2. PURPOSE AND NEED

2.1 Need for the Proposed Project

The need for the proposed project was identified through background research as well as comments expressed by the joint-lead agencies, cooperating and participating agencies, stakeholder workgroups, and the public. Several distinct but interrelated needs have been identified for the OHP Project:

- Congestion within the corridor has been brought on by steady population growth in the Austin metropolitan area.
- Congestion is causing unreliable traffic operations within the project limits. The term *reliability* refers to the ability of travelers, including emergency responders and transit vehicles, to travel through the corridor in a timely fashion with dependable travel times, regardless of the time of day. According to the FHWA (2005), the term *reliability* is defined as "how much travel times vary over the course of time."
- Congestion is causing travel-time delays and a poor level of service (LOS) along the roadway.
- Traffic and congestion affect emergency response and transit times within the corridor.
- US 290 and SH 71 lack reliable connectivity to Austin metropolitan area roadways and areas west and south of the project area under current conditions.
- Within the proposed project corridor, 925 crashes were reported on US 290 between 2010 and 2016 and 283 crashes were reported on SH 71 during the same time period (CRIS, 2015a, 2017).

2.1.1 Corridor Growth in Population

US 290 was originally constructed in 1927 and FM 93 (now designated as SH 71), in 1944. The "Y" in Oak Hill gained its current configuration in the 1950s when the population of Travis County was 160,980, the population of the COA was 132,459, and the population of Hays County was 17,840. Since that time, Travis County, the COA, and Hays County have experienced steady population growth with populations now over 645 percent, 616 percent and 1,046 percent greater, respectively, than they were in the 1950s; population data is shown in Table 2-1.

Table 2-1. Historical Population Data

Year	Travis County		City of Austin		Hays County		City of Dripping Springs[1]	
	Population	Change between Decade (%)	Population	Change between Decade (%)	Population	Change between Decade (%)	Population	Change between Decade (%)
1950[2]	160,980	--	132,459	--	17,840	--	--	--
1960[2]	212,136	31.8	186,545	40.8	19,934	11.7	--	--
1970[2]	295,516	39.3	251,808	35.0	27,642	38.7	--	--
1980[2]	419,335	41.9	345,496	37.2	40,594	46.9	--	--
1990[2]	576,407	37.5	472,020	36.6	65,614	61.6	1,033	--
2000[2]	812,280	40.9	656,562	39.1	97,589	48.7	1,548	49.9
2010[3]	1,024,266	26.1	790,390	20.4	157,107	61.0	1,788	15.5
2014[3]	1,149,668	12.2	911,390	15.3	184,951	17.7	2,231	24.8
2016[3]	1,199,323	4.3	947,890	4.0	204,470	10.6	3,140	40.7
Increase from 1950–2016 (%)	645%	--	616%	--	1,046%	--	204%[3]	--

[1] Dripping Springs was unincorporated until 1981. The percent increase for Dripping Springs is from 1990–2016.
[2] Texas Almanac, 2012
[3] USCB, 2016

According to the CAMPO 2040 RTP (2015), Travis County's population is expected to grow by approximately 70 percent from 1,024,531 in 2010 to approximately 1,732,860 in 2040. Neighboring Hays County is expected to have an even greater population increase, about 300 percent, from 156,966 in 2010 to approximately 628,309 in 2040. Employment is also expected to increase by over 110 percent in Travis County and over 450 percent in Hays County between 2010 and 2040. Population and employment projections for Travis and Hays County are shown in **Table 2-2**.

Table 2-2. CAMPO Population and Employment Forecasts

County	Population				Employment			
	2010	2020	2030	2040	2010	2020	2030	2040
Travis[1]	1,024,531	1,273,260	1,508,642	1,732,860	564,517	760,518	970,962	1,195,673
Hays[1]	156,966	257,643	406,051	628,309	48,052	89,505	157,832	270,173
Austin[2]	790,390	942,267	1,093,539	1,222,972	--	--	--	--

[1] CAMPO, 2015
[2] COA, 2012

According to the Austin Chamber of Commerce (2017), Austin continues to be a top destination for migrating talent. Austin ranks first among the top 50 U.S. metro cities based on net talent migration as a percent of the total population in 2015.

