH 205 – advance planning for realignment
- SH 34, south of Terrell to Kaufman– advance planning for realignment of the roadway

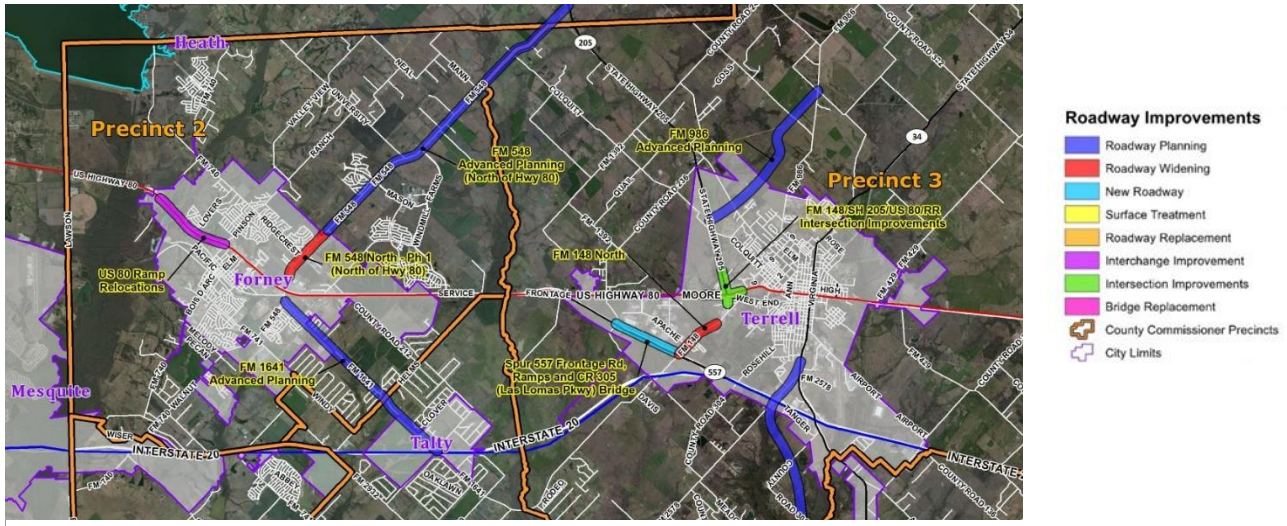


Figure 2. Kaufman County Bond Program Improvements near the US 80 Corridor

TxDOT Planned Improvements

The Texas Department of Transportation (TxDOT) annually establishes a program of funds for operations and safety improvements on state-maintained facilities. TxDOT and Kaufman County have collaborated to bring about the improvements to TxDOT roadways that are programmed in the Kaufman County Bond Program.

I-20 Corridor Study

I-20 runs parallel to and south of US 80. TxDOT conducted the I-20 Corridor Study, from I-635 to the Louisiana state line, "to make a comprehensive assessment of need, and to identify a master plan that can be used to implement improvements in the most timely and efficient manner." While this I-20 plan does not directly involve US-80, the implications from the I-20 study may directly affect the US 80 corridor. The study identified many needed improvements within each county including maintenance, safety, and the need for localized capacity enhancements and service roads. For Kaufman County, key improvements included adding frontage roads, adding capacity, and making ramp improvements.

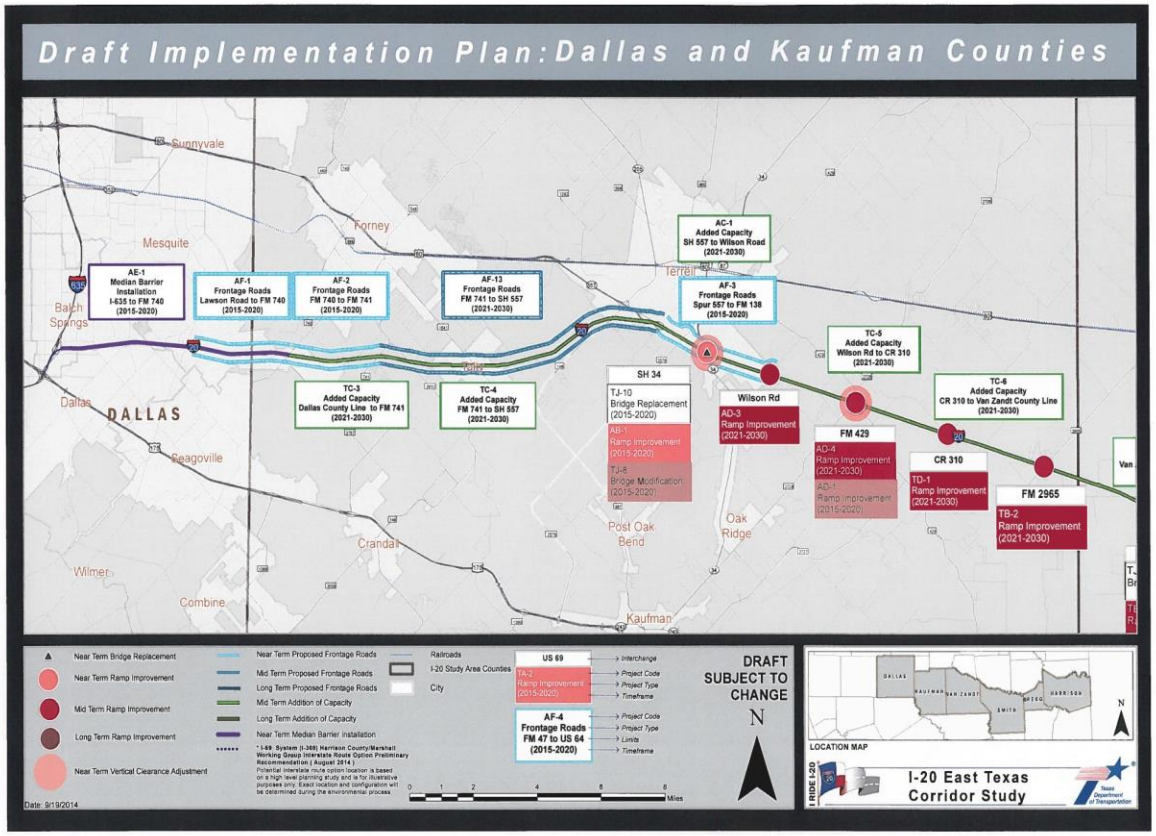


Figure 3. TxDOT Study of the I-20 Corridor in East Texas, Recommendations in Kaufman County

I-30 and US 80 Corridor Reconstruction Project

TxDOT is in the process of designing improvements to I-30 and US 80 within eastern Dallas County and into Kaufman County, from west of IH 45 to Lake Ray Hubbard along I-30 and from I-30 to FM 460 along US 80. The initial design efforts began in 2003 and was brought through schematic design, but then was suspended in 2006 when funding for the project was put off to future allocations. Efforts have been reinitiated by TxDOT in 2015, with conceptual design completion anticipated by the end of 2018. Funding has not yet been allocated to the project, estimated to cost over $2 Billion.

The concept for US 80 in the earlier schematic design efforts included a six-lane roadway with managed lanes from I-30 to east of I-635 at Belt Line Road, then continuing the six main lanes and frontage roads without managed lanes from Belt Line Road to FM 460. The currently published cross section of the proposed improvements, shown below from the TxDOT website, shows a six-lane highway with six lanes of frontage roads and a two-way, two-lane managed lane (HOV). The recently adopted NCTCOG 2040 Mobility Plan includes only six main lanes on US 80 with no managed lanes.

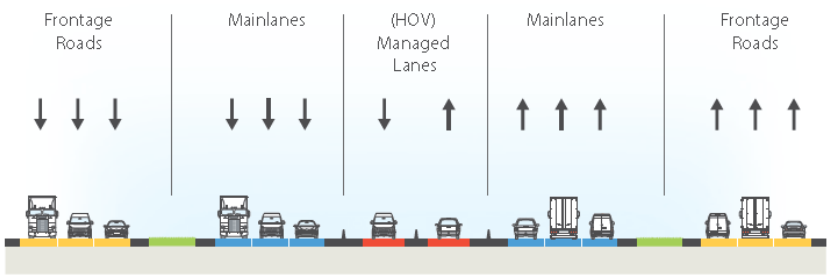
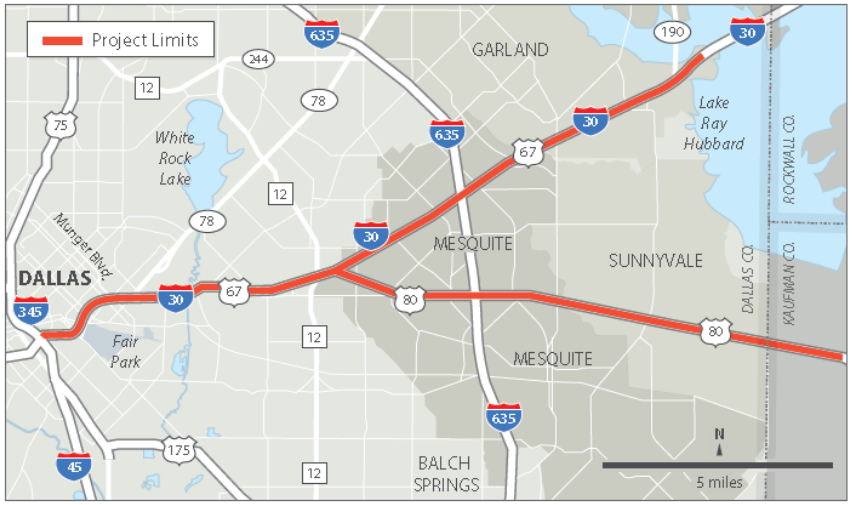


Figure 4. TxDOT East Corridor Improvements



SOURCE: TxDOT research. TxDOT graphic

US 80 Safety Improvements

TxDOT is in the process of designing various safety and operational improvements to US 80:

- Within the City of Forney, improvements are underway to mitigate safety issues with exit and entrance ramps and bridges that do not meet current design criteria. The short eastbound exit and exit ramps and interlining with Broad Street east of FM 460 will be reconfigured to provide better ramp designs and spacing, with Broad Street truncated into the service road east of FM 460. This improvement is being facilitated with funds from the Kaufman County Bond Program.

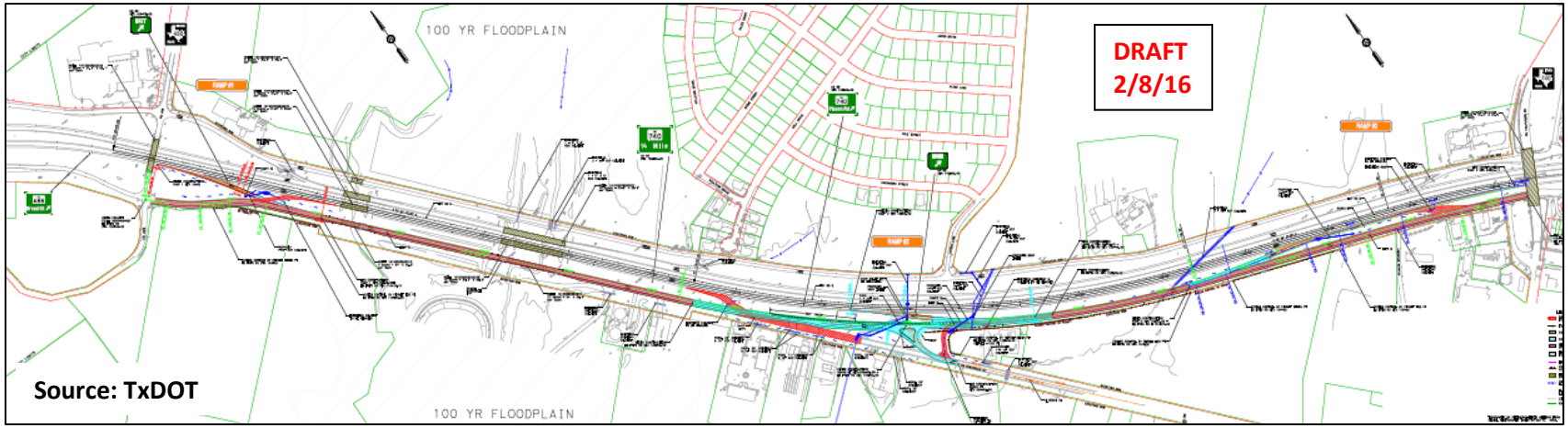


Figure 5. US 80 Safety Improvements at Broad Street in Forney

- Also within the City of Forney, TxDOT has plans to reconstruct the two-lane FM 460 bridge over US 80 to provide a five-lane section. This improvement is anticipated to be let for construction in 2018 and completed in 2020.
- Within the City of Terrell, TxDOT is working with the City and Kaufman County to improve traffic operations at the intersection of SH 205 at US 80. Short term improvements propose the addition of lanes at the intersection. Longer term solutions are looking at adding other north-south connecting roadways to spread the traffic amongst parallel roadways.
- TxDOT is in discussions with Kaufman County to create an FM road that would extend eastward from the gravel pits located north of US 80 along FM 2728. This FM road would serve as a designated truck route in an effort to mitigate truck impacts at the intersection of FM 2728 and US 80 near Elmo.

NTTA/TxDOT Planned Extension of SH 190 from I-30 to I-20

TxDOT and the North Texas Tollway Authority (NTTA) have collaborated to complete schematic design and environmental documentation for extension of SH 190 (President George Bush Turnpike – PGBT) from its current terminus at I-30 to a new terminus at I-20 with a full interchange at US 80. The final public hearing on the project design is anticipated in 2017. Whether the project will be implemented by NTTA as an extension of the PGBT tollway or whether TxDOT will fund and implement the project is yet to be determined. The conceptual design of the interchange of SH 190 at US 80 is shown in Figure 6, as provided by TxDOT.

