



7. OPERATIONS & MAINTENANCE

INTRODUCTION

Operation and maintenance analysis provides an assessment of El Paso MPO region’s roadway pavement conditions, deficient bridges, and transit assets. Developing a comprehensive understanding of the condition of the region’s transportation assets helps identify areas of need in the roadway network and illustrates how well public transit in the area measures up to current Federal regulations. Accordingly, Destino 2045 utilizes data from several sources, including the Federal Highway Administration’s (FHWA) National Bridge Inventory (NBI), Texas Department of Transportation (TxDOT), New Mexico Department of Transportation (NMDOT), and the Federal Transit Administration’s (FTA) National Transit Database (NTD), to complete the various operations and maintenance analyses included in the needs assessment.

ROADWAY PAVEMENT CONDITIONS

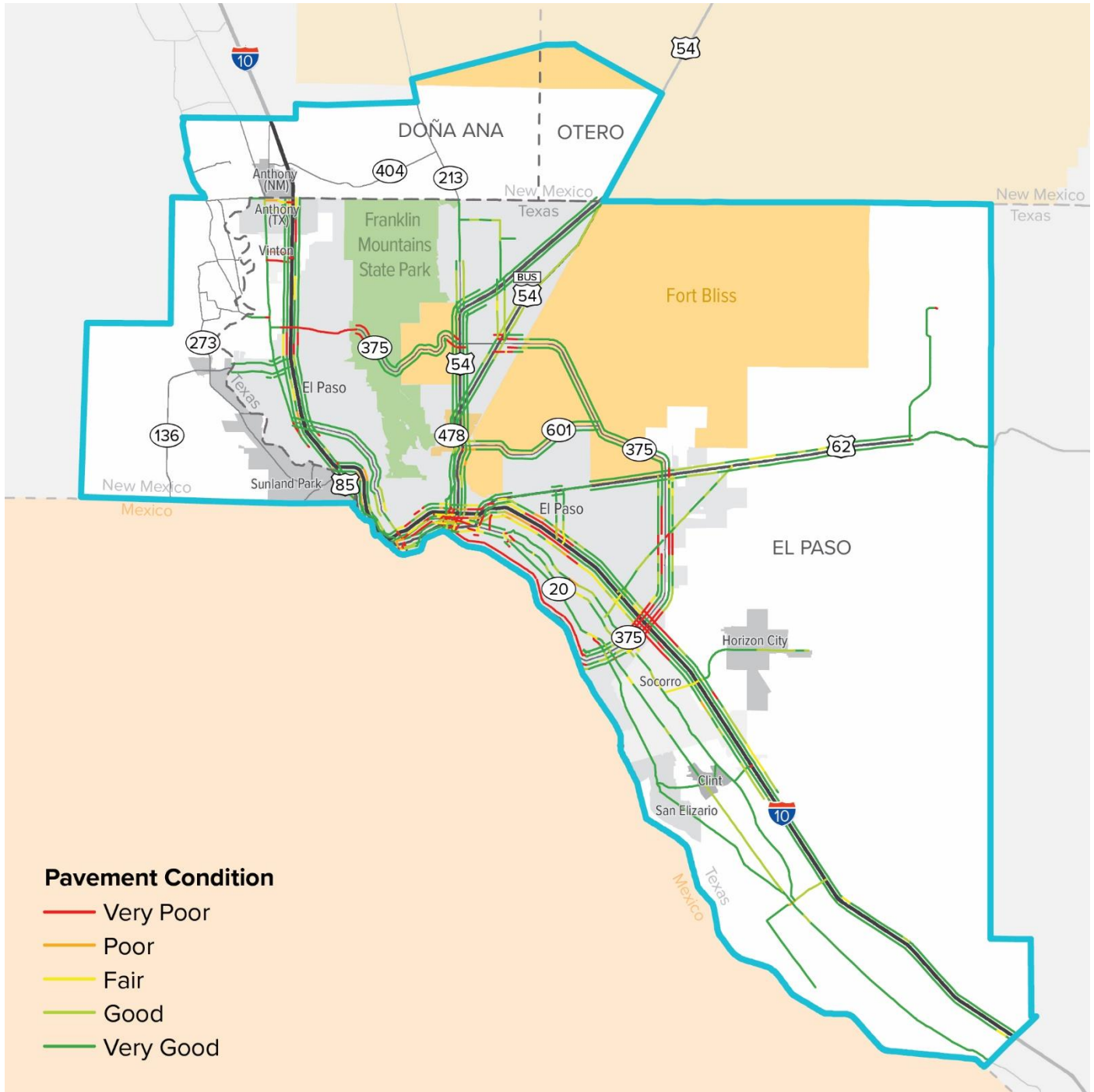
For roadway pavement conditions analysis, TxDOT’s Pavement Management Information System (PMIS)—taken from the 2016 TxDOT Statewide Planning Map—supplies condition scores for highways and other major roadways in the region. Condition scores represent the overall condition of pavement on a given road segment, in terms of both ride quality and pavement distress. Scores are represented on a 1 (worst) to 100 (best) scale. Figure 7.1 shows the conditions scores for roadways in the region where data was available. Overall, the region’s roadway network is shown to be in relatively good condition, as the majority of the roadways (82% of roadway miles) in the study area have “good” or “very good” condition scores (i.e. light or dark green in Figure 7.1). Conversely, 13% (83.5 miles) of roadways for which data was collected in the El Paso MPO region were identified as being in “poor” or “very poor” condition (i.e. deficient). Many of the segments identified as being deficient or in poor condition are major roadways that typically experience large amounts of traffic and are located where emphasis corridors intersect major highways (e.g. Loop 375 and IH 10). Table 7.1 shows the total and percentage of roadway miles by condition score for roadways in the region included in the TxDOT PMIS.

