



DRAFT

Indirect Impacts Technical Report

SH 71 at FM 1209

Bastrop County, Texas

CSJ: 0265-03-041

February 2019

Prepared for Texas Department of Transportation, Austin District

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.

Introduction

The Texas Department of Transportation (TxDOT) Austin District is proposing to add a grade separation and other roadway improvements to State Highway (SH) 71 from County Road (CR) 206 to SH 21 in Bastrop County, Texas. The proposed improvements would include constructing new frontage roads, a grade-separation over Farm-to-Market (FM) 1209, and shared-use paths. FM 1209 would be widened to include a 12-foot-wide left turn lane in each direction. East/west turnarounds would also be added on either side of the SH 71 and FM 1209 intersection, and on the west side of the SH 71 intersection with SH 21. See **Figures 1 and 2** in **Appendix A** for project locations maps.

Project Description

The existing SH 71 facility consists of two 12-foot-wide travel lanes in each direction with 10-foot-wide outside shoulders and 4-foot-wide inside shoulders. Directions of travel are separated by a grassy depressed median, approximately 68 feet in width. The existing right-of-way (ROW) is approximately 240 feet wide. The existing FM 1209 facility consists of one 12-foot-wide travel lane in each direction. The existing ROW along FM 1209 is approximately 80 feet wide. See **Figures 3.1 through 3.3** in **Appendix A** for existing and proposed typical sections.

The proposed project would add a grade separation at FM 1209 and construct new frontage roads along SH 71 while maintaining access to adjacent properties. Access to FM 1209 would be provided via ramps to the anticipated signalized intersection. If completed, the mainlanes of the SH 71 facility would consist of two 12-foot-wide lanes in each direction with 4-foot-wide inside shoulders and 10- to 22-foot-wide outside shoulders. Directions of travel would be separated by a grassy median that would usually be approximately 64 feet in width.

Each frontage road would consist of two 12-foot-wide travel lanes with 2-foot-wide inside and outside curb and gutter. Ramps would have a 14-foot-wide travel lane with a 4-foot-wide inside shoulder, a 6-foot-wide outside shoulder, and 2-foot-wide curb and gutter on both sides.

Median openings would be removed along SH 71 at the CR 206, River Oaks Drive, Blue Flame Road, and Stephen F. Austin Boulevard intersections, and farther east just past the Shell gas station near the eastern project limit. Deceleration and acceleration lanes would be added to the median break along SH 71 just west of the CR 206 intersection.

The proposed improvements to FM 1209 at SH 71 include the construction of one 12-foot-wide travel lane and a 12-foot-wide left turn lane in each direction. Twenty-four-foot-wide at-grade turnarounds for east/west traffic would also be added at the SH 71/FM 1209 intersection, and an east/west turnaround would be added on the west side of the SH 71/SH 21 intersection. A 10-foot-wide shared-use path would also be constructed on each side of

SH 71 and FM 1209. See **Figures 3.1** through **3.3** in **Appendix A** for existing and proposed typical sections.

The proposed project length is approximately 2.5 miles, and it is anticipated approximately 32.5 acres of additional ROW would be required. Displacements would include approximately seven residential displacements and 25 commercial displacements.

The project is situated in western Bastrop County, partially within the City of Bastrop extraterritorial jurisdiction (ETJ), the unincorporated community of Cedar Creek, and the census designated place (CDP) of Wyldwood. Land use directly adjacent to the project includes residential, commercial, and undeveloped uses.

Indirect Impacts Analysis

Indirect impacts are defined as those caused by an action and are later in time or farther removed in distance, but still reasonably foreseeable. Indirect impacts are not directly associated with the construction and operation of the roadway and are often caused by related development and induced growth. This, in turn, can result in a variety of related impacts such as changes in land use, population density or growth rate, economic vitality, and impacts on air, water, and other natural resources.

The National Cooperative Highway Research Program (NCHRP) Report 466 *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* identifies three broad categories of indirect effects:

1. Alteration of the behavior and functioning of the affected environment caused by project encroachment (physical, chemical, biological) on the environment;
2. Project-influenced development effects (i.e., the land use effect); and
3. Effects related to project-influenced development effects (i.e., effects of the change in land use on the human and natural environment).

The first category of effects is known as “encroachment alteration” and is more closely related to direct impacts than the second and third categories, or “induced growth” effects. Encroachment alteration impacts are those that alter the behavior and functioning of the physical environment. These impacts are related to project design features but are separated from the project by time and/or distance. The encroachment alteration impacts were considered and analyzed concurrently with the direct impacts, in accordance to current TxDOT policy. Induced growth effects are defined as those effects that are attributable to the induced growth resulting from transportation and accessibility improvement influences on future land use and development and will be the focus of the proceeding analysis.

Under the federal Council on Environmental Quality (CEQ) regulations, an indirect effects analysis must identify and eliminate issues which are not significant or which have been covered by prior environmental review, while determining which issues should be analyzed in-depth. The analysis follows the six-step process for identifying induced growth impacts outlined in TxDOT's *Indirect Impacts Analysis Guidance* (2016).

Step 1. Methodology

During project scoping, it was determined that the proposed project required an analysis of indirect effects due to the fact that the project would increase mobility in the area and because the area is experiencing population growth. Due to the mix of suburban and rural land use within the project area and the scope of proposed project activities, a combination of the planning judgment and cartographic methods were used to identify indirect impacts. The planning judgment method is a primarily qualitative method which uses input from local planning information and incorporates the cartographic method in an analysis of growth patterns and trends in the area. Because the project falls within areas with multiple planning agencies, a patchwork of extraterritorial jurisdiction (ETJ), land use, and zoning maps, and information from Bastrop County, the City of Bastrop, Travis County, and the City of Austin was compiled and assessed to determine current and future development patterns. Additionally, questionnaires were sent to local public officials and planners, requesting input on any known proposed land development within their jurisdiction, what impact the proposed project may have on development, any planned capital improvement projects, factors that may limit growth in the area, and how the project may impact traffic patterns, among other questions. The cartographic analysis included review of historic aerial imagery, as well as analysis of current development and potential constraints on future development. Assumptions associated with this combined methodology include the assumption that growth patterns will be consistent with historical trends, and that planning and zoning maps would guide growth in the future. Limitations of the methodology include potential data gaps and more qualitative data than quantitative data.

Step 2. Study Area and Timeframe

The study area for this indirect impacts analysis (referred to as the Area of Influence [AOI]) was developed and refined based on an evaluation of existing land use, input from planners, and in consideration of the components of the proposed project. A preliminary indirect impacts study area was defined using adjacent major traffic generators and census block groups, because these encompassed the local commute shed and the communities believed to be impacted or influenced by the grade separation over FM 1209 and the associated improved mobility along SH 71 if the proposed project was constructed. These boundaries included FM 969 (Webberville Road) to the north, FM 110 (Pearce Lane)/FM 535 to the south, SH 130 to the west, and FM 20 to the east (**Figure 4** in **Appendix A**). However, during

coordination with local planners from the Cities of Austin and Bastrop and Travis and Bastrop Counties, it was determined the proposed project would not be likely to influence areas that were not adjacent to the SH 71 at FM 1209 intersection. According to a City of Austin representative, the proposed project activities were considered far enough from the City of Austin and Travis County and their developments to not substantially influence growth to the western portion of the original study area (Kitten 2018). Because the proposed project is focused on improving mobility at the SH 71 and FM 1209 intersection and would not necessarily influence the “attractiveness” of the already growing SH 71 corridor for new development, it was determined the proposed project would not influence areas beyond parcels directly adjacent to the project corridor. Therefore, the AOI was refined to include only the parcels directly adjacent to the project limits. The project area and boundaries of this refined AOI are depicted in **Figure 5**, attached. The total acreage of the AOI is approximately 1,519 acres. The temporal boundary of the AOI has been defined as the horizon year of the Bastrop County Transportation Plan and the Travis County Land, Water, and Transportation Plan (2040) (Bastrop County 2018b, Travis County LWTP 2018).

