# Draft Environmental Assessment

## Farm-to-Market Road (FM) 455, Dallas District

From West of FM 2450 to East of Marion Road
CSJ Number 0816-02-072
Denton County, Texas
July 2017

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

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## List of Acronymns

| | |
|---|---|
| ADA | American with Disabilities Act |
| ADT | annual daily traffic |
| APE | Area of Potential Effects |
| BC | box culvert |
| BG | block group |
| BMPs | Best Management Practices |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CIA | Community Impacts Assessment |
| CO | Carbon Monoxide |
| CWA | Clean Water Act |
| EA | Environmental Assessment |
| EJ | Environmental Justice |
| ENV | TxDOT Environmental Affairs Division |
| EO | Executive Order |
| EPA | U.S. Environmental Protection Agency |
| EPIC | Environmental Permits, Issues, and Commitments |
| ESA | Endangered Species Act |
| FAA | Federal Aviation Administration |
| FEMA | Federal Emergency Management Agency |
| FM | Farm-to-Market Road |
| FHWA | Federal Highway Administration |
| FONSI | Finding of No Significant Impact |
| FPPA | Farmland Protection Policy Act |
| FRSTX | Facility Registry System |
| GPH | gallons per hour |
| GWCC | Groundwater Contamination Cases |
| HPAs | High Probability Areas |
| IH | Interstate Highway |
| IHWCA | Industrial and Hazardous Waste Corrective Action Sites |
| ISA | initial site assessment |

| | |
|---|---|
| LBP | Lead-Based Paint |
| LEP | Limited English Proficiency |
| LPST | Leaking Petroleum Storage Tanks |
| LWCF | Land and Water Conservation Fund |
| MBC | Multiple Box Culvert |
| MOU | Memorandum of Understanding |
| MS4 | Municipal Separate Storm Sewer System |
| MSAT | Mobile Source Air Toxics |
| MTP | Metropolitan Transportation Plan |
| N/A | Not applicable |
| NCTCOG | North Central Texas Council of Governments |
| NEPA | National Environment Policy Act |
| NHPA | National Historic Preservation Act |
| NOI | Notice of Intent |
| NOV | Notice of Violations |
| NRCS | Natural Resources Conservation Service |
| NRHP | National Register of Historic Places |
| NWP | Nationwide Permit |
| OTHM | Official Texas Historic Marker |
| PA | Programmatic Agreement |
| PCN | Preconstruction Notification |
| PM | particulate matter |
| PST | Petroleum Storage Tanks |
| PWC | Parks and Wildlife Code |
| RCP | Reinforced Concrete Pipe |
| ROE | right-of-entry |
| ROW | right-of-way |
| RPST | registered petroleum storage tank |
| SGCN | Species of Greatest Conservation Need |
| SHPO | State Historic Preservation Officer |
| SW3P | Storm Water Pollution Prevention Plan |
| TCEQ | Texas Commission on Environmental Quality |
| TERP | Texas Emissions Reduction Plan |
| THC | Texas Historical Commission |
| TIP | Transportation Improvement Program |
| TPDES | Texas Pollutant Discharge Elimination System |
| TPWD | Texas Parks and Wildlife Department |
| TSS | Total Suspended Solids |
| TxDOT | Texas Department of Transportation |
| TXNDD | Texas Natural Diversity Database |
| USACE | U.S. Army Corps of Engineers |
| USCG | U.S. Coast Guard |
| USFWS | U.S. Fish and Wildlife Service |
| USTs | Underground Storage Tanks |

# 1. Introduction

The Texas Department of Transportation (TxDOT) is preparing an Environmental Assessment (EA) for the proposed improvements to Farm-to-Market Road (FM) 455 from west of FM 2450 to east of Marion Road in the City of Sanger, Denton County, Texas (**Appendix A**). The purpose of the EA is to study the potential environmental consequences of the proposed project and determine whether such consequences warrant preparation of an Environmental Impact Statement. The EA is prepared to comply with TxDOT's environmental review rules and the National Environment Policy Act (NEPA). The EA will be made available for public review and following the comment period, TxDOT will consider any comments submitted. If TxDOT determines that there are no significant adverse effects, it will prepare and sign a Finding of No Significant Impact (FONSI), which will be made available to the public.

# 2. Project Description

## 2.1. Existing Facility

FM 455 is an existing undivided two-lane roadway with 11-foot wide travel lanes and no shoulders. The existing right-of-way (ROW) width varies from 50 to 170 feet wide with a usual ROW width of 90 feet. There are currently no bicycle or pedestrian facilities associated with FM 455 within the project limits. Refer to **Appendix B** for the Project Photos and **Appendix D** for the existing typical sections.

## 2.2. Proposed Project

The proposed project would reconstruct and widen FM 455 from west of FM 2450 to east of Marion Road, for an approximate distance of 5.53 miles. The proposed ROW width varies from 104 to 225 feet wide with a usual ROW width of 130 feet. The proposed project would require the acquisition of approximately 38.5 acres of new (additional) ROW and 2.1 acres for proposed easements. Proposed improvements would involve the expansion of FM 455 from a two-lane rural highway to a four-lane urban highway (four through lanes with a Center Two-Way Left Turn Lane [CTWLTL]). The expansion would consist of one 12-foot wide travel lane and one 14-foot wide outside shared-use lane with 1.5-foot wide outside curb offsets in each direction with a 17-foot wide CTWLTL. In the vicinity of Interstate Highway 35 (IH 35), the roadway would include a zero to nine-foot wide raised central median on each side of IH 35. Each raised central median would be preceded by an 11 to 19-foot wide taper from the flush median section (CTWLTL) to the raised central median section. The raised central medians and tapered sections would control turning movements along FM 455 at IH 35. Two bridges, one over a tributary to Clear Creek and one over Duck Creek, would be reconstructed to accommodate the wider roadway.

Bicycle and pedestrian facilities would be constructed as part of the proposed project. Bicycle traffic would be accommodated with 14-foot wide outside shared-use lanes with 1.5-foot wide outside curb offsets. Five to eight-foot wide American with Disabilities Act (ADA) compliant sidewalks would be included along FM 455 throughout the entire project limit.

Logical termini for the proposed improvements to FM 455 are from FM 2450 to Marion Road. Within the logical termini, FM 455 is of independent utility because the proposed improvements can be accomplished without additional improvements in the proposed project area. The project limits encompass the entire length of the project in which construction would take place and account for transitions into the existing roadway. Refer to **Appendix A** for the Project Location Map, **Appendix C** for the Schematics and **Appendix D** for the proposed typical sections.

The estimated total cost for the proposed project is $61.5 million. Approximately 80 percent of the total cost would be federally funded and approximately 20 percent would be state funded.

Both the Mobility 2040 Metropolitan Transportation Plan (MTP) and the 2017-2020 Transportation Improvement Program (TIP) were initially found to conform to the Texas Commission on Environmental Quality (TCEQ) State Implementation Plan (SIP) by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) on September 7, 2016, and December 19, 2016, respectively; however, the proposed project is not consistent with this conformity determination because the construction phase is not included in the applicable year of the TIP/Statewide TIP. TxDOT will not take final action on this environmental document until the proposed project is consistent with a currently conforming MTP and TIP. Copies of the MTP and TIP pages are included in **Appendix E**.

# 3. Purpose and Need

## 3.1. Need

The proposed project is needed because the existing FM 455 within the project limits (a) fails to meet current design standards because the existing facility does not have turn lanes and lacks shoulders and (b) is inadequate to meet current and future traffic volumes, resulting in congestion and reduced mobility.

## 3.2. Supporting Facts and/or Data

According to Census 2000, the population of the City of Sanger was 4,534. In 2010, the Census reported a total population of 6,916, an increase of 53 percent over the 10-year period. The U.S. Census Bureau's *Annual Estimates of the Resident Population* estimates the 2015 population for the City to be 7,747, an increase of 12 percent over the previous five years. According to the City of Sanger's *Comprehensive Land Use Plan* (adopted November 2007), the City of Sanger could expect a population of over 16,000 by the year 2030.

The demand along FM 455 within the project limits has grown substantially over the years and is expected to grow from 15,400 annual daily traffic (ADT) in 2020 to 21,400 ADT in 2040; an increase of 39 percent.

TxDOT's *Congestion 2012 Map* identifies FM 455, from Sam Bass Road to FM 2164, as moderately congested during the peak hour. On the *Congestion 2032 Map*, FM 455, from Burke Street to Sam Bass Road and from Indian Lane to US 377, is identified as moderately congested during the peak hour. The portion of FM 455 between Sam Bass Road and Indian Lane is identified as heavily congested during the peak hour.

Currently, congestion is particularly heavy between Chisholm Trail Elementary School to the west of IH 35 and Sanger High School to the east of IH 35. This activity was observed during the October 5 and 6, 2011, and February 18, 2016 site visits. As shown in **Table 1** below, the 2014 *Urban Saturation Maps* from TxDOT identified much higher traffic volumes along FM 455 in the vicinity of IH 35 than the rural portions of FM 455. The additional travel lane in each direction would help alleviate these congestion issues.

**Table 1: Traffic Volumes**

| Location along FM 455 | AADT |
|---|---|
| Just east of FM 2450 | 3,614 |
| Just east of Acker Street | 8,172 |
| Just east of IH 35 | 9,462 |
| Just east of N. 5th Street | 7,595 |
| Just east of Marion Road | 3,783 |

*Source: 2014 Dallas District Urban Traffic Map (2015), http://ftp.dot.state.tx.us/pub/txdot-info/tpp/traffic_counts/saturation/2014/dal-base.pdf.*

### 3.3. Purpose

The purpose of the proposed project is to bring the roadway up to current design standards, and to reduce congestion and improve mobility along FM 455 within the project limits. The widened FM 455 would help alleviate the congestion issues. The proposed improvements will address congestion issues through the corridor and enhance mobility.

## 4. Alternatives

This section discusses the following alternatives (1) Build Alternative, (2) No-Build Alternative, and (3) Preliminary Alternatives Considered but Eliminated from Further Consideration.

### 4.1. Build Alternative

As currently proposed, the Build Alternative (previously described in **Section 2.2**) would involve the expansion of FM 455 from a two-lane rural highway to a four-lane urban highway with bike and pedestrian facilities. The Build Alternative would meet the proposed project's purpose and need by increasing capacity to accommodate current and future projected traffic volumes and therefore facilitating congestion management and improving mobility in the proposed project area. These proposed improvements would help the roadway meet current design standards.

The major design features of the proposed project include:

- The construction of an additional lane in each direction of FM 455 with curb and gutter. The proposed design will include a 14-foot wide outside lane designed as a shared-use lane. The construction will also include five-foot wide sidewalks (eight-foot wide across bridges) with a three-foot wide offset from the outside curb throughout the length of the project.
- Two existing bridge structures, one over a tributary to Clear Creek and one over Duck Creek, will be removed and replaced with new bridge structures.
- The proposed project will incorporate a four-lane section with curb and gutter (four through lanes with a CTWLTL) for the length of the proposed project, except for in the vicinity of IH 35. The portion in the vicinity of IH 35 would be constructed as a four-lane divided roadway with a raised central median, tapered sections, and curb and gutter.
- The horizontal alignment of FM 455 on the eastern end of the proposed project near Marion Road will be redesigned utilizing a larger horizontal radius to provide a larger curve and increased safety for the traveling public.
- Currently existing FM 455 has two vertical curves that do not provide adequate sight distance for users of the facility. The vertical curves, located approximately 1,700 feet west of Sam Bass Road and at Metz Road, will be redesigned by flattening out the vertical curves to improve safety.

The proposed project is consistent with local land use plans and policies in the area and would improve mobility and reduce congestion in the proposed project area and facilitate reliable emergency response.

### 4.2. No-Build Alternative

The No-Build Alternative was considered in assessing improvements to FM 455. This alternative was not considered viable because the existing facility does not meet current TxDOT design standards, i.e., no turn lanes, no shoulders. The No-Build Alternative would not meet the purpose and need of the project. The projected growth in traffic demand would exceed the capacity of the FM 455 roadway without any improvements. Under the No-Build Alternative, the integrity of the roadway structure would continue to decline. Therefore, the Build Alternative is the Preferred Alternative. The No-Build Alternative is evaluated throughout the EA for comparison purposes.

### 4.3. Preliminary Alternatives Considered but Eliminated from Further Consideration

A preliminary alternative which included a 17-foot wide raised median with 11-foot wide left-turn bays at specific cross streets in the rural portion of the proposed project was considered but eliminated from further consideration.

## 5. Affected Environment and Environmental Consequences

In support of this EA, the following technical reports and documents were prepared:

- Air Quality Assessment Technical Report
- Archeological Background Study
- Archeological Survey Report
- Biological Evaluation Form and Technical Report
- Community Impacts Assessment Technical Report
- Hazardous Materials Initial Site Assessment Report
- Project Coordination Request for Historical Studies Project
- Report for Historical Studies Survey
- Indirect and Cumulative Impacts Analysis
- Traffic Noise Technical Report
- Water Resources Technical Report

The technical reports and documents may be inspected and copied upon request at the TxDOT Dallas District Office, 4777 E. Highway 80, Mesquite, TX 75150.

The following sub-sections identify the environmental consequence of the Build and No-Build Alternative on each resource.

### 5.1. Right-of-Way/Displacements

**Build Alternative:** The Build Alternative would require the acquisition of approximately 38.5 acres of new (additional) ROW and 2.1 acres of proposed easements (see **Appendix C: Schematics**). The additional ROW and easements would be acquired from 139 parcels. There are 25 properties with 35 potential structural displacements associated with the Build Alternative, which include nine residential structures, 17 commercial structures, and nine "other" structures (sheds, barns, and storm cellar). Refer to the *Community Impacts Assessment Technical Report* for the detailed analysis of the potential displacements associated with the Build Alternative.

The following are the avoidance, minimization, or compensatory mitigation features or mitigations conducted/analyzed for the Build Alternative:

- Alterations to previous alignments resulted in the avoidance of two residential displacements on Kildee Trail.
- Potential displacements were minimized by avoiding impacts to structures where possible and using available vacant or open land where practicable. Constraints were

mapped and used in the planning process to avoid important resources such as cemeteries, places of worship, public facilities, and other various resources.

- TxDOT offers relocation assistance to all individuals, families, businesses, farmers, ranchers and non-profit organizations displaced as a result of a state highway or other transportation project. In order to assist those who are required to move, TxDOT provides, through its relocation program, payments and services to aid in movement to a new location. This assistance applies to tenants as well as owners occupying the real property for an orderly, timely and efficient move. A relocation counselor would contact the affected property owners and tenants.
- ROW acquisition and relocation would be conducted in accordance with the Federal Uniform Relocation and Real Property Acquisition Policies Act of 1970 (Uniform Act).

No-Build Alternative: Under the No-Build Alternative, no project-related ROW would be acquired and no displacements would occur.

## 5.2. Land Use

Currently, land use along FM 455 is a mixture of single-family residential and commercial/retail properties. Large tracts of structurally undeveloped land are located in the rural, western portion of the project and in the vicinity of the eastern project limit. Many of these tracts are in agricultural production or used for related purposes such as livestock grazing or horse and alpaca farms.

All property within the city of Sanger is zoned. The *2012 Official Zoning Map for Sanger, Texas* represents the legal zoning classifications of all property within the city, and is enforceable as provided by state statute. The zoning map shows that there is no zoning from FM 2450 to Metz Road because the area adjacent to the proposed project is not within the Sanger city limits; however, it is within the city's extraterritorial jurisdiction. From Metz Road east to IH 35, the areas adjacent to the project are zoned Business District, Single-Family Residential, or Floodplain. From IH 35 east to 1st Street, the areas adjacent to the project are zoned Business District, Industrial, Multi-Family Residential, or Floodplain. From 1st Street to east of Marion Road, the areas adjacent to the project are zoned Business District, Floodplain, Industrial, and Single-Family Residential. The current zoning of developed and vacant land in the city does not consistently conform to the proposed land uses in the comprehensive plan.

According to the City's *Future Land Use Map* (2007), the future land use along FM 455 from FM 2450 to just west of Metz Road is predominately designated as Rural Residential with Open Spaces and Flood Areas. Commercial hubs are shown at the FM 455 intersections with FM 2450 and Sam Bass Road. From Metz Road to just east of Marion Road, the *Future Land Use Map* shows the primary land use designated as Commercial.

Build Alternative: The approximately 38.5 acres of new ROW and 2.1 acres of proposed easements currently designated as residential, commercial, agricultural and undeveloped land would be converted to transportation ROW.

The proposed ROW acquisition and associated structural displacements could influence land use changes along the proposed project corridor. For example, should a residential or commercial structure be displaced, the remaining property may no longer identify with that land use, may be altered, or remain vacant.

The land use changes associated with the proposed project do not conflict with the goals of the City of Sanger's *Comprehensive Land Use Plan*, would not delay or interfere with any other planned improvements, and is consistent with applicable laws; therefore, no mitigation is warranted.

No-Build Alternative: Under the No-Build Alternative, the additional ROW would not be obtained and there would be no FM 455-related land use impacts.

## 5.3. Farmlands

Observations made during the site reconnaissance on October 5 and 6, 2011 and February 18, 2016 revealed that active agricultural lands exist adjacent the proposed project.

The Natural Resources Conservation Service (NRCS) Web Soil Survey was used to determine the soil types present within the proposed project area. Soils determined to be within the existing and proposed ROW, and proposed easements are listed in **Table 2**.

**Table 2: Soil Types within Proposed Project Area**

| Soil Type | Farmland Classification |
|---|---|
| Aledo association, undulating | Not prime farmland |
| Altoga silty clay, 5 to 8 percent slopes | Not prime farmland |
| Bolar clay loam, 3 to 5 percent slopes | Farmland of statewide importance |
| Burleson clay, 1 to 3 percent slopes | All areas are prime farmland |
| Frio silty clay, 0 to 1 percent slopes, occasionally flooded | All areas are prime farmland |
| Frio silty clay, frequently flooded | Not prime farmland |
| Lewisville clay loam, 1 to 3 percent slopes | All areas are prime farmland |
| Lewisville clay loam, 3 to 5 percent slopes | All areas are prime farmland |
| Lindale clay loam, 1 to 3 percent slopes | All areas are prime farmland |
| Medlin-Sanger stony clay, 5 to 15 percent slopes | Not prime farmland |
| Ponder loam, 1 to 3 percent slopes | All areas are prime farmland |
| Sanger clay, 1 to 3 percent slopes | All areas are prime farmland |
| Sanger clay, 3 to 5 percent slopes | All areas are prime farmland |
| Sanger-Urban land complex, 1 to 5 percent slopes | Not prime farmland |
| Slidell clay, 1 to 3 percent slopes | All areas are prime farmland |
| Somervell gravelly loam, 1 to 5 percent slopes | Not prime farmland |
| Wilson clay loam, 1 to 3 percent slopes | Farmland of statewide importance |
| Wilson-Urban land complex, 0 to 2 percent slopes | Not prime farmland |

*Source: NRCS Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed April 14, 2015.*

Build Alternative: In compliance with the Farmland Protection Policy Act (FPPA) of 1981, Farmland Conversion Impact Rating Form NRCS-CPA-106 was completed because the proposed project would convert farmland subject to FPPA to a non-agricultural, transportation use. Because the site assessment score in Part VI of the form was less than 59 (actual score is 47), the project does not require coordination with the NRCS. Refer to the supporting documentation for the *Biological Evaluation Form* for a copy of Form NRCS-CPA-106.

Farmland impacts would be limited to areas directly adjacent to the existing FM 455 project corridor and would not result in the division or separation of existing agricultural land. Farmlands would continue to function as they do under existing conditions; therefore, encroachment-alteration effects stemming from farmland impacts are not anticipated as a result of the Build Alternative.

It is not possible to fully mitigate for the loss of agricultural acreage without bringing non-farmed land into production.

No-Build Alternative: Under the No-Build Alternative, the additional ROW would not be obtained and there would be no FM 455-related farmland impacts.

## 5.4. Utilities/Emergency Services

The existing utilities along the proposed project include water lines, sanitary sewer lines, and overhead electric. The proposed project area is currently served by the Sanger Volunteer Fire Department and Sanger Police Department. However, the fire department and the police station are not located along FM 455 nor are there any hospitals in the City of Sanger. The closest hospital is located approximately 10 miles south along IH 35 in the City of Denton.

Build Alternative: At this time, utility adjustments are anticipated, but the exact locations of utilities have not yet been determined. Detailed information on the utility lines would be evaluated during the detailed design phase of the project in order to evaluate the need to integrate the proposed improvements and utility systems into the design plans. Coordination with utility owners would take place during the detailed design phase.

For emergency services, project-related delays would be anticipated during construction; however, every reasonable effort would be made to minimize delays. Roadway closures are not anticipated; however, traffic patterns would be temporarily affected with alternating lane closures, temporary reductions in lane widths, and reduction in speed. During construction, temporary lane closures would be kept to a minimal length and time. Access would be maintained to adjacent properties during construction.

Required utility adjustments would occur prior to or during construction of the proposed project. Given that this issue is limited to the construction phase and would be confined to the project area, encroachment-alteration effects are not applicable.

Following completion of the proposed project, emergency services would have an expanded, more efficient facility to use in the performance of their duties resulting in faster response times which is crucial for emergencies that require an immediate response.

The adjustments and relocation of any utilities would be managed so that no substantial interruptions would occur. For emergency services, after construction is complete, emergency response times are expected to be lower than response times currently experienced because emergency services would have an expanded, more efficient facility to use in the performance of their duties. The proposed project would facilitate reliable emergency response.

No-Build Alternative: Under the No-Build Alternative there would be no project-related impacts to utilities. Emergency service response would continue to be hindered by heavy congestion and unreliable travel times associated with congestion.

## 5.5. Bicycle and Pedestrian Facilities

Build Alternative: In accordance with TxDOT's policy for bicycle and pedestrian accommodation and a federal policy statement on Bicycle and Pedestrian Accommodations Regulations and Recommendations by the U.S. Department of Transportation signed on March 11, 2010, the inclusion of bicycle and pedestrian facilities would be considered as part of the proposed project. Bicycle traffic would be accommodated with 14-foot wide outside shared-use lanes with 1.5-foot wide outside curb offsets. Five to eight-foot wide ADA-compliant sidewalks would be included along FM 455 throughout the entire project limit.

There is the potential for the proposed project area to experience changes in the mode(s) of transportation utilized by area residents and traffic volumes because residents travelling locally may opt to take advantage of the new bike and pedestrian facilities in lieu of their driving their vehicle.

The addition of bicycle and pedestrian facilities is a positive benefit; therefore, mitigation is not warranted.

No-Build Alternative: Under the No-Build Alternative, bicycle and pedestrian facilities would not be constructed.

## 5.6. Community Impacts

A detailed discussion of community cohesion, access and travel patterns, Environmental Justice (EJ), and Limited English Proficiency (LEP) populations can be found in the *Community Impacts Assessment Technical Report* for the proposed project. The Community Impacts Assessment (CIA) study area, covering 39,182 acres, is comprised of a buffer three miles from the proposed project limits. The three-mile buffer was deemed an appropriate study area because the proposed project is located in a rural area. Extending the buffer out three miles from the project limits likely encompasses the residences of those that utilize FM 455 to reach the City of Sanger, IH 35, and beyond. Those that reside beyond the three-mile buffer likely use other area east-west roadways to reach IH 35, the City of Sanger, and beyond.

The CIA study area is located in northwest Denton County within the City of Sanger. The CIA study area is mostly undeveloped. Development in the western portion of the CIA study area is primarily residential with a vast number of surface wells in the northwestern portion of the CIA study area. The City of Sanger is located somewhat centrally within the CIA study area, and is mostly residential with some commercial/retail, industrial/manufacturing, and community facility development. The northeastern portion of the CIA study area has some residential development while the southeastern portion is mostly undeveloped. Site visits of the CIA study area were conducted on October 5-6, 2011 and February 18, 2016.

In summary, impacts, both positive and negative, to economic, environmental, and social attributes of the proposed project area resulting from the proposed project are anticipated. Local and regional economic growth would be the determining factors in the future development of the area. The steady to improving economy within the CIA study area can be attributed in part to IH 35, which serves as the primary travel corridor for the area, as well as the continually expanding Dallas-Fort Worth Metroplex. According to data from the U.S. Census Bureau, Center for Economic Studies, substantial job growth of 142 percent has occurred between 2002 and 2014 in the CIA study area. Based on the data, it can be assumed that job growth would continue to increase.

### *5.6.1. Environmental Justice*

According to the 2010 Census, the CIA study area is intersected by three tracts, seven block groups (BG), and 532 blocks. Of the 532 blocks, 251 reported a population of zero and are not considered in the analysis. The total population of the project area blocks is 11,935 persons. Of these, 9,530 persons (79.8 percent) are White alone and 2,405 persons (20.2 percent) are minority. Of the minority persons within the project area blocks, 1,831 persons (15.3 percent) are Hispanic or Latino; 266 persons (2.2 percent) are Black or African American alone; 164 persons (1.4 percent) are Two or More Races; 91 persons (0.8 percent) are American Indian and Alaska Native alone; 43 persons (0.4 percent) are Asian alone; nine persons (0.1 percent) are Native Hawaiian and Other Pacific Island alone; and one person (less than 0.1 percent) is Some Other Race Alone.

A review of the 2010-2014 American Community Survey 5-Year Estimates data reveals that the combined estimates for "Poverty Status in the Past 12 Months" from 2010 to 2014 show a percentage of the population living below poverty level status in the surrounding BGs, tracts, city, and county. The median household incomes within the study area BGs range between $49,188 in BG 3 of tract 202.03 and $81,607 in BG 1 of tract 202.03.

Build Alternative: The proposed project would be consistent with Executive Order (EO) 12898 and FHWA Order 6640.23. In 2010, 21 blocks reported populations above 50 percent for minority populations. None of the CIA study area BGs and tracts reported populations above 50 percent

for minority populations. Minority populations exist within the CIA study area; therefore, the CIA study area contains EJ residents.

None of the potential displacements occur within a minority block. Only one minority block (Block 2031 of BG 2, tract 202.03) is located adjacent to the proposed project. This block is bordered by FM 455 to the north; N. Keaton Road to the west; Porter Place to the south; and, Acker Street to the east. This block has a population of three people, two of which are Hispanic or Latino alone and one of which is White alone. Using aerial imagery, there appears to be a single residence within this minority block. While ROW would be acquired from this residential property, no structures would be impacted. The remaining minority blocks are mainly located in Sanger, south of FM 455/east of IH 35. The minority blocks would have improved access and mobility throughout the region and would not be isolated. Air quality would be improved within the region and this would benefit the health for all blocks (minority and non-minority). No other adverse impacts from the Build Alternative such as noise or visual intrusions would occur to the minority blocks. In addition, no concentrations of low-income populations (BGs) were identified.

Several areas would require ROW and these impacts would not be limited to areas with minority populations. Benefits to all populations, including EJ persons, from the proposed project would occur by providing an improved east/west route in Sanger and northern Denton County, relieving traffic from existing roadways in the surrounding area as vehicles utilize FM 455, and providing improved mobility which benefits the economy by supporting the movement of goods and services throughout the proposed project area and surrounding area. In summary, the Build Alternative would not cause disproportionately high and adverse impacts on any minority or low-income populations in accordance with EO 12898.

EJ populations would realize the same benefits as non-EJ populations: reduced congestion and improved mobility. The improved mobility and reduced congestion would allow for more efficient travel through the surrounding area. No adverse encroachment-alteration effects on EJ populations are anticipated.

Disproportionately high and adverse impacts on any minority or low-income populations are not anticipated; therefore, mitigation measures for EJ populations were not considered.

No-Build Alternative: Under the No-Build Alternative, there would be no impact, adverse or beneficial, to environmental justice populations.

### *5.6.2. Limited English Proficiency*

The LEP populations in the individual BGs within the CIA study area range from 0.4 percent to 12.7 percent. Of the 13,475 people age five years and older within the BGs, approximately 5.7 percent (774 people) of the population speak English less than “very well,” which is comprised of 5.1 percent who speak Spanish and 0.6 percent who speak Asian and Pacific Island languages. Persons who speak English less than “very well” that speak Indo-European languages and Other languages were not identified within the CIA study area BGs. A windshield survey during field visits, conducted October 5-6, 2011 and February 18, 2016, indicated signage within the CIA study area is primarily presented in English. Signage in a non-English language was not observed.

Build Alternative: Reasonable steps have been and would continue to be taken to ensure LEP persons have meaningful access to the programs, services, and information TxDOT provides. Persons who have special communication or accommodation needs, or need an interpreter, have been, and will continue to be, encouraged to contact the TxDOT Dallas District Public Information Office for assistance. Therefore, the requirements of EO 13166, pertaining to LEP, appear to be satisfied.

LEP populations would realize the same benefits as non-LEP populations: reduced congestion and improved mobility. The improved mobility and reduced congestion would allow for more

efficient travel through the surrounding area. No adverse encroachment-alteration effects LEP populations are anticipated.

TxDOT ROW publications in Spanish were provided to interested Public Meeting attendees. All Legal Notices published in English language newspapers provided contact information for persons interested in attending the meetings who had special communication/accommodation needs. A Public Hearing is anticipated to be held in 2017. The previously discussed accommodations would be repeated for the Public Hearing.

**No-Build Alternative**: Under the No-Build Alternative, there would be no impacts to LEP populations as a result of the implementation of the proposed project.

### *5.6.3. Community Cohesion*

**Build Alternative**: The proposed improvements would not affect, separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups within or adjacent to the proposed project area. No residential neighborhood would be separated or divided by the proposed project because it is the widening of an existing facility. Positive impacts to residential communities would include improved mobility and accessibility throughout the CIA study area and to surrounding communities. Community cohesion may also be enhanced due to the introduction of pedestrian and bicycle facilities along the entire length of the proposed project. This would allow non-motorized travelers to move more safely along this section of FM 455. The proposed project would not negatively impact public or community facilities in the CIA study area nor would it restrict or alter access to any existing public or community services, businesses, commercial areas, or employment centers. The proposed project would provide a positive impact to the short-term employment opportunities in the area and future development of facilities that would provide long-term employment opportunities. In the long term, the entire community would benefit from the proposed project with improved mobility and connectivity to surrounding areas. Negative impacts to residential areas associated with the proposed project could be attributed to traffic noise impacts, changes in aesthetics, and/or temporary construction impacts. Project area residents not located directly adjacent to FM 455 may experience negative impacts associated with temporary construction impacts of the proposed improvements. Motorists travelling within or through the proposed project area may alter their existing routes to utilize parallel side streets in order to avoid FM 455 construction areas. This could lead to a temporary increase in traffic volumes on side streets.

Direct impacts to community cohesion are not anticipated. Encroachment-alteration effects could include improved connectivity, due to the introduction of shared-use lanes and sidewalks, between rural areas and central Sanger for residents and non-residents that utilize non-motorized transportation. On a negative side, the improved connectivity may leave current residents with the concern that they are losing their rural, “country living” environment.

Negative impacts to community cohesion are not anticipated; therefore, mitigation measures for community cohesion were not considered.

**No-Build Alternative**: Under the No-Build Alternative, there would be no impacts to community cohesion associated with the proposed project.

### *5.6.4. Access and Travel Patterns*

**Build Alternative**: The proposed project would increase roadway capacity, improve mobility in the project area, and would potentially alter travel patterns in the CIA study area and region. The proposed project would provide improved, safer access to currently undeveloped land within the project corridor, potentially influencing the introduction of new development within the proposed project area. The additional capacity and CTWLTL would decrease congestion at the various neighborhood, business, and public facility entrances and cross streets. Implementation of the proposed project would not result in changes of access to/from various roadways traversed by

the proposed alignment. Access to some existing businesses and residences, not displaced/relocated by the proposed project, would also be altered. With the presence of a raised central median and tapered sections in the vicinity of IH 35, access to properties adjacent to FM 455 in this area would be changed. Median cuts would not be constructed at the cross-street and commercial/retail facility driveways in this area to control turning movements along FM 455 at IH 35. Motorists seeking to turn left in front of oncoming traffic to access an adjacent property's driveway in the vicinity of IH 35 would no longer be able to so, but would have to continue and make a U-turn where permissible, then make a right-hand turn into the property or navigate to their destination via nearby city streets or connecting business driveways/parking areas. TxDOT procedures require that access to properties be maintained through at least one access point to the nearest roadway. TxDOT will continue to coordinate with the local government to determine the final raised central median and tapered section locations along FM 455 at IH 35 during the detailed plan preparation phase. The proposed project could also alter travel patterns within the CIA study area and surrounding region. Some area residents may avoid FM 455 in the project area due to poor traffic conditions. Motorists may instead utilize area roadways that parallel FM 455, especially in the vicinity of the FM 455/IH 35 intersection where there may be increased congestion that causes motorists to detour using parallel city streets through residential areas. The proposed improvements would improve traffic flow conditions in the project area and may result in these motorists once again utilizing FM 455.

There is the potential for project area neighborhoods to experience changes in traffic circulation due to motorists altering their commute to utilize the improved roadway, which they may have previously avoided. This could result in increased safety and decreased traffic noise for neighborhood resident's due to the decrease in the number of vehicles. Also, the residents and employees of businesses adjacent to the proposed project would benefit from the proposed project as a result of improved mobility in the area resulting from increased capacity due to widened roadway.

The proposed improvements to FM 455 do not conflict with the goals of the City of Sanger's *Comprehensive Land Use Plan*, would not delay or interfere with any other planned improvements, and are consistent with applicable laws; therefore, no mitigation is warranted.

Efforts would be made to minimize the inconvenience to motorists in the proposed project area during the construction phase.

No-Build Alternative: Under the No-Build Alternative, there would be no impacts to access and travel patterns associated with the proposed project.

## 5.7. Visual/Aesthetics Impacts

FM 455 is an existing undivided two-lane roadway with no shoulders or bicycle/pedestrian facilities within the project limits. Overhead lighting is present along FM 455 between Acker Street and N. 5th Street. Vegetation in the ROW consists primarily of maintained grasses with minimal tree cover located at Clear Creek Tributary 14 and Duck Creek. Aesthetic enhancement of the existing roadway is minimal. The roadway is a dominant visual feature in the proposed project area. Decorative signage and landscaping is located at the intersection of IH 35 and FM 455; however, these features are associated with IH 35 and its parallel frontage roads, not FM 455.

Build Alternative: The proposed project is not anticipated to impact existing landscaping or other aesthetic features. Landscaping would not be included as a part of the proposed project. Existing overhead lighting impacted by ROW acquisition and the widening of the existing roadway would be relocated.

The proposed project entails improvements/widening of an existing visual element (FM 455) rather than introducing a new visual element into the environment; thus, visual encroachment-alteration effects are not anticipated.

The proposed project is not anticipated to adversely affect aesthetics; therefore, mitigation is not warranted.

No-Build Alternative: The No-Build Alternative would not result in FM 455 project-related visual impacts along the existing corridor as the proposed improvements would not be constructed.

## 5.8. Cultural Resources

Cultural resources are structures, buildings, archeological sites, districts (a collection of related structures, buildings, and/or archeological sites), cemeteries, and objects. Both federal and state laws require consideration of cultural resources during project planning. At the federal level, NEPA and the National Historic Preservation Act (NHPA) of 1966, among others, apply to transportation projects such as this one. In addition, state laws such as the Antiquities Code of Texas apply to these projects. Compliance with these laws often requires consultation with the Texas Historical Commission (THC)/Texas State Historic Preservation Officer (SHPO) and/or federally-recognized tribes to determine the project's effects on cultural resources. Review and coordination of this project followed approved procedures for compliance with federal and state laws.

### *5.8.1. Archeology*

The purpose of the archeological investigation is to conduct an inventory or determine the presence/absence of archeological resources (36 Code of Federal Regulations [CFR] 800.4) and to evaluate identified resources for their eligibility for inclusion on the National Register of Historic Places (NRHP), as per Section 106 (36 CRF 800) of the NHPA of 1966, as amended, or as a designated state archeological landmark under the Antiquities Code of Texas (13 Texas Administrative Code 26.12).

In June 2016, AmaTerra conducted an archeological survey along FM 455 from FM 2450 to Marion Road in Denton County, Texas in advance of proposed expansion of that roadway. The project was conducted on behalf of TxDOT to comply with Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas. Work was performed under Antiquities Permit No. 7665. AmaTerra surveyed the entire existing ROW and the proposed new ROW on private property wherever access was available. Archeologists visually inspected the entire Area of Potential Effects (APE) and excavated 86 shovel tests in support of the project. Two new archeological sites were documented: Sites 41DN593 and 41DN594. Both are historic period archeological sites related to Bolivar of the nineteenth and early twentieth centuries. Both are recommended for further National Register eligibility testing along with several other areas in Bolivar that investigators did not have access to. As part of the project, investigators also assessed the Bolivar Cemetery, and found it to have no potential for unmarked graves within the adjacent FM 455 ROW.

AmaTerra was unable to assess several portions of the new proposed ROW where access was not granted and these eight areas, termed High Probability Areas (HPAs), are recommended for further investigation prior to construction. AmaTerra recommends that the project may proceed for all areas assessed with the exception of Sites 41DN593, 41DN594 and the eight HPAs identified in the report. This was a no-collect survey. All project related notes and records will be permanently curated at the Center for Archaeological Studies in San Marcos. The Texas SHPO concurred with TxDOT's recommendation and the concurrence letter can be found in Appendix G.

See the *Archeological Survey for Proposed Improvements along Farm-to-Market (FM) 455* Technical Report for detailed information.

**Build Alternative**: Prior to construction, further investigation and testing of Site 41DN593, Site 41DN594, and the eight HPAs would be conducted to determine National Register eligibility. Section 106 consultation will continue until all requirements under that statute have been fulfilled. In the unlikely event that cultural resources are discovered during construction of the proposed project, TxDOT would immediately initiate cultural resource discovery procedures. All work in the vicinity of the discovery would cease until a specialist from TxDOT and/or the THC could arrive on site and assess the discovery's significance and the need, if any, for additional investigation.

Consultation with federally-recognized Native American tribes was initiated on April 22, 2016. No objections or expressions of concern were received. See **Appendix G** for the tribal coordination documentation.

Potential impacts to archeological resources would be limited to the construction phase of the project and confined to the existing and proposed ROW/easements; thus, encroachment-alteration effects would not occur.

Mitigation efforts will be identified once determination of site(s) eligibility has been made.

**No-Build Alternative**: As construction of the proposed FM 455 project would not occur, there would be no FM 455 project-related impacts on archaeological resources associated with the No-Build Alternative.

