Final Environmental Assessment

FM 2478, Dallas District

From US 380 to North of FM 1461
CSJ: 2351-01-017, 2351-02-014
Collin County, Texas
September 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 ACRONYMS

AADT	average annual daily traffic
ACM	asbestos containing materials
ACS	American Community Survey
ADT	average daily traffic
AOI	Area of Influence
APE	area of potential effects
BG	Block Group
BMPs	best management practices
CAA	Clean Air Act
CFR	Code of Federal Regulation
CMP	Congestion Management Process
CR	County Road
CT	Census Tract
CWA	Clean Water Act
dB	decibels
dB(A)	decibels (A-weighted)
diesel PM	diesel particulate matter plus diesel exhaust organic gases
EA	Environmental Assessment
EJ	Environmental Justice
EM	Executive Memorandum
EMST	Ecological Mapping Systems of Texas
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Permits, Issues, and Commitments
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FLUP	Future Land Use Plan
FM	Farm-to-Market Road
FPPA	Farmland Protection Policy Act
FR	Federal Register
FTA	Federal Transit Authority
FWCA	Fish and Wildlife Coordination Act
HEI	Health Effects Institute
IRIS	Integrated Risk Information System
ISA	Initial Site Assessment
LEP	Limited English Proficiency
Leq	average or equivalent sound level
LF	linear feet
LOS	Level of Service
LPST	leaking petroleum storage tank
MBC	multiple box culvert
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MOVES	Motor Vehicle Emission Simulator
mph	miles per hour
MS4	Municipal Separate Storm Sewer System
MSATs	Mobile Source Air Toxics
MTP	Metropolitan Transportation Plan

NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NCTCOG	North Central Texas Council of Governments
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
OHWM	ordinary high water mark
PA	Programmatic Agreement
PA-TU	Programmatic Agreement for Transportation Undertakings
PCN	Preconstruction Notification
PH	Public Hearing
PST	petroleum storage tank
ROW	Right-of-Way
SBC	single box culvert
SH	State Highway
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SOV	single-occupancy vehicle
SSO	storm sewer outfall
SW3P	Stormwater Pollution Prevention Plan
TAQA	Traffic Air Quality Analysis
TCEQ	Texas Commission on Environmental Quality
TDSHS	Texas Department of State Health Services
THC	Texas Historic Commission
TIP	Transportation Improvement Plan
TPDES	Texas Pollutant Discharge Elimination System
TPP	Transportation Planning and Programming
TPWD	Texas Parks and Wildlife Department
TSS	Total Suspended Solids
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
US	U.S. Highway
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USGS	U.S. Geological Survey
VMT	vehicle-miles travelled
vpd	vehicles per day

I. INTRODUCTION

This Environmental Assessment (EA) evaluated the social, economic, and environmental impacts resulting from the proposed improvements (Build Alternative) to Farm-to-Market road (FM) 2478 (Custer Road) in the City of McKinney and Town of Prosper in Collin County, Texas. The proposed project limits extend from U.S. Highway (US) 380 to north of FM 1461. The proposed project length is approximately three miles. The City of McKinney is proposing to widen the existing two-lane, undivided, rural roadway to a six-lane divided, urban roadway and realign the intersection at FM 1461. Construction of the proposed facility would be staged with the two-lane roadway first being expanded to four lanes. Expansion to the ultimate six-lane facility would occur at a later date. A project location map is presented in **Figure 1**; the project location is shown on the McKinney West and Weston, Texas U.S. Geological Survey (USGS) topographic maps in **Figure 2**; and an aerial photograph of the project is presented in **Figure 3**.

Design plans can be inspected at the Texas Department of Transportation (TxDOT) Dallas District Office, 4777 East Highway 80, Mesquite, Texas, 75150 and at the Collin County Area Office, 2205 South State Highway (SH) 5, McKinney, Texas, 75069.

II. PROJECT DESCRIPTION

A. Need and Purpose

The proposed project is needed to meet future travel demands stemming from projected population growth and traffic volumes, and to bring the roadway up to current design standards.

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream and is generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. There are six LOS designations, A (best) to F (worst), that describe traffic operating conditions. General descriptions of LOS are shown in **Table1**. Additionally, Table 2 indicates that the population of Collin County is expected to grow by 95% between the years 2010 and 2040.

Table 1: Level of Service (LOS) Descriptions

LOS	Description
A	Free flow traffic operations. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The average spacing between vehicles is about 22 car lengths, which affords the motorist a high level of physical and psychological comfort. The effects of minor traffic incidents or vehicular breakdowns are easily absorbed. Although there might be deterioration in LOS within the vicinity of a traffic incident, standing traffic queues will not form and traffic quickly returns to LOS A on passing the disruption.
B	Reasonably free flow traffic operations. Vehicles are only slightly restricted in their ability to maneuver within the traffic stream. The average spacing between vehicles is about 13 car lengths, which still affords the motorist a high level of physical and psychological comfort. The effects of minor traffic incidents or vehicular breakdowns are still easily absorbed; however, deterioration in LOS within the vicinity of a traffic incident would be more severe than for LOS A.
C	Stable traffic operations, but traffic flows approach the range in which small increases in flow will cause substantial deterioration in service. The average spacing between vehicles is about nine car lengths. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require additional care and vigilance. The driver experiences a noticeable increase in tension due to the additional vigilance required for safe operation. The effects of minor traffic incidents or vehicular breakdowns might still be absorbed, but the local deterioration in LOS will be substantial. Queues might be expected to form behind any significant blockage.
D	Unstable flow of traffic operations. Small increases in flow cause substantial deterioration of service. The average spacing between vehicles is about six car lengths. Freedom to maneuver within the traffic stream is severely limited, and the driver experiences drastically reduced physical and psychological comfort levels. Even minor traffic incidents can be expected to create substantial traffic queuing because the traffic stream has little space to absorb disruptions.
E	Extremely unstable traffic operations due to the absence of gaps in the traffic stream. The average spacing between vehicles is about four car lengths. Maneuverability within the traffic stream is extremely limited, and the level of physical and psychological comfort afforded to the driver is extremely poor. At capacity, the traffic stream has no ability to dissipate even the most minor disruptions and any incident can be expected to produce a serious breakdown with extensive queuing.
F	Forced or breakdown flow. This results in long queues behind breakdown points such as traffic incidents, merge or weaving areas, lane drops, or any location where traffic capacity exceeds the capacity of the location.

Source: Highway Capacity Manual, Special Report 209, 3rd Edition, Transportation Research Board, 1994

Except for a signalized intersection at US 380 and a stop sign at FM 1461, the existing FM 2478 has no stop signs or signalized intersections. It is similar to a rural two-lane, undivided highway, which can generally accommodate approximately 5,300 vehicles per day (vpd) while maintaining a LOS of C to D. According to the TxDOT Transportation Planning and Programming (TPP) Division, FM 2478 has an estimated existing year 2016 average daily traffic (ADT) volume of 8,500 vpd. The LOS with this traffic volume would range between E and F. TxDOT TPP projects that by 2036, FM 2478 will have an ADT volume of 14,200 vpd. This is a 67.1 percent increase over 2016 traffic volumes. If no capacity is added to FM 2478, the LOS with this traffic volume would be F.

In addition to inadequate traffic carrying capacity, the existing FM 2478 is not up to current design standards. The roadway lacks sufficient shoulder widths and does not have dedicated turn lanes. The intersection layout of FM 2478 at FM 1461 is inefficient. FM 2478 south of FM 1461 is approximately 0.15 mile west of FM 2478 north of FM 1461.

The purpose of the proposed project is to improve mobility and bring the roadway up to current design standards.

B. Existing Facility

The existing FM 2478 within the project limits is a two-lane, undivided roadway with 10-foot wide lanes and one to two-foot wide shoulders. Drainage is conveyed into open ditches along both sides of the roadway. The existing speed limit is 55 miles per hour (mph). The typical section for the existing roadway is presented in **Figure 4**.

C. Right-of-Way (ROW) Requirements and Utility Adjustments

Build Alternative
The usual existing ROW widths are 90 feet from US 380 to FM 1461 and 100 feet from FM 1461 to the project terminus. The proposed ROW width varies from 138 to 217 feet. Approximately 36.8 acres of ROW would be acquired for the proposed project and 0.6 acre would be required for permanent drainage easements. The proposed project would convert approximately 37.4 acres of residential, commercial, agriculture, and undeveloped land into transportation ROW and drainage easements. The total footprint of the proposed project is 78.67 acres.

Utilities that exist within the existing ROW in the project area, including television cables, fiber optic cables, electrical cables, telephone cables, storm sewer lines, water lines, and gas lines, may require relocation due to the expansion of the roadway. Affected utilities would be adjusted or relocated prior to construction of the proposed project. The adjustments and relocation of any utilities would be managed so that no substantial interruptions would occur. Plans for relocating utilities would be provided by the appropriate utility company.

No Build Alternative
There would be no ROW acquisition or utility relocations.

D. Project Funding

This project is located within an area that has been designated by the Environmental Protection Agency (EPA) as a moderate nonattainment area for the 2008 ozone National Ambient Air Quality Standards (NAAQS); therefore, transportation conformity rules apply. The proposed action is consistent with the North Central Texas Council of Governments' financially constrained *Mobility 2040*, and the 2017-2020 Transportation Improvement Plan (TIP), as amended, which were initially found to conform to the TCEQ State Implementation Plan (SIP) by FHWA and FTA on September 7, 2016 and December 19, 2016, respectively. Copies of the MTP and TIP pages are included in **Appendix A**. All projects in the NCTCOG's TIP that are proposed for federal or state funds were initiated in a manner consistent with federal guidelines in Section 450, of Title 23 CFR and Section 613.200, Subpart B, of Title 49 CFR.

CSJs 2351-01-017 and 2351-02-014 are funded through an Advance Funding Agreement for Voluntary Local Government Contributions to Transportation Improvement with No Required Match between the City of McKinney and TxDOT with a total project cost of $47,818,502. Project

funding is 80 percent Federal and 20 percent State. Engineering and ROW are authorized for the CSJs. The interim phase of the proposed project (four-lane facility) is anticipated to be let for construction in September 2020. The estimated time of completion is September 2022.

E. Local Support

The City of McKinney is in support of this project and is providing funding for the proposed ROW (**Appendix B**).

F. Surrounding Terrain and Land Use

Surrounding terrain along the proposed project varies from nearly level to gently rolling (**Figure 2**). Land use along FM 2478 is a mixture of single family residential and commercial properties, with tracts of undeveloped land, some in agricultural production (**Figure 3**).

According to the Natural Resources Conservation Service's (NRCS) Web Soil Survey of Collin County, Texas, the soils present within the proposed project area include Altoga silty clay, 5 to 8 percent slopes, eroded; Austin silty clay, 1 to 3 percent slopes; Austin silty clay, 3 to 5 percent slopes, eroded; Austin silty clay, 5 to 8 percent slopes, eroded; Eddy gravelly clay loam, 3 to 8 percent slopes, eroded; Heiden clay, 3 to 5 percent slopes, eroded; Houston Black clay, 1 to 3 percent slopes; Lewisville silty clay, 3 to 5 percent slopes, eroded; and Trinity clay, occasionally flooded.

Build Alternative
Approximately 37.4 acres of land would be converted from existing uses to transportation ROW and drainage easements along the roadway.

No Build Alternative
The existing FM 2478 would not require land to be converted from existing uses to transportation ROW and drainage easements along the roadway.

G. Traffic Projections

According to the TxDOT TPP Division, FM 2478 within the proposed project limits has an estimated existing year 2016 average ADT volume of 8,500 vpd and a projected design year 2036 average ADT volume of 14,200 vpd. This is a 67.1 percent increase over 2016 traffic volumes.

H. Bicycle and Pedestrian Accommodations

Build Alternative
In accordance with a federal policy statement on Bicycle and Pedestrian Accommodations Regulations and Recommendations by the U.S. Department of Transportation (USDOT) signed on March 11, 2010, the inclusion of bicycle and pedestrian facilities were considered as part of the proposed project. A 14-foot wide shared use outside lane (to accommodate bicyclists) and a five-foot wide sidewalk in each direction are proposed as part of the Build Alternative. Additionally, a raised central median (minimum width six feet) would be constructed throughout the length of the proposed project with pedestrian refuge areas to allow pedestrians to safely cross the roadway. This meets the recommendation of the aforementioned federal policy statement.

No Build Alternative
There would be no bicycle and pedestrian accommodations if the existing FM 2478 remained in place.

I. Independent Utility and Logical Termini

The proposed project has logical termini (US 380 to FM 1461) with independent utility.

J. Alternatives

1. No Build

The No Build Alternative represents a case in which the proposed project is not constructed. It would result in the existing roadway remaining in place. FM 2478 at FM 1461 would not be realigned and usage of the inefficient intersection layout would continue. Normal routine maintenance including minor rehabilitation and other activities, such as signing, mowing, tree trimming and patchwork would continue; however, the capacity and functional deficiencies would remain. This alternative avoids adverse impacts associated with new construction within the proposed project limits; however, it does not address current or future uses of FM 2478 within the project limits.

The No Build Alternative was considered in assessing improvements to FM 2478. This alternative was not considered viable because the existing facility does not improve traffic capacity or meet current TxDOT design standards, i.e., insufficient shoulders and no dedicated turn lanes. The No Build Alternative would not meet the need and purpose of the proposed project.

The No Build Alternative is carried forward as a baseline for comparison throughout the document.

2. Build Alternatives

A preliminary constraints analysis was conducted prior to schematic design so that environmental impacts could be avoided or minimized during the preliminary design process. Consequently, the proposed Build Alternative is the only build alternative considered.

Preferred Alternative
The Preferred Alternative (further referred to as the Build Alternative) would involve the expansion of the existing facility from a two-lane rural roadway to a six-lane urban, divided roadway. The Build Alternative follows the existing FM 2478 from US 380 to Rhea Mills Circle North. Approximately 0.54 mile (2,886 feet) of FM 2478 would be realigned/constructed on new location from Rhea Mills Circle North to FM 1461. The realigned section of the roadway would curve east and connect back to the existing FM 2478 at FM 1461. This proposed realignment would remove FM 2478's sharp 90-degree left and right-turns with its intersection at FM 1461.

The Build Alternative would consist of two 11-foot wide inside travel lanes and one 14-foot wide outside travel lane in each direction with two-foot wide inside and outside curb offsets, 22-foot wide outside borders, and a 16-foot wide raised median. The 22-foot wide outside borders would accommodate five-foot wide sidewalks. At various cross streets, the median would be reduced to accommodate a 10-foot wide left-turn lane, or 10-foot and 12-foot wide dual left-turn lanes and a 12-foot wide right-turn lane. A 22-foot wide connector road would be constructed approximately 1,600 feet south of where the realigned section of FM 2478 connects with existing FM 1461. This road would connect the realigned section of FM 2478 to the existing FM 2478. A 10-foot wide left-turn lane would allow northbound motorists on the realigned section of FM 2478 to access the

connector road and existing FM 2478. The connector road would be constructed as part of the proposed project.

As part of the Build Alternative, three retaining walls would be constructed at the FM 2478 bridge over Wilson Creek. Retaining wall A is 170 feet in length; retaining wall B is 60 feet in length; and retaining wall C is approximately 355 feet in length.

Drainage elements proposed along the length of the proposed project include:

- A four-foot by four-foot storm sewer outfall (SSO) at Sta. 356+46.23
- Three – 10-foot by nine-foot multiple box culvert (MBC) at Sta. 387+97.19
- A five-foot by four-foot single box culvert (SBC) at Sta. 396+66.54
- A 150-foot span bridge (three 50-foot spans) from Sta. 409+13.16 to Sta. 410+63.16
- A four-foot by four-foot SSO at Sta. 419+76.58
- A four-foot by four-foot SSO at Bloomdale Road Sta. 22+00.00
- A six-foot by three-foot SBC at Sta. 473+75.91

Construction of the proposed facility would be staged with the existing two-lane roadway first being expanded to four lanes. The proposed four-lane facility would consist of one 11-foot wide inside travel lane and one 14-foot wide outside travel lane in each direction with two-foot wide inside and outside curb offsets, 22-foot wide outside borders with five-foot wide sidewalks, and a 38-foot wide raised median. Expansion to the ultimate six-lane facility would occur at a later date. The Build Alternative would require approximately 36.8 acres of new ROW and 0.6 acre of permanent drainage easements.

The Build Alternative would be consistent with local and regional transportation and land use planning efforts, and is the locally preferred alternative. It would meet the proposed project's need and purpose by increasing capacity and being up to current design standards. The Build Alternative would have a design speed of 45 mph. The proposed typical sections are illustrated in **Figure 4** and the proposed project layout is provided in **Figure 5**. The Build Alternative is the Preferred Alternative.

III. POTENTIAL SOCIAL, ECONOMIC, AND ENVIRONMENTAL EFFFECTS OF THE PROPOSED ACTION

A. Regional and Community Growth

Impacts, both positive and negative, to economic, environmental, and social attributes of the 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 North Central Texas Council of Governments (NCTCOG) collects demographic data for the North Central Texas region. According to the 2010 Census, the 16-county North Central Texas region added nearly 1.2 million residents since the 2000 Census.

Table 2 summarizes the population trends and forecasts in the project area.

Table 2: Population Trends and Forecasts for Selected Locations

Location	1980 Census	1990 Census	2000 Census	2010 Census	Growth Rate 1980-2010	2040 Forecast	Growth Rate 2010-2040
City of Celina	1,520	1,737	1,861	6,028	297%	89,000	1,376%
City of McKinney	16,256	21,283	54,369	131,117	707%	206,041	57%
Town of Prosper	675	1,018	2,097	9,423	1,296%	44,878	376%
Collin County	144,576	264,036	491,675	782,341	441%	1,560,421	95%

Sources: Census Population by City, 1970-2010, U.S. Census 2010 PL94-171, NCTCOG (February 2011); Census Population by County, 1970-2010, U.S. Census 2010 PL94-171, NCTCOG (February 2011), NCTCOG 2040 Demographic Forecast (September 2016), and Texas Water Development Board (TWDB) 2016 Regional Water Plan Population Projections for 2020-2070 (August 2016).

Table 2 shows that by 2040, Collin County is projected to have over 1.5 million residents. On average, Collin County is expected to add population at a rate of approximately 25,936 persons per year during the 30-year period. According to the TWDB Regional Water Plan Population Projections, the City of Celina and the Town of Prosper have projected growth rates of 2,765 and 1,181 persons per year, respectively. This on-going growth trend is acknowledged in the long-range MTP: *Mobility 2040*, which contains goals and policies that focus on the need to enhance and coordinate the regional transportation system to accommodate transportation infrastructure safely and efficiently.

B. Socio-Economic Impacts

Table 3 summarizes the employment forecasts in the project area.

Table 3: Employment Forecasts

Location	2005	2040 Forecast*	Change from 2005	Percent Change 2005-2040
City of McKinney	47,961	108,349	60,388	126%
Collin County	359,917	762,919	403,002	112%
North Central Texas 12-county area	3,617,803	6,691,459	3,073,656	85%

Source: NCTCOG 2040 Demographic Forecast (May 2016)

Table 3 shows that by 2040, Collin County is projected to have nearly 763,000 jobs. On average, Collin County is expected to add new jobs at a rate of 11,514 per year during the 35-year period. Employment forecast data is not currently available from the NCTCOG for the City of Celina or the Town of Prosper.

Build Alternative

Due to the proposed realignment, commercial establishments (The Mill: Rhea's Mill Baptist Church and Prosper Self Storage) and residences located on the west side of FM 2478 near the FM 2478/FM 1461 intersection would no longer be directly accessible to the realigned section of FM 2478. A proposed connector road approximately 885 feet north of Christie Farms Boulevard would link the realigned section of FM 2478 with the existing FM 2478 to allow for easier access to these commercial establishments and residences. A portion of the pavement of the existing FM 2478 from approximately 1,265 feet to 2,710 feet south of FM 1461 would be removed. A new

residential subdivision, Christie Farms, is adjacent to the portion of existing FM 2478 that would be removed. An extension of Christie Farms Boulevard would be constructed as part of the proposed project to connect the subdivision entrance to the proposed realigned section of FM 2478. Development patterns would not be affected by the proposed project because FM 2478 would continue to be one of the main north south roadways in this portion of Collin County.

A division of a farm operation would occur as a result of the proposed realignment. Refer to **Table 4, No. 7** for the description of this property and **Appendix C: Photo 19** for a visual representation. This 53.2-acre agricultural property was qualified open-space agricultural land; however, the zoning of this property has been changed from Agriculture to Planned Development District. This property would accommodate commercial establishments and low and medium density residential properties. It is possible that agricultural activities would continue on this property until it is developed. Due to the proposed realignment, approximately eight acres of the 53.2-acre property would be converted into transportation use. At the time of the field reconnaissance, the land was tilled but no crops were growing; therefore, it is unknown what the producing crop is.

During construction, there would be a short-term economic gain to the area due to new job opportunities creating a temporary boost to the local economy; however, there could also be short-term impacts to the economy because commuters might bypass the area to avoid being potentially inconvenienced. Drivers would benefit economically from various design improvements, which would reduce vehicle operating costs.

Encroachment-alteration Effects

The realigned portion of FM 2478 is not anticipated to adversely impact the commercial establishments and residences located on the west side of FM 2478 near the FM 2478/FM 1461 intersection. Motorists seeking to access a specific business on the west side of FM 2478 near the FM 2478/FM 1461 intersection could be temporarily inconvenienced, as they may have to alter their existing route. The realigned portion of FM 2478 could cause some motorists to pass by existing businesses that they formerly could access. These motorists that are making a purposeful visit to an establishment would need to make a U-turn to return to the establishment or, if available, return to the establishment via FM 1461. Inconvenience to motorists as a result of the realigned portion of FM 2478 should be minimal; as they would likely recall that they had to adjust their route based on changes in access, and utilize the new route for future visits to the establishment. While there is a change in access, the access to the proposed FM 2478 would be provided by a connector road and there would still be access FM 1461 via the section of existing FM 2478 that currently intersects FM 1461.

The rezoning of this property from Agriculture to Planned Development District would occur whether FM 2478 was realigned or not. An encroachment-alteration effect to the farm operation/ Planned Development property as a result of the proposed realignment of FM 2478 would be to provide new access to this property for development.

No Build Alternative

Implementation of the No Build Alternative would not provide adequate mobility to support traffic associated with the projected population and employment growth in the project area.

1. Community Cohesion

Community cohesion is a term that refers to an aggregate quality of a residential area. Cohesion is a social attribute that indicates a sense of community, common responsibility, and social interaction within a limited geographic area. It is the degree to which residents have a sense of

belonging to their neighborhood or community or a strong attachment to neighbors, groups, and institutions as continual association over time.

Build Alternative

The proposed project would not affect, separate, or isolate, any distinct neighborhoods, ethnic groups, or other specific groups. However, the section of FM 2478 from Rhea Mills Circle North to FM 1461 would potentially result in the division of existing agricultural parcels; however, the zoning of this property has been changed from Agriculture to Planned Development. Temporary access driveways would be provided to abutting property owners during construction and permanent access would be provided after construction is complete. Subdivision entrances would remain on FM 2478 after the improvements. The addition of left-turn lanes would improve traffic flow along the project corridor by not disrupting through traffic. The 38-foot (ultimate 16-foot) wide raised median would provide pedestrians the option to cross the four-lane (ultimate six-lane) facility in three shorter and safer segments, and allow them to more easily and safely navigate across bi-directional traffic, focusing on one direction at a time. Inconvenience to the motorists using the roadway during the construction phase would be minimized. Detours are not proposed during construction of the proposed project. Lane closures would occur, but one travel lane in each direction would be open at all times.

Currently, land use adjacent to FM 2478 is a mixture of single family residential, residential subdivisions, religious facilities, and commercial properties, with tracts of undeveloped land, one in agricultural production.

The places of employment within the FM 2478 project limits consist of storage, commercial, educational, and religious facilities. The religious facilities consist of Lighthouse Christian Fellowship and The Mill: Rhea's Mill Baptist Church. The Lighthouse Christian Fellowship has ministries for people of all ages, a preschool (Little Lighthouse Preschool), counseling, and life groups. Additionally, Grace Academy of North Texas, a private Christian school, neighbors the Lighthouse Christian Fellowship. The Academy currently has grades ranging from pre-K through 9th grade. The Mill also has a preschool, student ministries for children and teenagers; groups and classes for adults; and an outreach ministry.

Overall, the proposed project would not restrict access to any existing public or community services, businesses, commercial areas, or employment centers. However, as discussed in **Section B: Socio-Economic Impacts**, the commercial establishments located on the west side of existing FM 2478, south of FM 1461, would not be directly accessible from the improved FM 2478. Access to these commercial establishments would not be restricted by the proposed project, but access would be altered.

No Build Alternative

The existing FM 2478 does not contain a realigned portion of FM 2478 or divide existing agricultural parcels.

2. ROW Acquisition, Potential Displacements, and Potential Relocations

Build Alternative

Approximately 36.8 acres of ROW would be acquired for the proposed project and 0.6 acre would be required for permanent drainage easements. There is one potential residential displacement, three potential utility structure/out-building displacements, and three potential miscellaneous structure displacements associated with the Build Alternative. The following information in **Table 4** lists displacements and impacts associated with the proposed project.

The locations of the properties listed in **Table 4** are shown on **Figure 5** and **Appendix C, Photos 2, 3, 4, 5, 12, 15, 16, and 20**.

Table 4: Potential Displacements and Impacts Associated with the Build Alternative

No.	Address	Type	Field Observation and Appraisal District Data
1	Corner of University Dr. W. and N. Custer Rd.	Utility	Build date unknown. ATT utility out-building displacement. Structure located within proposed ROW.
2	2216 N. Custer Rd. N.	Detached Garage	Built in 1989. Detached garage (5,600 sq. ft.) displacement. Structure located within proposed ROW.
3	990 A&B S. Custer Rd.	Utility	Build date unknown. Town of Prosper – Custer Pump Station out-building structure displacement. Structure located within proposed ROW.
4	3712 N. Custer Rd.	Residential	Built in 1975. Residential structure displacement. Structure abutting proposed ROW.
5	3790 N. Custer Rd.	Utility	Build date unknown. Utility structure displacement. Structure located within proposed ROW.
6	N. Custer Rd.	Pavilion	Build date unknown. Displacement of pavilion serving as signage for Whitley Place residential subdivision.
7	N. Custer Rd.	Agricultural Structure	Build date unknown. Agricultural storage building displacement. Structure located within proposed ROW.

TxDOT would conduct acquisitions and relocations in accordance with the USDOT policy as mandated by the Surface Transportation and Uniform Relocation Assistance Act of 1987. Property owners from whom property is needed are entitled to receive just compensation for their land and property. Just compensation is based upon the fair market value of the property. TxDOT also provides, through its Relocation Assistance Program, payment and services to aid in movement to a new location.

The final disposition of properties that would require relocation would be determined by TxDOT during the ROW acquisition process.

No Build Alternative

No ROW acquisitions or displacements would occur if the existing FM 2478 is not improved.

3. Limited English Proficiency (LEP)

Executive Order (EO) 13166, *Improving Access to Services for Persons with Limited English Proficiency* requires federal agencies to examine the services they provide and identify any need for services to those with LEP. The EO requires federal agencies to work to ensure that recipients of federal financial assistance provide meaningful access to their LEP applicants and beneficiaries. Failure to ensure that LEP persons can effectively participate in or benefit from federally assisted programs and activities may violate the prohibition under Title VI of the Civil Rights Restoration Act of 1987. **Table 5** displays the LEP percentages of the seven Block Groups (BG) and five Census Tracts (CT) that encompass the proposed project.

Table 5: Limited English Proficiency Populations

Census Unit	Total Population	LEP	Speaks Spanish: Speaks English Less Than Very Well	Speaks Other Indo-European Languages: Speaks English Less Than Very Well	Speaks Asian and Pacific Island Languages: Speaks English Less Than Very Well	Speaks Other Languages: Speaks English Less Than Very Well
CT 303.01	**3,301**	**231 7.0%**	**140 4.2%**	**71 2.2%**	**20 0.6%**	**0 0%**
BG 1	458	0 0%	--	--	--	--
CT 303.02	**2,154**	**31 1.5%**	**0 0%**	**4 0.2%**	**27 1.3%**	**0 0%**
BG 1	663	0 0%	--	--	--	--
BG 2	1,491	31 2.1%	0 0%	4 0.3%	27 1.8%	0 0%
CT 303.05	**8,565**	**505 5.9%**	**480 5.6%**	**0 0%**	**25 0.3%**	**0 0%**
BG 2	824	0 0%	--	--	--	--
BG 3	2,751	38 1.4%	14 0.5%	0 0%	24 0.9%	0 0%
CT 305.24	**2,239**	**133 5.9%**	**113 5.0%**	**0 0%**	**15 0.7%**	**5 0.2%**
BG 1	1,124	89 7.8%	69 6.1%	0 0%	15 1.3%	5 0.4%
CT 305.26	**8,241**	**251 3.1%**	**145 1.8%**	**0 0%**	**66 0.8%**	**40 0.5%**
BG 1	2,880	0 0%	--	--	--	--

Source: U.S. Census Bureau; American FactFinder; 2010-2014 American Community Survey 5-Year Estimates; B16004 Data; http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t; Generated August 31, 2016.

According to the 2010-2014 American Community Survey 5-Year Estimates (ACS), LEP persons that speak Spanish; Other Indo-European languages; Asian and Pacific Island languages; and Other languages are present in three of the seven project area BGs. LEP persons are found in all five project area CTs. Within the three project area BGs that contain LEP populations, 1.5 percent speaks Spanish; 1.2 percent speaks Asian and Pacific Island languages; 0.1 percent speaks Other Indo-European languages; and, 0.1 percent speaks Other languages. A windshield survey, conducted on February 12, 2014, revealed that there are no business signs or advertisements in non-English languages along the project corridor. Because persons with LEP are present within the proposed project area according to ACS BG data, a LEP population is present within the proposed project area.

A Public Hearing (PH) was conducted for the proposed project on May 30, 2017. Reasonable steps were taken to ensure that LEP persons had meaningful access to the programs, services, and information TxDOT provides. These steps consisted of publishing a Spanish version of the PH Notice in Al Dia, a local Spanish newspaper; having TxDOT ROW publications available at the PH for interested attendees; providing contact information in the Notice for persons interested in attending the PH who had special communication/accommodation needs; and being prepared

to provide interpreters for specific languages if requests were made prior to the PH (none were made). Through the steps listed above, the requirements of EO 13166 are satisfied.