The current type and density of development within the AOI reflects the suburban to rural nature of the project area, as well as the existing transportation corridor. The general character of the AOI is residential, and commercial, with areas of undeveloped land use scattered throughout the AOI. The areas farther from the SH 71 corridor consist more of residential properties, with commercial properties more concentrated along SH 71.

Step 3. Study Areas Subject to Induced Growth

The purpose of this step is to determine areas within the AOI that would be most likely to experience induced growth if the SH 71 at FM 1209 project was constructed. Utilizing cartographic techniques and GIS layers gathered for land use, floodplains, parks, schools, churches, and other features of the area, constraints on development were identified within the AOI and categorized as areas that are less likely to be developed.

The proposed project AOI consists of approximately 1,125 acres of undeveloped land, and approximately 394 acres of developed land. The developed portions are more concentrated directly adjacent to the SH 71 corridor but are also dispersed throughout the AOI. The developed portions consist of residential, commercial, public, industrial, and utility land uses. Concentrations of undeveloped portions of the AOI are scattered throughout the AOI and are generally set-back from the SH 71 corridor.

Local planners with the Cities of Austin, Bastrop, and Bastrop County provided input on where planned development will occur and areas where future development is reasonably foreseeable (Bills 2018; Cleary 2018; Kitten 2018; Meuth 2018). Approximately 1,076 acres of land within the AOI are undeveloped but platted for future development (i.e. where

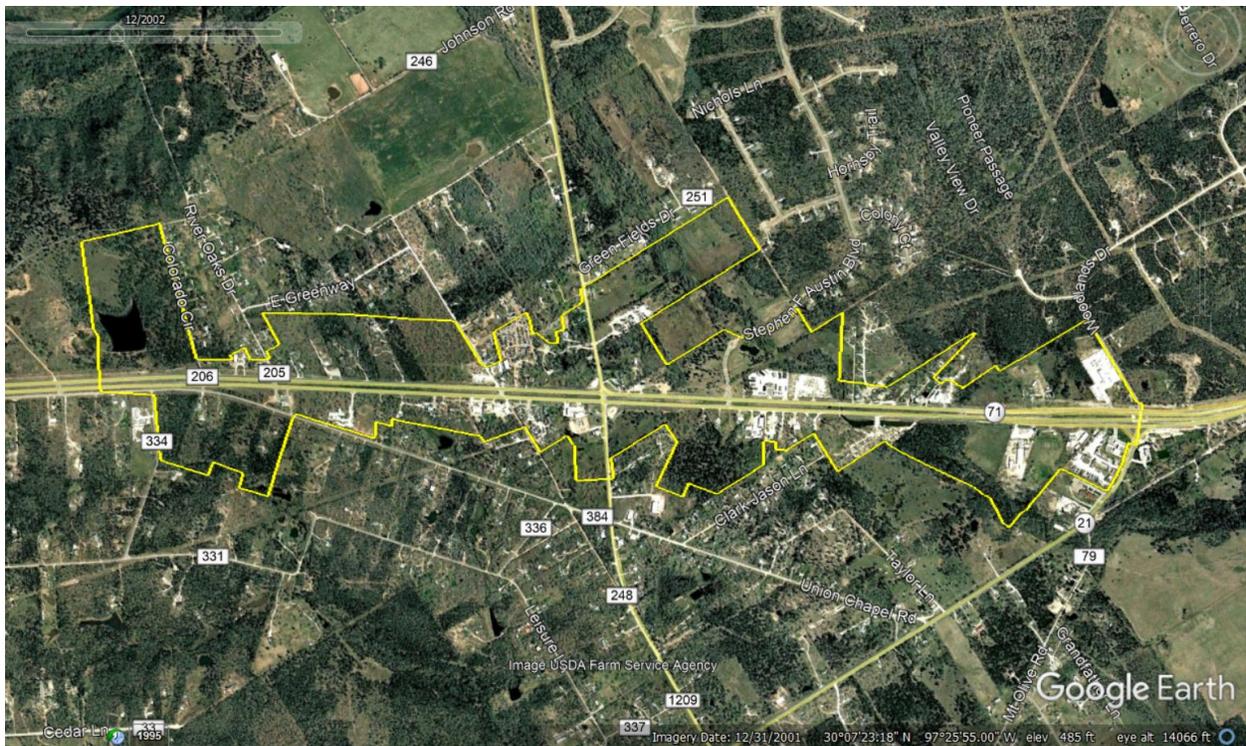
development is considered reasonably foreseeable, according to the City of Bastrop and Bastrop County). Undeveloped lands may also include floodplains or other environmental factors that may constrain development. Based on this input, those areas of undeveloped land were removed from the areas identified as “developable,” as depicted in **Figure 5**. The remaining developable land identified within the AOI totals approximately 49 acres, and is generally located north of SH 71 and on the southwest side of the SH 71 project corridor.