### *5.8.2. Historic Properties*

TxDOT-certified historians surveyed the project APE in July 2016. Project historians surveyed the project area for resources built in and before 1974 due to the 2019 letting date. Historians identified 61 historic-age properties. After evaluating the properties for eligibility for listing in the NRHP, an intensive survey was ordered for a c. 1920 farmhouse at 2001 W. Chapman (FM 455) known as the Noah Batis house. The intensive survey recommended a barn on the property as individually eligible for the NRHP (ID No. 26B). A finding of No Adverse Effect was recommended under Section 106, and it was determined that since the proposed project would have no adverse direct or indirect effect on the characteristics for which the NRHP-eligible resource is significant, there would be no use of the NRHP-eligible resource under the U.S. Department of Transportation Act Section 4(f) regulations (23 CFR 774).

See the *Report for Historical Studies Survey* Technical Report for the proposed project and the *Report for Historical Studies Intensive Survey* for the Noah Batis property (ID No. 26) for detailed information.

**Build Alternative**: Implementation of the proposed project would not require the relocation/displacement of any NRHP-eligible structures. Additional ROW would be required from the Noah Batis property (ID No. 26), but the NRHP-eligible barn (ID No. 26B) would not be impacted. Sixteen historic-age structures would potentially be relocated/displaced due to the proposed ROW acquisition and widening of the existing roadway.

Potential impacts to historic properties would be confined to the existing and proposed ROW/easements; thus, encroachment-alteration effects would not occur.

The proposed project is not anticipated to adversely affect historic properties; therefore, mitigation is not warranted.

**No-Build Alternative**: As construction of the proposed FM 455 project would not occur, there would be no FM 455 project-related impacts on historic properties associated with the No-Build Alternative.

## 5.9. DOT Act Section 4(f), LWCF Act Section 6(f) and PWC Chapter 26

**Build Alternative**: The proposed project would not use any lands protected by Section 6(f) of the Land and Water Conservation Fund (LWCF) Act or Parks and Wildlife Code (PWC) Chapter 26. There are no Section 6(f) properties present in the proposed project area.

Section 4(f) protects publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State or local significance, and any land from an historic site of national, State, or local significance. As described in the previous section, one site of potential historic significance are located adjacent to the proposed project: a barn (ID No. 26B) at 2001 W. Chapman (FM 455). An intensive survey of the Noah Batis property (ID No. 26) was conducted and the barn (ID No. 26B) was determined to be individually eligible for the NRHP. A finding of No Adverse Effect was recommended under Section 106, and it was determined that since the proposed project would have no adverse direct or indirect effect on the characteristics for which the NRHP-eligible resource is significant, there would be no use of the NRHP-eligible resource under the U.S. Department of Transportation Act Section 4(f) regulations (23 CFR 774). See **Section 5.8.2 - Historic Properties** for a summary on historic properties, the *Report for Historical Studies Survey* Technical Report for the proposed project, and the *Report for Historical Studies Intensive Survey* for the Noah Batis property (ID No. 26) for detailed information.

Potential impacts to Section 4(f), LWCF Act Section 6(f) and PWC Chapter 26 properties would be confined to the existing and proposed ROW/easements; thus, encroachment-alteration effects would not occur.

The proposed project is not anticipated to adversely affect DOT Act Section 4(f), LWCF Act Section 6(f) and PWC Chapter 26 resources; therefore, mitigation is not warranted.

**No-Build Alternative**: As construction of the proposed FM 455 project would not occur, there would be no FM 455 project-related impacts on Section 4(f), LWCF Act Section 6(f) and PWC Chapter 26 properties associated with the No-Build Alternative.

## 5.10. Water Resources

The proposed project is located in the Duck Creek – Clear Creek Watershed and the Elm Fork Trinity River Subbasin. As detailed in the *Water Resources Technical Report*, the proposed project crosses 11 streams. These streams consist of five tributaries to Clear Creek, three tributaries to Duck Creek, Duck Creek, Ranger Branch, and one tributary to Ranger Branch. Also located adjacent to the proposed project are a wetland (potential) and a pond. **Table 3** lists the Waters of the U.S. and potential wetland in the proposed project area, amount of impacts to the water bodies that would result from implementation of the proposed project, and the applicable U.S. Army Corps of Engineers (USACE) permit.

Table 3: Potential Impacts to Waters of the U.S.

| Crossing No. | Name of Water Body or other location indicator | Approx. OHWM (feet) | Existing Structure | Proposed Work or Structure | Permanent Fill | | Temporary Fill | | NWP | PCN (Y/N) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Open Waters (acres and linear feet) | Wetlands or other Special Aquatic Sites (acres) | Open Waters (acres and linear feet) | Wetlands or other Special Aquatic Sites (acres) | | |
| 1* | Clear Creek Tributary 14 (intermittent) | 15 | 60' x 25' bridge | 100' x 101' single-span bridge with riprap | 0.01 ac 101 LF | - | 0.056 ac 192 LF | - | 14 | N |
| 2* | Unnamed Clear Creek Tributary (intermittent) | 2 | 1 – 4' x 4' BC | 2 – 3' x 3' x 136' MBC | 0.005 ac 104 LF | - | 0.005 ac 112 LF | - | 14 | Y |
| | Potential Adjacent Wetland | - | | | - | - | - | 0.004 ac | | |
| 3* | Clear Creek Tributary 14.1 (intermittent) | 3 | 1 – 4' x 4' BC | 2 – 3' x 3' x 178' MBC | 0.010 ac 152 LF | - | 0.009 ac 124 LF | - | 14 | N |
| 4* | Unnamed Clear Creek Tributary (intermittent) | 3 | 1 – 3' x 3' BC | 2 – 4' x 4' x 139' MBC | 0.008 ac 111 LF | - | 0.008 ac 120 LF | - | 14 | N |
| 5* | Clear Creek Tributary 13 (intermittent) | 8 | 1 – 7' x 6' BC | 2 – 8' x 6' x 158' MBC | 0.022 ac 118 LF | - | 0.026 ac 142 LF | - | 14 | N |
| 6 | Duck Creek Tributary 4 West (intermittent) | 5 | 1 – 7' x 6' BC | 1 – 7' x 4' x 159' BC | 0.016 ac 139 LF | - | 0.010 ac 84 LF | - | 14 | N |
| 7 | Duck Creek Tributary 4 East (intermittent) | 8 | 2 – 60" RCP | 2 – 4' x 4' x 145' MBC | 0.019 ac 102 LF | - | 0.033 ac 182 LF | - | 14 | N |
| 8* | Duck Creek (intermittent) | 50 | 150' x 25' bridge | 150' x 96' single-span bridge with riprap | 0.023 ac 96 LF | - | 0.252 ac 240 LF | - | 14 | N |
| 8a* | Unnamed Duck Creek Tributary (ephemeral) | 1 | None | Fill | 0.004 ac 173 LF | - | - | - | 14 | Y |
| | Adjacent Pond | - | | | 0.241 ac | - | - | - | | |

Table 3: Potential Impacts to Waters of the U.S.

| Crossing No. | Name of Water Body or other location indicator | Approx. OHWM (feet) | Existing Structure | Proposed Work or Structure | Permanent Fill | | Temporary Fill | | NWP | PCN (Y/N) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Open Waters (acres and linear feet) | Wetlands or other Special Aquatic Sites (acres) | Open Waters (acres and linear feet) | Wetlands or other Special Aquatic Sites (acres) | | |
| 9* | Duck Creek Tributary 2 (intermittent) | 13 | 1 – 6' x 11' BC | 4 – 8' x 5' x 150' Bridge Class MBC | 0.037 ac 123 LF | - | 0.048 ac 161 LF | - | 14 | N |
| 10* | Ranger Branch (intermittent) | 10 | 4 – 10' x 6' MBC | Extend existing 4 – 72' x 10' x 6' Bridge Class MBC w/additional 46' x 10' x 6' BC | 0.012 ac 53 LF | - | 0.046 ac 200 LF | - | 14 | N |
| 11* | Ranger Branch Tributary 4 (intermittent) | 10 | 2 – 6' x 5' MBC | 2 – 8' x 4' x 135' MBC | 0.015 ac 66 LF | - | 0.042 ac 182 LF | - | 14 | N |

*: Because of lack of right-of-entry (ROE), all or part of Crossings 1, 2, 3, 4, 5, 8, 8a, 9, 10, and 11 were delineated using available aerial maps and estimation from field survey. Upon acquisition of the proposed ROW, areas encompassing Crossings 1, 2, 3, 4, 5, 8, 8a, 9, 10, and 11 would be further evaluated and examined for the presence of wetlands.

BC – Box Culvert
RCP – Reinforced Concrete Pipe
MBC – Multiple Box Culvert
NWP – Nationwide Permit
PCN – Preconstruction Notification
N/A – Not applicable
Y/N – Yes/No

According to the information presented in **Table 3**, impacts to Waters of the U.S., including a potential wetland and adjacent pond, within the limits of the proposed project would result from the widening of the roadway including two bridge replacements, one culvert extension, and eight culvert replacements. See the *Water Resources Technical Report* for detailed information and figures.

### *5.10.1. Clean Water Act Section 404*

The placement of temporary or permanent dredge or fill material into potentially jurisdictional Waters of the U.S. would be authorized under NWP 14 with a PCN. The purpose of the proposed activity is to widen FM 455 at water crossings 1 to 11 along the length of the project (**Table 3**). Appropriate measures would be taken to maintain normal downstream flows and minimize flooding. Temporary fills would consist of clean materials and be placed in a manner that would not be eroded by expected high flows. Temporary fills would be removed in their entirety and the affected area returned to pre-construction elevations, and revegetated as appropriate. If the project involves stream modification, stream channel modifications, including bank stabilization, would be limited to the minimum necessary to construct or protect the structure and the immediate vicinity of the project. The activity would comply with all general and regional conditions applicable to NWP 14.

The activities at water crossings 1 to 11 have been identified as single and complete projects as defined in the NWPs because each crossing occurs at a separate and distant location and would therefore be permitted under the same NWP (14).

The proposed project would comply with U.S. Environmental Protection Agency's (EPA) Section 404(b)(1) Guidelines 40 CFR Part 230, allowing the discharge of dredged or fill material only if there is no practicable alternative that would have less adverse effects on the aquatic ecosystem. Since the proposed project would consist of expanding an existing facility, and there are no other practicable build alternatives, the discharge of dredged or fill material into Waters of the U.S. is permissible.

**Build Alternative**: **Table 3** lists the Waters of the U.S. and potential wetland in the proposed project area, amount of impacts to the water bodies that would result from implementation of the proposed project, and the applicable USACE permit. A PCN for NWP 14 at water crossings 1, 3 to 8 and 9 to 11 would not be required because the impacts to Waters of the U.S. are less than 0.1 acre per crossing and no wetlands or other special aquatic sites would be impacted. A PCN for NWP 14 is required at water crossing 2 because discharges into special aquatic sites could occur and at water crossing 8a because the impact is greater than 0.1 acre at this crossing.

The potential for project-related encroachment-alteration effects on Waters of the U.S. would be mitigated through permanent (post-construction) Best Management Practices (BMPs) as described below. To minimize the potential for adverse impacts, BMPs would be regularly inspected and proactively maintained.

Further evaluation is required to determine the amount of impacts to the water bodies that would result from implementation of the proposed project. ROE was not granted at several crossings. Upon acquisition of the proposed ROW, the areas encompassing these crossings would also be further evaluated for impacts. Mitigation would be further evaluated at this time. Typical mitigation for impacts to Waters of the U.S. and wetlands includes the construction of mitigation areas or purchasing credits from a mitigation bank. Mitigation is frequently conducted as one of the requirements for obtaining a Section 404 permit. The USACE decides what the ratio of the mitigation area would be relative to the acreage of impacts to Waters of the U.S. A typical mitigation ratio is three times the amount of acreage impacted, while the minimum mitigation ratio is one time the amount of acreage impacted (i.e. 1:1 ratio).

**No-Build Alternative**: As construction of the proposed FM 455 project would not occur, there would be no FM 455 project-related impacts on Waters of the U.S. associated with the No-Build Alternative.

### *5.10.2. Clean Water Act Section 401*

General Condition 25 of the NWP Program requires applicants using NWP 14 to comply with Section 401 of the Clean Water Act (CWA). Compliance with Section 401 requires the use of BMPs to manage water quality on construction sites. General Condition 12 also requires applicants using NWP 14 to use appropriate soil erosion and sedimentation controls.

**Build Alternative**: The Storm Water Pollution Prevention Plan (SW3P) would include at least one BMP from the 401 Water Quality Certification Conditions for NWPs as published by the TCEQ. These BMPs would address each of the following categories:

- Category I Erosion Control would be addressed by using temporary vegetation, blankets/matting, permanent seeding/sodding, and stone outlet structures.
- Category II Sedimentation Control would be addressed by installing silt fence, rock berms, and stabilized construction exits.
- Category III Post-Construction Total Suspended Solids (TSS) control would be addressed by installing grass swales and vegetative filter strips.

Other approved methods would be substituted if necessary using one of the BMPs from the identical category.

The potential for project-related encroachment-alteration effects on water quality would be mitigated through permanent (post-construction) BMPs as described above. To minimize the potential for adverse impacts, BMPs would be regularly inspected and proactively maintained.

BMPs would be implemented to ensure that water quality impacts would not be significant; therefore, mitigation is not considered.

**No-Build Alternative**: As construction of the proposed FM 455 project would not occur, there would be no FM 455 project-related impacts on water quality associated with the No-Build Alternative.

### *5.10.3. Executive Order 11990 Wetlands*

**Build Alternative**: Pursuant to EO 11990 (Protection of Wetlands) and Section 404 of the CWA, a field reconnaissance was conducted to identify Waters of the U.S., including wetlands, within the proposed project limits on October 5 and 6, 2011, and February 18, 2016. Within the proposed project limits, 11 crossings were identified containing Waters of the U.S. One of these Waters of the U.S. appears to have an abutting wetland (Crossing 2, south of FM 455). Because of lack of ROE, the potential wetland at Crossing 2 was delineated using available aerial imagery and estimation from field survey. Upon acquisition of the proposed ROW, the area encompassing Crossing 2 south of FM 455 would be further evaluated for the presence of a wetland. In addition, ROE was not entirely granted at Crossings 1, 3, 4, 5, 8, 8a, 9, 10, and 11. Upon acquisition of the proposed ROW, the areas encompassing these crossings would also be further evaluated for the presence of wetlands.

If it is later determined that wetlands are not present within the existing and proposed ROW and easements, EO 11990 on wetlands does not apply because no wetlands would be impacted. If it is later determined that jurisdictional wetlands would be impacted, alternatives would be reviewed as required by EO 11990 on wetlands, to determine if any practicable alternatives to avoid wetland impacts can be identified.

The potential for project-related encroachment-alteration effects on wetlands would be mitigated through permanent (post-construction) BMPs as described above. To minimize the potential for adverse impacts, BMPs would be regularly inspected and proactively maintained.

Further evaluation is required to determine the presence/absence of wetlands. ROE was not granted at several crossings. Upon acquisition of the proposed ROW and easements, the areas encompassing these crossings would also be further evaluated for the presence of wetlands. Mitigation would be further evaluated at this time. Typical mitigation for impacts to Waters of the U.S. and wetlands includes the construction of mitigation areas or purchasing credits from a mitigation bank. Mitigation is frequently conducted as one of the requirements for obtaining a Section 404 permit. The USACE decides what the ratio of the mitigation area would be relative to the acreage of impacts to Waters of the U.S. A typical mitigation ratio is three times the amount of acreage impacted, while the minimum mitigation ratio is one time the amount of acreage impacted (i.e. 1:1 ratio).

No-Build Alternative: As construction of the proposed FM 455 project would not occur, there would be no FM 455 project-related impacts on wetlands associated with the No-Build Alternative.

### *5.10.4. Rivers and Harbors Act*

This project does not involve work in or over a navigable Water of the U.S., therefore Section 10 of the Rivers and Harbors Act does not apply. Likewise, a navigational clearance under the General Bridge Act of 1946, and Section 9 of the Rivers and Harbors Act (administered by the U.S. Coast Guard [USCG]) is not applicable. Coordination with the USCG (for Section 9 and the General Bridge Act) and the USACE (for Section 10) would not be required.

### *5.10.5. Clean Water Action Section 303(d)*

The proposed project is not located within five miles of or within the watershed of an impaired assessment unit. The 2014 303(d) list was utilized in this assessment.

### *5.10.6. Clean Water Act Section 402*

Build Alternative: Because this project would disturb more than five acres of surface area, TxDOT would comply with the requirements of the TCEQ Texas Pollutant Discharge Elimination System (TPDES) General Permit No. TxR150000. In order to comply with TPDES General Permit Number TxR150000 for Construction Activities requirements, a Notice of Intent (NOI) would be filed with TCEQ stating that TxDOT would have a SW3P in place during construction of this project. A construction site notice would be posted on the construction site. This SW3P utilizes the temporary control measures as outlined in TxDOT's manual *Standard Specifications for the Construction and Maintenance of Highways, Streets, and Bridges*. No permanent water quality impacts are expected as a result of the proposed project. Every effort would be made for proper soil conservation and preservation during the planning, development, and construction of this proposed project.

A portion of the proposed project is located within the boundaries of the Phase II Denton County Municipal Separate Storm Sewer System (MS4). A NOI would be submitted to Denton County and the proposed project would comply with the applicable MS4 requirements.

It is anticipated that implementation of the SW3P would reduce erosion and sedimentation from construction sites to a negligible level, such that migration of substantial amounts of sediment away from the project footprint would be unlikely.

Permanent water quality impacts are not expected as a result of the proposed project; therefore, mitigation is not proposed.

No-Build Alternative: This alternative would not alter the amount of runoff generated within the proposed project area.

### *5.10.7. Floodplains*

The City of Sanger and Denton County are participants in the National Flood Insurance Program. The proposed project area is located on Flood Insurance Rate Map Nos. 48121C0205G (revised 4-18-11) and 48121C0210G (revised 4-18-11).

Build Alternative: Three tributaries to Clear Creek, two tributaries to Duck Creek, Ranger Branch, and a tributary to Ranger Branch are located in Zone A. Zone A is the approximate 100-year floodplain for which base flood elevations have not been determined. Duck Creek is located in Zone AE. Zone AE is the approximate 100-year floodplain for which base flood elevations have been determined. Approximately 7.3 acres of the proposed project ROW and proposed drainage easements are located within a Federal Emergency Management Agency (FEMA) designated 100-year floodplain.

The hydraulic design for the proposed project would be in accordance with current FHWA and TxDOT design policies. The proposed project would be in compliance with 23 CFR 650 regarding location and hydraulic design of highway encroachments within the floodplains. The proposed project would comply with EO 11988, Floodplain Management, which requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Since the proposed project would consist of expanding an existing facility, and there are no other practicable build alternatives, the development of the approximately 7.3 acres of 100-year floodplain would be unavoidable. The facility would permit the conveyance of the 100-year flood, inundation of the roadway being acceptable, without causing significant damage to the facility, stream, or other property. The proposed project would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. Coordination with the local floodplain administrator would be required.

Construction would be limited to the proposed project's existing/proposed ROW/easement areas, and would have no effect on floodplain areas outside the construction area.

The proposed project would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances; therefore, mitigation is not proposed.

No-Build Alternative: This alternative would not alter the existing level of roadway encroachments into floodplains.

### *5.10.8. Wild and Scenic Rivers*

The proposed project would not impact any present, proposed, or potential unit of the National Wild and Scenic Rivers System.

### *5.10.9. Trinity River Corridor Development Certification*

The proposed project is not within the Trinity River Corridor Development Regulatory Zone; therefore, a Corridor Development Certificate permit would not be required.

### *5.10.10. Coastal Barrier Resources*

The proposed project would not impact any Coastal Barrier Resources.

### *5.10.11. Coastal Zone Management*

The proposed project is not located within or likely to affect land or water uses within the Texas Coastal Management Area.

#### *5.10.12. Edwards Aquifer*

The proposed project is not located within the Edwards Aquifer Contributing or Recharge Zones; therefore, the Edwards Aquifer Rules do not apply.

#### *5.10.13. International Boundary and Water Commission*

This proposed project would not be located within the floodplain of the Rio Grande; therefore, coordination with the International Boundary Water Commission would not be required.

### 5.11. Biological Resources

A TxDOT *Biological Evaluation Form* and *Biological Resources Technical Report* was completed for the proposed project and it was determined that coordination with the Texas Parks and Wildlife Department (TPWD) was required per the 2013 TPWD/TxDOT Memorandum of Understanding (MOU) because:

1) The proposed project is within the ranges of Species of Greatest Conservation Need (SGCN) for which there are no defined BMPs.
2) The proposed project may adversely impact important remnant vegetation.
3) The proposed project requires a NWP with PCN, issued by the USACE.
4) The proposed project includes more than 200 linear feet of stream channel for each single and complete crossing of which would be permanently disturbed.
5) The project contains known isolated wetlands outside the existing TxDOT ROW that would be directly impacted by the project.
6) The proposed project may impact 0.10 acre of riparian vegetation.
7) The proposed project disturbs habitat in an area equal to or greater than the area of disturbance indicated in the Threshold Table PA.

Early coordination with TPWD was initiated on December 20, 2016 and completed on March 20, 2017. See **Appendix G** for the coordination documentation. Documentation of the *Biological Evaluation Form* and *Biological Resources Technical Report* are maintained in the project file at the TxDOT Dallas District Office.

#### *5.11.1. Vegetation*

**Build Alternative**: The proposed project would directly impact the following MOU Type habitats: Agriculture (5.6 acres); Disturbed Prairie (0.3 acre); Edwards Plateau Savannah, Woodland, and Shrubland (3.3 acres); Floodplain (0.3 acre); Riparian (0.5 acre); and Urban (53.2 acres). The 3.3 acres of Edwards Plateau Savannah, Woodland, and Shrubland MOU Type habitat disturbance is greater than the 2.0 acres area of disturbance indicated in the Threshold Table PA for Cross Timbers. The 0.5 acre of Riparian MOU Type habitat disturbance exceeds the 0.1-acre area of disturbance indicated in the Threshold Table PA for Cross Timbers. The remaining MOU Type habitats do not exceed their associated threshold. A threshold has not been established for Urban MOU Type habitat.

According to the MOU with TPWD, important remnant vegetation includes communities listed as suitable habitat and within the range of SGCN. General habitat types listed for Cross Timbers Ecoregion SGCN present within the proposed project footprint include agricultural, riparian, grassland, forest, woodland, shrubland, riverine, and developed. These general habitat types apply to multiple species, including two plants that are SGCNs: the Glen Rose yucca (*Yucca necopina*) and Topeka purple-coneflower (*Echinacea atrorubens*).

Potential suitable habitat for the Glen Rose yucca and Topeka purple-coneflower is present within the proposed project area. For the Glen Rose yucca, there is potential habitat present such as limestone outcrops along and in the vicinity of Duck Creek. For the Topeka purple-coneflower, there is potential habitat present such as limestone hillsides along and in the

vicinity of Duck Creek. Site visits were conducted on October 5 and 6, 2011 and February 18, 2016, outside of the flowering/fruiting season. Neither species was observed during the site visits. Also, there are no approved species BMPs for either plant species. On February 23, 2017, TPWD advised that the likelihood of Glen Rose yucca or Topeka purple-coneflower occurring in relation to Duck Creek or any other area within the project area was highly unlikely.

Unusual vegetation features or special habitat features occurring within the proposed project area (existing and proposed ROW/easements) were identified and described during field investigations in accordance with the 2013 TxDOT-TPWD MOU. Unusual vegetation features identified during field investigations include unmaintained vegetation, fencerow vegetation and riparian vegetation. No special habitat features were identified during field investigations.

Potential impacts to vegetation would be confined to the existing and proposed ROW/easements; thus, encroachment-alteration effects would not occur.

Impacts to vegetation would be avoided or minimized by limiting disturbance to only that which is necessary to construct the proposed project. The removal of native vegetation, particularly mature native trees and shrubs, would be avoided to the greatest extent practicable. A native and locally adapted seed mix would be used in the re-vegetation of disturbed areas.

No-Build Alternative: If the No-Build Alternative were implemented, the proposed project would not be constructed. No effects to vegetation related to the construction of the proposed project would occur. Existing land use and activities, including routine mowing, would continue to periodically affect vegetation communities.

### *5.11.2. Wildlife*

The proposed project is located in north-central Denton County, in the rural community of Bolivar and City of Sanger. Land adjacent to the proposed project is predominantly developed or disturbed. The western portion of the proposed project has some residential development and a small number of retail facilities. Much of the adjacent land is used for agriculture or livestock. The central and eastern portions of the project are more densely developed and include residential, commercial, retail, and educational facilities. Agricultural land is also present. Wildlife species expected to inhabit the proposed project area are likely adapted to both a rural environment as well as an urban, developed environment. Mammalian species that likely inhabit the area include the coyote (*Canis latrans*), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), and eastern gray squirrel (*Sciurus carolinensis*). Amphibian and reptilian species would also utilize the different available habitats. The species would include various snakes, turtles, lizards, and frogs native to north-central Texas. Examples would be the Texas rat snake (*Elaphe obsolete lindheimen*), red-eared slider (*Trachemys scripta*), western ribbon snake (*Thamnophis proximus*), and the northern cricket frog (*Acris crepitans*). Various waterfowl species could utilize the aquatic habitat. The pastures still serve as foraging areas for resident and migratory species.

Wildlife species observed during field reconnaissance include eastern phoebe (*Sayornis phoebe*), yellow-bellied sapsucker (*Sphyrapicus varius*), northern cardinal (*Cardinalis cardinalis*), raccoon (*Procyon lotor*), Carolina chickadee (*Poecile carolinensis*), and red-tailed hawk (*Buteo jamaicensis*). Swallow nests were observed under the bridge at Duck Creek.

There is potential suitable habitat present within the proposed project area for the following rare species (as identified on TPWD's Annotated County List of Rare Species for Denton County): western burrowing owl (*Athene cunicularia hypugaea*), plains spotted skunk (*Spilogale putorius interrupta*), and Texas garter snake (*Thamnophis sirtalis annectens*). BMPs that would be implemented for these species are as follows:

- Western burrowing owl (Bird BMPs): No disturbing, destroying, or removing active nests, including ground nesting birds, during the nesting season; as practicable, avoid the

removal of unoccupied, inactive nests; prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair; and, no collecting, capturing, relocating, or transporting birds, eggs, young, or active nests without a permit.

- Plains spotted skunk BMPs: Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.
- Texas garter snake BMPs: Contractors will be advised of potential occurrence in the project area and to avoid harming the species if encountered.

Build Alternative: Substantial impacts to wildlife are not anticipated. The proposed project is the widening of an existing roadway and therefore is not newly bisecting continuous wildlife habitat. It is likely that wildlife currently avoid the proposed project area due to the adjacent development and high-speed traffic. Terrestrial wildlife that does cross FM 455 would have to travel a greater distance when crossing the widened roadway upon project completion. This would result in their being exposed to predators, people, domestic pets, vehicles, etc. for a greater amount of time. Wildlife that does currently inhabit adjacent urban development and existing roadway structures (culverts, bridges, utility poles, etc.) would be temporarily impacted due to potential structural displacements/relocations and roadway structure reconstruction and relocation. It is likely that the impacted wildlife would recolonize the available habitat once construction of the proposed project is complete.

The proposed project would reduce congestion and improve mobility along FM 455 within the project limits, potentially leading to an increase in traffic volumes. Over time, as traffic volumes continue to increase, conditions on and along the improved roadway would become more hazardous, potentially deterring wildlife from entering or inhabiting the proposed project area. Wildlife numbers may decline as they seek habitat and refuge elsewhere.

BMPs would be implemented to avoid impacts to rare species.

No-Build Alternative: Under the No-Build Alternative, the proposed project would not be constructed; thus, there would be no project-related impacts to wildlife.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a Federal permit issued in accordance to the Act's policies and regulations. The contractor would remove all old migratory bird nests from any structure where work would be done from October 1 to February 15. In addition, the contractor would be prepared to prevent migratory birds from building nest(s) between February 15 and October 1. In the event that migratory birds are encountered on-site during project construction, efforts to avoid adverse impacts on protected birds, active nests, eggs and/or young would be observed, per the Environmental Permits, Issues, and Commitments (EPIC) plans.

Fish and Wildlife Coordination Act

All impacts to Waters of the U.S. would be authorized under a USACE Section 404 NWP. Therefore, the U.S. Fish and Wildlife Service (USFWS) consider Fish and Wildlife Coordination Act coordination to be complete as part of the NWPs review, which was last authorized and reissued on March 19, 2017.

Bald and Golden Eagle Protection Act of 2007

No eagles were observed during the October 5 and 6, 2011, and February 18, 2016, site visits nor does the project area offer suitable eagle habitat. Therefore, no impact to bald or golden

eagles or their habitat is anticipated as a result of the proposed project, as verified by a qualified biologist. The proposed project is not anticipated to impact Bald and Golden Eagles.

### *5.11.3. Threatened and Endangered Species*

As detailed in the *Biological Resources Evaluation Form* and *Biological Resources Technical Report,* desktop analysis and field investigations conducted in October 2011 and February 2016 indicate that the proposed project would have no effect/no impact on any federally listed threatened, endangered, or candidate species. USFWS designated Critical Habitat is not present within the proposed project action area.

There is potential suitable habitat present within the proposed project area for the following state-listed threatened species: Timber rattlesnake (*Crotalus horridus*), Louisiana pigtoe (*Pleurobema riddellii*), sandbank pocketbook (*Lampsilis satura*), and Texas heelsplitter (*Potamilus amphichaenus*). BMPs that would be implemented for these species are as follows:

- Timber rattlesnake BMPs: Contractors will be advised of potential occurrence in the project area and to avoid harming the species if encountered.
- Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter (Freshwater Mussel BMPs): When work is in the water, survey project footprints for state listed species where appropriate habitat exists; when work is in the water and mussels are discovered during surveys, relocate state listed and SGCN mussels under TPWD permit and implement Water Quality BMPs; and when work is adjacent to the water, Water Quality BMPs implemented as part of SW3P for a construction general permit or any conditions of the 401 water quality certification for the project will be implemented.

TPWD maintains special species lists through the Texas Natural Diversity Database (TXNDD) by county. The TXNDD is a geo-referenced database of documented sightings of rare, threatened, and endangered species of Texas maintained by TPWD. Data were obtained from TPWD on October 4, 2016 and reviewed along with the USFWS list. The search radius was 1.5 miles from the proposed project. There were no known element occurrences of state or federally-listed species or managed areas within 1.5 miles of the proposed project area.

Build Alternative: Potential suitable habitat for the Timber rattlesnake, Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter is present in the proposed project area; therefore, it is possible that impacts to suitable habitat could result in direct impacts to these state-listed threatened species. Due to the potential presence of state-listed threatened mussels, TxDOT would be responsible for conducting a presence/absence survey and relocation of the listed mussel species. Appropriate TPWD permits would be obtained by TxDOT. Mussel surveys/relocation would be completed approximately six months prior to the start of construction. It is not anticipated that the proposed project would result in the take of a state-listed threatened species.

Endangered Species Act

The 1973 Endangered Species Act (ESA) provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. Section 7 of the ESA requires Federal agencies to ensure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat.

As previously discussed, there is no suitable habitat for federally-listed species within the proposed project area. The proposed project is not anticipated to impact or take any federally-listed species.

The proposed project would reduce congestion and improve mobility along FM 455 within the project limits, potentially leading to an increase in traffic volumes. Over time, as traffic volumes

continue to increase, conditions on and along the improved roadway would become more hazardous, potentially deterring wildlife from entering or inhabiting the proposed project area. Wildlife numbers may decline as they seek habitat and refuge elsewhere.

BMPs would be implemented to avoid impacts to state-threatened species.

**No-Build Alternative**: Under the No-Build Alternative, the proposed project would not be constructed; thus, there would be no project-related impacts to wildlife.

#### *5.11.4. Executive Order 13112 on Invasive Species*

In accordance with EO 13112 on Invasive Species, seeding and replanting with TxDOT-approved seed mixes containing native species would be done where possible. Soil disturbance would be minimized in the ROW in order to minimize invasive species establishment.

#### *5.11.5. Executive Memorandum on Environmentally and Economically Beneficial Landscaping*

Landscaping would not be included in the proposed project.

### 5.12. Air Quality

The proposed project is located in Denton County, which is part of the EPA's designated ten-county moderate nonattainment area for the 2008 eight-hour standard for the pollutant ozone; therefore, the transportation conformity rule applies.

Both the Mobility 2040 MTP and the 2017-2020 TIP were initially found to conform to the TCEQ SIP by the FHWA and FTA on September 7, 2016, and December 19, 2016, respectively; however, the proposed project is not consistent with this conformity determination because the construction phase is not included in the applicable year of the TIP/Statewide TIP. TxDOT will not take final action on this environmental document until the proposed project is consistent with a currently conforming MTP and TIP. Copies of the MTP and TIP pages are included in **Appendix E**.

**Build Alternative**: An *Air Quality Assessment Technical Report* was completed for the proposed project and is maintained in the project file at the TxDOT Dallas District Office. Because the proposed project would add capacity in a nonattainment area, it would be coordinated under TxDOT's MOU with TCEQ.

A Carbon Monoxide (CO) Traffic Air Quality Analysis was not required for the proposed project because the average annual daily traffic does not exceed 140,000 vehicles per day. A qualitative Mobile Source Air Toxics (MSAT) analysis was completed for the proposed project and found that the Build Alternative may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain and, because of this uncertainty, the health effects from these emissions cannot be estimated. Although the concentrations are uncertain, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds. Because of EPA regulations, the MSAT emissions are likely to be lower in the future. A Congestion Management Process was conducted to identify operational improvements and travel demand reduction strategies at the project level. Committed congestion reduction strategies and operational improvements within the study boundary would consist of access management improvements (turn lanes); addition of new lanes; intersection improvements; bicycle and pedestrian facility improvements; and traffic signal improvements. Lastly, it is not anticipated that emissions from construction of this project would have any significant impact on air quality in the area due to the use of fugitive dust control measures, the encouragement of the use of the Texas Emissions Reduction Plan (TERP), and compliance with applicable regulatory requirements.

Present and future vehicle miles travelled and the associated MSAT emissions and CO emissions resulting from the proposed project are considered a direct effect and were considered in the air quality analyses discussed above. Additional impacts, in the form of encroachment-alteration effects, would not occur.

The use of fugitive dust control measures, the encouragement of the use of TERP, and compliance with applicable regulatory requirements would mitigate impacts to air quality due to construction.

**No-Build Alternative**: Due to federal fuel and vehicle control programs, air quality would be expected to improve regardless of the build or no build alternative.

## 5.13. Hazardous Materials

An initial site assessment (ISA) including a visual survey of the project limits and surrounding area, research of existing and previous land use, and limited review of federal and state regulatory databases/lists was performed by Civil Associates, Inc. The purpose of the ISA is to identify possible hazardous materials within the project limits. A review of a regulatory database list was conducted as part of the ISA. **Section 5.1** of the ISA lists the regulatory records that were reviewed. The FM 455 *Hazardous Materials Initial Site Assessment Report* is maintained in the TxDOT Dallas District project files.

**Build Alternative:** A brief summary of regulated sites of concern within the proposed project limits is provided in **Table 4**. These sites are discussed following the table and site locations are shown on the Hazardous Materials Site Map in **Appendix F**.

**Table 4: Summary of Regulated Sites of Concern**

| Map ID* | Site Information | Database | Location Relative to Project |
|---|---|---|---|
| 1 | Bolivar Country Store/Bolivar Grocery<br>10706 FM 2450<br>Sanger, TX 76266 | PST Facility ID# 45042<br><br>FRSTX ID# 110033535388<br><br>NOV ID# RN102393386<br><br>Site Visit Concerns: None. | Adjacent<br>(low risk site) |
| 2 | Sanger Texaco/Former Sanger Texaco<br>Reported at IH 35 and FM 455<br>Sanger, TX 76266 | PST Facility ID# 6317<br><br>LPST ID# 0044005, Facility ID# 0044005<br><br>Note: This facility is not one of the fuel stations currently located at the FM 455/IH 35 intersection. The exact former location of this facility has not been determined. This facility is not shown on the Hazardous Materials Site Map.<br><br>Site Visit Concerns: None. | Unknown<br>(low risk site) |
| 3 | Gateway 18/Lynchs Food Mart<br>800 N. Stemmons (IH 35)<br>Sanger, TX 76266 | PST Facility ID# 39101<br><br>LPST ID# 0039101<br><br>NOV ID# RN102465911<br><br>Site Visit Concerns: None. Facility now operates as a Shell Fuel Station and Food Mart (observed during 02/18/2016 site visit). | Potential Displacement<br>(high risk site) |

Table 4: Summary of Regulated Sites of Concern

| Map ID* | Site Information | Database | Location Relative to Project |
|---|---|---|---|
| 4 | Snap Shop 1/Snap Shop Store<br>902 N. Stemmons Freeway (IH 35)<br>Sanger, TX 76266 | PST Facility ID# 38662<br><br>LPST ID# 0038662<br><br>NOV ID# RN102401627<br><br>FRSTX ID# 110035160358<br><br>Site Visit Concerns: None. | Potential Displacement (high risk site) |
| 5 | Horizon 2 Chevron/ Horizon/Inara Mgmt. LLC<br>901 N. Stemmons Freeway (IH 35)<br>Sanger, TX 76266 | PST Facility ID# 42105<br><br>LPST ID# 0042105<br><br>FRSTX ID# 110033966242<br><br>GWCC ID# 116720<br><br>Note: The potential displacement is the diesel pump island due to ROW acquisition. Not the entire facility.<br><br>Site Visit Concerns: None | Potential Displacement (high risk site) |
| 6 | Sanger Conoco/ Crimson Tide Management Inc.<br>1406 W Chapman Dr.<br>Sanger, TX 76266 | PST Facility ID# 76002<br><br>FRSTX ID# 110034704559<br><br>NOV ID# RN103993283<br><br>Site Visit Concerns: None | Proposed ROW acquisition (high risk site) |
| 7 | RJ Corner Store/The Sportsman<br>499 W. Chapman Dr. (FM 455)<br>Sanger, TX 76266 | PST Facility ID# 75427<br><br>FRSTX ID# 110035225681<br><br>NOV ID# RN102957974<br><br>Site Visit Concerns: None | Proposed ROW acquisition (low risk site) |
| 9 | Pit Stop – Valero<br>6551 FM 455 W.<br>Sanger, TX 76266 | PST Facility ID# 79413<br><br>Site Visit Concerns: None | Proposed ROW acquisition (high risk site) |
| 10 | Geo Con Equipment Storage & Maintenance Facility Sanger<br>606 Acker St.<br>Sanger, TX 76266 | IHWCA ID# T1721<br><br>Site Visit Concerns: None. During the 02/18/2016 site visit, no structure depicting this address was identified. However, on the southwest corner of FM 455 and Acker St. are what appear to be former building foundations. | Proposed ROW acquisition (low risk site) |

FRSTX Facility Registry System
NOV Notice of Violations
GWCC Groundwater Contamination Cases
IHWCA Industrial and Hazardous Waste Corrective Action Sites
LPST Leaking Petroleum Storage Tanks
PST Petroleum Storage Tanks
* Map ID numbers correspond to those used in the ISA.