TABLE 7.1: ROADWAY MILES BY CONDITION SCORE; TXDOT PMIS; 2016 TXDOT STATEWIDE PLANNING MAP

CONDITION SCORE	DESCRIPTION	MILES	% OF TOTAL MILES
1-34	Very Poor	71.7	11%
35-49	Poor	11.7	2%
50-69	Fair	36.2	5%
70-89	Good	85.0	13%
90-100	Very Good	462.4	69%



FIGURE 7.1: ROADWAYS BY CONDITION SCORE; TXDOT PMIS; 2016 TXDOT STATEWIDE PLANNING MAP





BRIDGE DEFICIENCY

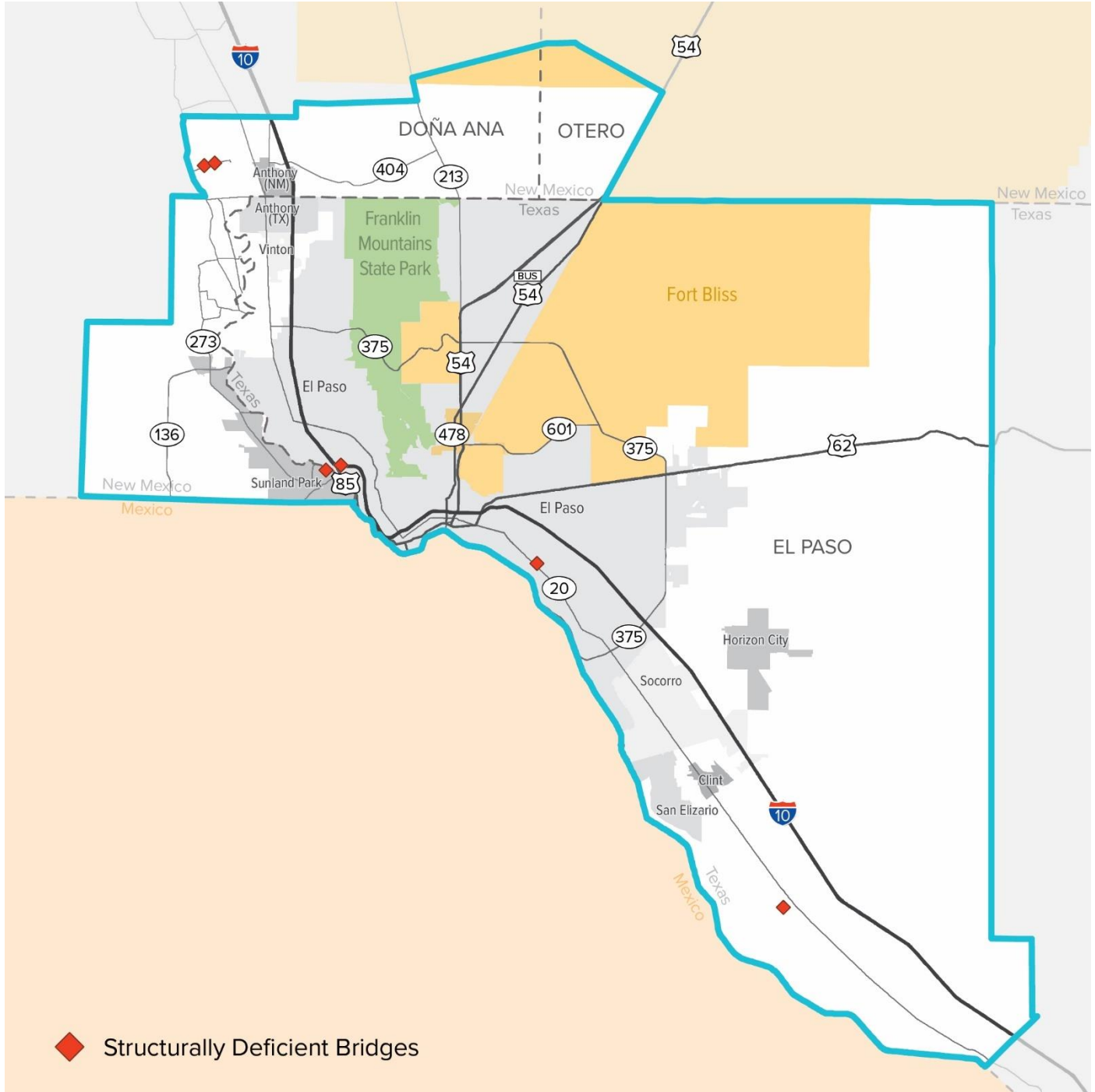
A structurally deficient bridge is defined as a bridge that has structural defects which require rehabilitation and/or monitoring and which may require speed or weight limits. Destino 2045 identifies the number of deficient bridges in the El Paso MPO region using the 2016 FHWA NBI. The NBI provides an inventory of over 600,000 bridges located on roadways throughout the United States. Included in the NBI are condition ratings for different structural elements of the bridges (e.g. deck, superstructure, substructure) that are used to determine whether a bridge is structurally deficient based on criteria provided in FHWA’s *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Bridges*. Applying the criteria to the NBI data for the region, six bridge structures were identified as being structurally deficient. Table 7.2 lists the roadway facilities that the deficient bridges carry as well as general location descriptions. Figure 7.2 shows the location of the deficient bridges in the El Paso MPO region.