Step 4. Likelihood of Growth in Induced Growth Areas

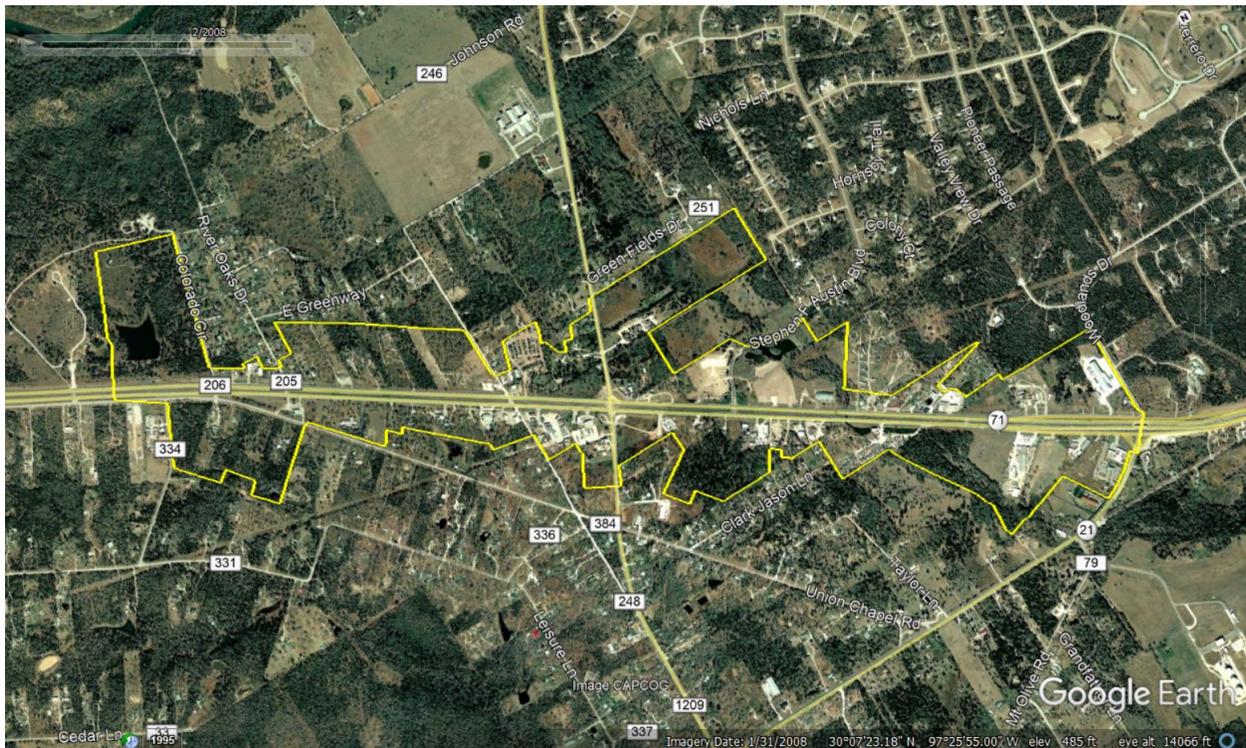
A review of historic aerial images revealed that the study area experienced a gradual increase in development between the years 1995 and 2013 (**Inserts 1 through 4**). During that time, pockets of land were converted from agricultural land to residential developments, as well as commercial developments near intersections along SH 71. Since that time, the pace of development has gradually continued to increase, as has the variety of types of development (**Insert 5**). This is presumably due to the increased population growth within the City of Bastrop and Bastrop County.



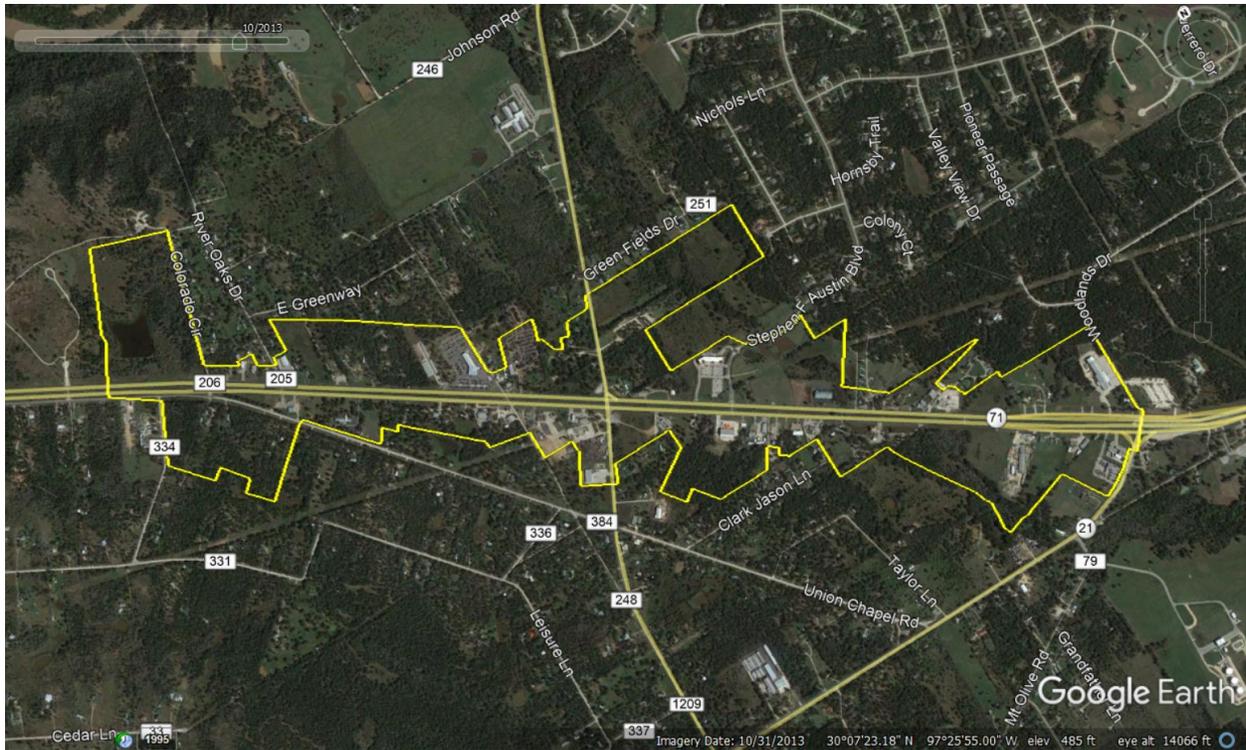
Insert 1. 1995 Aerial Imagery of AOI.