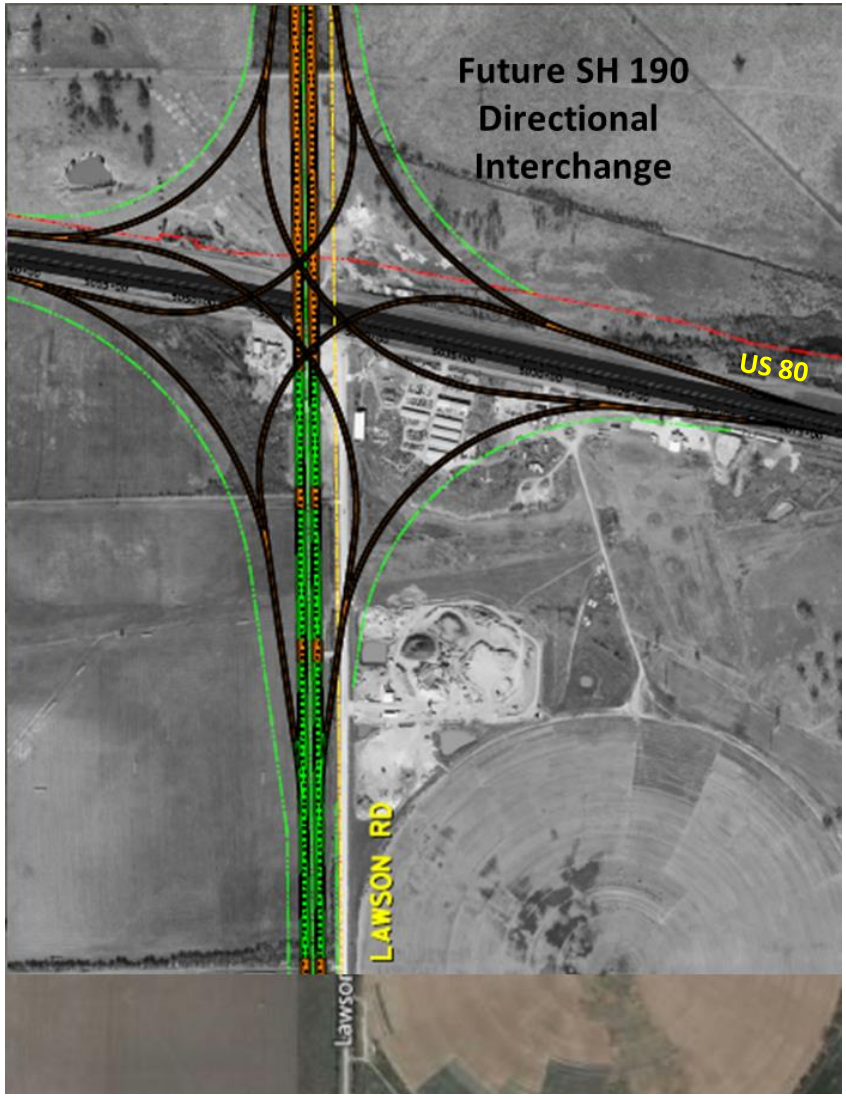


Figure 6. Future SH 190 Directional Interchange at US 80

North Central Texas Council of Governments (NCTCOG)

NCTCOG has the responsibility to coordinate the transportation development efforts of the cities and counties in its region, to make sure that connections between communities are logical and support intra-regional mobility and commerce. NCTCOG has assisted many of the newly included counties, including Kaufman County, to prepare transportation studies that provide input into the Metropolitan Transportation Plan.

The Metropolitan Transportation Plan

The NCTCOG Metropolitan Transportation Plan MTP "incorporates the primary features of local government thoroughfare planning efforts into a single, comprehensive transportation plan. Given its goal to be sensitive to local needs, the plan focuses on promoting region-wide consistency and continuity regarding arterial street alignments and functions between jurisdictions in order to help guide local government thoroughfare planning decisions on facilities that have inter-jurisdictional and regional significance. One of its key aspects is the designation of regional arterials whose purpose is intended to balance local mobility needs with the need to provide access to the rest of the regional transportation system." The Regional Transportation Council adopts an updated MTP approximately every 5 years, with interim updates as needed.

Kaufman County Multimodal Transportation Study

NCTCOG prepared the formative Kaufman County Thoroughfare Plan as part of a multimodal transportation study for the county. According to the plan, the purpose was to "develop a thoroughfare plan for Kaufman County that will be coordinated with other locally adopted planning documents in Kaufman and adjacent counties and that will also be reflected in NCTCOG's Regional Thoroughfare Plan." This 2009 study identifies current deficiencies in the existing thoroughfare network and guides the future development of a comprehensive region-wide thoroughfare system." This plan has guided the efforts of the County, leading to its current Bond Program of projects.

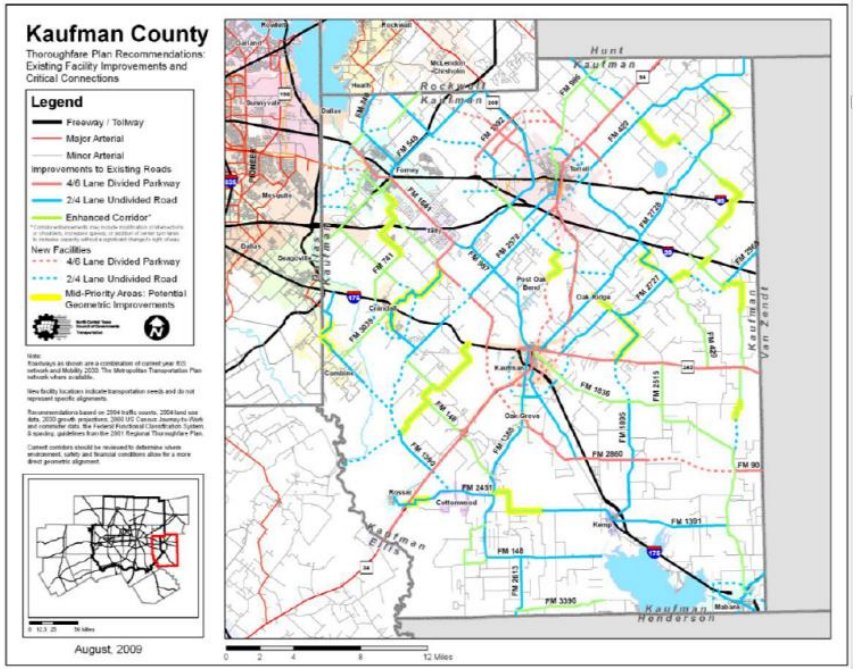


Figure 7. Kaufman County Thoroughfare Plan Recommendations, NCTCOG 2009

Regional Eastside Transit Study

NCTCOG funded a study of the transit needs of the eastern portion of the DFW Metroplex. Short range and intermediate range transit options include limited stop bus service from Terrell through Forney to connect to DART rail stations and extend into Downtown Dallas. While rail extensions are feasible within Dallas County, the ridership needed to expand the rail options east into Terrell or Kaufman was determined to be not high enough to warrant their implementation.

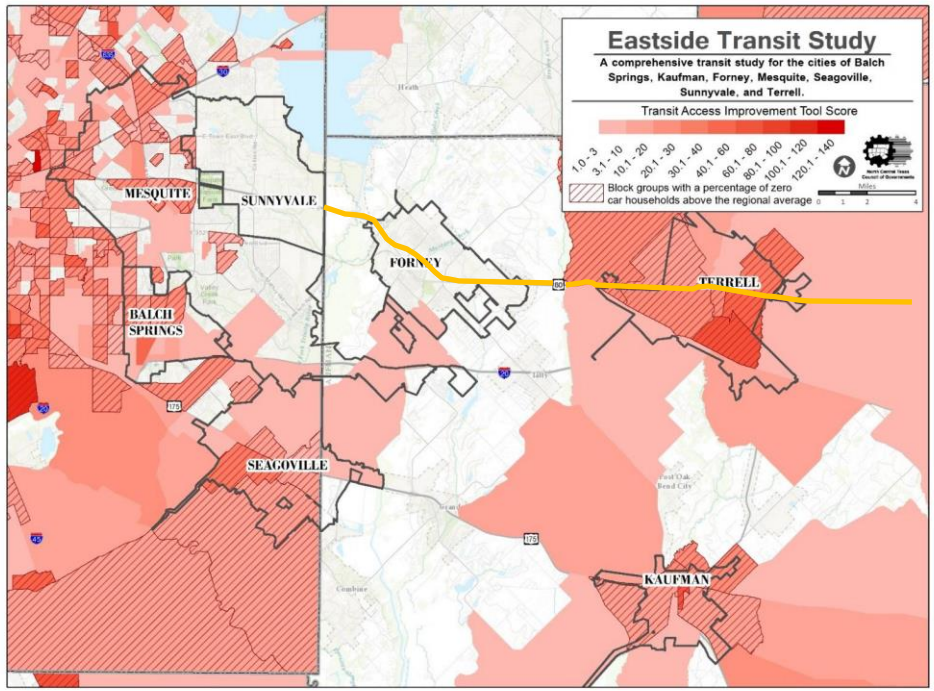


Figure 8. Eastside Transit Study – Transit Access Needs and Recommended US 80 Bus Corridor

Dallas Area Rapid Transit (DART)

Express Bus Routes and Potential for Rail Service

Near-term transit services detailed in the Eastside Transit Study report can address immediate public transportation needs. Several routes stand out for possible implementation in the mid-term timeframe, including a bus route from Terrell through Forney to Union Station in Dallas and a bus route from Kaufman into Dallas County.

Long-term possibilities would be the connection to rail corridor extensions identified in NCTCOG's Metropolitan Transportation Plan. The extensions are not included in DART's System Plan but DART is aware of the desire to further extend the current system outside of the areas that are served today in the traditional manner. While the analysis for the Eastside Transit Study did not go beyond 2035, it is possible that in the very long term, commuter rail may be a viable travel option for communities like Terrell or Kaufman. However, a number of factors, including population and employment growth and future land use development patterns, may influence the feasibility of this type of service.

Amtrak

Kaufman County has some limited commuter rail service potential between Terrell, through Forney, and into Dallas. Currently, the Union Pacific Railroad corridor is being used to transport freight at a frequency of about 26 trains per day. Amtrak has an agreement with UPRR to use the tracks for once daily inbound (near midday) and outbound (near 3 PM) passenger rail service (Texas Eagle).

City Transportation Plans

Each major city has a plan that lays out the vision for the future of transportation in that city. The US 80 corridor spans across two incorporated municipalies in Kaufman County – Forney and Terrell. These cities incorporate US 80 into their transportation plans since the corridor runs through the heart of the cities. Both cities' transportation plans were evolving during the development of the US 80 Corridor Study and elements that affected US 80 were incorporated into this plan, and conversely, recommendations from this plan were incorporated into the individual city transportation plans. These cities' transportation plans are one tool for implementation of the recommendations of the US 80 Corridor Study.

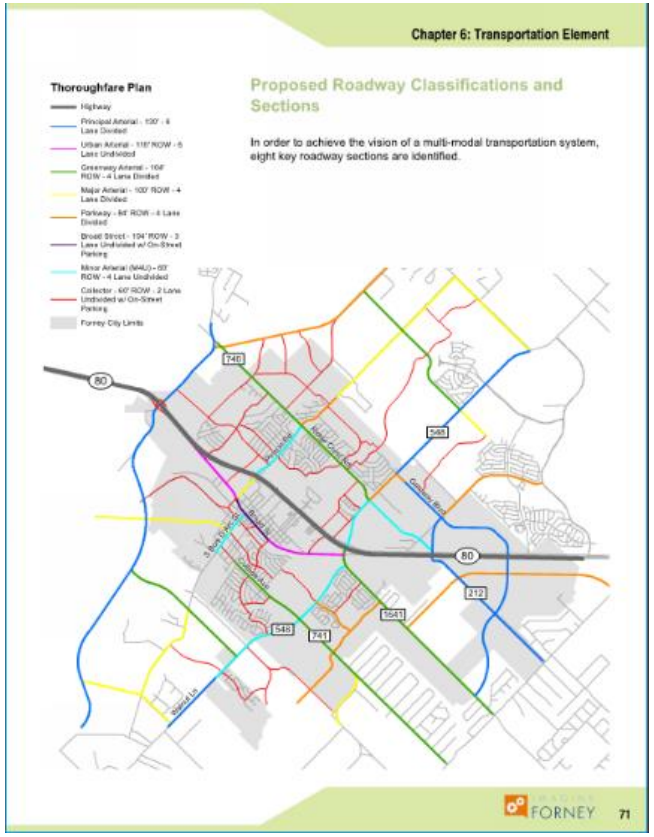


Figure 9. City of Forney Comprehensive Plan - Transportation

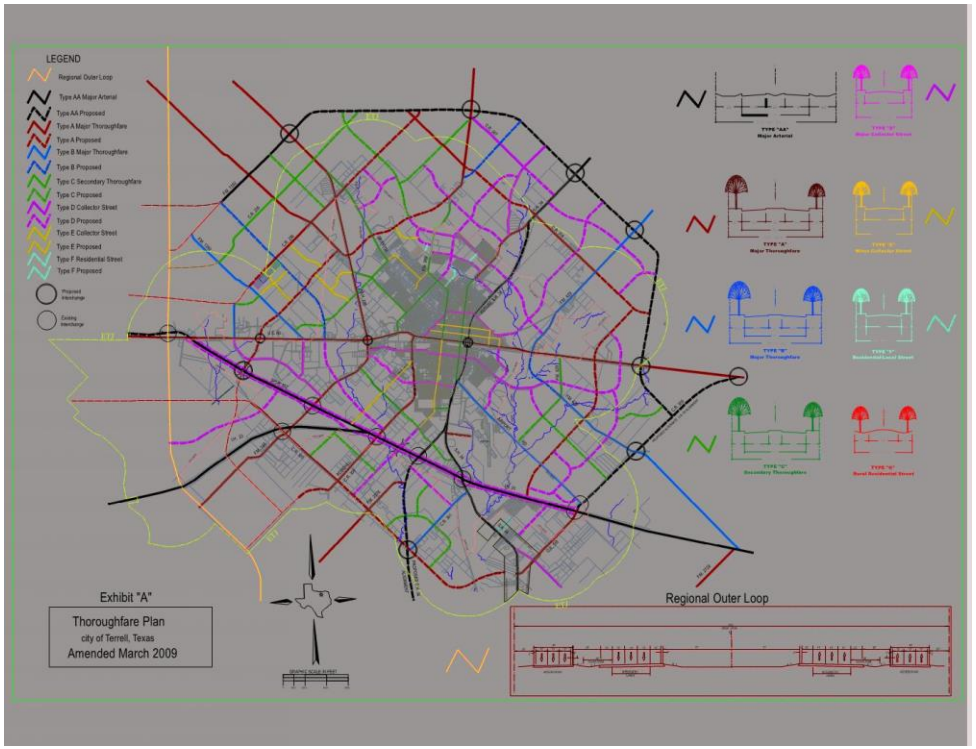


Figure 10. City of Terrell Thoroughfare Plan

Goals and Objectives

This US 80 Corridor Plan was completed in conjunction with the overall Kaufman County Transportation Plan. The primary objective of both plans is to ensure the preservation of adequate rights-of-way to serve existing and future transportation needs. The plans looked holistically across the entire county, placing an emphasis on regional connectivity, and is intended to guide the County by identifying locations and types of roadway facilities that are needed to meet projected long-term growth within the area.