4. Environmental Justice (EJ)
EO 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* requires each Federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The FHWA has identified three fundamental principles of EJ:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations;
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and,
3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

Disproportionately high and adverse human health or environmental effects are defined by FHWA as adverse effects that:

1. Are predominately borne by a minority population and/or a low-income population, or
2. Will be suffered by the minority population and/or low-income population and are appreciably more severe or greater in magnitude than the adverse effects that will be suffered by the nonminority population and/or non-low- income population.

The race and ethnicity of the population of the study area were analyzed. According to *Census 2010*, population groups defined as minorities include the following:

1. Black or African American alone;
2. American Indian and Alaska Native alone;
3. Asian alone;
4. Native Hawaiian and Other Pacific Islander alone;
5. Some Other Race alone;
6. Two or More Races; and,
7. Hispanic or Latino.

Table 6 summarizes the racial and ethnic distribution of the CTs, BGs, and Blocks that encompass the proposed project. **Figure 6** shows the location of the blocks and block groups.

Table 6: Racial and Ethnic Distribution

Comparison Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some other race alone	Two or more races	Hispanic or Latino
CT 303.01	2,874	2,022 70.4%	320 11.1%	27 0.9%	71 2.5%	1 0%	1 0%	66 2.3%	366 12.7%
BG 1	441	374 84.8%	6 1.4%	11 2.5%	1 0.2%	0 0.0%	0 0.0%	6 1.4%	43 9.8%
Block 1005	0	---	---	---	---	---	---	---	---
Block 1008	1	1 100%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1022	*23*	*11* *47.8%*	*0* *0.0%*	*0* *0.0%*	*0* *0.0%*	*0* *0.0%*	*0* *0.0%*	*2* *8.7%*	*10* *43.5%*
Block 1023	15	10 66.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	5 33.3%
Block 1024	74	68 91.9%	0 0.0%	6 8.1%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1030	5	5 100%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1046	*11*	*5* *45.5%*	*0* *0.0%*	*0* *0.0%*	*0* *0.0%*	*0* *0.0%*	*0* *0.0%*	*0* *0.0%*	*6* *54.5%*
Block 1047	18	14 77.8%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	4 22.2%
Block 1048	1	1 100%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
CT 303.02	2,028	1,775 87.5%	89 4.4%	8 0.4%	28 1.4%	1 0%	0 0.0%	26 1.3%	101 5%
BG 1	521	485 93.1%	8 1.5%	2 0.4%	5 1%	0 0.0%	0 0.0%	4 0.8%	17 3.3%
Block 1000	9	9 100%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1025	0	---	---	---	---	---	---	---	---
Block 1030	0	---	---	---	---	---	---	---	---
Block 1033	14	14 100%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1037	1	1 100%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
BG 2	1,507	1,290 85.6%	81 5.4%	6 0.4%	23 1.5%	1 0.1%	0 0.0%	22 1.5%	84 5.6%
Block 2031	310	276 89%	5 1.6%	0 0.0%	1 0.3%	0 0.0%	0 0.0%	2 0.6%	26 8.4%
Block 2032	2	2 100%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 2042	79	72 91.1%	2 2.5%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	5 6.3%
CT 303.05	2,709	2,286 84.4%	85 3.1%	9 0.3%	28 1%	0 0.0%	0 0.0%	42 1.6%	259 9.6%
BG 2	595	539 90.6%	3 0.5%	4 0.7%	5 0.8%	0 0.0%	1 0.2%	1 0.2%	42 7.0%
Block 2045	0	---	---	---	---	---	---	---	---

Table 6: Racial and Ethnic Distribution

Comparison Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some other race alone	Two or more races	Hispanic or Latino
BG 3	2,709	2,286 84.4%	85 3.1%	9 0.3%	28 1.0%	0 0.0%	0 0.0%	42 1.6%	259 9.6%
Block 3064	136	135 99.3%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 0.7%
CT 305.24	2,256	1,445 64.1%	295 13.1%	9 0.4%	60 2.7%	0 0.0%	3 0.1%	54 2.4%	390 17.3%
BG 1	1,269	815 64.2%	155 12.2%	5 0.4%	36 2.8%	0 0.0%	0 0.0%	37 2.9%	221 17.4%
Block 1010	532	326 61.3%	66 12.4%	4 0.8%	10 1.9%	0 0.0%	0 0.0%	24 4.5%	102 19.1%
CT 305.26	7,247	5,681 78.4%	525 7.2%	33 0.5%	277 3.8%	6 0.1%	6 0.1%	147 2%	572 7.9%
BG 1	2,441	2,006 82.2%	110 4.5%	9 0.4%	97 4%	0 0.0%	3 0.1%	48 2%	168 6.9%
Block 1010	220	178 80.9%	8 3.6%	2 0.9%	8 3.6%	0 0.0%	0 0.0%	11 5.0%	13 5.9%

Source: U.S. Census Bureau; American FactFinder; 2010 SF1 100% Data; P9 Data; http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml; generated May 3, 2012.

As shown in **Table 6**, the study area does contain minority populations. Of the 21 project area Census Blocks, four do not have a recorded population. Two (Census Blocks 1022 and 1046) of the remaining 17 Census Blocks contain a minority population greater than 50 percent. These two Census Blocks are italicized in **Table 6**. The total population of these two Census Blocks is 23 and 11, respectively. None of the associated project area CTs or BGs contains a minority population greater than 50 percent. According to **Table 4**, there is one potential residential displacement. This is shown on **Figure 6**. Residential displacement No. 4 is located in Census Block 1022. As was stated previously, Census Block 1022 contains a minority population greater than 50 percent. Based on aerial photography, Census Block 1022 encompasses eight residences (houses and mobile homes) along a private, dead end drive (Easy Lane). Census Block 1022 represents a distinct EJ population group because it represents a specific residential area and the minority percentage is higher than that of its associated BG.

Table 7 summarizes the percent of the population below the poverty guideline and median household income for the BGs and CTs that encompass the proposed project. A household income at or below the Department of Health and Human Services poverty guideline ($24,300 for a family of four in 2016) is considered low-income.

Table 7: Median Household Income and Poverty Level

Comparison Area	Total Households	Number and Percentage of Households Below Poverty Status in the Past 12 Months	Median Household Income in the Past 12 Months (in 2014 inflation adjusted dollars)
CT 303.01	**1,355**	**14 1.0%**	**$92,902**
BG 1	202	10 5.0%	$95,278
CT 303.02	**721**	**19 2.6%**	**$150,208**
BG 1	203	19 9.4%	$135,063
BG 2	518	0 0.0%	$176,196
CT 303.05	**2,963**	**356 12.0%**	**$90,118**
BG 2	281	0 0.0%	$150,284
BG 3	1,009	85 8.4%	$104,566
CT 305.24	**777**	**0 0.0%**	**$99,148**
BG 1	443	0 0.0%	$98,693
CT 305.26	**2,943**	**134 4.6%**	**$98,839**
BG 1	885	93 10.5%	$130,107

Source: U.S. Census Bureau; American FactFinder; 2010-2014 American Community Survey 5-Year Estimates; B17017 and B19013 Data; Generated August 31, 2016; http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t;
N/A – Not available

As shown in **Table 7**, the study area does contain low-income populations. Four of the five project area CTs and four of the seven project area BGs contain households in which income is below the poverty guideline. The median household income for all of the project area BGs and CTs greatly exceeds that of the poverty guideline.

Build Alternative

The proposed project consists of the widening of the existing facility to better serve the mobility needs of all motorists. Temporary pavement would be constructed during project construction to avoid roadway closures and traffic delays for all populations. Access to adjacent properties would be affected by the proposed raised median; however, this would impact all people in the project area equally. Impacts to environmental justice communities might occur from the proposed widening; however, based on the above discussion and analysis, these impacts are not considered to be disproportionately high and adverse impacts. Therefore, the requirements of EO 12898 are satisfied.

No Build Alternative

The No Build Alternative would not impact minority or low-income populations. However, the existing roadway conditions would continue to deteriorate and increase congestion as residential and commercial development continues along FM 2478.

C. Impacts on 4(f) Properties

Build Alternative
The proposed project would require ROW from a portion of a parcel containing an historic-age resource (Southern pyramidal roof cottage) recommended eligible for the National Register of Historic Places (NRHP). It was determined that the taking of a portion of the parcel would not have an adverse effect on the structure. A De Minimis final approval was made on April 9, 2015. See **Appendix B** for the De Minimis documentation.

The proposed project would not require the use of, nor substantially impair the purposes of, any publicly owned lands from a public park, recreational area, wildlife and waterfowl refuge lands or any other historic sites of national, state, or local significance as determined by the federal, state, or local officials having jurisdiction.

No Build Alternative
The No Build Alternative would not affect any publicly owned lands or historic sites.

D. Public Facilities and Services

Build Alternative
No public facilities such as parks, hospitals, or fire/police stations are located within or immediately adjacent to the project area. The construction, operation, and maintenance of the proposed project would not adversely affect public facilities. Emergency public services would have an expanded, more efficient facility to use in the performance of their duties.

No Build Alternative
The No Build Alternative would not directly affect public facilities in the area. Also, emergency service vehicles would not be able to perform their duties quickly and efficiently on the congested roadway.

E. Lakes, Rivers and Streams

Build Alternative
This project does not involve work in or over a navigable Waters of the U.S.; therefore, a navigational clearance under the General Bridge Act of 1946 and Section 9 of the Rivers and Harbors Act of 1899 (administered by the U.S. Coast Guard [USCG]), and Section 10 of the Rivers and Harbors Act of 1899 (administered by the U.S. Army Corps of Engineers [USACE]) would not be required. Coordination with the USCG (for Section 9 and the General Bridge Act) and the USACE (for Section 10) would not be required.

No Build Alternative
The No Build Alternative would not affect any navigational waters.

F. Floodplains

Build Alternative
Collin County, the City of McKinney, and the Town of Prosper are participants in the National Flood Insurance Program. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Nos. 48085C0255 J and 48085C0140 J (June 2, 2009), the proposed project is located within Zones A, AE, and X. Zone A is an approximate 100-year floodway area for which base flood elevations have not been determined and Zone AE is an approximate 100-

year floodway area for which base flood elevations have been determined. These floodplains are associated with Rutherford Branch and Wilson Creek. Zone X encompasses areas determined to be outside the 500-year floodplain. Approximately 4.4 acres of the proposed project ROW and proposed drainage easements are located within a FEMA designated 100-year floodplain The proposed project would not increase the base flood elevation to a level that would violate the applicable floodplain regulations or ordinances. The hydraulic design practices for this project would be in accordance with current TxDOT design policy and standards. The highway facility would permit conveyance of the design-year flood levels, inundation of the roadway being acceptable, without causing substantial damage to the highway, stream or other property. Coordination with the local Floodplain Administrator would be required.

No Build Alternative
The No Build Alternative would not affect any floodplains.

G. Water Resources

Build Alternative
The proposed project crosses Rutherford Branch, tributary to Rutherford Branch, Wilson Creek, and tributary to Wilson Creek. These crossings are Waters of the U.S. regulated by the USACE under authority of Section 404 of the Clean Water Act (CWA). Pursuant to EO 11990 (Protection of Wetlands) and Section 404 of the CWA, an investigation was conducted to identify potentially jurisdictional wetlands and Waters of the U.S. within the project limits on February 12, 2014 and July 13, 2016.

The placement of temporary or permanent dredge or fill material into potentially jurisdictional Waters of the U.S. would be authorized under Nationwide Permit (NWP) 14 (Linear Transportation Projects) with no Preconstruction Notification (PCN). An analysis of USGS topographic maps, FEMA maps, field reconnaissance, and the presence of an ordinary high water mark (OHWM) reveals potentially jurisdictional Waters of the U.S. that would be impacted by the proposed project. **Table 8** provides the crossing, the proposed structure, and potential permanent impacts to the Waters of the U.S. Refer to **Figure 5** for the location of the Waters of the U.S., **Appendix C**, **Photos 9, 10, 13, and 14** for the project area photographs, and **Appendix D** for the stream data forms.

Table 8: Impacts to Jurisdictional Waters of the U.S.

Crossing No./ Name of Water Body	OHWM (feet)	Existing Structure	Proposed Structure	Permanent Fill		Temporary Fill		NWP (indicate number)	PCN (Y/N)
				Open Waters	Wetlands or other Special Aquatic Sites	Open Waters	Wetlands or other Special Aquatic Sites		
Crossing 1a Rutherford Branch	4 to 18	2 - 10' x 10' MBC	3 - 10' x 8' MBC	205 LF (0.047 acre)	–	166 LF (0.038 acre)	–	NWP 14	N
Crossing 1b Former Channel	14	None	Fill	135 LF (0.045 acre)	–	0 LF (0 acre)	–		
Crossing 2 Tributary to Rutherford Branch (Intermittent)	3 to 4	48" Reinforced concrete pipe	5' x 4x SBC	106 LF (0.007 acre)	–	107 LF (0.009 acre)	–	NWP 14	N

Table 8: Impacts to Jurisdictional Waters of the U.S.

Crossing No./ Name of Water Body	OHWM (feet)	Existing Structure	Proposed Structure	Permanent Fill		Temporary Fill		NWP (indicate number)	PCN (Y/N)
				Open Waters	Wetlands or other Special Aquatic Sites	Open Waters	Wetlands or other Special Aquatic Sites		
Crossing 3 Wilson Creek	25 to 30	Bridge – 4 30' long spans x 26' wide	Bridge – 3 50' long spans x 136' wide	0 LF (0 acre)	–	187 LF (0.13 acre)	–	NWP 14	N
Crossing 4 Tributary to Wilson Creek (Intermittent)	5	None	4'x4' Storm Sewer Outfall and fill	279 LF (0.03 acre)	–	0 LF (0 acre)	–	NWP 14	N
			TOTAL	724 LF (0.129 acre)	–	460 LF (0.177 acre)	–		

LF – Linear feet

The proposed project would require the replacement of the culverts at Crossings 1 and 2; replace the bridge at Crossing 3; and, construct a storm sewer outfall at Crossing 4 in addition to permanently filling a portion of the water body. Appropriate measures would be taken to maintain normal downstream flows and minimize flooding. Temporary fills would consist of 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 re-vegetated 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.

A PCN for NWP 14 at Crossings 1 through 4 would not be required because the permanent impact at each crossing does not exceed 0.1 acre and wetlands or other special aquatic sites are not present. There is no potential to affect listed species or designated critical habitat, or any historic properties listed or eligible for listing on the NRHP.

The activities at Crossings 1 through 4 have been identified as single and complete projects as defined in the NWPs, and will therefore be permitted separately. EO 11990 on wetlands does not apply because no wetlands will be impacted.

No Build Alternative

The No Build Alternative would not impact any jurisdictional Waters of the U.S.

H. Water Quality

Build Alternative

Runoff from the proposed project would discharge directly into Wilson Creek. According to the TCEQ 2014 Section 303(d) list, Wilson Creek is listed as threatened or impaired for bacteria, Category 5c. There are no Total Maximum Daily Loads in place or scheduled for this waterbody. The proposed project is not expected to contribute to the constituent of concern in the impaired water body. Wilson Creek flows into Lake Lavon and is part of Segment 0821 (0821C) of the Trinity River Basin. This segment covers an area starting from the confluence with Lake Lavon in

Collin County up to West FM 455, just east of Celina, Collin County, Texas. The 2014 303(d) list was utilized in this assessment.

No permanent water quality impacts are expected as a result of the proposed project. The area's public water supply treatment facilities and water distribution systems would not be affected by the proposed project. This project is located within the boundaries of the Phase II Collin County Municipal Separate Storm Sewer System (MS4), and would comply with the applicable MS4 requirements.

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 Stormwater Pollution Prevention Plan (SW3P) in place during construction of this project. This SW3P utilizes the temporary control measures as outlined in TxDOT's manual *Standard Specifications for the Construction 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.

General Condition 25 of the NWP Program requires applicants using NWP 14 to comply with Section 401 of the CWA. Compliance with Section 401 requires the use of best management practices (BMPs) to manage water quality on construction sites. The SW3P would include at least one BMP from the 401 Water Quality Certification Conditions for NWPs as published by the TCEQ, April 5, 2012. These BMPs would address each of the following categories:

- Category I Erosion Control,
- Category II Sedimentation Control, and
- Category III Post Construction Total Suspended Solids (TSS) Control

Category I would be addressed by applying compost or mulch filter berms and socks to disturbed areas. Category II would be addressed by installing silt fences. Category III would be addressed by vegetation lined ditches in areas where there is a need for an open ditch section to transition to existing outfalls. Grassy swales and/or extended detention basins are proposed for storm sewer outfalls. Other approved methods may be substituted if necessary using one of the BMPs from the identical category. The TCEQ coordination documentation is included in **Appendix B**.

No Build Alternative

The No Build Alternative uses grassy swales as Post Construction TSS Control.

I. Drinking Water Systems

The TCEQ's Source Water Assessment Viewer and the TWDB Groundwater Data Viewer did not reveal any water wells within the FM 2478 project area; however, one private water well was identified on proposed ROW during site reconnaissance. The well structure is located at 3500 FM 2478, on the east side of the road between County Road (CR) 858 and East 1st Street (**Figure 5, Sheet 4**). An 8-foot wide by 4.5-foot wide concrete structure surrounds the well. The total depth of the well from the top of the structure is approximately 13 feet and the water table in the well is approximately 7.5 below the top of the structure (**Appendix C, Photos 23** and **24**). The well appears to tap into the perched water from a small adjacent stream and is used for irrigation.

The water well will be impacted by embankment fill and channel outfall grading/stone protection riprap. The well would be plugged and abandoned in accordance with the applicable state requirements.

Collin County is a part of the North Texas Groundwater Conservation District. All confirmed groundwater conservation districts in Texas are required to develop and implement a management plan for the effective management of their groundwater resources. The TWDB is charged with the approval of groundwater management plans.

The TCEQ is required by the 1996 Safe Drinking Water Act Amendments to assess every public drinking water source for susceptibility to certain chemical constituents. The resulting source water susceptibility assessment reports provided to public water systems are then used to implement local source water protection projects. Source water protection is a voluntary program that helps public water systems protect their drinking water sources. Locally controlled and implemented, a source water protection program is designed to protect drinking water sources from potential contamination. There are no source water protection areas within the project area.

J. Natural Resources

Build Alternative

A TxDOT Biological Evaluation Form, which incorporates the Texas Parks and Wildlife Department's (TPWD) Analysis Form with Tier I Site Assessment, was completed in 2014 for the proposed project. It was determined that coordination with TPWD was required per the 2013 TPWD/TxDOT Memorandum of Understanding (MOU). Coordination with TPWD was completed on June 19, 2014. Documentation of the Biological Evaluation Form is maintained in the project file. The June 19, 2014 TPWD coordination documentation is included in **Appendix B**.

The proposed project required design changes made after TPWD coordination was completed. Previous coordination identified 35.6 acres of additional ROW and permanent drainage easements. The proposed ROW was widened slightly at various locations along the east and west sides of FM 2478. Some drainage structures were also modified, including the addition of riprap and stormwater treatment units, which resulted in changes in impacts to Waters of the U.S. and vegetation. Previously proposed drainage easements were modified as well and additional drainage easements proposed. While the proposed ROW was widened slightly in some locations, the proposed roadway design/typical section did not change. These design changes require an additional 1.8 acres of ROW and permanent drainage easements, which were not a part of the original February 12, 2014 biological survey. New surveys of the project area were conducted by qualified biologists on July 13, 2016 and February 2, 2017 to determine the presence of suitable habitat for federal and state-listed threatened and endangered species, and species of greatest conservation need (SGCN). The biologists also surveyed vegetation to determine discrepancies between actual habitat and that mapped by the Ecological Mapping Systems of Texas (EMST), and to determine the vegetation types impacted by the project's additional required ROW and drainage easements.

Results of the species survey indicated that there is no suitable habitat for federally-listed species within the project area; however, suitable habitat is present for the following state-listed species:

- Wood Stork (*Mycteria americana*)
- Louisiana pigtoe (*Pleurobema riddellii*)
- Texas heelsplitter (*Potamilus amphichaenus*)
- Timber/canebrake rattlesnake (*Crotalus horridus*)

Suitable habitat is also present for the following SGCNs:

- Henslow's Sparrow (*Ammodramus henslowii*)
- Western Burrowing Owl (*Athene cunicularia hypugaea*)
- Plains spotted skunk (*Spilogale putorius interrupta*)
- Texas garter snake (*Thamnophis sirtalis annectens*)

Bird BMPs for the Wood Stork, Henslow's Sparrow and Western Burrowing Owl, species BMPs for the plains spotted skunk, snake BMPs for the timber/canebrake rattlesnake and Texas garter snake, and BMPs for fresh water mussels are applicable to minimize any potential impacts to the species during construction. Appropriate BMP statements would be included in the Environmental Permits, Issues, and Commitments (EPIC) sheet of the proposed project's construction plans.

Results of the vegetation survey indicate that the proposed project would impact the following EMST-classified vegetation types that have impact thresholds associated with them:

- Agriculture – The impacts before the design changes totaled 22 acres. The revised design impacts total 9.95 acres.
- Disturbed Prairie – The impacts before the design changes totaled 3.0 acres. The revised design impacts total 1.23 acre.
- Floodplain – The impacts before the design changes totaled 2.0 acres. The revised design impacts total 0.51 acre.
- Riparian – The impacts before the design changes totaled one acre. The revised design impacts total 3.04 acre.
- Tallgrass Prairie, Grassland – An impact to this MOU type was not previously reported. The revised design impacts total 17.30 acres.

The remaining existing and proposed ROW and easements consist of 46.64 acres of Urban vegetation.

Based on changes in the project design and additional impacts exceeding the Riparian threshold of 0.1 acre, Floodplain threshold of 0.5 acre, and Tallgrass Prairie, Grassland threshold of two acres, new TPWD coordination was required. TPWD coordination was completed on May 19, 2017 and the documentation is included in **Appendix B**.

A mussel survey of Wilson Creek and Rutherford Branch was conducted on May 6, 2014 to determine the presence of federal or state-listed mussel species. Results of the survey indicated that listed mussel species are not anticipated to be impacted by the proposed project; however, an additional freshwater mussel survey/relocation would be completed no more than six months prior to the start of construction. The mussel survey documentation is included in **Appendix B**.

1. Endangered Species Act
The 1973 Endangered Species Act provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. Section 7 of the Endangered Species Act 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 project area. The proposed project is not anticipated to impact federally-listed species.

2. Migratory Bird Treaty Act (MBTA)
The MBTA 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 within the Act's policies and regulations. In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young would be avoided. The contractor would remove all old migratory bird nests between October 1 and February 15 from any structure where work will be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between February 15 and October 1, per the EPIC plans.

3. Bald and Golden Eagle Protection Act
There is no suitable habitat for Bald and Golden Eagles within the project area. The proposed project is not anticipated to impact Bald and Golden Eagles.

4. Fish and Wildlife Coordination Act (FWCA)
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 considers FWCA coordination to be complete as part of the NWPs review, which was last authorized and reissued in 2012.

5. Invasive Species and Beneficial Landscaping
Permanent soil erosion control features would be constructed as soon as feasible during the early stages of construction through proper sodding and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits and temporary sodding would be considered where large areas of disturbed ground would be left bare for a considerable length of time. In accordance with EO 13112 on Invasive Species and the Executive Memorandum (EM) on Beneficial Landscaping, Seeding, and Replanting with TxDOT approved seeding specifications that are in compliance with EO 13112 would be done where possible. Moreover, abutting turf grasses within the ROW are expected to re-establish throughout the project length. Soil disturbance would be minimized to ensure that invasive species would not establish in the ROW.

No Build Alternative
The No Build Alternative would not affect any natural resources.

K. Prime, Unique, and Special Farmland Impacts

Build Alternative
Observations made during the site reconnaissance on February 12, 2014 revealed that active agricultural lands exist adjacent the proposed project. Eight acres of the 53.2-acre property would be converted into transportation use.

The NRCS Web Soil Survey was used to determine the soil types present within the proposed project area. Soils determined to be within the existing ROW and easements, and proposed ROW and easements are listed in **Table 9**.

Table 9: Soil Types within Proposed Project Area

Soil Type	Farmland Classification
Austin silty clay, 1 to 3 percent slopes	All areas are prime farmland
Altoga silty clay, 5 to 8 percent slopes, eroded	Not prime farmland
Austin silty clay, 3 to 5 percent slopes, eroded	Not prime farmland
Austin silty clay, 5 to 8 percent slopes, eroded	Not prime farmland
Eddy gravelly clay loam, 3 to 8 percent slopes, eroded	Not prime farmland
Heiden clay, 3 to 5 percent slopes eroded	Not prime farmland
Houston Black clay, 1 to 3 percent slopes	All areas are prime farmland
Lewisville silty clay, 3 to 5 percent slopes, eroded	Not prime farmland
Trinity clay, occasionally flooded	All areas are prime farmland

Source: NRCS Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed January 6, 2014.

Because the proposed project requires the acquisition of new ROW, coordination with the U.S. Department of Agriculture (USDA) NRCS was initiated on April 8, 2016 in accordance with the Farmland Protection Policy Act (FPPA) of 1981. The NRCS provided a response dated May 13, 2016, which stated that the project rating in the Farmland Conversion Impact Rating Form (NRCS-CPA-106) is 137. The FPPA law states that sites with a rating less than 160 will need no further consideration; therefore, project coordination is considered complete. The USDA NRCS coordination documentation is included in **Appendix B**.

No Build Alternative

The No Build Alternative would not affect any prime, unique or special farmlands.

L. 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, National Environment Policy Act (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.

1. Historical Resources

Build Alternative

The proposed project would require ROW from a parcel containing an historic-age resource (Southern pyramidal roof cottage) recommended eligible for the NRHP. It was determined that the taking of the property would not have an adverse effect on the structure. A De Minimis final approval was made on April 9, 2015. See **Appendix B** for the De Minimis documentation.

In compliance with the Programmatic Agreement for Transportation Undertakings (PA-TU), a TxDOT historian determined project activities have no potential for adverse effects. The area of potential effects (APE) for the proposed project is 150 feet from the proposed ROW. Individual project coordination with the SHPO was required. The SHPO concurred with no adverse effect. See **Appendix B** for historical resources coordination documentation.

TxDOT Environmental Affairs (ENV) historians evaluated the recent project changes including areas of new ROW and determined on May 3, 2016 that no additional impacts to historic resources would occur.

No Build Alternative
The No Build Alternative would not affect any historic-age resources or historical sites.

2. Archeological Sites
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 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).

Build Alternative
TxDOT conducted appropriate research to identify and evaluate archeological resources to determine NRHP eligibility. TxDOT determined effects to archeological resources in the APE in compliance with Section 106 of the NHPA and the 2005 First Amended Programmatic Agreement (PA) among the FHWA, TxDOT, SHPO, and the Advisory Council on Historic Preservation regarding the implementation of transportation undertakings.

The proposed project will have no effect on archeological historic properties or cemeteries. As provided under the PA-TU, consultation with the SHPO is not necessary for the proposed project. As provided under the MOU, the proposed project does not require individual coordination with the THC. See **Appendix B** for archeological resources coordination documentation.

After archeology was cleared, TxDOT conducted a title search of properties adjacent to the proposed project. During the search, TxDOT discovered potential archeological implications. At the northwest corner of FM 2478 and 1st Street (CR 79), Walnut Grove C.P. Church was deeded property in 1887. In 1921, the Church sold a part of the property to the Walnut Grove Cemetery Association. In 1957, Walnut Grove C.P. Church deeded part of the Walnut Grove Cemetery Association's tract to TxDOT to build the existing FM 2478. In summary, Walnut Grove C.P. Church deeded land to TxDOT that they did not own since they had previously deeded that part to the Walnut Grove Cemetery Association. It is TxDOT's opinion that minimal potential exists for this undertaking to impact any marked or unmarked graves associated with the Walnut Grove Cemetery. TxDOT recommends no further work in regard to the Walnut Grove Cemetery for this project. Supporting documentation and a map of the location is in **Appendix B.**

No Build Alternative
The No Build Alternative would not affect any archeological sites.

M. Air Quality Assessment

Build Alternative
The proposed action is consistent with the NCTCOG's financially constrained Mobility 2040 and the 2017-2020 TIP, as amended, which were initially found to conform to the TCEQ State Implementation Plan (SIP) by FHWA and FTA on September 7, 2016 and December 19, 2016, respectively. Copies of the MTP and TIP pages are included in **Appendix A**. All projects in the NCTCOG's TIP that are proposed for federal or state funds were initiated in a manner consistent with federal guidelines in Section 450, of Title 23 CFR and Section 613.200, Subpart B, of Title 49 CFR.

1. Traffic Air Quality Analysis (TAQA)
Traffic data for the design year 2035 is 13,950 vpd from US 380 to FM 1461. A prior TxDOT modeling study and previous analyses of similar projects demonstrated that it is unlikely that a carbon monoxide standard would ever be exceeded as a result of any project with an average annual daily traffic (AADT) below 140,000 vpd. The AADT projections for the project do not exceed 140,000 vpd; therefore a TAQA was not required.

2. Lead National Ambient Air Quality Standards (NAAQS)
This project is not located within the portion of Collin County that has been designated by EPA as a non-attainment area for the 2008 Lead NAAQS, effective December 31, 2010. Transportation conformity is required under Clean Air Act (CAA) section 176(c) (42 U.S. Code 7506(c)) to ensure that federally supported highway and transit project activities are consistent with the purpose of the SIP for transportation-related criteria pollutants. However, in light of the elimination of lead additives from gasoline, transportation conformity does not apply to the Lead NAAQS. (*2008 Final Lead NAAQS Rule, preamble page (73 Federal Register [FR] 67043), November 12, 2008*).

3. Congestion Management Process (CMP)
The CMP is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The project was developed from NCTCOG's operational CMP, which meets all requirements of 23 CFR 500.109. The CMP was adopted by NCTCOG in March 2011.

The region commits to operational management improvements and travel demand reduction strategies at two levels of implementation: program level and project level. Program level commitments are inventoried in the regional CMP, which was adopted by the NCTCOG; they are included in the financially constrained MTP, and future resources are reserved for their implementation.

The CMP element of the plan carries an inventory of all project commitments (including those resulting from major investment studies) that details type of strategy, implementing responsibilities, schedules, and expected costs. At the project's programming stage, travel demand reduction strategies and commitments will be added to the regional TIP or included in the construction plans. The regional TIP provides for programming of these projects at the appropriate time with respect to the single-occupancy vehicle (SOV) facility implementation and project-specific elements.