*Source: GeoSearch (February 3, 2016); Field Work (10/5-6/2011 and 02/18/2016).*

Petroleum Storage Tanks

Within the project limits, there are eight registered petroleum storage tank (RPST) facilities within the specified search distance for the radius report. Of these, four facilities are also listed as LPST sites. The site visits and research into the historical land use did not reveal any other abandoned and/or active gasoline service stations. ROW acquisition and easements are required for this project and considerable excavation is anticipated. Two of the RPST sites would be acquired as part of the ROW requirements of the proposed project. District ROW would be notified of the PST regulatory status and exact locations. The PST sites of concern are included in **Table 4** and shown in on the Hazardous Materials Site Map in **Appendix F**.

Leaking Petroleum Storage Tanks

A review of the hazardous materials database indicated seven LPST sites within the proposed project area. Three of these sites are considered environmental concerns due to proximity to the project, gradient relative to the project, priority, and status. There is the potential that subsurface releases of petroleum hydrocarbons from one or more of these facilities have affected the subsurface conditions of the project area. The LPST sites of concern are included in **Table 4** and shown in on the Hazardous Materials Site Map in **Appendix F**, and are discussed below in the order of the Map Identification Numbers for each LPST site.

**Map ID 3** - Gateway 18/Lynchs Food Mart, located at 800 N. Stemmons (IH 35), Sanger, is identified as a PST site and LPST site. This site is located on the southeast corner of the FM 455/IH 35 intersection, adjacent to the proposed project. ROW acquisition would potentially result in the displacement of this facility. The site has four single-wall, steel Underground Storage Tanks (USTs) installed in 1984. The USTs consist of one 6,000-gallon gasoline tank, two 8,000-gallon gasoline tanks, and one 6,000-gallon diesel tank, all currently in use. Corrosion protection is reported as "Cathodic Protection – Field Installation" and external containment is not reported. Compartment release detection is reported as "Automatic Tank Gauge Test & Inventory Control." Spill prevention and overflow protection is reported as "Tight-Fill Fitting Container/Bucket/Sump, Factory – Built Spill Container/Bucket/Sump, Flow Restrictor Value." The piping systems are reported as "FRP." Piping release detection is reported as "Annual Piping Tightness Test / Annual Electronic Monitoring (@ 0.1 gallons per hour [GPH]), Auto. Line Leak Detector (3.0 GPH for Pressure Piping)." A subsurface release of petroleum hydrocarbons at this site was reported on November 30, 1998. Groundwater was impacted; however, no apparent threats or impacts to receptors occurred. The TCEQ has issued "Final Concurrence, Case Closed."

Based on the subsurface release that occurred in 1998, the age and construction of the tanks (32-year-old, single-wall, steel), and the potential displacement of the site for ROW acquisition, this site is considered a high risk to ROW acquisition and construction of the proposed project.

The LPST sites and tank systems would be addressed during the ROW negotiation and acquisition process. The LPST sites have all received final concurrence and the cases are closed. Coordination with property owners, tank owners, operators and TCEQ on these sites would be an ongoing process up to and during construction.

**Map ID 4** - Snap Shop 1/Snap Shop Store, located at 902 N. Stemmons Freeway (IH 35), Sanger, is identified as a PST site and LPST site. This site is located on the northeast corner of the FM 455/IH 35 intersection, adjacent to the proposed project. ROW acquisition for the proposed project would potentially result in the displacement of this facility. The site has three single wall, steel USTs installed in 1978. The USTs consist of one 4,000-gallon and two 8,000-gallon gasoline tanks, all currently in use. Corrosion protection is reported as "Cathodic Protection – Field Installation" and external containment is not reported. Compartment release detection is reported as "Automatic Tank Gauge Test & Inventory Control." Spill prevention and overflow protection is reported as "Tight-Fill Fitting Container/Bucket/Sump, Factory – Built Spill Container/Bucket/Sump, Flow Restrictor Value." The piping systems are reported as "FRP."

Piping Leak Detector (3.0 GPH for Pressure Piping)." A subsurface release of petroleum hydrocarbons at this site was reported on December 2, 1998. Groundwater was impacted; however, no apparent threats or impacts to receptors occurred. The TCEQ has issued "Final Concurrence, Case Closed."

Based on the subsurface release that occurred in 1998, the age and construction of the tanks (38-year-old, single-wall, steel), and the potential displacement of the site for ROW acquisition, this site is considered a high risk to ROW acquisition and construction of the proposed project.

**Map ID 5** - Horizon 2 Chevron/Sanger Gulf/Horizon/Inara Mgmt. LLC, located at 901 N. Stemmons Freeway (IH 35), Sanger, is identified as a PST site and LPST site. This site is located on the northwest corner of the FM 455/IH 35 intersection, adjacent to the proposed project. ROW would be acquired from this site, potentially resulting in the displacement of the diesel pump island. The site has four single wall, composite USTs installed in 1987. The USTs consist of three 10,000-gallon gasoline tanks and one 4,000-gallon diesel tank, all currently in use. Corrosion protection is reported as "Cathodic Protection - Factory Installation, Cathodic Protection - Field Installation" and external containment is not reported. Compartment release detection is reported as "Weekly Manual Tank Gauging (Tanks <= 1,000 Gal), SIR (Stat. Inventory Reconciliation) & Inventory Control." Spill prevention and overflow protection is reported as "Tight-Fill Fitting Container/Bucket/Sump, Factory – Built Spill Container/Bucket/Sump, Delivery Shut-Off Valve." The piping systems are reported as "FRP." Piping release detection is reported as "Vapor Monitoring, Groundwater Monitoring, Annual Piping Tightness Test / Annual Electronic Monitoring (@ 0.1 GPH), Auto. Line Leak Detector (3.0 GPH for Pressure Piping), SIR (Stat. Inventory Reconciliation) & Inventory Control."

A subsurface release of petroleum hydrocarbons at this site was reported on February 6, 1991. Groundwater was impacted; however, no apparent threats or impacts to receptors occurred. The TCEQ has issued "Final Concurrence, Case Closed." Another subsurface release of petroleum hydrocarbons at this site was reported on October 25, 2005. Groundwater was impacted; however, no apparent threats or impacts to receptors occurred. The TCEQ has issued "Final Concurrence, Case Closed." A GWCC was filed for the 2005 release. The TCEQ initiated an action to address a contamination incident. The action has since been completed and the remedy considered complete.

Based on the subsurface releases that occurred in 1991 and 2005, the age of the tanks still in use (29 years), and the potential displacement of the diesel pump island for ROW acquisition, this site is considered a high risk to ROW acquisition and construction of the proposed project.

IHWCA

**Map ID 10** - Geo Con Equipment Storage & Maintenance Facility Sanger, located at 606 Acker St., Sanger, is identified as an IHWCA site. The status is listed as active, with a status date of 11/13/02. During the 02/18/2016 site visit, no structure depicting this address was identified. However, on the southwest corner of FM 455 and Acker St. are what appear to be former building foundations. Google Earth aerial imagery dated 1/30/1995 shows two buildings located on the southeast corner of the FM 455/Acker St. intersection. However, the two buildings are no longer present in the next available aerial imagery (1/2/2005). This site was considered a high risk site because of its active status; the lack of information about the site; and because ROW would be acquired from this site. The approximate location of the IHWCA is shown on the Hazardous Materials Site Map in **Appendix F**.

Additional investigation was conducted to determine if contamination would be encountered during construction. The TxDOT Environmental Affairs Division (ENV) reviewed the plan schematics and plan profiles, and it was determined that there is a minimum amount of construction being performed adjacent to the site. Additionally, there is ROW being acquired from the parcel but it is minimal and does not extend to the source areas.

Utility Adjustments/Relocation

At this time, utility adjustment requirements have not been determined. There is a potential for contamination to be encountered during utility adjustments. Coordination with utility companies concerning this contamination would be addressed during the ROW stage of project development. It is anticipated that all utility adjustments or relocation would be completed prior to construction.

Storm Water Drainage Structures in Contamination

The proposed project requires the installation of storm sewers. Due to the possible contamination from adjacent properties, special considerations or provisions for entry and monitoring in the project's plans, specifications and estimates would be required.

Possible Asbestos-Containing Materials

The proposed project includes the demolition and/or relocation of building and bridge structures. The buildings and bridges may contain Asbestos-Containing Materials. Asbestos inspections, specification, notification, license, accreditation, abatement and disposal, as applicable, would comply with federal and state regulations. Asbestos issues would be addressed during the ROW process prior to construction.

Lead-Based Paint

The proposed project includes the demolition and/or relocation of building structures, some of which contain Lead-Based Paint (LBP). Further examination of paint-bearing structures for LBP would be performed prior to demolition. Any waste materials and construction debris containing LBP would be disposed of according to current disposal regulations of the TCEQ and EPA.

Well Plugging (Water Quality)

Monitoring wells were observed within the project limits. Proper plugging of the wells would be addressed during the ROW negotiation and acquisition process. If not plugged prior to construction, the wells would be addressed per TxDOT Standard Specification Item 103 Disposal of Wells.

Additional investigation would be required to confirm if contamination would be encountered during construction. If contamination were confirmed, then TxDOT would develop appropriate soils and/or groundwater management plans for activities within these areas.

Active Pipelines

During the preliminary hazardous materials investigation, a pipeline was found to bisect the proposed project. The Railroad Commission of Texas Public GIS Viewer identified an in-service crude oil gathering pipeline that crosses the proposed project east of Kildee Trail. Additional investigation may be required to determine if the pipeline would need adjustment due to the proposed project construction. The approximate location of the pipeline is shown on the Hazardous Materials Site Map in **Appendix F**.

Potential impacts to hazardous material sites would be limited to the construction phase of the project (when ground disturbing activities would occur) and confined to the existing and proposed ROW/easements; thus, encroachment-alteration effects on hazardous materials would not occur.

Special provisions or contingency language would be included in the project's construction plans to handle hazardous materials and/or petroleum contamination according to applicable federal and state regulations. In addition, the construction contractor would take appropriate measures to prevent, minimize, and control spillage of hazardous materials in the construction staging area(s).

**No-Build Alternative**: Under the No-Build Alternative, the proposed project would not be constructed; thus, project-related hazardous materials impacts would not occur.

## 5.14. Traffic Noise

**Build Alternative:** A traffic noise analysis was conducted in accordance with TxDOT's *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (2011). Refer to the *FM 455 Traffic Noise Technical Report* for a detailed discussion of the traffic noise analysis. Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB." The FHWA has established Noise Abatement Criteria (NAC) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur. A noise impact occurs when either the absolute or relative criterion is met:

**Absolute criterion** - The predicted noise level at a receiver approaches, equals or exceeds the NAC. "Approach" is defined as one dB(A) below the NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.

**Relative criterion** - The predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. "Substantially exceeds" is defined as more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area. The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise. Existing and predicted traffic noise levels were modeled at receiver locations (**Table 5** and **Appendix F**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

**Table 5: Traffic Noise Levels dB(A) Leq**

| Representative Receiver | NAC Category | NAC Level | Existing | Predicted 2040 | Change (+/-) | Noise Impact |
|---|---|---|---|---|---|---|
| R1 - Single-family Residential | B | 67 | 60 | 61 | +1 | No |
| R2 - Bolivar Church | D | 52 | 43 | 42 | -1 | No |
| R3 - Bolivar Cemetery | C | 67 | 63 | 62 | -1 | No |
| R4 - Single-family Residential | B | 67 | 51 | 53 | +2 | No |
| R5 - Single-family Residential | B | 67 | 50 | 53 | +3 | No |
| R6 - Single-family Residential | B | 67 | 57 | 58 | +1 | No |
| R7 - Single-family Residential | B | 67 | 59 | 61 | +2 | No |
| R8 - Single-family Residential | B | 67 | 50 | 51 | +1 | No |
| R9 - Single-family Residential | B | 67 | 53 | 55 | +2 | No |
| R10 - Single-family Residential | B | 67 | 54 | 55 | +1 | No |
| R11 - Chisholm Trail Elementary School (playground) | C | 67 | 52 | 54 | +2 | No |
| R12 - Single-family Residential | B | 67 | 51 | 55 | +4 | No |
| R13 - Single-family Residential | B | 67 | 53 | 54 | +1 | No |
| R14 - Single-family Residential | B | 67 | 52 | 56 | +4 | No |
| R15 - Single-family Residential | B | 67 | 58 | 59 | +1 | No |
| R16 - Single-family Residential | B | 67 | 54 | 58 | +4 | No |
| R17 - Single-family Residential | B | 67 | 58 | 58 | 0 | No |
| R18 - Sanger High School | C | 67 | 55 | 57 | +2 | No |

As indicated in Table 5, the proposed project would not result in a traffic noise impact. However, to avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2040) noise impact contours (Table 6).

Table 6: Noise Impact Contours in the Project Study Area

| Land Use | Impact Contour[1] | Distance from Proposed ROW Line |
|---|---|---|
| NAC category B & C | 66 dB(A) | 20 feet |
| NAC category E | 71 dB(A) | Within ROW |

[1] – Impact contours are one dB(A) lower than the NAC per category to reflect impacts that would occur as a result of approaching the NAC for the respective contours.

A copy of this traffic noise analysis will be available to local officials. On the date of approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project. For more information about how traffic noise is evaluated for TxDOT projects, refer to ENV's *Environmental Handbook for Traffic Noise* and *Guidelines for Analysis and Abatement of Roadway Traffic Noise*, the latter of which has been approved by FHWA.

The analysis of traffic noise is by its nature an examination of encroachment-alteration indirect impacts. That is, traffic noise models predict the noise levels that would be perceived by people located away from newly-constructed transportation facilities. No attempt has been made to describe noise levels that may exist directly within the transportation facility by motorists, as noise is generally accepted as a necessary element that accompanies the use of roadways. Because the proposed project would not result in traffic noise impacts, there are no encroachment-alteration effects.

No noise barriers or other mitigative measures were evaluated because the proposed project would not result in traffic noise impacts.

No-Build Alternative: This alternative would not result in traffic noise impacts.

## 5.15. Induced Growth

The Council on Environmental Quality (CEQ) defines indirect effects as those "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR Section 1508.8).

Build Alternative: An analysis of indirect impacts followed the processes outlined in TxDOT's Indirect Impacts Analysis Guidance (July 2016). Refer to the FM 455 *Indirect and Cumulative Impacts Analysis* Technical Report for a detailed discussion of the indirect effects analysis.

Results of the analysis indicate that there is the potential for 1,207 acres of induced growth to occur as a result of the proposed project. The 1,207 acres of land is located on the north and south side of FM 455, east of the BNSF Railway.

Water bodies that could be impacted by induced development include 0.7 acre of wetlands, 11.5 acres of open waters (freshwater ponds), and 14.6 acres of riverine features. These impacts total approximately 10.2 percent of the existing water bodies in the AOI and are not considered substantial.

Approximately 1,031 acres of prime farmland and farmland of statewide importance would be impacted by induced development. This impact totals approximately 14 percent of the prime farmland and farmland of statewide importance in the AOI, and is not considered substantial.

Impacts to vegetation and wildlife habitat total 1,180.8 acres (190.9 acres of land classified as Agriculture; 94.8 acres as Crosstimbers Woodland and Forest; 27.8 acres as Disturbed Prairie; 36.7 acres as Edwards Plateau Savannah, Woodland, and Shrubland; 0.4 acre as Floodplain; 66.6 acres as Riparian; 747.7 acres as Tallgrass Prairie, Grassland; and 15.9 acres is classified as Urban) and total approximately 11.1 percent of the resource in the AOI.

Wildlife that may utilize the previously discussed vegetation and water bodies for food and habitat include the Plains spotted skunk, a state species of concern (SOC); Western Burrowing Owl, a state SOC; the Louisiana pigtoe, a state-listed threatened species; and the Timber rattlesnake, a state-listed threatened species, among others. SGCN that may inhabit the areas subject to potential induced development include, but are not limited to, the Hog-nosed skunk (*Conepatus leuconotus*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), and Woodhouse's toad (*Anaxyrus (Bufo) woodhousii*), among others. However, due to much of this land being disturbed regularly, whether by mowing maintenance, agricultural production, or livestock grazing, it is unlikely that high quality wildlife habitat is present within the areas considered subject to induced growth related to the proposed project. Overall, impacts to vegetation and wildlife habitat by induced growth are not considered substantial.

There is the potential for three residential structures, three barns, and three sheds to be displaced by induced development. One residential structure appears to be abandoned while the other two appear to be occupied. The expected development and redevelopment in the AOI would improve the socioeconomic condition of the community through the construction of new homes and businesses, and create new jobs for members of the community.

It is anticipated that EJ and non-EJ populations would benefit from the induced growth impacts equally. Overall, the expected project induced growth would contribute to the overall well-being of the community, as the development and redevelopment would be compatible with zoning requirements, city planning documents, and project area goals. Impacts to socio-economic/community resources by induced growth are not considered substantial.

Land development activities would be regulated by the local municipality. The mitigation of the potential development and redevelopment within the area of influence considered for this assessment would be the responsibility of the agencies with the authority to implement such controls. This authority rests with the municipal government and, to a lesser extent, the county. Examples of municipal government regulations include tree ordinances and development codes. City of Sanger subdivision regulations require the dedication of land for parks and open space. Additionally, developers often incorporate existing water and vegetation features, such as streams, ponds, and green belts, into their design plans; thus maintaining some existing natural vegetation and wildlife habitat.

The responsibility of transportation providers such as TxDOT, local and regional transit agencies, and the local governments would be to implement a transportation system to complement the land use.

The induced growth associated with the proposed project does not conflict with study area goals, would not substantially worsen the conditions of a sensitive or vulnerable resource, would not delay or interfere with planned improvement of a resource, and is not inconsistent with any applicable laws; therefore, mitigation for the impacts to vegetation/wildlife habitat, farmland and water resources is not warranted.

No-Build Alternative: This alternative would not result in induced growth.

## 5.16. Cumulative Impacts

The CEQ defines cumulative impacts as those which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative

impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §1508.7). As such, it may be difficult to understand the role that a proposed action may have in contributing to the overall or cumulative impacts to an area or resource.

**Build Alternative**: An analysis of cumulative impacts followed the processes outlined in TxDOT's *Cumulative Impacts Analysis Guidelines* (July 2016). Refer to the FM 455 *Indirect and Cumulative Impacts Analysis* Technical Report for a detailed discussion of the cumulative impacts analysis.

Results of the analysis indicate that the cumulative impacts on vegetation and wildlife habitat resulting from 98.5 acres of direct impacts, 1,180.8 acres of induced development impacts, and 1,811.7 acres of impacts from other past, present, and reasonably foreseeable actions would total 3,091.0 acres. Cumulative impacts to vegetation and wildlife habitat would affect 35.4 percent of the resource within the resource study area (RSA). Based on the continued availability of protected habitat areas; the potential cumulative impact occurring over a 60-year period, allowing for resource recovery; and assuming appropriate implementation of regulated avoidance, minimization, and mitigation strategies for vegetation and habitat impacts, the proposed project would not contribute to substantial cumulative impacts to the area's vegetation and habitat.

The cumulative impacts on streams (riverine features) resulting from 0.715 acre of direct impacts, 14.6 acres of induced development impacts, and 18.1 acres of impacts from other past, present, and reasonably foreseeable actions would total 33.415 acres. Cumulative impacts to streams (riverine features) would affect 24.3 percent of the resource within the RSA.

The cumulative impacts on wetlands resulting from 0.004 acre of direct impacts, 0.7 acre of induced development impacts, and 1.4 acres of impacts from other past, present, and reasonably foreseeable actions would total 2.104 acres. Cumulative impacts to wetlands would affect 13.8 percent of the resource within the RSA.

The cumulative impacts on open waters (ponds) resulting from 0.241 acre of direct impacts, 11.5 acres of induced development impacts, and 22.7 acres of impacts from other past, present, and reasonably foreseeable actions would total 34.441 acres. Cumulative impacts to open waters (ponds) would affect 50.2 percent of the resource within the RSA.

Overall, the cumulative impact to Waters of the U.S. is considered not substantial because the potential cumulative impact would occur over a 60-year period, allowing for resource recovery; existing regulations (e.g., Section 404 of the Clean Water Act and floodplain restrictions) govern impacts to Waters of the U.S., which would require avoidance and minimization of potential impacts; and at least some of the Waters of the U.S. would be retained as part of the landscaping for residential or other site developments.

For vegetation and wildlife habitat, incorporating parks, open spaces, and riparian corridors around and within developed areas would provide wildlife habitat and shelter. This mitigation could be conducted by whoever is responsible for the impact such as a developer. Development within the associated municipality within the RSA would be subject to the laws and ordinances regulating residential, commercial and industrial development set by the municipal government. Mitigation could include mandatory park areas or a limit on lot sizes.

For Waters of the U.S., avoidance or minimization of impacts to Waters of the U.S. and wetlands should be performed during the development design phase so that the least amount of impact occurs. Mitigation is only conducted when impacts to Waters of the U.S. and wetlands cannot be avoided. Typical mitigation for impacts to Waters of the U.S. includes the construction of mitigation areas or purchasing credits from a mitigation bank. Mitigation is frequently conducted as one of the requirements for obtaining a Section 404 permit. The USACE decides what the ratio

of the mitigation area would be relative to the acreage of impacts to Waters of the U.S. A typical mitigation ratio is three times the amount of acreage impacted, while the minimum mitigation ratio is one time the amount of acreage impacted (i.e. 1:1 ratio).

A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or in certain circumstances, preserved for the purpose of providing compensation for unavoidable impacts to aquatic resources permitted under Section 404 or a similar state or local wetland regulation. Mitigation banks are used in situations where the construction of a mitigation area is not practical. Mitigation banks are a form of "third-party" compensatory mitigation, in which the responsibility for compensatory mitigation implementation and success is assumed by a party other than the permittee. The USACE would have jurisdiction over mitigation activities for impacts to Waters of the U.S., and as such, would determine the mitigation responsibilities of the developers.

No-Build Alternative: The implementation of this alternative would not contribute to cumulative impacts in the 8,951-acre RSA for vegetation, wildlife habitat, and Waters of the U.S.

## 5.17. Construction Phase Impacts

Build Alternative: The construction phase of the proposed project, and associated construction impacts, is anticipated to be 24 months in length. During the construction phase of the proposed project, there is the potential for noise, dust or light pollution; impacts associated with physical construction activity, temporary lane, road or bridge closures (including detours); and other traffic disruptions. These potential impacts are discussed as follows:

Construction Noise – There would be loud noise from heavy equipment during construction of the project. Noise associated with the construction is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns and would not be restricted to any specific location. Refer to the FM 455 *Traffic Noise Technical Report* for a detailed discussion of construction noise.

Construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the businesses and residences along the project is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected.

Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

Fugitive Dust and Air Pollutants – During the construction phase of this project, temporary increases in particulate matter (PM) and MSAT emissions may occur from construction activities. The primary construction-related emissions of PM are fugitive dust from site preparation, and the primary construction-related emissions of MSAT are diesel PM from diesel powered construction equipment and vehicles. Refer to Section 5.12 of this EA and the FM 455 *Air Quality Assessment Technical Report* for a detailed discussion of fugitive dust and air pollutants.

Construction-related pollutants that are not contained onsite are expected to dissipate readily in the normal course of atmospheric mixing. Considering the temporary and transient nature of construction-related emissions, as well as the mitigation actions to be utilized, it is not anticipated that emissions from construction of this project would have any substantial impact on air quality in the proposed project area.

The potential impacts of PM emissions would be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The TERP provides financial incentives to reduce emissions from vehicles and equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent

possible to minimize diesel emissions. Information about the TERP program can be found at: http://www.tceq.state.tx.us/implementation/air/terp/.

Light Pollution – Construction normally occurs during daylight hours; however, construction could occur during the night-time hours to minimize impacts to the traveling public during the daylight hours.

Due to the close proximity of businesses and residents to the project, if construction were to occur during the night-time hours, it would be of short duration and would not be conducted late in the evening.

Construction during the night-time hours would be of short duration and would follow any local policies and ordinances established for construction activities, such as light limitations.

Construction Activity Impacts – Construction activities would be limited to the proposed project footprint. Excessive vibration from construction equipment is not anticipated.

If there was excessive vibration from construction equipment, it would be of short duration.

Traffic control plans would be prepared and implemented in coordination with the city and the county. Construction that would require cross street closures would be scheduled so only one crossing in an area is affected at one time. Where detours are required, clear and visible signage for an alternative route would be displayed. In residential areas, major activity would be limited to normal work hours whenever practicable, to avoid noise and related impacts to the local population.

Temporary Lane, Road or Bridge Closures (Including Detours) – Traffic control plans would be prepared and implemented in coordination with the city and the county. Construction that would require cross street closures would be scheduled so only one crossing in an area is affected at one time. Where detours are required, clear and visible signage for an alternative route would be displayed. There would be no bridge closures.

Motorists would be inconvenienced during construction of the project due to lane and cross-street closures; however, these closures would be of short duration and alternate routes would be provided.

Residents and businesses in the immediate construction area would be notified in advance of proposed construction activity using a variety of techniques, including signage, electronic media, community newspapers, and other techniques. The proposed project would not restrict access to any existing public or community services, businesses, commercial areas, or employment centers.

**No-Build Alternative**: This alternative would not result in noise, dust or light pollution; impacts associated with physical construction activity, temporary lane, road or bridge closures; and other traffic disruptions associated with construction.

## 5.18. Airway-Highway Clearance

There are four privately-owned airports found within the vicinity of the proposed project area. Elevations of the airports, runway lengths, and the approximate distances between the airports and proposed project are provided in **Table 7**. No heliports were identified within the proposed project area.

Table 7: Project Area Airports

| Site Number | Site Information | Elevation | Runway Length | Airport Location Relative to Project (Approximate) |
|---|---|---|---|---|
| 24726.*A | Lane Field<br>97°8'47"W, 33°21'57.8"N<br>Sanger, TX 76266 | 700 feet | 3,340 feet | 3,450 feet southeast |
| 24726.1*A | Ironhead<br>97°13'49.058"W, 33°19'54.417"N<br>Sanger, TX 76266 | 715 feet | 2,500 feet | 9,960 feet south |
| 24726.11*A | Horseshoe Lake<br>97°12'19.053"W, 33°23'35.41"N<br>Sanger, TX 76266 | 725 feet | 2,675 feet | 9,380 feet north |
| 24726.15*A | Flying C<br>97°16'12"W, 33°20'32"N<br>Sanger, TX 76266 | 775 feet | 1,650 feet<br>1,400 feet | 9,270 feet southwest |

*Source: Federal Aviation Administration, Airport Data & Contact Information Form; Airport Facilities Data and Airport Runways Data; https://www.faa.gov/airports/airport_safety/airportdata_5010/; accessed January 17, 2017.*

According to the FHWA, highway projects within 10,000 feet of an airport runway (actual length of 3,200 feet or less), 20,000 feet of an airport runway (actual length greater than 3,200 feet) , or 5,000 feet of a heliport require Federal Aviation Administration (FAA) coordination if construction height would exceed a plane (extending outward from helipad or end of runway) defined by a distance: height ratio of 50:1 for airports (runway no more than 3,200 feet in actual length); 100:1 for airports (runway more than 3,200 feet in actual length); or 25:1 for heliports. Coordination is also required within this buffer for any construction or alteration of more than 200 feet in height above the ground level. Lastly, coordination is required for minimum 15-feet upward adjustment (lane elevation) of a public roadway (not an Interstate Highway that is part of the National System of Military and Interstate Highways). Due to the proximity of the airports listed in **Table 7** to the proposed project, the TxDOT Dallas District will determine if FAA coordination would be required. If it is determined that coordination is required, FAA Form 7460-1 (Notice of Proposed Construction or Alteration) would be completed and submitted by TxDOT to the FAA for their approval prior to construction of proposed improvements.

# 6. Agency Coordination

Cultural Resources – Coordination with the THC regarding archeological and historical resources is ongoing. See the FM 455 *Report for Historical Studies Survey* for information on the coordination that occurred with the Denton County Historical Commission, Denton County Certified Local Government, Sanger Area Historical Society, and Bolivar Cemetery Association.

Biological Resources - Early coordination with TPWD was initiated on December 20, 2016 and completed on March 20, 2017.

Water Resources – Coordination with the USACE would be required because a PCN for NWP 14 is required at water crossing 2 because discharges into special aquatic sites could occur and at water crossing 8a because the impact is greater than 0.1 acre at this crossing. The proposed project includes work within a FEMA designated 100-year floodplain; therefore, coordination with the local Floodplain Administrator would be required.

Airway-Highway Clearance – The TxDOT Dallas District will determine if coordination with the FAA is required. If it is determined that coordination is required, FAA Form 7460-1 (Notice of Proposed Construction or Alteration) would be filed at least 45 days before the start date of the proposed construction in conjunction with project airway-highway clearance coordination.

# 7. Public Involvement

A Meeting with Affected Property Owners was held on May 24, 2015 to discuss the area from just west of IH 35 east to the BNSF railroad tracks. On February 26, 2015, TxDOT hosted a Public Meeting at the Sanger High School Lecture Hall, 100 Indian Lane, Sanger, TX 76266. TxDOT personnel, representatives from Denton County, the City of Sanger, and project consultants were present at the meeting for a combined total of 157 attendees. The meeting was held to share information about the project and seek input from area residents. There were 56 written comments received at the Public Meeting. There were 13 additional comments received via mail during the 10-day comment period that ended on July 3, 2015. Of these 68 comments, six predominant issues were mentioned:

1. The need for more median openings throughout the project west of IH 35.
2. Having to make U-turns with large trailers both by businesses and property owners with horse trailers.
3. Questions regarding the ROW acquisition process.
4. Drainage for the proposed project.
5. The distance of a structure on their property with regards to the proposed ROW and would they be damaged out.
6. The need for the project and why it would be four lanes.

The Public Meeting Documentation may be inspected and copied upon request at the TxDOT Dallas District Office. A Public Hearing is anticipated to be held in 2017.

A notice of impending construction would be provided to owners of adjoining property and affected local governments and public officials. The notice may be provided via a sign or signs posted in the ROW, mailed notice, printed notice distributed by hand, or notice via website when the recipient has previously been informed of the relevant website address. This notice would be provided after the environmental decision (i.e., FONSI), but before earthmoving or other activities requiring the use of heavy equipment begin.

# 8. Environmental Permits, Issues and Commitments

## 8.1. ROW Acquisition and Relocation

The TxDOT ROW Acquisition and Relocation Assistance Program would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970, as amended, in the Uniform Relocation Assistance Act of 1987, and relocation resources are available without discrimination to all facilities being relocated.

## 8.2. Limited English Proficiency

A Public Hearing would be conducted for the proposed project. Reasonable steps will be taken to ensure that LEP persons have meaningful access to the programs, services, and information TxDOT provides. During the Public Hearing, an interpreter for specific languages would be provided if requests are made prior to the event date.

## 8.3. Clean Water Act Section 401

The SW3P would include at least one BMP from the 401 Water Quality Certification Conditions for NWPs as published by the TCEQ. These BMPs would address each of the following categories:

- Category I Erosion Control would be addressed by using temporary vegetation, blankets/matting, permanent seeding/sodding, and stone outlet structures.
- Category II Sedimentation Control would be addressed by installing silt fence, rock berms, and stabilized construction exits.
- Category III Post-Construction TSS control would be addressed by installing grass swales and vegetative filter strips.

Other approved methods would be substituted if necessary using one of the BMPs from the identical category.

### 8.4. Clean Water Act Section 402

TxDOT would comply with the requirements of the TCEQ TPDES General Permit No. TxR150000. In order to comply with TPDES General Permit Number TxR150000 for Construction Activities requirements, a NOI would be filed with TCEQ stating that TxDOT would have a SW3P in place during construction of this project. A construction site notice would be posted on the construction site. This SW3P utilizes the temporary control measures as outlined in TxDOT's manual *Standard Specifications for the Construction of Highways, Streets, and Bridges*.

A portion of the proposed project is located within the boundaries of the Phase II Denton County MS4. A NOI would be submitted to Denton County and the proposed project would comply with the applicable MS4 requirements.

### 8.5. Executive Order 11988, Floodplain Management

The proposed project would be in compliance with 23 CFR 650 regarding location and hydraulic design of highway encroachments within the floodplains, and the proposed project would comply with EO 11988, Floodplain Management. Local floodplain administrator coordination would be conducted.

### 8.6. Cultural Resources

Prior to construction, further investigation and testing of Site 41DN593, Site 41DN594, and the eight HPAs would be conducted to determine National Register eligibility.

In the unlikely event that cultural resources are discovered during construction of the proposed project, TxDOT would immediately initiate cultural resource discovery procedures. All work in the vicinity of the discovery would cease until a specialist from TxDOT and/or the THC could arrive on site and assess the discovery's significance and the need, if any, for additional investigation.

### 8.7. Biological Resources

Impacts to vegetation would be avoided or minimized by limiting disturbance to only that which is necessary to construct the proposed project. The removal of native vegetation, particularly mature native trees and shrubs, would be avoided to the greatest extent practicable. A native and locally adapted seed mix would be used in the re-vegetation of disturbed areas. Contractors must adhere to Construction Specification Requirement Specs 162, 164, 192, 193, 506, 730, 752 & 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

In accordance with the TxDOT-TPWD MOU, BMPs would be implemented for the Western burrowing owl, plains spotted skunk, Texas garter snake, Timber rattlesnake, Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter. In addition, the contractor would be notified (via the EPIC sheet, general notes, and/or pre-construction meeting) of the potential to encounter these species during construction and to take the necessary measures to avoid harm to these species. Mussel surveys/relocation would be completed approximately six months prior to the start of construction.

### 8.8. Migratory Bird Treaty Act

The contractor would remove all old migratory bird nests from any structure where work would be done from October 1 to February 15. In addition, the contractor would be prepared to prevent migratory birds from building nest(s) between February 15 and October 1. In the event that migratory birds are encountered on-site during project construction, efforts to avoid adverse impacts on protected birds, active nests, eggs and/or young would be observed.

### 8.9. Executive Order 13112 on Invasive Species

Seeding and replanting with TxDOT-approved seed mixes containing native species would be conducted where possible. Soil disturbance would be minimized in the ROW in order to minimize invasive species establishment. Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, and 752 in order to comply with the requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

### 8.10. Air Quality

Potential impacts of PM emissions would be minimized by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate.

### 8.11. Hazardous Materials or Contamination Issues

The proposed project includes the demolition and/or relocation of building structures and bridges. Asbestos inspections, specification, notification, license, accreditation, abatement and disposal, as applicable, should comply with federal and state regulations. Asbestos issues should be addressed during the ROW process prior to construction.

Any unanticipated hazardous materials encountered during construction would be handled according to applicable federal, state, and local regulations per TxDOT Standard Specifications. The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. All construction materials used for this project would be removed as soon as the work schedules permit.

Should hazardous materials/substances be encountered, the TxDOT Dallas District Hazardous Materials Section would be notified and steps would be taken to protect personnel and the environment. If necessary, the plans, specifications, and estimates would include provisions for the appropriate soil and/or groundwater management plans for activities within these areas. The management plans would be initiated in accordance with all applicable federal, state and local regulations.

## 9. Conclusion

Implementation of the proposed project would not result in a significant impact on the human or natural environment; therefore, a FONSI is recommended.