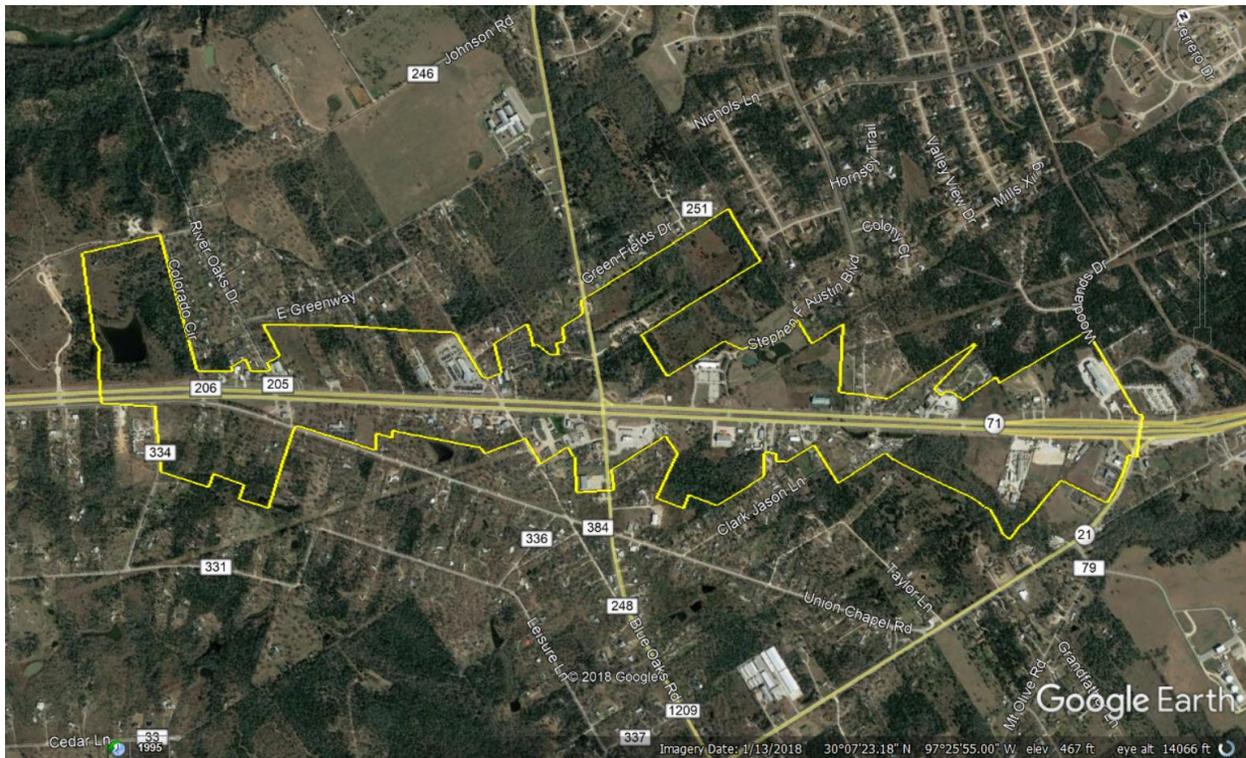
Insert 2. 2002 Aerial Imagery of AOI



Insert 3. 2008 Aerial Imagery of AOI



Insert 4. 2013 Aerial Imagery of AOI



Insert 5. 2018 Aerial Imagery of AOI

Population data from the U.S. Census shows a gradual increase in population in the Wyldwood CDP, the City of Bastrop, and Bastrop County between 2000 and 2017. This population growth is consistent with the land use changes observed over a similar period, with development steadily increasing. Population projections from the Texas Water Development Board (TWDB) indicate continued growth in the region through the year 2040 (**Table 1**).

Table 1: Population Growth

	2000	2010	2017	Percent Increase (2000-2017)	2020	2040
Wyldwood	2,310*	2,505	3,106	34%	--	--
Bastrop	5,340	7,218	8,802	65%	9,653	17,553
Bastrop Co	57,733	74,171	84,761	47%	95,487	164,648
State of Texas	20,851,820	25,145,561	28,304,596	36%	29,510,184	37,736,338

Source: U.S. Census 2018; TWDB 2018.

*Source: The Handbook of Texas Online, 2019.

As seen in **Figure 5**, the AOI contains areas available for development (approximately 49 acres). A representative from Bastrop County provided information regarding locations of existing development and permitted future development within the AOI (Cleary 2018). Additional email correspondence with representatives from the Cities of Austin and Bastrop and Bastrop County revealed that the cities and the county anticipate population growth within their jurisdictional areas, regardless of the project activities (Bills 2018; Cleary 2018; Kitten 2018; Meuth 2018). None of the aforementioned developments would be dependent on the proposed project activities and would occur regardless of construction of the proposed project.

Based on past development patterns depicted through an analysis of historical imagery, the population trends demonstrated through the U.S. Census data and TWDB projections, and input from local planners concerning current and future land development, development and growth in the region are expected to continue. Consistent with these growth trends, the developable land within the AOI (**Figure 5**) may be developed by the year 2040.

Transportation projects can increase the attractiveness of adjacent land for development by reducing travel time and improving access. The proposed project would reduce travel time through the SH 71 and FM 1209 intersection by improving mobility; however, the proposed project is needed to address the current and future traffic volume demand. Additionally, only 49 acres of developable land is located adjacent to the SH 71 corridor, representing 3.23 percent of the total amount within the AOI. Based on reviews of land use maps, aerial imagery, analysis of population data, and input from local planners, the overall existing growth trend

within the AOI is expected to continue. However, due to the nature of the project, substantial induced development associated with the proposed grade separation is not anticipated.

Step 5. Resources Subject to Induced Growth Impacts

As indicated in Step 4, induced growth associated with the proposed SH 71 project is not anticipated. Because the project is not providing access to previously inaccessible areas and due to the limited amount of developable land adjacent to the SH 71 corridor, the project is not expected to result in induced growth impacts. Therefore, the analysis does not require an assessment of resources potentially subject to induced growth.

Step 6. Identify Mitigation if Applicable

Because the project is not expected to result in induced growth impacts, an assessment of potential mitigation is not applicable.