Committed congestion reduction strategies and operational improvements within the study boundary will consist of the following:

- The addition of two travel lanes in each direction separated by a raised median. The outside lanes would be shared use for motorists and bicyclists.
- The addition of left-turn and right-turn lanes.
- Intersection improvements at major cross streets.
- The addition of sidewalks for pedestrians.

Individual projects are listed in **Table 10**.

Table 10: Congestion Management Process Strategies

Operational Improvements in Travel Corridor		
Location	**Type**	**Implementation Date**
US 380 from East of FM 2478 to East of Lake Forest Drive, McKinney, TX	Addition of Lanes	To be Determined
CR 48, 81, 122 from FM 2478 to BUS 289, Various Locations	Addition of Lanes	To be Determined
SH 289 from US 380 Interchange to North of FM 1641/BUS 289D	Addition of Lanes	To be Determined

Source: http://www.nctcog.org/trans/tip/tipins/ (September 2016)

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and NCTCOG will continue to promote appropriate congestion reduction strategies through the Congestion Mitigation and Air Quality program, the CMP, and the MTP. The congestion reduction strategies considered for this project would help alleviate congestion in the SOV study boundary, but would not eliminate it.

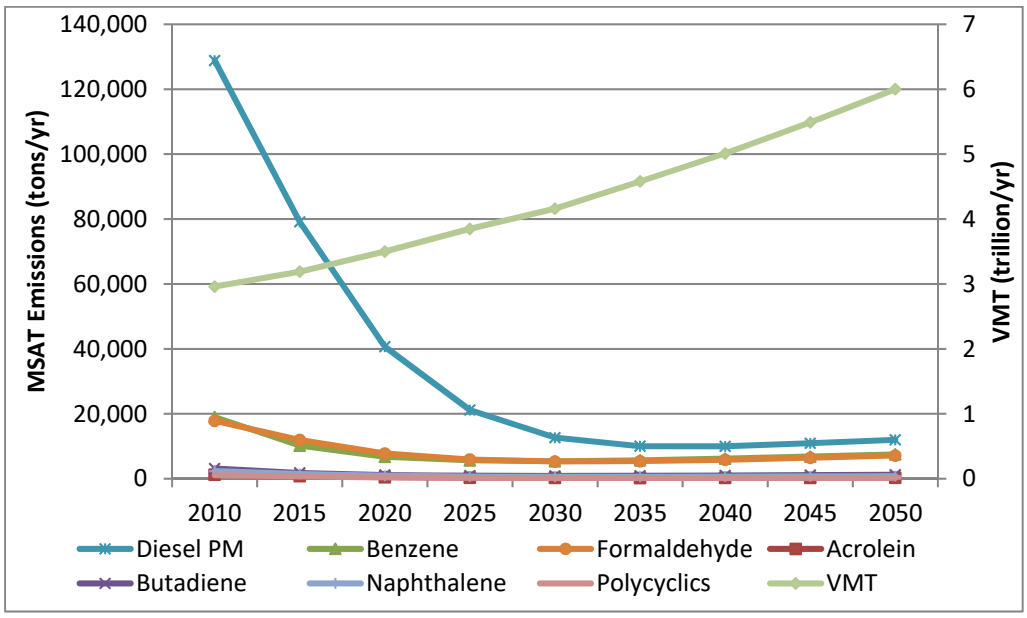
Therefore, the proposed project is justified. The CMP analysis for added SOV capacity projects in the Transportation Management Area is on file and available for review at NCTCOG and can be found in **Appendix B**.

4. Mobile Source Air Toxics (MSATs)

Controlling air toxic emissions became a national priority with the passage of the CAA Amendments of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (FR, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/iris/). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (http://www.epa.gov/ttn/atw/nata1999/). These are acrolein, benzene, 1,3-butidiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA MSAT rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's Motor Vehicle Emission Simulator (MOVES) 2010b model, as shown in **Graphic 1** and **Table 11**, even if VMT increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Graphic 1:
Projected National MSAT Emission Trends 2010 – 2050
For Vehicles Operating on Roadways
Using EPA's MOVES 2010b Model



Source: **Table 11** below.
Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.

Table 11: Projected National MSAT Emission Trends 2010 – 2050 for Vehicles Operating on Roadways Using EPA's MOVES 2010b Model

Pollutant/ VMT	Pollutant Emissions (tons) and Vehicle-Miles Traveled (VMT) by Calendar Year									Change
	2010	2015	2020	2025	2030	2035	2040	2045	2050	2010 to 2050
Acrolein	1,244	805	476	318	258	247	264	292	322	-74%
Benzene	18,995	10,195	6,765	5,669	5,386	5,696	6,216	6,840	7,525	-60%
Butadiene	3,157	1,783	1,163	951	890	934	1,017	1,119	1,231	-61%
Diesel PM	128,847	79,158	40,694	21,155	12,667	10,027	9,978	10,942	11,992	-91%
Formaldehyde	17,848	11,943	7,778	5,938	5,329	5,407	5,847	6,463	7,141	-60%
Naphthalene	2,366	1,502	939	693	607	611	659	727	802	-66%
Polycyclics	1,102	705	414	274	218	207	219	240	262	-76%
Trillions VMT	2.96	3.19	3.5	3.85	4.16	4.58	5.01	5.49	6	102%

Source: EPA MOVES 2010b model runs conducted during May – June 2012 by FHWA.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of the NEPA. The FHWA, EPA, the Health Effects Institute (HEI), and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions

associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

Project-Specific MSAT Information

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at:
http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.pdf

For each alternative in this document, the amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the Build Alternative is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built between Wilson Creek Trail and Prosper Trail. However, the magnitude and the duration of these potential increases compared to the No Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any

genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, http://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the HEI. Two HEI studies are summarized in Appendix D of FHWA's *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents*. Among the adverse health effects linked to MSAT compounds at high exposures are; cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable

control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two step decision framework.

Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable. Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Conclusion

In this document, a qualitative MSAT assessment has been provided relative to the various alternatives of MSAT emissions and has acknowledged 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.

5. Air Quality Construction Emissions Reduction Strategies

During the construction phase of this project, temporary increases in 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 particulate matter from diesel powered construction equipment and vehicles.

The potential impacts of particulate matter emissions will be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (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/.

However, considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, the encouragement of the use of TERP, and compliance with applicable regulatory requirements; it is not anticipated that emissions from construction of this project will have any significant impact on air quality in the area.

On a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

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

N. Traffic Noise Analysis

Build Alternative
A traffic noise analysis was conducted in accordance with TxDOT's (FHWA approved) *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (2011). Results of the traffic noise analysis indicated that the proposed project would not result in traffic noise impacts; therefore, noise barriers or other mitigation were not evaluated. See the Traffic Noise Technical Report for a detailed description of the methodology and results of the traffic noise analysis.

No Build Alternative
Under the No Build Alternative, traffic noise levels would increase in the project area over time as traffic levels increase.

O. Hazardous Waste/Substance

Build Alternative
Based on the following project activities: roadway widening and realignment, bridge demolition/replacement, and structural demolition, an Initial Site Assessment (ISA) was conducted to identify potential hazardous materials in the project area. The ISA consisted of a review of project design and ROW requirements, a site survey, a land use review, and a regulatory database search. An analysis of the ISA data indicates hazardous materials impacts are not anticipated, with the exception of possible asbestos containing materials (ACM) on the existing bridge and within ROW structures to be demolished.

1. Asbestos Containing Materials
The proposed project includes the demolition of buildings, one bridge, and one bridge-class culvert. These structures may contain ACM. 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. In addition, a 10-day Notification would be submitted to the Texas Department of State Health Services (TDSHS) prior to any demolition activity. Asbestos issues should be addressed during the ROW process prior to construction.

2. Lead-Based Paint (LBP)
The proposed project includes the demolition of building structures, some of which may contain 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.

3. Petroleum Storage Tank (PST)
Two sites were identified on the regulatory database within the search radius. One PST facility, 2858 Joint Venture, was located at FM 2478 at US 380 (**Figure 7, Map ID# 1**). The facility had one single-wall PST installed on August 31, 1987. Tank capacity, details, substances, spill containment/overflow prevention, and piping systems were not reported. The tank was removed from the ground on December 30, 1991. This facility is no longer present in the project area. This facility is also a Leaking Petroleum Storage Tank (LPST) facility and is discussed in the LPST section of the EA.

Southwest Erosion Control, located at 6251 N. FM 2478, was identified as a PST facility and is situated adjacent west of the project (**Figure 7, Map ID# 6**). A minor amount of ROW would be acquired from the southeast corner area of this property. The facility is reported as utilizing two 2,000-gallon diesel and one 2,000-gallon gasoline aboveground PSTs that were installed in 2015. The tanks are held within a concrete containment liner. Based on aerial images, the PSTs are situated approximately 188 feet west-northwest of the proposed ROW acquisition. Based on the age and type of PSTs, provided containment, and distance from the proposed ROW, this facility is not considered an environmental concern. The location of the site is shown on **Figure 5, Sheet 9**. **Appendix C: Photo 22** shows the location of the aboveground PSTs.

The site survey (conducted on February 2, 2017) and research into the historical land use did not reveal any other active or abandoned gasoline/service stations.

4. Leaking Petroleum Storage Tank
Two sites were identified within the search radius. The 2858 Joint Venture Property is reported at the intersection of Custer Rd (FM 2478) and Highway 380 (**Figure 7, Map ID# 1**). The facility is reported as formerly utilizing one underground PST installed in 1987 and removed in 1991. Utilizing the PST timeframe, historic aerials were reviewed. The only area developed during that timeframe was the northeast area of the intersection. The nearest point to the area of previous development shown on a 1995 aerial is approximately 200 feet east of the intersection. The LPST had minor soil contamination with no RAP required and was closed in 1992. Based on the removal of the PST, LPST closure, and only surface regrading proposed along FM 2478, this facility is not considered an environmental concern. The approximate location of the site is shown on **Figure 7**.

The second site, Country Boy Convenience Store (8850 W. University Drive), is located on the north side of US 380 approximately 500 feet east of the proposed project (**Figure 7, Map ID# 2**). The leak was reported on April 23, 1990. Groundwater was impacted. The TCEQ issued final concurrence in 2009 and the case is closed. As of May 2016, this facility is out of business and the land is for sale for redevelopment. Based on case closure and distance, this site is not considered an environmental concern for the project area. The location of the site is shown on **Figure 7**.

5. Pipelines
During the preliminary investigations, three natural gas pipelines were found to bisect the proposed project. Two of the pipelines cross the project approximately 400 feet south of First Street (**Figure 7, Map ID# 4**). The other pipeline crosses the project approximately 50 feet south of Prosper Trail/ Bloomdale Road (**Figure 7, Map ID# 5**). These pipelines are not considered an environmental concern. Negotiations would be conducted with the pipeline owners to properly relocate or deepen the affected pipelines, if necessary.

6. Landfills
Environmental Recycle, Inc., located at 2721 N. Custer Road, is situated at the adjacent southwest corner of FM 2478 and CR 933 (**Figure 7, Map ID# 3**). ROW would be acquired from this property. The site is identified as a municipal solid waste landfill site for Resource Recovery/Recycling. The facility applied for an NOI in September 2005 and is listed as active. Historic aerials identified onsite stockpiling of materials that looked to be soils, possibly compost/mulch, wood debris, and possibly stone materials.

An online search for the business identified it as a commercial provider/hauler for construction and demolition (wood, drywall, brick, shingles) recycling (NCTCOG, September 2010). The TCEQ Central Registry online identified the facility to have a Commissioner's Enforcement Order in 2008. The order was related to the facility failing to remove non-recyclable waste within one week after processing it for recycling, failing to process materials indoors as stated on the NOI, and failing to prevent discharge of solid waste into or adjacent to waters. The Enforcement Order Docket document is in the project file at the TxDOT Dallas District.

Although the facility is listed as active, no stockpiling or recycling activities were noted at the property during the site visit. Based on the regulatory information and ROW being acquired from the property, this facility is considered an environmental concern for the project area. The location of the site is shown on **Figure 5, Sheet 2**. **Appendix C: Photos 7 and 8** show the current conditions of the site.

A visual hazardous materials survey of the proposed project limits and surrounding area was performed by qualified personnel on February 2, 2017 to identify possible hazardous materials within the Build Alternative ROW. No surface evidence of contamination as in stained discolored, barren, exposed or foreign soil or dead, damaged, or stressed vegetation was observed. Documentation of the ISA is maintained in the project files. The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. The use of construction equipment within sensitive areas would be minimized or eliminated entirely. All construction materials used for this project would be removed as soon as work schedules permit. Any unanticipated hazardous materials encountered during construction would be handled according to applicable federal and state regulations per TxDOT Standard Specifications.

No Build Alternative
There would be no impacts to the No Build Alternative from hazardous materials.

P. Visual Impacts

Aesthetic values would be emphasized on this project. It has always been the policy of TxDOT to build visually pleasing travel ways, coupling beauty with their functional capability.

No Build Alternative
The No Build Alternative would not impact aesthetic values.

Q. Construction Impacts

Build Alternatives
Roadway closures are not anticipated for the proposed improvements. The proposed project would be constructed in phases; temporarily affecting traffic patterns in the project area 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. Construction may temporarily degrade air quality through dust and exhaust gases associated with construction equipment. Measures to control fugitive dust would be considered and incorporated into the final design and construction specifications.

A traffic control plan would be included in the engineering plans for this project. These plans would not involve the closure of any streets. No detours would be required during construction of the proposed project because one lane of traffic in each direction along FM 2478 would be maintained. The roadway would be constructed in phases. First, the proposed northbound lanes would be constructed, keeping traffic on the existing roadway. This would allow for two-way traffic. During the second stage of construction, traffic would be switched onto the completed northbound lanes. This will allow for the construction of the southbound lanes. During the final phase of construction, southbound traffic would be shifted to the southbound side of proposed FM 2478 and the inner lane of the northbound and southbound sides of proposed FM 2478 would be constructed. This would include the construction of proposed medians and left turn lanes.

Due to operations normally associated with road construction, there is a possibility that noise levels would be above normal in the areas adjacent to the ROW. Construction is normally limited to daylight hours when occasional loud noises are more tolerable. Due to the relatively short term exposure periods imposed on any one receptor, extended disruption of normal activities is not considered likely. Provisions would be included in the plans and specifications that require the contractor to make every possible effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance or muffler systems.

There could be short-term adverse effects to the economy during construction because commuters may bypass the area to avoid being potentially inconvenienced. Drivers would benefit economically from various design improvements, which would reduce vehicle operating costs.

No Build Alternative
The No Build Alternative would not require utility adjustments and relocations.

R. Induced Growth

The Council on Environmental Quality defines indirect impacts 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). Indirect impacts differ from the direct impacts associated with the construction and operation of the proposed project and are caused by another action or actions that have an established relationship or connection to the proposed project. These induced actions are those that would not or could not occur except for the implementation of the proposed project.

The analysis of indirect impacts discussed in this document follows the six step process outlined in TxDOT’s *Indirect Impacts Analysis Guidance*. The six steps in the TxDOT *Indirect Impacts Analysis Guidance* consist of the following:

1. Define the Methodology
2. Define the Area of Influence (AOI) and Study Timeframe
3. Identify Areas Subject to Induced Growth in the AOI
4. Determine if Growth is Likely to Occur in the Induced Growth Areas
5. Identify Resources Subject to Induced Growth Impacts
6. Identify Mitigation if Applicable

Step 1: Define the Methodology

Induced growth impacts were determined using a planning judgment approach with data collected from the City of Celina, City of McKinney, and Town of Prosper Planning Departments. Cartographic techniques using map overlays of constraints such as floodplains were used to identify areas where potential induced growth would not likely occur due to environmental constraints.

Temporal boundaries for the indirect effects extend from construction of the proposed project until 2040, the end of the current MTP planning cycle. The City of McKinney, Town of Prosper, and City of Celina's comprehensive plans all extend into this time period.

Step 2: Define the Area of Influence and Study Timeframe

The proposed project's AOI was established using north-south and east-west roadways. It was assumed that any new development within proximity of these roadways would be associated with these roadways and not the proposed project. The northern boundary of the AOI consists of portions of Twin Bridges Road. The eastern boundary of the AOI is Lake Forest Drive. The southern boundary of the AOI is Virginia Parkway. The western boundary of the AOI consists of Colt Road. The area within the AOI encompasses the entire Build Alternative and adjacent areas where development or accelerated rates of development could potentially occur. Extending the AOI out farther would encompass areas unlikely to be affected by the proposed project.

The City of McKinney Planning Department, Town of Prosper Planning Department, and City of Celina Planning and Development Services agreed that the AOI shown on **Figure 8** would encompass any induced growth effects associated with the proposed project. The AOI encompasses approximately 19,862 acres.

Temporal boundaries for the indirect effects analysis extend from construction of the Build Alternative until 2040, the end of the current MTP planning cycle.

Step 3: Identify Areas Subject to Induced Growth in the AOI

The proposed project is not providing access to property that currently does not have access; therefore, no property is expected to be subject to induced growth as a result of the proposed project. Because no property is expected to be subject to induced growth, Steps 4 – 6 are not needed.

S. Cumulative Impacts

Because the project does not have substantial direct or indirect impacts on any resources, and the resources in the project area are not in poor or declining health (see **Table 12**), the proposed project is unlikely to result in cumulative impacts. Therefore, no cumulative impacts analysis is required.

Table 12: Resources to be Evaluated in the Cumulative Impacts Analysis

Resource or Topic Evaluated		Direct Effects	Indirect Effects	Carried Forward for Cumulative Effects Analysis	Reason for Elimination
Socio-economics	Environmental Justice	Direct impacts: No disproportionately high or adverse direct impacts.	No indirect effects are anticipated.	No	No direct impacts or indirect effects are anticipated.
Section 4(f) and Section 6(f) Resources		The proposed project would require ROW from a parcel containing an historic-age resource.	No indirect effects are anticipated.	No	No substantial direct impacts and no indirect effects are anticipated.
Public Facilities and Services		Direct impacts: No direct impacts are anticipated.	No indirect effects are anticipated.	No	No direct impacts or indirect effects are anticipated.
Floodplains		Direct impacts: Approximately 4.4 acres of the proposed project ROW and proposed drainage easements are located within a FEMA designated 100-year floodplain.	No indirect effects are anticipated.	No	No substantial direct impacts and no indirect effects are anticipated.
Water Resources		Direct impacts: The proposed project crosses Rutherford Branch, a tributary to Rutherford Branch, Wilson Creek, and a tributary to Wilson Creek. All combined, the proposed project would permanently impact approximately 611 LF (0.117 acre) of Waters of the U.S. and temporarily impact 436 LF (0.179 acre) of Waters of the U.S.	No indirect effects are anticipated.	No	Direct and indirect effects are not anticipated to be substantial and the resource is not in poor or declining health.
Water Quality		Direct impacts: Potential impacts would be minimized by BMPs associated with Tier I projects. Potential impacts are not anticipated to be substantial.	No indirect effects are anticipated.	No	No direct impacts or indirect effects are anticipated to be substantial.
Natural Resources	Threatened/Endangered Species and Species of Concern	Direct impacts: Suitable habitat within the proposed project area may be present for the timber/canebrake rattlesnake, Louisiana pigtoe, Texas heelsplitter, Texas garter snake, plains spotted skunk, and the Western burrowing owl. Other species might also utilize this habitat.	No indirect effects are anticipated.	No	Due to much of the 1,667 acres of land impacted by induced development being disturbed regularly, whether by mowing maintenance, agricultural production, or livestock grazing, it is unlikely that high quality wildlife habitat is present; therefore, impacts to wildlife are not considered substantial.

Table 12: Resources to be Evaluated in the Cumulative Impacts Analysis

Resource or Topic Evaluated		Direct Effects	Indirect Effects	Carried Forward for Cumulative Effects Analysis	Reason for Elimination
	Vegetation	Direct impacts: Approximately 23.5 acres of Agriculture; 2.4 acre of Disturbed Prairie; 1.2 acre of Floodplain, 0.7 acre of Riparian, and 35.7 acres of Urban vegetation would be impacted by the proposed project. The remaining existing and proposed ROW and easements consist of 50.6 acres of Urban vegetation.	No indirect effects are anticipated.	No	Direct impacts are not substantial and there are no indirect effects.
Prime, Unique, and Special Farmland		Direct impacts: Eight acres of the 53.2-acre property would be converted into transportation use.	No indirect effects are anticipated.	No	Direct impacts are not substantial and there are no indirect effects.
Cultural Resources	Historic Resources	Direct impacts: No direct impacts are anticipated.	No indirect effects are anticipated.	No	No direct impacts or indirect effects are anticipated.
	Archeological Resources	Direct impacts: No direct impacts are anticipated.	No indirect effects are anticipated.	No	No direct impacts or indirect effects are anticipated.
Air Quality		Direct impacts: The project is consistent with the MTP, which conforms to the SIP; therefore, impacts are not expected related to ozone. The project's AADT is below the relevant threshold of 140,000 vpd so no CO impacts are anticipated. The qualitative MSAT analysis indicates that regionally, MSATs are expected to decline over time.	No indirect effects are anticipated.	No	No direct impacts or indirect effects are anticipated.
Visual/Aesthetics		Direct impacts: The proposed project improvements are expected to blend with the general character of the area.	No indirect effects are anticipated.	No	No direct or indirect effects are anticipated.

N/A – Not Applicable.
Source: Study Team, February, 2014.

IV. PUBLIC INVOLVEMENT

On February 26, 2015, the City of McKinney hosted a public meeting concerning the design aspects of the proposed project. TxDOT personnel, representatives from the Town of Prosper, and project consultants were present at the meeting for a combined total of 86 attendees. The meeting was held to share information about the project and seek input from area residents. 19 comments were submitted by the public which included one email before the Public Meeting, 17 comment cards during the meeting and one email during the 10-day comment period following the meeting. Of these 19 comments five predominant issues were mentioned:

1. Traffic and safety issues along the corridor
2. Request the speed limit to be reduced
3. Noise impacts and the lack of proposed noise abatement measures
4. Request for an updated traffic study and updated noise analysis
5. Request to move roadway alignment more towards undeveloped open areas

A PH for the project was conducted on May 30, 2017. TxDOT personnel, representatives from Collin County, City of McKinney, Town of Prosper, and project consultants were present at the PH for a combined total of 194 attendees. The PH consisted of an open house followed by a formal presentation. Two letters were received after the PH Notice was published, 13 verbal comments were made at the PH, and 13 comment cards were received during the 15-day comment period following the PH. Three of the verbal commenters also submitted comment cards or letters. The predominant issues consisted of the following:

1. Noise impacts and the lack of proposed noise abatement measures
2. Request for traffic signals at various intersections
3. Traffic and speed limits along the corridor
4. Zoning changes
5. US 380 bypass project

V. PERMITS AND COMMITMENTS

This section summarizes the elements that constitute the EPIC Sheet. The EPIC sheet, found in the Environmental Compliance Oversight System, documents and communicates permit issues and environmental commitments that must be incorporated into the Plans, Specifications, and Estimates. The permits, impacts and commitments relevant to the proposed project are as follows:

Potential Relocations and Displacements

Approximately 36.8 acres of ROW would be acquired for the proposed project and 0.6 acre would be required for permanent drainage easements. There is one potential residential displacement, three potential utility structure/out-building displacements, and three potential miscellaneous structure displacements associated with the Build Alternative.

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.

Floodplain Commitment

According to the FEMA Flood Insurance Rate Map Nos. 48085C0255 J and 48085C0140 J (June 2, 2009), the proposed project is located within Zones A, AE, and X. The proposed project would not increase the base flood elevation to a level that would violate the applicable floodplain regulations or ordinances. The hydraulic design practices for this project would be in accordance with current TxDOT design policy and standards. The highway facility would permit conveyance of the design-year flood levels, inundation of the roadway being acceptable, without causing substantial damage to the highway, stream or other property. Coordination with the local Floodplain Administrator will be required.

CWA, Section 402 TPDES Commitments

The proposed project would disturb more than five acres; TxDOT would be required to comply with the TCEQ TPDES General Permit for Large Construction Activity. A NOI would be filed to comply with TCEQ stating that TxDOT would have a SW3P in place during construction of the proposed project. Measures would be taken to prevent or correct erosion that might develop during construction.

CWA, Section 401 and 404 Compliance Commitments

The placement of fill material into jurisdictional Waters of the U.S. would be authorized under NWP 14 without a PCN. NWP 14 - BMPs may include, but will not be limited to:

- Category I Erosion control: Application of compost or mulch filter berms and socks to disturbed areas;
- Category II Sedimentation control: Installation of silt fences; and,
- Category III Post construction TSS control: Vegetation lined ditches in areas where there is a need for an open ditch section to transition to existing outfalls. Grassy swales and/or extended detention basins for storm sewer outfalls.

Water Well Commitment

The private water well located at 3500 FM 2478 would be plugged and abandoned in accordance with the applicable state requirements.

Cultural Resources Commitment

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the PA-TU, and the MOU between TxDOT and the THC.

Federal Listed, and Proposed Threatened and Endangered Species, Critical Habitat, State Listed Species, Candidate Species

The project area contains habitat within or adjacent to the project area that might be potentially suitable for the timber/canebrake rattlesnake, Louisiana pigtoe, Texas heelsplitter, Texas garter snake, plains spotted skunk, Wood Stork, and the Western Burrowing Owl. Because these species might be encountered during construction, the contractor would be notified (via the EPIC sheet, general notes, and/or pre-construction meeting) of this potential and to take the necessary measures to avoid harm to these species.

Mussel Survey Commitment

When work is in the water; survey project footprints for state listed species where appropriate habitat exists. Freshwater mussel surveys/relocation must be complete no more than six months prior to the start of construction.

Migratory Bird Treaty Act

The MBTA 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 within the Act's policies and regulations. In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young would be avoided. The contractor would remove all old migratory bird nests between October 1 and February 15 from any structure where work will be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between February 15 and October 1, per the EPIC plans.

Vegetation Resources Commitment

Preserve native vegetation to the extent practical. 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.

Invasive Species and Beneficial Landscaping

Permanent soil erosion control features would be constructed as soon as feasible during the early stages of construction through proper sod and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits and temporary sod would be considered where large areas of disturbed ground would be left bare for more than 14 days. In accordance with EO 13112 on Invasive Species and the EM on Beneficial Landscaping, landscaping would be limited to seeding and replanting the ROW according to TxDOT-approved seeding specifications wherever possible. Soil disturbance would be minimized to ensure that invasive species would not establish in the ROW.

Construction Noise Commitment

Provisions will 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.

Hazardous Materials or Contamination Issues Commitment

The proposed project includes the demolition of buildings, one bridge, and one bridge-class culvert. These structures may contain ACMs. 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. In addition, a 10-day Notification would be submitted to the TDSHS prior to any demolition activity. Asbestos issues would be addressed during the ROW process prior to construction.

The proposed project includes the demolition of building structures, some of which may contain 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.

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.

Other Environmental Issues Commitment

Potential impacts of particulate matter emissions will 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.

VI. DETERMINATION OF ASSESSMENT

The engineering, social, economic, and environmental investigations conducted thus far indicate that the proposed project would result in no significant impacts to the quality of the human or natural environment. A Finding of No Significant Impact (FONSI) is recommended.