## 10. References

City of Sanger

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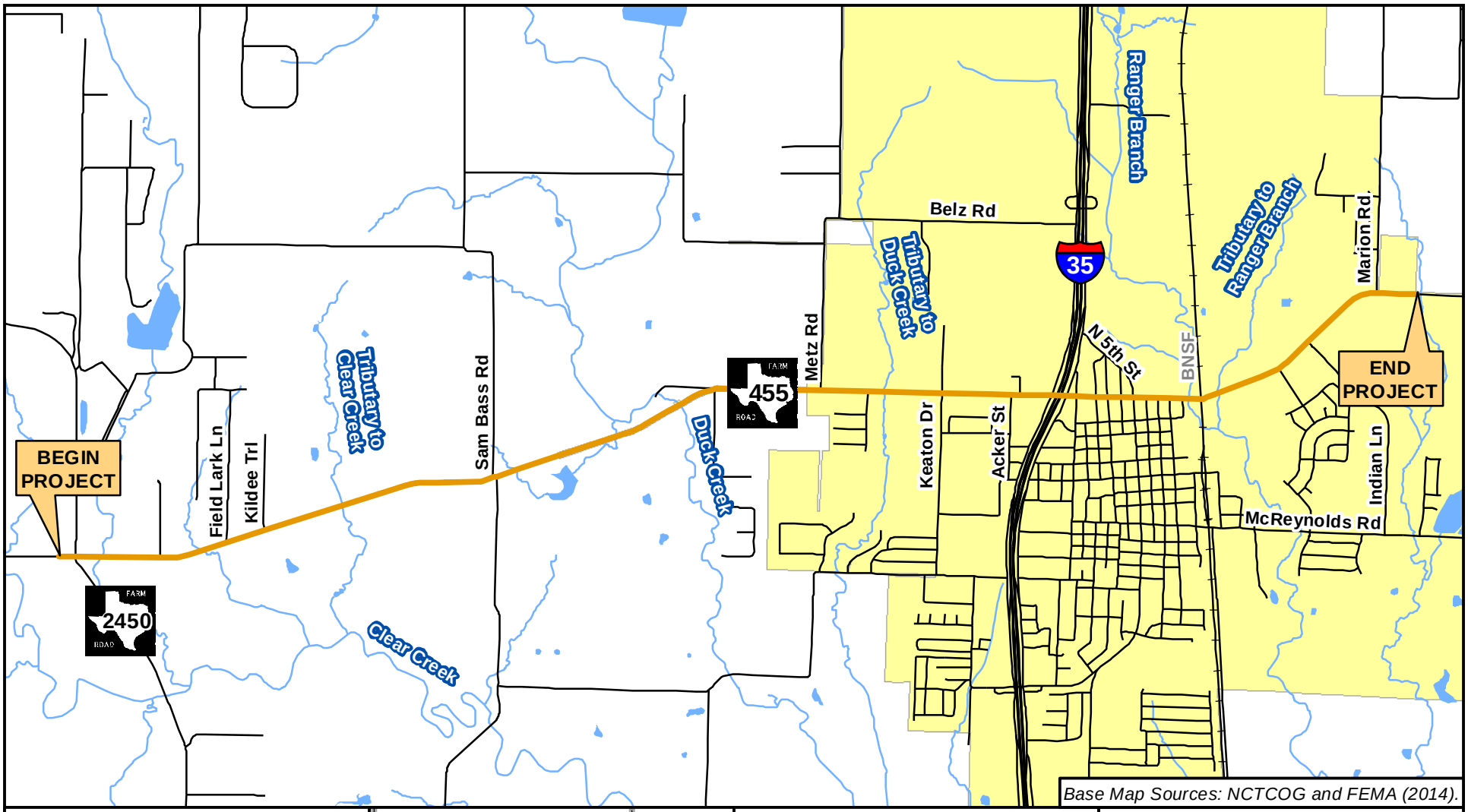
# Appendix A – Project Location Map

## FM 455 Draft Environmental Assessment

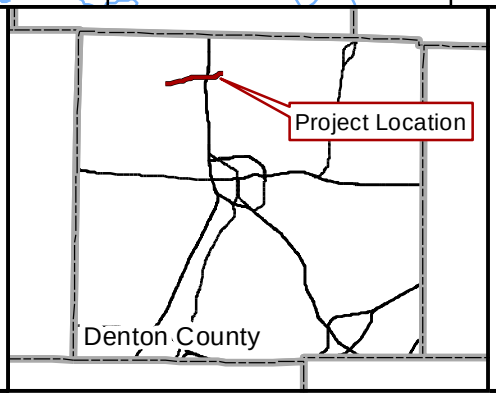
Denton County, Texas

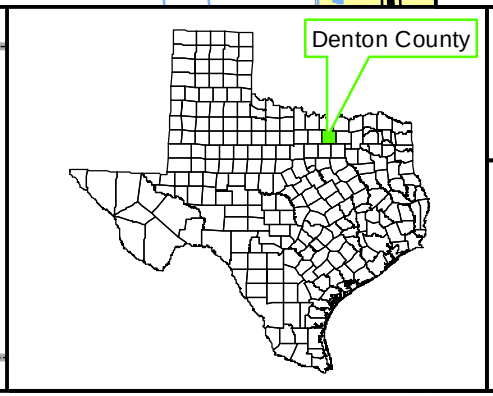
CSJ: 0816-02-072




**Legend**

- Project Limits
- Road
- Railroad
- City of Sanger
- Lake/Pond
- Stream




0 3,000 Feet

N W E S

**PROJECT LOCATION MAP**

FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY

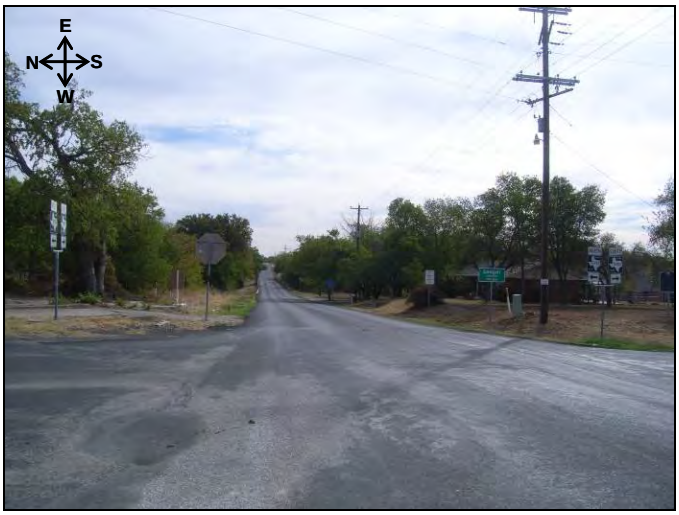
CSJ: 0816-02-072

# Appendix B – Project Photos

## FM 455 Draft Environmental Assessment

Denton County, Texas

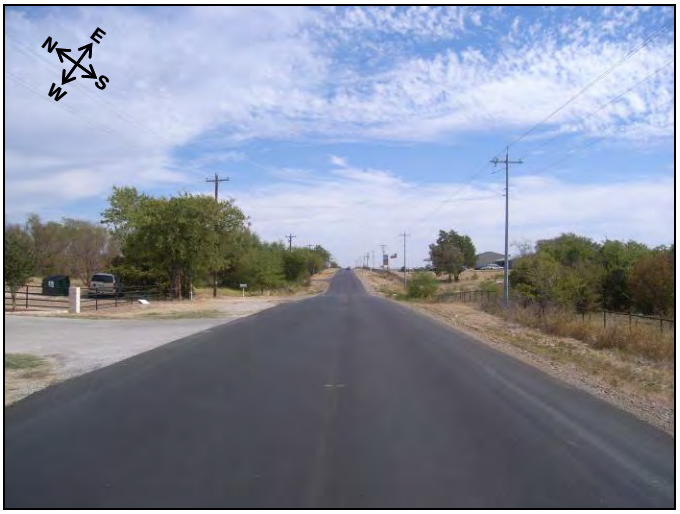
CSJ: 0816-02-072




**Photograph 1: View looking east at the intersection of FM 455 and FM 2450, the beginning of the proposed project.**

**Photograph 2: View looking east from the south side of FM 455 at the FM 455 Bridge over the easternmost tributary to Clear Creek.**

**Photograph 3: View looking southeast from the south side of FM 455 at Bolivar Cemetery and its associated OTHM.**

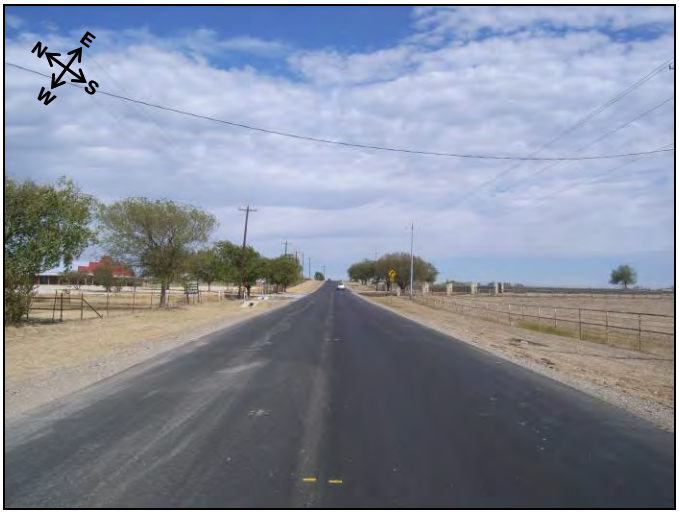



**Photograph 4: View looking northeast at FM 455 from between Burke St. and Field Lark Ln. Pit Stop (Valero) is visible in the distance on the south side of FM 455.**

**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 1 OF 9

**Photograph 5: View looking south from the north side of FM 455 at the culvert beneath FM 455 at the easternmost tributary to Clear Creek.**

**Photograph 6: View looking southwest at the FM 455 Bridge over Duck Creek.**



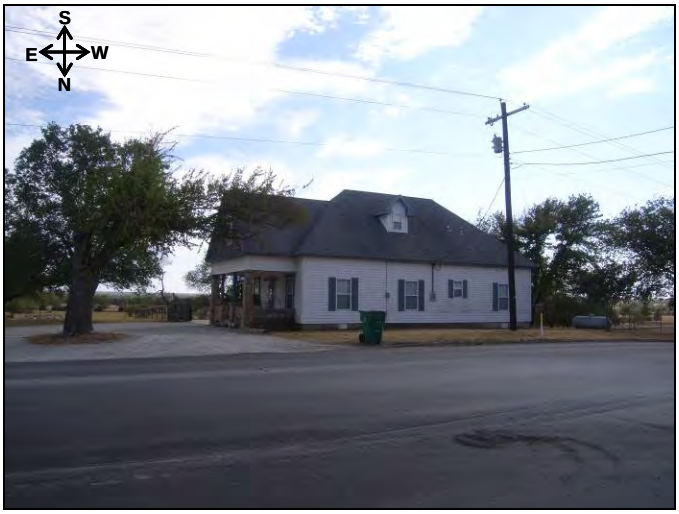

**Photograph 7: View looking northeast at FM 455 approximately 500 feet east of the easternmost tributary to Clear Creek.**

**Photograph 8: View looking northwest at a potential structural displacement located at the intersection of FM 455 and Hachtel Dr.**

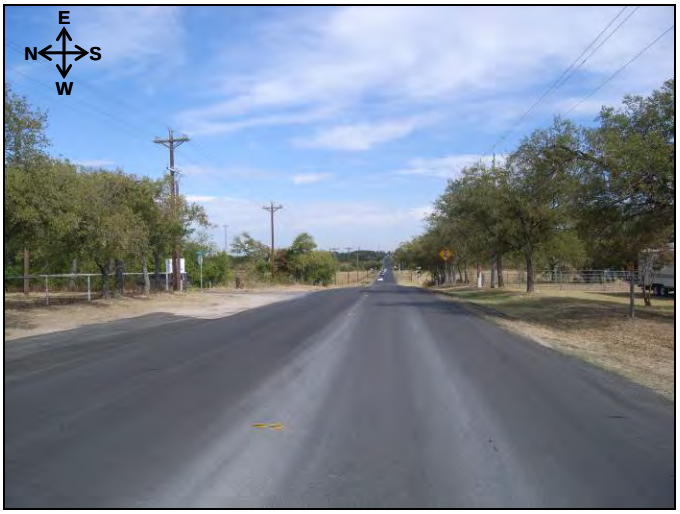
**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 2 OF 9

**Photograph 9: View looking northwest just west of the intersection of FM 455 and Metz Rd. The commercial structure and unknown structure are potential displacements.**

**Photograph 10: View looking south from FM 455 at the easternmost tributary to Duck Creek.**



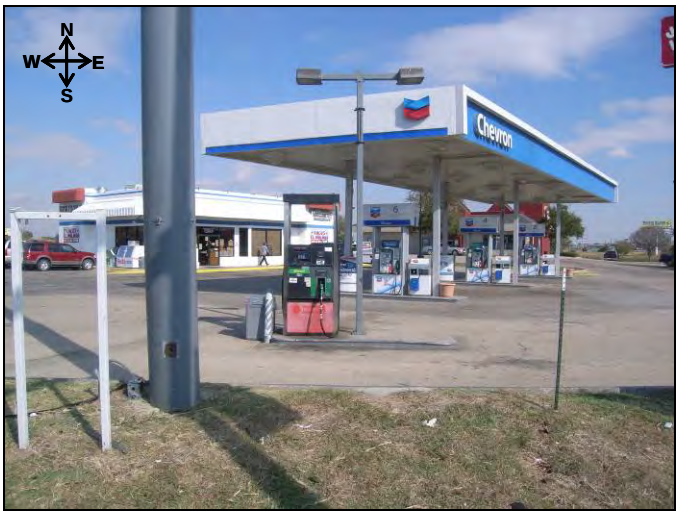

**Photograph 11: View looking south from the north side of FM 455 just west of its intersection with Metz Rd. The residential structure is a potential displacement.**




**Photograph 12: View looking east at FM 455 just west of its intersection with Metz Rd.**

**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 3 OF 9

**Photograph 13: View looking north from the south side of FM 455 at the Noah C. Batis property, an OTHM and potential displacement.**

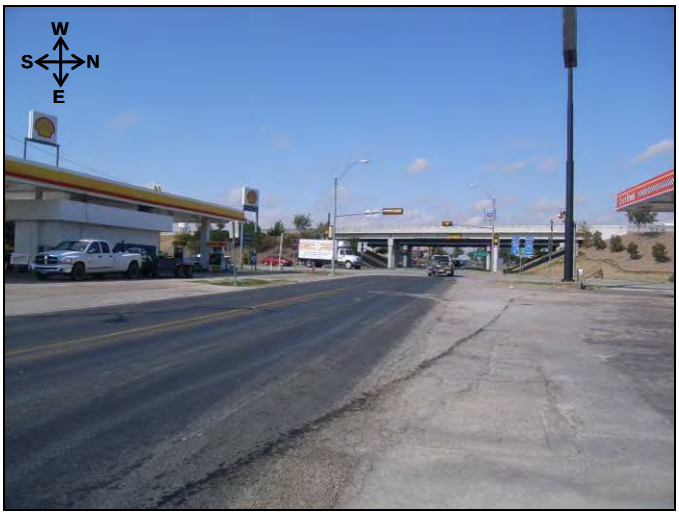



**Photograph 14: View looking north at the Chevron on the northwest corner of the I-35 southbound frontage road/FM 455 intersection. The diesel pump island in the foreground is a potential displacement.**

**Photograph 15: View looking west at FM 455, adjacent to the Chisholm Trail Elementary School.**

**Photograph 16: View looking east at FM 455, west of Acker St.**

**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 4 OF 9




**Photograph 17: View looking west at I-35 over FM 455. Snap Shop 1 (Quick Track) is located on the north side of FM 455 and Gateway 18/Lynch's Food Mart (Shell) is in located on the south side. Both facilities are potential displacements.**

**Photograph 18: View looking southwest from the south side of FM 455 at the 7th St./FM 455 intersection at a potential residential displacement and commercial (State Farm Insurance) displacement.**

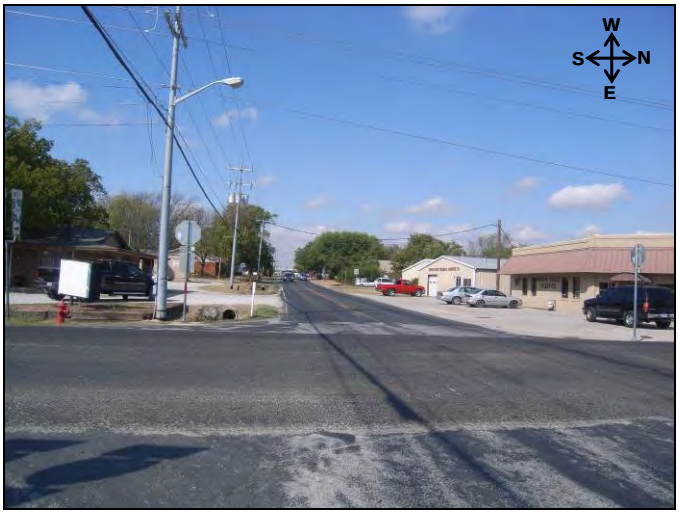
**Photograph 19: View looking east at FM 455 from its intersection with 10th St. The structures on the south side of FM 455 are potential commercial displacements (Pioneer Automotive and Sonic).**

**Photograph 20: View looking southeast from the 8th St./FM 455 intersection at a potential residential displacement.**

**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 5 OF 9

**Photograph 21: View looking southeast from the south side of FM 455 towards the 6th St./FM 455 intersection at a potential residential displacement and commercial (Springer Properties and Germania Insurance) displacements.**

**Photograph 22: View looking east from the west side of 5th St., south of FM 455 at a potential commercial displacement (D&L Farm and Home).**




**Photograph 23: View looking west from the intersection of 5th St. and FM 455.**

**Photograph 24: View looking east from the intersection of 5th St. and FM 455.**

**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 6 OF 9

**Photograph 25: View looking southeast from the south side of FM 455 at a potential commercial displacement (Carol & Co. Hair Salon) on the southwest corner of the 4th St./FM 455 intersection.**

**Photograph 26: View looking southeast from the south side of FM 455 at a potential commercial displacement (Clear Creek Real Estate) on the southeast corner of the 3rd St./FM 455 intersection.**

**Photograph 27: View looking southeast from the south side of FM 455 at a potential residential displacement on the southeast corner of the 4th St./FM 455 intersection.**

**Photograph 28: View looking southwest from the south side of FM 455 at a potential residential displacement on the southwest corner of the 3rd St./FM 455 intersection.**

**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 7 OF 9

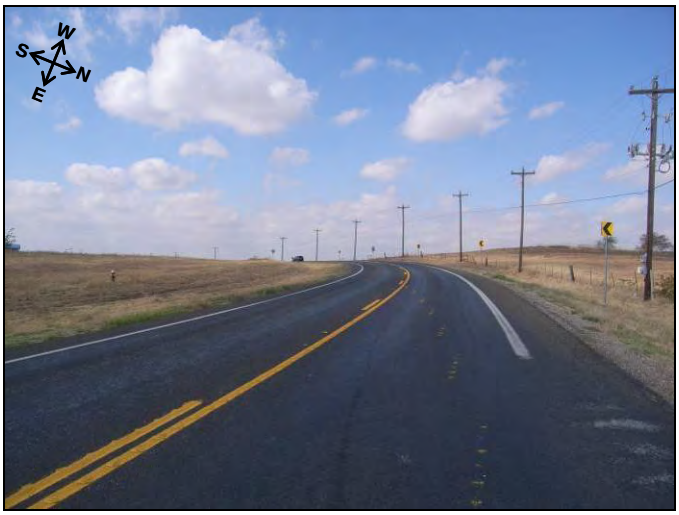
**Photograph 29: View looking southeast from the south side of FM 455 at a potential commercial displacement (B&B Garage) on the southwest corner of the 2nd St./FM 455 intersection.**

**Photograph 30: View looking northeast from the south of FM 455 where it crosses a tributary to Ranger Branch.**

**Photograph 31: View looking southeast from the south side of FM 455 at Ranger Branch. BNSF is in the background.**

**Photograph 32: View looking west at the BNSF RR crossing over FM 455. The vacant structure on the south side of FM 455 is a potential displacement.**

**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 8 OF 9




**Photograph 33: View looking southwest from the Marion Rd./FM 455 intersection, near the end of the proposed project.**

**PROJECT PHOTOS**
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 9 OF 9

# Appendix C – Schematics

## FM 455 Draft Environmental Assessment

Denton County, Texas

CSJ: 0816-02-072

DENTON COUNTY

PRELIMINARY DESIGN SCHEMATIC

Texas Department of Transportation

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DALLAS DISTRICT
JAMES K. SELMAN P.E.,
DISTRICT ENGINEER

FM 455

FROM WEST OF FM 2450 TO EAST OF MARION ROAD
CSJ NO. 0816-02-072

ROADWAY = 28,951.18 FT = 5.483 MI
BRIDGE = 250 FT = 0.047 MI
NET LENGTH OF PROJECT = 29,201.18 FT = 5.530 MI

FM 455
FUNCTIONAL CLASS: MINOR ARTERIAL

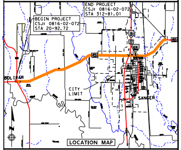
DESIGN SPEED: 45 MPH (LOW SPEED URBAN)

PROJECTED ADT (2020): 15,400
PROJECTED ADT (2040): 21,400
TRAFFIC SOURCE: TXDOT, TP&P MEMO JUNE 10, 2013

SAM BASS ROAD
DESIGN SPEED: 35 MPH (CITY STREET)

MARION ROAD
DESIGN SPEED: 40 MPH (CITY STREET)

EQUATIONS: NONE
RAILROADS: BNSF RR
EXCEPTIONS: NONE


END PROJECT
CSJ: 0816-02-072
STA 312+81.01
BEGIN PROJECT
CSJ: 0816-02-072
STA 20+92.72
BOLIVAR
CITY LIMIT
SANGER

LOCATION MAP

SCALE:

200'
100'
0
200'

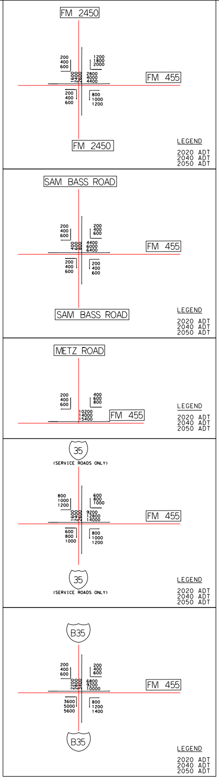
SCALE: HORIZONTAL 1"= 200'

SCALE: VERTICAL 1"= 20'

DANNENBAUM
ENGINEERING COMPANY - DALLAS, LLC
T.B.P.E. FIRM REGISTRATION #392
3030 LYNDON B JOHNSON FWY, STE 910 DALLAS, TX 75234 (972) 239-2002

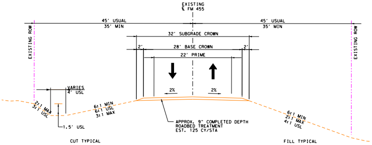
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF DANIEL W. EVERETT, P.E. 93551. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES. DATE: 7/13/2017

ROLL 1 OF 2


FM 2450
200
400
600
1200
1800
2000
1600
2400
2600
2800
4000
4400
FM 455
200
400
600
800
1000
1200
FM 2450
LEGEND
2020 ADT
2040 ADT
2050 ADT
SAM BASS ROAD
200
400
600
200
400
600
400
600
800
4400
6000
6400
FM 455
200
400
600
200
400
600
SAM BASS ROAD
LEGEND
2020 ADT
2040 ADT
2050 ADT
METZ ROAD
200
400
600
400
600
800
10200
14000
15400
FM 455
LEGEND
2020 ADT
2040 ADT
2050 ADT
35
(SERVICE ROADS ONLY)
800
1000
1200
600
800
1000
1600
2400
2600
9200
12800
14000
FM 455
600
800
1000
800
1000
1200
35
(SERVICE ROADS ONLY)
LEGEND
2020 ADT
2040 ADT
2050 ADT
B35
200
400
600
200
400
600
2200
2800
3400
6800
9200
10000
FM 455
3600
5000
5600
800
1200
1400
B35
LEGEND
2020 ADT
2040 ADT
2050 ADT

TRAFFIC DIAGRAMS

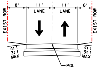
SOURCE OF DATA: TEXAS DEPARTMENT OF TRANSPORTATION; TRANSPORTATION PROGRAMMING AND PLANNING DIVISION MEMORANDUM JUNE 10, 2013


EXISTING
℄ FM 455
45' USUAL
35' MIN
45' USUAL
35' MIN
EXISTING ROW
EXISTING ROW
32' SUBGRADE CROWN
2'
28' BASE CROWN
2'
22' PRIME
2%
2%
VARIES
4' USL
2:1 MAX
3:1 USL
1.5' USL
6:1 MIN
6:1 USL
3:1 MAX
APPROX. 9" COMPLETED DEPTH
ROADBED TREATMENT
EST. 125 CY/STA
6:1 MIN
2:1 MAX
4:1 USL
CUT TYPICAL
FILL TYPICAL

FM 455 EXISTING TYPICAL SECTION

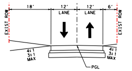
N.T.S.

STA 20+92.72 TO STA 313+23.50


8'
11'
LANE
11'
LANE
6'
EXIST ROW
EXIST ROW
4:1
3:1
MAX
4:1
3:1
MAX
PGL

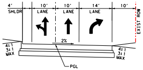
SAM BASS ROAD
EXISTING/PROPOSED TYPICAL SECTION

N.T.S.


18'
12'
LANE
12'
LANE
6'
EXIST ROW
EXIST ROW
4:1
3:1
MAX
4:1
3:1
MAX
PGL

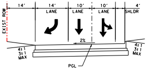
MARION ROAD
EXISTING/PROPOSED TYPICAL SECTION

N.T.S.


4'
SHLDR
10'
LANE
10'
LANE
14'
LANE
10'
EXIST ROW
2%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

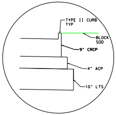
IH35 NORTHBOUND FRONTAGE ROAD
EXISTING/PROPOSED TYPICAL SECTION

N.T.S.


14'
14'
LANE
10'
LANE
10'
LANE
4'
SHLDR
EXIST ROW
2%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

IH35 SOUTHBOUND FRONTAGE ROAD
EXISTING/PROPOSED TYPICAL SECTION

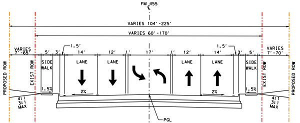
N.T.S.


TYPE II CURB
TYP
BLOCK
SOD
9" CRCP
4" ACP
10" LTS

DETAIL A

FINAL PAVEMENT DESIGN PENDING

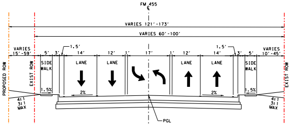
STATUS:
USER:
FILE: G:\1220\4527-01\DGN\Schematic\452701 sch01.dgn
DATE: 7/13/2017


FM 455 ℄
VARIES 104'-225'
VARIES 60'-170'
VARIES 7'-65'
VARIES 7'-70'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

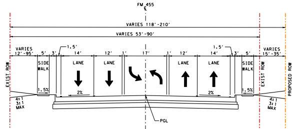
STA 30+00.62 TO STA 32+30.81
STA 46+76.35 TO STA 85+50.00
STA 94+61.04 TO STA 117+78.63
STA 148+52.40 TO STA 153+35.40
STA 154+85.40 TO STA 164+80.24
STA 179+69.29 TO STA 185+32.80
STA 220+18.42 TO STA 227+03.25
STA 252+68.41 TO STA 266+71.15
STA 275+71.07 TO STA 281+91.84
STA 290+64.81 TO STA 297+46.74


FM 455 ℄
VARIES 121'-173'
VARIES 60'-100'
VARIES 15'-59'
VARIES 10'-45'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

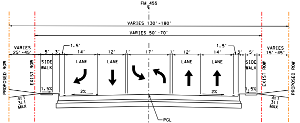
STA 32+30.81 TO STA 46+76.35
STA 85+50.00 TO STA 94+61.04
STA 117+78.63 TO STA 148+52.40
STA 164+80.24 TO STA 179+69.29
STA 185+32.80 TO STA 194+28.44
STA 202+57.54 TO STA 220+18.42
STA 287+74.74 TO STA 290+64.81


FM 455 ℄
VARIES 118'-210'
VARIES 53'-90'
VARIES 12'-95'
VARIES 15'-35'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

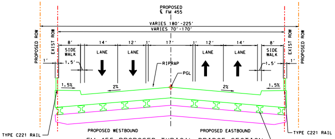
STA 247+91.92 TO STA 252+68.41
STA 266+71.15 TO STA 275+71.07
STA 297+46.74 TO STA 304+82.61


FM 455 ℄
VARIES 130'-180'
VARIES 50'-70'
VARIES 25'-45'
VARIES 15'-45'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

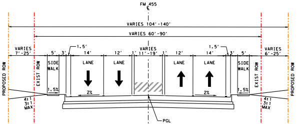
BEGIN PROJECT TO STA 29+00.76


PROPOSED ℄ FM 455
VARIES 180'-225'
VARIES 70'-170'
SIDE WALK
LANE
RIPRAP
PGL
1.5%
2%
EXIST ROW
PROPOSED ROW
PROPOSED WESTBOUND
PROPOSED EASTBOUND
TYPE C221 RAIL
PRESTR CONC GIRDER (TYPE TX46-UNLESS OTHERWISE NOTED) (TYPE TX 70 OVER DUCK CREEK)

FM 455 PROPOSED TYPICAL BRIDGE SECTION

N.T.S.

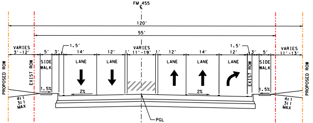
STA 29+00.76 TO STA 30+00.76
STA 153+35.40 TO STA 154+85.40


FM 455 ℄
VARIES 104'-140'
VARIES 60'-90'
VARIES 7'-25'
VARIES 11'-19'
VARIES 6'-25'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

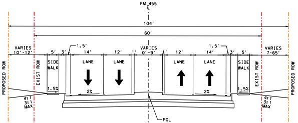
STA 227+03.25 TO STA 229+20.28
STA 304+82.61 TO STA 309+67.24


FM 455 ℄
120'
55'
VARIES 3'-12'
VARIES 11'-19'
VARIES 11'-13'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

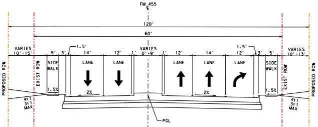
STA 235+84.50 TO STA 238+04.64


FM 455 ℄
104'
60'
VARIES 10'-12'
VARIES 0'-9'
VARIES 7-65'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

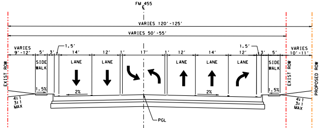
STA 229+20.28 TO STA 230+97.55


FM 455 ℄
120'
60'
VARIES 10'-15'
VARIES 0'-9'
VARIES 10'-13'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

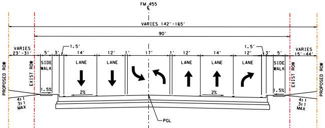
STA 233+94.12 TO STA 235+84.50


FM 455 ℄
VARIES 120'-125'
VARIES 50'-55'
VARIES 9'-12'
VARIES 10'-11'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

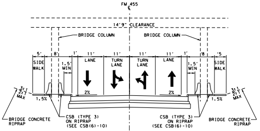
STA 238+04.64 TO STA 247+91.92


FM 455 ℄
VARIES 142'-165'
90'
VARIES 23'-31'
VARIES 15'-44'
SIDE WALK
LANE
1.5%
2%
4:1 3:1 MAX
EXIST ROW
PROPOSED ROW
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

STA 238+04.64 TO STA 247+91.92


FM 455 ℄
14'9" CLEARANCE
BRIDGE COLUMN
SIDE WALK
LANE
TURN LANE
1.5' MIN
1.5%
2%
3:1 2:1 MAX
BRIDGE CONCRETE RIPRAP
CSB (TYPE 3) ON RIPRAP (SEE CSB(6)-10)

FM 455 PROPOSED TYPICAL SECTION AT IH 35

N.T.S.

STA 230+97.55 TO STA 233+94.12

NOTE: ALL CURBS ARE TYPE II UNLESS OTHERWISE NOTED.

PROPERTY OWNER INFORMATION		
NUMBER	PROPERTY ID NO.	OWNER NAMES
1	59126	RANDY L. BENTLEY
2	59144	STEPHEN L. & GARY L. MARTIN
3	58818	CLEAR CREEK ANIMAL HOSPITAL INC.
4	57964	RANDY L. BENTLEY
5	250374	MARGARET LEROY BENTLEY
6	164480	FD EST CURTSINGER
7	250372	B R JR & MICHELLE A BENTLEY
8	57964	RANDY L. BENTLEY
9	122831	GERALD P. CARSEY
10	117863	GERALD P. CARSEY
11	58796	JOSHUA L & LACEY L SMITH
12	164480	JUSTIN CURTSINGER
13	58800	PHILLIP C & CHRISTINE L WAGNER
14	188925	SUSAN P. STEWART
15	58828	CALVIN HARBERSON
16	58831	BOLIVAR BAPTIST CHURCH
17	122976	AARON M. & JODI M MARTIN
18	186532	JUSTIN R MAXWELL
19	186533	CALVIN M & AMY R JONES
20	186534	PAUL W & SHARON SPRUIELL
21	56215	JUSTIN CURTSINGER
22	111336	CHERI ANNE GRAVES
23	244984	CHERI ANNE GRAVES
24	58833	ROBERT IRWIN ALBRECHT
25	123015	BOLIVAR BAPTIST CHURCH
26	123016	BOLIVAR BAPTIST CHURCH
27	117106	TERRY STOKES
28	117108	JANET L TIPPIT
29	56411	DANNY & VICTORIA BERTEL
30	257967	SUMEER HOMES INC
31	257969	SUMEER HOMES INC
32	258007	SUMEER HOMES INC
33	56269	RENNA L MOSS
34	283703	DAVID C & SARAH MANTSCH
35	56407	MEDIEVAL CASTLE INC
36	247079	B R JR & MICHELLE A BENTLEY
37	56285	JASON W & LAURA M DOWNING
38	56294	RIDIN FOR THE BRAND COWBOY CHURCH
39	56366	MIKE & LINDA THATEN
40	46409	ARTHUR P TRUST BUTHOD
41	134535	PEDRO & ARCELIA CASTOR RIVERA
42	134538	ANTHONY PAX
43	114138	ANTHONY PAX
44	76437	MARTIN BLACK
45	134541	TOMMY & DIANE RHODES
46	134540	TOMMY RHODES
47	149570	JOHNNY MELTON
48	149586	TONY A & BRENDA K BLEDSOE
49	57186	JUDY KNOWES SELPH
50	57193	FLOYD W & JEAN A HALBERT
51	111255	JUDY KNOWES SELPH
52	57224	BILLY ED NANCE
53	57372	NANCE
54	57205	JOHN W III & DELORES COKER
55	57208	PEGGY (AKA BETTY L) PATE
56	57200	ALLEN A & KAREN S SERRANO
57	59752	JO ANN HOLSON
58	59747	JO ANN HOLSON
59	59742	JO ANN HOLSON
60	59761	WILLIAM E NANCE
61	106056	GERALD A KNEZEK
62	106058	WOODARD II & HELEN WEBB
63	106059	GERALD A KNEZEK
64	132566	WOODARD II & HELEN WEBB
65	59751	SANDRA KAY DOBBS
66	75839	SANDRA KAY DOBBS
67	59768	ROBERTA E WALLACE
68	128451	TERRY LEE & NORMA STRAIN JONES
69	283345	DONNY & BRANDY A KNIGHTSTEP
70	300028	WILLIAM J & BELITA G MORRIS
71	300029	BRIAN P & MELISSA A MANN
72	59737	ROBERT G & GAYLETA PUGH
73	208169	DONNY KNIGHTSTEP
74	620422	BOLIVAR WATER SUPPLY CORP
75	225100	KATHY & STOUFFE ROSENTHAL
76	225315	KATHY & STOUFFE ROSENTHAL
77	225313	KATHY & STOUFFE ROSENTHAL
78	59901	JOHN & CAROL BETH KNIGHTSTEP
79	59905	JAMES V SR & DARLENE WATSON
80	59711	CONNIE & STROOPE HOLLSTEIN
81	59734	RANDY R & PATTIE R SLIGER
82	77796	RANDY R & PATTIE R SLIGER
83	77077	RUTH MRS MARSHALL
84	232698	R&R RANCHING AND REAL ESTATE INC
85	232699	R&R RANCHING AND REAL ESTATE INC
86	56536	KENNETH D & SHELLEY L RULAND
87	131208	SANGER ISD
88	56489	PAC GROUP LTD
89	233824	PORTER
90	245453	REED LAND HOLDINGS LLC
91	245454	JJEM PROFESSIONALS LLC
92	245455	SHIELDS FAMILY LLC II
93	245456	KENNETH R HERMES
94	245457	RICHARD J PERRY
95	245458	PAC GROUP LTD
96	56513	S&T RENTALS LLC
97	56518	LINDA DIANE HEWLETT
98	56521	LINDA DIANE HEWLETT
99	56459	O'REILLY AUTOMOTIVE INC
100	243328	PAC GROUP LTD
101	253746	DAVID K & SHERRY A ISBELL
102	243327	CRIMSON TILE MANAGEMENT INC
103	57235	B-29 PROPERTIES LLC
104	238298	FIRST UNITED BANK AND TRUST COMPANY
105	205219	R C FINN INC
106	309668	FUEL MANAGEMENT LLC
107	56431	CHET TR SWITZER
108	56438	CHET TR SWITZER
109	75856	VICTRON STORES LP
110	60333	RICHARD T MUIR
111	59731	SPRINGER FAMILY RENTALS LLC
112	57946	SPRINGER FAMILY RENTALS LLC
113	57919	SPRINGER FAMILY RENTALS LLC
114	199424	SANGER PATE ADDISTION LLC
115	199629	DENTON/NORTH TEXAS SDI PORTFOLIO LLC
116	57927	KLEMENT KARL PROP INC
117	57924	KLEMENT KARL PROP INC
118	58030	DORMAN LEE JOHNSON
119	155832	RUSSEL M CEBALLOS
120	57928	JAMES W CONLEY
121	57932	SHARON S COPELAND
122	58714	LAVERNE SCHERTZ
123	58716	KERRY L & CHERYL CHERTZ
124	77706	OPAL ASHCROFT
125	57643	ALFRED ASHCROFT
126	58447	JOHN D & ELIZABETH SPRINGER
127	58441	JOHN D & ELIZABETH SPRINGER
128	239288	RJ SODHI INC
129	291008	EAGLE FARMS INC ETAL
130	58699	SPRINGER FAMILY RENTALS LLC
131	58704	SPRINGER FAMILY RENTALS LLC
132	58688	ALLAN W & CAROLYN PFAFFLY
133	58678	FRANK SAMDAD LTD P/S ETAL
134	60332	RONALD BEARD
135	58673	DENNIS & PEGGY ARRINGTON
136	58659	RONALD BEARD
137	284004	STUCKY FAMILY LTD PS
138	60307	EAGLE FARMS INC ETAL
139	58738	JESSE L BECK
140	58739	DONNA G SEARLE
141	58585	BILL & DONNA G SEARLE-PARK
142	60305	A RAY STEPHENS
143	60221	JIM & DEBBIE CONLEY
144	60218	BILLIE J PENNINGTON
145	268495	GRANITE INDUSTRIES LLC
146	60322	HUGH Z PRUETT
147	123509	SANGER ISD
148	132465	SANGER ISD

LEGEND

-·-·-	EXISTING TXDOT ROW
-·-·-	PROPOSED ROW
-·-·-	PROPOSED EASEMENT
-·-·-	EXISTING CITY/COUNTY ROW
—	PROPOSED SIDEWALK AND ADA RAMPS
▨	DISPLACEMENTS
—	PROPOSED EDGE OF PAVEMENT
▨	PROPOSED RIP RAP
—	PROPOSED METAL BEAM GUARD FENCE
○	UTILITY MANHOLE (APPROXIMATE LOCATION)
◇	FIRE HYDRANT (APPROXIMATE LOCATION)
●—	OVERHEAD ELECTRIC (APPROXIMATE LOCATION)
—	WATER LINE (APPROXIMATE LOCATION)
- - - SAN -	SANITARY SEWER LINE (APPROXIMATE LOCATION)

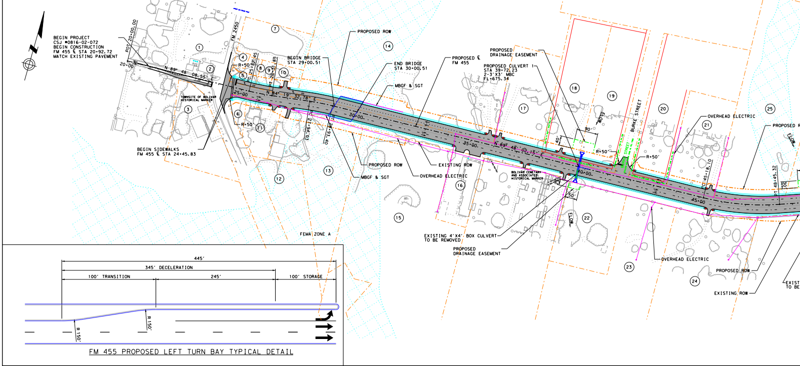
NOTES:

1. ALL RADII ARE MIN 15' UNLESS OTHERWISE NOTED
2. FINAL LOCATIONS FOR MEDIAN OPENINGS WILL BE DETERMINED DURING THE PS&E PHASE IN COORDINATION WITH THE LOCAL GOVERNMENT

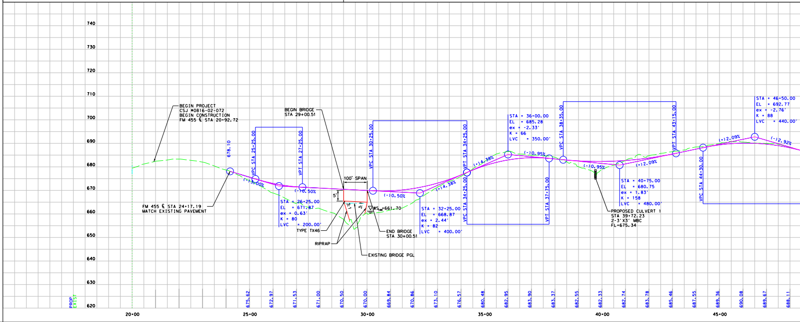
PI STATION = 25+82.19
DELTA = 5° 28' 35.76"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 49.74
LENGTH = 99.41
RADIUS = 1040.00
PC STATION = 25+32.45
PT STATION = 26+31.85

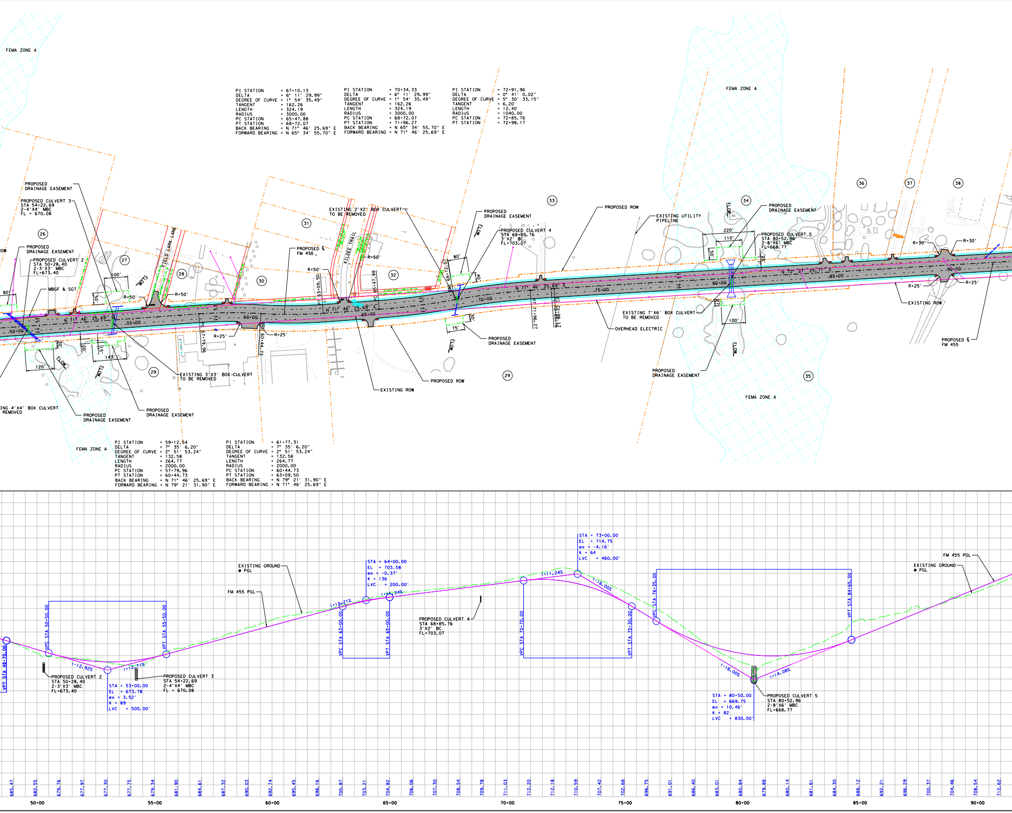
PI STATION = 28+43.75
DELTA = 5° 28' 29.36"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 49.73
LENGTH = 99.38
RADIUS = 1040.00
PC STATION = 27+94.03
PT STATION = 28+93.40

PI STATION = 46+83.07
DELTA = 18° 1' 36.46"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 164.97
LENGTH = 327.21
RADIUS = 1040.00
PC STATION = 45+18.10
PT STATION = 48+45.32


FEMA ZONE A
CLEAR CREEK TRIBUTARY
BEGIN PROJECT
CSJ #0816-02-072
BEGIN CONSTRUCTION
FM 455 ℄ STA 20+92.72
MATCH EXISTING PAVEMENT
POT 20+00.00
20+00
N 89° 48' 08.55" E
FM 2450
TOWNSITE OF BOLIVAR HISTORICAL MARKER
R=50'
PC 25+32.45
PT 26+31.85
N 84° 19' 32.78" E
25+00
BEGIN BRIDGE
STA 29+00.51
PC 27+94.03
PT 28+93.40
BEGIN SIDEWALKS
FM 455 ℄ STA 24+45.83
PROPOSED ROW
END BRIDGE
STA 30+00.51
MBGF & SGT
30+00
PROPOSED ℄
FM 455
PROPOSED DRAINAGE EASEMENT
PROPOSED CULVERT 1
STA 39+72.23
2-3'X3' MBC
FL=675.34
EXISTING ROW
OVERHEAD ELECTRIC
35+00
N 89° 48' 02.15" E
FLOW
90'
40'
50'
BURKE STREET
40+00
BOLIVAR CEMETARY AND ASSOCIATED HISTORICAL MARKER
EXISTING 4'X4' BOX CULVERT TO BE REMOVED
PC 45+18.10
PT 48+45.32
45+00
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
445'
345' DECELERATION
100' TRANSITION
245'
100' STORAGE
R 150'
R 150'

FM 455 PROPOSED LEFT TURN BAY TYPICAL DETAIL




FEMA ZONE A
FEMA ZONE A
FEMA ZONE A
FEMA ZONE A
PROPOSED
DRAINAGE EASEMENT
PROPOSED CULVERT 3
STA 54+22.69
2-4'X4' MBC
FL = 670.08
26
ROW
PROPOSED
DRAINAGE EASEMENT
PROPOSED CULVERT 2
STA 50+28.40
2-3'X3' MBC
FL=673.40
80'
MBGF & SGT
27
100'
50'
R=50'
FLOW
FIELD LARK LANE
28
R=50'
30
N 71° 46' 25.69" E
50+00
55+00
30'
20'
15'
143'
120'
FLOW
FLOW
29
PC 57+79.96
R=25'
60+00
BRC 60+44.73
R=25'
EXISTING 3'X3' BOX CULVERT
TO BE REMOVED
ING 4'X4' BOX CULVERT
REMOVED
PROPOSED
DRAINAGE EASEMENT
PROPOSED
DRAINAGE EASEMENT
31
EXISTING 2'X2' BOX CULVERT
TO BE REMOVED
KILDEE TRAIL
PROPOSED ℄
FM 455
R=50'
R=50'
PT 63+09.50
PC 65+47.88
32
N 71° 46' 25.69" E
65+00
EXISTING ROW
PROPOSED ROW
29
PROPOSED
DRAINAGE EASEMENT
FLOW
PROPOSED CULVERT 4
STA 68+85.76
3'X2' BC
FL=703.07
80'
40'
PC 68+72.07
70+00
30'
75'
FLOW
PROPOSED
DRAINAGE EASEMENT
N 71° 46' 25.69" E
PT 71+96.27
PI 72+98.17
PC 72+85.76
33
PROPOSED ROW
EXISTING UTILITY
PIPELINE
75+00
EXISTING 7'X6' BOX CULVERT
TO BE REMOVED
OVERHEAD ELECTRIC
34
FLOW
220'
110'
50'
20'
PROPOSED
DRAINAGE EASEMENT
PROPOSED CULVERT 5
STA 80+52.96
2-8'X6' MBC
FL=668.77
80+00
27'
100'
FLOW
PROPOSED
DRAINAGE EASEMENT
35
N 72° 27' 25.71" E
85+00
36
37
38
R=30'
R=30'
90+00
R=25'
R=25'
EXISTING ROW
PROPOSED ℄
FM 455
VPT STA 48+70.00
VPC STA 50+50.00
VPT STA 55+50.00
(-)2.92%
(+)2.71%
PROPOSED CULVERT 2
STA 50+28.40
2-3'X3' MBC
FL=673.40
STA = 53+00.00
EL = 673.78
ex = 3.52'
K = 89
LVC = 500.00'
PROPOSED CULVERT 3
STA 54+22.69
2-4'X4' MBC
FL = 670.08
EXISTING GROUND
● PGL
FM 455 PGL
(+)2.71%
(+)1.24%
VPC STA 63+00.00
VPT STA 65+00.00
STA = 64+00.00
EL = 703.58
ex = -0.37'
K = 136
LVC = 200.00'
PROPOSED CULVERT 4
STA 68+85.76
3'X2' BC
FL=703.07
STA = 73+00.00
EL = 714.75
ex = -4.16'
K = 64
LVC = 460.00'
(+)1.24%
(-)6.00%
VPC STA 70+70.00
VPT STA 75+30.00
VPC STA 76+35.00
VPT STA 84+65.00
(-)6.00%
(+)4.08%
STA = 80+50.00
EL = 669.75
ex = 10.46'
K = 82
LVC = 830.00'
PROPOSED CULVERT 5
STA 80+52.96
2-8'X6' MBC
FL=668.77
FM 455 PGL
EXISTING GROUND
● PGL
685.47
682.55
679.76
677.97
677.30
677.75
679.34
681.90
684.61
687.32
690.03
692.74
695.45
698.16
700.87
703.21
704.82
706.06
707.30
708.54
709.78
711.03
712.20
712.18
710.59
707.42
702.68
696.75
691.01
686.40
683.01
680.84
679.88
680.14
681.61
684.30
688.12
692.21
696.29
700.37
704.46
708.54
712.62
50+00
55+00
60+00
65+00
70+00
75+00
80+00
85+00
90+00

PI STATION = 67+10.13
DELTA = 6° 11' 29.99"
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 162.26
LENGTH = 324.19
RADIUS = 3000.00
PC STATION = 65+47.88
PT STATION = 68+72.07
BACK BEARING = N 71° 46' 25.69" E
FORWARD BEARING = N 65° 34' 55.70" E

PI STATION = 70+34.33
DELTA = 6° 11' 29.99"
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 162.26
LENGTH = 324.19
RADIUS = 3000.00
PC STATION = 68+72.07
PT STATION = 71+96.27
BACK BEARING = N 65° 34' 55.70" E
FORWARD BEARING = N 71° 46' 25.69" E

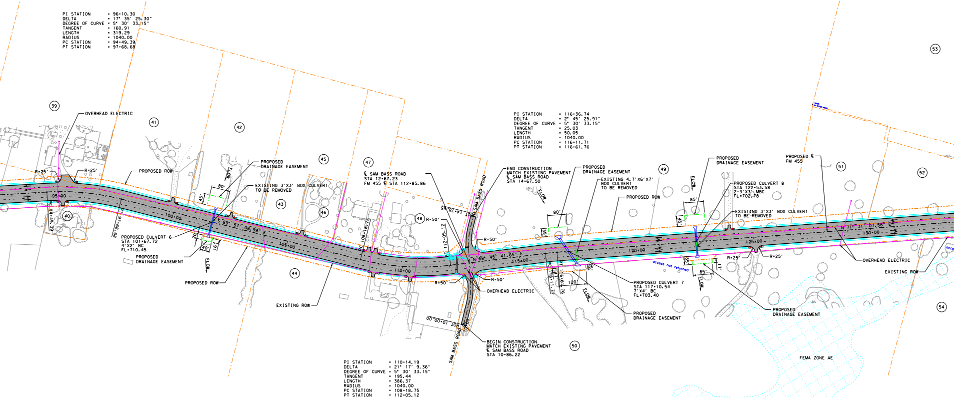
PI STATION = 72+91.96
DELTA = 0° 41' 0.02"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 6.20
LENGTH = 12.40
RADIUS = 1040.00
PC STATION = 72+85.76
PT STATION = 72+98.17

PI STATION = 59+12.54
DELTA = 7° 35' 6.20"
DEGREE OF CURVE = 2° 51' 53.24"
TANGENT = 132.58
LENGTH = 264.77
RADIUS = 2000.00
PC STATION = 57+79.96
PT STATION = 60+44.73
BACK BEARING = N 71° 46' 25.69" E
FORWARD BEARING = N 79° 21' 31.90" E

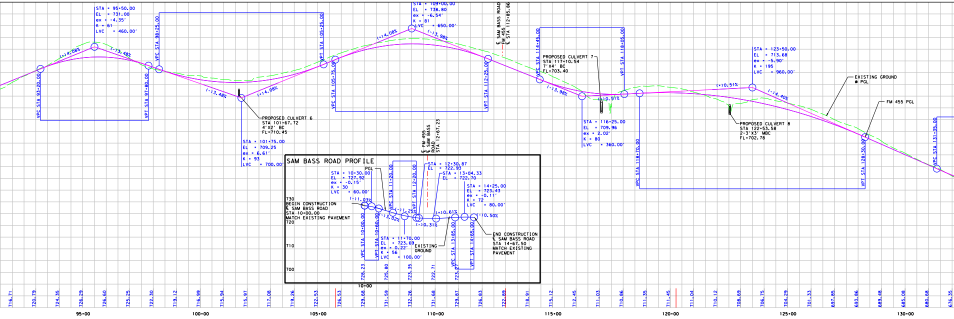
PI STATION = 61+77.31
DELTA = 7° 35' 6.20"
DEGREE OF CURVE = 2° 51' 53.24"
TANGENT = 132.58
LENGTH = 264.77
RADIUS = 2000.00
PC STATION = 60+44.73
PT STATION = 63+09.50
BACK BEARING = N 79° 21' 31.90" E
FORWARD BEARING = N 71° 46' 25.69" E

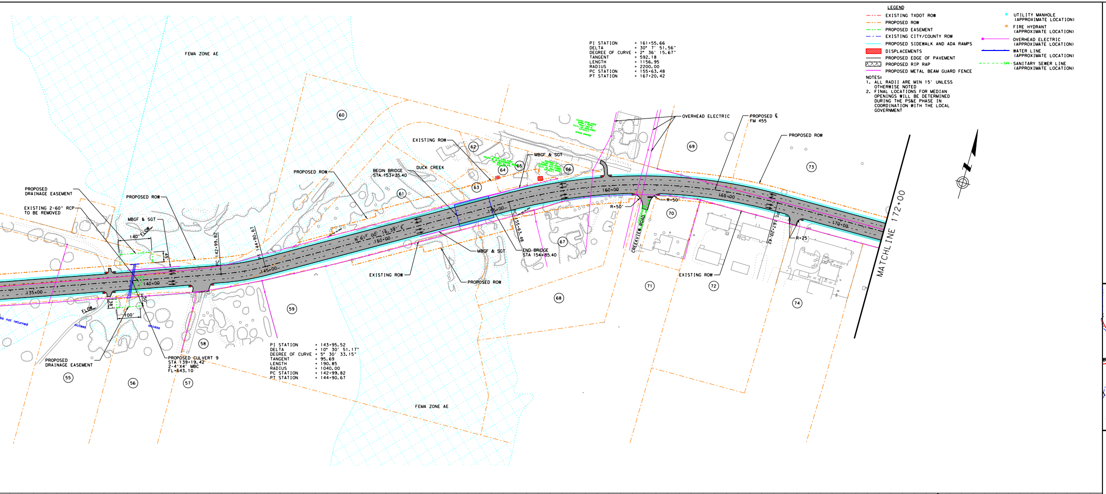
PI STATION = 96+10.30
DELTA = 17° 35' 25.30"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 160.91
LENGTH = 319.29
RADIUS = 1040.00
PC STATION = 94+49.39
PT STATION = 97+68.68

PI STATION = 116+36.74
DELTA = 2° 45' 25.91"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 25.03
LENGTH = 50.05
RADIUS = 1040.00
PC STATION = 116+11.71
PT STATION = 116+61.76


(39)
(40)
(41)
(42)
(43)
(44)
(45)
(46)
(47)
(48)
(49)
(50)
(51)
(52)
(53)
(54)
OVERHEAD ELECTRIC
R=25'
R=25'
PROPOSED ROW
95+00
PC 94+49.39
PT 97+68.68
100+00
105+00
110+00
115+00
120+00
125+00
130+00
PROPOSED DRAINAGE EASEMENT
EXISTING 3'X3' BOX CULVERT TO BE REMOVED
80'
45'
20'
40'
16'
FLOW
S 89° 57' 08.99" E
PROPOSED CULVERT 6
STA 101+67.72
4'X2' BC
FL=710.45
PROPOSED DRAINAGE EASEMENT
PROPOSED ROW
EXISTING ROW
℄ SAM BASS ROAD
STA 12+67.23
FM 455 ℄ STA 112+85.86
PC 108+18.75
PT 112+05.12
R=50'
R=50'
R=50'
R=50'
POT 14+78.65
SAM BASS ROAD
SAM BASS ROAD
POT 10+00.00
N 68° 45' 41.65" E
OVERHEAD ELECTRIC
END CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ SAM BASS ROAD
STA 14+67.50
BEGIN CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ SAM BASS ROAD
STA 10+86.22
PROPOSED DRAINAGE EASEMENT
EXISTING 4.7'X6'X7' BOX CULVERT TO BE REMOVED
PROPOSED ROW
80'
35'
25'
17'
120'
PC 116+11.71
PT 116+61.76
FLOW
PROPOSED CULVERT 7
STA 117+10.54
7'X4' BC
FL=703.40
PROPOSED DRAINAGE EASEMENT
access not returned
PROPOSED DRAINAGE EASEMENT
85'
45'
35'
17'
85'
FLOW
PROPOSED CULVERT 8
STA 122+53.58
2-3'X3' MBC
FL=702.78
EXISTING 3'X3' BOX CULVERT TO BE REMOVED
R=25'
R=25'
PROPOSED DRAINAGE EASEMENT
PROPOSED ℄ FM 455
N 71° 31' 07.56" E
OVERHEAD ELECTRIC
EXISTING ROW
FEMA ZONE AE

PI STATION = 110+14.19
DELTA = 21° 17' 9.36"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 195.44
LENGTH = 386.37
RADIUS = 1040.00
PC STATION = 108+18.75
PT STATION = 112+05.12




FEMA ZONE AE
PROPOSED DRAINAGE EASEMENT
EXISTING 2-60" RCP TO BE REMOVED
PROPOSED ROW
MBGF & SGT
EXISTING ROW
BEGIN BRIDGE STA 153+35.40
DUCK CREEK
END BRIDGE STA 154+85.40
OVERHEAD ELECTRIC
PROPOSED ℄ FM 455
CREEKVIEW ROAD
R=50'
R=25'
PROPOSED CULVERT 9
STA 139+19.42
2-4'X4' MBC
FL=643.10
FLOW
MATCHLINE 172+00
135+00
140+00
145+00
150+00
155+00
160+00
165+00
170+00
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74

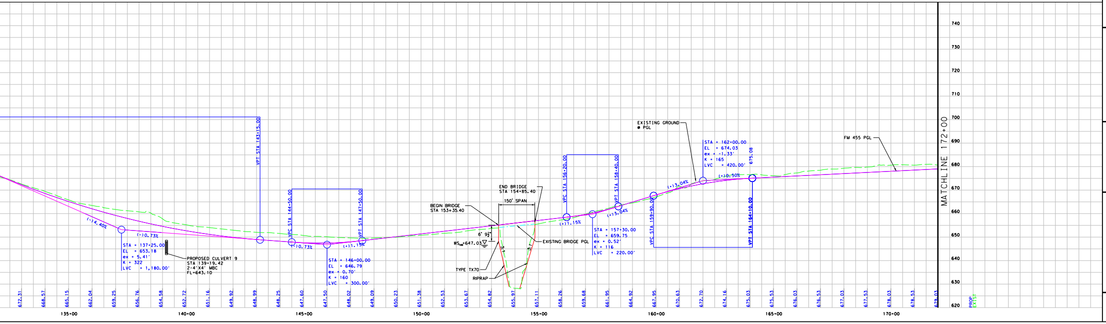
PI STATION = 161+55.66
DELTA = 30° 7′ 51.56″
DEGREE OF CURVE = 2° 36′ 15.67″
TANGENT = 592.18
LENGTH = 1156.95
RADIUS = 2200.00
PC STATION = 155+63.48
PT STATION = 167+20.42

PI STATION = 143+95.52
DELTA = 10° 30′ 51.17″
DEGREE OF CURVE = 5° 30′ 33.15″
TANGENT = 95.69
LENGTH = 190.85
RADIUS = 1040.00
PC STATION = 142+99.82
PT STATION = 144+90.67

LEGEND

- · - · -	EXISTING TXDOT ROW
- · - · -	PROPOSED ROW
- · - · -	PROPOSED EASEMENT
— · —	EXISTING CITY/COUNTY ROW
——	PROPOSED SIDEWALK AND ADA RAMPS
🟥	DISPLACEMENTS
——	PROPOSED EDGE OF PAVEMENT
▨	PROPOSED RIP RAP
——	PROPOSED METAL BEAM GUARD FENCE
○	UTILITY MANHOLE (APPROXIMATE LOCATION)
○	FIRE HYDRANT (APPROXIMATE LOCATION)
●——	OVERHEAD ELECTRIC (APPROXIMATE LOCATION)
——	WATER LINE (APPROXIMATE LOCATION)
- - SAN -	SANITARY SEWER LINE (APPROXIMATE LOCATION)

NOTES:
1. ALL RADII ARE MIN 15′ UNLESS OTHERWISE NOTED
2. FINAL LOCATIONS FOR MEDIAN OPENINGS WILL BE DETERMINED DURING THE PS&E PHASE IN COORDINATION WITH THE LOCAL GOVERNMENT



DENTON COUNTY

PRELIMINARY DESIGN SCHEMATIC

Texas Department of Transportation

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DALLAS DISTRICT
JAMES K. SELMAN P.E.,
DISTRICT ENGINEER

FM 455

FROM WEST OF FM 2450 TO EAST OF MARION ROAD
CSJ NO. 0816-02-072

ROADWAY = 28,951.18 FT = 5.483 MI
BRIDGE = 250 FT = 0.047 MI
NET LENGTH OF PROJECT = 29,201.18 FT = 5.530 MI

FM 455
FUNCTIONAL CLASS: MINOR ARTERIAL

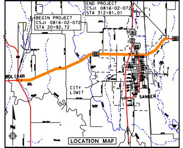
DESIGN SPEED: 45 MPH (LOW SPEED URBAN)

PROJECTED ADT (2020): 15,400
PROJECTED ADT (2040): 21,400
TRAFFIC SOURCE: TXDOT, TP&P MEMO JUNE 10, 2013

SAM BASS ROAD
DESIGN SPEED: 35 MPH (CITY STREET)

MARION ROAD
DESIGN SPEED: 40 MPH (CITY STREET)

EQUATIONS: NONE
RAILROADS: BNSF RR
EXCEPTIONS: NONE


END PROJECT
CSJ: 0816-02-072
STA 312+81.01
BEGIN PROJECT
CSJ: 0816-02-072
STA 20+92.72
CITY LIMIT
SANGER
BOLIVAR

LOCATION MAP

SCALE:
200′ 100′ 0 200′
SCALE: HORIZONTAL 1"= 200′
20′ 10′ 0 20′
SCALE: VERTICAL 1"= 20′

DANNENBAUM
ENGINEERING COMPANY - DALLAS, LLC
T.B.P.E. FIRM REGISTRATION #392
3030 LYNDON B JOHNSON FWY, STE 910 DALLAS, TX 75234 (972) 239-2002

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF DANIEL W. EVERETT, P.E. 93551. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES. DATE: 7/13/2017

ROLL 1 OF 2

DENTON COUNTY

PRELIMINARY DESIGN SCHEMATIC

Texas Department of Transportation

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DALLAS DISTRICT
JAMES K. SELMAN P.E.,
DISTRICT ENGINEER

FM 455

FROM WEST OF FM 2450 TO EAST OF MARION ROAD
CSJ NO. 0816-02-072

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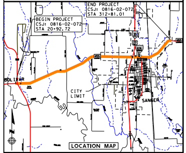
TRAFFIC SOURCE: TXDOT, TP&P MEMO JUNE 10, 2013

SAM BASS ROAD
DESIGN SPEED: 35 MPH (CITY STREET)
MARION ROAD
DESIGN SPEED: 40 MPH (CITY STREET)

EQUATIONS: NONE
RAILROADS: BNSF RR
EXCEPTIONS: NONE


END PROJECT
CSJ: 0816-02-072
STA 312+81.01
BEGIN PROJECT
CSJ: 0816-02-072
STA 20+92.72
BOLIVAR
CITY LIMIT
SANGER
455
35
77
B35

LOCATION MAP

SCALE:

200' 100' 0 200'

SCALE: HORIZONTAL 1"= 200'

20' 10' 0 20'

SCALE: VERTICAL 1"= 20'

DANNENBAUM
ENGINEERING COMPANY - DALLAS, LLC
T.B.P.E. FIRM REGISTRATION #392
3030 LYNDON B JOHNSON FWY, STE 910 DALLAS, TX 75234 (972) 239-2002

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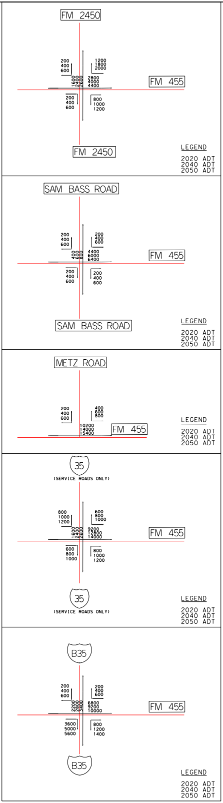
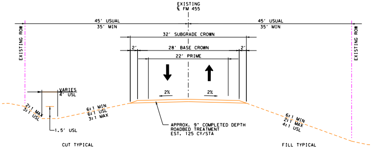
ROLL 2 OF 2

STATUS:
USER:
FILE: G:\1220\4527-01\DGN\Schematic\452701 sch02.dgn
DATE: 7/13/2017


FM 2450
200 400 600
1200 1800 2000
1600 2400 2600
2800 4000 4400
FM 455
200 400 600
800 1000 1200
FM 2450
LEGEND
2020 ADT
2040 ADT
2050 ADT
SAM BASS ROAD
200 400 600
200 400 600
400 600 800
4400 6000 6400
FM 455
200 400 600
200 400 600
SAM BASS ROAD
LEGEND
2020 ADT
2040 ADT
2050 ADT
METZ ROAD
200 400 600
400 600 800
10200 14000 15400
FM 455
LEGEND
2020 ADT
2040 ADT
2050 ADT
35
(SERVICE ROADS ONLY)
800 1000 1200
600 800 1000
1600 2400 2600
9200 12800 14000
FM 455
600 800 1000
800 1000 1200
35
(SERVICE ROADS ONLY)
LEGEND
2020 ADT
2040 ADT
2050 ADT
B35
200 400 600
200 400 600
2200 2800 3400
6800 9200 10000
FM 455
3600 5000 5600
800 1200 1400
B35
LEGEND
2020 ADT
2040 ADT
2050 ADT

TRAFFIC DIAGRAMS

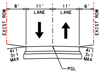
SOURCE OF DATA: TEXAS DEPARTMENT OF TRANSPORTATION; TRANSPORTATION PROGRAMMING AND PLANNING DIVISION MEMORANDUM JUNE 10, 2013


EXISTING
℄ FM 455
45' USUAL
35' MIN
45' USUAL
35' MIN
EXISTING ROW
EXISTING ROW
32' SUBGRADE CROWN
2'
28' BASE CROWN
2'
22' PRIME
2%
2%
VARIES
4' USL
2:1 MAX
3:1 USL
1.5' USL
6:1 MIN
6:1 USL
3:1 MAX
APPROX. 9" COMPLETED DEPTH
ROADBED TREATMENT
EST. 125 CY/STA
6:1 MIN
2:1 MAX
4:1 USL
CUT TYPICAL
FILL TYPICAL

FM 455 EXISTING TYPICAL SECTION

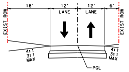
N.T.S.

STA 20+92.72 TO STA 313+23.50


8'
11'
LANE
11'
LANE
6'
EXIST ROW
EXIST ROW
4:1
3:1
MAX
4:1
3:1
MAX
PGL

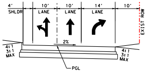
SAM BASS ROAD
EXISTING/PROPOSED TYPICAL SECTION

N.T.S.


18'
12'
LANE
12'
LANE
6'
EXIST ROW
EXIST ROW
4:1
3:1
MAX
4:1
3:1
MAX
PGL

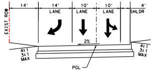
MARION ROAD
EXISTING/PROPOSED TYPICAL SECTION

N.T.S.


4'
SHLDR
10'
LANE
10'
LANE
14'
LANE
10'
EXIST ROW
2%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

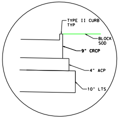
IH35 NORTHBOUND FRONTAGE ROAD
EXISTING/PROPOSED TYPICAL SECTION

N.T.S.


EXIST ROW
14'
14'
LANE
10'
LANE
10'
LANE
4'
SHLDR
2%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

IH35 SOUTHBOUND FRONTAGE ROAD
EXISTING/PROPOSED TYPICAL SECTION

N.T.S.

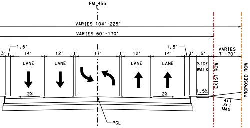

TYPE II CURB
TYP
BLOCK
SOD
9" CRCP
4" ACP
10" LTS

DETAIL A

FINAL PAVEMENT DESIGN PENDING

VARIES
7'-65'
5'
SIDE
WALK
PROPOSED ROW
EXIST ROW
1.5%
4:1
3:1
MAX
VARIES
25'-45'
5'
SIDE
WALK
PROPOSED ROW
EXIST ROW
1.5%
4:1
3:1
MAX
VARIES
3'-12'
5
PROPOSED ROW
EXIST ROW
4:1
3:1
MAX
VARIES
9'-12'
5'
SIDE
WALK
EXIST ROW
1.5%
4:1
3:1
MAX

NOTE: ALL CURBS

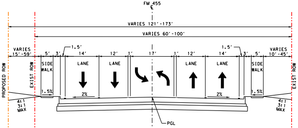

FM 455
℄
VARIES 104'-225'
VARIES 60'-170'
1.5'
3'
14'
12'
1'
17'
1'
12'
14'
1.5'
3'
5'
VARIES 7'-70'
LANE
LANE
LANE
LANE
SIDE WALK
EXIST ROW
PROPOSED ROW
2%
2%
1.5%
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

STA 30+00.62 TO STA 32+30.81
STA 46+76.35 TO STA 85+50.00
STA 94+61.04 TO STA 117+78.63
STA 148+52.40 TO STA 153+35.40
STA 154+85.40 TO STA 164+80.24

STA 179+69.29 TO STA 185+32.80
STA 220+18.42 TO STA 227+03.25
STA 252+68.41 TO STA 266+71.15
STA 275+71.07 TO STA 281+91.84
STA 290+64.81 TO STA 297+46.74

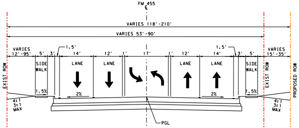

FM 455
℄
VARIES 121'-173'
VARIES 60'-100'
VARIES 15'-59'
5'
3'
1.5'
14'
12'
1'
17'
1'
12'
14'
1.5'
3'
5'
VARIES 10'-45'
PROPOSED ROW
EXIST ROW
SIDE WALK
LANE
LANE
LANE
LANE
SIDE WALK
EXIST ROW
PROPOSED ROW
1.5%
2%
2%
1.5%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

STA 32+30.81 TO STA 46+76.35
STA 85+50.00 TO STA 94+61.04
STA 117+78.63 TO STA 148+52.40
STA 164+80.24 TO STA 179+69.29
STA 185+32.80 TO STA 194+28.44

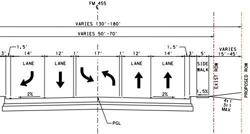
STA 202+57.54 TO STA 220+18.42
STA 287+74.74 TO STA 290+64.81


FM 455
℄
VARIES 118'-210'
VARIES 53'-90'
VARIES 12'-95'
5'
3'
1.5'
14'
12'
1'
17'
1'
12'
14'
1.5'
3'
5'
VARIES 15'-35'
EXIST ROW
SIDE WALK
LANE
LANE
LANE
LANE
SIDE WALK
EXIST ROW
PROPOSED ROW
1.5%
2%
2%
1.5%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

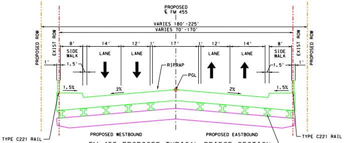
STA 247+91.92 TO STA 252+68.41
STA 266+71.15 TO STA 275+71.07
STA 297+46.74 TO STA 304+82.61


FM 455
℄
VARIES 130'-180'
VARIES 50'-70'
1.5'
3'
14'
12'
1'
17'
1'
12'
14'
1.5'
3'
5'
VARIES 15'-45'
LANE
LANE
LANE
LANE
SIDE WALK
EXIST ROW
PROPOSED ROW
2%
2%
1.5%
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

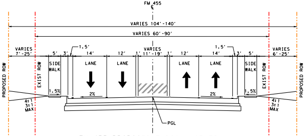
BEGIN PROJECT TO STA 29+00.76


PROPOSED
℄ FM 455
VARIES 180'-225'
VARIES 70'-170'
PROPOSED ROW
EXIST ROW
8'
14'
12'
1'
17'
1'
12'
14'
8'
EXIST ROW
PROPOSED ROW
SIDE WALK
LANE
LANE
LANE
LANE
SIDE WALK
1'
1.5'
RIPRAP
PGL
1.5'
1'
1.5%
2%
2%
1.5%
PROPOSED WESTBOUND
PROPOSED EASTBOUND
TYPE C221 RAIL
TYPE C221 RAIL
PRESTR CONC GIRDER (TYPE TX46-UNLESS OTHERWISE NOTED) (TYPE TX 70 OVER DUCK CREEK)

FM 455 PROPOSED TYPICAL BRIDGE SECTION

N.T.S.

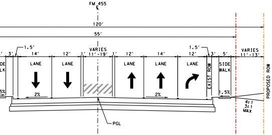
STA 29+00.76 TO STA 30+00.76
STA 153+35.40 TO STA 154+85.40


FM 455
℄
VARIES 104'-140'
VARIES 60'-90'
VARIES 7'-25'
5'
3'
1.5'
14'
12'
1'
VARIES 11'-19'
1'
12'
14'
1.5'
3'
5'
VARIES 6'-25'
PROPOSED ROW
EXIST ROW
SIDE WALK
LANE
LANE
LANE
LANE
SIDE WALK
EXIST ROW
PROPOSED ROW
1.5%
2%
2%
1.5%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

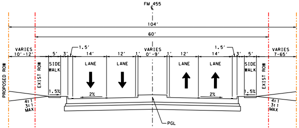
STA 227+03.25 TO STA 229+20.28
STA 304+82.61 TO STA 309+67.24


FM 455
℄
120'
55'
1.5'
14'
12'
1'
VARIES 11'-19'
1'
12'
14'
12'
1.5'
3'
5'
VARIES 11'-13'
DE LK
LANE
LANE
LANE
LANE
LANE
EXIST ROW
SIDE WALK
PROPOSED ROW
5%
2%
2%
1.5%
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

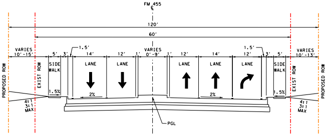
STA 235+84.50 TO STA 238+04.64


FM 455
℄
104'
60'
VARIES 10'-12'
5'
3'
1.5'
14'
12'
1'
VARIES 0'-9'
1'
12'
14'
1.5'
3'
5'
VARIES 7-65'
PROPOSED ROW
EXIST ROW
SIDE WALK
LANE
LANE
LANE
LANE
SIDE WALK
EXIST ROW
PROPOSED ROW
1.5%
2%
2%
1.5%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

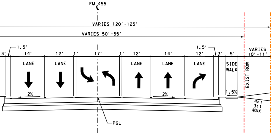
STA 229+20.28 TO STA 230+97.55


FM 455
℄
120'
60'
VARIES 10'-15'
5'
3'
1.5'
14'
12'
1'
VARIES 0'-9'
1'
12'
14'
12'
1.5'
3'
5'
VARIES 10'-13'
PROPOSED ROW
EXIST ROW
SIDE WALK
LANE
LANE
LANE
LANE
LANE
EXIST ROW
SIDE WALK
PROPOSED ROW
1.5%
2%
2%
1.5%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

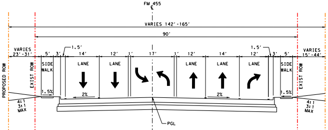
STA 233+94.12 TO STA 235+84.50


FM 455
℄
VARIES 120'-125'
VARIES 50'-55'
1.5'
3'
14'
12'
1'
17'
1'
12'
14'
12'
1.5'
3'
5'
VARIES 10'-11'
LANE
LANE
LANE
LANE
LANE
SIDE WALK
EXIST ROW
PROPOSED ROW
2%
2%
1.5%
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

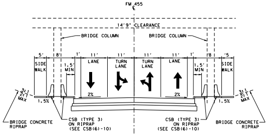
STA 238+04.64 TO STA 247+91.92


FM 455
℄
VARIES 142'-165'
90'
VARIES 23'-31'
5'
3'
1.5'
14'
12'
1'
17'
1'
12'
14'
12'
1.5'
3'
5'
VARIES 15'-44'
PROPOSED ROW
EXIST ROW
SIDE WALK
LANE
LANE
LANE
LANE
LANE
SIDE WALK
EXIST ROW
PROPOSED ROW
1.5%
2%
2%
1.5%
4:1
3:1
MAX
4:1
3:1
MAX
PGL

FM 455 PROPOSED TYPICAL SECTION

N.T.S.

