



CENTRAL TEXAS REGIONAL  
MOBILITY AUTHORITY

2024

# ANNUAL REPORT OF CONDITIONS MOPAC EXPRESS LANE



Prepared by:

**AtkinsRéalis**  
General Engineering Consultant



CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY



May 30, 2024

Mr. James Bass, Executive Director  
Central Texas Regional Mobility Authority  
3300 N. Interstate 35, Suite 300  
Austin, Texas 78705

Subject: **2024 Annual Report of Conditions – MoPac Express Lane**

Mr. Bass:

As General Engineering Consultant to the Central Texas Regional Mobility Authority (Mobility Authority), AtkinsRéalis is pleased to submit the 2024 Annual Report of Conditions for the MoPac Express Lane. This report sets forth our findings as to the condition of this facility, as well as our recommendation of proper operations and maintenance of the facility during fiscal year (FY) 2025.

AtkinsRéalis conducted a visual inspection of all portions of the MoPac Express Lane, in fall 2023. Bridges are inspected as part of the Texas Department of Transportation (TxDOT) Bridge Inventory, Inspection and Appraisal Program (BRINSAP) every two years per applicable federal requirements in accordance with the National Bridge Inspection Standards (NBIS). The findings of TxDOT's most recent BRINSAP inspections, conducted in 2023, were provided to the Mobility Authority and are reflected in this year's report. Visual bridge observations are performed during alternate years under the Maintenance Bridge Inspection Tracking System (MBITS) program.

We appreciate the opportunity to provide the services required of the General Engineering Consultant, and we wish to acknowledge the excellent cooperation of the Mobility Authority staff in the performance of these services.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory S. Blake".

Gregory S. Blake, P.E.  
VP, Sr. Division Manager, AtkinsRéalis

Enclosure

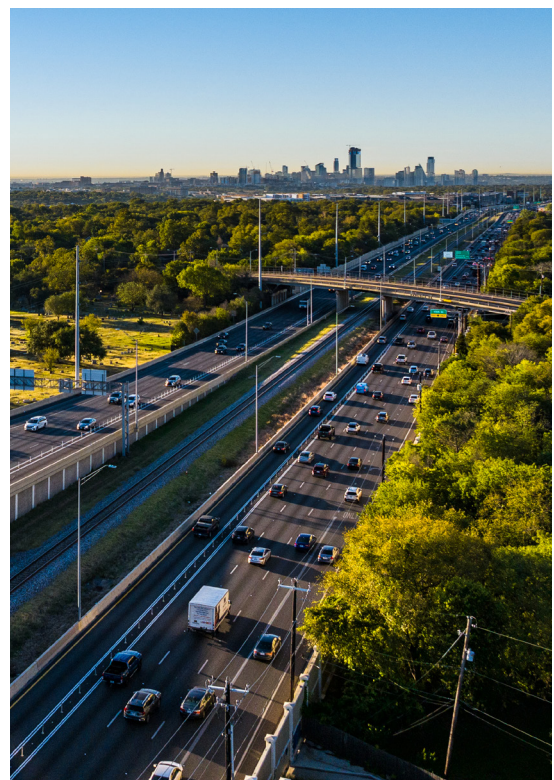
Cc: Tracie Brown, Director of Operations, Central Texas Regional Mobility Authority  
Jose Hernandez, Chief Financial Officer, Central Texas Regional Mobility Authority  
Jori Liu, Director of Communications, Central Texas Regional Mobility Authority  
Greg Mack, Director of IT & Toll Systems, Central Texas Regional Mobility Authority  
Mike Sexton, P.E., Director of Engineering, Central Texas Regional Mobility Authority  
File