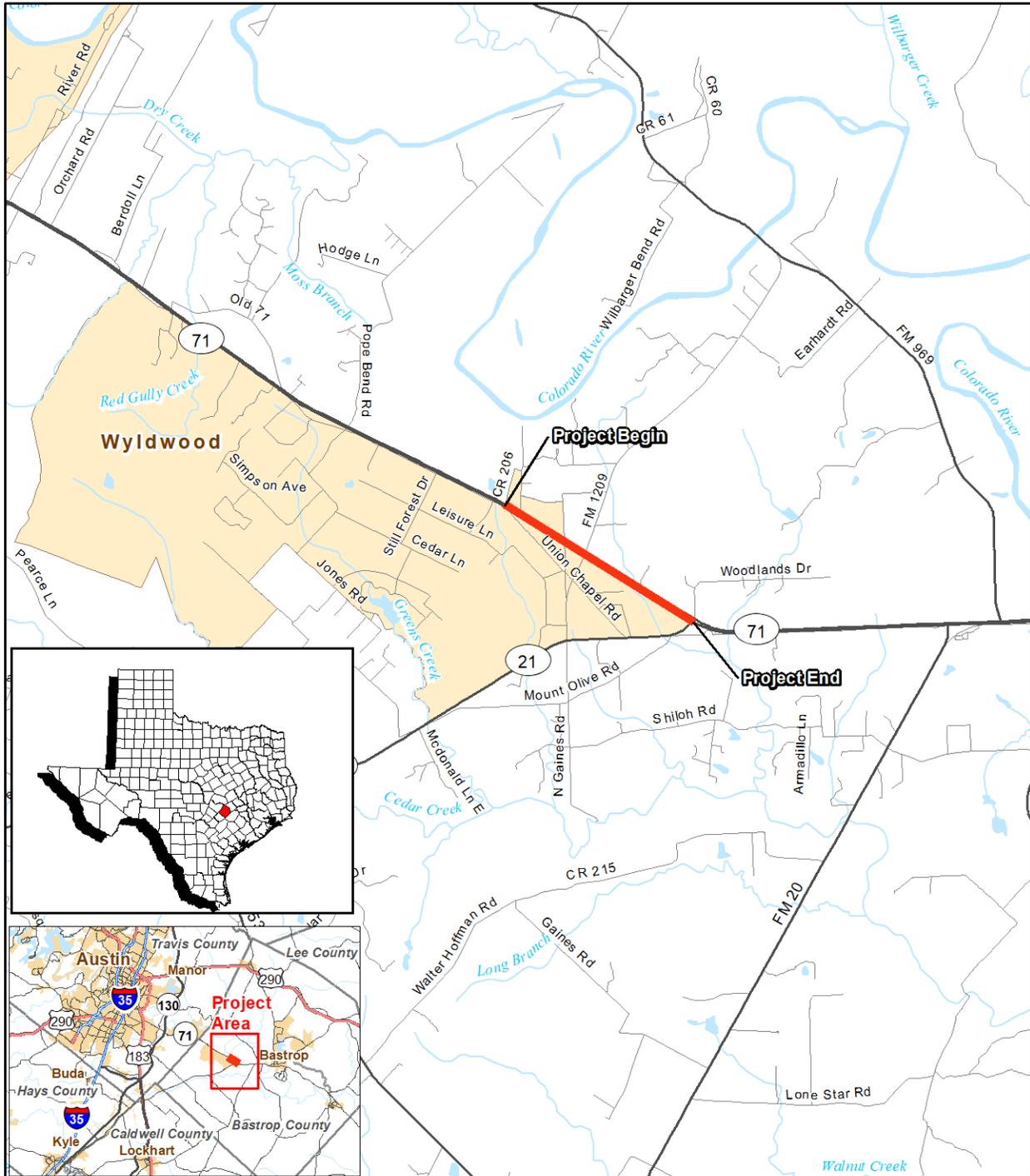
Summary

Based on the data gathered and input received as part of this analysis, growth within the AOI is expected to continue. However, induced development associated with the SH 71 intersection improvement would be limited. The proposed project would consist of constructing a grade separation along an existing roadway and would not provide additional access to portions of the AOI that are currently lacking access to SH 71 or another major roadway. The proposed improvements are intended to address existing growth and demand in the nearby cities and communities, and while the project could potentially influence the location of development along the roadway corridor, it would not be expected to influence the current pace and nature of development within the AOI. In addition, due to the limited amount of available or suitable developable land adjacent to the SH 71 corridor, induced growth impacts associated with the project are not anticipated.

References

- City of Austin. 2018. City of Austin Property Profile web map application. <http://www.austintexas.gov/GIS/PropertyProfile/>. November 2018.
- Bastrop County. 2018a. Bastrop County ETJs and Subdivision Review web map application. <https://www.arcgis.com/apps/View/index.html?appid=198bb5b422b143e982347e84fa25b207&extent=-97.7753,29.8946,-96.6918,30.3590>. November 2018.
- _____. 2018b. Bastrop County 2016 Transportation Plan. http://www.co.bastrop.tx.us/upload/page/0194/docs/20161228_FINAL_BCTP%20Compressed.pdf. November 2018.
- Bills, Jennifer. 2018. Email with Rachel Sprunger regarding development in the City of Bastrop. November 2018.
- Cleary, Julia. 2018. Personal communication with Rachel Sprunger regarding development in Bastrop County. October 2018.
- Handbook of Texas Online*, Laurie E. Jasinski, "WYLDWOOD, TX," accessed January 2019, <http://www.tshaonline.org/handbook/online/articles/hjw21>. Uploaded on June 15, 2010. Published by the Texas State Historical Association.
- Kitten, Cole. 2018. Email with Rachel Sprunger regarding development in the City of Austin and Travis County. November 2018.
- Meuth, Mark. 2018. Email with Rachel Sprunger regarding development in Bastrop County. October 2018.
- National Cooperative Highway Research Council. 2002. *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_466.pdf
- Texas Water Development Board. 2018. <http://www.twdb.texas.gov/waterplanning/data/projections/index.asp>.
- Travis County Land Water and Transportation Plan (LWTP). 2018. <https://www.traviscountytexas.gov/tnr/lwtp>.
- U.S. Census Bureau. 2018. <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>.

Appendix A



Base Map: ESRI- US Base Map;



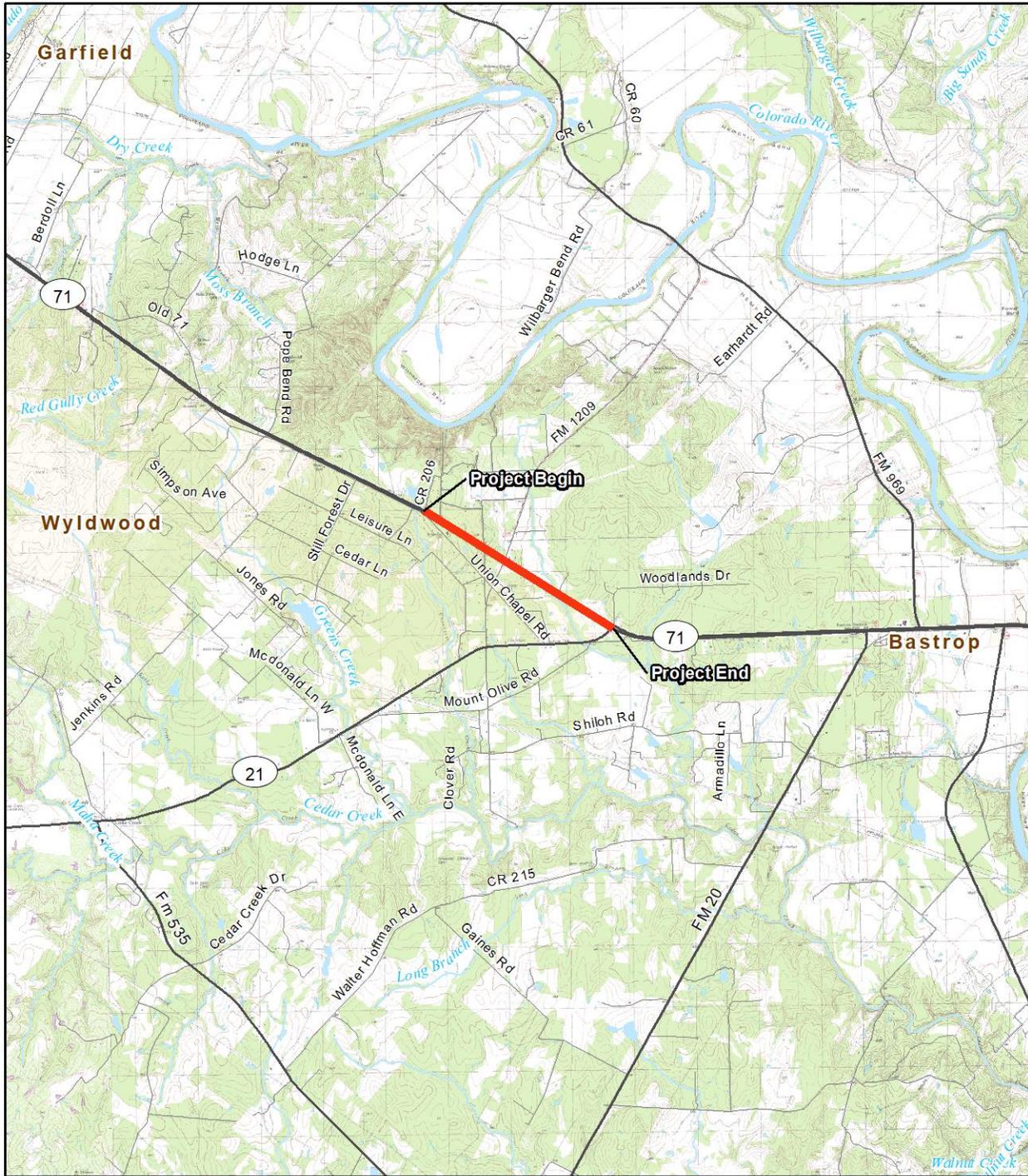
1:100,000

Miles



Project Location

Figure 1
 Project Location on County Map
 SH 71 from CR 206 to SH 21
 Bastrop County, Texas
 CSJ: 0265-03-041