Goals and objectives are "SMART"
Strategic
Measurable
Achievable
Relevant
Time-Oriented

The goals and objectives of this plan reflect the ideology and aspirations that the County and the cities of Forney and Terrell desire of the US 80 corridor. Goals are philosophical in nature and serve as a vision of what transportation should be in the future. The objectives discussed in this section are action oriented and are intended to form the framework for specific actions for achieving the stated goals.

The goals and objectives for the US 80 Corridor Study were vetted through the project steering committee, which was made up of local leaders, land owners, and city staff members. The goals and objectives developed for the plan were packaged into the following goals and associated objectives to meet those goals.

Goal #1 | Mobility and Safety

Objective: Provide a transportation system that will effectively and economically serve the existing and projected travel needs of the county in a safe and efficient manner.

Actions:

- Coordinate the transportation system and agency planning efforts of Forney, Terrell and other communities along the corridor to ensure a coordinated transportation plan and implementation for the corridor.
- Plan and implement new and improved roadways and intersection treatments to effectively accommodate vehicular traffic within the corridor and throughout the region.
- Plan and implement effective transit, bicycle and pedestrian mobility options for residents traveling within the corridor.

Goal #2 | Corridor Identity

Objective: Create a sense of community identity along the corridor through incorporation of context sensitive transportation design practices and a proactive approach to aesthetic quality of improvements.

Actions:

- Adopt policies and programs that promote context sensitive considerations and aesthetics into the planning and funding of transportation projects.
- Enhance the aesthetics of US 80, its service roads, and arterial class roadways that lead travelers through and into the major areas of retail and development.

Goal #3 | Economic Vitality

Objective: Invest in transportation improvements that support the physical and economic vitality of the cities, businesses and employment along the US 80 corridor.

Actions:

- Identify and implement policies and programs to streamline the transportation project development process and reduce implementation time.
- Promote integration between transportation and land use development, consistent with the vision of individual communities.

Goal #4 | Fiscal Stewardship

Objective: Optimize the use of city and county funds and leverage additional funding for strategic implementation of transportation improvements to maximize public return on investment in transportation infrastructure and operation.

Actions:

- Identify and pursue private, regional, state and federal revenue sources for funding multimodal transportation improvements.
- Provide transparent and meaningful public awareness, ongoing citizen input, and participation opportunities to implement and update the plan.
- Plan for and preserve rights-of-way and other properties for future multimodal transportation and supporting infrastructure investments.

Chapter 2 – Needs for Transportation Improvement

Kaufman County has been steadily increasing in population and employment as the Dallas-Fort Worth economy continues to grow. As identified in Appendix A, the area within one mile of the US 80 corridor through Kaufman County is forecasted to more than double in population and employment by 2040, growing to nearly 92,000 residents and 44,000 employees. Infrastructure needs in the corridor include replacing aging and outdated roadways, addressing safety issues, and adding capacity and connections where needed.

Identified Issues

The initial meeting with the project Steering Committee focused on the identification of issues along the corridor, and much discussion involved the following categories of concern:

- Safety – The ramp configurations along US 80 are not designed to accommodate current higher speed traffic maneuvers. Many of the bridges were built too narrow to accommodate proper clear zones or continuation of the shoulders. Some of the rural sections along US 80 east of Terrell do not have good access management of adjacent property driveways and parking, and truck turning movements to and from US 80 are getting busier at the FM 2728 intersections.
- Mobility – There are a limited number of crossings of US 80 and its parallel freight railroad, limiting north-south traffic circulation. There is also a lack of roadway network parallel to US 80, which exacerbates the constraints to local traffic circulation. Regionally, there are few north-south circulation connections to and from US 80.
- Congestion – While generally not an overly congested corridor, there are times when there are significant queues and delays on US 80. The crossing of the spillway is a location for occasional crashes on US 80, mostly westbound, which leaves travelers on US 80 with few good alternative routes to the other east-west corridors of I-20 and I-30. Traffic on SH 348 and other key north-south roadways is interrupted when freight trains pass through the corridor (about 26 times per day). The intersection of US 80 and SH 205/FM 148 in Terrell experiences significant peak period traffic delays and is adjacent to an at-grade railroad crossing.
- Planned Development – Expansion of the DFW Metroplex into Kaufman County is resulting in significant development interest along the US 80 corridor, especially near the City of Forney. Traffic generated by these new residential and commercial developments will put an increasing load on the existing roadway network, driving the need for new and expanded roadways especially at critical junctions with US 80.
- Corridor Context – East of Spur 557, US 80 transitions to an urbanized arterial roadway through the City of Terrell. Enhancement of this segment of the US 80 corridor will need to protect and promote the urban context of the adjacent land uses. In Downtown Terrell, zero lot line buildings, numerous signalized cross street intersections, and curbside parking for businesses limit roadway capacity provisions.

Specific issues and items of discussion were written down and are annotated in Figures 11 through 14 on the following pages.

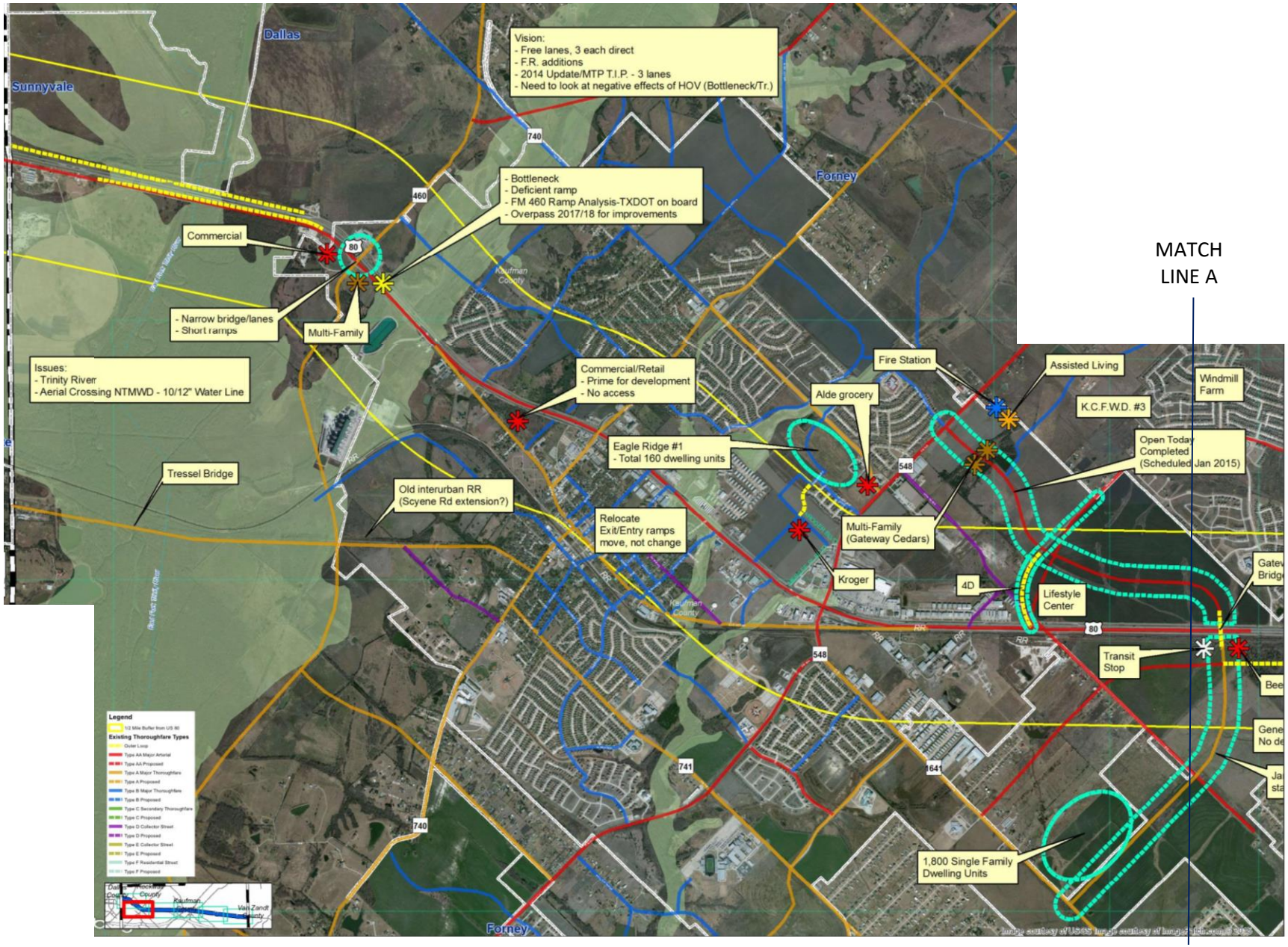


Figure 11. Issues Along US 80 Corridor Identified in Meetings with Project Steering Committee (1 of 4)

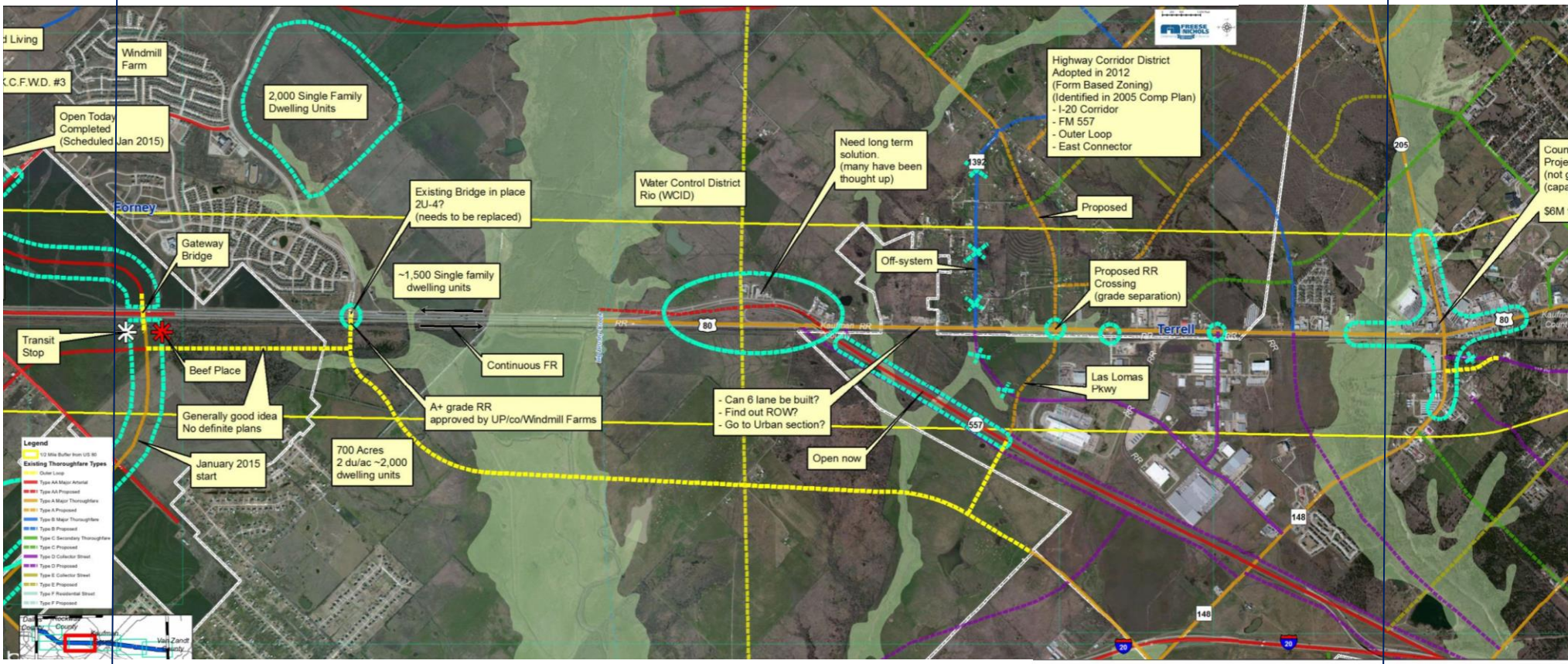


Figure 12. Issues Along US 80 Corridor Identified in Meetings with Project Steering Committee (part 2 of 4)

MATCH LINE A

MATCH LINE B

MATCH LINE B

MATCH LINE C

Figure 13. Issues Along US 80 Corridor Identified in Meetings with Project Steering Committee (part 3 of 4)