TABLE 7.2: EL PASO MPO REGION NBI STRUCTURALLY DEFICIENT BRIDGES

ROADWAY	CITY	LOCATION DESCRIPTION
FM 76	Fabens	.12 miles SW of SH 20
Vista Hill Drive	El Paso	At IH 10 crossing
N. Carolina Drive	El Paso	At UP railroad crossing
NM 186	West of Anthony	.7 miles E of NM 28
NM 186	West of Anthony	1.2 miles E of NM 28
NM 498	Sunland Park	.15 miles SW of Doniphan Drive



FIGURE 7.2: NBI STRUCTURALLY DEFICIENT BRIDGES (2016)





SUN METRO TRANSIT ASSET MANAGEMENT

The Transit Asset Management (TAM) model was established by MAP-21 to create a system to monitor/manage public transportation assets. In order to accomplish this objective, TAM uses the condition of current assets to guide optimal prioritization of funding within a transit agency. The following assesses Sun Metro’s most recently available NTD asset information and summarizes the agency’s current transit standing regarding TAM regulations.

Table 7.3 displays a snapshot of Sun Metro’s 2015 fleet vehicle asset inventory. The table displays total fleet vehicles by mode (i.e. demand response or motor bus), type (i.e. bus, van, etc.), and built year, creating 15 separate fleet vehicle groupings. All fleet vehicles (292) were in use and ADA accessible in 2015. Average miles per vehicle indicates the usage of each vehicle in a fleet and was calculated using the total fleet group mileage and dividing it by the total number of vehicles in the fleet. Comparing this value for each fleet group to the average lifetime mileage for vehicle type produced a percentage of lifetime mileage used. This metric shows the average usage of each vehicle in the fleet group and helps to estimate the useful life remaining. The data shows that only 16% of the vehicles in the entire Sun Metro fleet have an average usage greater than 80% of their lifetime mileage. In other words, the Sun Metro fleet is in relatively good condition in terms of how many more miles the fleet vehicles are expected to last.