Base Map: 7.5' USGS topographic quadrangle:
 Webberville, Texas
 (1987, Map ID No. 30097-B5)
 Utley, Texas
 (1982, Map ID No. 30097-B4)
 Bastrop SW, Texas
 (1982, Map ID No. 30097-A4)
 Lytton Springs, Texas
 (1968, Map ID No. 30097-A5)

 Project Location

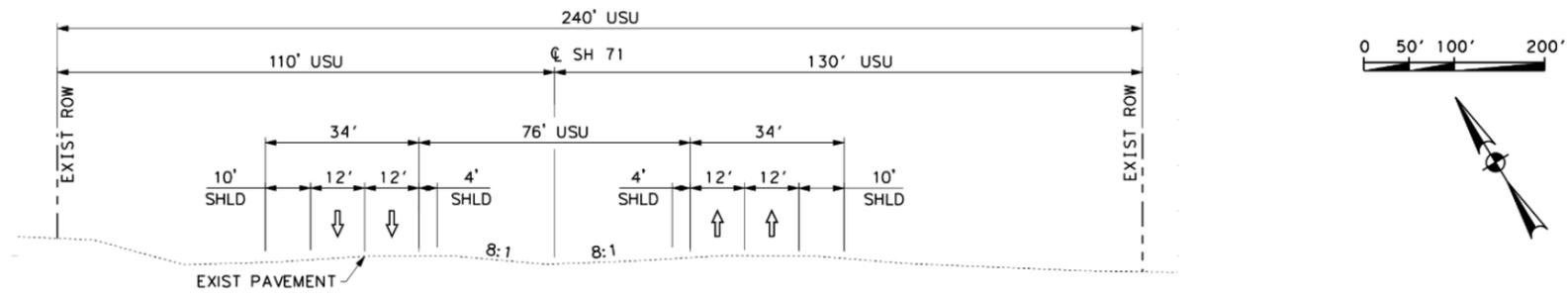


1:100,000

Miles



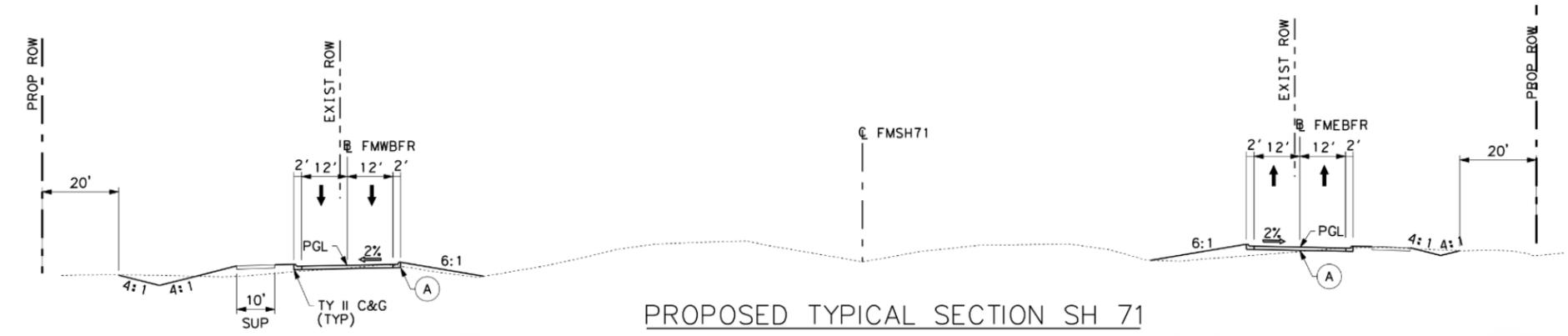
Figure 2
 Project Location on Topographic Map
 SH 71 from CR 206 to SH 21
 Bastrop County, Texas
 CSJ: 0265-03-041



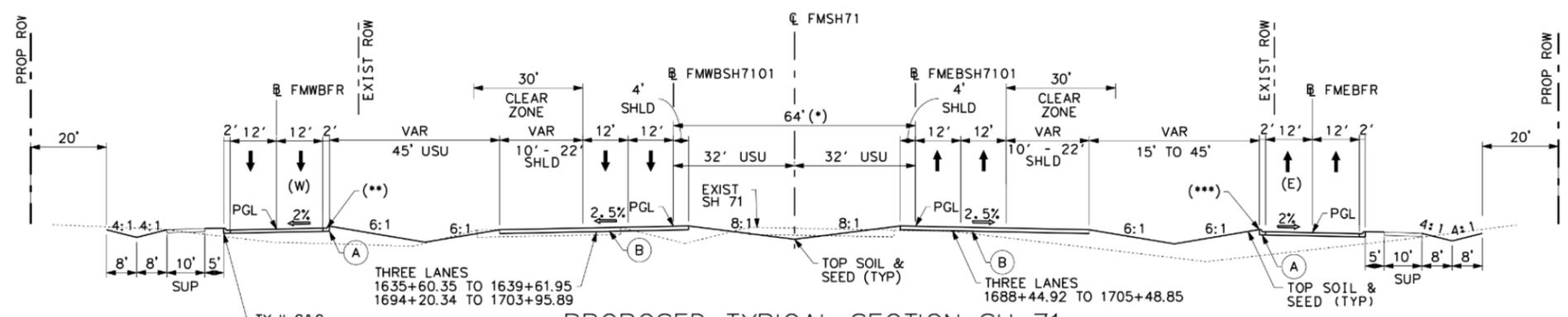
EXISTING TYPICAL SECTION SH 71
STA 1620+00 TO STA 1695+00

MASS FIBER OPTIC UTILITIES
AND WATER (EAST OF FM 1209)

MASS FIBER OPTIC UTILITIES
AND WATER (EAST OF FM 1209)