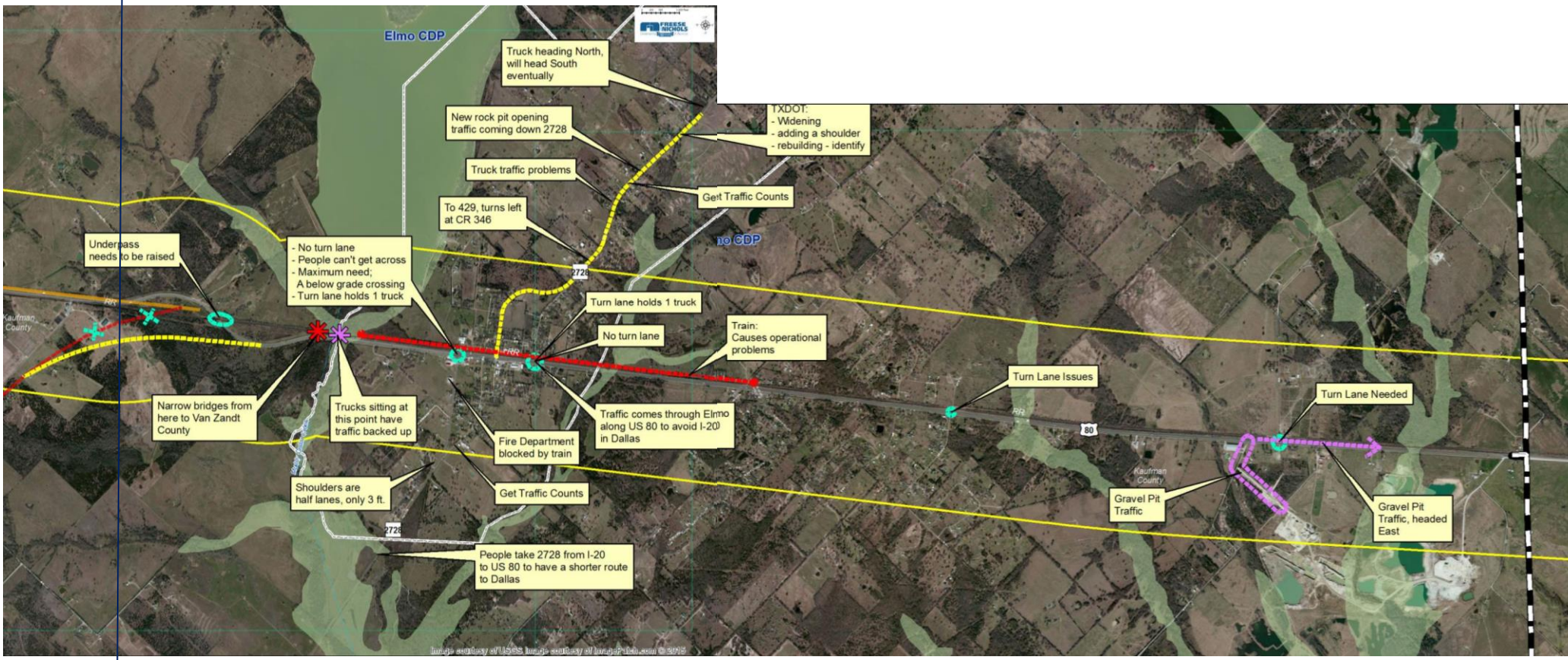


Figure 14. Issues Along US 80 Corridor Identified in Meetings with Project Steering Committee (part 4 of 4)

MATCH LINE C

Crashes

A summary of the 5-year history of reported traffic crashes along US 80, from 2010 through 2014, shows a significant amount of crashes and concentrations at key points of conflict, including geometric changes and constraints, exit/entrance ramp merge areas, and intersections. The following contributing factors were associated with key fatality crash locations along US 80 (shown as red dots in Figure 15): short freeway entrance ramps, bridge retaining walls close to the travel lane, limited line of sight/visibility, and trucks at railroad crossings.

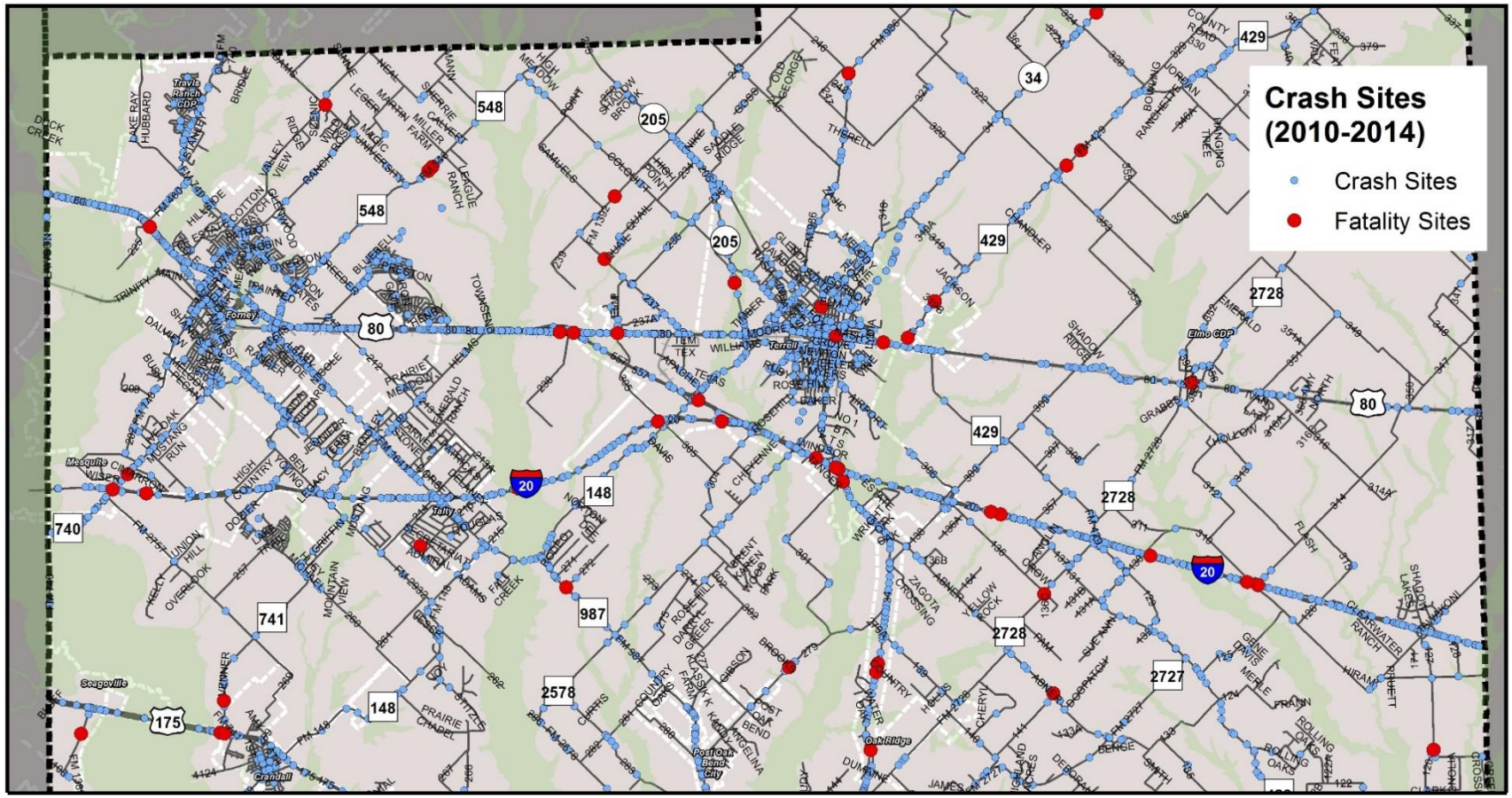


Figure 15. Reported Traffic Crash Sites (2010-2014)

Planned Development

Residential development has increased tremendously in US 80 corridor over the last 10 to 15 years, with retail and employment opportunities following and subsequently encouraging more residential development. The following are key planned developments for which information has been provided regarding planned residential and commercial construction over the next ten years.

- Travis Ranch, north along FM 460 – Plans are underway to add another 1,000 homes to its master planned community
- Forney Infill north of US 80 – Approximately 500 new homes plus 25,000 sf retail are estimated to be added northwest of FM 548.
- Forney Infill south of US 80 - Approximately 150,000 sf retail is estimated to be added west of FM 548 plus another 500 homes.
- Gateway Development north of US 80 – As part of its master plan for development, two additional 300-unit apartment complexes would be built plus approximately 10,000 sf of the planned retail along the US 80 frontage.
- Gateway Development south of US 80 - As part of its master plan for development, approximately 1,000 new homes would be built north of FM 1641, along with the extension of Gateway Boulevard southward from US 80 to FM 1641.
- Windmill Farms - Plans to add another 1,000 homes to the master planned community are planned at about 100 homes per year.
- Las Lomas – The beginning stages of this master planned development will include about 300 homes across US 80 from Windmill Farms plus 10,000 sf of retail space at the junction of Spur 557 with the new Las Lomas Boulevard.
- Rio – The Terrell land use plan prepared for their water impact fee report indicated that this development would add 1,100 new homes north of US 80 near its junction with Spur 557.
- Terrell Infill, north of US 80 - The land use plan prepared for the City of Terrell Water Impact Fee Study indicated that over 1,500 new homes and over 1,000 new jobs would be added north of US 80.
- Terrell Infill, south of US 80 - The land use plan prepared for the City of Terrell Water Impact Fee Study indicated that 100 new homes and over 700 new jobs would be added within Terrell south of US 80.

The location and estimated amount of anticipated development over the next 10 years is graphically represented in Figure 16.

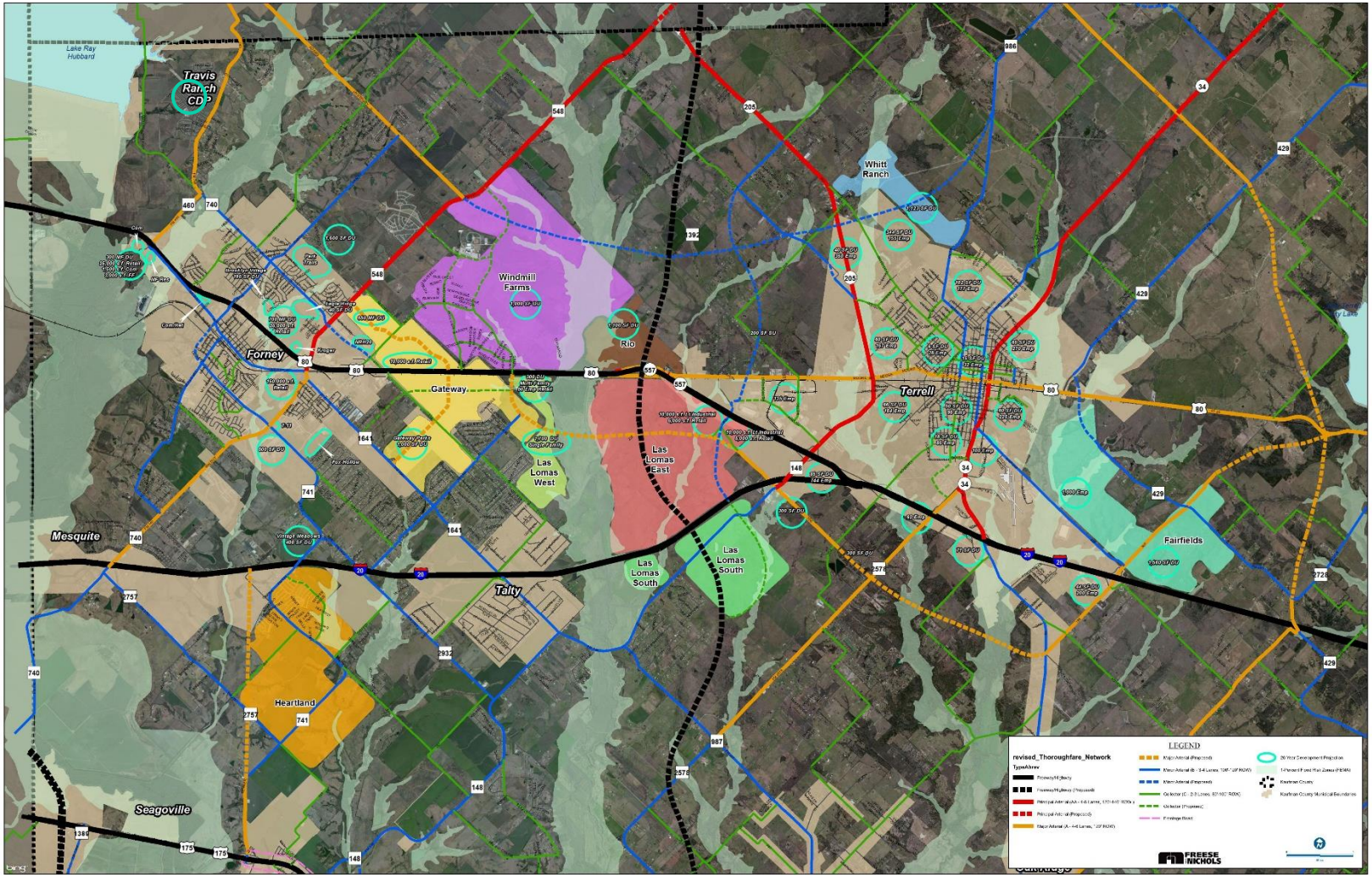


Figure 16. 10-Year US 80 Corridor Planned Development (shown with potential thoroughfares)

Estimating Future Travel Demand

10-Year Horizon

Key known developers of major properties along the US 80 corridor were requested to make estimates of the quantities of residential and commercial improvements that would be implemented within the next 10 years. The City of Terrell prepared estimates of future employment and residential development as part of its land use assumptions for development of its Roadway Impact Fee Study. These development estimates were converted to peak hour trips using the *Trip Generation Manual* published by the Institute of Transportation Engineers. These estimates of new trips were then added to counts of existing peak hour traffic volumes on significant roadways within one mile of the US 80 corridor. A modeling tool, VISTRO, was used to allocate trips onto the existing roadway network from their origins to destinations along the corridor and exiting the corridor during the evening peak hour of a typical week day. The VISTRO model tracked the resulting accumulation of traffic volumes and its traffic analysis tool indicated where traffic congestion would occur on the existing roadway network. Mitigation measures were then analyzed to bring the significant intersections back to an acceptable level of service for traffic operations in the 10-year horizon.