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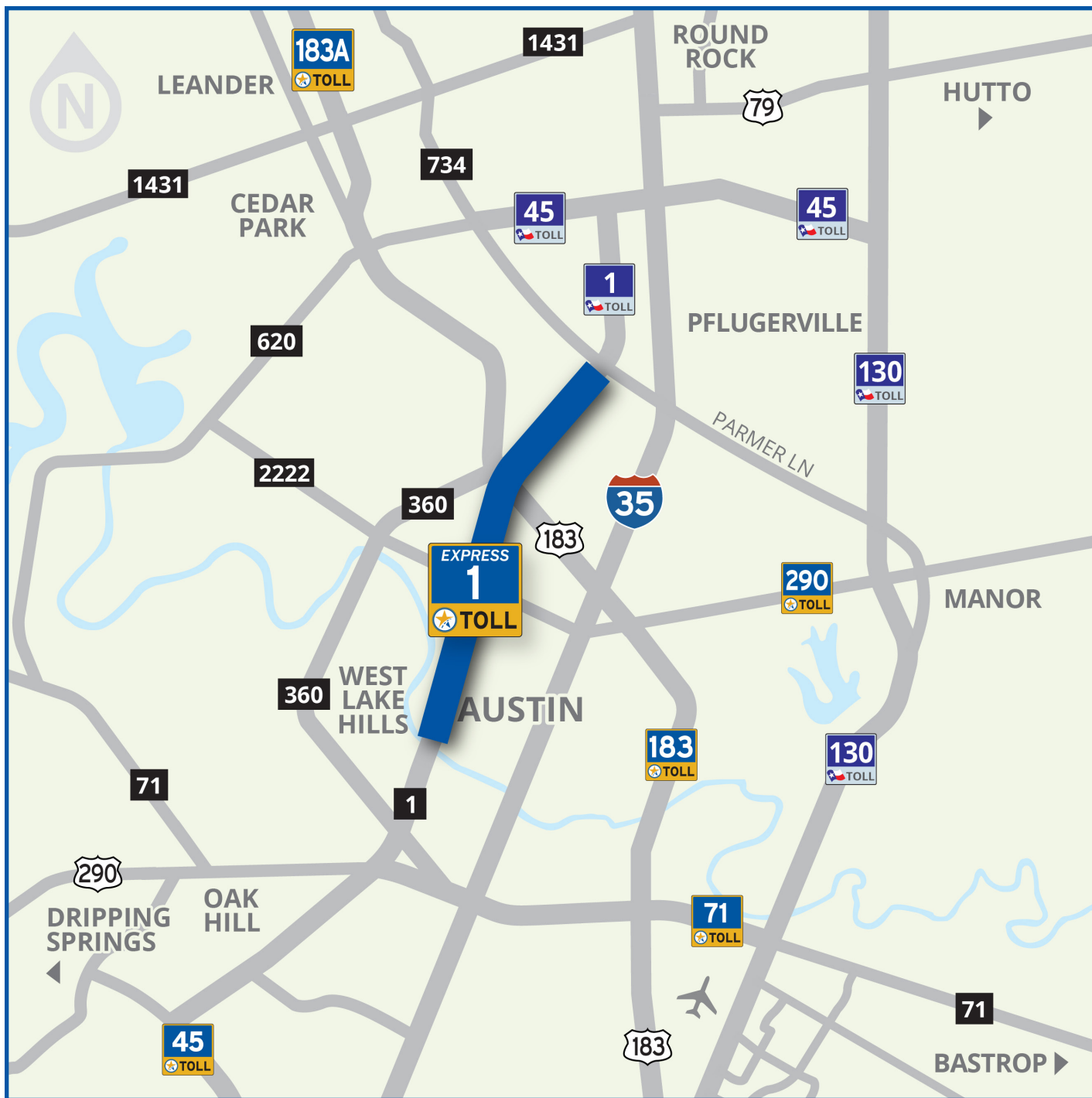


# Acronyms and Abbreviations

## ACRONYMS AND ABBREVIATIONS

BRINSAP	Bridge Inventory, Inspection and Appraisal Program
CAMPO	Capital Area Metropolitan Planning Organization
FHWA	Federal Highway Administration
FY	Fiscal Year
GEC	General Engineering Consultant
GIS	Geographic Information System
ILP	In-Lane Processing
NBIS	National Bridge Inspection Standards
PBMC	Performance Based Maintenance Contractor
R&R	Renewal and Replacement
SL 1	State Loop 1
TCS	Toll Collection System
TxDOT	Texas Department of Transportation

## Location Map



## Executive Summary

As General Engineering Consultant (GEC) to the Central Texas Regional Mobility Authority (Mobility Authority), AtkinsRéalis is pleased to submit the 2024 Annual Report of Conditions for the MoPac Express Lane. This report includes conclusions and recommendations concerning the condition, maintenance, repair, and operation of the Mopac Express Lane, the estimated cost for the proper maintenance, repair and operation of the toll road during FY 2025, and the funds forecasted for Renewal and Replacement (R&R) projects for the next 5 years.