The recent interim intersection improvements (completed in 2015) were the first significant improvements that have been made to US 290/SH 71 through Oak Hill since it was originally constructed. The interim improvements are intended to provide congestion relief through the corridor until a long-term solution can be implemented. Improving the facility to accommodate the increasing population is consistent with the policies and goals adopted within the TxDOT Austin District's long-range plans and the adopted CAMPO 2040 RTP.

2.1.2 Traffic and Roadway Congestion

Increasing population and economic growth in Travis County, the COA, and Hays County are expected to place greater demands on US 290/SH 71 West to transport the traveling public to and from home, work, schools, entertainment, and other activity centers. The additional traffic expected to use the facility would worsen the congestion already being experienced in the roadway corridor.

LOS is a measure of traffic flow and congestion. It is defined in the *Highway Capacity Manual* as a qualitative measure describing operational conditions within a traffic stream and the perception of those conditions by motorists and passengers (Transportation Research Board, 2000). The LOS is generally classified as A through F, with LOS A being the least congested (best operating conditions) and F being the worst. **Table 2-3** describes the LOS for each letter designation and the volume to capacity ratio (V/C ratio), which is another standard measure of roadway LOS.

Table 2-3. Levels of Service Defined

LOS	Quality of Traffic Operation	V/C Ratio*
A	Free flow with low volumes and high speed. Very good.	< 0.60
B	Reasonably free flow, but speeds beginning to be restricted by traffic conditions. Good.	0.61–0.70
C	Stable flow zone, but most drivers are restricted in the freedom to select their own speeds. Good.	0.71–0.80
D	Approaching unstable flow, drivers have little freedom to select their own speeds. Poor.	0.81–0.90
E	Unstable flow; may be short stoppages. Approaching failure.	0.91–1.00
F	Unacceptable congestion; stop-and-go. Forced flow and long delays. Failure.	>1.00

Source: TRB, 2000;
* V/C Ratio=volume to capacity ratio, a standard measure of roadway LOS.

Existing conditions within the proposed project corridor are congested, and with the projected population and employment growth, conditions would likely deteriorate further if no long-term solution is implemented. As shown on **Table 2-4**, between 1985 and 2011 traffic (using AADT numbers) within the proposed project corridor has increased about 63 percent at US 290/SH

71 just east of William Cannon Drive and about 78 percent on the facility just west of MoPac. The drop in congestion between 2005 and 2010 within the corridor is similar to the drop in traffic and congestion that was observed nationally and statewide. This drop in traffic and congestion, beginning in 2008, has been attributed to the economic recession (Texas Transportation Institute [TTI], 2009). More recent AADT numbers from 2011 are consistent with an increase in traffic and congestion which would be expected with a continued improvement in the economy.

Table 2-4. Historical Traffic Data for the Proposed Project Corridor

Location	1985	1995	2005	2010[1]	2015[2]	2016[3]
AADT on US 290/SH 71 east of William Cannon	35,000	43,000	59,040	54,000	68,000	69,000
AADT on US 290/SH 71 west of MoPac	46,000	44,000	82,550	72,000	87,000	83,500

Source: TxDOT, 2013
[1]Nationally there was a drop in congestion and traffic beginning in 2008 as a result of the recession (TTI, 2009).
[2]TxDOT, 2015b.
[3]TxDOT, 2016.

In 2016, the US 290/SH 71 corridor in Oak Hill (from RM 1826 to MoPac) was identified by TxDOT as #55 on the list of Texas' 100 most congested roadway corridors. Furthermore, portions of US 290 within the OHP Project corridor were listed in the top 50 congested roadway segments during the am peak period (33rd westbound from MoPac to SH 71, 37th eastbound from El Rey to SH 71, 43rd eastbound from SH 71 to MoPac, and 50th from Trautwein Road eastbound [outside the project area]) and pm peak period (34th westbound from MoPac to SH 71) (CAMPO, 2015). **Table 2-5** shows the traffic volumes and the LOS for the current US 290/SH 71 facility and the traffic volumes and LOS for the facility provided by TxDOT for 2035; both are at LOS F (unacceptable congestion).