20-Year Horizon

This US 80 Corridor Plan was developed in concert with preparation of the Kaufman County Transportation Plan. The NCTCOG travel demand model output from the 2035 Metropolitan Transportation Plan has been utilized in the development of the 20-year horizon for both studies. The model has been adapted to represent the current information on emerging development and to identify future low levels of service and to test the performance of potential network enhancements and additions.

Further information on the development of future year traffic volumes for analysis in the assessment of future travel demand needs can be found in Appendix B.

Chapter 3 – Short Range 10-Year Transportation Improvement Plan

The ten-year plan of recommended improvements focuses on two urgent needs along the corridor: 1) safety and operational needs and 2) existing and anticipated congestion. The improvement recommendations in this chapter are in addition to the improvements currently being designed for implementation within the next year or two in the US 80 corridor, which include:

- safety and operational improvements for the eastbound US 80 ramps between FM 460 and FM 740 in Forney
- capacity enhancements to FM 458 at US 80 and just north of US 80 in Forney
- operational enhancements to the intersection of SH 205/FM 148 at US 80 in Terrell

A set of improvements are recommended herein for implementation within the next ten years. They are illustrated in Figure 17 and 18 and are described on the following pages and in further detail in Appendix C. The following is a listing of the recommended short range improvements.

Recommended safety and operational improvements:

S1. Improve the configuration of the entry ramp from FM 460 to westbound US 80.
S2. Widen the four narrow US 80 main lane creek crossing bridges between FM 460 and FM 740 in Forney.
S3. Upgrade intersection controls at US 80 intersection with FM 2728 in Elmo.
S4. Widen the two US 80 westbound bridges near Elmo.
S5. Improve the intersection level of service for US 80 at SH 205/FM 148.

Recommended functional improvements to roadway operations:

F1. Widen US 80 to six lanes between SH 190 and FM 460.
F2. Upgrade the interchange of US 80 service road with FM 460 in Forney.
F3. Upgrade the interchange of US 80 service road with FM 740 in Forney.
F4. Create an underpass of FM 548 at UPRR in Forney.
F5. Realign CR 212 to tie to CR 217 and reconstruct the bridge at CR 217 over US 80 in Forney.
F6. Reconstruct the interchange at Windmill Farms near Forney.
F7. Realign and extend FM 1392 in Terrell.

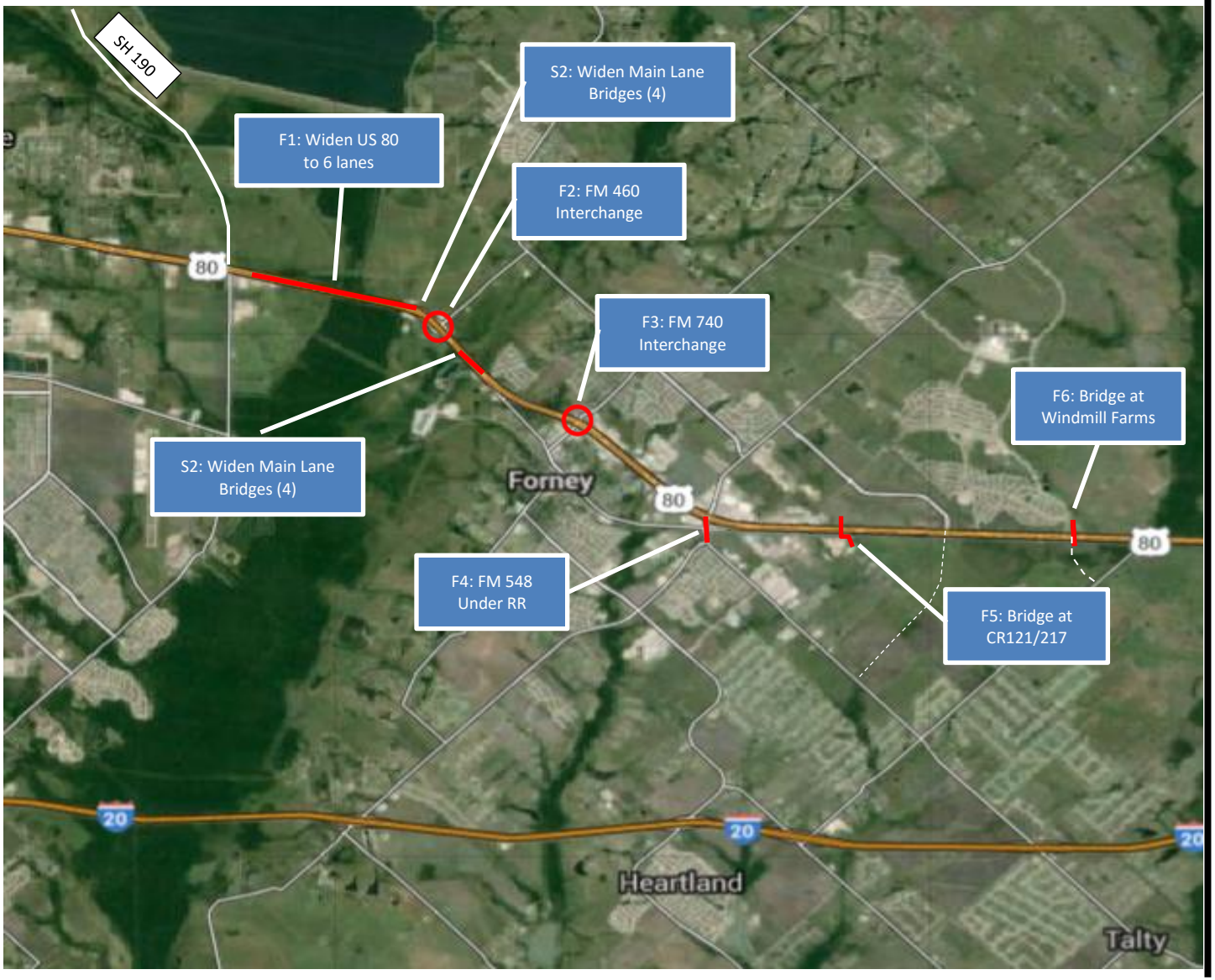


Figure 17. Recommended Short Range Transportation Improvements (Western Segment)

Match Line A

Figure 18. Recommended Short Range Transportation Improvements (Eastern Segment)

Safety and Operational Improvements

S0. Improve Westbound On-ramp from FM to US 80

Issue: The two-way service road on the north side of US 80 west of FM 460 constrains the approach speed for traffic entering the on-ramp to westbound US 80. The geometrics of the curve to the left across the two-way service road followed by the reverse curve to the right to enter the ramp onto US 80 constrains the point of acceleration on the ramp. Once on the ramp, the point of demarcation between ramp and main lane is relatively abrupt. The on-ramp continues its 13-foot width for about 300 feet, from the gore point where ramp and main lane come together to across the bridge, then tapers into the main lane within about 700 feet. The gore point is denoted where the edge line of the ramp meets the edge line of the main lane, but there is no striping through the subsequent 900-foot length to the end of the taper. Channelization of this merging area needs to be modified for enhanced driver understanding of merging behavior at this location.

Urgency: As soon as possible, within the next two years. This imterim improvement will enhance traffic conditions unitl the main lane capacity and service road improvements to this section of highway and service road can be implemented (see Improvement F1).

Recommended Actions:

S1.1 Extend the full width auxiliary lane that crosses the bridge to improve the merging conditions for traffic entering westbound US 80. Convert taper merge ramp to parallel merge ramp.

S1.2 Ultimately, convert the two-way service road to a one-way service road and extend it westward to the new SH 190 interchange.

Expected Cost of Implementation: About $0.5 Million

Figure 19. Improvement S1 for Enhancing Westbound On-ramp to US 80 West of FM 460

S1. Improve Narrow Bridges between FM 460 and FM 741

Issue: Narrow bridges on US 80 at creek crossings place bridge parapet walls very close to the edge of the roadway. There are four such bridges on US 80 between FM 460 and FM 740. The pending reconfiguration of the eastbound ramps in this section of US 80 will mitigate the highest crash locations of the four bridges, removing the short on-ramp that merges into US 80 just before one of the narrow bridges. However, the crash potential for traffic on the main lanes at these four bridges remains and will increase over time – there is little margin for error for traffic traversing these four bridges. Due to the age of the bridges, this improvement would fully reconstruct the bridges and to a width that would accommodate the ultimate three lanes in each direction.

Urgency: As soon as possible, within the next three years

Figure 20. Location and Condition of Creek Crossing Bridges to be Replaced under Improvement S2

Recommended Actions:

S2.1 Reconstruct the four US 80 creek crossing bridges between FM 460 and FM 740 to meet current TxDOT design standards for the safety of the two directional travel lanes and to accommodate future three-lane eastbound and westbound US 80 main lanes. Two of the bridges are 200 feet long and the other two bridges are 450 feet long.

Expected Cost of Implementation: $20 to 25 Million

S2. Improve Traffic Control at US 80 intersection with FM 2728 in Elmo

Issue: Truck traffic on FM 2728 causes southbound queues at the stop sign controlled intersection with US 80. Trucks waiting for gaps in US 80 traffic often place trucks in precarious positions in the US 80 intersection and on the railroad at-grade crossing. An initial traffic signal assessment indicates that a signal may be warranted, which would allow a more orderly processing of traffic from southbound FM 2728 onto US 80. However, part of the issue regards the storage length for the southbound trucks to stop past the railroad crossing. TxDOT is separately pursue extending an FM road eastward from the gravel pits north of US 80 to tie to US 80 and I-20 further east to mitigate the volume of trucks that utilize this intersection. Thus, a channelization of the westbound travel lanes is proposed to create a minimum of 65 feet from stop line to ten feet from the tracks as an immediate mitigation that can be readily implemented..

Urgency: As soon as possible, within the next 2 years

Actions:

S3.1. Channelize the westbound movement on US 80 at the FM 2728 north intersection, as shown in Figure 21. Convert the rightmost westbound lane to a right turn only at FM 2728 to allow an extension of the stop line to 75 feet away from the centerline of the tracks.

S3.2 Widen the southbound FM 2728 approach between CR 374 and US 80, and extending the concrete planking at the railroad crossing, to provide a left turn bay and a right turn bay channelized for a free-right turn movement.

S3.3 Coordinate with TxDOT to perform special traffic study to assess the need to install signalized traffic control at the intersection.

Expected Cost of Implementation: $0.8 to 1.1 Million

Figure 21. Improvement S3 to Channelize the Intersection of FM 2728 at US 80 Improve Truck Storage and Intersection Operations

S4. Widen Narrow Westbound US 80 Bridges at Creek Crossings near Elmo

Issue: Two creek crossing bridges, one to the east and one to the west of FM 2787 were built with a constriction of the westbound right shoulder to cross a bridge too narrow to carry the full section of the roadway. Guardrail is provided for the taper of the shoulder, but the bridge parapet wall and guardrail are only about 2 to 3 feet from the edge of the rightmost travel lane, which does not meet the standard 4-foot clear zone for the highway. There is no history of crashes at those two bridge locations.

Urgency: As safety funding is available, within the next five to ten years

Actions:

S4.1. Extend the two culverts about 10 feet towards the railroad, adjust guardrail, and pave the shoulder to match existing pavement.

Expected Cost of Implementation: $4.8 Million

Figure 22.One of Two Locations for Improvement S4 to Widen the Culvert to Continue the Shoulders on Westbound US 80

S5. Improve Intersection Operations for US 80 @ SH 205/FM 148

Issue: TxDOT is currently evaluating the short range operational improvement needs of this intersection of two heavily traveled principal arterial roadways, which also has a very active railroad crossing on its FM 148 approach within 100 feet of the intersection. Expand upon the short range assessment to plan and implement a longer range set of enhancements.

Urgency: As congestion mitigation funding is available, within the next 2 to 5 years

Actions:

- S5.1. Evaluate the effects of the planned short range congestion mitigation measures currently under design by TxDOT. Prepare a medium range and long range plan of action for improving traffic operations at this junction.
- S5.2 Design and implement the medium range set of operational improvements for this junction.
- S5.3. Evaluate the effects of the proposed medium range congestion mitigation measures. Update proposed long rang improvements as necessary.
- S5.4 Design and implement the long range set of operational improvements for this junction.

Expected Cost of Implementation: TBD

Figure 23. Improvement S5 to Improve Intersection Operations at the Junction of US 80 at SH 205/ FM 148

Functional Improvements

F1. Widen US 80 to 6 lanes between SH 190 and FM 460

Issue: Crashes on US 80 main lanes occurring west of the FM 460 interchange block passage on US 80 causing extensive queues and delays due to the lack on service roads and the scarcity of viable alternative routes. The extension of SH 190 south of I-30 to US 80 and I-10 is on track to be implemented within the next 10 years, providing north-south connections to alternative routes west of the lake and spillway. US 80 traffic volumes in 2035 are expected to be over 130,000 vehicles per day, including significant traffic to and from FM 460 north of US 80. As a four lane highway, this section of US 80 would operate at LOS F, so it needs to be a six-lane highway plus auxiliary lanes for ramp connections.

Urgency: Within next 5 to 10 years, coincident with the extension of SH 190 to US 80.