The inspections performed in fall 2023 show that the MoPac Express Lane corridor continues to be maintained in good repair, working order and condition. This observation was based on a general visual inspection of the roadways, overhead sign bridges, retaining walls, tunnels, and toll facilities.

Because of the configuration of the express lanes within TxDOT right of way, bridge structures are shared with the adjacent TxDOT-owned facility. The findings of the Texas Department of Transportation's (TxDOT) most recent Bridge Inventory, Inspection and Appraisal Program (BRINSAP) inspections conducted in 2023 were provided to the Mobility Authority by TxDOT and are reflected in this report. This report reflects the Mobility Authority's level of responsibility, understanding further coordination will be needed for repairs that fall outside of routine maintenance.

A Detailed Inspection Report of the inspection findings is transmitted separately to the Mobility Authority's Director of Engineering.

AtkinsRéalis recommends that the Mobility Authority continue to implement the routine maintenance as budgeted and scoped, and implement the R&R projects proposed for the ensuing fiscal year. Through coordination with Mobility Authority staff, and in review of the R&R projects anticipated through 2029. The following budgets are recommended:

RECOMMENDED BUDGETS	
Operating Expenses FY 2025	\$3,883,000
Maintenance Expenses FY 2025	\$825,000
R&R Fund FY 2025	\$6,063,000
R&R Fund FY 2026	\$16,888,000
R&R Fund FY 2027	\$0
R&R Fund FY 2028	\$0
R&R Fund FY 2029	\$0

The overall condition of the MoPac Express Lane, and funding levels for operations budgets exemplify the Mobility Authority's commitment to maintain and operate a safe and reliable toll road system for the Central Texas region.



# 1.0 Introduction

## 1.1 BACKGROUND

AtkinsRéalis conducted a visual inspection of the MoPac Express Lane corridor in fall 2023. The inspection assesses the general condition of roadways, overhead sign bridges, retaining walls, tunnels, and toll facilities along the roadway, and to identify any deficient elements to be restored to good working condition. This report includes conclusions and recommendations concerning the condition, maintenance, repair and operation, the estimated cost necessary for the proper maintenance, repair and operation of the MoPac Express Lane corridor during FY 2025, and the amount of funds forecasted for R&R Projects for the next 5 years.

## 1.2 INSPECTION PROCESS

The inspection covers all portions of the facility including pavement, roadside elements, retaining and noise walls, underdeck lighting, drainage structures, signs and sign bridges, pedestrian bridges, pavement markings, and associated toll infrastructure. All bridges on the MoPac Express Lane, with the exception of pedestrian bridges not located over travel lanes, are inspected as part of TxDOT's BRINSAP to implement the National Bridge Inspection Standards (NBIS).

The NBIS standards are issued by the Federal Highway Administration (FHWA) and discussed in detail in the Code of Federal Regulations (CFR), 23 CFR 650C. These standards require all bridges on the Texas Transportation Commission designated State Highway System be inventoried, inspected, and appraised every two years in accordance with the Manual of Maintenance Inspection of Bridges published by the American Association of State Highway and Transportation Officials. In addition, visual observations are performed by TxDOT maintenance personnel and the Mobility Authority, as inspected through the Performance Based Maintenance Contract (PBMC), during alternate years, when BRINSAP inspections are not conducted, under the Maintenance Bridge Inspection Tracking System Program. The Mobility Authority performs biennial structural inspections for lighting structures, cantilever and overhead sign bridges and signal poles. In addition, pedestrian bridges not located over travel lanes are inspected. These structural inspections are conducted by trained engineers in accordance with TxDOT structural inspection protocols.

For the purpose of this report, the existing roadway conditions were rated and grouped into three major categories: (1) Pavement; (2) Roadside and (3) Miscellaneous. Each category consists of specific features inspected, as shown in Table 1.