PROPOSED TYPICAL SECTION SH 71
AT FM1209
STA 1610+32 TO STA 1625+60



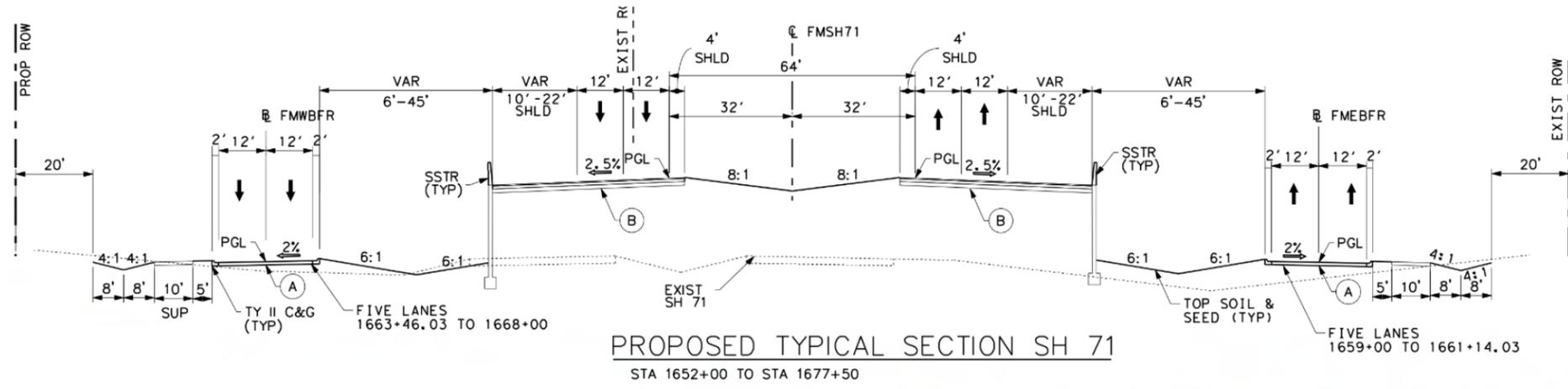
PROPOSED TYPICAL SECTION SH 71

(**) AUXILLARY LANE ADDED TO WBFR
STA 1686+00 TO STA 1702+00

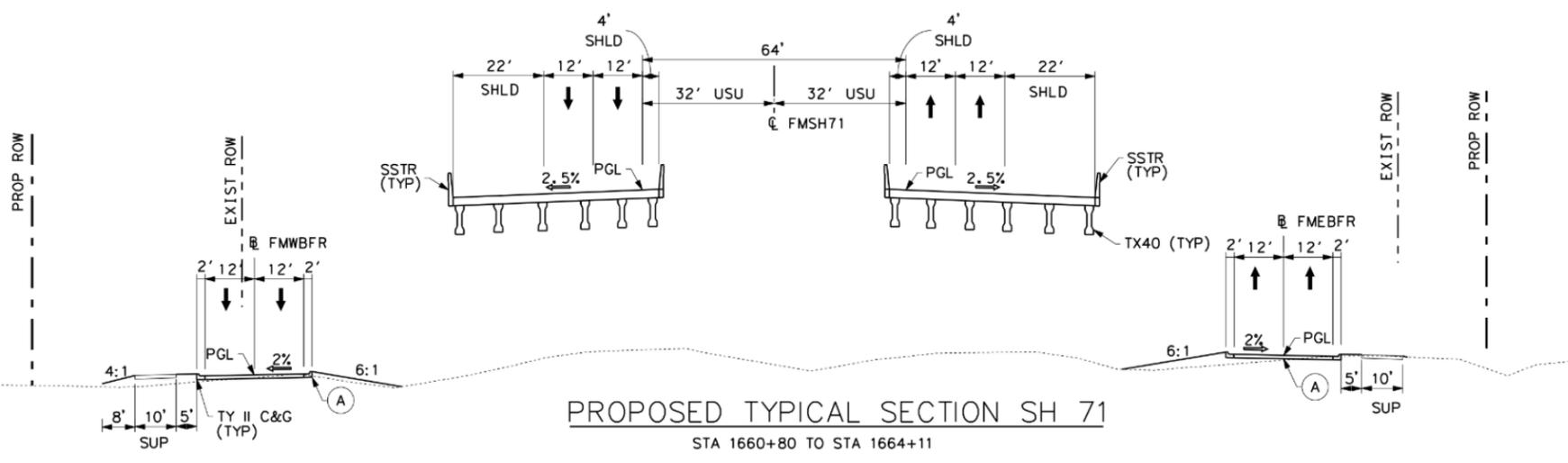
(*) STA 1625+60 TO STA 1634+50 VARIES 76' TO 64'
STA 1634+50 TO STA 1652+00
STA 1677+50 TO STA 1691+61
STA 1692+31 TO STA 1703+95
(*) STA 1703+95 TO STA 1714+00 VARIES 64' TO 60'

(***) AUXILLARY LANE ADDED TO EBFR
STA 1684+00 TO STA 1700+00

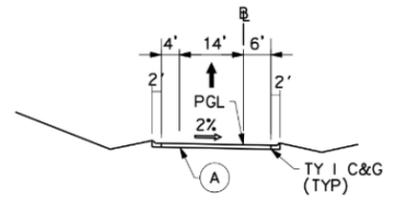
Figure 3.1
Existing and Proposed Typical Sections
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041



PROPOSED TYPICAL SECTION SH 71
STA 1652+00 TO STA 1677+50



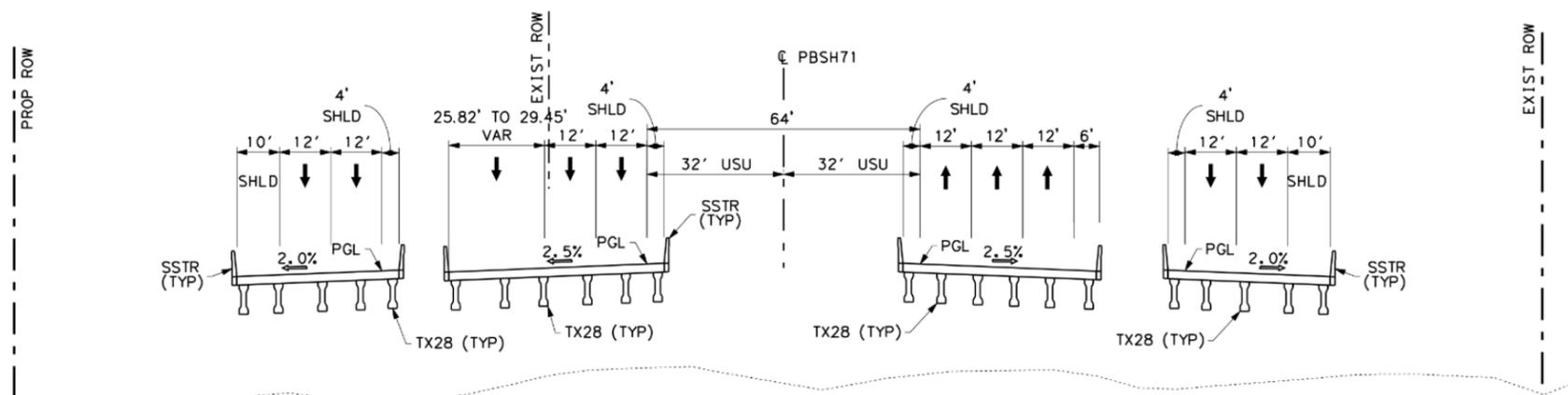
PROPOSED TYPICAL SECTION SH 71
STA 1660+80 TO STA 1664+11