STA 238+04.64 TO STA 247+91.92


FM 455
℄
14'9" CLEARANCE
BRIDGE COLUMN
BRIDGE COLUMN
5'
8'
1'
11'
11'
11'
11'
1'
8
5
SIDE WALK
1.5' MIN
LANE
TURN LANE
TURN LANE
LANE
1.5' MIN
SIDE WALK
2%
2%
3:1
2:1
MAX
1.5%
1.5%
3:1
2:1
MAX
BRIDGE CONCRETE RIPRAP
CSB (TYPE 3) ON RIPRAP (SEE CSB(6)-10)
CSB (TYPE 3) ON RIPRAP (SEE CSB(6)-10)
BRIDGE CONCRETE RIPRAP

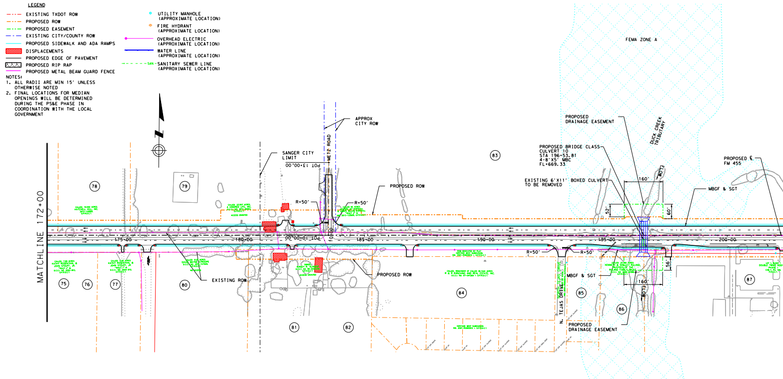
FM 455 PROPOSED TYPICAL SECTION AT IH 35

N.T.S.

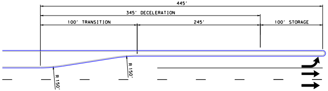
STA 230+97.55 TO STA 233+94.12

ARE TYPE II UNLESS OTHERWISE NOTED.

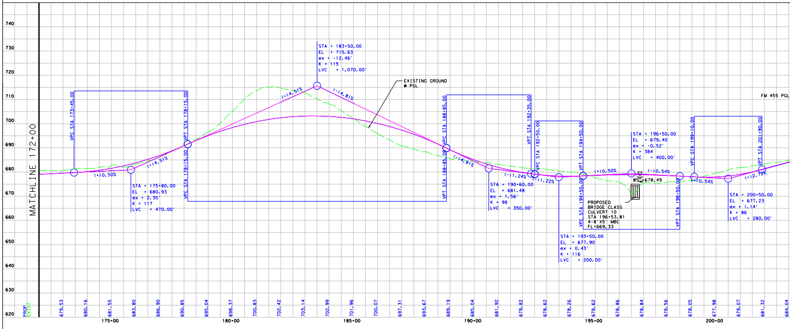
PROPERTY OWNER INFORMATION		
NUMBER	PROPERTY ID NO.	OWNER NAMES
1	59126	RANDY L. BENTLEY
2	59144	STEPHEN L. & GARY L. MARTIN
3	58818	CLEAR CREEK ANIMAL HOSPITAL INC.
4	57964	RANDY L. BENTLEY
5	250374	MARGARET LEROY BENTLEY
6	164480	FD EST CURTSINGER
7	250372	B R JR & MICHELLE A BENTLEY
8	57964	RANDY L. BENTLEY
9	122831	GERALD P. CARSEY
10	117863	GERALD P. CARSEY
11	58796	JOSHUA L & LACEY L SMITH
12	164480	JUSTIN CURTSINGER
13	58800	PHILLIP C & CHRISTINE L WAGNER
14	188925	SUSAN P. STEWART
15	58828	CALVIN HARBERSON
16	58831	BOLIVAR BAPTIST CHURCH
17	122976	AARON M. & JODI M MARTIN
18	186532	JUSTIN R MAXWELL
19	186533	CALVIN M & AMY R JONES
20	186534	PAUL W & SHARON SPRUIELL
21	56215	JUSTIN CURTSINGER
22	111336	CHERI ANNE GRAVES
23	244984	CHERI ANNE GRAVES
24	58833	ROBERT IRWIN ALBRECHT
25	123015	BOLIVAR BAPTIST CHURCH
26	123016	BOLIVAR BAPTIST CHURCH
27	117106	TERRY STOKES
28	117108	JANET L TIPPIT
29	56411	DANNY & VICTORIA BERTEL
30	257967	SUMEER HOMES INC
31	257969	SUMEER HOMES INC
32	258007	SUMEER HOMES INC
33	56269	RENNA L MOSS
34	283703	DAVID C & SARAH MANTSCH
35	56407	MEDIEVAL CASTLE INC
36	247079	B R JR & MICHELLE A BENTLEY
37	56285	JASON W & LAURA M DOWNING
38	56294	RIDIN FOR THE BRAND COWBOY CHURCH
39	56366	MIKE & LINDA THATEN
40	46409	ARTHUR P TRUST BUTHOD
41	134535	PEDRO & ARCELIA CASTOR RIVERA
42	134538	ANTHONY PAX
43	114138	ANTHONY PAX
44	76437	MARTIN BLACK
45	134541	TOMMY & DIANE RHODES
46	134540	TOMMY RHODES
47	149570	JOHNNY MELTON
48	149586	TONY A & BRENDA K BLEDSOE
49	57186	JUDY KNOWES SELPH
50	57193	FLOYD W & JEAN A HALBERT
51	111255	JUDY KNOWES SELPH
52	57224	BILLY ED NANCE
53	57372	NANCE
54	57205	JOHN W III & DELORES COKER
55	57208	PEGGY (AKA BETTY L) PATE
56	57200	ALLEN A & KAREN S SERRANO
57	59752	JO ANN HOLSON
58	59747	JO ANN HOLSON
59	59742	JO ANN HOLSON
60	59761	WILLIAM E NANCE
61	106056	GERALD A KNEZEK
62	106058	WOODARD II & HELEN WEBB
63	106059	GERALD A KNEZEK
64	132566	WOODARD II & HELEN WEBB
65	59751	SANDRA KAY DOBBS
66	75839	SANDRA KAY DOBBS
67	59768	ROBERTA E WALLACE
68	128451	TERRY LEE & NORMA STRAIN JONES
69	283345	DONNY & BRANDY A KNIGHTSTEP
70	300028	WILLIAM J & BELITA G MORRIS
71	300029	BRIAN P & MELISSA A MANN
72	59737	ROBERT G & GAYLETA PUGH
73	208169	DONNY KNIGHTSTEP
74	620422	BOLIVAR WATER SUPPLY CORP
75	225100	KATHY & STOUFFE ROSENTHAL
76	225315	KATHY & STOUFFE ROSENTHAL
77	225313	KATHY & STOUFFE ROSENTHAL
78	59901	JOHN & CAROL BETH KNIGHTSTEP
79	59905	JAMES V SR & DARLENE WATSON
80	59711	CONNIE & STROOPE HOLLSTEIN
81	59734	RANDY R & PATTIE R SLIGER
82	77796	RANDY R & PATTIE R SLIGER
83	77077	RUTH MRS MARSHALL
84	232698	R&R RANCHING AND REAL ESTATE INC
85	232699	R&R RANCHING AND REAL ESTATE INC
86	56536	KENNETH D & SHELLEY L RULAND
87	131208	SANGER ISD
88	56489	PAC GROUP LTD
89	233824	PORTER
90	245453	REED LAND HOLDINGS LLC
91	245454	JJEM PROFESSIONALS LLC
92	245455	SHIELDS FAMILY LLC II
93	245456	KENNETH R HERMES
94	245457	RICHARD J PERRY
95	245458	PAC GROUP LTD
96	56513	S&T RENTALS LLC
97	56518	LINDA DIANE HEWLETT
98	56521	LINDA DIANE HEWLETT
99	56459	O'REILLY AUTOMOTIVE INC
100	243328	PAC GROUP LTD
101	253746	DAVID K & SHERRY A ISBELL
102	243327	CRIMSON TILE MANAGEMENT INC
103	57235	B-29 PROPERTIES LLC
104	238298	FIRST UNITED BANK AND TRUST COMPANY
105	205219	R C FINN INC
106	309668	FUEL MANAGEMENT LLC
107	56431	CHET TR SWITZER
108	56438	CHET TR SWITZER
109	75856	VICTRON STORES LP
110	60333	RICHARD T MUIR
111	59731	SPRINGER FAMILY RENTALS LLC
112	57946	SPRINGER FAMILY RENTALS LLC
113	57919	SPRINGER FAMILY RENTALS LLC
114	199424	SANGER PATE ADDISTION LLC
115	199629	DENTON/NORTH TEXAS SDI PORTFOLIO LLC
116	57927	KLEMENT KARL PROP INC
117	57924	KLEMENT KARL PROP INC
118	58030	DORMAN LEE JOHNSON
119	155832	RUSSEL M CEBALLOS
120	57928	JAMES W CONLEY
121	57932	SHARON S COPELAND
122	58714	LAVERNE SCHERTZ
123	58716	KERRY L & CHERYL CHERTZ
124	77706	OPAL ASHCROFT
125	57643	ALFRED ASHCROFT
126	58447	JOHN D & ELIZABETH SPRINGER
127	58441	JOHN D & ELIZABETH SPRINGER
128	239288	RJ SODHI INC
129	291008	EAGLE FARMS INC ETAL
130	58699	SPRINGER FAMILY RENTALS LLC
131	58704	SPRINGER FAMILY RENTALS LLC
132	58688	ALLAN W & CAROLYN PFAFFLY
133	58678	FRANK SAMDAD LTD P/S ETAL
134	60332	RONALD BEARD
135	58673	DENNIS & PEGGY ARRINGTON
136	58659	RONALD BEARD
137	284004	STUCKY FAMILY LTD PS
138	60307	EAGLE FARMS INC ETAL
139	58738	JESSE L BECK
140	58739	DONNA G SEARLE
141	58585	BILL & DONNA G SEARLE-PARK
142	60305	A RAY STEPHENS
143	60221	JIM & DEBBIE CONLEY
144	60218	BILLIE J PENNINGTON
145	268495	GRANITE INDUSTRIES LLC
146	60322	HUGH Z PRUETT
147	123509	SANGER ISD
148	132465	SANGER ISD


LEGEND
EXISTING TXDOT ROW
PROPOSED ROW
PROPOSED EASEMENT
EXISTING CITY/COUNTY ROW
PROPOSED SIDEWALK AND ADA RAMPS
DISPLACEMENTS
PROPOSED EDGE OF PAVEMENT
PROPOSED RIP RAP
PROPOSED METAL BEAM GUARD FENCE
UTILITY MANHOLE (APPROXIMATE LOCATION)
FIRE HYDRANT (APPROXIMATE LOCATION)
OVERHEAD ELECTRIC (APPROXIMATE LOCATION)
WATER LINE (APPROXIMATE LOCATION)
SAN
SANITARY SEWER LINE (APPROXIMATE LOCATION)
MATCHLINE 172+00
78
79
75
76
77
80
81
82
83
84
85
86
87
SANGER CITY LIMIT
METZ ROAD
APPROX CITY ROW
POT 13+00.00
POT 10+00.00
10+00
R=50'
R=50'
PROPOSED ROW
EXISTING ROW
PROPOSED ROW
175+00
180+00
185+00
190+00
195+00
200+00
R=50'
R=50'
N. TEJAS DRIVE
MBGF & SGT
PROPOSED DRAINAGE EASEMENT
FEMA ZONE A
PROPOSED DRAINAGE EASEMENT
DUCK CREEK TRIBUTARY
PROPOSED BRIDGE CLASS CULVERT 10 STA 196+53.81 4-8'X5' MBC FL=669.33
EXISTING 6'X11' BOXED CULVERT TO BE REMOVED
160'
52'
60'
56'
160'
FLOW
FLOW
MBGF & SGT
PROPOSED ℄ FM 455

NOTES:
1. ALL RADII ARE MIN 15' UNLESS OTHERWISE NOTED
2. FINAL LOCATIONS FOR MEDIAN OPENINGS WILL BE DETERMINED DURING THE PS&E PHASE IN COORDINATION WITH THE LOCAL GOVERNMENT

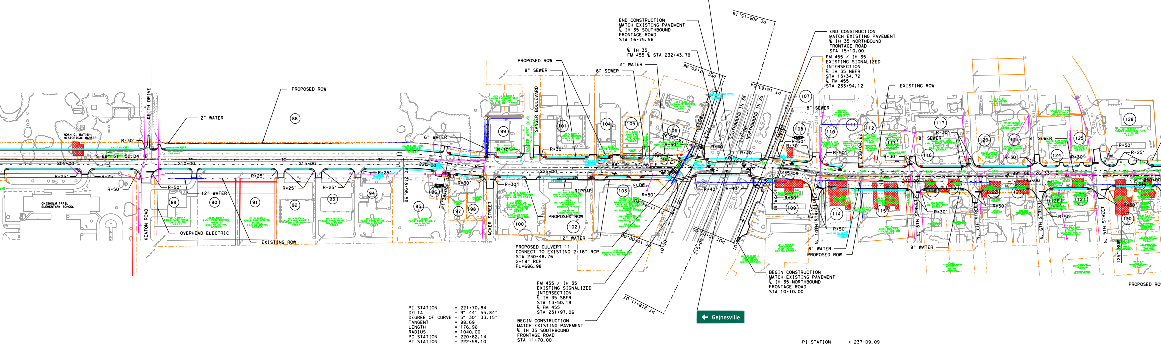

445'
345' DECELERATION
100' TRANSITION
245'
100' STORAGE
R 150'
R 150'

FM 455 PROPOSED LEFT TURN BAY TYPICAL DETAIL



PI STATION = 219+90.59
DELTA = 10° 6' 51.25"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 92.03
LENGTH = 183.59
RADIUS = 1040.00
PC STATION = 218+98.56
PT STATION = 220+82.14

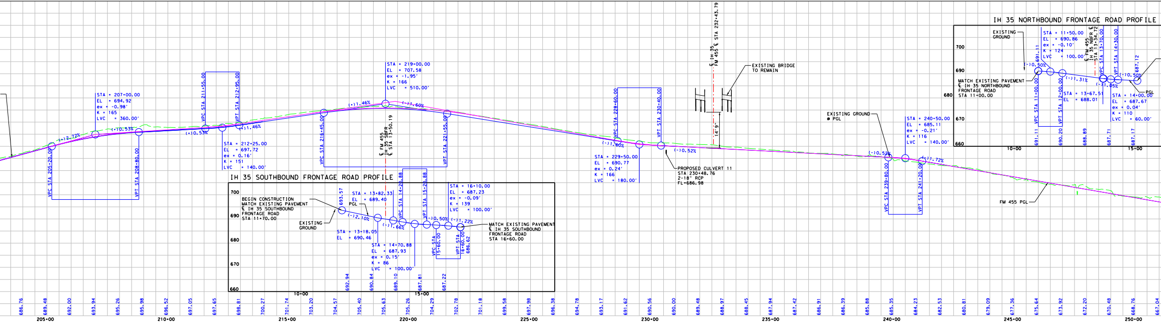
PI STATION = 235+21.55
DELTA = 10° 6' 14.89"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 91.94
LENGTH = 183.40
RADIUS = 1040.00
PC STATION = 234+29.61
PT STATION = 236+13.02

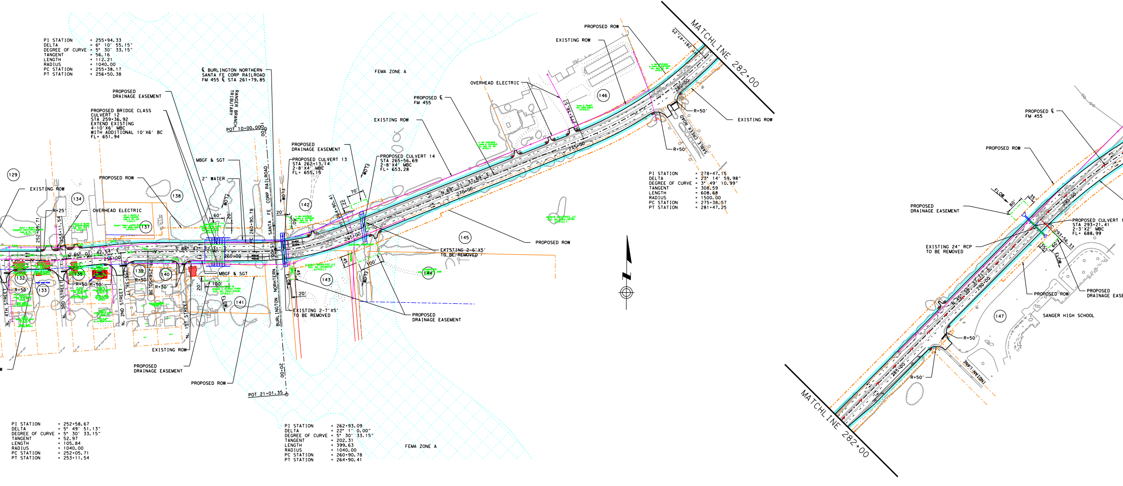

Denton
Gainesville
PC 205+15.16
PROPOSED ROW
2" WATER
NOAH C. BATIS HISTORICAL MARKER
KEITH DRIVE
R=30'
S 88° 51' 52.04" E
205+00
210+00
215+00
220+00
225+00
R=25'
R=50'
12" WATER
CHISHOLM TRAIL ELEMENTARY SCHOOL
KEATON ROAD
OVERHEAD ELECTRIC
EXISTING ROW
6" WATER
8" SEWER
PC 218+98.56
PT 220+82.14
ACKER STREET
SANGER BOULEVARD
RIPRAP
12" WATER
PROPOSED CULVERT 11
CONNECT TO EXISTING 2-18" RCP
STA 230+48.76
2-18" RCP
FL=686.98
END CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ IH 35 SOUTHBOUND
FRONTAGE ROAD
STA 16+75.56
℄ IH 35
FM 455 ℄ STA 232+43.79
POT 12+50.98
PT 16+63.94
N 88° 39' 57.66" E
FLOW
SOUTHBOUND IH 35
NORTHBOUND IH 35
FM 455 / IH 35
EXISTING SIGNALIZED
INTERSECTION
℄ IH 35 SBFR
STA 13+50.19
℄ FM 455
STA 231+97.06
BEGIN CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ IH 35 SOUTHBOUND
FRONTAGE ROAD
STA 11+70.00
PT 218+11.07
END CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ IH 35 NORTHBOUND
FRONTAGE ROAD
STA 15+10.00
FM 455 / IH 35
EXISTING SIGNALIZED
INTERSECTION
℄ IH 35 NBFR
STA 13+34.72
℄ FM 455
STA 233+94.12
EXISTING ROW
R=40'
235+00
240+00
245+00
250+00
PC 234+29.61
PT 236+13.02
10TH STREET
8TH STREET
7TH STREET
6TH STREET
5TH STREET
8" WATER
PROPOSED ROW
N 89° 08' 26.33" E
BEGIN CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ IH 35 NORTHBOUND
FRONTAGE ROAD
STA 10+10.00
125' ROW
PROPOSED ROW
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131

PI STATION = 221+70.84
DELTA = 9° 44' 55.84"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 88.69
LENGTH = 176.96
RADIUS = 1040.00
PC STATION = 220+82.14
PT STATION = 222+59.10

PI STATION = 237+09.09
DELTA = 10° 33' 20.66"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 96.07
LENGTH = 191.60
RADIUS = 1040.00
PC STATION = 236+13.02
PT STATION = 238+04.62

SUPERELEVATION TABLE			
LEFT		RIGHT	
STA 229+60	-2%	STA 227+40	-2%
STA 229+90	-1.58%	STA 229+90	1.58%
STA 231+30	-1.58%	STA 231+30	1.58%
STA 232+10	-1.20%	STA 232+10	1.20%
STA 234+90	-1.20%	STA 234+90	1.20%
STA 235+45	-2%	STA 237+10	-2%
STA 258+30	-2%	STA 258+70	-2%
STA 259+90	0.31%	STA 259+90	-0.31%
STA 262+00	0.31%	STA 262+00	-0.31%
STA 263+60	-2%	STA 263+20	-2%



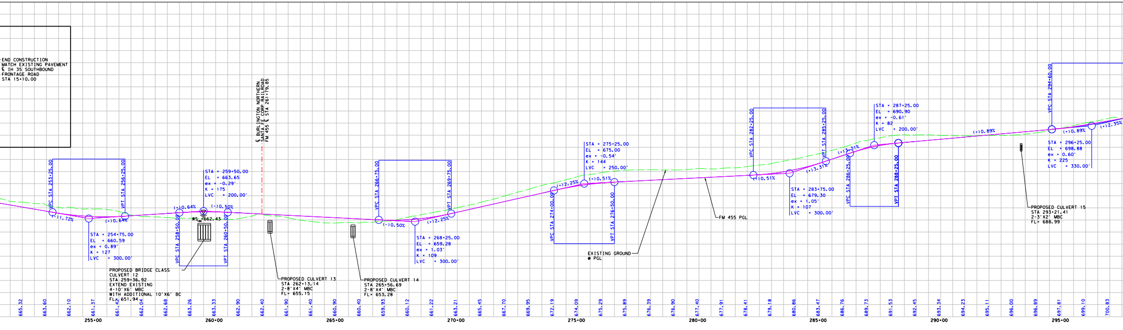

℄ BURLINGTON NORTHERN
SANTA FE CORP RAILROAD
FM 455 ℄ STA 261+79.85
RANGER BRANCH TRIBUTARY
POT 10+00.00
FEMA ZONE A
PROPOSED DRAINAGE EASEMENT
PROPOSED BRIDGE CLASS
CULVERT 12
STA 259+36.92
EXTEND EXISTING
4-10'X6' MBC
WITH ADDITIONAL 10'X6' BC
FL= 651.94
MBGF & SGT
2" WATER
PROPOSED ROW
EXISTING ROW
OVERHEAD ELECTRIC
PROPOSED CULVERT 13
STA 262+13.14
2-8'X4' MBC
FL= 655.15
PROPOSED CULVERT 14
STA 265+56.69
2-8'X4' MBC
FL= 653.28
PROPOSED ℄
FM 455
SANTA FE CORP RAILROAD
BURLINGTON NORTHERN
EXISTING 2-6'X5'
TO BE REMOVED
EXISTING 2-7'X5'
TO BE REMOVED
FLOW
R=25'
R=50'
R=30'
N. 4TH STREET
N. 3RD STREET
N. 2ND STREET
N. 1ST STREET
129
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
POT 21+01.35
MATCHLINE 282+00
SABLE CREEK ROAD
INDIAN LANE
SANGER HIGH SCHOOL
EXISTING 24" RCP
TO BE REMOVED
PROPOSED CULVERT 1
STA 293+21.41
2-3'X2' MBC
FL= 688.99
PROPOSED DRAINAGE EASE
255+00
260+00
265+00
270+00
275+00
280+00
285+00
290+00
295+00

PI STATION = 255+94.33
DELTA = 6° 10' 55.15"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 56.16
LENGTH = 112.21
RADIUS = 1040.00
PC STATION = 255+38.17
PT STATION = 256+50.38

PI STATION = 278+47.15
DELTA = 23° 14' 59.98"
DEGREE OF CURVE = 3° 49' 10.99"
TANGENT = 308.59
LENGTH = 608.68
RADIUS = 1500.00
PC STATION = 275+38.57
PT STATION = 281+47.25

PI STATION = 252+58.67
DELTA = 5° 49' 51.13"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 52.97
LENGTH = 105.84
RADIUS = 1040.00
PC STATION = 252+05.71
PT STATION = 253+11.54

PI STATION = 262+93.09
DELTA = 22° 1' 0.00"
DEGREE OF CURVE = 5° 30' 33.15"
TANGENT = 202.31
LENGTH = 399.63
RADIUS = 1040.00
PC STATION = 260+90.78
PT STATION = 264+90.41


END CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ IH 35 SOUTHBOUND
FRONTAGE ROAD
STA 15+10.00
℄ BURLINGTON NORTHERN
SANTA FE CORP RAILROAD
FM 455 ℄ STA 261+79.85
VPC STA 253+25.00
VPT STA 256+25.00
(-)1.72%
(+)0.64%
STA = 254+75.00
EL = 660.59
ex = 0.89'
K = 127
LVC = 300.00'
VPC STA 258+50.00
VPT STA 260+50.00
(+)0.64%
(-)0.50%
STA = 259+50.00
EL = 663.65
ex = -0.29'
K = 175
LVC = 200.00'
WS100 =662.43
PROPOSED BRIDGE CLASS
CULVERT 12
STA 259+36.92
EXTEND EXISTING
4-10'X6' MBC
WITH ADDITIONAL 10'X6' BC
FL= 651.94
PROPOSED CULVERT 13
STA 262+13.14
2-8'X4' MBC
FL= 655.15
PROPOSED CULVERT 14
STA 265+56.69
2-8'X4' MBC
FL= 653.28
VPC STA 266+75.00
VPT STA 269+75.00
(-)0.50%
(+)2.25%
STA = 268+25.00
EL = 659.28
ex = 1.03'
K = 109
LVC = 300.00'
VPC STA 274+00.00
VPT STA 276+50.00
(+)2.25%
(+)0.51%
STA = 275+25.00
EL = 675.00
ex = -0.54'
K = 144
LVC = 250.00'
EXISTING GROUND
@ PGL
FM 455 PGL
VPC STA 282+25.00
VPT STA 285+25.00
(+)0.51%
(+)3.31%
STA = 283+75.00
EL = 679.30
ex = 1.05'
K = 107
LVC = 300.00'
VPC STA 286+25.00
VPT STA 288+25.00
(+)3.31%
STA = 287+25.00
EL = 690.90
ex = -0.61'
K = 82
LVC = 200.00'
(+)0.89%
PROPOSED CULVERT 15
STA 293+21.41
2-3'X2' MBC
FL= 688.99
VPC STA 294+60.00
(+)0.89%
(+)2.35%
STA = 296+25.00
EL = 698.88
ex = 0.60'
K = 225
LVC = 330.00'
665.32
663.60
662.10
661.37
661.42
662.04
662.68
663.26
663.33
662.90
662.40
661.90
661.40
660.90
660.40
659.93
660.12
661.22
663.21
665.45
667.70
669.95
672.19
674.09
675.29
675.89
676.39
676.90
677.40
677.91
678.41
679.18
680.86
683.47
686.76
689.73
691.53
692.45
693.34
694.23
695.11
696.00
696.89
697.81
699.10
700.83
255+00
260+00
265+00
270+00
275+00
280+00
285+00
290+00
295+00

DENTON COUNTY

PRELIMINARY DESIGN SCHEMATIC

Texas Department of Transportation

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DALLAS DISTRICT
JAMES K. SELMAN P.E.,
DISTRICT ENGINEER

FM 455

FROM WEST OF FM 2450 TO EAST OF MARION ROAD
CSJ NO. 0816-02-072

ROADWAY = 28,951.18 FT = 5.483 MI
BRIDGE = 250 FT = 0.047 MI
NET LENGTH OF PROJECT = 29,201.18 FT = 5.530 MI

FM 455
FUNCTIONAL CLASS: MINOR ARTERIAL

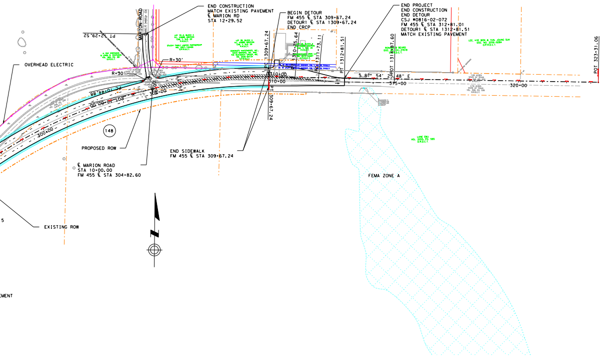
DESIGN SPEED: 45 MPH (LOW SPEED URBAN)

PROJECTED ADT (2020): 15,400
PROJECTED ADT (2040): 21,400
TRAFFIC SOURCE: TXDOT, TP&P MEMO JUNE 10, 2013

SAM BASS ROAD
DESIGN SPEED: 35 MPH (CITY STREET)

MARION ROAD
DESIGN SPEED: 40 MPH (CITY STREET)

EQUATIONS: NONE
RAILROADS: BNSF RR
EXCEPTIONS: NONE



MARION ROAD
PI 12+29.52
OVERHEAD ELECTRIC
R=30'
R=30'
END CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ MARION RD
STA 12+29.52
BEGIN DETOUR
FM 455 ℄ STA 309+67.24
DETOUR1 ℄ STA 1309+67.24
END CRCP
END PROJECT
END CONSTRUCTION
END DETOUR
CSJ #0816-02-072
FM 455 ℄ STA 312+81.01
DETOUR1 ℄ STA 1312+81.51
MATCH EXISTING PAVEMENT
PC 1309+67.24
1310+75.64
1311+73.11
PT 1312+81.51
POT 1314+87.60
POT 323+31.06
310+00
310+00
315+00
320+00
S 87° 54' 25.48" E
PT 309+67.24
305+00
300+00
148
PROPOSED ROW
END SIDEWALK
FM 455 ℄ STA 309+67.24
℄ MARION ROAD
STA 10+00.00
FM 455 ℄ STA 304+82.60
FEMA ZONE A
EXISTING ROW
EMENT

PI STATION = 302+08.35
DELTA = 46° 8' 56.81"
DEGREE OF CURVE = 2° 51' 53.24"
TANGENT = 852.02
LENGTH = 1610.91
RADIUS = 2000.00
PC STATION = 293+56.33
PT STATION = 309+67.24
BACK BEARING = N 45° 56' 37.71" E
FORWARD BEARING = S 87° 54' 25.48" E

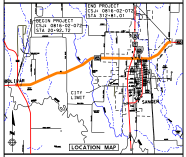
PI STATION = 310+34.37
DELTA = 4° 26' 10.67"
DEGREE OF CURVE = 4° 5' 33.20"
TANGENT = 54.23
LENGTH = 108.40
RADIUS = 1400.00
PC STATION = 309+80.14
PT STATION = 310+88.54
BACK BEARING = S 87° 54' 25.48" E
FORWARD BEARING = S 83° 28' 14.81" E

PI STATION = 312+40.23
DELTA = 4° 26' 10.67"
DEGREE OF CURVE = 4° 5' 33.20"
TANGENT = 54.23
LENGTH = 108.40
RADIUS = 1400.00
PC STATION = 311+86.01
PT STATION = 312+94.41

LEGEND

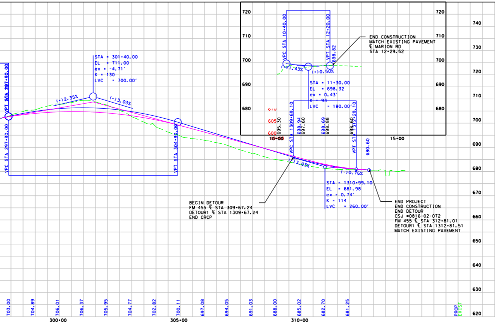
- · - · (red)	EXISTING TXDOT ROW
- · - · (orange)	PROPOSED ROW
- · - · (green)	PROPOSED EASEMENT
— · —	EXISTING CITY/COUNTY ROW
—	PROPOSED SIDEWALK AND ADA RAMPS
🟥	DISPLACEMENTS
—	PROPOSED EDGE OF PAVEMENT
▨	PROPOSED RIP RAP
—	PROPOSED METAL BEAM GUARD FENCE
○	UTILITY MANHOLE (APPROXIMATE LOCATION)
○	FIRE HYDRANT (APPROXIMATE LOCATION)
●—	OVERHEAD ELECTRIC (APPROXIMATE LOCATION)
—	WATER LINE (APPROXIMATE LOCATION)
- - SAN -	SANITARY SEWER LINE (APPROXIMATE LOCATION)

NOTES:
1. ALL RADII ARE MIN 15' UNLESS OTHERWISE NOTED
2. FINAL LOCATIONS FOR MEDIAN OPENINGS WILL BE DETERMINED DURING THE PS&E PHASE IN COORDINATION WITH THE LOCAL GOVERNMENT



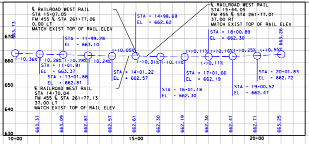
END PROJECT
CSJ: 0816-02-072
STA 312+81.01
BEGIN PROJECT
CSJ: 0816-02-072
STA 20+92.72
BOLIVAR
CITY LIMIT
SANGER
35
455
LOCATION MAP

MARION ROAD PROFILE



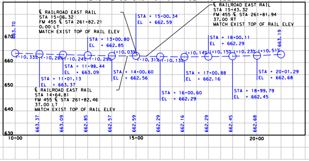
720
710
700
690
680
VPC STA 10+40.00
VPT STA 12+20.00
(-)1.43%
(+)0.50%
STA = 11+30.00
EL = 698.32
ex = 0.43'
K = 93
LVC = 180.00'
END CONSTRUCTION
MATCH EXISTING PAVEMENT
℄ MARION RD
STA 12+29.52
695.30
698.94
697.60
698.69
698.88
698.60
10+00
15+00
VPC STA 297+90.00
VPT STA 297+90.00
STA = 301+40.00
EL = 711.00
ex = -4.71'
K = 130
LVC = 700.00'
(+)2.35%
(-)3.03%
VPT STA 304+90.00
VPC STA 1309+69.10
VPT STA 1312+29.10
(-)3.03%
(-)0.76%
STA = 1310+99.10
EL = 681.98
ex = 0.74'
K = 114
LVC = 260.00'
680.60
BEGIN DETOUR
FM 455 ℄ STA 309+67.24
DETOUR1 ℄ STA 1309+67.24
END CRCP
END PROJECT
END CONSTRUCTION
END DETOUR
CSJ #0816-02-072
FM 455 ℄ STA 312+81.01
DETOUR1 ℄ STA 1312+81.51
MATCH EXISTING PAVEMENT
740
730
720
710
700
690
680
670
660
650
640
630
620
703.00
704.89
706.01
706.37
705.95
704.77
702.82
700.11
697.08
694.05
691.03
688.00
685.02
682.70
681.25
300+00
305+00
310+00
PROP
EXIST

BNSF EXISTING TOP OF RAIL PROFILE



℄ RAILROAD WEST RAIL
STA 15+07.05
FM 455 ℄ STA 261+77.06
0.00 LT
MATCH EXIST TOP OF RAIL ELEV
℄ RAILROAD WEST RAIL
STA 15+44.05
FM 455 ℄ STA 261+77.01
37.00 RT
MATCH EXIST TOP OF RAIL ELEV
STA = 14+98.69
EL = 662.62
STA = 11+99.28
EL = 663.10
STA = 18+00.89
EL = 662.30
(-)0.36%
(-)0.28%
(-)0.28%
(-)0.24%
(+)0.05%
(-)0.31%
(-)0.11%
(+)0.11%
(+)0.16%
(+)0.25%
(+)0.55%
(-)0.11%
STA = 11+01.91
EL = 663.37
STA = 13+01.66
EL = 662.81
STA = 14+01.22
EL = 662.57
STA = 17+01.66
EL = 662.19
STA = 20+01.83
EL = 662.72
STA = 16+01.18
EL = 662.30
STA = 19+00.52
EL = 662.47
℄ RAILROAD WEST RAIL
STA 14+70.04
FM 455 ℄ STA 261+77.13
37.00 LT
MATCH EXIST TOP OF RAIL ELEV
670
660
650
640
630
663.73
663.26
663.37
663.09
662.81
662.57
662.61
662.30
662.19
662.30
662.47
662.71
663.25
10+00
15+00
20+00

BNSF EXISTING TOP OF RAIL PROFILE



℄ RAILROAD EAST RAIL
STA 15+06.32
FM 455 ℄ STA 261+82.21
0.00 LT
MATCH EXIST TOP OF RAIL ELEV
℄ RAILROAD EAST RAIL
STA 15+43.32
FM 455 ℄ STA 261+81.94
37.00 RT
MATCH EXIST TOP OF RAIL ELEV
STA = 15+00.34
EL = 662.59
STA = 13+00.80
EL = 662.85
STA = 18+00.11
EL = 662.29
(-)0.33%
(-)0.28%
(-)0.24%
(-)0.29%
(+)0.03%
(-)0.31%
(-)0.13%
(+)0.14%
(+)0.15%
(+)0.23%
(+)0.51%
STA = 11+98.44
EL = 663.09
STA = 14+00.60
EL = 662.56
STA = 17+00.88
EL = 662.16
STA = 20+01.29
EL = 662.68
STA = 11+01.13
EL = 663.37
STA = 16+00.60
EL = 662.29
STA = 18+99.79
EL = 662.45
℄ RAILROAD EAST RAIL
STA 14+64.81
FM 455 ℄ STA 261+82.46
37.00 LT
MATCH EXIST TOP OF RAIL ELEV
670
660
650
640
630
663.70
663.19
663.37
663.09
662.85
662.57
662.59
662.29
662.16
662.29
662.45
662.68
10+00
15+00
20+00

SCALE:

200' 100' 0 200'
SCALE: HORIZONTAL 1" = 200'

20' 10' 0 20'
SCALE: VERTICAL 1" = 20'

DANNENBAUM
ENGINEERING COMPANY - DALLAS, LLC
T.B.P.E. FIRM REGISTRATION #392
3030 LYNDON B JOHNSON FWY, STE 910 DALLAS, TX 75234 (972) 239-2002

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF DANIEL W. EVERETT, P.E. 93551. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES. DATE: 7/13/2017