**Table 1: Roadway Inspection Elements**

CATEGORY	ITEM	DESCRIPTION OF INSPECTION
Pavement	Pavement & Shoulders	General condition of pavement and shoulders
	Curb/Gutter	Identification of deficiencies such as settlement, cracking, and displacement
	Joints	Identification of deficiencies including joint cracking, faulting, and surface deterioration, etc.
Roadside	Culverts	Identification of inadequate drainage at culverts, flumes, and weep holes and condition of safety treatments
	Ditches	Presence of erosion, silting, presence of debris, lack of vegetation, etc.
	Grates/Inlets/Piping	Identification of inadequate drainage at pipes, grates, and inlets
	Ponds	Identification of inadequate drainage, evidence of erosion, and malfunctioning components
Misc.	Signs	Conditions associated with mainline and ramp signing to include damage and day and night visibility
	Pavement Graphics	Condition of pavement graphics to include day and night visibility and section loss
	Pavement Markings	Presence of wear and tear of striping and markings to include day and night visibility and section loss
	Raised Pavement Markers	Condition of raised pavement markers to include missing markers and proper day and night visibility
	Delineators	Condition of delineation to include missing delineators and proper day and night visibility
	Metal Beam Guard Fence	Condition of MBGF and its components, terminal anchors, single guardrail terminals (SGT), etc.
	Attenuators	Condition of various crash attenuation systems
	Barriers	Condition of concrete barriers and bridge rail
	Coatings	Conditions such as peeling, absent or damaged coatings on concrete traffic barrier, concrete traffic rail, or other coated surfaces
	Fence	Condition of chain-link, barbed wire, and ornamental fencing at the right-of-way (ROW), or within maintenance limits
	Lighting	Conditions associated with lighting structures and their components, bridge underdeck lights, and nighttime inspections for proper operation
	Traffic Signals	Conditions associated with signals and their components, and nighttime inspections for proper operation
	Shared Use Path	General condition of concrete path, joints and potential obstructions

Bridge inspections were conducted in 2023 by TxDOT as part of the BRINSAP. The findings of the most recent bridge inspections were provided to the Mobility Authority and serve as the basis for the comments and recommendations in the bridge portion of this report. Inspections of pedestrian bridges not located over travel lanes were conducted in 2023 by the GEC as part of the Mobility Authority's structural inspection program.

The existing bridge conditions are rated and grouped by the following categories: (1) Deck; (2) Substructure; (3) Superstructure; (4) Channel; (5) Culverts; (6) Approaches; (7) Miscellaneous and (8) Traffic Safety. Each category consists of specific features that were inspected, as shown in Table 2.

**Table 2: Bridge (Traffic and Pedestrian) Inspection Elements**

CATEGORY	DESCRIPTION OF INSPECTION
Deck	Condition of the deck surface, its associated joints, rail, sidewalks/medians, striping, and drainage on top of the bridge structure
Superstructure	Condition of concrete beams, beam connections and bearings
Substructure	Condition of columns, bents, abutments, foundations, and riprap
Channel	Condition of the stream or creek being crossed by the bridge
Culverts	Condition of the headwalls, wingwalls, slab footing, safety devices and other associated items
Approaches	Condition of the approach slabs, rail leading up to the bridge, guard fence, and retaining walls at the bridge abutments
Miscellaneous	Condition of the warning devices such as vertical under clearances, signs, illumination and utility lines
Traffic Safety	Condition of approach rails and impact attenuators

## 1.0 Introduction *continued*

For tunnels, procedures for the structural, civil, and functional systems were performed in accordance with the current versions of the following FHWA documents:

- Tunnel Operations, Maintenance, Inspection, and Evaluation Manual, FHWA-HIF-15-005
- Specifications for the National Tunnel Inventory, FHWA-HIF-15-006

The findings of the most recent tunnel inspections were provided to the Mobility Authority by TxDOT and serve as the basis for the comments and recommendations in the tunnel portion of this report. National Tunnel Inventory elements are rated and grouped by the following categories: (1) Structural; (2) Civil; (3) Mechanical; (4) Electrical; (5) Fire/Life Safety/Security Systems; (6) Signs. Each element consists of specific features that were inspected, as shown in Table 3.