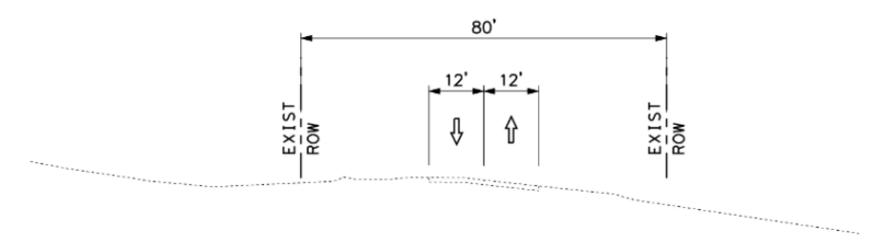
PROPOSED TYPICAL RAMP SECTION



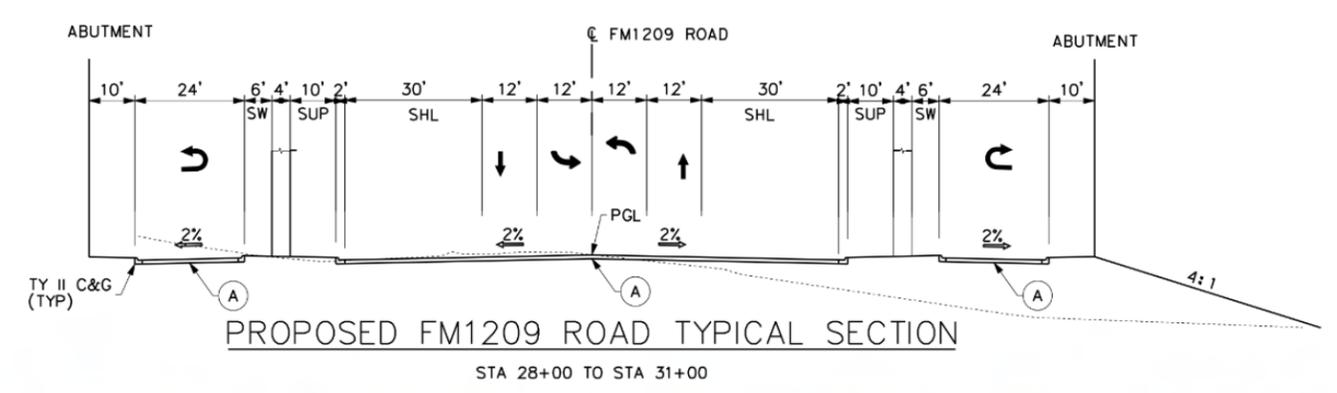
Figure 3.2
Existing and Proposed Typical Sections
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041



PROPOSED TYPICAL SECTION SH 71
STA 1691+60 TO STA 1693+00



EXISTING FM1209 ROAD TYPICAL SECTION



PROPOSED FM1209 ROAD TYPICAL SECTION
STA 28+00 TO STA 31+00

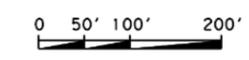
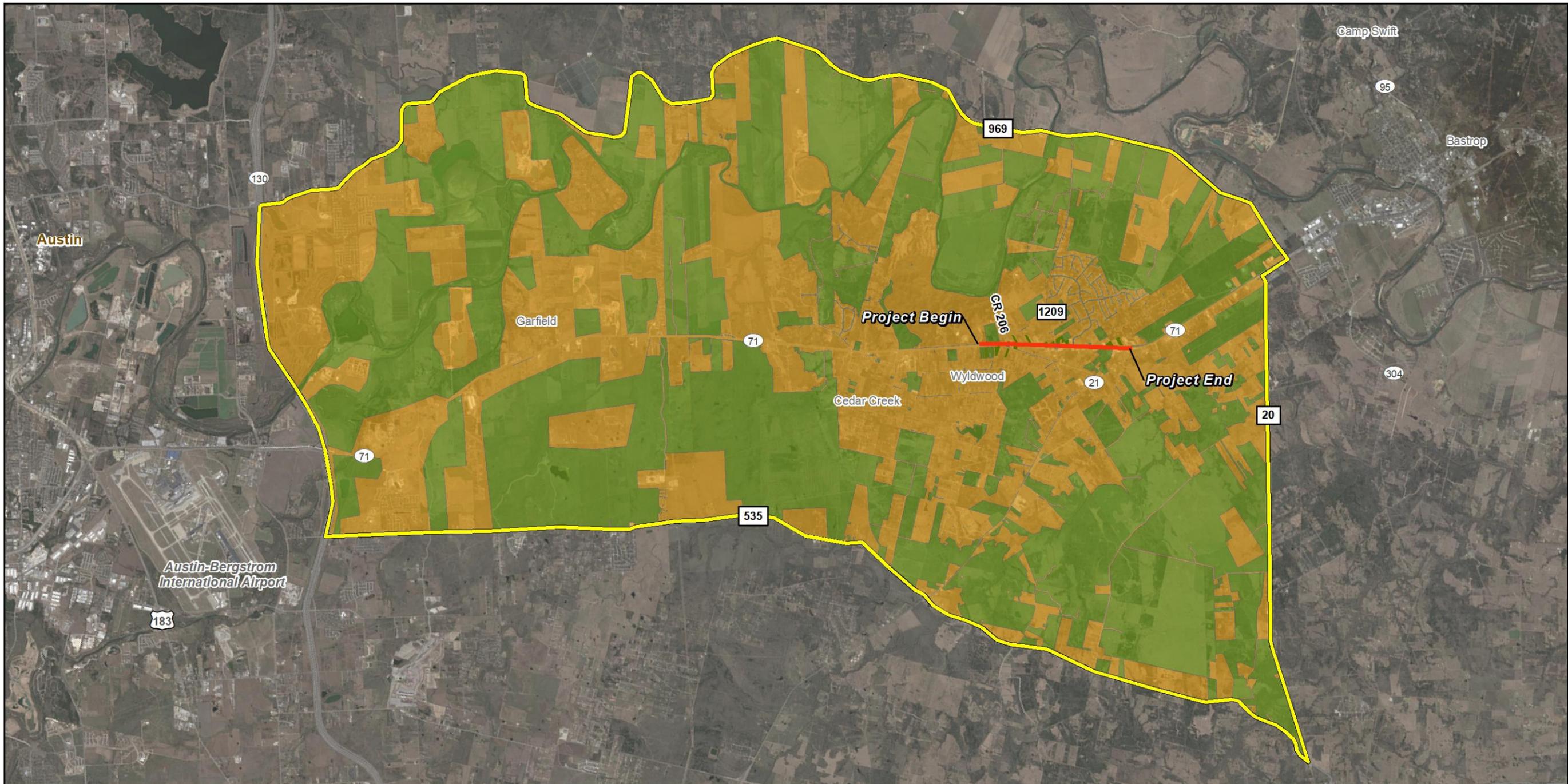


Figure 3.3
Existing and Proposed Typical Sections
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041



- Area of Influence
- Developed
- Undeveloped

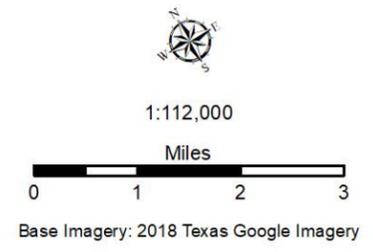


Figure 4
 Preliminary Indirect Impacts Study Area
 SH 71 from CR 206 to SH 21
 Bastrop County, Texas
 CSJ: 0265-03-041



- Area of Influence
- Project Area
- Developable Land

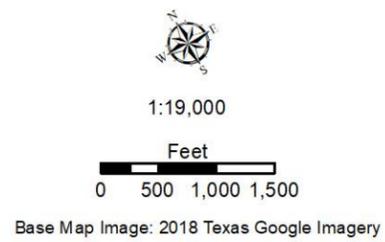


Figure 5
 Indirect Impacts Area of Influence
 SH 71 from CR 206 to SH 21
 Bastrop County, Texas
 CSJ: 0265-03-041