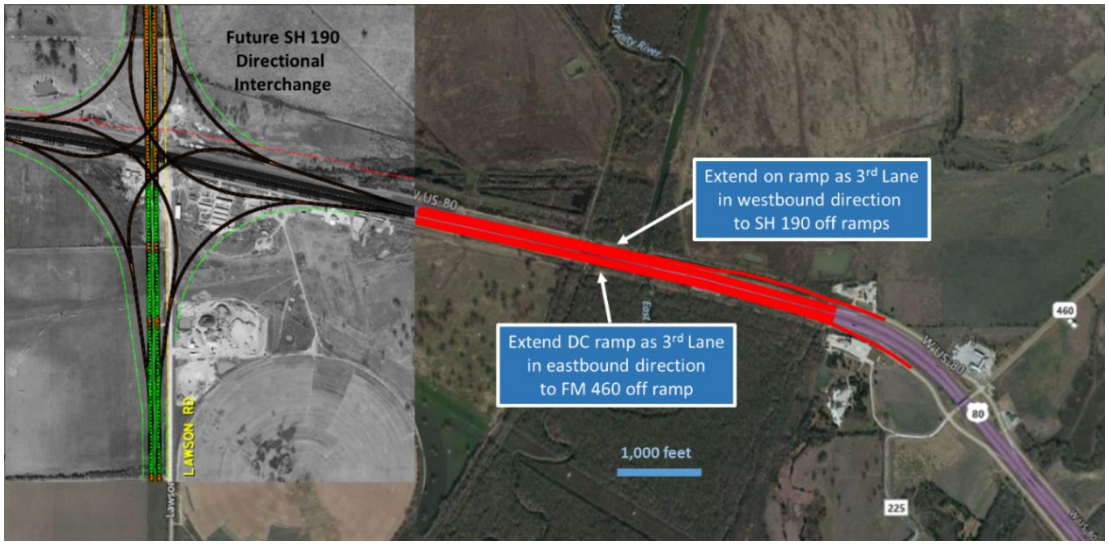
Recommended Actions:

F1.1 Conduct planning and environmental studies for the widening of US 80 to 6 Lanes and adding WB Service road between FM 640 and SH 190. This improvement will require adding structural supports into the spillway from Lake Ray Hubbard and re-channelization of the drainage channels paralleling the service road.

F1.2 Extend the westbound service road west of FM 460 as a third westbound lane, tying to the DC ramps to SH 190

F1.3 Extend the DC ramps from SH 190 as a third eastbound lane, forcing off at the exit ramp to FM 460.

Expected cost of Implementation: $44.9 Million



F2. Upgrade the US 80 Interchange at FM 460 in Forney

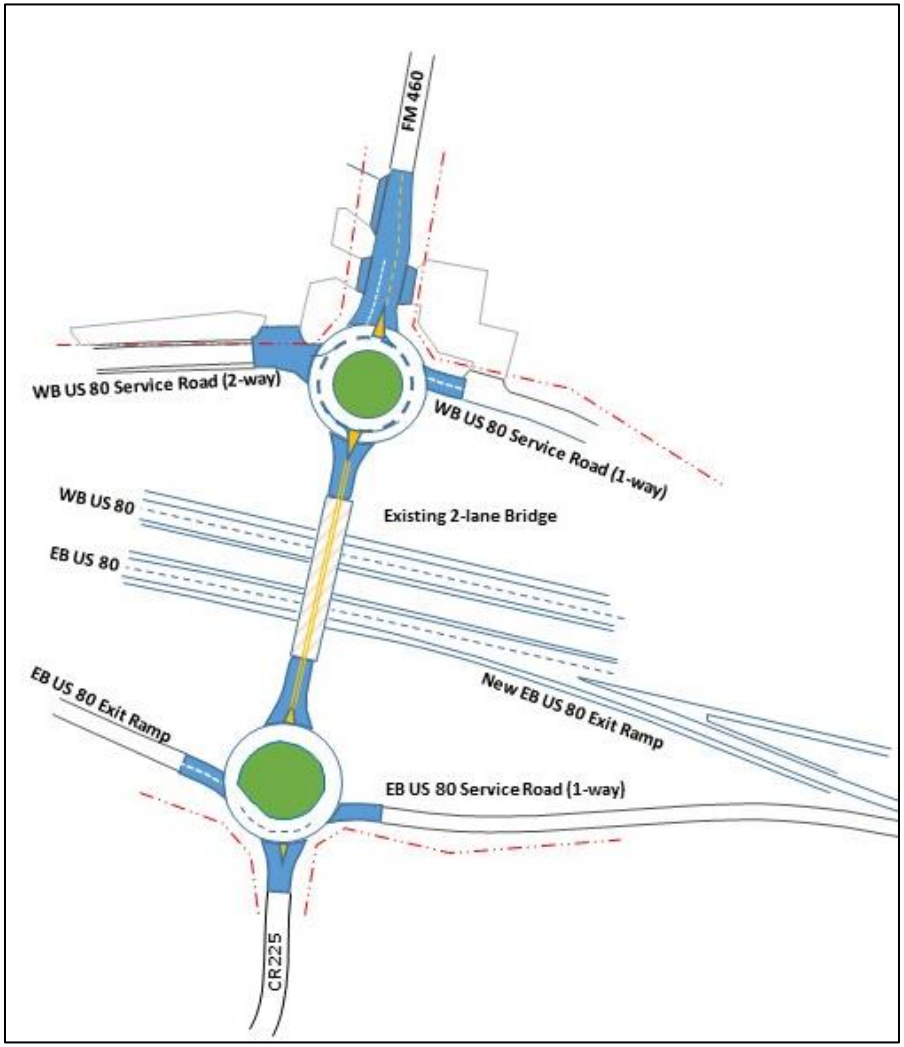
Issue: Planned development in the FM 460/FM 740 corridor north of US 80 will overwhelm the traffic handling capabilities of the two-lane bridge on FM 460 over US 80 within the next 5 to 10 years. The service road intersections are already nearing capacity in 2014, with peak levels of service (LOS) of D. Without improvements, the intersections will only become more congested and decline in LOS, having peak period LOS F after proposed development takes place within next 10 years. Until the two lane bridge is replaced with a five-lane bridge (anticipated to be let for construction in 2018 and completed in 2020), replacing the current stop-controlled intersections with roundabouts will ease congestion and bring the peak LOS of both intersections to B for an interim treatment. Evaluation of interim traffic signals determined that the roundabouts would provide much better LOS.

Urgency: Within next 1 to 3 years (roundabouts), within the next 3 to 5 years (widen bridge and improve service road intersections)

Actions:

- F2.1 Improve the intersections at the FM 460 interchange service roads, (roundabouts recommended) until the bridge over US 80 can be re-built.
- F2.2 Rebuild FM 460 bridge to provide five lanes and install traffic signals at each service road intersection. Provide span to accommodate 6 main lanes on US 80.

Expected cost of Implementation: About $2.0 Million for initial Roundabouts, $9.3 to 10.5 Million for new bridge and upgraded intersections



F3. Upgrade the US 80 Interchange at FM 740 in Forney

Issue: The re-construction of the eastbound US 80 ramps and services road will create a continuous eastbound service road between FM 460 and FM 548, and is programmed by TxDOT for letting in June 2016 with construction completed in late 2017. Broad Street will be brought to a T-intersection at the service road midway between FM 460 and FM 741 (Pinson Road), which will tend to redistribute some traffic from the western portion of Broad Street onto Pinson Road in the future. Pinson Road is forecast to receive additional traffic from infill development, and will need enhancements to maintain an acceptable level of service at it intersections at the US 80 interchange.

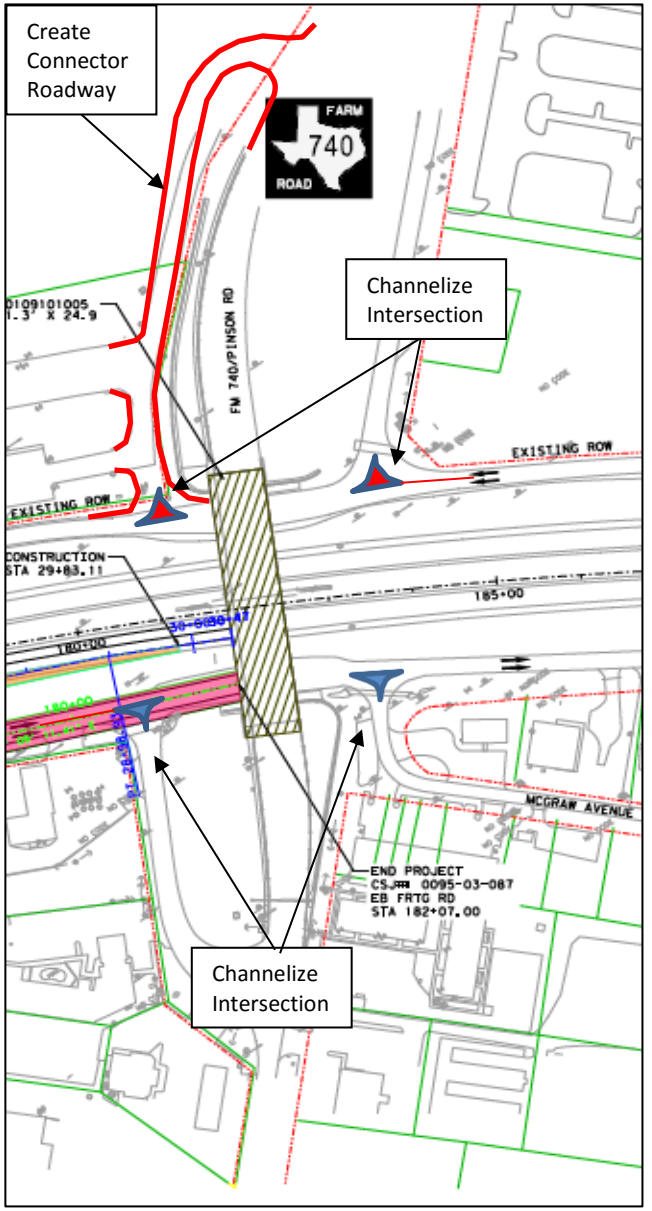
Channelize the jug handle intersections at the service roads to facilitate access to and from the service roads. Add the two-way connecting roadway for facilitation of the SB to WB and WB to SB movement which will remove these movements from turning left through the signalized intersection.

Urgency:
Channelization of intersections - Within next 3 to 5 years
New connector roadway - Within the next 5 to 10 years

Actions:

- F3.1 Channelize the eastbound and westbound US 80 service roads at the access to Pinson Road to facilitate access between Pinson Road and the service roads.
- F3.2 Purchase required additional property for new ramps on west side of FM 740 on north side of US 80.
- F3.2 Design and construct the new SB-WB/WB-SB ramps on west side of FM 740 on north side of US 80.

Expected cost of Implementation:
$0.7 to 1.0 Million (channelization), $1.8 to 2.0 Million (new ramps)



F4. Create an Underpass of FM 548 at UPRR in Forney

Issue: Development near the FM 548 interchange at US 80 has grown significantly over the last 10 years and continues to intensify. FM 548 serves as one of the primary arterial roadways that interchange with US 80, and there are numerous minor arterial roadways that themselves serve significant residential development that feed into FM 548 to access US 80. Recent improvements by TxDOT have created ample capacity at the interchange to accommodate much of the projected growth. However, when a train crosses FM 548 at-grade, as it does about 24 times each day, traffic flow in both directions on FM 548 is interrupted for 3 to 5 minutes causing lengthy queues and extensive delays during busier hours of each day. The railroad tracks are several feet higher than the US 80 frontage road, so an undercrossing of the railroad is feasible.

Urgency: Within next 2 to 5 years

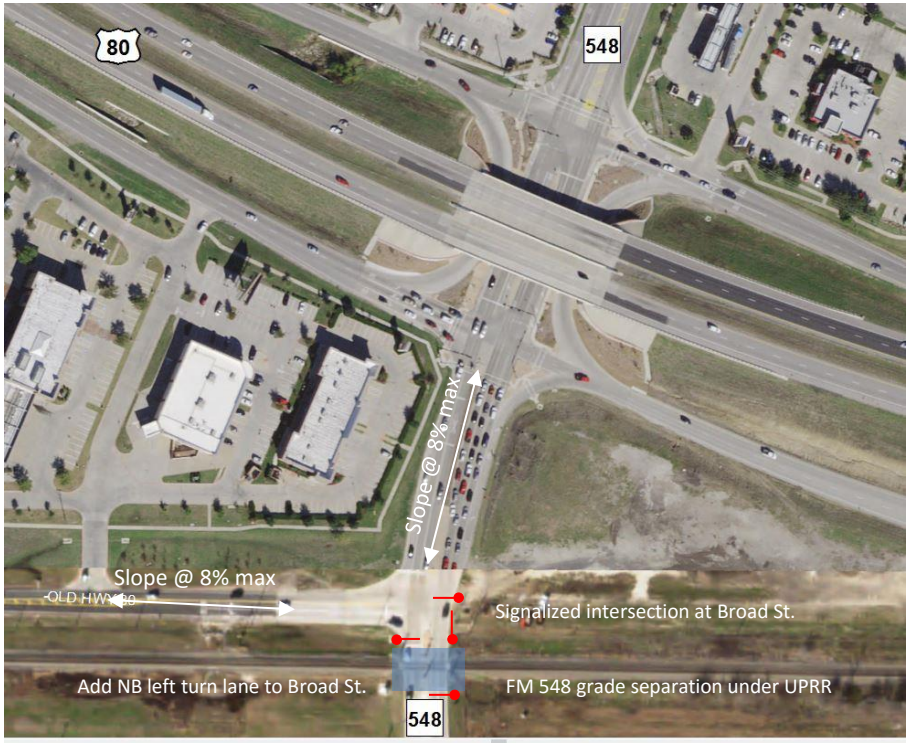
Actions:

F4.1 Create shoefly for UPRR and temporary FM 548 roadway at-grade crossings with the shoefly track.

F4.2 Build new bridge for railroad wide enough to add 2nd freight rail plus one commuter rail track.

F4.3 Build new FM 548 roadway with three lanes northbound and two lanes southbound under railroad bridge.

Expected cost of Implementation: $15 to 25 Million



F5. Realign CR 212 and Rebuild the CR 212/217 Bridge over US 80 in Forney

Issue: The existing Orange County Container Group facility has good eastbound connection to and from US 80, however, exiting traffic headed from the facility to the DFW Metroplex must proceed eastward on the one-way service road to the next crossing of US 80 which is a two-lane bridge at CR 217. Planned development to the north and south of US 80 east of FM 548 will generate significant traffic demand for crossing US 80. Much of this traffic will be able to utilize the newly constructed Gateway Boulevard bridge the crosses both US 80 and the railroad. The existing two-lane bridge at CR 217 will provide another crossing for traffic to and from the north of US 80, but does not currently provide direct access from CR 212 to westbound US 80. Realignment of CR 212 to tie to the existing bridge location will provide additional circulation for traffic from development south of US 80 and in particular the commercial frontage immediately south of the railroad tracks. The bridge over US 80 will need to be reconstructed to accommodate a six-lane highway on US 80.