FIGURES

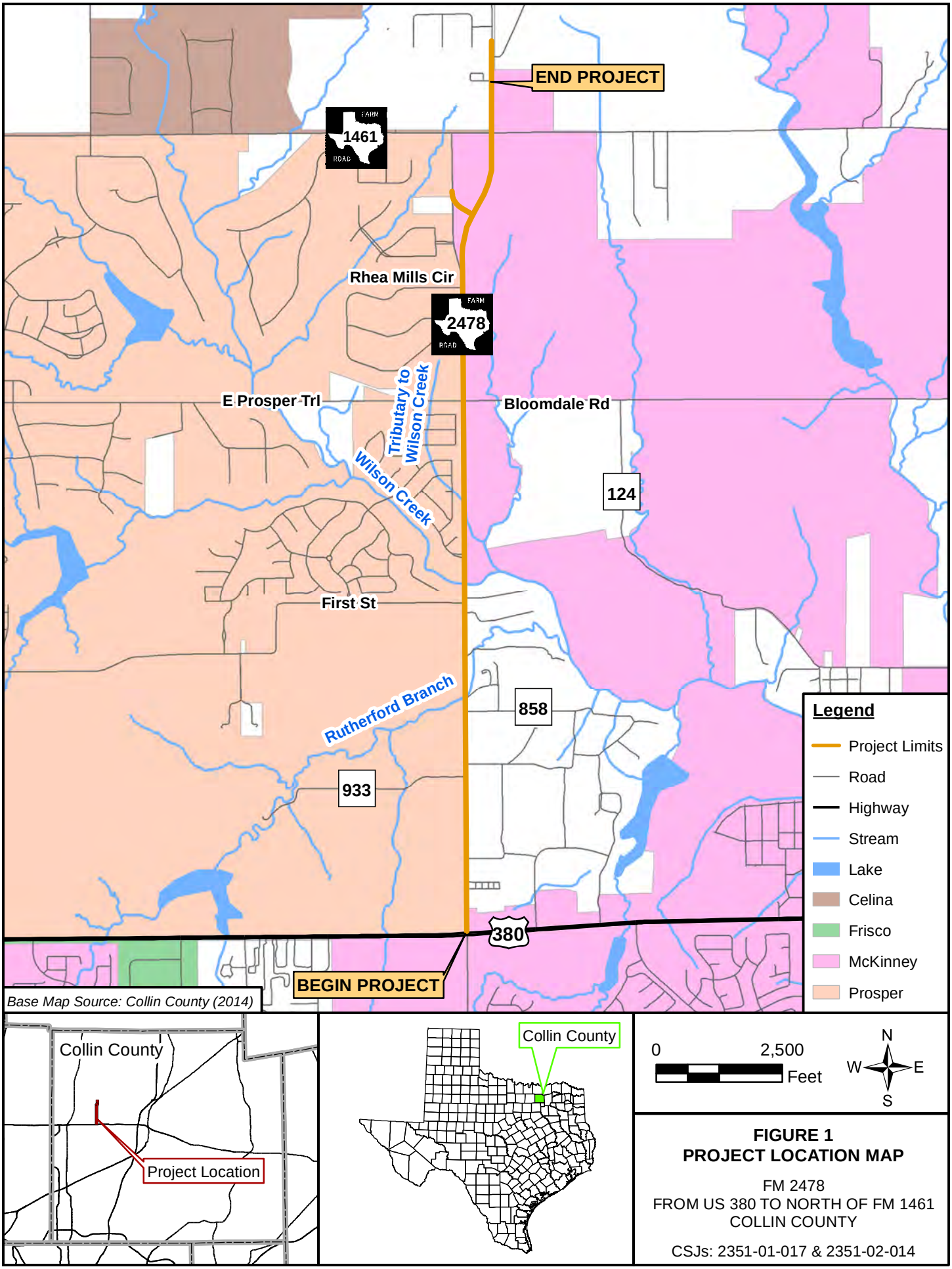
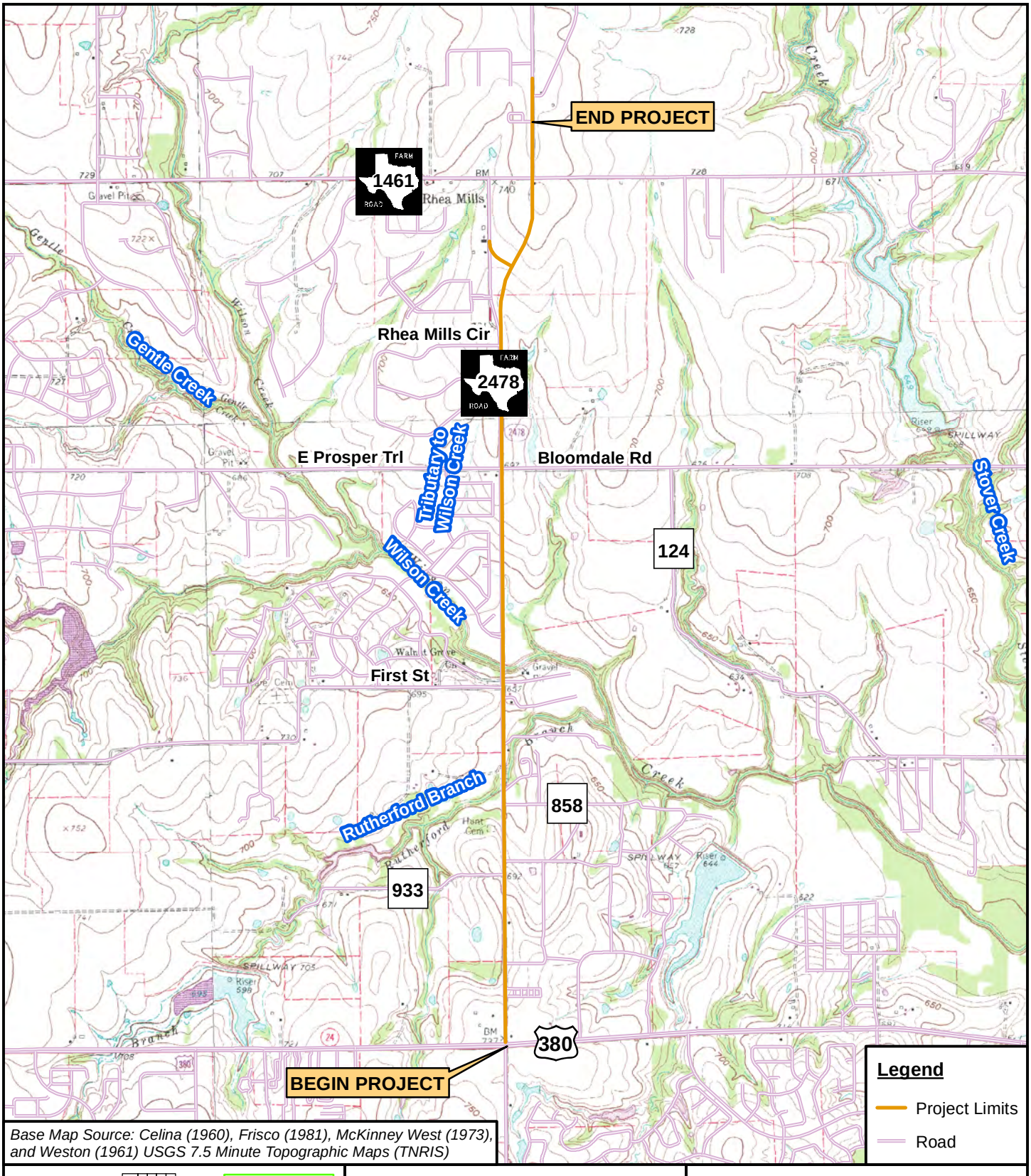


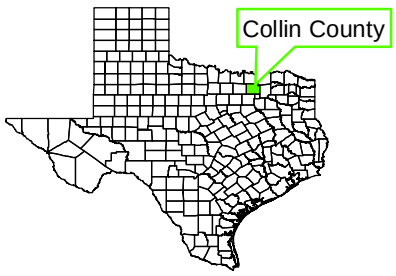
FIGURE 1
PROJECT LOCATION MAP

FM 2478
FROM US 380 TO NORTH OF FM 1461
COLLIN COUNTY

CSJs: 2351-01-017 & 2351-02-014



Base Map Source: Celina (1960), Frisco (1981), McKinney West (1973), and Weston (1961) USGS 7.5 Minute Topographic Maps (TNRIS)



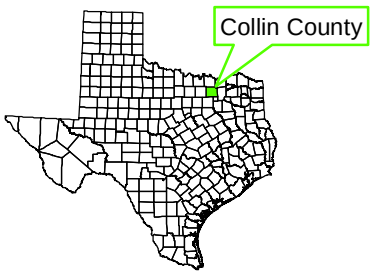
N
W E
S

0 2,500
Feet

FIGURE 2
USGS TOPOGRAPHIC MAP

FM 2478
FROM US 380 TO NORTH OF FM 1461
COLLIN COUNTY

CSJs: 2351-01-017 & 2351-02-014



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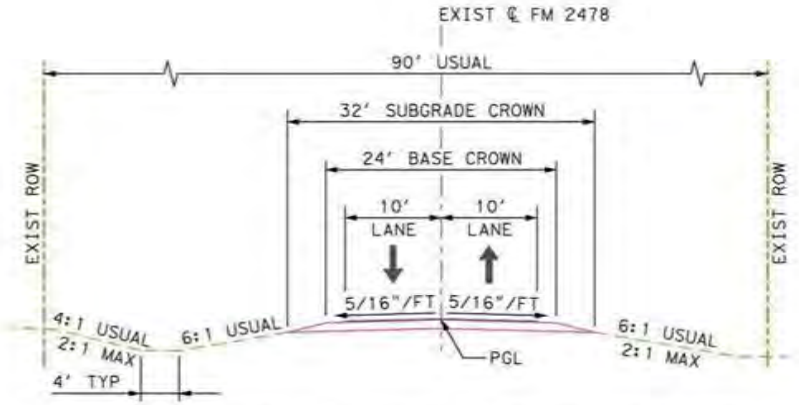
W E
S

0 2,500
Feet

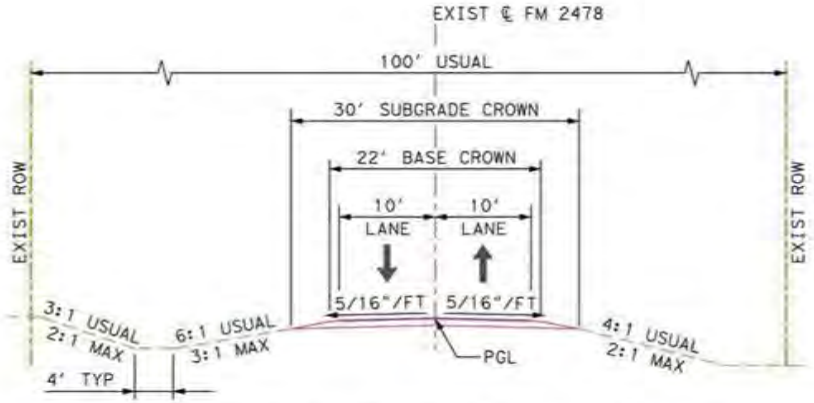
FIGURE 3
AERIAL MAP

FM 2478
FROM US 380 TO NORTH OF FM 1461
COLLIN COUNTY

CSJs: 2351-01-017 & 2351-02-014



EXISTING FM 2478 TYPICAL SECTION

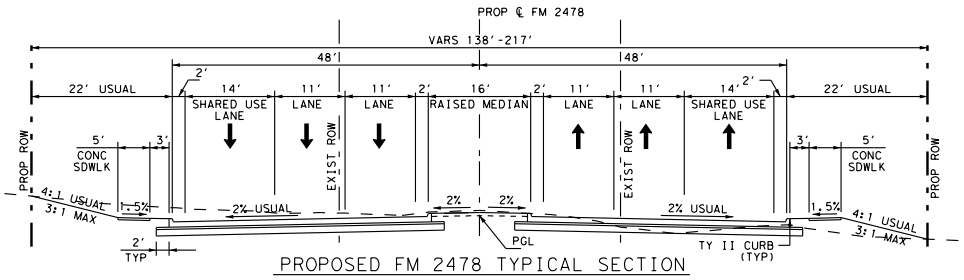


EXISTING FM 2478 TYPICAL SECTION

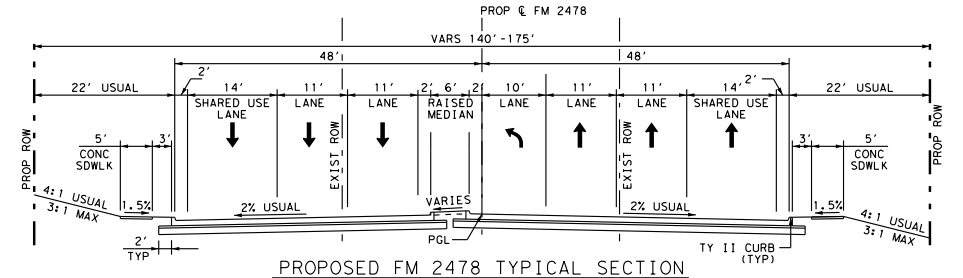
FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

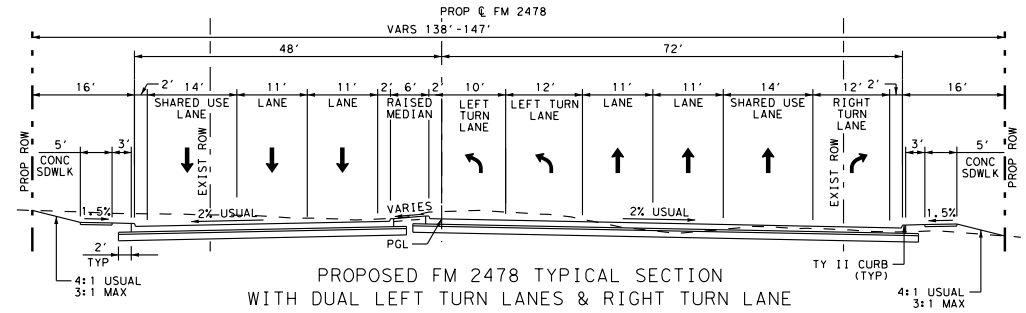
FIGURE 4
TYPICAL SECTIONS
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS 2351-01-017, 2351-02-014
SHEET 1 OF 3



PROPOSED FM 2478 TYPICAL SECTION



PROPOSED FM 2478 TYPICAL SECTION
WITH SINGLE LEFT TURN LANE



PROPOSED FM 2478 TYPICAL SECTION
WITH DUAL LEFT TURN LANES & RIGHT TURN LANE

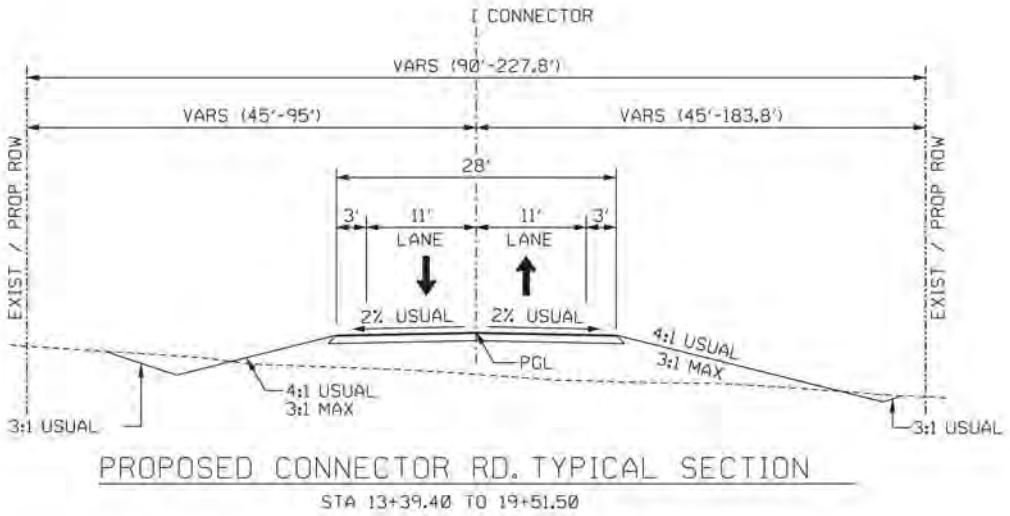
FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 4
TYPICAL SECTIONS

FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461

CSJ: 2351-01-017, 2351-01-014



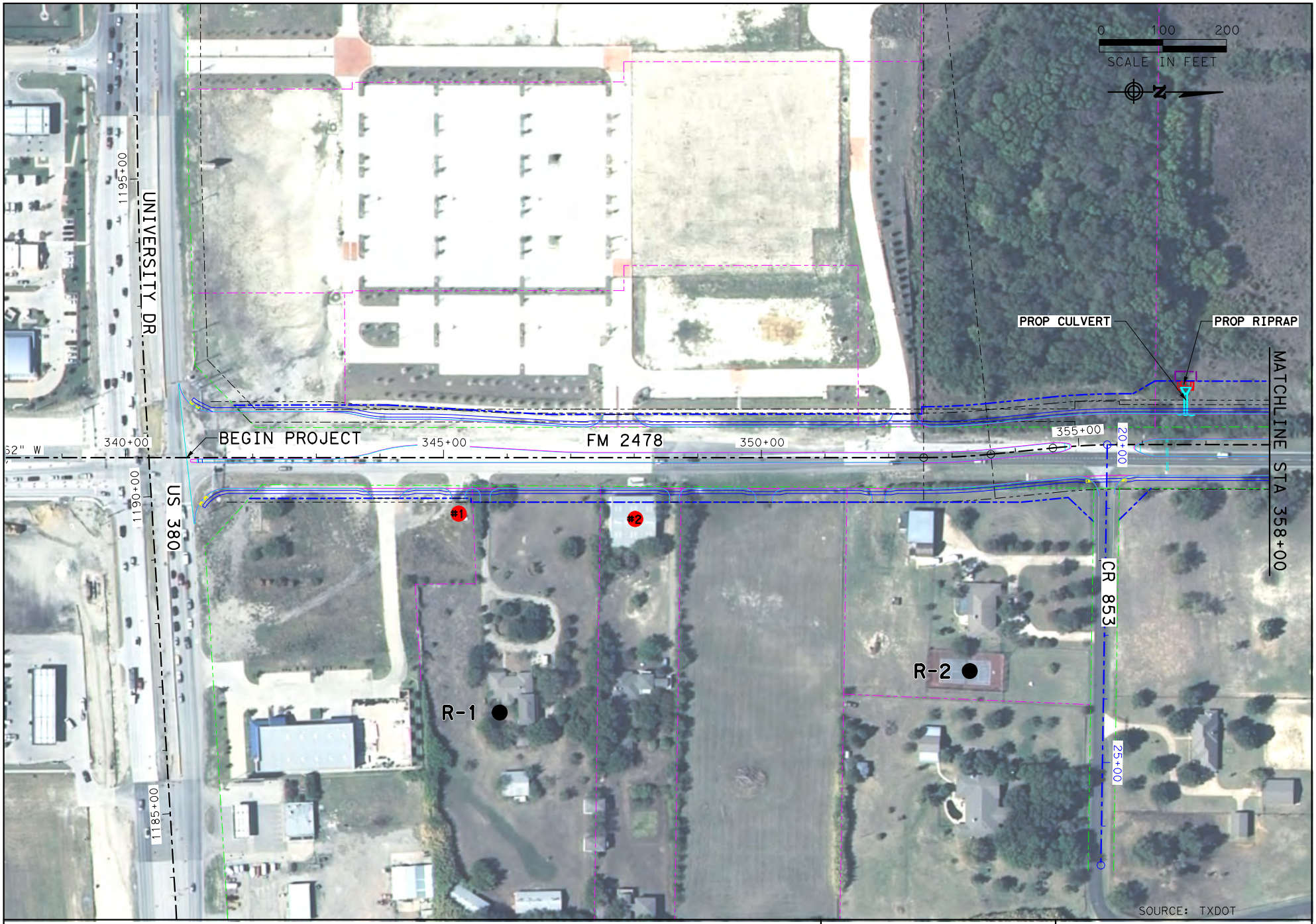
PROPOSED CONNECTOR RD. TYPICAL SECTION

STA 13+39.40 TO 19+51.50

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 4
TYPICAL SECTIONS
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS 2351-01-017, 2351-02-014
SHEET 3 OF 3



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- R-# NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 1 OF 10

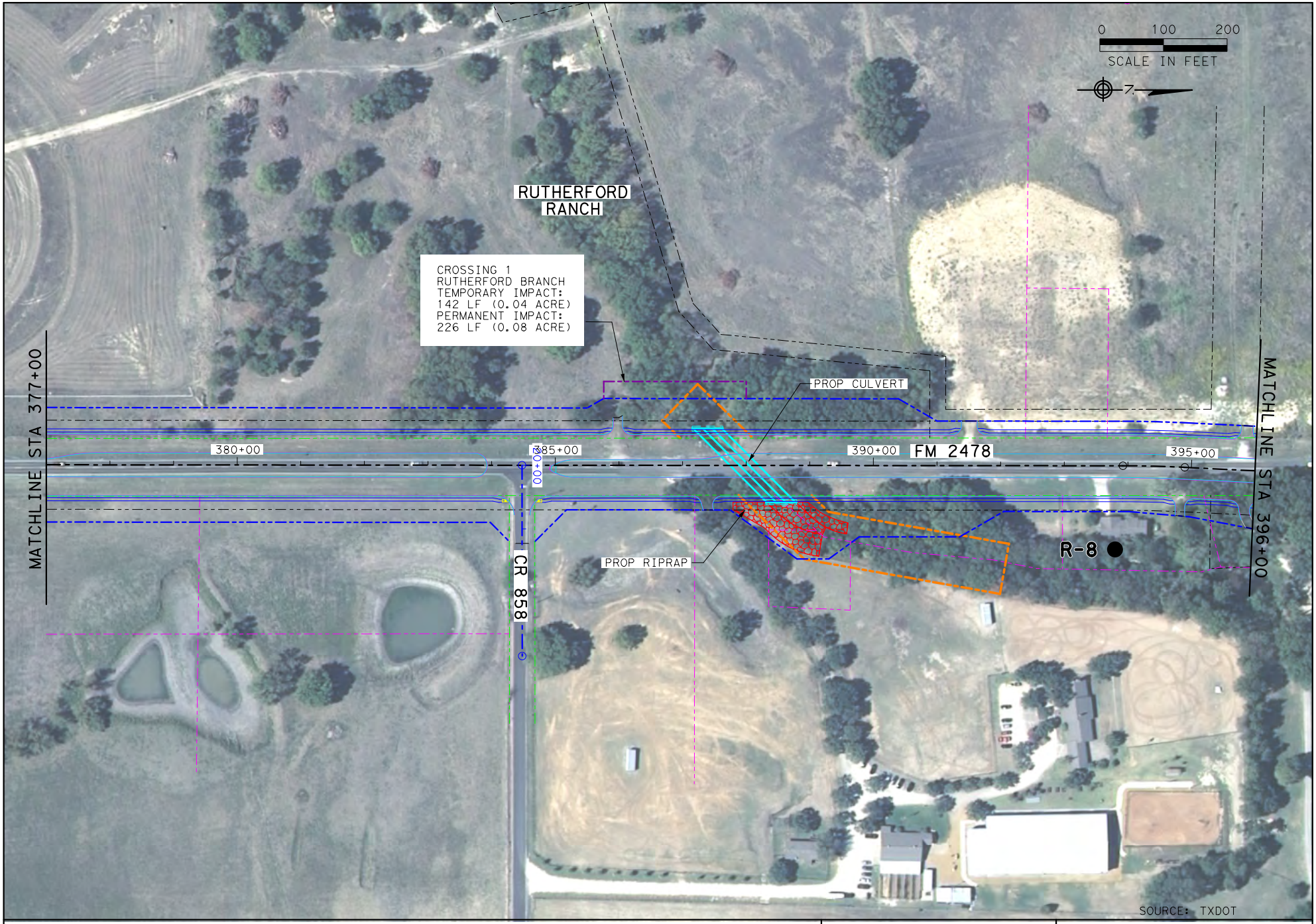
LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- R-# NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 2 OF 10



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- R-# NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

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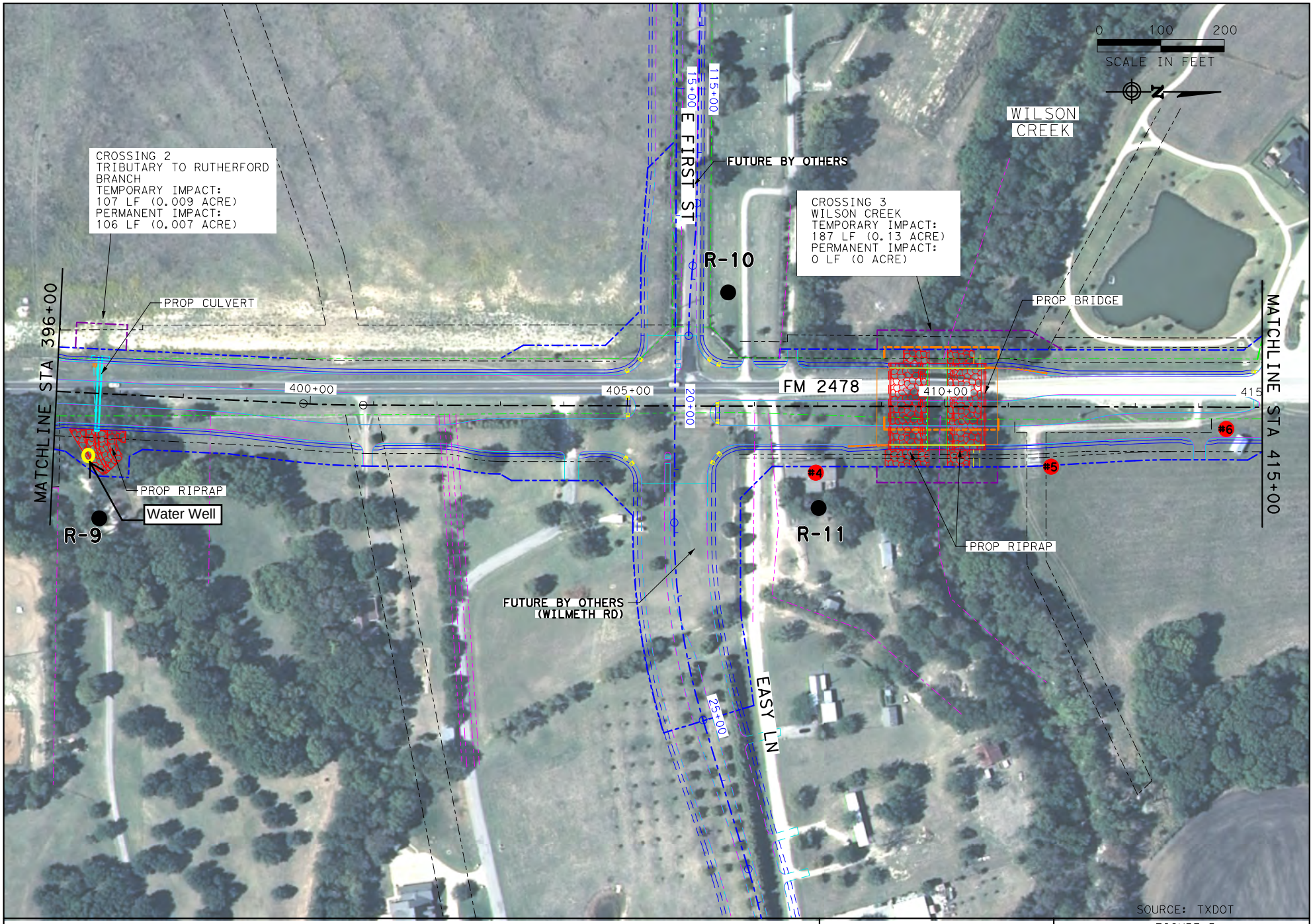
FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 3 OF 10



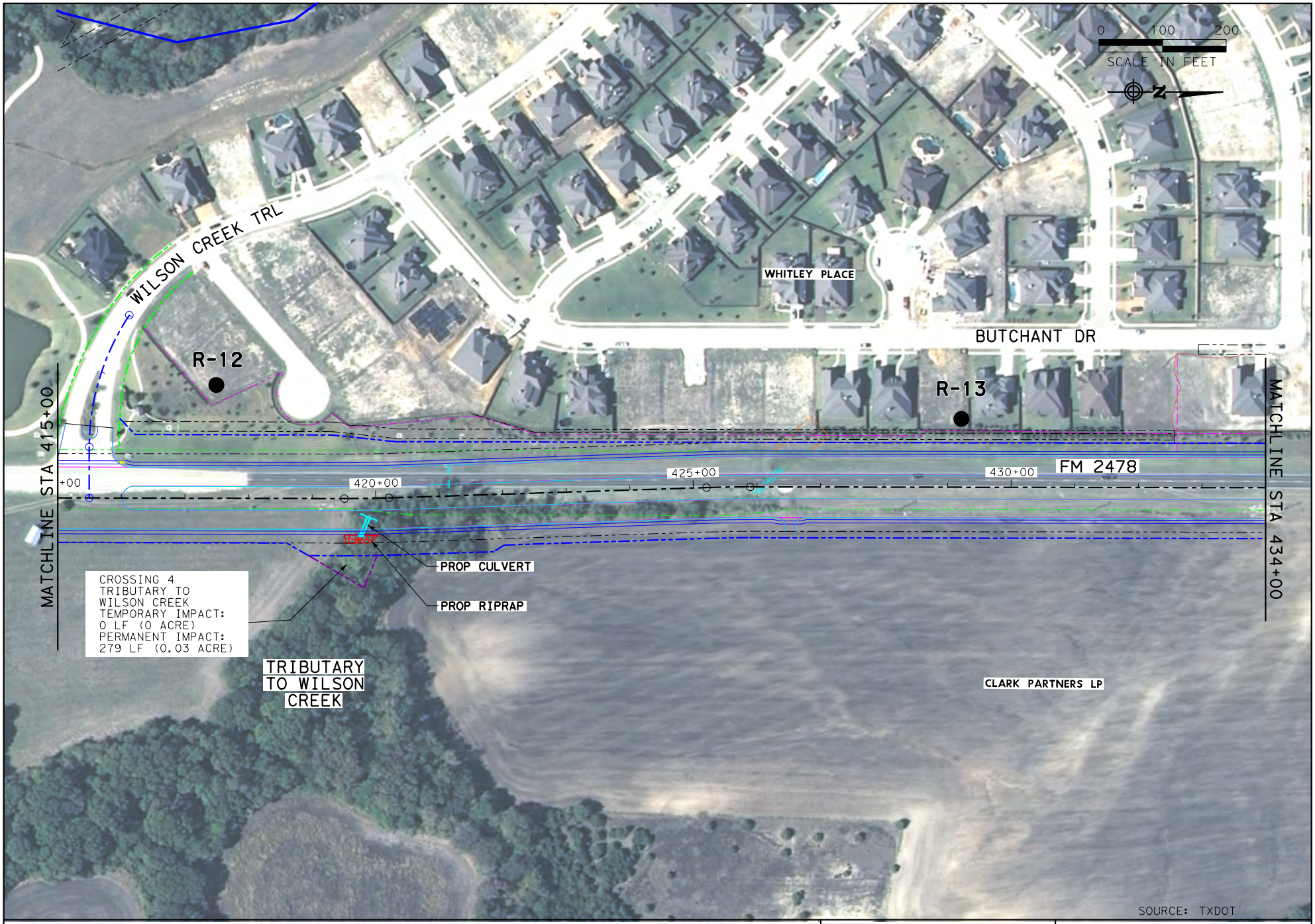
LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- R-# NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 4 OF 10



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- R-# NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 5 OF 10

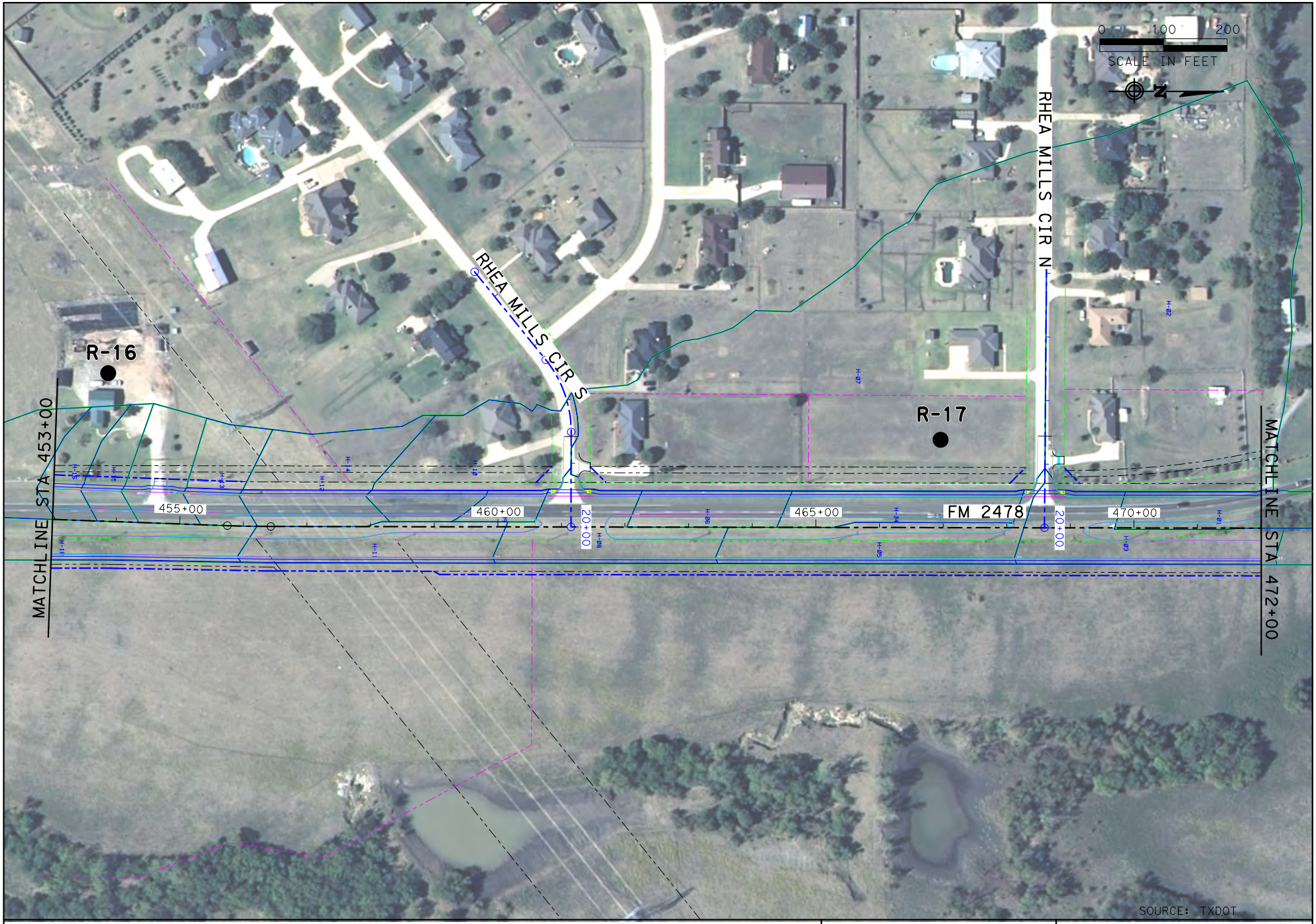
LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- R-# NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 6 OF 10



LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT

R-#

- NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 7 OF 10

LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- R-# NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 8 OF 10

LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- R-# NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 9 OF 10

LEGEND

- EXISTING R.O.W.
- PROPOSED R.O.W.
- PROPERTY LINE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRAINGAGE EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT

R-#

- NOISE RECEIVER
- DISPLACEMENT
- FUTURE PAVEMENT

FOR REPORT PURPOSES ONLY

Not for construction, bidding, or permit purposes.