**Table 3: National Tunnel Inspection Elements Scale**

NTI ELEMENTS		
Element Section	Element Number	Element Name
Structural	10001	Cast-in-Place Concrete Tunnel Liner
	10012	Prestressed Concrete Tunnel Roof Girder
	10051	Concrete Portal
	10111	Concrete Slab-on-Grade
	10140	Gasket
Civil	10151	Concrete Wearing Surface
	10161	Concrete Traffic Barrier
Mechanical	10300	Drainage and Pumping System
Electrical	10500	Electrical Distribution System
	10600	Tunnel Lighting System
	10601	Tunnel Lighting Fixtures
Fire/Life Safety/Security Systems	10700	Fire Protection Systems
	10800	Tunnel Operations and Security System
Signs	10850	Traffic Sign
	10910	Lane Signal
	10911	Lane Signal Fixture

Retaining and noise walls, and associated components, were rated and grouped by (1) wall or (2) earth categories. Each category consists of specific features that were inspected, as shown in Table 4.

**Table 4: Wall Inspection Elements**

CATEGORY	DESCRIPTION OF INSPECTION
Wall	Condition of wall face, coping, foundations, joints, panel finishes, and Cast in Place (CIP) sections
Earth	Conditions of the top slope, toe slope, backfill, CIP and Mechanically Stabilized Earth (MSE) wall

## **1.0 Introduction** *continued*

The structural elements of the overhead sign bridges (OSB), lighting, and signals located on the roadway were inspected, as shown in Table 5.

**Table 5: Overhead Sign Bridge, Lighting and Signal Elements**

CATEGORY	DESCRIPTION OF INSPECTION
Structural	Condition of foundation
	Condition of the concrete columns
	Condition of the truss connection to the column, including the bolts
	Condition of the arm chords on the truss

The various elements of the Toll Collection System (TCS) located on the roadway were inspected, as shown in Table 6.

**Table 6: TCS Inspection Elements**

CATEGORY	DESCRIPTION OF INSPECTION
TCS	Retaining walls and copings
	Drainage features
	Civil site work, including grading, access driveways and fencing
	Toll gantries, including foundations and gantry structures
	In-Lane Processing (ILP) Equipment Enclosures, environmental protection and climate controls for housing the electronic equipment. ILP Equipment Enclosures consist of either cabinets or communications hub building.
	Conduit and ground boxes providing connections between the ILPs and the Electronic Toll Collection (ETC) Lane equipment installations
	Power and Wide Area Network (WAN) communication services up to the location of the ILP enclosures
	Emergency generators and associated fuel tanks
	Signing, pavement markings, traffic barriers and other roadway appurtenances required at each remote tolling location

The assessment is based on visual observations made in the field without conducting any detailed in-place testing. Inspection data is collected and organized in real-time by means of computer tablets pre-loaded with a Geographic Information System (GIS)-based collection application for visualization and analysis. The GIS-based maps and output data are spot-checked to verify accuracy and consistency. The observations reflect the condition of the feature(s) on the day the inspection was performed. As such, the opinions, statements, and recommendations in this report are based solely on conditions observed during the inspection. As part of this inspection, a list of roadside deficiencies is being provided to the Mobility Authority to forward to the PBMC Contractor.

AtkinsRéalis uses an inspection rating scale of 1 to 5 for assets not inspected through TxDOT programs, to determine the severity of the asset defects, shown in Table 7.

## 1.0 Introduction *continued*

**Table 7: Condition Assessment Rating Scale**

GRADE	RATING	DESCRIPTION
5	Excellent	Feature is in like-new condition. No deficiencies noted.
4	Good	Feature appearance and functionality/operability are good. No maintenance is required.
3	Degraded	Feature appearance and functionality/operability are below average. Maintenance is required but does not require emergency repair to protect the System.
2	Unsatisfactory	Feature appearance and functionality/operability are substandard. Maintenance is required, as soon as practical <sup>(1)</sup> , but does not require emergency repair to protect the System.
1	Failing	Feature appearance and functionality/operability are unacceptable. Feature has failed and may require emergency repair to protect the public or System. <sup>(2)</sup>