Urgency: Within next 5 to 10 years

Actions:

F5.1 Acquire ROW and realign CR 212 to connect to the bridge at CR 217.

F5.2 Rebuild bridge to three lanes, including a center back-to-back left turn lane. Install traffic control at the US 80 service roads. Provide span to accommodate 6 main lanes on US 80.

Expected cost of Implementation:

Realign CR 212: $3.0 to 3.5 Million

Relocate Railroad crossing: $1.5 to 2.0 Million

Reconstruct bridge: $6.0 to 6.5 Million

Upgrade service road intersections: $1.0 to 1.5 Million

Existing bridge at CR 212 / 217

F6. Rebuild the US 80 Interchange at Windmill Farms in Forney

Issue: Continued expansion of the Windmill Farms development to the north of US 80 and extension of new roadway into the Las Lomas development will generate significant traffic demand for crossing US 80. The bridge over US 80 will be needed to be reconstructed to accommodate five travel lanes. Developer to construct Las Lomas Parkway and new at-grade crossing of railroad, closing the railroad crossing at Helms Trail.

Urgency: Within next 5 to 10 years

Actions:

F6.1 Rebuild bridge to five lanes, including a center back-to-back left turn lane. Provide span to accommodate 6 main lanes on US 80.

F6.2 Improve the on and off ramp configurations to comply with current TxDOT design standards.

F6.2 Install traffic control at the WB and EB service road intersections with Windmill Farms Blvd.

Expected cost of Implementation: $X.X Million

Reconstruct bridge: $6.0 to 6.5 Million

Upgrade service road intersections: $1.5 to 2.0 Million

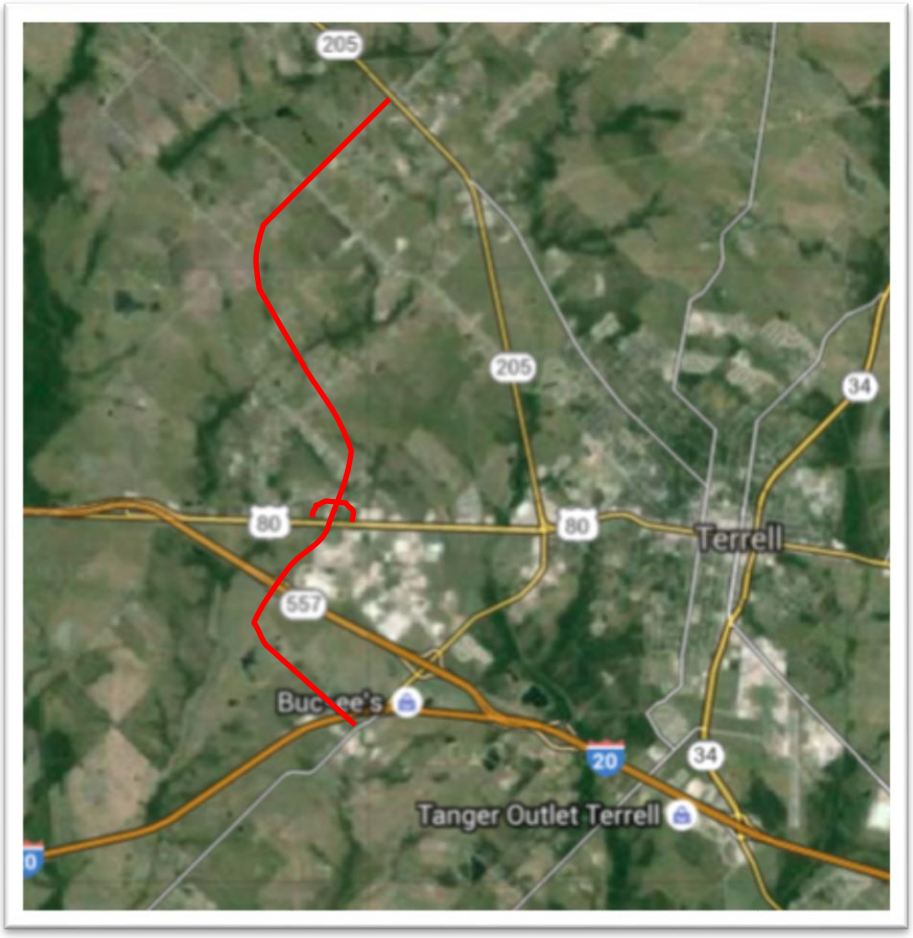
Improve on and off-ramps: $2.5 to 3.0 Million

New at-grade railroad crossing (by Las Lomas)

Existing bridge at Windmill Farms Blvd

F7. Realign and Extend FM 1392 in Terrell

Issue: Traffic growth on SH 205, and reliance on SH 205 to traverse between the I-30 corridor and destinations in Kaufman County, is creating congestion at the at-grade intersection of SH 205 and US 80 in Terrell. TxDOT is in the process of designing a widening of SH 205 north of US 80, and will soon implement some operational improvements to provide near term relief of congestion at the intersection of SH 205 at US 80. As a longer term solution, the extension of FM 1392 from SH 205 to cross US 80, Spur 557, I-20 and tie to FM 148 (and ultimately to SH 34) would redistribute traffic away from the SH 205/US 80 intersection. The near term intersection improvements at the SH 205/US 80 intersection would then be better able to accommodate the anticipated future traffic volumes that would remain best served by using that intersection.



Urgency: Within next 5 to 10 years

Actions:

- F7.1 Conduct planning and environmental studies to identify preferred alignment and costs.
- F7.2 Acquire ROW for a four lane divided roadway and construct realigned FM 1392 from SH 205 to US 80 as a three-lane roadway, initially.
- F7.3 Construct a 4-lane bridge overpass of US 80 and UPRR, with a pair of jug-handle access ramps to/from the north side of US 80.
- F7.4 Connect FM 1392 to the newly constructed 4-lane CR 305 extending to Spur 557 at the Las Lomas Parkway bridge.
- F7.5 Widen Las Lomas Parkway/CR 305 bridge over Spur 557 to provide four lanes plus a center left turn lane and improve service road intersections.
- F7.6 Collaborate with Las Lomas developer to improve CR 305 between Spur 557 and I-20 connecting to FM 148.

Expected cost of Implementation: $72 to 80 Million

Chapter 4 – Long Range 20-Year Transportation Improvement Plan

The long range 20-year plan of recommended improvements focuses on the emerging growth and provision of travel capacity and options along the corridor. The set of improvements that are recommended for implementation within the next 20 years are illustrated in **Figure 10** and are described further on the following pages. The following is a listing of the recommended long range improvements.

L1. Widen US 80 to 6 lanes from SH 190 to Spur 557
L2a. Commuter Transit Center at the Eastern Edge of Forney
L2b. Commuter Transit Center in Downtown Terrell
L3. North-South Connector northward from I-20
L4. US 80 Realignment east of Terrell
L5 Extend Pinson Rd over UPRR and tie to Main Street

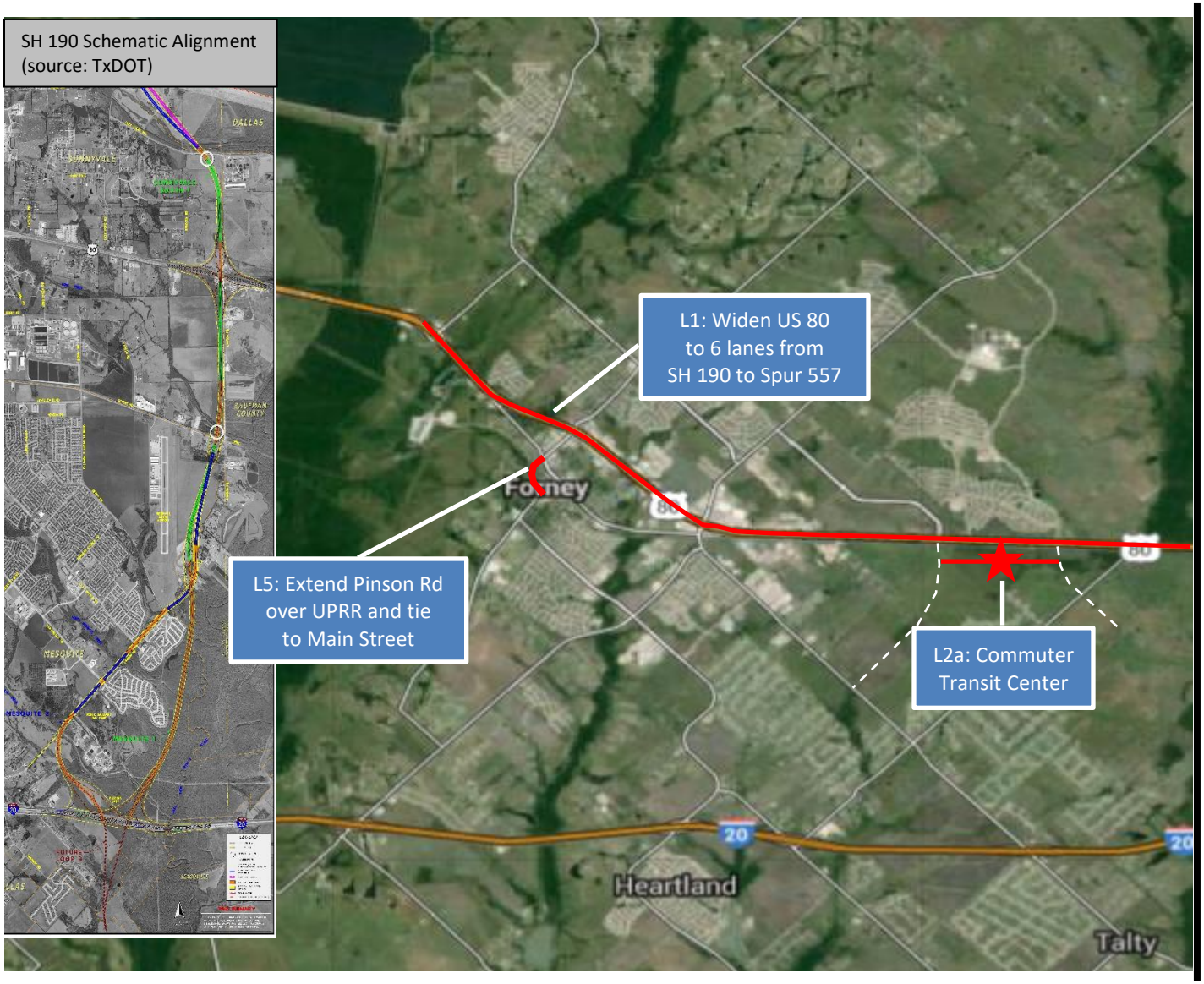


Figure 10a. Recommended Long Range Transportation Improvements (western segment)

Figure 10b. Recommended Long Range 20-year Transportation Improvements (eastern segment)

L1. Widen US 80 to 6 Main Lanes between SH 190 and Spur 577/North-South Connector

Issue: The continued growth of significant development along the FM 548 corridor and master planned developments (Gateway, Windmill Farms, Las Lomas) in the Forney area will contribute traffic over the next 20 years and beyond that will exceed the capacity of the current four-lane highway. A number of the existing ramps were constructed with geometries that do not meet current design standards and should be addressed when US is widened.

Urgency: Within next 10 to 20 years

Actions:

- L1.1 Widen US 80 to provide 3 main lanes in each direction between FM 460 and Spur 557.
- L1.2 Reconstruct exit and entry ramps to meet current TxDOT design standards, most notably near the bridges at CR 217/212, Gateway Boulevard, Windmill Farms Boulevard/Las Lomas Parkway.

Expected cost of Implementation: $175 Million to $250 Million

Existing US 80 roadway and short ramps, view to east near windmill Farms Blvd

L2. Commuter Transit Centers

Issue: The NCTCOG Eastside Transit Study concluded that the US 80 corridor would not generate sufficient ridership to support building and operating commuter rail connecting to the DART light rail system. But, the US 80 corridor would generate sufficient ridership to support commuter bus operations from both Terrell and Forney to connect to the DART stations and into Downtown Dallas. Looking forward to sometime farther into the future, however, any bus transit centers serving Forney and Terrell should be developed adjacent to the UPRR freight rail in the US 80 corridor.

Urgency: Begin discussions regarding service provisions and cost sharing with next 1 to 3 years. Initiate pilot service from interim Terrell Transit Center within next 3 to 5 years. Full development of both transit centers within next 10 to 15 years

Actions:

- L2.1 Develop a Transit Center for Forney, potentially located south of UPRR along a new roadway extending between Gateway Boulevard and Las Lomas Parkway.
- L2.2 Develop a Transit Center for Terrell, potentially located south of UPRR along near the existing historic depot building that houses Star Transit administrative staff.
- L2.3 Contract for commuter bus services and plan the services.