Table 2-5. Traffic Characteristics for US 290/SH 71

	2010	2035
ADT	54,000	74,500
LOS	F	F

Source: TxDOT, 2013

As described in **Section 1.4.3**, TxDOT, in cooperation with the COA and Travis County, recently implemented improvements at five intersections along US 290 in western Travis County. The improvements consisted of the following:

- Construction of turn lanes at RM 1826
- Construction of turn lanes at Convict Hill Road
- Construction of a CFI at SH 71
- Construction of a CFI at William Cannon Drive

- Operational enhancements at Joe Tanner Lane

These interim intersection improvements were intended to reduce time intervals at the intersections and to improve corridor LOS in the mornings and evenings to acceptable levels (LOS B and C, respectively). Traffic studies indicate, however, that by 2025 the interim operational improvements would no longer maintain congestion relief, and the corridor LOS would return to F as shown in **Table 2-5**. With LOS F and no congestion relief, the interim improvements would not meet the purpose and need of this project and a long-term solution would still be required.

2.1.3 System Connectivity

The project corridor has served as an important means of connection for Oak Hill, southwest Austin, and the greater metropolitan area to growing communities in the west, the Hill Country, Fredericksburg, Kerrville, and other western regions of Texas. Demand for consistent reliable travel connections has continually increased in the area. With the current congestion levels, US 290 and SH 71 through the project area do not provide reliable connectivity to other Austin metropolitan area roadways and to roadways west and south of the project area. Comments and observations by the public indicate some users have started traveling on other area arterial roadways including Southwest Parkway, Convict Hill Road, and Slaughter Lane, in addition to neighborhood roadways, as a means to bypass traffic and congestion through the "Y."

2.1.4 Crash Data

Reportable motor vehicle traffic crash data for approximately 3.9 miles of US 290, from 0.25 miles west of Circle Drive/Southview Road to 0.25 miles east of Joe Tanner Road, and for approximately 1.5 miles of SH 71, from 0.25 miles west of Fletcher Lane to US 290, were evaluated using the TxDOT Crash Records Information System (CRIS) and are shown on **Table 2-6** and **Table 2-7**. A reportable motor vehicle traffic crash is defined as: "Any crash involving a motor vehicle in transport that occurs or originates on a traffic way, results in injury to or death of any person, or damage of property of any one person to the apparent extent of $1,000 and having at least one vehicle towed due to the damage sustained in the crash." According to the CRIS, between 2010 and 2016, 1,208 crashes were reported to have occurred within the project limits. Of the 1,208 crashes reported, 215 were run-off-the-road/fixed object/overturns, 582 crashes were rear ends, 67 were sideswipes, 28 were head ons, 196 were angle collisions, and 94 were collisions involving left turns. These crashes resulted in 30 incapacitating injuries and 5 fatalities.

Table 2-6. Crashes by Major Type of Collision

Year	Head On	Run Off the Road/ Fixed Object/ Overturn	Side-Swipe	Rear End	Left Turn	Angle	Other	Total
2010	4	33	13	80	15	32	5	182
2011	3	25	6	67	13	28	4	146
2012	4	41	11	107	20	32	6	221
2013	5	21	10	89	16	29	4	174
2014	4	29	12	84	8	23	2	162
2015	5	31	9	83	7	27	2	164
2016	3	35	6	72	15	25	3	159
Total Total %	28 2.3%	215 17.8%	67 5.5%	582 48.2%	94 7.8%	196 16.2%	26 2.2%	1,208 100%

Source: CRIS, 2015, 2017

Table 2-7. Crashes by Severity

Year	Non-Injury or Property Damage Only	Possible Injury	Non-incapacitating Injury	Incapacitating Injury	Fatality	Total
2010	87	41	47	6	1	182
2011	72	29	39	5	1	146
2012	122	44	52	3	0	221
2013	92	36	40	3	3	174
2014	85	43	31	3	0	162
2015	105	26	27	6	0	164
2016	91	28	36	4	0	159
Total Total%	654 54.1%	247 20.4%	272 22.5%	30 2.5%	5 0.4%	1,208 100%