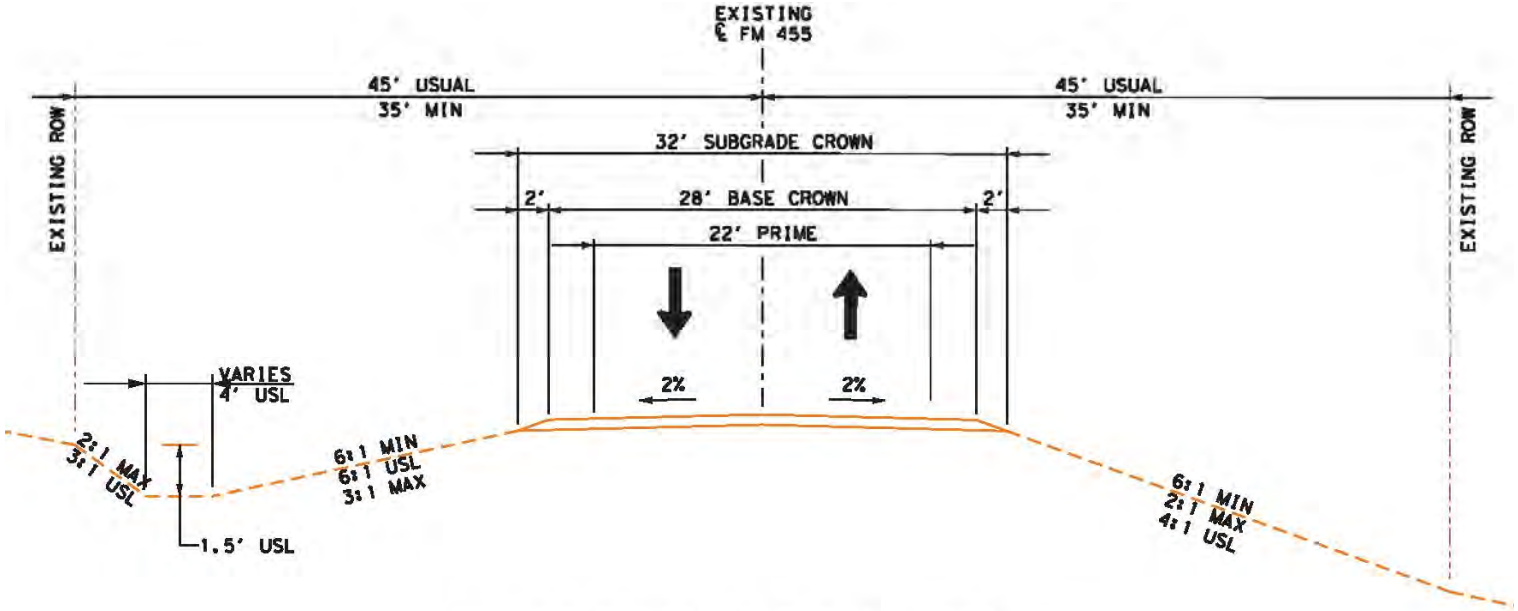
ROLL 2 OF 2

# Appendix D – Typical Sections

## FM 455 Draft Environmental Assessment

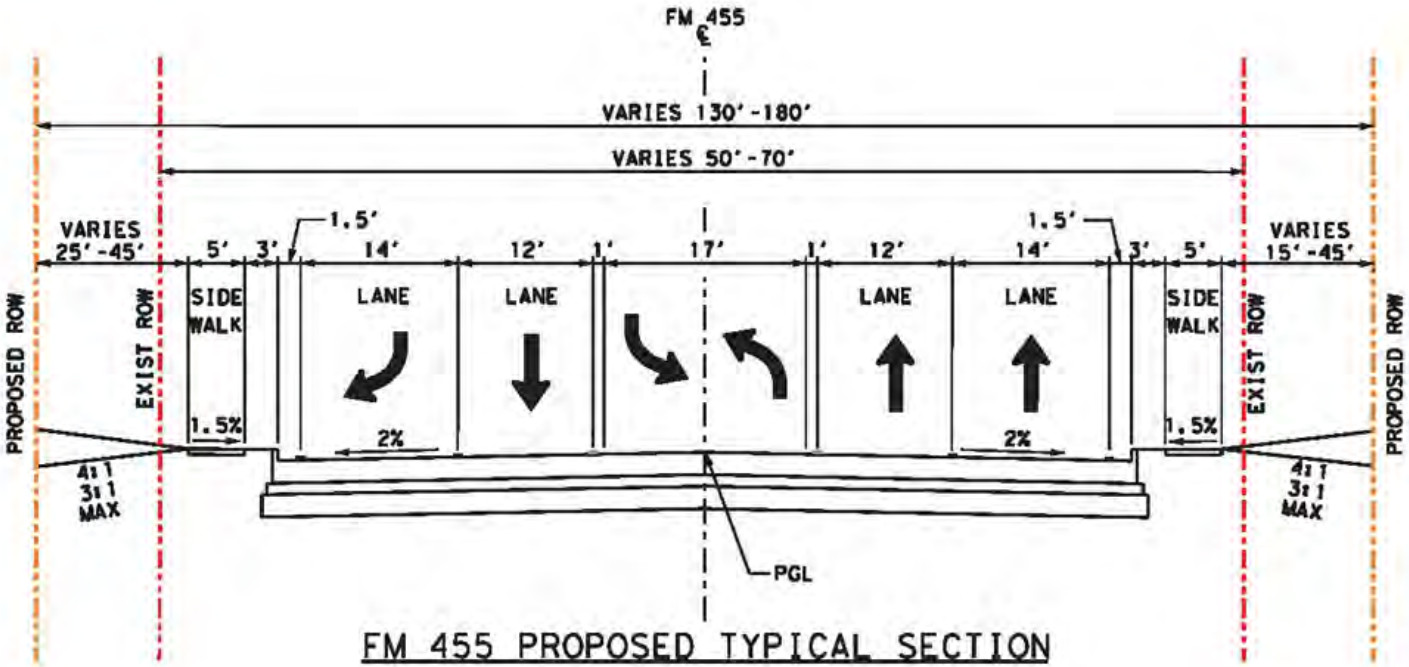
Denton County, Texas

CSJ: 0816-02-072




FM 455 EXISTING TYPICAL SECTION

N. T. S.

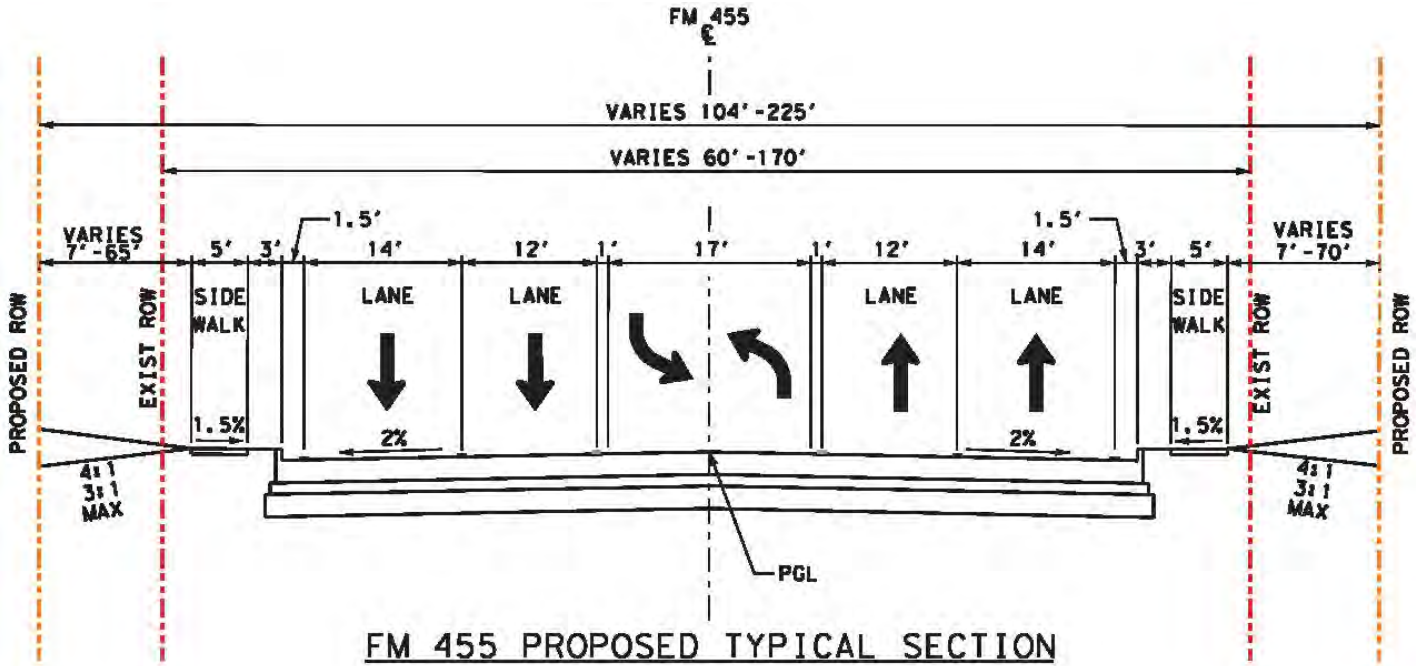



FM 455 PROPOSED TYPICAL SECTION

N. T. S.

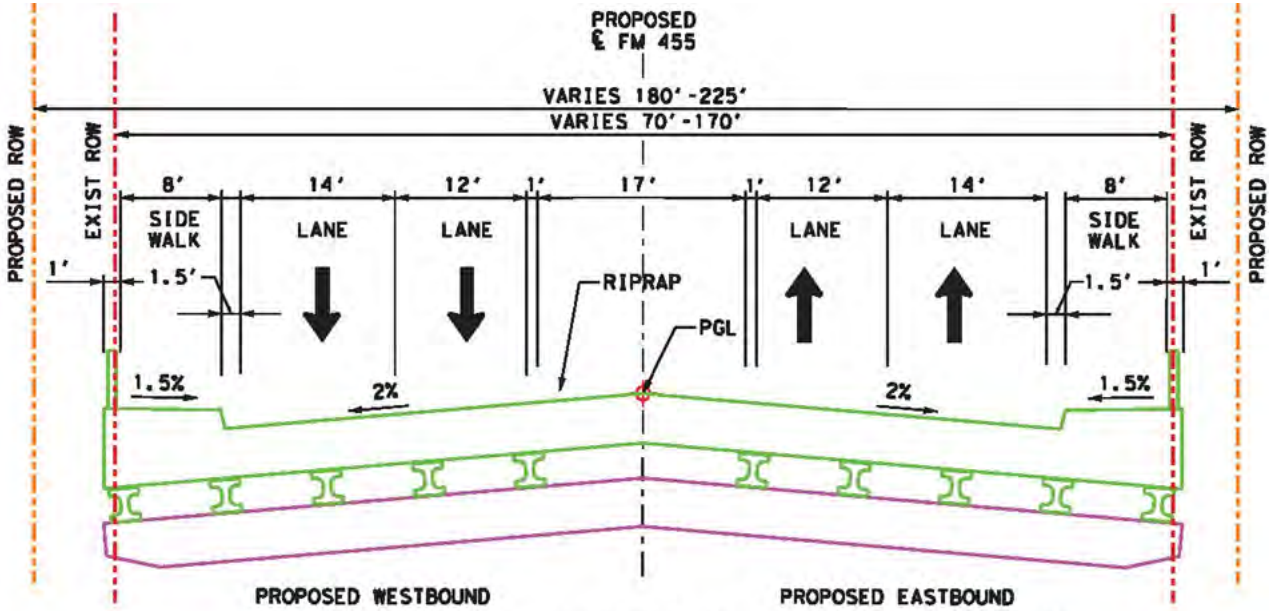
FOR REPORT PURPOSES ONLY
Not for construction, bidding, or permit purposes.

**FIGURE 4**
TYPICAL SECTIONS
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 1 OF 5




FM 455 PROPOSED TYPICAL SECTION

N. T. S.

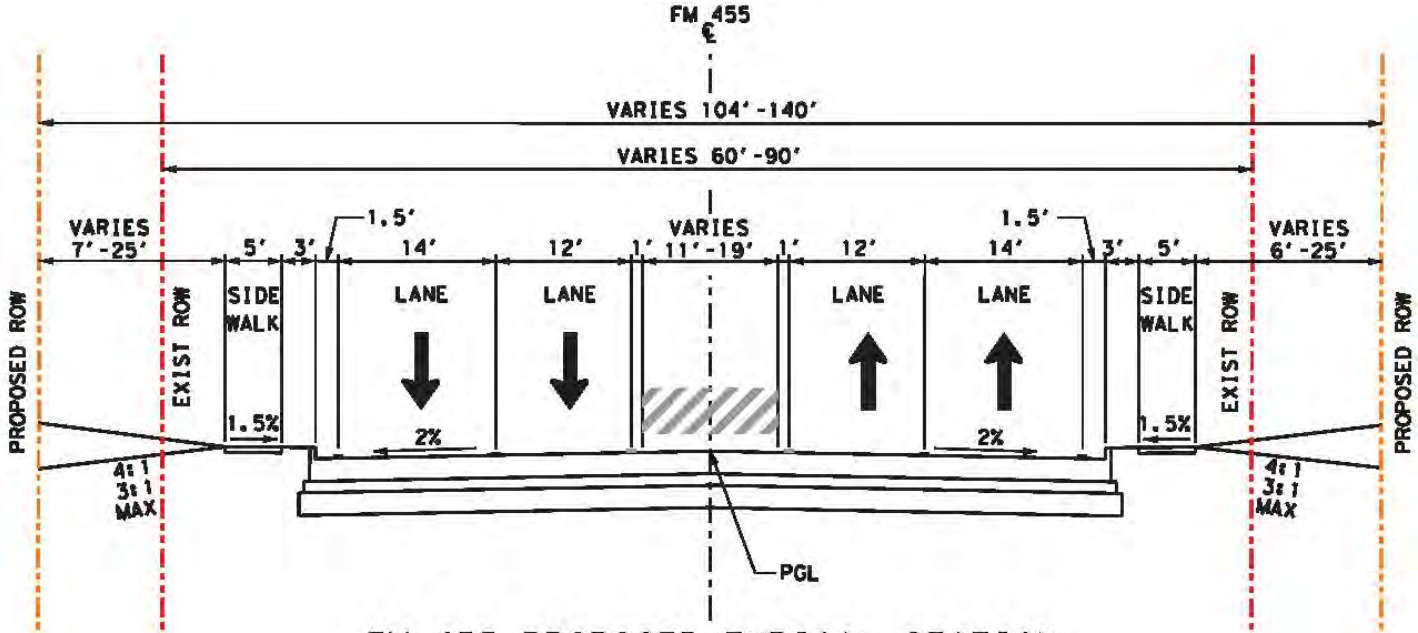



FM 455 PROPOSED TYPICAL BRIDGE SECTION

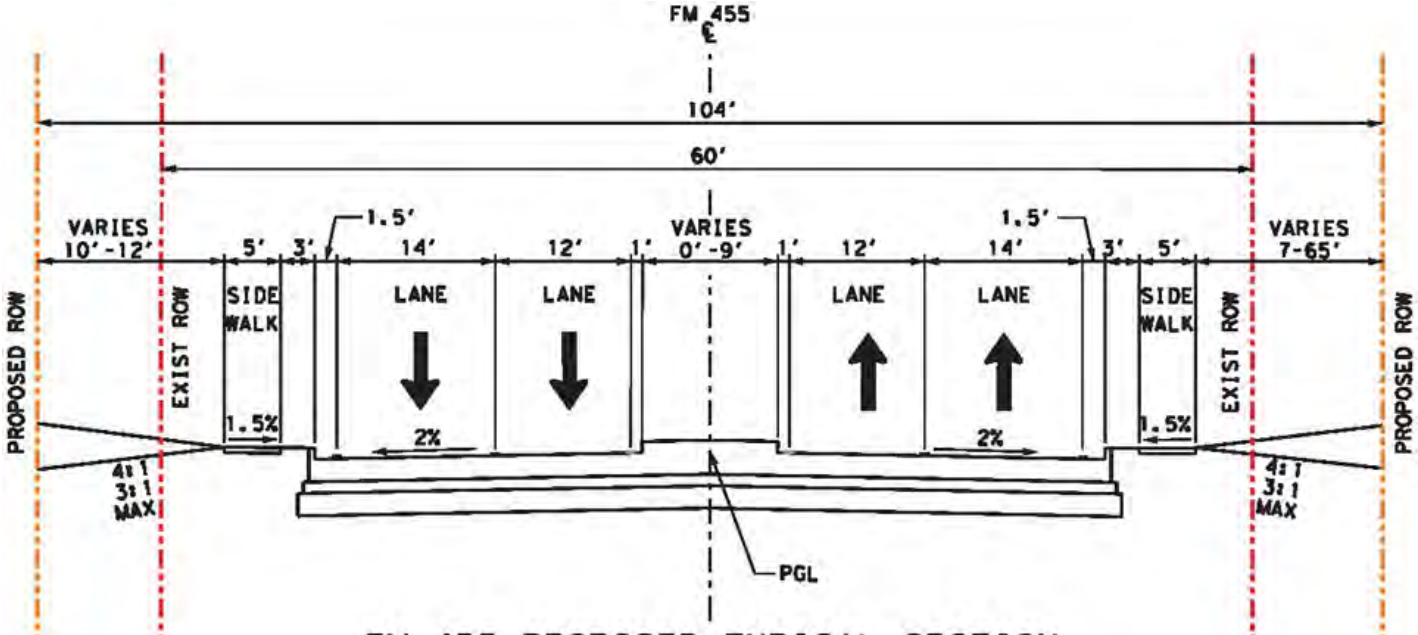
N. T. S.

FOR REPORT PURPOSES ONLY
Not for construction, bidding, or permit purposes.

**FIGURE 4**
TYPICAL SECTIONS
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 2 OF 5




FM 455 PROPOSED TYPICAL SECTION
N. T. S.




FM 455 PROPOSED TYPICAL SECTION
N. T. S.

FOR REPORT PURPOSES ONLY
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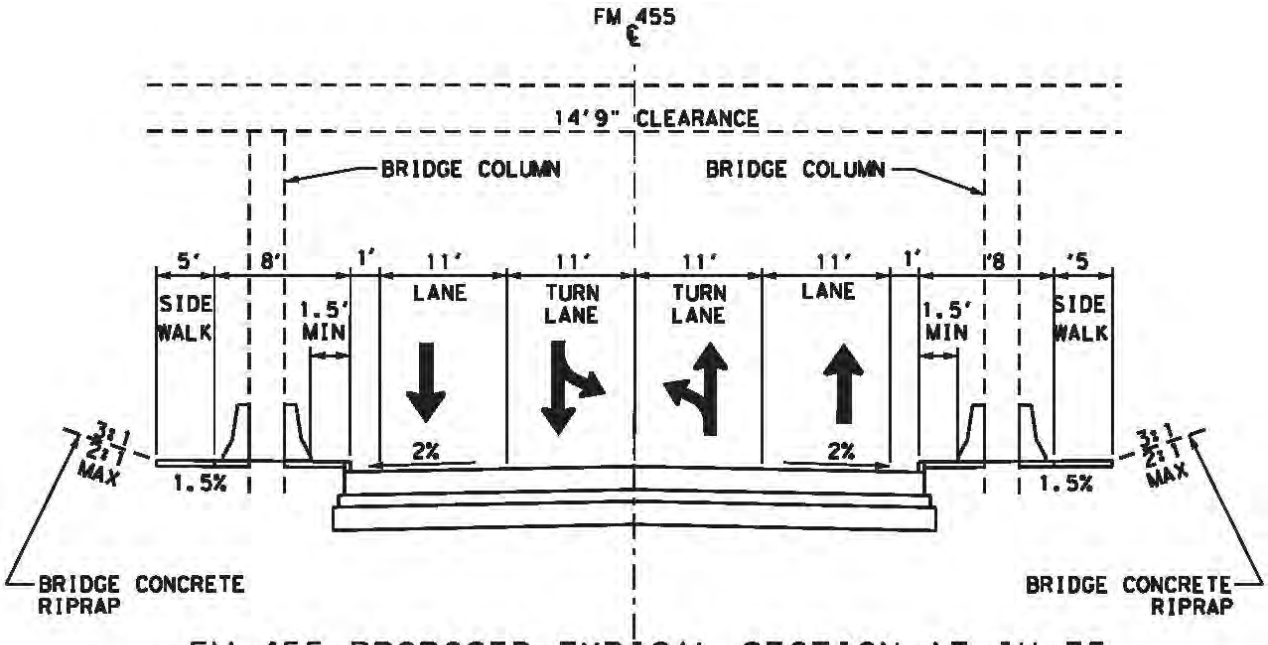
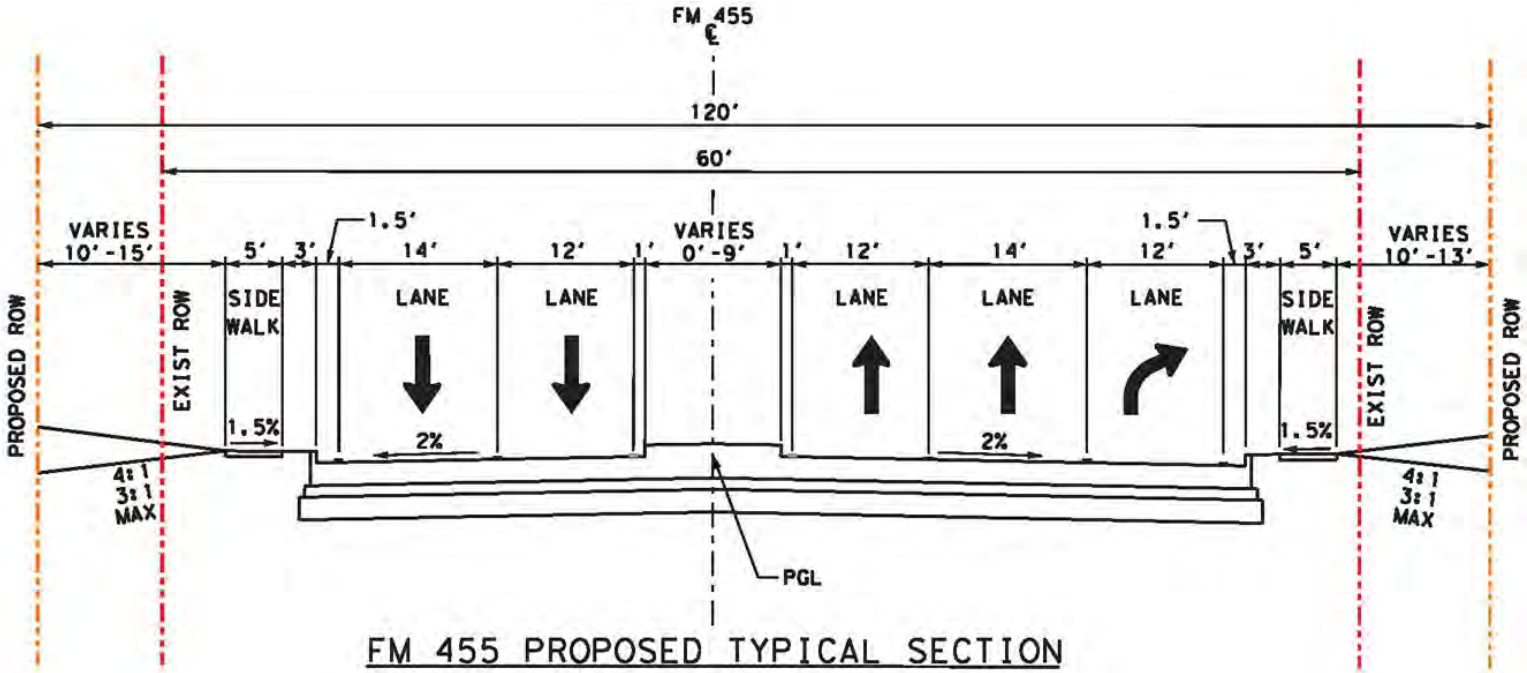
**FIGURE 4**
TYPICAL SECTIONS
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 3 OF 5




FM 455 PROPOSED TYPICAL SECTION AT IH 35
N.T.S.




FM 455 PROPOSED TYPICAL SECTION
N.T.S.

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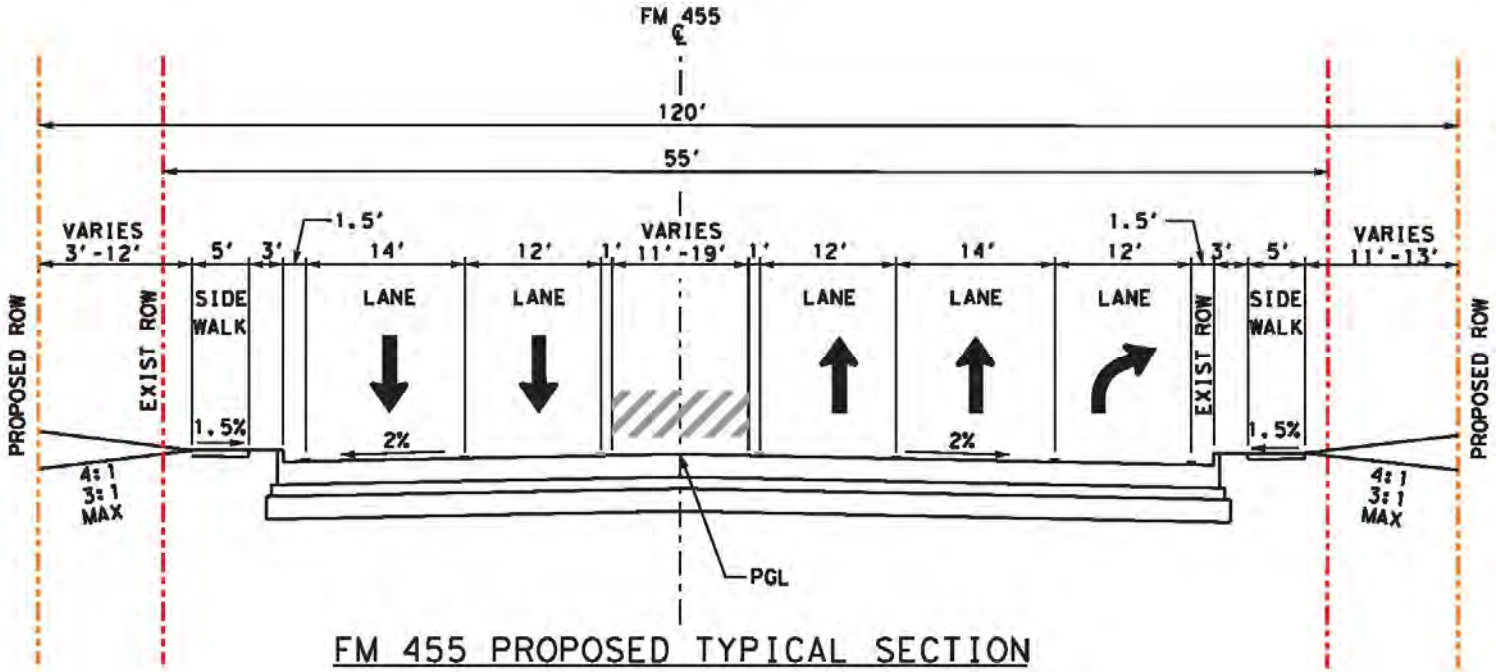
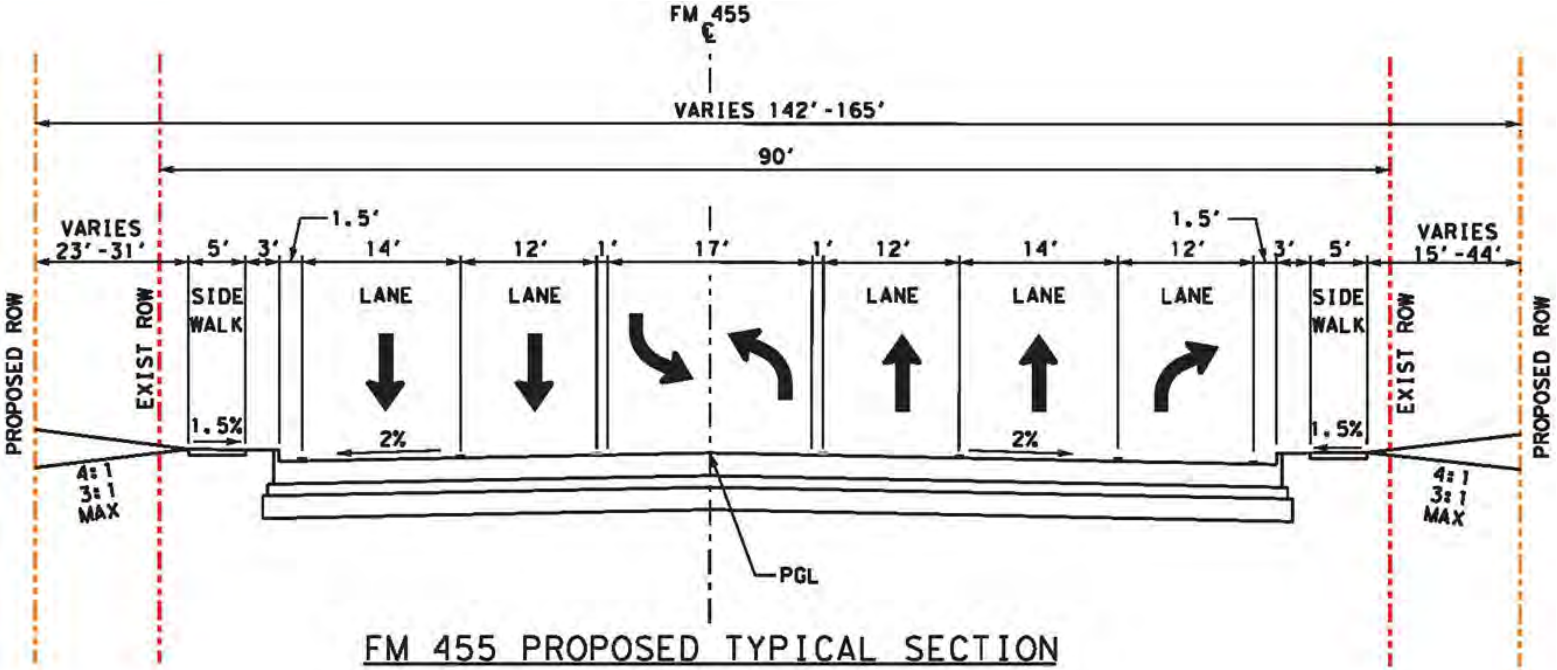
**FIGURE 4**
TYPICAL SECTIONS
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 4 OF 5




FM 455 PROPOSED TYPICAL SECTION

N. T. S.




FM 455 PROPOSED TYPICAL SECTION

N. T. S.

FOR REPORT PURPOSES ONLY
Not for construction, bidding, or permit purposes.

**FIGURE 4**
TYPICAL SECTIONS
FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY
CSJ: 0816-02-072
SHEET 5 OF 5

# Appendix E – Plan and Program Excerpts

## FM 455 Draft Environmental Assessment

Denton County, Texas

CSJ: 0816-02-072

| MTP ID | TIP Code | Project Type | CSJ | Project | From | To | Description | YOE Total Project Cost | FFCS |
|---|---|---|---|---|---|---|---|---|---|
| NRSA1- DAL-118 | 20121.0 | Addition of lanes | 0718-01-064 | FM 156 | SH 114 | 12th Street (in Justin) | Widen 2- to 4-lane divided urban cross section | $39,052,786 | Minor Arterial |
| NRSA1- DAL-119 | 11719.0 | Reconstruct roadway/widen | 3392-01-008 | FM 2786 (Stacy Road) | SH 5 | East of Angel Parkway in Allen | Widen 2- to 4-lane divided (ultimate 6) with intersection improvement at SH 5 | $10,476,761 | Minor Arterial |
| NRSA1- DAL-120 | 20082.0 | Reconstruct roadway/widen | 3392-01-009 | FM 2786 (Stacy Road) | East of Angel Parkway in Allen | FM 1378 | Reconstruct 2- to 4-lane (ultimate 6) divided roadway | $9,881,662 | Minor Arterial |
| NRSA1- DAL-121 | 20023.0 | Reconstruct roadway/widen | 1785-01-028 | FM 407 | FM 1830 | West of Lantana Trail | Widen from 2-lane rural to 4-lane urban | $16,751,248 | Minor Arterial |
| NRSA1- DAL-122 | 20024.0 | Reconstruct roadway/widen | 1950-01-032 | FM 407 | West of Lantana Trail | West of Chinn Chapel | Widen from 2-lane rural to 4-lane urban | $12,121,285 | Minor Arterial |
| NRSA1- DAL-123 | 677.0 | Addition of lanes | 8090-18-010 | Skillman Street | UPRR | Lovers Lane | Delete project to widen from 4 lanes to 6 lanes | | Minor Arterial |
| NRSA1- DAL-124 | 20208.0 | New roadway | 0196-03-180 | Dickerson Parkway at IH 35E | Sandy Lake Road/Whitlock Lane | PGBT (SH 190) | Lane ramp & 4/6 frontage road construction along IH 35E & a new 6-lane overpass at Dickerson Parkway | $101,673,681 | Minor Arterial |
| NRSA1- DAL-126 | 55006.0 | Addition of lanes | 1017-01-015 | FM 552 | SH 205 | SH 66 | Widen from 2-lane rural to 4-lane urban section | $1,000,000 | Major Collector |
| NRSA1- DAL-127 | 83221.0 | Addition of lanes | 1015-01-024 | FM 549 | SH 205 | SH 276 | Widen from 2 lanes rural to 4 lanes urban | $2,000,000 | Major Collector |
| NRSA1- DAL-128 | 83223.0 | Feasibility study | 1051-01-038 | FM 664 | SH 342 | IH 45 | Feasibility study to widen from 2 lanes rural to 4 lanes divided | $400,000 | Minor Arterial |
| NRSA1- DAL-129 | 83222.0 | Addition of lanes | 1015-01-023 | FM 3549 | IH 30 | North of SH 66 | Widen from 2 lanes rural to 4 lanes urban divided | $14,556,618 | Major Collector |
| NRSA1- DAL-130 | 20231.0 | Lane reduction | 0918-46-261 | Main Street | Charles Street | Mill Street | Intersection improvements; reduce from 4 lanes to 2 lanes to accommodate pedestrian improvements | $3,750,000 | Minor Arterial |
| NRSA1- DAL-131 | 20233.0 | Lane reduction | 0918-47-020 | Gus Thomasson | Karla Drive | Moon Drive and Whitson Way | Intersection improvements; reduce from 6 lanes to 4 lanes to accommodate parking & bike lanes | $3,749,421 | Minor Arterial |
| NRSA1- DAL-133 | 83255.0 | Addition of lanes | 0816-02-072 | FM 455 | West of FM 2450 | East of Marion Road | Widen 2-lane rural highway to 4-lane divided urban & add turn lanes at IH 35 | $7,150,000 | Minor Arterial |
| NRSA1- DAL-134 | 54090.0 | Addition of lanes | 0815-08-027 | FM 663 (Midlothian) | North of US 287 | South of US 287 | Widen existing 2-lane rural to 4-lane divided overpass & approaches | $3,583,450 | Minor Arterial |
| NRSA1- DAL-135 | 20272.0 | New roadway | 0918-24-193 | Infocom | US 75 | Plano Road/DART rail line | Construct new 4-lane divided urban roadway | $7,474,938 | Major Collector |
| NRSA1- DAL-136 | 20270.0 | Addition of lanes | 0918-24-197 | Exchange Parkway | Alma Drive to US 75 | and from Greenville to Allen Heights | Widen 4 to 6 urban divided lanes with lighting/traffic signal modifications & intersection improvements | $4,500,000 | Minor Arterial |
| NRSA1- DAL-137 | 20273.0 | Addition of lanes | N/A | FM 2786 (Stacy Road) | Ridge Road | SH 121 | Widen 4-lane divided roadway to 6-lane divided urban roadway | $1,600,000 | Minor Arterial |
| NRSA1- DAL-138 | 20276.0 | New roadway | 0918-24-189 | Routh Creek Parkway | Renner Road | Infocom | Construct new 2-lane roadway | $3,675,000 | Major Collector |
| NRSA1- DAL-139 | 20278.0 | Addition of lanes | 0918-24-194 | West Lucas Road | FM 2551 | FM 1378 | Widen 2 lanes to 3/4-lane section including traffic signal modifications at FM 2551 & FM 1378 intersections | $1,250,000 | Minor Arterial |
| NRSA1- DAL-140 | 20285.0 | Addition of lanes | 0918-24-191 | FM 3038 (Virginia Parkway) | Bellgrove Drive | US 75 | Widen 4-lane to 6-lane divided including bridge over Wilson Creek | $3,100,000 | Minor Arterial |
| NRSA1- DAL-141 | 20283.0 | New roadway | 0918-24-187 | East Infocom Road | Plano Road | Wyndham Lane | Construct new 4-lane roadway | $6,971,250 | Major Collector |

**2017-2020 STIP** — 07/2016 Revision: Approved 12/19/2016

| DISTRICT | MPO | COUNTY | CSJ | HWY | PHASE | CITY | YOE COST |
|---|---|---|---|---|---|---|---|
| DALLAS | DALLAS-FORT WORTH | KAUFMAN | 0751-01-046 | FM 148 | C | TERRELL | $ 12,600,000 |

**LIMITS FROM** SOUTH OF US 80
**LIMITS TO** SP 557
**PROJECT SPONSOR** TERRELL
**REVISION DATE** 07/2016
**MPO PROJ NUM** 83257
**FUNDING CAT(S)**
**PROJECT DESCR** WIDEN EXISTING HIGHWAY FROM TWO LANE RURAL TO FOUR LANE DIVIDED
**REMARKS P7** LOCAL CONTRIBUTION PAID FOR BY TERRELL; PASS THRU PROJECT
**PROJECT HISTORY**

**TOTAL PROJECT COST INFORMATION**

| | | | |
|---|---|---|---|
| PREL ENG | $ 1,000,000 | | |
| ROW PURCH | $ 250,000 | COST OF APPROVED PHASES | |
| CONSTR | $ 12,600,000 | | |
| CONST ENG | $ 286,787 | | |
| CONTING | $ 115,062 | | $ 12,600,000 |
| INDIRECT | $ 179,271 | | |
| BOND FIN | $ 0 | | |
| PT CHG ORD | $ 0 | | |
| TOTAL CST | $ 14,431,120 | | |

**AUTHORIZED FUNDING BY CATEGORY/SHARE**

| CATEGORY | FEDERAL | STATE | REGIONAL | LOCAL | LC | TOTAL |
|---|---|---|---|---|---|---|
| 3LC | $ 0 | $ 0 | $ 0 | $ 0 | $ 12,600,000 | $ 12,600,000 |
| TOTAL | $ 0 | $ 0 | $ 0 | $ 0 | $ 12,600,000 | $ 12,600,000 |

**2017-2020 STIP** — 07/2016 Revision: Approved 12/19/2016

| DISTRICT | MPO | COUNTY | CSJ | HWY | PHASE | CITY | YOE COST |
|---|---|---|---|---|---|---|---|
| DALLAS | DALLAS-FORT WORTH | DENTON | 0816-02-072 | FM 455 | E,ENG | VARIOUS | $ 900,000 |