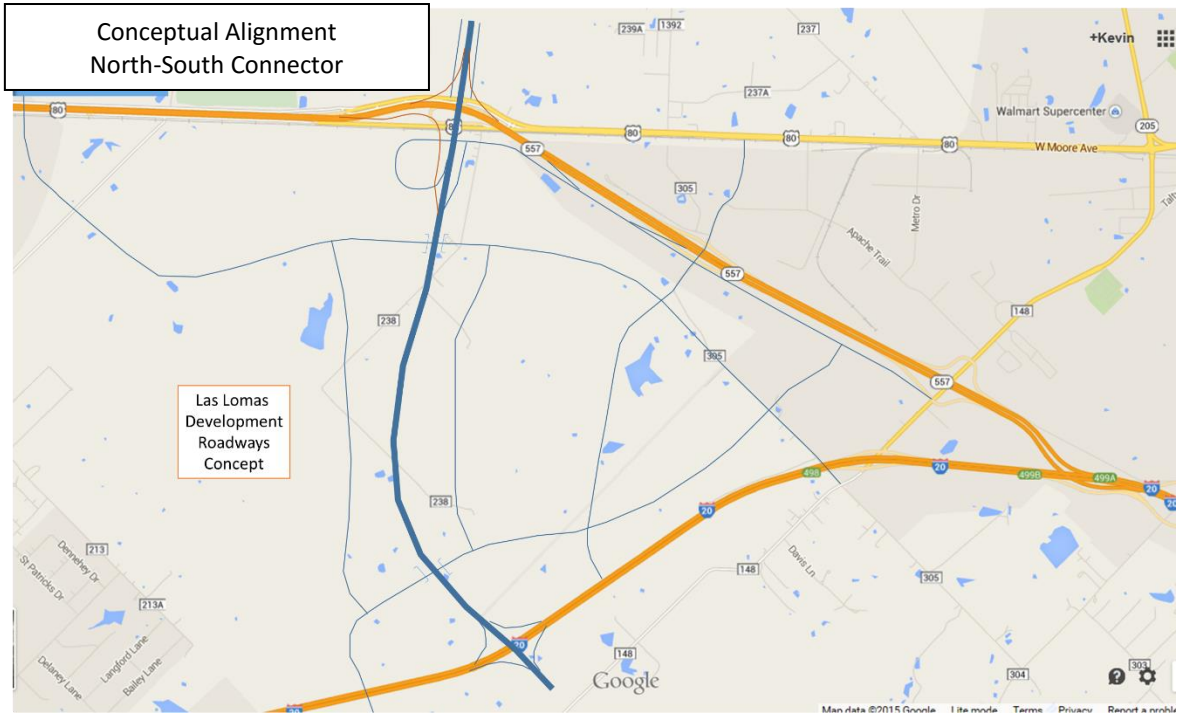
Expected cost of Implementation: $25 to 40 Million

L3. North-South Connector

Issue: Collaboration with Rockwall County will be needed to accomplish the functional intent of creating a north-south passageway east of Lake Ray Hubbard that would extend, as a minimum, between I-30 and I-20. Between US 80 and I-20, the Las Lomas development masterplan has incorporated an alignment of a major north-south roadway. Subsequent extension of the north-south connector south of I-20 to US 175 and SH 34 would also have regional significance and provide passageway for more direct movement of goods and materials in this region.
Urgency: Within next 10 to 20 years
Actions:

- L3.1 Plan and obtain environmental clearance for the corridor.
- L3.2 Purchase needed rights-of-way.
- L3.3 Design and construct the segment north from US 80 to Rockwall County, in partnership with Rockwall County.
- L3.4 Design and construct the segment south from US 80 to I-20, in partnership with the Las Lomas development.

Expected cost of Implementation: TBD



L4. US 80 Realignment from Near UPRR Underpass via CR 309 to I-20

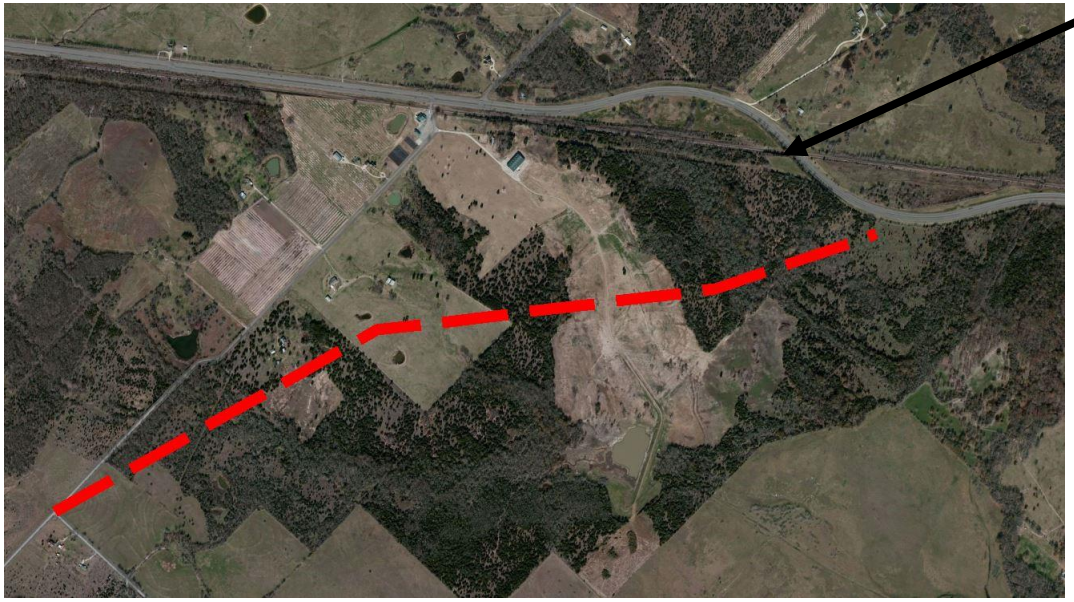
Issue: The existing underpass of the UPRR has a posted vertical clearance of only 13'-9". This height is less than the 14'-0" maximum height of truck without requiring special permits. Due to the elevation of the underpass in relation to nearby New Terrell City Lake, this underpass should be eventually replaced with an overpass, as proposed in the Kaufman County Thoroughfare Plan. Re-routing US 80 via CR 309 to I-20 will provide an alternate route for trucks. The alternate route will also help to divert truck and automobile traffic from passing through the central area of Terrell to continue east-west along US 80.

Urgency: As safety funding is available, within the next 10 to 15 years

Actions:

- S4.1. Prepare schematic design and environmental clearance for a preferred alignment
- S4.2 Acquire ROW for the connection of US to CR 309
- S4.3 Design and construct the connection of US 80 to CR 309 as a 4-lane roadway
- S4.4 Design and construct the widening of CR 309 to provide 4 lanes from US 80 to the I-20 interchange.
- S4.5 Post truck clearance warning signs in advance of RR underpass.

Expected cost of Implementation: $90 Million to 100 Million



L5. Extend Pinson Road over UPRR and Tie to Main Street

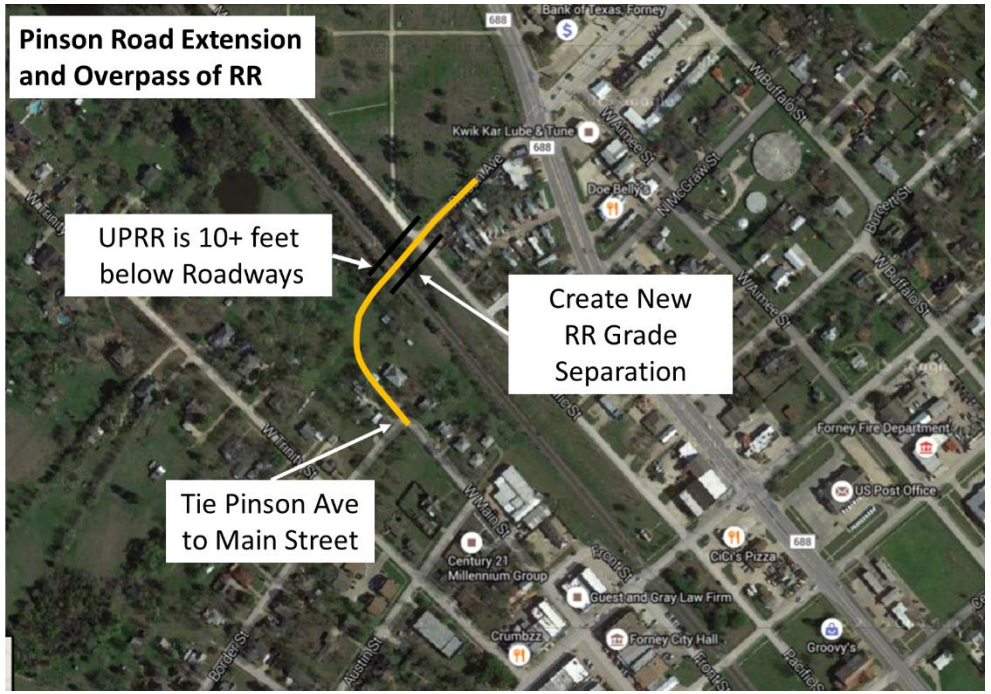
Issue: The UPRR tracks are depressed several feet below the street level at the end of Pinson Road at Pacific Street, which would facilitate creation of a grade separated crossing of UPRR near Downtown Forney. The roadway would need to begin climbing immediately west of Broad Street to cross over Pacific Street and UPRR, and then would return back to grade in time to align with an extension of Main Street, connecting to Downtown.

Urgency: Within next 10 to 15 years

Actions:

- L4.1 Enter into an agreement with UPRR to allow the grade separated crossing.
- L4.2 Purchase needed rights-of-way control of access along Pinson Road.
- L4.3 Purchase the needed properties south of UPRR to tie to Main Street.
- L4.4 Design and construct the extension of Pinson Road and bridge over UPRR.

Expected cost of Implementation: $10 to 15 Million



Chapter 5 – Implementation Plan

An implementation plan is formulated to allow for strategic and opportunistic planning for, designing and constructing the recommended transportation improvements for the US 80 corridor. The 10-year and 20-year transportation improvement plans for US 80 propose numerous projects that will take many years to implement and will require many incremental steps and stages of development to secure the partnerships, environmental clearance, rights-of-way and funding to advance the projects towards completion. The following is a recommended implementation plan to follow over the next several years.

Within the First 4 years of the Plan (FY 2017-FY 2020)

1. Collaborate with TxDOT to approve, fund and implement strategic short range safety projects.
    a. Apply for TxDOT safety improvement funding for projects to the extent possible.
    b. Secure state, county and local budget amounts for funding of safety improvement projects S1, S2 and S3 as first priorities, with S4 as secondary priority.
    c. Design and construct safety projects S1, S2, S3 and, soon thereafter, S4.
2. Collaborate with TxDOT to implement short range operational performance improvements at key interchanges/intersections.
    a. Develop an agreement with TxDOT and other entities for the funding of strategic interchange improvement projects.
    b. Complete the currently programmed improvements to the US 80 EB service road and ramps between FM 460 and FM 740.
    c. Complete the currently programmed improvements to the lane channelization of the US 80 service roads at FM 548.
    d. Task F2.1a. Upgrade the interchange of US 80 service road with FM 460 in Forney to provide roundabouts as an interim improvement and in preparation for widening of the FM 460 bridge over US 80.
    e. Task F2.1b. Widen the FM 460 bridge over US 80 and improve the service road intersections.
    f. Task F3.1. Upgrade the interchange of US 80 service road with FM 740 in Forney to channelize the jug handle intersections at the service roads.
    g. Task F3.2. Purchase required additional property for a new ramp connection from SB FM 740 to WB US 80 service road.
3. Purchase ROW for roadways and roadway realignment projects
    a. Task F5.1. Develop conceptual roadway realignment for CR 212. Acquire ROW and realign CR 212 to connect to the bridge at CR 217.
4. Project F6. Reconstruct the interchange at Windmill Farms near Forney to facilitate local development access and circulation across US 80 from either side of the highway.
5. Develop an agreement with UPRR for various improvements in the US 80 corridor, including:
    a. Project F3. Creation of a grade separation of FM 548 under UPRR in Forney.
    b. Project F5. Relocate the at-grade railroad crossing of CR 212 to tie to the reconstructed bridge at CR 217 over US 80 in Forney
    c. Project L5. Extend Pinson Road southward over UPRR and tie to Main Street.

6. Prepare Planning and Environmental Linkages studies for the following projects:
    a. Task F1.1. Conduct planning and environmental studies Widen US 80 to 6 Lanes and add WB Service road between FM 640 and SH 190. This improvement will require adding structural supports into the spillway from Lake Ray Hubbard and re-channelization of the drainage channels paralleling the service road.
    b. Task F7.1 Conduct planning and environmental studies to identify preferred alignment and costs for the realignment and extension of FM 1392 in Terrell between SH 205 and US 80.
    c. Project L3.1. Conduct planning and environmental studies to identify preferred alignment and costs for the North-South Connector.
7. Prepare for a County Bond Election to implement Short Range improvements for the US 80 Corridor
    a. Collaborate with the cities of Forney and Terrell for joint funding agreements of projects within their jurisdiction
    b. Attain concurrence on projects to place in the Bond program

Within the Second 4 Years of the Plan (FY 2021-FY 2024)

1. Collaborate with TxDOT to design and construct operational performance improvements at key arterial interchanges:
    a. Develop an agreement with TxDOT and other agencies for the joint funding of strategic interchange improvement projects.
    b. Task F3.3. Build the ramp connection from SB FM 740 to WB US 80 service road.
    c. Project F5. Reconstruct the bridge at CR 217 over US 80 in Forney to facilitate egress from the Orange County Container Group facility and local development access and circulation across US 80 from either side of the highway.
    d. Project F6. Reconstruct the interchange at Windmill Farms near Forney to facilitate local development access and circulation across US 80 from either side of the highway.
2. Develop an agreement with UPRR for various improvements in the US 80 corridor, including:
    a. Project F3. Creation of a grade separation of FM 548 under UPRR in Forney.
    b. Project F5. Relocate the at-grade railroad crossing of CR 212 to tie to the reconstructed bridge at CR 217 over US 80 in Forney
    c. Project L5. Extend Pinson Road southward over UPRR and tie to Main Street.
3. Prepare Planning and Environmental Linkages studies for the following projects:
    a. Project F1. Widen US 80 to 6 Lanes and add WB Service road between FM 640 and SH 190. This improvement will require adding structural supports into the spillway from Lake Ray Hubbard and re-channelization of the drainage channels paralleling the service road.
    b. Project F7. Realign and Extend FM 1392 in Terrell. The roadway will need to extend along new ROW between SH 205 and US 80.
    c. Project L3. North-South Connector.