Source: CRIS, 2015, 2017

A comparison of crash rates for each segment with the statewide average rates for similar roadways is presented in **Table 2-8.** These include comparisons to urban roadways with four or more lanes, both divided and undivided, since both roadway types occur in the project corridor. While the overall crash rates for the US 290 segment are lower than the state averages, the rates for SH 71 are higher than the state averages for divided highways. The proposed project would aim to make the segments even safer by eliminating left-hand turns with one-way frontage roads and installing signalized intersections.

Table 2-8. Crash Rates with Comparison to Statewide Averages

Year	Segment—Total Crashes	Segment—ADT	Segment—Crash Rate	Statewide Average—Urban State Highway	Statewide Average—Urban Four or More Lanes, Divided	Statewide Average—Urban, Four or More Lanes, Undivided
US 290 Study Segment						
2012	172	43400	281.15	193.42	108.30	267.85
2013	130	41010	224.88	195.27	113.39	272.09
2014	118	38870	215.36	215.05	126.12	300.72
2015	118	47370	176.72	263.53	177.66	361.47
2016	116	47370	173.72	284.60	193.14	377.59
SH 71 Study Segment						
2012	49	30000	297.33	193.42	108.30	267.85
2013	44	24830	322.59	195.27	113.39	272.09
2014	44	25860	309.74	215.05	126.12	300.72
2015	46	28890	289.86	263.53	177.66	361.47
2016	43	28890	270.95	284.60	193.14	377.59

Source: CRIS, 2017

2.1.5 Emergency Response

As the number of vehicles increases due to growth, incident management becomes increasingly important to maintaining traffic flow. As described in the section above, a total of 1,208 crashes occurred over an almost six-year period, an average of one crash every two days over the time period. Incidents such as crashes have a negative effect on the corridor's LOS, which is already at LOS F (unacceptable congestion) during peak periods of traffic. Peak periods of traffic are parts of the day when traffic congestion on roads and crowding on public transportation is at its highest. Normally, this happens twice a day during the week, once in the morning and once in the evening when many people commute.

US 290 and SH 71 are vital corridors for first responders addressing incidents on US 290 and throughout the southwestern portion of the COA. As **Figure 2-1** illustrates, there are numerous emergency response stations and facilities, fire stations and hospitals in particular, located within 3 miles of the corridor, with US 290 serving as a vital link for first responders. The deteriorating LOS on US 290 and SH 71, the frequency of crashes, and the importance of the corridor as a route for first responders indicate a need to make the route more reliable for emergency vehicles throughout the day.