FIGURE 5
PROJECT LAYOUT AND NOISE RECEIVER LOCATION MAP
FM 2478 (CUSTER ROAD)
FROM US 380
TO NORTH OF FM 1461
CSJS: 2351-01-017, 2351-02-014
SHEET 10 OF 10

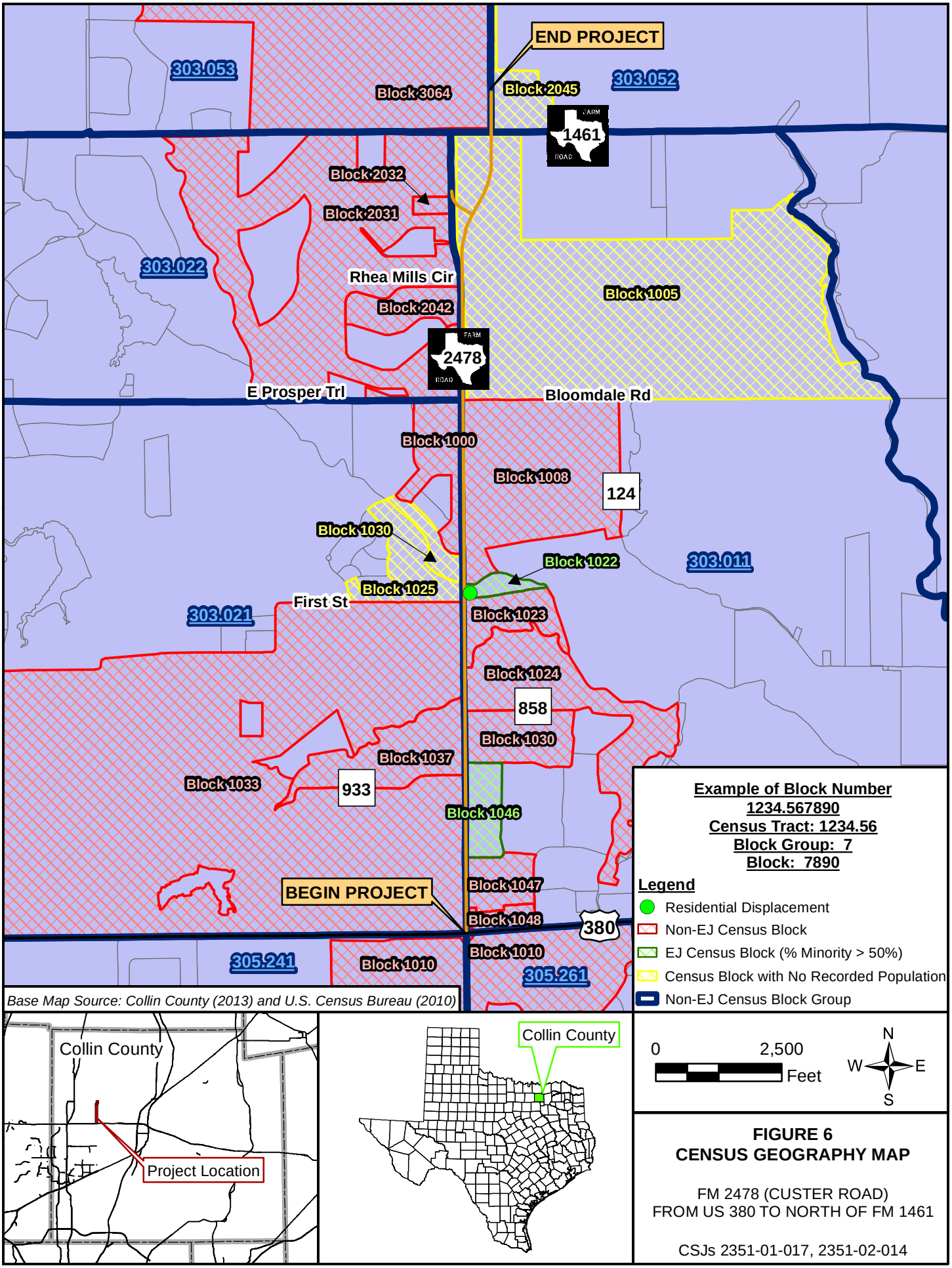
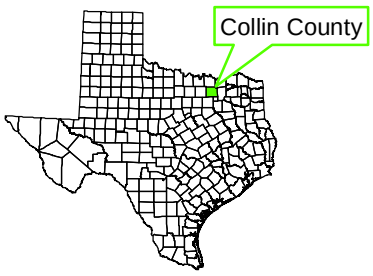


FIGURE 6
CENSUS GEOGRAPHY MAP

FM 2478 (CUSTER ROAD)
FROM US 380 TO NORTH OF FM 1461

CSJs 2351-01-017, 2351-02-014

Base Map Source: Aerial Surveys International, 2011



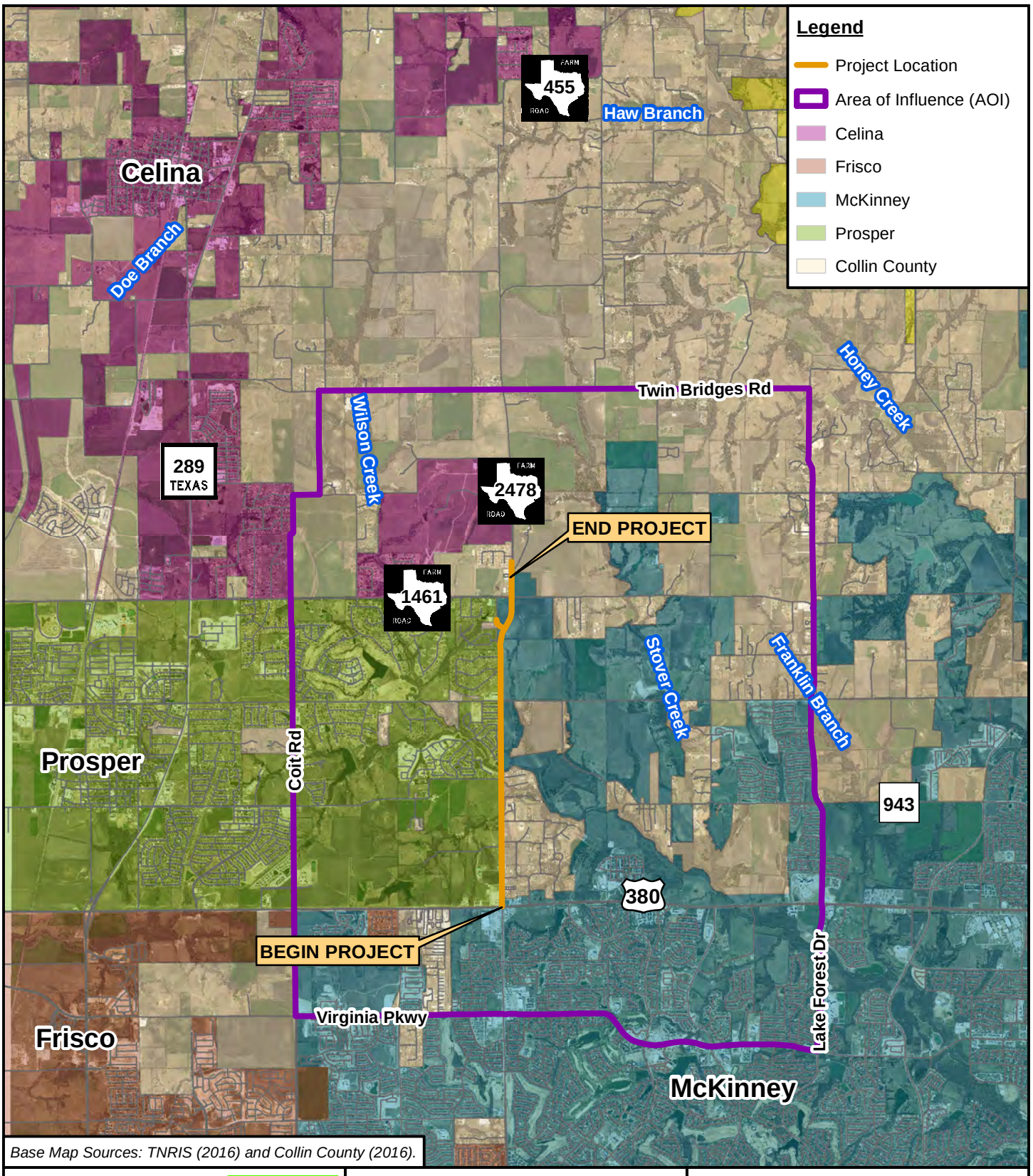
N
W E
S

0 2,500 Feet

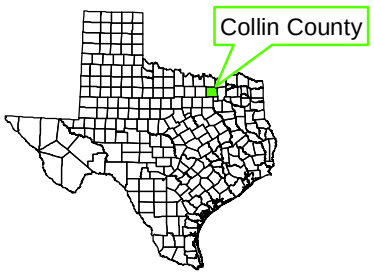
FIGURE 7
HAZARDOUS MATERIALS LOCATION MAP

FM 2478 (CUSTER ROAD)
FROM US 380 TO NORTH OF FM 1461

CSJs 2351-01-017, 2351-02-014



Base Map Sources: TNRIS (2016) and Collin County (2016).



N
W E
S

0 7,000
Feet

FIGURE 8
INDIRECT EFFECTS
AREA OF INFLUENCE MAP

FM 2478 (CUSTER ROAD)
FROM US 380 TO NORTH OF FM 1461

CSJs 2351-01-017, 2351-02-014

APPENDIX A
MTP and TIP Pages

2017-2020 STIP — **02/2017 Revision: Approved 05/18/2017**

DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST
DALLAS	DALLAS-FORT WORTH	COLLIN	2351-01-017	FM 2478	R,ACQ	MCKINNEY	$ 13,000,000

LIMITS FROM US 380
LIMITS TO FM 1461
PROJECT SPONSOR MCKINNEY
REVISION DATE 02/2017
PROJECT DESCR WIDEN TWO LANE RURAL HIGHWAY TO FOUR LANE DIVIDED; REALIGN INTERSECTION AT FM 14 61; SIX LANE ULTIMATE
MPO PROJ NUM 54005
FUNDING CAT(S)
REMARKS REVISE LIMITS; ADD ROW PHASE IN FY2017; ADD PROJECT P7 TO THE 2017-2020 TIP/STIP
PROJECT HISTORY

TOTAL PROJECT COST INFORMATION

PREL ENG	$ 3,750,000
ROW PURCH	$ 13,000,000
CONSTR	$ 0
CONST ENG	$ 1,831,882
CONTING	$ 423,318
INDIRECT	$ 1,558,411
BOND FIN	$ 0
PT CHG ORD	$ 0
TOTAL CST	$ 20,563,611

COST OF APPROVED PHASES $ 13,000,000

AUTHORIZED FUNDING BY CATEGORY/SHARE

CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
S102	$ 10,400,000	$ 1,300,000	$ 0	$ 1,300,000	$ 0	$ 13,000,000
TOTAL	$ 10,400,000	$ 1,300,000	$ 0	$ 1,300,000	$ 0	$ 13,000,000

2017-2020 STIP — **02/2017 Revision: Approved 05/18/2017**

DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST
DALLAS	DALLAS-FORT WORTH	DALLAS	0918-47-027	VA	C	DALLAS	$ 2,482,813

LIMITS FROM COLLECTIVE MIXED USE DEVELOPMENT; FW AVE TO THE WEST INCLUDING ANNIELS DR, ODEANS DR, AND WALTER DR; COLORADO BLVD
LIMITS TO HAMPTON ROAD AND PLYMOUTH ON THE EAST; AND THE COOMBS CREEK TRAIL TO THE N ORTH
PROJECT SPONSOR DALLAS
REVISION DATE 02/2017
PROJECT DESCR BIKE LANES ON FORT WORTH AVE FROM BAHAMA TO IH 30, ON COLORADO FROM FORT WORTH AVE TO PLYMOUTH RD, AND ON BAHAMA FROM FTW AVE TO HAMPTON RD; INTERSECTION IMPROVEMENTS AT FTW AVE AND BAHAMA; AND SIDEWALK IMPROVEMENTS AND CONNECTION TO COOMBS CREEK TRAIL
MPO PROJ NUM 20240
FUNDING CAT(S)
REMARKS REVISE LIMITS; REVISE SCOPE; RTR 121-ESD P7
PROJECT HISTORY

TOTAL PROJECT COST INFORMATION

PREL ENG	$ 0
ROW PURCH	$ 0
CONSTR	$ 2,482,813
CONST ENG	$ 0
CONTING	$ 0
INDIRECT	$ 0
BOND FIN	$ 0
PT CHG ORD	$ 0
TOTAL CST	$ 2,482,813

COST OF APPROVED PHASES $ 2,482,813

AUTHORIZED FUNDING BY CATEGORY/SHARE

CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
3RTR121	$ 0	$ 0	$ 1,986,250	$ 496,563	$ 0	$ 2,482,813
TOTAL	$ 0	$ 0	$ 1,986,250	$ 496,563	$ 0	$ 2,482,813

2017-2020 STIP — **02/2017 Revision: Approved 05/18/2017**

DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST
DALLAS	DALLAS-FORT WORTH	COLLIN	0918-24-181	VA	C	MCKINNEY	$ 0

LIMITS FROM HISTORIC FLOUR MILL CATALYST TOD PROJECT, ON LOUISIANA FROM SH 5 (MCDONALD) APP. 520 FT E. OF MURRAY
LIMITS TO ON THROCKMORTON FROM LOUISIANA TO VIRGINIA, ON VIRGINIA FROM THROCKMORTON TO MAIN, & ON GREENVILLE FROM DUNGAN TO MURRAY
PROJECT SPONSOR MCKINNEY
REVISION DATE 02/2017
PROJECT DESCR PEDESTRIAN AMENITIES, INTERSECTION IMPROVEMENTS, BIKE CONNECTION, AND STREET IMPROVEMENTS ON LOUISIANA ST FROM SH 5 TO THROCKMORTON ST TO RETROFIT TWO-WAY TRAVEL LANES AND PARKING LANES
MPO PROJ NUM 20230
FUNDING CAT(S)
REMARKS CANCEL PROJECT; RTR 121-SD EAST P7
PROJECT HISTORY

TOTAL PROJECT COST INFORMATION

PREL ENG	$ 0
ROW PURCH	$ 0
CONSTR	$ 0
CONST ENG	$ 0
CONTING	$ 0
INDIRECT	$ 0
BOND FIN	$ 0
PT CHG ORD	$ 0
TOTAL CST	$ 0

COST OF APPROVED PHASES $ 0

AUTHORIZED FUNDING BY CATEGORY/SHARE

CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
3RTR121	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
TOTAL	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR
DALLAS	ELLIS	1051-01-038	FM 664	E	VARIOUS	TXDOT-DALLAS

LIMITS FROM: US 287 IN WAXAHACHIE
LIMITS TO: IH 45 IN FERRIS
TIP DESCRIPTION: WIDEN 2 LANE RURAL TO 4 LANE DIVIDED URBAN
REMARKS:

REV DATE: 07/2016
MPO PROJECT ID: 83223
MTP REFERENCE: RSA1-1.563.200, RSA1-2.710.225, RSA1-2.710.250, RSA1-2.710.300, NRSA-DAL-128

Project History:

DALLAS | ROCKWALL | 1290-03-016 | SH 276 | C,E | ROCKWALL | TXDOT-DALLAS

LIMITS FROM: FM 549
LIMITS TO: FM 551
TIP DESCRIPTION: RECONSTRUCT AND WIDEN 2 LANE RURAL TO 6 LANE DIVIDED URBAN
REMARKS: LOCAL CONTRIBUTION BY ROCKWALL CO

REV DATE: 07/2016
MPO PROJECT ID: 51255
MTP REFERENCE: RSA1-2.375.250, RSA1-2.375.275, RSA1-2.375.300

Project History:

DALLAS | ROCKWALL | 1290-03-020 | SH 276 | E,R | ROCKWALL | TXDOT-DALLAS

LIMITS FROM: FM 551
LIMITS TO: FM 548
TIP DESCRIPTION: RECONSTRUCT AND WIDEN 2 LANE RURAL TO 6 LANE DIVIDED URBAN
REMARKS: LOCAL CONTRIBUTION BY ROCKWALL CO

REV DATE: 07/2016
MPO PROJECT ID: 52524
MTP REFERENCE: RSA1-2.375.300

Project History:

DALLAS | ROCKWALL | 1290-04-011 | SH 276 | E | ROCKWALL | TXDOT-DALLAS

LIMITS FROM: FM 548
LIMITS TO: 0.5 MILES WEST OF COUNTY ROAD 2472
TIP DESCRIPTION: RECONSTRUCT AND WIDEN 2 LANE RURAL TO 6 LANE DIVIDED URBAN
REMARKS: ROCKWALL CO PAYING LOCAL CONTRIBUTION

REV DATE: 07/2016
MPO PROJECT ID: 54035
MTP REFERENCE: RSA1- 2.375.300, RSA1-2.375.325,RSA1-2.375.350

Project History:

DALLAS | COLLIN | 2351-02-014 | FM 2478 | E | MCKINNEY | TXDOT-DALLAS

LIMITS FROM: FM 1461
LIMITS TO: NORTH OF FM 1461
TIP DESCRIPTION: WIDEN TWO LANE RURAL HIGHWAY TO FOUR LANE DIVIDED; SIX LANE ULTIMATE; REALIGN INTERSECTION OF FM 1461
REMARKS: ADD TO APPENDIX D OF THE 2017-2020 TIP/STIP; RELATED TO PROJECT TIP 54005/CSJ 2351-01-017

REV DATE: 11/2016
MPO PROJECT ID: 54005.1
MTP REFERENCE: FT3-004, NRSA1-DAL-109

Project History: RELATED TO PROJECT TIP 54005/CSJ 2351-01-017

DALLAS | DALLAS | 2374-01-127 | IH 635 | C | VARIOUS | TXDOT-DALLAS

LIMITS FROM: ABRAMS ROAD
LIMITS TO: SKILLMAN STREET
TIP DESCRIPTION: WIDEN FREEWAY FROM 8 TO 10 LANES AND ADD 2 CONCURRENT HOV/MANAGED LANES
REMARKS: DEFERRED; CANCEL BY DISTRICT 11/26/2012

REV DATE: 07/2016
MPO PROJECT ID: 54011
MTP REFERENCE: FT1-131.10.1

Project History: CANCEL BY DISTRICT 11/26/2012

DALLAS | DALLAS | 2374-01-136 | IH 635 | E,R | VARIOUS | TXDOT-DALLAS

LIMITS FROM: MIDWAY ROAD
LIMITS TO: SH 289 (PRESTON ROAD)
TIP DESCRIPTION: IMPROVE 8 LANE FREEWAY AND CONSTRUCT 6 HOV/MANAGED LANES
REMARKS: CANCEL PROJECT

REV DATE: 07/2016
MPO PROJECT ID: 54044
MTP REFERENCE: FT1-130.30.2

Project History:

CSJ	District	COLLIN COUNTY	MPO	City	FM 2478	Letting FY
2351-01-017	DALLAS		DALLAS-FORT WORTH			2020

Limits From: US 380
Limits To: FM 1461
Ranking Tier 3
Project Description: WIDEN TWO LANE RURAL HIGHWAY TO FOUR LANE DIVIDED; REALIGN INTERSECTION AT FM 1461; SIX LANE ULTIMATE

Total Project Cost Information

INFORMATIONAL PURPOSES ONLY	
Preliminary Engineering	$1,853,716
ROW & Utilities	$12,151,972
Construction	$37,830,933
Construction Engineering	$1,849,933
Contingencies	$427,490
Indirect Costs	$0
Potential Change Orders	$1,573,767
Total Project Cost	$55,687,810

Programmed Funding

Category	Description	Authorized	Other	Local	Total
2M	METRO CORRIDOR	$25,452,391	$0	$0	$25,452,391
5	CMAQ	$7,000,000	$0	$0	$7,000,000
	Total	$32,452,391	$0	$0	$32,452,391

CSJ	District	COLLIN COUNTY	MPO	City	FM 2478	Letting FY
2351-02-014	DALLAS					2020

Limits From: FM 1461
Limits To: NORTH OF FM 1461
Ranking Tier 3
Project Description: WIDEN TWO LANE RURAL HIGHWAY TO FOUR LANE DIVIDED; SIX LANE ULTIMATE; REALIGN INTERSECTION OF FM 1461

Total Project Cost Information

INFORMATIONAL PURPOSES ONLY	
Preliminary Engineering	$9,800
ROW & Utilities	$744,052
Construction	$200,000
Construction Engineering	$9,780
Contingencies	$2,260
Indirect Costs	$0
Potential Change Orders	$8,320
Total Project Cost	$974,212

Programmed Funding

Category	Description	Authorized	Other	Local	Total
5	CMAQ	$200,000	$0	$0	$200,000
	Total	$200,000	$0	$0	$200,000

CSJ	District	COLLIN COUNTY	MPO	City	FM 2514	Letting FY
2679-03-016	DALLAS		DALLAS-FORT WORTH	WYLIE		2020

Limits From: N OF DRAIN DR
Limits To: BROWN ST
Ranking Tier 1
Project Description: WIDEN FACILITY FROM 2 LANE TO 4 LANE URBAN DIVIDED, ULTIMATE 6 LANE DIVIDED

Total Project Cost Information

INFORMATIONAL PURPOSES ONLY	
Preliminary Engineering	$845,238
ROW & Utilities	$0
Construction	$17,249,746
Construction Engineering	$855,587
Contingencies	$343,270
Indirect Costs	$0
Potential Change Orders	$645,141
Total Project Cost	$19,938,981

Programmed Funding

Category	Description	Authorized	Other	Local	Total
2M	METRO CORRIDOR	$12,249,746	$0	$0	$12,249,746
5	CMAQ	$5,000,000	$0	$0	$5,000,000
	Total	$17,249,746	$0	$0	$17,249,746

CSJ	District	COLLIN COUNTY	MPO	City	SH 5	Letting FY
0047-05-054	DALLAS		DALLAS-FORT WORTH			2021

Limits From: SPUR 399
Limits To: SH 121
Ranking Tier 3
Project Description: RECONSTRUCT 4 LANE UNDIVIDED ROADWAY TO 4 LANE DIVIDED CURB AND GUTTER URBAN SECTION

Total Project Cost Information

INFORMATIONAL PURPOSES ONLY	
Preliminary Engineering	$4,158,415
ROW & Utilities	$0
Construction	$84,865,610
Construction Engineering	$4,149,928
Contingencies	$958,981
Indirect Costs	$0
Potential Change Orders	$3,530,409
Total Project Cost	$97,663,344

Programmed Funding

Category	Description	Authorized	Other	Local	Total
2M	METRO CORRIDOR	$70,000,000	$0	$0	$70,000,000
	Total	$70,000,000	$0	$0	$70,000,000

Note: As passed by the 84th Legislature funding allocations and project listings identified in the UTP that generally involve allocations in Categories 2, 4, 11 and 12 may be subject to further consideration by the Texas Transportation Commission to ensure that the Texas Department of Transportation and HB 20 designated Planning Organizations (TxDOT Districts and Metropolitan Planning Organizations) have complied with the requirements of HB 20. Any proposed revisions to funding allocations or project listings will be addressed in future updates to the UTP.

APPENDIX B
Coordination Documents

CITY OF McKINNEY, TEXAS - Action Details

Details

File #:	13-494 Version: 1
Type:	Resolution
Title:	Consider/Discuss/Act on a Resolution Authorizing the City Manager to Execute an Advance Funding Agreement with the Texas Department of Transportation for the Widening and Realignment of FM 2478 (Custer Road) from US 380 (University Drive) to FM 1461
Mover:	Travis Ussery
Seconder:	Roger Harris
Result:	Pass
Agenda note:	
Minutes note:	
Action:	Approved
Action text:	This that this Resolution be Approved by consent roll call

Consent Votes (7:0)

7 records | Group | Export

Person Name	Vote
Randy P. Pogue	Aye
Roger Harris	Aye
Travis Ussery	Aye
Brian Loughmiller	Aye
Geralyn Kever	Aye
Don Day	Aye
Ray Ricchi	Aye

Checklist
for Section 4(f) De Minimis Checklist for Historical Properties

Control Section Job Number (CSJ): 2351-01-017

District/County: Collin County/Dallas District

Property ID: 04a

Property Name: 5283 North Custer Road

The following checklist was developed as a tool to assist in streamlining the Section 4(f) *De Minimis* process and to ensure that all necessary information is documented in the File of Record (ECOS).

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 12-16-14, and executed by FHWA and TxDOT.

Note: *This checklist is not all-inclusive and should be modified as appropriate with ENV approval.*

For each of the following steps and/or items, check the appropriate box in the columns on the left. Check one box **ONLY**.

I. Section 4(f) Defining Criteria for Historical Properties

Yes	No	
☒	☐	A. Is the property listed or eligible for the NRHP or NHL?

Comments: Resource 04a eligible, criterion C (architecture)

II. Establishing Section 4(f) Use of the Property

Yes	No	
☒	☐	A. Does the project require a use (i.e. new right of way, new easement(s), etc.)?

III. Establishing Section 4(f) *De Minimis* Eligibility

Yes	No	
☒	☐	A. Was it determined that the project will not adversely affect the features or attributes that make the property eligible for Section 4(f) protection?
☒	☐	B. Did the Official with Jurisdiction concur that the project will not adversely affect the features or attributes that make the property eligible for Section 4(f) protection?

IV. Documentation

The following **MUST** be attached to this checklist to ensure proper documentation of the Section 4(f) *De Minimis:*

1. Brief project description with explanation of how the property will be used.
2. A detailed map of the Section 4(f) property including:
    a. Current and proposed ROW
    b. Property boundaries
    c. Existting and planned facilities
3. Concurrence letter with the Official with Jurisdiction

V. TxDOT Approval Signatures

ENV Technical Expert Reviewer Certification

I reviewed this checklist and all attached documentation and confirm that the above property and proposed project meet the requirements of 23 CFR 774 for a Section 4(f) *De Minimis* finding.

ENV Personnel Name	Date: 9.08.15

TxDOT-ENV Section 4(f) *De Minimis* Final Approval

Based upon the above considerations, this Section 4(f) *De Minimis* satisfies the requirements of 23 CFR 774.

TxDOT-ENV, PD Director or designee	Date: 4/9/15

This technical report is produced for the purposes of meeting requirements under Section 106 of the National Historic Preservation Act, the Antiquities Code of Texas, and other cultural resource legislation related to environmental clearance as applicable.

Abstract

The City of McKinney, with funds from the Dallas District of the Texas Department of Transportation (TxDOT), proposes the expansion of approximately 2.45 miles of Farm to Market (FM) 2478 (also referred to as North Custer Road) in northwestern Collin County, Texas, from a two-lane undivided roadway to a six-lane divided roadway. The project extends along FM 2478 from US Highway 380 (US 380) to just north of FM 1461. The proposed project corridor is approximately three miles in length with a current right-of-way (ROW) width of 100 feet and a proposed additional 40 feet of new ROW. The project also involves the reconstruction of the existing bridges that span Wilson Creek and Rutherford Branch and the realignment of approximately 0.54 miles of roadway from Rhea Mills Circle to FM 1461. The survey determined that 15 historic-age resources exist within the area of potential effects (APE). One historic-age resource (04a) is recommended eligible for listing on the National Register of Historic Places (NRHP) under Criterion C. The potential for historic districts was considered, but none was identified.

and feel of a rural, domestic zone; therefore, it retains its overall integrity. The first addition is of historic age and sympathetic to the original materials and design. The second addition is such that it is not visible from the façade (east elevation), and thus, the dwelling still conveys the look of a Southern pyramidal roof cottage. Integrity of design, workmanship, and materials is maintained overall, for many character-defining features (roof, expansive wrap-around front porch, long one-over-one wood windows, double-entry doors on the façade, form, and simplicity of design and features) remain.