**LIMITS FROM** WEST OF FM 2450
**LIMITS TO** EAST OF MARION RD
**PROJECT SPONSOR** TXDOT-DALLAS
**REVISION DATE** 07/2016
**MPO PROJ NUM** 83255
**FUNDING CAT(S)**
**PROJECT DESCR** RECONSTRUCT AND WIDEN TWO LANE RURAL TO FOUR LANE URBAN DIVIDED
**REMARKS P7** LOCAL CONTRIBUTION BY CITY OF DENTON
**PROJECT HISTORY** ADDITIONAL ENGINEERING FUNDS IN APP D

**TOTAL PROJECT COST INFORMATION**

| | | | |
|---|---|---|---|
| PREL ENG | $ 900,000 | | |
| ROW PURCH | $ 6,000,000 | COST OF APPROVED PHASES | |
| CONSTR | $ 0 | | |
| CONST ENG | $ 1,296,278 | | |
| CONTING | $ 0 | | $ 900,000 |
| INDIRECT | $ 0 | | |
| BOND FIN | $ 0 | | |
| PT CHG ORD | $ 0 | | |
| TOTAL CST | $ 8,196,278 | | |

**AUTHORIZED FUNDING BY CATEGORY/SHARE**

| CATEGORY | FEDERAL | STATE | REGIONAL | LOCAL | LC | TOTAL |
|---|---|---|---|---|---|---|
| 3LC | $ 0 | $ 0 | $ 0 | $ 0 | $ 900,000 | $ 900,000 |
| TOTAL | $ 0 | $ 0 | $ 0 | $ 0 | $ 900,000 | $ 900,000 |

**2017-2020 STIP** — 07/2016 Revision: Approved 12/19/2016

| DISTRICT | MPO | COUNTY | CSJ | HWY | PHASE | CITY | YOE COST |
|---|---|---|---|---|---|---|---|
| DALLAS | DALLAS-FORT WORTH | ROCKWALL | 1015-01-023 | FM 3549 | C,E,ENG,R,ACQ | ROCKWALL | $ 14,556,618 |

**LIMITS FROM** IH 30
**LIMITS TO** NORTH OF SH 66
**PROJECT SPONSOR** TXDOT-DALLAS
**REVISION DATE** 07/2016
**MPO PROJ NUM** 83222
**FUNDING CAT(S)**
**PROJECT DESCR** WIDEN FROM 2 LANE RURAL TO 4 LANE URBAN DIVIDED SECTION
**REMARKS P7** LOCAL CONTRIBUTION PAID BY ROCKWALL COUNTY; CAT 2M FUNDS ARE PROP 1
**PROJECT HISTORY**

**TOTAL PROJECT COST INFORMATION**

| | | | |
|---|---|---|---|
| PREL ENG | $ 1,800,000 | | |
| ROW PURCH | $ 2,500,000 | COST OF APPROVED PHASES | |
| CONSTR | $ 10,256,618 | | |
| CONST ENG | $ 0 | | |
| CONTING | $ 0 | | $ 14,556,618 |
| INDIRECT | $ 0 | | |
| BOND FIN | $ 0 | | |
| PT CHG ORD | $ 0 | | |
| TOTAL CST | $ 14,556,618 | | |

**AUTHORIZED FUNDING BY CATEGORY/SHARE**

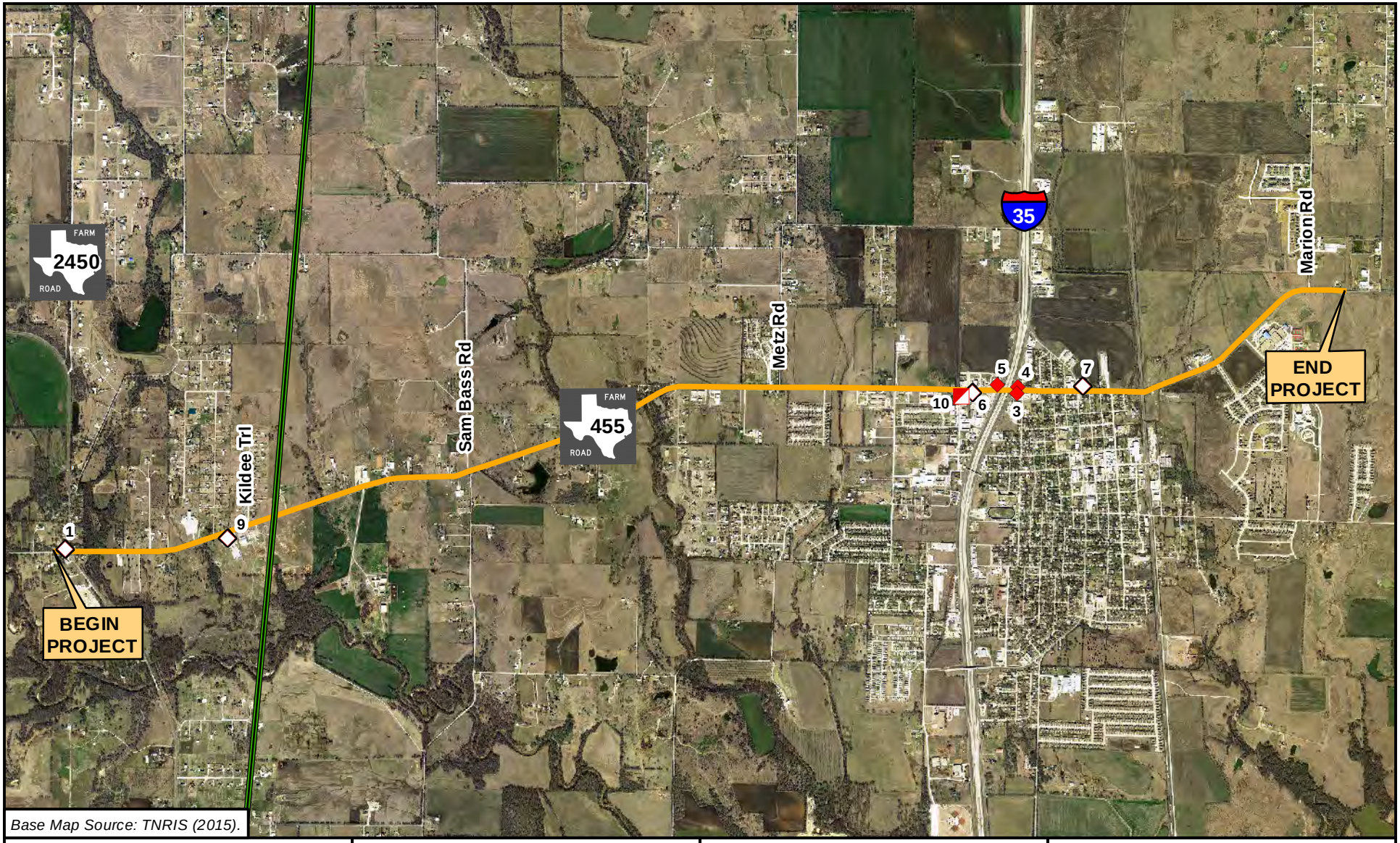
| CATEGORY | FEDERAL | STATE | REGIONAL | LOCAL | LC | TOTAL |
|---|---|---|---|---|---|---|
| 1 | $ 619,038 | $ 154,760 | $ 0 | $ 0 | $ 0 | $ 773,798 |
| 2M | $ 0 | $ 9,482,820 | $ 0 | $ 0 | $ 0 | $ 9,482,820 |
| 3LC | $ 0 | $ 0 | $ 0 | $ 0 | $ 1,800,000 | $ 1,800,000 |
| S102 | $ 2,250,000 | $ 250,000 | $ 0 | $ 0 | $ 0 | $ 2,500,000 |
| TOTAL | $ 2,869,038 | $ 9,887,580 | $ 0 | $ 0 | $ 1,800,000 | $ 14,556,618 |

# Appendix F – Resource-specific Maps

## FM 455 Draft Environmental Assessment

Denton County, Texas

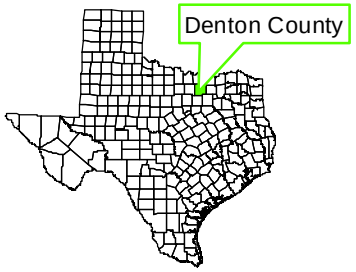
CSJ: 0816-02-072




*Base Map Source: TNRIS (2015).*

**Legend**

- Project Limits
- IHWCA
- LPST
- PST
- Crude Oil Gathering Pipeline (In Service)



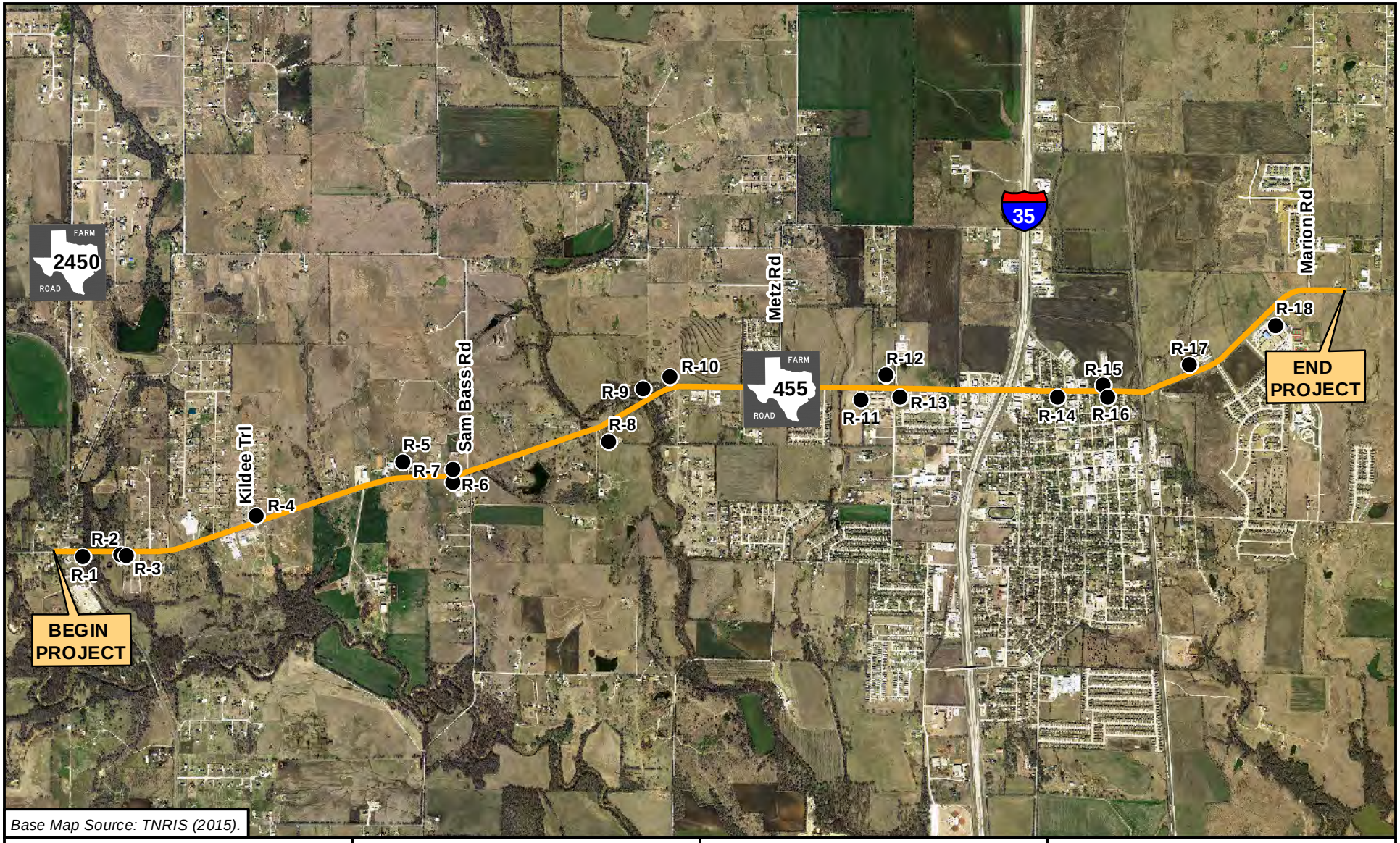

N
W E
S

0 3,000 Feet

**HAZARDOUS MATERIALS SITE MAP**

FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY

CSJ: 0816-02-072

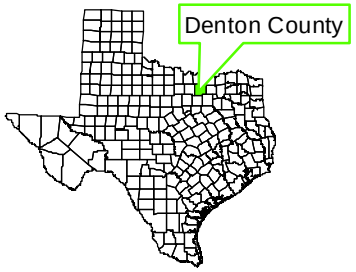


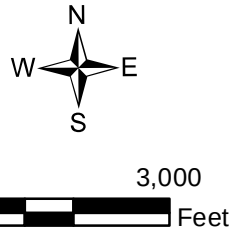

*Base Map Source: TNRIS (2015).*

**Legend**

Project Limits

Non-Impacted Noise Receiver




**NOISE RECEIVER LOCATION MAP**

FM 455
FROM WEST OF FM 2450
TO EAST OF MARION ROAD
DENTON COUNTY

CSJ: 0816-02-072

# Appendix G – Coordination Documentation

## FM 455 Draft Environmental Assessment

Denton County, Texas

CSJ: 0816-02-072

Texas Department of Transportation

125 EAST 11TH STREET, AUSTIN, TEXAS 78701-2483 | 512.463.8588 | WWW.TXDOT.GOV

January 6, 2017

Transmittal of AmaTerra Intensive Archeological Survey Report: *Archeological Survey for Proposed Improvements along Farm-to-Market (FM) 455: Expansion from West of FM 2450 to East of Marion Road, City of Sanger.*
Denton County, Dallas District, CSJ: 0816-02-072
THC Antiquities Permit No. 7665

Ms. Pat Mercado-Allinger,
Division of Archeology, Texas Historical Commission
P.O. Box 12276
Austin, Texas 78711

Dear Ms. Mercado-Allinger:

The above proposed project will be undertaken with local and federal funds. As required by the First Amended Programmatic Agreement (PA, 2005) and the Memorandum of Understanding with your agency, we are continuing consultation with your office on this project and are enclosing for your review and processing a draft report of an archeological survey recently conducted by AmaTerra Environmental, Inc. for the undertaking.

On behalf of TxDOT's Dallas District, AmaTerra conducted an Intensive Archeological Survey with systematic shovel testing within the area of potential effects (APE) of a proposed expansion of Farm-to-Market (FM) 455between FM 2450 in Bolivar and Marion Road northeast of Sanger, in Denton County. The work was conducted in compliance with Section 106 of the National Historic Preservation Act and the Texas Antiquities Code. The project APE is approximately 5.53 miles in length with and average width of approximately 130 feet. The total APE is 98.5 acres consisting of 57.9 acres of existing right-of-way (ROW), 38.5 acres of proposed new ROW, and 2.1 acres of proposed easements. Typical roadway construction depths would be less than four feet, but impacts for proposed bridge expansions at Duck Creek and the Moore's Branch of Clear Creek would extend down more than 25 feet.

AmaTerra surveyed the entire existing ROW and the proposed new ROW on private property where access was available. Archeologists visually inspected the entire APE and excavated 86 shovel tests at approximately 100 m intervals on each side of the accessible proposed ROW. Shovel testing was not performed in previously disturbed areas such as locations of buried utilities, drainage ditches, transmission lines, manicured residential plots or paved parking lots. Investigators also assessed the Bolivar Cemetery, and found it to have no potential for unmarked graves within the adjacent ROW. Two new archeological sites were documented (41DN593 and 41DN594). Both are historic period archeological sites related to Bolivar of the nineteenth and early twentieth centuries. Both are recommended for further National Register eligibility testing.

Eight High Probability Areas (HPAs) to which access was not granted at time of survey are also recommended for further investigation. AmaTerra recommends that the project may proceed for all areas assessed with the exception of sites 41DN593 and 41DN594 and the eight HPAs. Fieldwork activities and findings are summarized in the attached report.

A TxDOT archeologist has reviewed the report by AmaTerra and concurs with the results. **TxDOT seeks THC concurrence that**:

1. With the possible exceptions of two archeological sites and eight presently inaccessible HPAs, no other archeological historic properties (36 CFR Part 800.16(1) or State Archeological Landmarks (13 TAC 26.12) are present within the 98.5-acre APE examined by AmaTerra (see attached report).

2. Once access is granted to the eight unexamined HPAs identified during the survey and prior to construction, these areas are to be assessed under a separated antiquities permit for potential archeological historic properties.

3. Further work is warranted on two sites (41DN593, 41DN594) in order to determine the eligibility of their components within the APE for the NRHP and as SALs. The level of investigation (to be performed under a separate antiquities permit) should be sufficient to make a determination regarding eligibility of the portions of these sites that extend into the proposed APE.

4. Since the survey was conducted under an individual THC Antiquities Permit, we are forwarding the draft for your review and processing in partial fulfillment of THC Antiquities Permit No. 7665. TxDOT finds the report acceptable as a draft and pending any final report review comments from your office, we request your concurrence that the report may proceed toward production.

Thank you for your consideration of this matter. If you have any questions regarding the survey report, please contact Rachel Feit at (512) 329-0031. If you have any other questions or have need of further information, please contact me at (512) 416-2639. Thank you for your consideration in this matter.

Sincerely,

J. Kevin Hanselka

J. Kevin Hanselka, Archeological Studies Program
Environmental Affairs Division

Cc w/attachment: Sandra Williams, TxDOT Dallas District Environmental Coordinator; Scott Ford, ENV-PD; Kevin Hanselka, ENV-Arch; ENV Arch Project File

Intensive Archeological Survey Report: *Proposed Improvements along Farm-to-Market (FM) 455, Expansion from West of FM 2450 to East of Marion Road, City of Sanger.* Denton County, Dalls District.
CSJ: 0816-02-072
THC Antiquities Permit No. 7665

Cc w/o attachments: ECOS Scan

Concurrence By:

William A. Martin 1/12/17

*for:* Mark Wolfe, Executive Director and SHPO
Texas Historical Commission

Date

Texas Department of Transportation

DRAFT REPORT ACCEPTABLE

# Archeological Survey for Proposed Improvements along Farm-to-Market (FM) 455 (Draft)

Expansion from West of FM 2450 to East of Marion Road, City of Sanger, Denton County, Texas

CSJ: 0816-02-072

Principal Investigator: Rachel Feit

Antiquities Permit No. 7665

Date: December 2016

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

## Chantal McKenzie

**From:** Theodore Villacana <theodorev@comanchenation.com>
**Sent:** Monday, April 25, 2016 11:18 AM
**To:** Chantal McKenzie
**Subject:** Consult response for - RE: Section 106 Consultation, Texas Department of Transportation, CSJ 081602072, Denton County, Dallas District

Dear Ms. McKenzie :

In response to your request, the above reference project has been reviewed by staff of this office to identify areas that may potentially contain prehistoric or historic archeological materials. The location of your project has been cross referenced with the Comanche Nation site files, where an indication of ***"No Properties"*** have been identified.

Please contact this office at (580) 595-9960/9618 if you require additional information on this project.

This review is performed in order to identify and preserve the Comanche Nation and State cultural heritage, in conjunction with the State Historic Preservation Office.

Regards

Comanche Nation Historic Preservation Office
Theodore E. Villicana ,Technician
#6 SW "D" Avenue , Suite C
Lawton, OK. 73502

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**From:** Jimmy Arterberry
**Sent:** Friday, April 22, 2016 1:42 PM
**To:** Theodore Villacana
**Subject:** FW: Section 106 Consultation, Texas Department of Transportation, CSJ 081602072, Denton County, Dallas District

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**From:** Chantal McKenzie [mailto:Chantal.McKenzie@txdot.gov]
**Sent:** Friday, April 22, 2016 1:21 PM
**To:** Amber Toppah <kbo@kiowatribe.org>; Amie R. Tah-Bone (atahbone@kiowatribe.org) <atahbone@kiowatribe.org>; Gary McAdams (Gary.McAdams@wichitatribe.com) <Gary.McAdams@wichitatribe.com>; Holly Houghten (holly@mathpo.org) <holly@mathpo.org>; Jason Ross (jross@delawarenation.com) <jross@delawarenation.com>; Jimmy Arterberry <jimmya@comanchenation.com>; Miranda Myer (mallen@tonkawatribe.com) <mallen@tonkawatribe.com>; Nekole Alligood (NAlligood@delawarenation.com) <NAlligood@delawarenation.com>; Terri Parton (Terri.Parton@wichitatribe.com) <Terri.Parton@wichitatribe.com>
**Subject:** Section 106 Consultation, Texas Department of Transportation, CSJ 081602072, Denton County, Dallas District

Good afternoon,

We kindly request your comments regarding a proposed undertaking.  Please see attached letter and exhibits for project details and information.

Thank you in advance for your consideration.

Please let me know if you have any questions.

Regards,

Chantal

Chantal McKenzie
Cultural Resource Specialist
Environmental Affairs Division
Texas Department of Transportation
512-416-2770
Chantal.McKenzie@TxDOT.gov

will be addressed to the fullest extent possible. If you do not object that the proposed findings and recommendations are appropriate, please sign below to indicate your concurrence. In the event that further work discloses the presence of archeological deposits, we will contact your Tribe to continue consultation.

Thank you for your attention to this matter. If you have questions, please contact Kevin Hanselka (TxDOT Archeologist) at 512/416-2639 (email: Kevin.Hanselka@txdot.gov) or Chantal McKenzie at 512/416-2770 (email: Chantal.McKenzie@txdot.gov). When replying to this correspondence by US Mail, please ensure that the envelope address includes reference to the Archeological Studies Branch, Environmental Affairs Division.

Sincerely,

Scott Pletka, Supervisor
Archeological Studies Branch
Environmental Affairs Division

Concurrence by: _____ Date: 4/25/16

Attachments
cc w/attachments: ENV-ARCH ECOS

## Leslie Mirise

**From:** Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
**Sent:** Monday, March 20, 2017 2:31 PM
**To:** Leslie Mirise
**Cc:** Sandra Williams; Dan Perge; Jan Heady; Stirling Robertson
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Good afternoon, Leslie,

Thank you for acknowledging my recommendation to consider constructing wildlife passage benches under perennial waterway bridges. TPWD is very interested in collaborating with TxDOT regarding the wildlife passage bench installation, and we continue to encourage TxDOT to evaluate future projects early in the planning and design process for opportunities to do so.

With that being said, thank you for submitting the FM 455 Widening project in Denton County for early coordination. TPWD appreciates TxDOT's commitment to implement the Best Management Practices discussed in the information provided and in the emails below. Based on a review of the project description and the avoidance and minimization efforts described, and provided that the project plans do not change, TPWD considers coordination to be complete. However, please note it is the responsibility of the project proponent to comply with all federal, state, and local laws that protect fish, wildlife, and plants.

Sincerely,

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

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**From:** Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
**Sent:** Friday, March 10, 2017 11:30 AM
**To:** Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
**Cc:** Sandra Williams <Sandra.Williams2@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Stirling Robertson <Stirling.Robertson@txdot.gov>
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Hi Laura,

Thank you for your recommendation regarding wildlife passage benches. TxDOT acknowledges your recommendation. However, implementing these project changes without justification for the delays in project design, increases in design cost, and increase in taxpayer expense cannot be done for the FM 455 project where 1) there is no suitable habitat for federally listed species and 2) BMPs for state-listed species and SGCN, per the MOU, are already implemented and included in EPIC sheets. Therefore, TxDOT would not consider a wildlife passage bench at this time for the FM 455 project (CSJ 0816-02-072).

Thank you,

*Leslie Mirise*
Environmental Specialist

Dallas District – Advance Planning
Texas Department of Transportation
4777 East Highway 80
Mesquite, Texas 75150
(214) 320-6162 office
(214) 320-4470 FAX

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**From:** Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
**Sent:** Thursday, March 09, 2017 4:37 PM
**To:** Leslie Mirise
**Cc:** Sandra Williams; Dan Perge; Jan Heady; Stirling Robertson
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Leslie,

I apologize for the delay in responding.

In response to your questions in TxDOT Response #1 below, I understand that the FM 455 project will not be affecting any federally listed species. I used the SH 100 project as an example of what is possible within TxDOT specifications to alleviate the impacts of roadways on local wildlife populations. I am interested in encouraging TxDOT Districts to consider design changes during scheduled project construction that may provide a safer roadway for the traveling public as well as facilitate daily and seasonal movements of wildlife regardless of rarity. As for data, no, TPWD does not have any site specific data for this project area. Does TxDOT? It is my understanding that some Maintenance Divisions keep records of roadkill within their area of responsibility. TPWD is very interested in collaborating with TxDOT in developing a roadkill database that may help targeting areas that would benefit from future project design and construction modifications that avoid and minimize impacts to wildlife that attempt to cross roads. Also, it should be noted that the absence of roadkill does not necessarily indicate that a roadway does not create a barrier to movement. Many species avoid roadways which in turn can potentially impact gene flow, dispersal, and seasonal migrations. Please see the attached copy of Chapter 1 of van der Ree's Handbook of Road Ecology for further information. I have also included color versions of the figures found in Chapter 1 since I find them incredibly helpful and thought-provoking.

With that being said, TPWD still recommends that TxDOT consider installing wildlife passage benches, where practicable, to facilitate wildlife movement across the project area, particularly at bridges crossing perennial waterways. The effectiveness of wildlife passage benches increases with the installation of fencing by directing wildlife to the installed bench. TPWD is available to help with the planning and design of any passage benches for this project area or any future projects that may warrant this recommendation.

I hope we can come to a consensus on this recommendation so TxDOT can fulfill their mission of delivering a safe, reliable, and integrated transportation system while TPWD upholds their mission of managing and conserving the natural resources of Texas.

Sincerely,

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

**From:** Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
**Sent:** Wednesday, March 01, 2017 5:09 PM
**To:** Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
**Cc:** Sandra Williams <Sandra.Williams2@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Stirling Robertson <Stirling.Robertson@txdot.gov>
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Hi Laura,

Thank you for the information regarding Glen Rose yucca and Topeka coneflower and for providing recommendations for the FM 455 project. TxDOT provides the following responses:

**TPWD Recommendation #1:** With the increased lanes and capacity being provided by this FM 455 project, TPWD has concerns about the ability for wildlife to safely move throughout the area. The slopes beneath bridges and overpasses, even in suburban areas, are often used for movement between habitat patches by many species of wildlife. During construction of this project, bridges may be modified to permit safe passage by adding a bench or similar wildlife path to facilitate movement. I was recently in the Pharr District, and I visited an ongoing construction project along SH 100 that has incorporated interlocking articulating concrete blocks to facilitate a passage bench (see attached Special Specification 4014 and pictures from that project area); however passage benches can also be incorporated using traditional rip rap applications (see excerpts from a Minnesota DNR publication that provide examples). To facilitate wildlife movement, TPWD recommends incorporating passage benches and fencing (to direct animals to the slope and to prevent their movement onto the road surface) in the project design for FM 455.

**TxDOT Response #1:** TxDOT Dallas District (District) does not use concrete or concrete products as stabilization at or near bridges. Stone riprap and/or gabions are typically used. With regard to benches or wildlife paths, the proposed project is not expected to affect federally listed species, such as ocelots in the Pharr District, that would warrant such a measure at waterway crossings. Is there data from the vicinity of the project area that justifies the implementation of such design(s) (*e.g.*, traffic accidents due to wildlife crossings, impacts to state-listed species or SGCN as a result of vehicle strikes)?

**TPWD Recommendation #2:** TPWD understands that TxDOT has language directing their contractors to minimize soil disturbance to reduce the establishment of invasive species; however we recommend that native vegetation removal, in general, as well as soil disturbance, be minimized, particularly in regard to the streams and tributaries throughout the project area. All of these drainages eventually feed into Clear Creek, which has been designated by TPWD as an Ecologically Significant Stream due to high water quality/exceptional aquatic life/high aesthetic value.

**TxDOT Response #2:** TxDOT Dallas District incorporates the following language into all project EPIC sheets under Vegetation Resources: Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751 & 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

**TPWD Recommendation #3:** On a related note to the previous recommendation, and it may seem contrary to what was just recommended, I observed in some of the pictures provided regarding Duck Creek that a large stand of bamboo occurs along its slopes. If this area falls within the project area (it was not clear if it did), TPWD recommends implementing the control methods found at the following link: http://www.clemson.edu/extension/hgic/pests/weeds/hgic2320.html in order to discourage further spread into this creek area.

**TxDOT Response #3:** Recommendation noted. Vegetation removal and/or impact would occur within the specified areas of the plan sheets. Vegetation within the ROW would be maintained according to the specifications included in Response #2 above.

**TPWD Recommendation #4:** Lastly, please let me know if you need any assistance locating mitigation opportunities with regard to any USACE permitting. I am happy to help however I can.

**TxDOT Response #4:** Recommendation noted. Thank you.

We appreciate your recommendations.

Thank you,

*Leslie Mirise*
Environmental Specialist
Dallas District – Advance Planning
Texas Department of Transportation
4777 East Highway 80
Mesquite, Texas 75150
(214) 320-6162 office
(214) 320-4470 FAX

---

**From:** Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
**Sent:** Thursday, February 23, 2017 2:46 PM
**To:** Leslie Mirise
**Cc:** Sandra Williams; Dan Perge; Jan Heady
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Good afternoon, Leslie,

I consulted with Jason Singhurst, TPWD Plant Community Ecologist, about the likelihood of Glen Rose yucca or Topeka purple coneflower occurring in relation to Duck Creek or any other area within the project area, and he felt it was highly unlikely. I have attached some photos Jason provided of typical habitat conditions where these species occur. Hopefully, they can be of some assistance in the future. With regard to other natural resources, TPWD makes the following recommendations:

- With the increased lanes and capacity being provided by this FM 455 project, TPWD has concerns about the ability for wildlife to safely move throughout the area. The slopes beneath bridges and overpasses, even in suburban areas, are often used for movement between habitat patches by many species of wildlife. During construction of this project, bridges may be modified to permit safe passage by adding a bench or similar wildlife path to facilitate movement. I was recently in the Pharr District, and I visited an ongoing construction project along SH 100 that has incorporated interlocking articulating concrete blocks to facilitate a passage bench (see attached Special Specification 4014 and pictures from that project area); however passage benches can also be incorporated using traditional rip rap applications (see excerpts from a Minnesota DNR publication that provide examples). To facilitate wildlife movement, TPWD recommends incorporating passage benches and fencing (to direct animals to the slope and to prevent their movement onto the road surface) in the project design for FM 455.
- TPWD understands that TxDOT has language directing their contractors to minimize soil disturbance to reduce the establishment of invasive species; however we recommend that native vegetation removal, in general, as well as soil disturbance, be minimized, particularly in regard to the streams and tributaries throughout the project area. All of these drainages eventually feed into Clear Creek, which has been designated by TPWD as an Ecologically Significant Stream due to high water quality/exceptional aquatic life/high aesthetic value.

- On a related note to the previous recommendation, and it may seem contrary to what was just recommended, I observed in some of the pictures provided regarding Duck Creek that a large stand of bamboo occurs along its slopes. If this area falls within the project area (it was not clear if it did), TPWD recommends implementing the control methods found at the following link: http://www.clemson.edu/extension/hgic/pests/weeds/hgic2320.html in order to discourage further spread into this creek area.
- Lastly, please let me know if you need any assistance locating mitigation opportunities with regard to any USACE permitting. I am happy to help however I can.

Please indicate if TxDOT is willing to commit to the recommendations provided in this email.

Sincerely,

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

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**From:** Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
**Sent:** Wednesday, February 22, 2017 4:41 PM
**To:** Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
**Cc:** Sandra Williams <Sandra.Williams2@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Hi Laura,

The team has reviewed their field maps/notes, stream data forms, and photographs. There is no indication that any yucca plants were observed. I can dropbox a zip file of all the photos taken at Duck Creek.

Thanks,

*Leslie Mirise*
Environmental Specialist
Dallas District – Advance Planning
Texas Department of Transportation
4777 East Highway 80
Mesquite, Texas 75150
(214) 320-6162 office
(214) 320-4470 FAX

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**From:** Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
**Sent:** Wednesday, February 22, 2017 2:39 PM
**To:** Leslie Mirise
**Cc:** Sandra Williams; Jan Heady; Dan Perge
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Good afternoon, Leslie,

Quick question: During site visits to Duck Creek and the associated limestone outcrops/hillsides in the FM 455 project area, were there any observations of yucca plants whatsoever? Generally, Agavaceae family species do not need to be in flower to determine if they are in an area. I am trying to determine the likelihood for Glen Rose yucca to occur along this creek.

Thanks,
Laura

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

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**From:** Laura Zebehazy
**Sent:** Wednesday, February 22, 2017 10:04 AM
**To:** 'Leslie Mirise' <Leslie.Mirise@txdot.gov>
**Cc:** Sandra Williams <Sandra.Williams2@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Ok, thanks! That helps. I'll go find them on ECOS.

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

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**From:** Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
**Sent:** Wednesday, February 22, 2017 10:02 AM
**To:** Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
**Cc:** Sandra Williams <Sandra.Williams2@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Hi Laura,

I just checked the two schematic files in ECOS, and they both show stations. They are located under the Documents/Project section. The file names are as follows:
0816-02-072 FM 455 sch02-09-29-16.pdf
0816-02-072 FM 455 sch01-09-29-16.pdf

Please let me know if that doesn't work and I can re-send the schematic via email.

Thanks,

*Leslie Mirise*
Environmental Specialist
Dallas District – Advance Planning
Texas Department of Transportation
4777 East Highway 80
Mesquite, Texas 75150

(214) 320-6162 office
(214) 320-4470 FAX

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**From:** Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
**Sent:** Tuesday, February 21, 2017 4:44 PM
**To:** Leslie Mirise
**Cc:** Sandra Williams; Jan Heady; Dan Perge
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Hi Leslie,

I am reviewing the photos associated with the Biological Resources Technical Report for FM 455, and I was wondering if it would be possible to provide a plan set that would show the stations so I can easily identify where along the project area the photos are referenced to?

Thanks,
Laura

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

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**From:** Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
**Sent:** Friday, February 10, 2017 5:15 PM
**To:** Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
**Cc:** Sandra Williams <Sandra.Williams2@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Hi Laura,

I've attached the final tech report for the FM 455 project. It is also available in ECOS. Please see ECOS for the updated Bio Evaluation Form (uploaded on 2-8-17) and supporting documents (uploaded 2-10-17). An edit was made to the ESA section and species determination in the species impact table for red knot and piping plover. A no-effect determination was provided for both species as no suitable habitat is present in the action area (no longer merely relying upon the project not being related to wind energy). These changes in no way affect the Tier 1 Site Assessment or triggers for coordination with TPWD. The earlier versions that were originally sent to you are still in ECOS in case you'd like to compare the language change between old and updated versions. The old version will be deleted in the near future.

Please let me know if you have any questions.

Thanks,

*Leslie Mirise*
Environmental Specialist
Dallas District – Advance Planning
Texas Department of Transportation
4777 East Highway 80

Mesquite, Texas 75150
(214) 320-6162 office
(214) 320-4470 FAX

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**From:** Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
**Sent:** Wednesday, January 25, 2017 5:05 PM
**To:** Leslie Mirise
**Cc:** Sandra Williams; Jan Heady; Dan Perge
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Thanks, Leslie, I would appreciate you sending the tech report when ready.

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

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**From:** Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
**Sent:** Friday, January 20, 2017 10:02 AM
**To:** Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
**Cc:** Sandra Williams <Sandra.Williams2@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Hi Laura,

The draft EA is currently in progress. However, I do have a draft Technical Report (to be reviewed by the District) that was just submitted on 1-18-17. The tech report would be the Bio Resources section of the EA. I can send you this document, preferably after I've had a chance to review it. I will also upload it to ECOS once it is finalized.

Please let me know if there is anything else I can provide.

Thanks,

*Leslie Mirise*
Environmental Specialist
Dallas District – Advance Planning
Texas Department of Transportation
4777 East Highway 80
Mesquite, Texas 75150
(214) 320-6162 office
(214) 320-4470 FAX

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**From:** Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
**Sent:** Thursday, January 19, 2017 6:04 PM
**To:** Leslie Mirise; Dan Perge; Jan Heady; Sandra Williams
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

Good evening, Leslie,

I want to apologize for not responding in any manner until now regarding the FM 455 Widening project in Denton County. I have begun my preliminary review of the coordination materials, and I will let you know if I need any further information or have any questions. On that note, will there be an EA available to review for this project? I looked in ECOS and did not find one.

Laura

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

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**From:** WHAB_TxDOT
**Sent:** Wednesday, December 21, 2016 9:10 AM
**To:** Leslie Mirise <Leslie.Mirise@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Sandra Williams <Sandra.Williams2@txdot.gov>
**Cc:** Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
**Subject:** RE: 0816-02-072 FM 455 Project - Request for Early Coordination

The TPWD Wildlife Habitat Assessment Program has received your request and has assigned it project ID # 37371. The Habitat Assessment Biologist who will complete your project review is copied on this email.

Thank you,

John Ney
Administrative Assistant
Texas Parks & Wildlife Department
Wildlife Diversity Program – Habitat Assessment Program
4200 Smith School Road
Austin, TX 78744
Office: (512) 389-4571

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**From:** Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
**Sent:** Tuesday, December 20, 2016 4:19 PM
**To:** WHAB_TxDOT <WHAB_TxDOT@tpwd.texas.gov>
**Cc:** Dan Perge <Dan.Perge@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Sandra Williams <Sandra.Williams2@txdot.gov>
**Subject:** CSJ: 0816-02-072 FM 455 Project - Request for Early Coordination

Hello,

TxDOT requests early coordination for the FM 455 Widen from 2-lane to 4-lane Divided with Turn Lanes Project (CSJ: 0816-02-074) in Denton County, Texas. I have attached the following:

1. The Biological Evaluation Form, which contains the Tier 1 Site Assessment and BMPs to be implemented;
2. Supporting Documents, including (but not limited to) the detailed project description, project location map, species lists from TPWD and USFWS/IPaC, TxNDD figure, EMST documentation, and site photos; and
3. The EMST Report Excel spreadsheet.

These documents, along with related project documentation, are also available in ECOS under the CSJ: 0816-02-072 Documents/Biology section.

Please feel free to contact me with an questions or if you need any additional information.

Sincerely,

*Leslie Mirise*
Environmental Specialist
Dallas District – Advance Planning
Texas Department of Transportation
4777 East Highway 80
Mesquite, Texas 75150
(214) 320-6162 office
(214) 320-4470 FAX