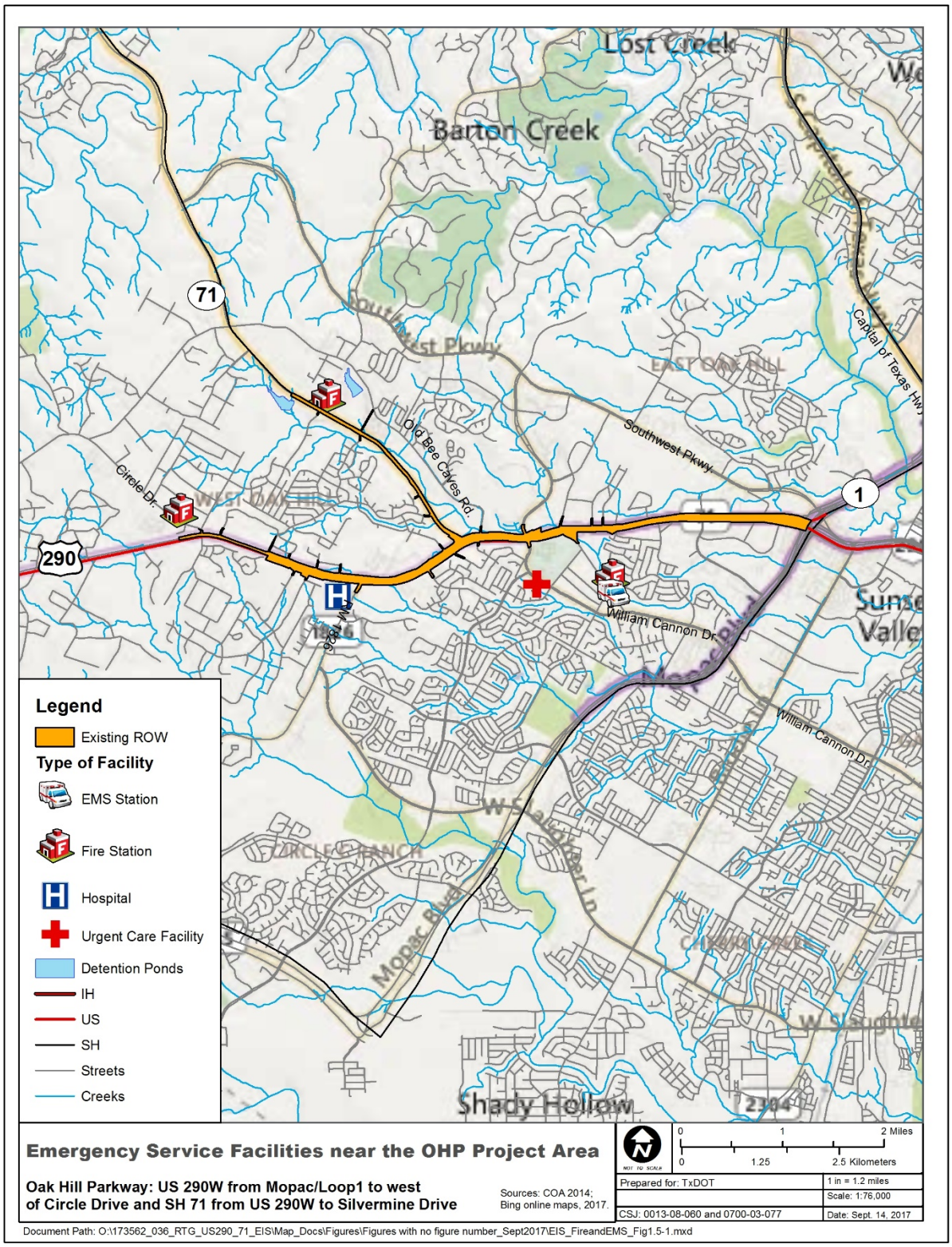

Figure 2-1. Emergency service facilities near the OHP Project area.

2.2 Statement of Purpose

The regional vision, promulgated by CAMPO in the CAMPO 2040 RTP (CAMPO, 2015), calls for improving the overall livability of the region by balancing the need to move traffic with our need to build quality communities. In order to achieve this balance, the CAMPO plan recommends considering not only the movement of vehicles but the mobility of people, the sustainability of the system, and the impact of the future investments on land use and growth patterns.

The purpose of the proposed project is to:

- Improve mobility and operational efficiency
- Facilitate long-term congestion management in the corridor by accommodating the movement of people and goods for multiple modes of travel
- Improve safety and emergency response

2.2.1 Goals and Objectives

The proposed project goals and objectives include measures to ensure the project is consistent with the overall regional plan and community values while maintaining and enhancing the community character and the natural setting. The project goals and objectives include the following:

- Promoting sustainable growth
- Maintaining consistency with local and regional plans and policies
- Developing facilities for multi-modal transportation
- Enhancing air quality
- Avoiding/minimizing water quality impacts
- Avoiding/minimizing impacts to wildlife habitat
- Minimizing noise impacts
- Avoiding/minimizing adverse social and economic impacts
- Providing for aesthetics and landscaping
- Reducing conflict between local and through traffic
- Facilitating the development of a small activity center in Oak Hill in accordance with the 2040 CAMPO Plan–CAMPO Centers map or the redevelopment of an activity center as identified in *Imagine Austin*