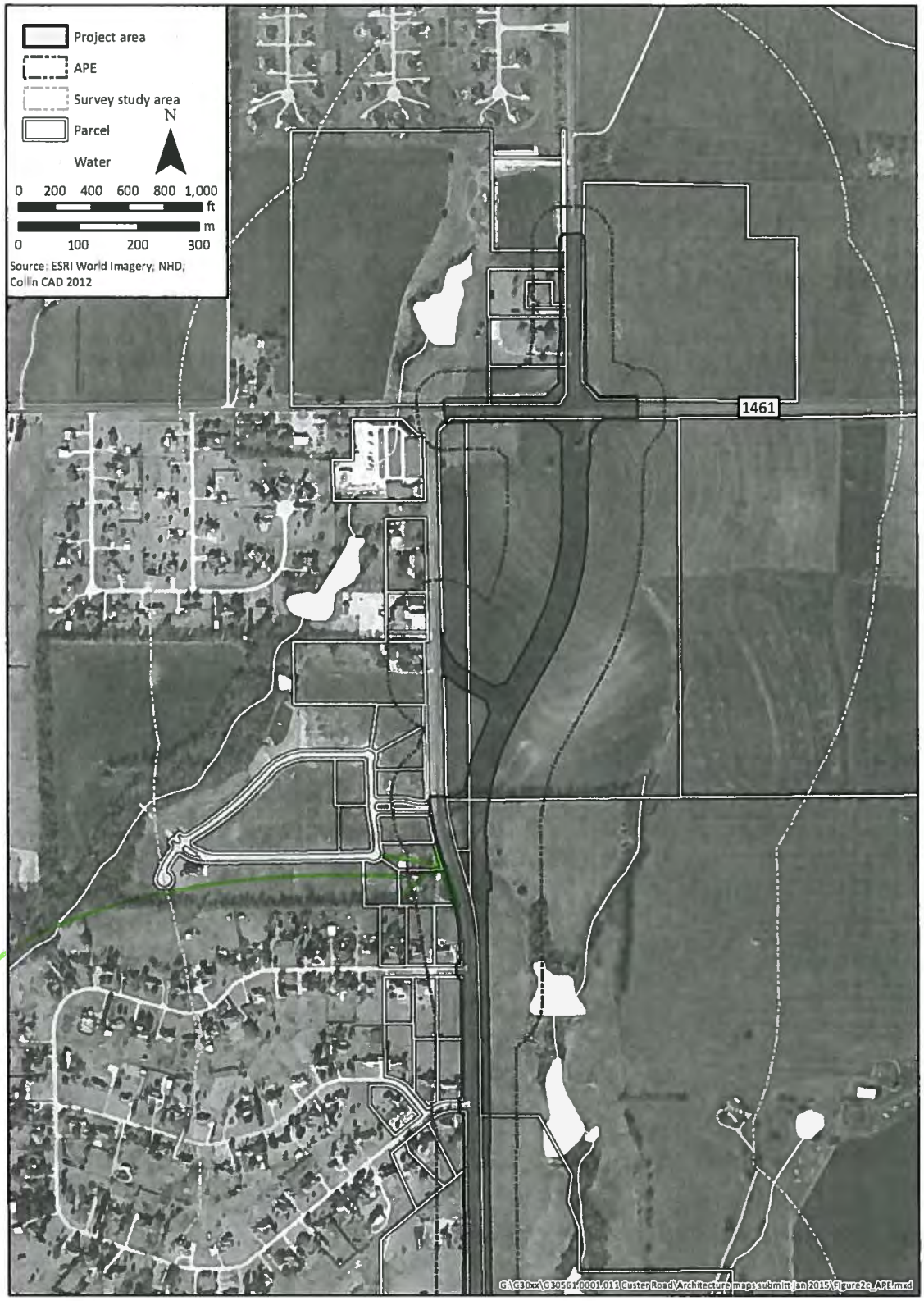
Potential direct effects upon historic properties (Resource 04a) through the widening of FM 2478 would occur only if the character-defining features of the property would be impacted through demolition of the historic building. The taking of the property would have a direct effect, but it would not be an adverse effect given that the eligibility of the property is based on design, workmanship, and materials, not location, setting, association, and feeling.

There is no potential for indirect effects from the widening of FM 2478 upon historic properties (Resource 04a), for the taking of the property has no effect on the ability of the property to convey its historic character or feeling as it relates to its intended historic surrounding. Integrity of design, workmanship, association, and materials are not indirectly impacted by the proposed widening of FM 2478.

Cumulative impacts to the area include past and future changes. Given that the property (Resource 04a) is eligible under Criterion C only, and that there are no adverse direct effects and no indirect effects, there would be no cumulative effects.

- **Further Work:** An intensive level survey is recommended for Resource 04a should TxDOT or THC require additional information for determining the significance of this resource under Criterion C. An intensive level survey would include deed/title research, permission to observe the building and photograph from a closer viewpoint, and additional informal interviews if informants are available. Pertinent data from other sources would be collected as they are discovered or become available.
- **Justification:** Additional and more in-depth information on Resource 04a would be necessary should TxDOT or THC believe it necessary for determining the eligibility of Resource 04a. Resource 04a appears to be a good example of a Southern pyramidal roof cottage and retains sufficient integrity for conveying its original design, materials, workmanship, feeling, and association. The exact age and original surrounding built environment, however, are unknown. Additional information may provide a more thorough perspective for assessing the significance of Resource 04a.

Figure 3. Location of historic-age resources and CCAD parcels within the project area.



Take

Figure 2c. Aerial imagery of the FM 2478 (CSJ 2351-01-017) project area, APE, and survey study area.


Facing North
2478
2478
04A
04C
04B
New ROW from parcel

Texas Department of Transportation
125 EAST 11TH STREET | AUSTIN, TEXAS 78701-2483 | (512) 463-8588 | WWW.TXDOT.GOV

March 6, 2015

SECTION 106 REVIEW: DETERMINATION OF NRHP ELIGIBILITY AND NO ADVERSE EFFECT
SECTION 4(f) REVIEW: NOTIFICATION OF INTENT TO RENDER *DE MINIMIS* SECTION 4(F) FINDING
Collin County/Dallas District
FM 2478
CSJ: 2351-01-017

Ms. Linda Henderson
History Programs
Texas Historical Commission
Austin, TX 78711

Dear Ms. Henderson:

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 12-16-14, and executed by FHWA and TxDOT. In accordance with 36 CFR 800 and our first amended Programmatic Agreement for Transportation Undertakings (PA-TU 2005), this letter initiates Section 106 consultation on the effect the proposed undertaking poses for Resource 04a (5283 North Custer Road) located within the project's area of potential effects (APE). As a consequence of these agreements, TxDOT's regulatory role for this project is that of the Federal action agency.

Project Description
The Texas Department of Transportation (TxDOT) proposes to proposes the expansion of approximately 2.45 miles of Farm to Market (FM) 2478 (also referred to as North Custer Road) in northwestern Collin County, Texas, from a two-lane undivided roadway to a six-lane divided roadway. For a detailed project description, please see the attached reconnaissance survey.

Determination of Eligibility
Background research was conducted to identify properties listed on the National Register of Historic Places (NRHP) and State Archeological Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL). There were no NRHP, SAL, RTHL or Official Texas Historical Markers (OTHM) located within the project APE. TxDOT historians determined the area of potential effects (APE) for this project is 150' from the proposed ROW.

The survey determined that 8 historic-age properties with 15 historic-age resources are within the area of potential effects (APE); including, 8 domestic, 4 agricultural, 2 funerary, and 1 transportation. One resource, 04a, was determined eligible for listing on the National Register of Historic Places (NRHP) under Criterion C for Architecture (pgs 19-20). The potential for historic districts was considered, but none was identified. TxDOT historians determined the remaining resources are not eligible under Criterion A, B or C.

Consultation with Other Parties
Contact with consulting parties was made during the course of the survey effort. Mr. Guy Giersch (City of McKinney) and Ms. Paula Ross (Collin County Historical Commission) were informed of the project; each suggested a few sources for finding information, but did not identify known resources of concern.

Determination of Effect

- Direct Effect: The project would require a sliver of ROW taking from Property 04. Resource 04a would be over 100' from the edge of the new ROW line. No character-defining features of the property are within the taking. The architecture won't be impacted in any way. Therefore, while there is direct effect it is not adverse.

- Indirect Effect: The historic resource is recommended eligible under Criterion C for architecture. Adverse Indirect Effect occurs only when the proximity of the proposed project impairs the features or attributes of a historic resource in a substantial way, where such features and attributes are considered important contributing elements to the integrity of the resource. Design, Materials, Workmanship, and Association are all aspects that can't be indirectly impacted. Indirect effects will not affect the significance of the architecture. Adverse indirect effect to the setting only occurs when there is a substantial change such that the property is no longer able to convey its historic character as it relates to its intended historic surrounding. Therefore, there is no indirect effect.

- Cumulative Effect: Given the direct effect is not adverse and there are no indirect effects, there is no foreseeable cumulative. Of note, the historic property was previously compromised by the introduction of modern elements and development in the project area.

Conclusion
In accordance with 36 CFR 800 and our 2005 Programmatic Agreement for Transportation Undertakings, I hereby request your signed concurrence with TxDOT's finding of **no adverse effect** to Resource 04a (5283 North Custer Road). We additionally notify you that SHPO is the designated official with jurisdiction over Section 4(f) resources protected under the provisions of 23 CFR 774 and that your comments on our Section 106 findings will be integrated into a Section 4(F) *de minimis* finding. Final determinations for the Section 4(f) process will be rendered by TxDOT pursuant to 23 U.S.C. 327 and the afore-mentioned MOU dated 12-16-14.

We look forward to further consultation with your staff and hope to maintain a partnership that will foster effective and responsible solutions for improving transportation, safety and mobility in the state of Texas. Thank you for your cooperation in this federal review process. If you have any questions or comments concerning these evaluations, please call me at (512) 416-2619.

Sincerely,

Summer Chandler
Environmental Specialist
Cultural Resource Management Section
Environmental Affairs Division

cc: Bruce Jensen, Cultural Resources Section Director, BJJ

CONCURRENCE WITH NON-ARCHEOLOGICAL SECTION 106 FINDINGS:
HISTORIC PROPERTY PRESENT: NO ADVERSE EFFECT

NAME: _____ DATE: 3/26/15
for Mark Wolfe, State Historic Preservation Officer

NO COMMENTS ON DETERMINATION OF DE MINIMIS IMPACT UNDER SECTION 4(F) REGULATIONS

NAME: _____ DATE: 3/26/15

for Mark Wolfe, State Historic Preservation Officer

Re: Response to Request for TCEQ Environmental Review

The Texas Commission on Environmental Quality (TCEQ) received a request from the Texas Department of Transportation (TxDOT) regarding the following project: TCEQ Coordination for Air Quality and Water Quality, Draft EA, FM 2478 from US 380 to FM 1461, Collin County, 2351-01-017

In accordance with the Memorandum of Understanding between TxDOT and TCEQ addressing environmental reviews, which is codified in Chapter 43, Subchapter I of the Texas Administrative Code (TAC) and 30 TAC § 7.119, TCEQ is responding to your request for review by providing the below comments:

This project is in an area of Texas classified by the United States Environmental Protection Agency as moderate nonattainment for the 2008 ozone National Ambient Air Quality Standard. Air Quality staff has reviewed the document in accordance with transportation and general conformity regulations codified in 40 Code of Federal Regulations Part 93 Subparts A and B. We concur with TxDOT's assessment.

The Office of Water does not anticipate significant long term environmental impacts from this project as long as construction and waste disposal activities associated with it are completed in accordance with applicable local, state, and federal environmental permits, statutes, and regulations. We recommend that the applicant take necessary steps to ensure that best management practices are used to control runoff from construction sites to prevent detrimental impact to surface and ground water.

TxDOT will still need to follow all other applicable laws related to this project, including applying for applicable permits.

If you have any questions, please feel free to contact the NEPA Coordinator at (512) 239-3500 or NEPA@tceq.texas.gov.

Chikaodi Agumadu
NEPA Coordinator
TCEQ, MC-119
NEPA@tceq.texas.gov
512-239-3500

Robert Hall

From: Karen Hardin <Karen.Hardin@tpwd.texas.gov>
Sent: Thursday, June 19, 2014 11:44 AM
To: Robert Hall
Cc: Sue Reilly
Subject: RE: [Dropbox Service] Robert Hall has dropped-off 4 files for you!

Categories: Done and good, Follow-up

Hi Robert,

TPWD Project 32966; TxDOT CSJ 2531-01-017

Thank you for submitting the above-referenced project for early coordination. TPWD appreciates TxDOT's commitment to implement Programmatic Agreement BMPs for the Western Burrowing Owl, Plains spotted skunk, Texas garter snake, and Timber rattlesnake as indicated in the Biological Evaluation Form submitted for this project. **Based on a review of the documentation, the avoidance and mitigation 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 and wildlife.

Please note that on the Tier I Site Assessment, your answer to 1.1 should be "Yes" because TxDOT indicates it will implement the PA BMPs for species. You can put the commitment to conduct the PA BMPs in the comments section for 1.1. The impact to 0.3 acres riparian vegetation is not applicable to MOU-Trigger 1 regarding species. It is applicable to Trigger 6.

Sincerely,

Karen Hardin
Habitat Assessment Biologist
Wildlife Habitat Assessment Program
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744
(903)322-5001

-----Original Message-----
From: WHAB_TxDOT
Sent: Monday, June 02, 2014 4:08 PM
To: Robert Hall; WHAB_TxDOT
Cc: Karen Hardin; Jim Dobbins; Dan Perge; Stan Hall; Tad Dellinger
Subject: RE: [Dropbox Service] Robert Hall has dropped-off 4 files for you!

Good afternoon,

The TPWD Wildlife Habitat Assessment Program has received your request for Early Coordination and has assigned it project ID #32966. The Habitat Assessment Biologist who will complete your project review is copied on this email.

Thank you,

Gloria Garza
Administrative Assistant
Texas Parks and Wildlife Dept
Wildlife Division - Habitat Assessment Program
4200 Smith School Rd
Austin, TX 78744

Office: (512) 389-4571
Fax: (512) 389-4599

Please note new email address gloria.garza@tpwd.texas.gov

Texas Parks and Wildlife is Celebrating 50 Years of Making Life Better Outside.
Join Us!: http://bit.ly/TPW50

-----Original Message-----
From: Robert Hall [mailto:Robert.Hall@txdot.gov]
Sent: Monday, June 02, 2014 1:23 PM
To: WHAB_TxDOT
Cc: Karen Hardin; Jim Dobbins; Dan Perge; Stan Hall; Tad Dellinger
Subject: FW: [Dropbox Service] Robert Hall has dropped-off 4 files for you!

All for your use. You can retrieve the drop-off by clicking the following link (or copying and pasting it into your web browser) within 21 days:

"https://ftp.dot.state.tx.us/dropbox/pickup.php?claimID=VyZFyzMV4E8VRt8q&claimPasscode=Jr6rFhB6raGp73D9&emailAddr=robert.hall%40txdot.gov"

Tad---I put these in C-5E, 1.2

-----Original Message-----
From: TxDOT Dropbox [mailto:dropbox@ftp.txdot.gov]
Sent: Monday, June 02, 2014 1:10 PM
To: Robert Hall
Subject: [Dropbox Service] Robert Hall has dropped-off 4 files for you!

This is an automated message sent to you by the Dropbox Service.

Robert Hall (robert.hall@txdot.gov) has dropped-off 4 files for you.

You can retrieve the drop-off by clicking the following link (or copying and pasting it into your web browser) within 21 days:

"https://ftp.dot.state.tx.us/dropbox/pickup.php?claimID=VyZFyzMV4E8VRt8q&claimPasscode=Jr6rFhB6raGp73D9&emailAddr=robert.hall%40txdot.gov"

Full information for the drop-off:

Claim ID: VyZFyzMV4E8VRt8q

Claim Passcode: Jr6rFhB6raGp73D9
Date of Drop-Off: 2014-06-02 13:09:45-0500

-- Sender --
Name: Robert Hall
Organization: TxDOT
Email Address: robert.hall@txdot.gov
IP Address:

-- Uploaded Files --

Name: 20140602 FM 2478 2351-01-017.pdf
Content Type: application/pdf
Size: 409.9 KB
Description:

Name: FM 2478_2351-01-017_Tier_1_Backup_data_draft_2014-03-19 Compressed.pdf
Content Type: application/pdf
Size: 2.7 MB
Description:

Name: RH 4-10-14 Photos.doc
Content Type: application/msword
Size: 60.3 MB
Description:

Name: 20140529 FM 2478 General Assessment Report mussels.pdf
Content Type: application/pdf
Size: 886.4 KB
Description:

Don't mess with Texas® means don't litter.

[Don't Mess With Texas]<http://dontmesswithtexas.org/>

Leslie Mirise

From: Sue Reilly <Sue.Reilly@tpwd.texas.gov>
Sent: Friday, May 19, 2017 4:43 PM
To: Leslie Mirise
Cc: Dan Perge; Jan Heady; Jim Dobbins
Subject: RE: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Leslie,

I understand that the regulations in place do provide protections; however, adding these simple EPICs may provide important protections to riparian and stream habitats. For example, driving in streams stirs up sediment that can disturb fish spawning and habitat, and may crush animals. If TxDOT can discourage contractors from these practices, state resources may be preserved. Please consider that this is a low-cost, possibly high-benefit practice. I would appreciate TxDOT applying this practice in future projects. If there is a reason that it is not practicable, please contact me and maybe we can figure out an alternative.

Thank you for submitting the following project for early coordination: FM 2478 widening in Collin County (CSJ 2351-01-017). TPWD appreciates TxDOT's commitment to implement the practices listed in the Biological Evaluation Form submitted on March 7, 2017. Based on a review of the documentation, the avoidance and mitigation efforts described, and provided that 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 plants, fish, and wildlife.
According to §2.204(g) of the 2013 TxDOT-TPWD MOU, TxDOT agreed to provide TXNDD reporting forms for observations of tracked SGCN (which includes federal- and state-listed species) occurrences within TxDOT project areas. Please keep this mind when completing project due diligence tasks. For TXNDD submission guidelines, please visit the following link: http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/submit.phtml

Thank you,

Sue Reilly
Transportation Assessment Liaison
TPWD Wildlife Division
512-389-8021

From: Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
Sent: Friday, May 19, 2017 11:45 AM
To: Sue Reilly <Sue.Reilly@tpwd.texas.gov>
Cc: Dan Perge <Dan.Perge@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>; Jim Dobbins <Jim.Dobbins@txdot.gov>
Subject: FW: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Sue,

The District believes other environmental regulations already in place provide protections for water quality and commit to the avoidance and minimization of impacts to natural resources. Therefore, additional EPIC commitments are unnecessary.

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

From: Sue Reilly [mailto:Sue.Reilly@tpwd.texas.gov]
Sent: Thursday, May 18, 2017 2:43 PM
To: Leslie Mirise
Cc: Jim Dobbins; Dan Perge; Jan Heady
Subject: RE: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Leslie,

So Dallas District will not include language in the EPIC requesting that contractors place PSLs away from riparian areas and avoid driving through streams?

Thanks,
Sue

From: Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
Sent: Wednesday, May 17, 2017 3:29 PM
To: Sue Reilly
Cc: Jim Dobbins; Dan Perge; Jan Heady
Subject: RE: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Sue,

Thank you for the recommendations. Per language included under EO 13112 in the Biological Resources Evaluation Form, soil disturbance within the ROW would be minimized in order to minimize invasive species establishment. This would include riparian areas. Impacts to riparian areas would be minimized to the extent feasible. The contractor would be obligated to follow requirements per the project's NWP, 401 certification, and NPDES General Permit for fill in waters of the US, potential impacts to water quality, and/or stormwater discharges. The placement of project specific locations (PSLs), which could include staging areas, stockpiles, etc., would be the contractor's decision, and it would be the contractor's responsibility to attain all required permitting, per the contract.
Disturbed areas would be revegetated with plant species included in TxDOT seed mix specifications, which include native species.

Thanks again and please let me know if you need any additional information.

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: Sue Reilly [mailto:Sue.Reilly@tpwd.texas.gov]
Sent: Friday, May 12, 2017 4:06 PM
To: Leslie Mirise
Cc: Jim Dobbins; Dan Perge; Jan Heady
Subject: RE: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Leslie,
My request is that TxDOT minimize impacts to riparian habitat. The riparian vegetation associated with the rivers and streams acts as a natural buffer and should remain undisturbed to the extent feasible to help protect water quality and preserve wildlife cover, food sources, and travel corridors. Contractors should be advised to locate stock piles, staging areas, and other project related sites in previously disturbed areas outside of the riparian corridor (at least 100 feet from streams) whenever possible. Disturbed areas should be revegetated with site-specific native plant species. Contractors should not drive through streams.

Thank you,

Sue Reilly
Transportation Assessment Liaison
TPWD Wildlife Division
512-389-8021

From: Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
Sent: Wednesday, April 26, 2017 2:05 PM
To: Sue Reilly
Cc: Jim Dobbins; Dan Perge; Jan Heady
Subject: RE: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Hi Sue,

Just checking in. Do you need any additional information about the project or any specific locations?

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

From: Leslie Mirise
Sent: Friday, March 31, 2017 12:07 PM
To: 'Sue Reilly'
Cc: Jim Dobbins; Dan Perge; Jan Heady
Subject: RE: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Hi Sue,

The impacts at Wilson Creek (Crossing 3 in the EA) would include a new bridge and armoring of the banks with riprap above the OHWM. Vegetation impacts were calculated for right-of-way (ROW) line to ROW line. The newly finalized EA includes a graphic that will help you see the impacts. Please see Figure 5, sheet 4 of 10, which I've included here as an attachment.

The EA, which was just finalized on 3-29-17, is available in ECOS in the project's CSJ in the following section/filename: Documents/Project/Draft EA FM 2478 FINAL APPROVED.pdf. The file is quite large, so if you can't find it in ECOS, I'd be happy to dropbox it to you. **Section G. Water Resources** (starting on p. 17) best describes impacts to Waters of the U.S. Figures, photos, and stream data forms are also included in the EA.

Both Rutherford Branch and Wilson Creek are perennial streams and could contain suitable habitat for freshwater mussels. Although a freshwater mussel survey was performed at both locations in May 2014, and no state-listed or SGCN species were observed, freshwater mussel surveys would be conducted again approximately six-months prior to the start of construction.

Please let me know if you need any additional information.

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: Sue Reilly [mailto:Sue.Reilly@tpwd.texas.gov]
Sent: Thursday, March 30, 2017 10:03 PM
To: Leslie Mirise; Jim Dobbins; Dan Perge; Jan Heady
Subject: RE: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Leslie,

Can you please tell me more about the impacts to the waterways, particularly Wilson Creek?

Thank you,

Sue

From: WHAB_TxDOT
Sent: Tuesday, March 07, 2017 2:44 PM
To: Leslie Mirise; Jim Dobbins; Dan Perge; Jan Heady
Cc: Sue Reilly
Subject: RE: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

The TPWD Wildlife Habitat Assessment Program has received your request and has assigned it project ID # 37706. 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

From: Leslie Mirise [mailto:Leslie.Mirise@txdot.gov]
Sent: Tuesday, March 07, 2017 12:51 PM
To: WHAB_TxDOT <WHAB_TxDOT@tpwd.texas.gov>
Cc: Jim Dobbins <Jim.Dobbins@txdot.gov>; Dan Perge <Dan.Perge@txdot.gov>; Jan Heady <Jan.Heady@txdot.gov>
Subject: CSJ: 2351-01-017, etc FM 2478 Widening (Collin County) - Request for Early Coordination

Hello,

TxDOT requests early coordination for the FM 2478 widening project in Collin County, Texas. I have attached the following:

1. The Biological Evaluation Form;
2. Tier 1 Site Assessment Form, including the project description and BMPs to be implemented;
3. Supporting Documents, including but not limited to, project location map, species lists from TPWD and USFWS/IPaC, EMST documentation, species impact table, and site photos; and

4. The EMST and Observed Vegetation Excel spreadsheet.

These documents, along with other project-related information, are also available in ECOS under the CSJ: 2351-03-017. Please be aware that the project was previously coordinated back in summer 2014. A detailed account of changes from that coordination (such as the project footprint changes and updated species impacts) are described in the Tier 1 Site Assessment Form. The previous coordination materials are available in ECOS under the project CSJ.

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

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

Robert Hall

From: Peter Sprouse <peter@zaraenvironmental.com>
Sent: Wednesday, May 28, 2014 3:46 PM
To: Robert Hall
Cc: Jim Dobbins; Denise Lunski; chris@civilassociates.com; Jean Krejca; Brian Cowan; Stirling Robertson; Clover Clamons
Subject: FM 2478 (csj 2351-01-017) general Assessment Report
Attachments: General Assessment Report_FM2478.pdf; General Assessment Report_FM2478.docx

Categories: Follow-up

Robert,

Attached is our general assessment report for FM 2478, in both Word and PDF formats.

regards,
Peter Sprouse

Vice President
Zara Environmental LLC

FM 2478, Collin County, Texas, Onsite General Assessment Report

Date: *05/05/2014*	**County:** *Collin*
CSJ/District: *0918-47-062/Dallas*	**USGS Quad(s):** *McKinney West*
Roadway: *Farm to Market Road 2478*	**Dates of Onsite Survey:** *6 May 2014*
Waterbody: *Wilson Creek and Rutherford Branch*	**Report Author:** *David McBee and Brian Cowan*

Project Setting

The survey consisted of two separate sites along Farm to Market Road 2478. The southernmost site is a crossing of Rutherford Branch and the northernmost is a crossing of Wilson Creek. The area surrounding both survey sites is primarily cropland, with some suburban development (Figure 1).

Species

The mussels that potentially could occur at the project site are shown in Table 1. The state listed species are Fawnsfoot (*Truncilla donaciformis*), Little Spectaclecase (*Villosa lienosa*), Louisiana Pigtoe (*Pleurobema riddellii*), Texas Heelsplitter (*Potamilus amphichaenus*), and Wabash Pigtoe (*Fusconaia flava*). Fawnsfoot live in small and large rivers, especially on sand, mud, rocky mud, and sand and gravel, also silt and cobble bottoms in still to swiftly flowing waters; it is known from the Trinity River basin. Little Spectaclecase lives in creeks, rivers, and reservoirs, sandy substrates in slight to moderate current, usually along the banks in slower currents; it is an east Texas species. Louisiana Pigtoe live in streams and moderate-size rivers, usually in flowing water on substrates of mud, sand, and gravel, and is not generally known from impoundments. Texas Heelsplitter occur in quiet waters in mud or sand, and also in reservoirs. Wabash Pigtoe occurs in creeks to large rivers on mud, sand, and gravel from all habitats except deep shifting sands. It is found in moderate to swift current velocities in east Texas river basins; elsewhere it occurs in reservoirs and lakes with no flow. Potentially, specimens listed in the literature as Wabash Pigtoe are actually Texas Pigtoe; therefore, a taxonomist should verify all Pigtoe identifications.

Methods and Materials

The list of potential mussel species was developed using Texas Parks and Wildlife Department (TPWD) Annotated County Lists of Rare Species, Howells et al., 1996, and the University of Texas at Tyler invertebrate collection data. A TPWD permitted Malacologist (Dr. Neil Ford) prepared the mussel species list.

The site was surveyed by walking along the creek bed and searching for mussels in the creek bed as well as the dry bank, utilizing both visual and tactile searches. A TPWD permitted Malacologist (Brian Cowan) performed the field work for both survey sites.

Results

Wilson Creek

At the time of the survey, the water depth within the survey area ranged from less than one inch to approximately 4 inches (Figure 2), with very little observable flow. The area immediately under the existing bridge consists of a widened stream channel with rock gabions. The surveyor spent 30 person minutes at the Wilson Creek survey site searching approximately 100 feet upstream and 150 feet downstream. The surveyor was able to visually survey nearly 100% of the survey area. Tactile searches were performed both upstream and downstream of the existing bridge where sediment was present.

Fauna encountered

Visual and tactile searches resulted in no unionid species. Various terrestrial and avian fauna were observed, with abundant unknown fish species present.

Substrate

Substrate throughout the survey area consisted of silt banks with bedrock throughout the stream channel. A single gravel riffle with cobbles present was observed. The gravel riffle was approximately ten feet in length.

Rutherford Branch

At the time of the survey, the water depth within the survey area ranged from less than less than one inch to greater than four feet (Figure 3), with very little observable flow. The surveyor spent 50 person minutes at the Rutherford Branch site searching 150 feet downstream at the Rutherford Branch site, but was unable to survey the upstream area due to water depth, debris and a private property fence across the water. The areas under and immediately adjacent to the existing bridge are culverted, and a significant amount of debris is present (Figure 3). The area immediately upstream of the bridge was too deep at the time of the survey to perform visual or tactile surveys (Figure 4).

Fauna encountered

Visual and tactile searches resulted in four live and two dead Pondmussels (*Ligumia subrostrata*) (Figure 5). Various terrestrial and aquatic fauna were observed, including raccoons, frogs, and water beetles.

Substrate

The substrate under the bridge was concrete. The downstream substrate was a mixture of silt, cobbles and gravel, with organic debris throughout. The upstream substrate is unknown due to water depths greater than what the surveyor could access.

Conclusions/Findings

_X_ Phase I Habitat Survey is not recommended. __ Phase I Habitat Survey is recommended.
_X_ Phase II Presence/Absence Survey is not recommended. __Phase II Presence/Absence Survey is recommended.(See below)

Wilson Creek

While the substrate at the Wilson Creek site might be considered habitat for state listed unionids, the lack of water flow and shallow water depths, along with no observed unionids indicate that the site is not habitat for state listed mussel species. No further surveys are recommended at this time.

Rutherford Branch

Aside from conditions that made upstream survey efforts impossible, the hydrology of the site and location of the impact area relative to the upstream pool makes it unlikely that construction activity will impact potential habitat upstream of the culvert so long as stream hydrology is not greatly altered by construction. Flow through the culvert is laminar and there are no large eddies that could move sediments upstream a great distance. At the time of the survey, during low flow conditions, there was an approximately one foot vertical separation between the bottom of the culvert and the top of the downstream pool, making it impossible for sediments downstream of the culvert to travel upstream under the observed flow conditions. Since the stream was observed during low flow conditions, stream

hydrology may be different under high flow conditions. It is possible that sediment may be transported upstream during high flow conditions due to eddying caused by the backup of water downstream of the culvert.

No further surveys are recommended at this time.

Certifications

By my signature below, I affirm that this report and its supporting documentation are an accurate description of the work performed, the observations made, and the results obtained.

Brian Cowan	Brian Cowan	5 May 2014
Author's Name	Signature	Date

ZARA
ENVIRONMENTAL LLC

Table 1. Unionids in Collin County, Texas.