TABLE 7.3: 2015 SUN METRO FLEET ASSET INVENTORY

FLEET GROUP	MODE	TOTAL	USED	TYPE	BUILT YEAR	REBUILD YEAR	ADA	AVG MI PER VEHICLE	AVERAGE LIFETIME MILEAGE	% OF MILEAGE USED
1	DR	22	22	Bus	2008	-	22	1,357	258,702	1%
2	DR	1	1	Van	2012	-	1	2,703	33,460	8%
3	DR	34	34	Bus	2012	-	34	41,506	159,126	26%
4	DR	3	3	Cutaway	2014	-	3	29,872	36,262	82%
5	DR	25	25	Cutaway	2014	-	25	53,201	66,448	80%
6	MB	13	13	Bus	1994	-	13	4,894	680,135	1%
7	MB	24	24	Bus	2004	2011	24	42,310	471,693	9%
8	MB	35	35	Bus	2007	-	35	32,268	444,051	7%
9	MB	25	25	Bus	1991	2006	25	713	773,591	0%
10	MB	40	40	Bus	2008	-	40	57,068	416,293	14%
11	MB	20	20	Bus	2007	-	20	49,158	459,619	11%
12	MB	8	8	Bus	2010	-	8	52,641	247,286	21%
13	MB	13	13	Articulated Bus	2014	-	13	45,902	51,191	90%
14	MB	22	22	Bus	2014	-	22	70,040	97,470	72%
15	MB	7	7	Cutaway	2014	-	7	47,784	51,055	94%



Another component of assessing condition of transit assets is age of vehicles. Tables 7.4 and 7.5 show Sun Metro vehicles grouped by age for buses and vans from 2010 to 2014, as reported in the NTD. Comparing the 2014 average fleet age for both bus and van to the corresponding Default Useful Life Benchmark (ULB) from FTA, both categories of vehicles are well below their useful life, on average. For bus the ULB is 14 year and for van it is 8. The low average fleet ages relative to given ULBs indicate that Sun Metro vehicles, on average, should be in operation for several more years before requiring replacement. However, since the provided data is not available for the time period Destino 2045 is being developed, it is important to note that unless Sun Metro has recently purchased new vehicles, the average fleet age has increased by about three years. This means that the fleet vehicles will likely have gotten closer to hitting their ULB. Assuming that no vehicles have been purchased between 2014 and 2017, though, the average fleet ages—10.9 for buses and 7.5 for vans—would still remain below their ULB. While the average bus in the fleet would still have about three years of useful life, the average van would likely be hitting its ULB in the next few months.

TABLE 7.4: ACTIVE BUSES BY AGE GROUPING (YEARS); 2010-2014

YEAR	5 OR LESS	6 TO 11	12 TO 15	16 TO 20	21 TO 25	MORE THAN 25	TOTAL	AVG. AGE OF FLEET
2014	64	145	0	13	25	0	285	7.9
2013	163	80	0	13	25	0	281	6.7
2012	159	57	0	13	25	0	254	7.3
2011	128	64	0	38	0	0	230	7.4
2010	120	65	0	39	0	0	224	6.7

TABLE 7.5: ACTIVE VANS BY AGE GROUPING (YEARS); 2010-2014

YEAR	5 OR LESS	6 TO 11	12 TO 15	16 TO 20	21 TO 25	MORE THAN 25	TOTAL	AVG. AGE OF FLEET
2014	6	0	2	0	0	0	8	4.5
2013	12	4	0	0	0	0	16	3.5
2012	6	0	0	0	0	0	6	0
2011	0	0	0	0	0	0	0	0
2010	0	8	0	0	0	0	8	8



Performance failure is another component of assessing transit asset conditions, which provides an understanding of the quality of assets and how well they are maintained. Table 7.6 shows performance failure counts for bus fleet vehicles from 2011 to 2015 from NTD. Major failures are considered to be serious mechanical failures that prohibit any vehicle usage, and all other problems are categorized as other failures. In all categories vehicle failures have dropped significantly by about 85% within the five-year timeframe.

TABLE 7.6: BUS FAILURES; 2011 TO 2015

YEAR	MAJOR FAILURES	OTHER FAILURES	TOTAL FAILURES
2015	87	4	91
2014	150	6	156
2013	207	59	266
2012	217	26	243
2011	536	53	589

While bus failures have decreased, demand response vehicle failures have actually increased over the same time period (Table 7.7). This is mostly due to a large increase in the number of “other failures”. Major failures over the period decreased by about 8% for demand response vehicles over the five-year time period.

TABLE 7.7: DEMAND RESPONSE FAILURES; 2011 TO 2015

YEAR	MAJOR FAILURES	OTHER FAILURES	TOTAL FAILURES
2015	56	54	110
2014	11	70	81
2013	71	21	92
2012	41	21	62
2011	61	3	64