Scientific Name	Species	Comment	Denton county
Amblema plicata	Threeridge	Riverine species	Yes
Anodonta imbecillis	Paper Pondshell	Riverine species although can adapt to lentic condition	Yes
Anodonta suborbiculata	Flat Floater	Expanding westward adapted to lakes	No
Arcidens confragosus	Rock Pocketbook	Riverine species in gravel and cobble areas	Yes
*Fusconaia askewi**	Texas Pigtoe	Riverine species in gravel and cobble areas	No, but found nearby
*Fusonaia flava**	Wabash Pigtoe	It may be only Texas Pigtoe, needs genetic verification	Yes, but probably *F. askewi*
Lampsilis hydiana	Louisiana Fatmucket	Riverine species but in lower flow areas	Yes
*Lampsilis satura**	Sandbank Pocketbook	Riverine species	No, but potentially present
Lampsilis teres	Yellow Sandshell	Riverine species adapted to flooding	Yes
Lasmagona complanata	White Heelsplitter	Riverine species	Yes, probably extirpated
Leptodea fragilis	Fragile Papershell	Riverine species	Yes
Ligumia subrostrata	Pondmussel	Lentic species	Yes
Megalonaias nervosa	Washboard	Riverine species	No, but likely present
Obliquaria reflexa	Threehorn Wartyback	Riverine species in gravel and cobble areas	Yes
*Pleurobema riddelli**	Louisiana Pigtoe	Riverine species	Yes
*Potamilus amphichaenus**	Texas Heelsplitter	Could hybridize with Pink papershell	Yes
Potamilus ohiensis	Pink Papershell	Riverine species although can adapt to lentic condition	Yes
Potamilus purpuratus	Bleufer	Riverine species	Yes
Pygonodon grandis	Giant Floater	Lentic species	Yes
Quadrula apiculata	Southern Mapleleaf	Riverine species although can adapt to lentic condition	Yes
Quadrula mortoni	Western Pimpleback	Riverine species	Yes
Quadrula verrucosa	Pistolgrip	Riverine species	Yes
Toxolasma parva	Lilliput	Lentic and lotic species	Yes
Toxolasma texasensis	Texas Lilliput	Riverine species although can adapt to lentic condition	Yes
*Truncilla donaciformis***	Fawnsfoot	large river species	No, but potentially present
Truncilla truncata	Deertoe	Riverine species	Yes
Uniomerus declivis	Tapered Pondhorn	Lentic species	No, but potentially present
Uniomerus tetralasmus	Pondhorn	Lentic species	Yes
*Villosa lienosa***	Little Spectaclecase	Riverine species but in lower flow areas	No, but potentially present

** Threatened*

*** Species of Concern*

Sources (Howells, et al., 1996)

Figure 1. Aerial photo showing both survey sites.


Figure 2. Photo showing water depth at Wilson Creek under the FM 2478 bridge.

Figure 3. Photo showing water depth and culvert downstream of the FM 2478 bridge over Rutherford Branch.

Figure 4. Photo area upstream of the FM 2478 bridge over Rutherford Branch.

Figure 5. Photo showing live and dead Pondmussels (*Ligumia subrostrata*) downstream of the FM 2478 bridge over Rutherford Branch.

USDA

Natural Resources
Conservation Service

State Office

101 S. Main Street
Temple, TX 76501
Voice 254.742.9800
Fax 254.742.9819

May 13th, 2016

Meghan D Karadimos
9330 LBJ Freeway
Suite 1150
Dallas Texas, 75243

Attention: Meghan D Karadimos

Subject: FM2478_Collin County_#20160408
FHWA

We have reviewed the information provided in your correspondence dated April 8th, 2016 concerning the highway widening project in Collin County. This review is part of the National Environmental Policy Act (NEPA) evaluation for FHWA. We have evaluated the proposed site as required by the Farmland Protection Policy Act (FPPA).

The proposed project does contain soils classified as Important Farmland, and we have completed Parts I thru VII of the Farmland Conversion Impact Rating form (AD-1006). The combined rating of the site is **137**. The FPPA law states that sites with a rating less than 160 will need no further consideration.

We urge you to use accepted erosion control methods during construction.
If you have any questions, please contact me at (254)742-9857 or by email at alan.stahnke@tx.usda.gov

Sincerely,

ALAN STAHNKE

Digitally signed by ALAN STAHNKE
DN: c=US, o=U.S. Government, ou=Department of Agriculture, cn=ALAN STAHNKE, 0.9.2342.19200300.100.1.1=12001000351887
Date: 2016.05.13 13:00:08 -05'00'

Alan Stahnke
State Soil Scientist

Attachment

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 4/8/16	4. Sheet 1 of 1
1. Name of Project **FM 2478 from US 380 to north of FM 1461**	5. Federal Agency Involved **FHWA**	
2. Type of Project **widen existing roadway, realign at FM 1461**	6. County and State **Collin, Texas**	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 4/8/16	2. Person Completing Form **Alan Stahnke**
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐		4. Acres Irrigated **6,186** | Average Farm Size **138**
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: **312,806** % **55**	7. Amount of Farmland As Defined in FPPA Acres: **312,806** % **55**
8. Name Of Land Evaluation System Used **LESA**	9. Name of Local Site Assessment System **LESA**	10. Date Land Evaluation Returned by NRCS **5/13/16**

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	20.0			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	16.8			
C. Total Acres In Corridor	36.8			
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland	9.456			
B. Total Acres Statewide And Local Important Farmland	3.027			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	.006			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	45			
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*	72			
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))* — Maximum Points				
1. Area in Nonurban Use — 15	11			
2. Perimeter in Nonurban Use — 10	8			
3. Percent Of Corridor Being Farmed — 20	17			
4. Protection Provided By State And Local Government — 20	20			
5. Size of Present Farm Unit Compared To Average — 10	0			
6. Creation Of Nonfarmable Farmland — 25	0			
7. Availability Of Farm Support Services — 5	1			
8. On-Farm Investments — 20	8			
9. Effects Of Conversion On Farm Support Services — 25	0			
10. Compatibility With Existing Agricultural Use — 10	0			
TOTAL CORRIDOR ASSESSMENT POINTS — 160	65	0	0	0
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland (From Part V) — 100	72	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment) — 160	65	0	0	0
TOTAL POINTS *(Total of above 2 lines)* — 260	137	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

MEMO

March 11, 2015

To: 850 File, Various Road Projects, Various CSJs, Various Districts

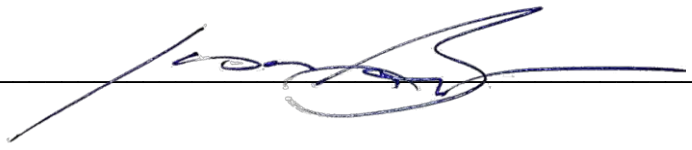
From: Scott Pletka, Ph.D.

Subject: Internal review under the First Amended Programmatic Agreement Among the Federal Highway Administration, the Texas Department of Transportation, the Texas State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings (PA-TU), and internal review under the Memorandum of Understanding (MOU) Between the Texas Historical Commission and the Texas Department of Transportation

---

Listed below are the projects reviewed internally by qualified TxDOT archeologists from 3/5/15 to 3/11/15. The projects will have no effect on archeological historic properties. As provided under the PA-TU, consultation with the Texas State Historic Preservation Officer is not necessary for these undertakings. As provided under the MOU, the proposed projects do not require individual coordination with the Texas Historical Commission.

CSJ	DISTRICT	ROADWAY	WORK PERFORMED
0920-38-254	Beaumont	TE - Port Neches Sidewalks	No Survey
0146-06-023	Childress	US 70	No Survey
2351-01-017	Dallas	FM 2478	Intensive Survey
1606-02-019	Fort Worth	FM 2123	No Survey
0905-06-086	Lubbock	Erskine Street	No Survey
0911-28-031	Lufkin	CR 3480	No Survey
0901-28-086	Paris	CR 444-1	No Survey
1441-01-012	Yoakum	FM 1457	No Survey

Signature  Date: 03 / 11 / 2015

For TxDOT

cc: ECOS Data Entry; PD; ENV_ARC: PA File *Table Template for Weekly List Memo.doc*

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.

TxDOT Walnut Grove Cemetery Investigation Supporting Documentation
Dallas District: Collin County: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017
Jon Budd TxDOT staff archeologist January 17, 2017

Project Description:
This investigation of the Walnut Grove Cemetery is associated with the larger FM 2478 Improvement Project beginning at US 380 and extending 3.0 miles to FM 1461. The existing two lane roadway would be expanded to a divided, six lane roadway with sidewalks. Portions of the existing roadway would be realigned on new location. All cross drainage structures would be widened to match the wider roadway. Approximately 36.8 acres of proposed new right of way and 0.6 acres of proposed new easements would be required. ***No new ROW*** is proposed in the vicinity of the Walnut Grove Cemetery. The project area is comprised of approximately 78.4 acres. All Section 106 and Antiquities Code of Texas consultation was completed for this project on March 11, 2015. This investigation addresses the Texas Health and Safety Code.

Questions regarding the potential of the proposed project to impact marked or unmarked graves associated with the Walnut Grove Cemetery have recently become apparent (please see the copy of the email chain provided below).

Scott [Ford],

Thanks for bringing this issue to my attention.

I was not aware of the additional research; I assume that ROW or someone working on behalf of ROW made this discovery. Based on the account in the EA, I agree that we need to do additional research, which will likely include field investigation. Regarding commitments, I recommend that we commit to completing additional investigation of the parcel identified on pg. 183, and that no construction occur in that area until all issues associated with Health and Safety Code compliance have been addressed. That commitment is pretty much what you've already got in the EA.

Right now, this issue can be treated strictly as a matter of Health and Safety Code compliance. Burials are rarely eligible under Sec. 106, and we don't have any confirmation of burials at this time. Consequently, I believe that the NEPA process can proceed, as long as this commitment is retained in the EA.

I'm going to assign Jon Budd to look into this further. He has a lot of experience handling cemetery issues, so I trust him to get this matter resolved.

-Scott

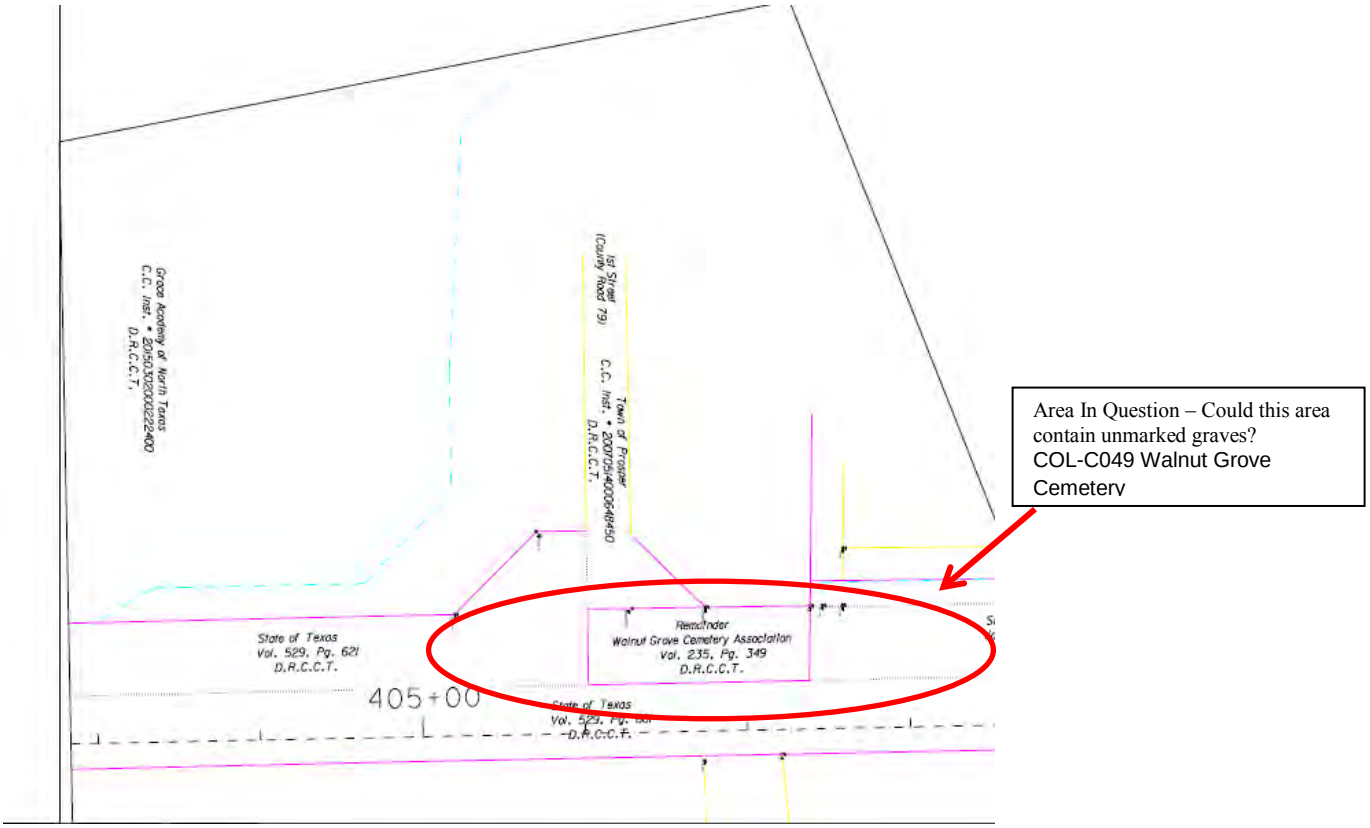
From: Scott Ford
Sent: Thursday, December 15, 2016 3:23 PM
To: Scott Pletka
Subject: FW: 2351-01-017 FM 2478 EA

Scott, I'm reviewing an EA and would like your confirmation that everything is clear for arch. I understand the original project was cleared by you on 3/11/15 and that on 3/15/16 you evaluated some design changes and determined the project is still clear. Below is a page from the EA with a paragraph highlighted that indicates additional research related to graves should be conducted. Page 183 of the attached PDF describes the parcel of subject. Are you aware of this additional research and what are your thoughts? What are recommendations for EPICs, if any? Does anything need to occur for arch/cemeteries prior to NEPA clearance? Thx.
Undertakings Area of Potential Effects (APE)
Project Vicinity Map: State of Texas Map

After archeology was cleared, TxDOT conducted a title search of properties adjacent to the proposed project. During the search, TxDOT discovered potential archeological implications. At the northwest corner of FM 2478 and 1st Street (CR 79), Walnut Grove C.P. Church was deeded property in 1887. In 1921, the Church sold a part of the property to the Walnut Grove Cemetery Association. In 1957, Walnut Grove C.P. Church deeded part of the Walnut Grove Cemetery Association's tract to TxDOT to build the existing FM 2478. In summary, Walnut Grove C.P. Church deeded land to TxDOT that they did not own since they had previously deeded that part to the Walnut Grove Cemetery Association. Additional research should be conducted to determine if graves are present. A map of this location is provided on the next page.

TxDOT Walnut Grove Cemetery Investigation Supporting Documentation
Dallas District: Collin County: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017
Jon Budd TxDOT staff archeologist January 17, 2017

FM 2478 Proposed Right of Way map and possible ENV ARCH implications



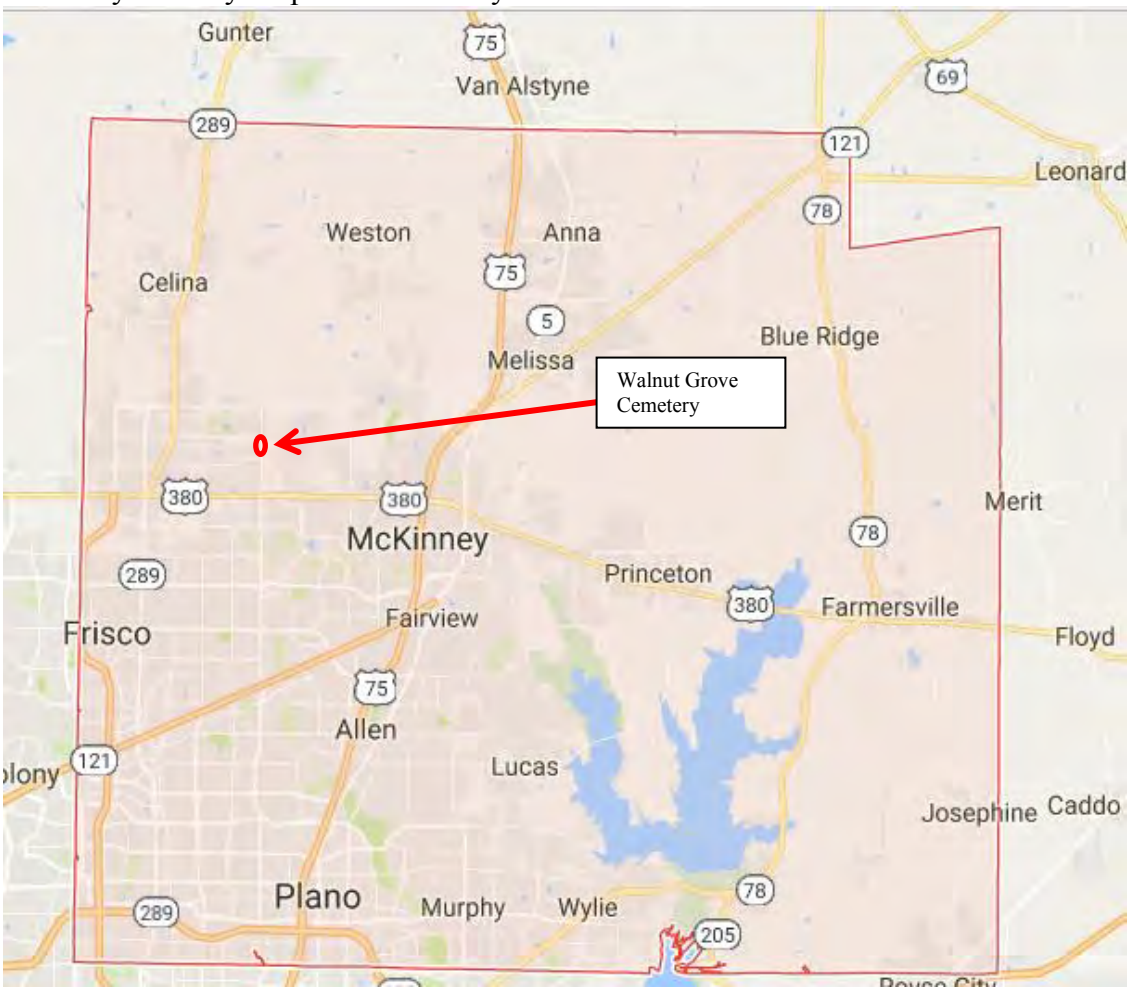
At the northwest corner of FM 2478 and 1st Street (CR 79), Walnut Grove C.P. Church was deeded property in 1887 and in 1921 the Church sold a part of the property to the Walnut Grove Cemetery Association. In 1957, Walnut Grove C.P. Church deeded part of the Walnut Grove Cemetery Association's tract to TxDOT to build the existing FM road. In summary, Walnut Grove C.P. Church deeded land to TxDOT that they did not own since they had previously deeded that part to the Walnut Grove Cemetery Association.

TxDOT Walnut Grove Cemetery Investigation Supporting Documentation
Dallas District: Collin County: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017
Jon Budd TxDOT staff archeologist January 17, 2017

Cemetery Vicinity: Collin County in the State of Texas

TxDOT Walnut Grove Cemetery Investigation Supporting Documentation
Dallas District: Collin County: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017
Jon Budd TxDOT staff archeologist January 17, 2017

Cemetery Vicinity Map: Collin County

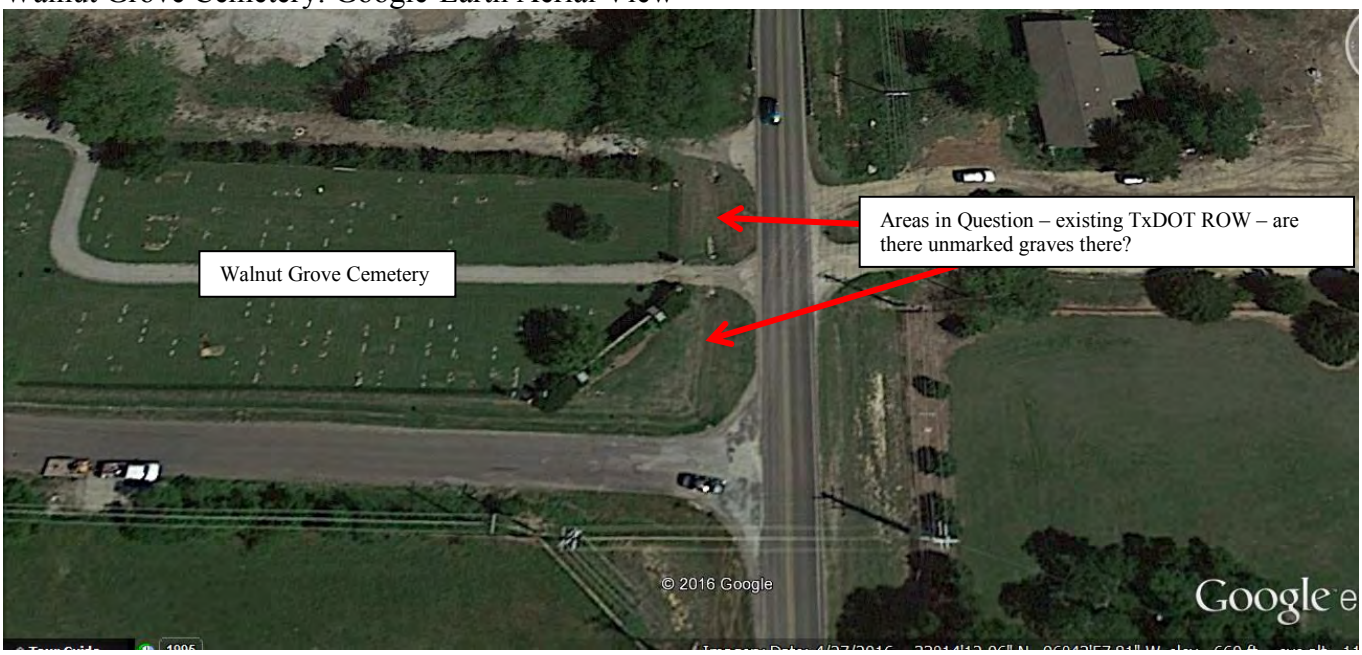


TxDOT Walnut Grove Cemetery Investigation Supporting Documentation
Dallas District: Collin County: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017
Jon Budd TxDOT staff archeologist January 17, 2017

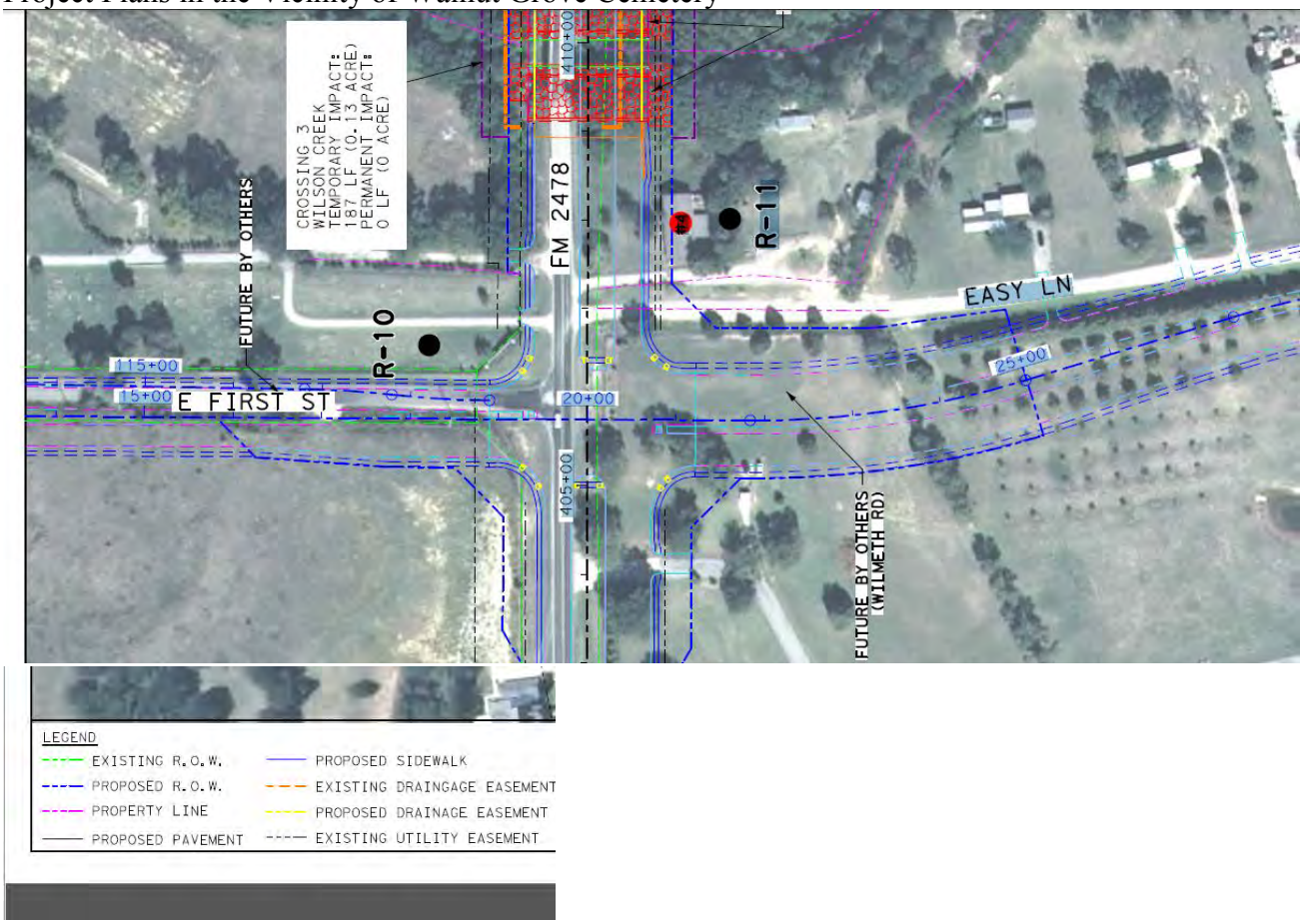
Cemetery Location Map: McKinney West (3396-213) USGS Topographic Quadrangle

TxDOT Walnut Grove Cemetery Investigation Supporting Documentation
Dallas District: Collin County: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017
Jon Budd TxDOT staff archeologist January 17, 2017

Walnut Grove Cemetery: Google-Earth Aerial View



Project Plans in the Vicinity of Walnut Grove Cemetery

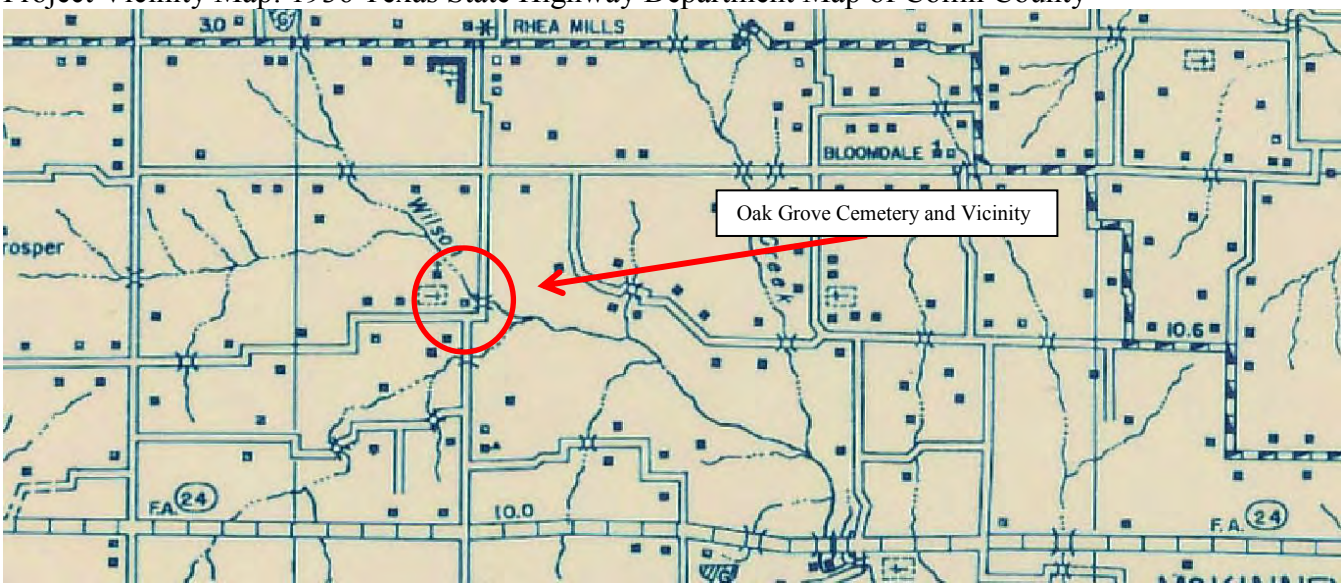


The undertaking's area of potential effects is limited to the existing FM 2478 right of way in the vicinity of the Walnut Grove Cemetery.

Walnut Grove Cemetery Google Earth Street View

Facing SW toward Walnut Grove Cemetery Entrance at FM 2478 and East 1st Street

Project Vicinity Map: 1936 Texas State Highway Department Map of Collin County



In 1936, the Oak Grove Cemetery was located approximately 300 feet west of the intersection of FM 2478 and 1st Street. In addition, a building was in place at the intersection. Therefore, minimal potential exists for the presence of any unmarked graves to be in the APE at this intersection.

Conclusions/Recommendations

Based upon the information provided above, it is TxDOT's opinion that minimal potential exists for this undertaking to impact any marked or unmarked graves associated with the Walnut Grove Cemetery. TxDOT recommends no further work in regard to the Walnut Grove Cemetery for this project. This is based upon the fact that no new right of way is required in the vicinity of the cemetery along with three lines of evidence that are outlined below.

The first line of evidence involves the above illustrated section of the 1936 Texas State Highway Department Map of Collin County. This map illustrates the original Walnut Grove Cemetery located more than 200 feet west of the FM 2478/1st Street intersection. In addition, this map also depicts a residence/structure/ building located on the northwest quad of the intersection. It is the northwest quad of this intersection containing this structure that was eventually deeded to TxDOT in order to straighten the FM 2478 roadway at this intersection. This map helps to confirm that there were no known graves located within 200 feet of the intersection in 1936.

The second line of evidence involves the results of the archeological reconnaissance survey of the APE conducted by Geomarine Environmental Consultants Inc., in 2014 under Texas Antiquities Permit Number 7074 (see the Archeological Reconnaissance Survey of FM 2478 from US 380 to just north of FM 1461, Colling County, Texas Dallas District CSJ: 2351-01-017). They stated (pp. 33 – 35):

> "The Walnut Grove Cemetery is well maintained and expanded from an area well outside the project area. The portion of this cemetery adjacent to the proposed FM 2478 right-of-way consists of interments made since the mid-1980s that are separated from the proposed right-of-way (ROW) by a substantial fence and gate."

The third line of evidence involves a telephone interview conducted on December 22, 2016 by Jon Budd, TxDOT staff archeologist with Mr. Paul Baxter, Walnut Grove Cemetery Association Chairman (telephone: 214-592-6195). Mr. Baxter has been associated with the cemetery since 1963. He stated that the pre-1900 era graves are located 200 to 300 feet west of the intersection. He also stated that in his opinion, there are no graves located beyond the currently established boundaries of the cemetery and definitely not in the existing rights of way at the FM 2478/1st Street intersection.

Despite the confusion resulting from the deeding of cemetery land to TxDOT either by the Walnut Grove C.P. Church or the Walnut Grove Cemetery, the land deeded to TxDOT post 1936, likely does not contain any marked or unmarked graves. The proposed undertaking therefore would most likely not impact any marked or unmarked graves in the vicinity of the Walnut Grove Cemetery. TxDOT recommends no further work.

NCTCOG CMP
PROJECT IMPLEMENTATION FORM

Submitter Name: Denise Lunski, P.E.
Agency Name: Texas Department of Transportation
Agency Address: 4777 E. Highway 80, Mesquite, TX 75150
Email: denise.lunski@txdot.gov
Telephone Number: (214) 320-6154
Date: 9/16/2016

Please answer the following questions

Project Name FM 2478
Project Limits (From) US 380
Project Limts (To) North of FM 1461

2. Does this project add roadway capacity? (IF NOT, THIS FORM IS NOT REQUIRED)

YES

3. Are complementary Travel Demand Management (TDM) or Transportation System Management & Operations (TSM&O) projects within the corridor in the TIP?
If "yes," enter the project name(s), TIP Code(s) and/or CSJ number(s) in table below.
This information can be verified at the following link: Transportation Improvement Program Information System (TIPINS)
*For a list of TDM and TSM&O project types see: Appendix A - TDM and TSM&O Strategies

Project Name	US 380 from east of FM 2478 to east of Lake Forest Drive	**TIP Code**	54005	**CSJ#**	[Enter Here]
Project Name	CR 48, 81, 122 from FM 2478 to BUS 289	**TIP Code**	81262	**CSJ#**	[Enter Here]
Project Name	SH 289 from US 380 Interchange to north of FM 1641/BUS 289D	**TIP Code**	20202	**CSJ#**	[Enter Here]
Project Name	[Enter Here]	**TIP Code**	[Enter Here]	**CSJ#**	[Enter Here]

3b. Are there any other projects not included in the TIP that may compliment the project?
If "yes," enter the project name(s) and implementing agency in table below.

NO

Project Name	[Enter Here]	**Implementing Agency**	[Enter Here]
Project Name	[Enter Here]	**Implementing Agency**	[Enter Here]
Project Name	[Enter Here]	**Implementing Agency**	[Enter Here]
Project Name	[Enter Here]	**Implementing Agency**	[Enter Here]

4. Are the project limits within a corridor included in the current Metropolitan Transportation Plan?
This information can be verified in the Mobility Options found here: Appendix E of the MTP (pg. 53 - 97 / pg. 102 - 112)
If "yes," enter the MTP Reference #(s) in table below

YES

MTP Reference #	NRSA1-DAL-109
MTP Reference #	[Enter Here]
MTP Reference #	[Enter Here]
MTP Reference #	[Enter Here]

5. Are the project limits within a corridor included in the current CMP Corridor Analysis?
The complete inventory of corridor fact sheets can be found here: Appendix C - CMP Corridor Fact Sheet

NO

*If "yes," please proceed to question six.
*If "no," please evaluate corridor to determine if improvements are needed by completing the Fact Sheet Form in Step 2 in the tab below, before proceeding to question six.

6. Is the corridor identified as deficient in any category?

YES

*If "yes," please proceed to questions seven.
*If "no," please proceed to question 11.

7. Identify corridor deficiencies as specified in the current CMP Corridor Analysis or in the CMP Roadway Deficiency Form. (Check all that apply)

- [x] Alternative Roadway Infrastructure
- [x] Modal Options
- [ ] System Demand
- [x] System Reliability

8. Review Appendix A of the current CMP or other available resources to identify possible congestion mitigation strategies to correct the deficiency. (Check all that apply)
Appendix A - TDM and TSM&O Strategies

- [ ] Commuter Transportation Options
- [x] Sustainable Development Improvements
- [ ] Freight Management Activities
- [ ] System Management and Operations Improvements
- [ ] Incentive to Use Alternative Modes
- [ ] Transit System Efficiency Improvements
- [ ] In-Vehicle System Efficiency Improvements
- [ ] Traveler Information Services
- [ ] Roadway Incident and Emergency Management Options
- [ ] Work Zone/Construction Management Operations
- [x] Roadway Infrastructure Improvements

9. Specify deficiency-correcting congestion mitigation strategy that will be implemented as part of the project.

Addition of two travel lanes in each direction separated by a raised median. Outside lanes would be shared use for motorists and bicyclists.
Addition of dedicated left and right-turn lanes.
Intersection improvements with signals at major cross streets.
Addition of sidewalks for pedestrians.

10. If not implementing a congestion mitigation stragegy, please explain reason.

[ENTER HERE]

11. Submit completed form to NCTCOG - CMP Team at: CMP@nctcog.org or by clicking SUBMIT below

*Submit button will auto generate email to NCTCOG with completed excel document attached.
Please finalize step by sending the email.

SUBMIT

CMP CORRIDOR ANALYSIS - FACT SHEET

ROADWAY NAME	FM 2478 (Custer Road)

HIGHWAY	LIMITS	LENGTH	DIRECTION	MAINLANES
FM 2478	US 380 to north of FM 1461	3.174 miles	North-South	2

CORRIDOR FACTS (WITHIN 1 MILE)

Functional Class	Major Arterial
HOV Lanes	No
Parrallel Freeways (within 5 miles)	No
Shoulders	No
Frontage Roads	No
Bike Options	No
Available Transit	No
Park and Ride	No

Direct Connections	No
Truck Lane Restriction	No
Hazmat Route	No
Population	8,969
Number of Employees	2,251
FIM Training Participants	McKinney and Prosper
Crash Rate (Use Most Recent Year)	Below 75.19
Construction Status	Not constructed

PARRALLEL ARTERIALS (ENTIRE LIMITS)

None within 2 miles

PARRALLEL ARTERIALS (PARTIAL LIMITS)

One within 2 miles

CORRIDOR SCORE (Results from Step 3 - CMP Deficiency Form)

ROADWAY	MODAL OPTIONS	SYSTEM DEMAND	SYSTEM RELIABILITY	SCORE
13	0	18	13	44

CONCLUSIONS / RECOMMENDATIONS

Addition of two travel lanes in each direction separated by a raised median. Outside lanes would be shared use for motorists and bicyclists.
Addition of dedicated left and right-turn lanes.
Intersection improvements with signals at major cross streets.
Addition of sidewalks for pedestrians.

END PROJECT

FARM 1461 ROAD

Rhea Mills Cir

FARM 2478 ROAD

E Prosper Trl

Tributary to Wilson Creek

Wilson Creek

Bloomdale Rd

124

First St

Rutherford Branch

858

933

380

BEGIN PROJECT

Legend

Project Limits

Base Map Source: Aerial Surveys International, 2011

N
W E
S

0 2,500 Feet

AERIAL MAP

FM 2478 (CUSTER ROAD)
FROM US 380 TO NORTH OF FM 1461

CSJs 2351-01-017, 2351-02-014

Project Name:	FM 2478
Project Limits (From and To):	From US 380 to north of FM 1461
Agency Name:	Texas Department of Transportation
Submitter Name:	Denise Lunski, P.E.
Telephone:	(214) 320-6154
Email:	denise.lunski@txdot.gov
Date Submitted:	09/16/16

Alternative Roadway Corridor Deficiency

The factors that influence alternative roadway infrastructure include the presence of parallel freeways, frontage roads, parallel arterials, and direct connections or interchanges.

	Click Cell To Select Answer	Score
1. Does the roadway facility have a parallel freeway or toll road within five miles?	Yes	12
2. Does the roadway facility include a frontage road system?	No	0
3. Does the roadway facility have a parallel arterial within two miles?	Yes, partial limits	1
4. Does the roadway network include a direct connection or non-signalized interchange to another highway?	No	0
Total Points Received in Alternative Roadway Infrastructure Category		**13**

If total score is 14 or below, then improvements are needed in this category. Please see Appendix A of the current CMP to identify possible congestion mitigation strategies to correct the deficiency.

Modal Options Deficiency

The factors that influence modal options include the presence of transit options (bus and/or rail), park-and-ride facilities, HOV/Managed Lanes, and bicycle/pedestrian options.

	Click Cell To Select Answer	Score
1. Does the roadway facility have established transit service?	No	0
2. Is a park-and-ride facility located along the roadway corridor?	No	0
3. Are HOV or Managed lanes available along the roadway corridor?	No	0
4. Are bike trails or other bike options available along the roadway corridor?	No	0
Total Points Received in Modal Options Category		**0**

If total score is 14 or below, then improvements are needed in this category. Please see Appendix A of the current CMP to identify possible congestion mitigation strategies to correct the deficiency.

System Demand (Recurring) Deficiency

The factors that influence system demand include traffic volume, truck volume/percentage, number of employees along the roadway corridor block, and residential population.

	Click Cell To Select Answer	Score
1. Is the peak hour volume capacity above or below the current average Peak V/C of 0.692?	Above the Average	3
2. Is the truck volume percentage along the corridor above or below the current average of 9%?	Below or Equal to the Average	7
3. Is the total number of employees along the corridor above or below the current average of 82,549 (by TSZ)?	Below or Equal to the Average	5
4. Is the population along the corridor above or below the current average of 74,611 (by TSZ)?	Below or Equal to the Average	3
Total Points Received in System Demand Category		**18**

If total score is 14 or below, then improvements are needed in this category. Please see Appendix A of the current CMP to identify possible congestion mitigation strategies to correct the deficiency.

System Reliability (Non-Recurring) Deficiency

The factors that influence system reliability include facility crash rates, agencies that participate in incident management training, truck lane restrictions, roadway shoulders, and the presence of Intelligent Transportation Systems (ITS) technology.

	Click Cell To Select Answer	Score
1. Is the crash rate for the corridor below or above the current crash rate average of 75.19?*	Below or Equal to the Average	10
2. Does the roadway facility have paved shoulders?	No	0
3. Have emergency response agencies (police and fire) along the corridor participated in Freeway Incident Management (FIM) training?**	Yes, entire limits	3
4. Have truck lane restrictions been implemented along the corridor?	No	0
5. Is Intelligent Transportation Systems (ITS) technology being utilized along the corridor?	No	0
Total Points Received in System Reliability Category		**13**

If total score is 14 or below, then improvements are needed in this category. Please see Appendix A of the current CMP to identify possible congestion mitigation strategies to correct the deficiency.

Notes:
*Please use most recent crash year if available.
**FIM attendance information is maintained by NCTCOG Safety staff. Please call 817-695-9245 to request information.
CMP 2013 - Appendix A

APPENDIX C
Project Area Photographs

Photo 1: View looking south along FM 2478 from near Sta. 344+00. US 380, the southern project terminus, is at the intersection in the photo.

Photo 2: View looking north along FM 2478 near Sta. 344+00. A utility shed that would be displaced by the proposed project is to the right of the photo.

Project Area Photographs
FM 2478
From US 380
To North of FM 1451
Collin County, Texas
CSJs: 2351-01-017, 2351-02-014

Photo 3: View looking east from near Sta. 345+00 toward a utility shed that would be displaced by the proposed project. This structure is not marked as a displacement on the schematic, but should be.

Photo 4: View looking east from near Sta. 348+00 toward a structure that would be displaced by the proposed project.

Project Area Photographs
FM 2478
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Photo 5: View looking west from near Sta. 359+50 toward a utility structure that would be displaced by the proposed project.

Photo 6: View looking southwest from the west side of FM 2478 near Sta. 365+00. The light colored area of fill material in the photo is associated with a proposed residential subdivision.

Project Area Photographs
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Photo 7: View looking northwest from the west side of FM 2478 near Sta. 365+00 toward the former Environmental Recycle, Inc. facility located at the SWC of FM 2478 at CR 933. The facility is listed on the TCEQ's Closed and Abandoned Municipal Solid Waste Landfill Site list. There were no visible external signs of recycling activities or posted business signs identified during the site reconnaissance.

Photo 8: View looking southeast from CR 933 near FM 2478 Sta. 371+50 toward the former Environmental Recycle, Inc. facility located at the SWC of FM 2478 at CR 933. The facility is listed on the TCEQ's Closed and Abandoned Municipal Solid Waste Landfill Site list. There were no visible external signs of recycling activities or posted business signs identified during the site reconnaissance.

Project Area Photographs
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Photo 9: View looking northeast and downstream along Rutherford Branch toward the Horn Branch bridge from west of FM 2478 near Sta. 388+00. This bridge class culvert would be demolished and replaced as a part of the proposed project.

Photo 10: View looking southwest and upstream along Rutherford Branch toward the Horn Branch bridge from east of FM 2478 near Sta. 388+00. This bridge class culvert would be demolished and replaced as a part of the proposed project.

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Photo 11: View looking south along the east side of FM 2478 at Rutherford Branch near Sta. 389+50.

Photo 12: View looking east from FM 2478 near Sta. 408+00 toward a structure that would be displaced by the proposed project.

Project Area Photographs
FM 2478
From US 380
To North of FM 1451
Collin County, Texas
CSJs: 2351-01-017, 2351-02-014

Photo 13: View looking west-northwest and upstream along Wilson Creek from the west side of FM 2478 near Sta. 410+00. The blue pipe is off proposed ROW and consists of a 24-inch sanitary sewer line.

Photo 14: View looking west and upstream along Wilson Creek toward the Wilson Creek bridge from the east side of FM 2478 near Sta. 410+00. The bridge would be demolished and a new bridge constructed as a part of the proposed project.

Project Area Photographs
FM 2478
From US 380
To North of FM 1451
Collin County, Texas
CSJs: 2351-01-017, 2351-02-014

Photo 15: View looking east from the east side of FM 2478 near Sta. 412+00 toward a North Texas Municipal Water District sanitary sewer flow meter station. This station would be displaced by the proposed project.

Photo 16: View looking east-southeast from the east side of FM 2478 near Sta. 415+00 toward a structure that would be displaced by the proposed project.

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Photo 17: View looking south along FM 2478 from the E. Prosper Trail/ Bloomdale Road intersection near FM 2478 Sta. 445+50.

Photo 18: View looking north along FM 2478 from the E. Prosper Trail/ Bloomdale Road intersection near FM 2478 Sta. 445+50.

Project Area Photographs
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Photo 19: View looking south-southwest along the path of the FM 2478 proposed realignment from FM 2478 Sta. 498+00.

Photo 20: View looking south from the proposed FM 2478 at FM 1461 intersection near FM 2478 Sta. 500+00 toward a structure that would be displaced by the proposed project.

Project Area Photographs
FM 2478
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Photo 21: View looking north along FM 2478 from the proposed FM 2478 at FM 1461 intersection near FM 2478 Sta. 500+00.

Photo 22: Aerial view of the Southwestern Erosion control facility located on the west side of FM 2478 near Sta. 510+00. This facility is identified in the hazardous materials database as a PST facility. The proposed project would require a minor strip of ROW from this facility; however, the three ASTs would not be impacted.

Project Area Photographs
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Photo 23: View looking east-southeast toward a private water well on the east side of FM 2478 near Sta. 396+50. The water well would be displaced by the proposed project.

Photo 24: View looking into the water well on the east side of FM 2478 near Sta. 396+50. The total depth of the well from the top of the structure is approximately 13 feet and the water table in the well is approximately 7-1/2 feet below the top of the structure. The well is used for irrigation.

Project Area Photographs
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APPENDIX D
Stream Data Forms

Stream Data Form #: 1
Project Name: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017, 2351-02-014

Stream Data Form

Surveyor(s): CFH, MDB
Date of Field Work: 02-12-14, 05-06-2014, 07-13-16
USGS Stream Name: Rutherford Branch
County/State: Collin, TX
USGS Topo Quad Name: McKinney West, Texas
Stream Number [303(d) List]: N/A
Associated Wetland(s): None
GPS Data: 33.231548° N 96.732688° W

Stream Type: Perennial Characteristics: Natural
Bank Stability (e.g. highly eroding, sloughing banks, etc.): Slight erosion
Stream Flow Direction: Northeast
OHWM Width (ft): 8 to 15 OHWM Height (in): 6 to 36
Stream Bottom composition:

- ☒ Silts ☐ Cobbles ☐ Concrete ☐ Other:
- ☒ Sands ☐ Bedrock ☐ Muck
- ☐ Gravel ☐ Vegetation Type: Herbaceous Percent Cover 0

Aquatic Habitat: Indicate all types present within proposed ROW/project limits.

- ☐ Sand bar ☐ Sand/Gravel beach/bar ☐ Gravel riffles ☐ Aquatic vegetation
- ☒ Overhanging trees/shrubs ☐ Deep pool/ hole/ channel ☐ Other:

Stream has the following characteristics:

- ☒ Bed and banks
- ☒ OHWM (check all indicators that apply):
  - ☒ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☒ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☒ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community

Water Quality:

- ☐ Clear ☒ Slightly Turbid ☐ Turbid ☐ Very Turbid ☐ Oily film ☐ High organic content
- ☐ Other characteristics (pollutants, etc.)

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.
None observed.

Riparian Vegetation: List species observed.
Eastern red cedar (*Juniperus virginiana*), sugarberry (*Celtis laevigata*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), Shumard's oak (*Quercus shumardii*), pecan (*Carya illinoinensis*), black willow (*Salix nigra*), giant cane (*Arundinaria gigantea*), Virginia wildrye (*Elymus virginicus*).

T&E Species/Suitable Habitat: List T&E species observed or which species the habitat is suitable for.
Suitable habitat for the timber rattlesnake (*Crotalus horridus*).

Stream Data Form #:	1
Project Name:	FM 2478 from US 380 to North of FM 1461
CSJ:	2351-01-017, 2351-02-014

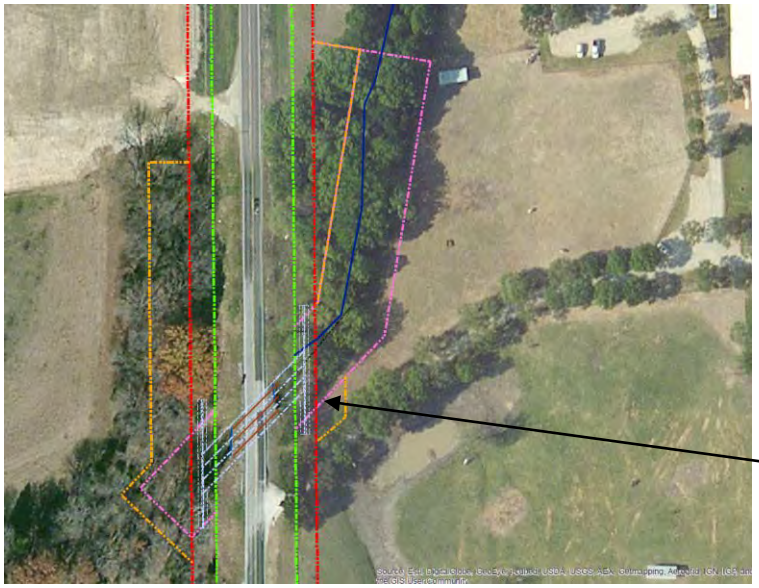
Stream Data Form (continued)

Please provide a plan and section view sketch of the stream channel.

Sketch should include:

- Directional arrow;
- Width of channel from top of bank to top of bank;
- Depth of channel,
- Approximate side slope; and,
- Width of stream from water edge to water edge.

Plan View



N

- Water flow – Northeasterly
- Depth of channel – 6 to 36 inches
- Width of stream from water edge to water edge – 8 to 15 feet
- Existing structure – Two 10x10-foot MBC
- Proposed structure – Three 10x10-foot MBC

Rutherford Branch

Sectional View

Upstream

Downstream

Stream Data Form #: 2
Project Name: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-01, 2351-02-014

Stream Data Form

Surveyor(s): CFH, MDB
Date of Field Work: 07-13-16
USGS Stream Name: N/A
County/State: Collin, TX
USGS Topo Quad Name: McKinney West, Texas
Stream Number [303(d) List]: N/A
Associated Wetland(s): None
GPS Data: 33.233811°N 96.732604°W

Stream Type: Intermittent Characteristics: Natural
Bank Stability (e.g. highly eroding, sloughing banks, etc.): Slightly eroded

Stream Flow Direction: East
OHWM Width (ft): 3 to 4
OHWM Height (in): 6 to 12

Stream Bottom composition:

- ☒ Silts ☐ Cobbles ☐ Concrete ☐ Other:
- ☒ Sands ☐ Bedrock ☐ Muck
- ☐ Gravel ☒ Vegetation Type: Herbaceous Percent Cover:50

Aquatic Habitat: Indicate all types present within proposed ROW/project limits.

- ☐ Sand bar ☐ Sand/Gravel beach/bar ☐ Gravel riffles ☐ Aquatic vegetation
- ☒ Overhanging trees/shrubs ☐ Deep pool/ hole/ channel ☐ Other:

Stream has the following characteristics:

- ☐ Bed and banks
- ☒ OHWM (check all indicators that apply):
  - ☒ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☒ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community

Water Quality:

- ☐ Clear ☒ Slightly Turbid ☐ Turbid ☐ Very Turbid ☐ Oily film ☐ High organic content
- ☐ Other characteristics (pollutants, etc.)

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.
None observed.

Riparian Vegetation: List species observed.
Eastern red cedar (*Juniperus virginiana*), sugarberry (*Celtis laevigata*), green ash (*Fraxinus pennsylvanica*), Johnsongrass (*Sorghum halepense*), Bermudagrass (*Cynodon dactylon*)

T&E Species/Suitable Habitat: List T&E species observed or which species the habitat is suitable for.
Suitable habitat for the timber rattlesnake (*Crotalus horridus*).

Stream Data Form #:	2
Project Name:	FM 2478 from US 380 to North of FM 1461
CSJ:	2351-01-017, 2351-02-014

Stream Data Form (continued)

Please provide a plan and section view sketch of the stream channel.

Sketch should include:

- Directional arrow;
- Width of channel from top of bank to top of bank;
- Depth of channel,
- Approximate side slope; and,
- Width of stream from water edge to water edge.

Plan View

N

- Water flow – Easterly
- Depth of channel – 6 to 12 inches
- Width of stream from water edge to water edge – 3 to 4 feet
- Existing structure – 48" RCP
- Proposed structure – 5' x 4x SBC

Tributary to Rutherford Branch

Sectional View

Upstream

Downstream

Stream Data Form #: 3
Project Name: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017, 2351-02-014

Stream Data Form

Surveyor(s): CFH, MDB
Date of Field Work: 02-12-14, 05-06-14, 07-13-16
USGS Stream Name: Wilson Creek
County/State: Collin, TX
USGS Topo Quad Name: McKinney West, Texas
Stream Number [303(d) List]: 0821C
Associated Wetland(s): None
GPS Data: 33.237616° N 96.732613°W

Stream Type: Perennial Characteristics: Natural
Bank Stability (e.g. highly eroding, sloughing banks, etc.): Slight erosion
Stream Flow Direction: East
OHWM Width (ft): 25 to 30
OHWM Height (in): 6 to 12
Stream Bottom composition:

- ☒ Silts ☐ Cobbles ☐ Concrete ☐ Other:
- ☒ Sands ☐ Bedrock ☐ Muck
- ☐ Gravel ☒ Vegetation Type: Herbaceous Percent Cover 0

Aquatic Habitat: Indicate all types present within proposed ROW/project limits.

- ☐ Sand bar ☐ Sand/Gravel beach/bar ☐ Gravel riffles ☐ Aquatic vegetation
- ☒ Overhanging trees/shrubs ☐ Deep pool/ hole/ channel ☐ Other:

Stream has the following characteristics:

- ☒ Bed and banks
- ☒ OHWM (check all indicators that apply):
  - ☒ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☒ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☒ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community

Water Quality:

- ☐ Clear ☒ Slightly Turbid ☐ Turbid ☐ Very Turbid ☐ Oily film ☐ High organic content
- ☐ Other characteristics (pollutants, etc.)

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.
Minnows.

Riparian Vegetation: List species observed.
Green ash (*Fraxinus pennsylvanica*), Shumard's oak (*Quercus shumardii*), American elm (*Ulmus americana*), Eastern red cedar (*Juniperus virginiana*), Virginia wildrye (*Elymus virginicus*), Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), coralberry (*Symphoricarpos orbiculatus*).

T&E Species/Suitable Habitat: List T&E species observed or which species the habitat is suitable for.
Suitable habitat for the timber rattlesnake (*Crotalus horridus*).

Stream Data Form #:	3
Project Name:	FM 2478 from US 380 to North of FM 1461
CSJ:	2351-01-017, 2351-02-014

Stream Data Form (continued)

Please provide a plan and section view sketch of the stream channel.

Sketch should include:

- Directional arrow;
- Width of channel from top of bank to top of bank;
- Depth of channel,
- Approximate side slope; and,
- Width of stream from water edge to water edge.

Plan View

N

- Water flow – Easterly
- Depth of channel – 6 to 12 inches
- Width of stream from water edge to water edge – 25 to 30 feet
- Existing structure – Bridge: Three 50-foot long spans x 25 feet wide
- Proposed structure – Bridge: Three 50-foot long spans x 135 feet wide

Wilson Creek

Sectional View

Downstream

Downstream

Stream Data Form #: 4
Project Name: FM 2478 from US 380 to North of FM 1461
CSJ: 2351-01-017, 2351-02-014

Stream Data Form

Surveyor(s): CFH, MDB
Date of Field Work: 02-12-14, 07-13-16
USGS Stream Name: N/A
County/State: Collin, TX
USGS Topo Quad Name: McKinney West, TX
Stream Number [303(d) List]: 0821C
Associated Wetland(s): None
GPS Data: 33.240741° N 96.732536°W

Stream Type: Intermittent Characteristics: Natural
Bank Stability (e.g. highly eroding, sloughing banks, etc.): Medium erosion
Stream Flow Direction: Southeast
OHWM Width (ft): 5 OHWM Height (in): 6
Stream Bottom composition:

- ☒ Silts ☐ Cobbles ☐ Concrete ☐ Other:
- ☒ Sands ☐ Bedrock ☐ Muck
- ☐ Gravel ☒ Vegetation Type: Herbaceous Percent Cover 0

Aquatic Habitat: Indicate all types present within proposed ROW/project limits.

- ☐ Sand bar ☐ Sand/Gravel beach/bar ☐ Gravel riffles ☐ Aquatic vegetation
- ☒ Overhanging trees/shrubs ☐ Deep pool/ hole/ channel ☐ Other:

Stream has the following characteristics:

- ☒ Bed and banks
- ☒ OHWM (check all indicators that apply):
  - ☒ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☒ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☒ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community

Water Quality:

- ☐ Clear ☒ Slightly Turbid ☐ Turbid ☐ Very Turbid ☐ Oily film ☐ High organic content
- ☐ Other characteristics (pollutants, etc.)

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.
None observed.

Riparian Vegetation: List species observed.
Sugarberry (*Celtis laevigata*), black willow (*Salix nigra*), Cedar elm (*Ulmus crassifolia*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), honeylocust (*Gleditsia triacanthos*), Virginia wildrye (*Elymus virginicus*).

T&E Species/Suitable Habitat: List T&E species observed or which species the habitat is suitable for.
Suitable habitat for the timber rattlesnake (*Crotalus horridus*).

Stream Data Form #:	4
Project Name:	FM 2478 from US 380 to North of FM 1461
CSJ:	2351-01-017, 2351-02-014

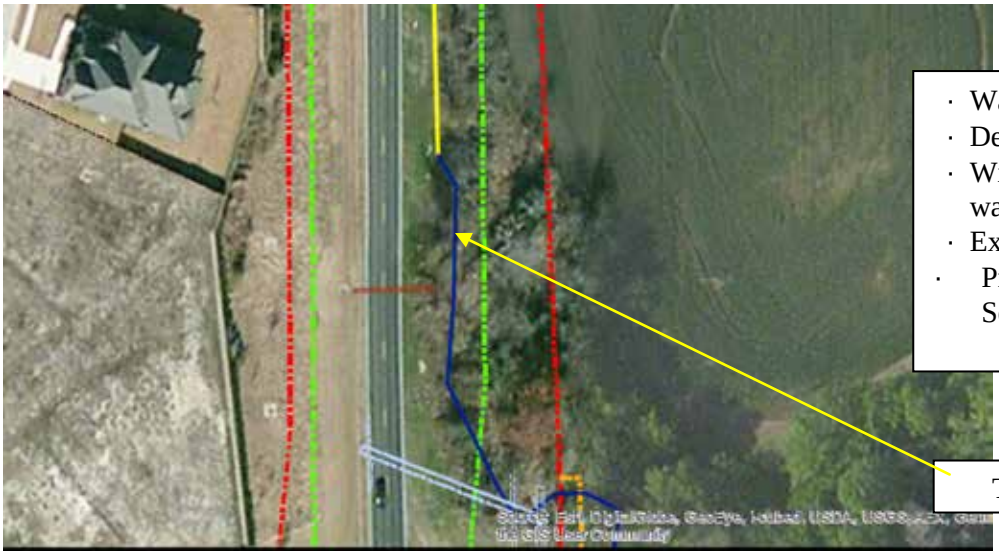
Stream Data Form (continued)

Please provide a plan and section view sketch of the stream channel.

Sketch should include:

- Directional arrow;
- Width of channel from top of bank to top of bank;
- Depth of channel,
- Approximate side slope; and,
- Width of stream from water edge to water edge.

Plan View



N

- Water flow – Southeasterly
- Depth of channel – 6 inches
- Width of stream from water edge to water edge – 5 feet
- Existing structure – None
- Proposed structure – 4'x4' Storm Sewer Outfall and fill

Tributary to Wilson Creek

Sectional View

Downstream

Downstream