**NOTES:**

(1) *Timeframe for which, under normal circumstances, repair work would be prioritized and scheduled.*

(2) *The need for emergency repair should be determined based on response times set forth in maintenance protocols set forth by the Mobility Authority as appropriate for a specific deficiency.*

*A rating of 5 indicates the asset is adequately performing or is in “like-new” condition and does not require maintenance action.*

*A rating of 4 indicates some level of degradation of the asset but has not affected performance and does not require maintenance.*

*A rating of 3 indicates some level of degradation of the asset performance and requires maintenance action but does not warrant expedited maintenance.*

*A rating of 2 indicates the defect identified is showing signs of the asset degrading to the point that it is no longer functional and requires expedited maintenance to protect the public or the System.*

*A rating of 1 indicates that the asset is out of service and is in need of replacement or reconstruction.*

For bridges, an inspection rating scale of 0-9 is used to determine the severity of the asset defect, where a “9” indicates that an element is in “Excellent” condition and a “0” indicates that an element has failed, as shown in Table 8.

**Table 8: Bridge Condition Assessment Rating Scale**

GRADE	RATING	DESCRIPTION
9	Excellent	All elements are in excellent condition.
8	Very Good	No problems noted.
7	Good	Element has some minor problems. Minor maintenance may be needed.
6	Satisfactory	Minor deterioration of structural elements (limited). Maintenance may be needed.
5	Fair	Minor deterioration of structural elements (extensive). Minor rehabilitation may be needed.
4	Poor	Deterioration significantly affects structural capacity. Major rehabilitation may be needed.
3	Serious	Deterioration seriously affects structural capacity. Repair / rehabilitation is required immediately.
2	Critical	Element shows advanced deterioration. It may be necessary to close the bridge until repaired.
1	Failing	Bridge is closed to traffic, but repairable.
0	Failed	Bridge is closed, and beyond repair.



## 1.0 Introduction *continued*

For tunnels, a condition rating scale is used to determine the severity of the asset defect, where “Condition State 1” indicates that an element is in “Good” condition and “Condition State 4” indicates that an element is in “Severe” condition, as shown in Table 9, below.

**Table 9: Tunnel Inspection Rating System**

CONDITION	DESCRIPTION
1	Good condition – no notable distress
2	Fair condition – isolated breakdowns or deterioration
3	Poor condition – widespread deterioration or breakdowns without reducing load capacity
4	Severe condition – The condition warrants a structural review to determine the effect on strength or serviceability of the element or tunnel, OR a structural review has been completed and the defects impact strength and serviceability of the element or tunnel.

### 1.3 DESCRIPTION OF CORRIDOR

Although not considered a System corridor, the Mobility Authority constructed, operates, and maintains the variably-priced MoPac Express Lane. The MoPac Express Lane consists of one express lane in each direction between Parmer Lane and Cesar Chavez Street along an 11-mile stretch of SL-1. The Express Lane is located in the center of the SL-1 corridor and is separated from the existing lanes by a four- to five-foot-wide striped buffer zone with flexible delineators. Drivers are able to access the MoPac Express Lanes at the north and south begin points, or near the halfway points at Far West Boulevard and Anderson Lane, necessitating two tolling points.

### 1.4 MAINTENANCE PROGRAM OVERVIEW

The Mobility Authority utilizes a System-wide PBMC to maintain its infrastructure. The intent of the PBMC is for the contractor to manage and plan maintenance activities to meet the performance requirements as set forth in the contract. The general maintenance obligations of the PBMC are as follows:

1. Maintain the corridor and related transportation facilities in a proactive and timely manner.
2. Minimize delay and inconvenience to users and, to the extent the Contractor is able to control, users of adjacent facilities.
3. Identify, manage, and correct all defects and damages from incidents to include cleanup of spilled cargo, removal and disposal of damaged and unsalvageable materials, obtaining required permits, etc.
4. Monitor and observe weather and weather forecasts to proactively deploy resources to minimize delays and safety hazards due to heavy rains, snow, ice, or other severe weather events.
5. Remove debris, including litter, graffiti, animals, and abandoned vehicles or equipment from the right-of-way.
6. Minimize the risk of damage, disturbance, or destruction of third-party property during the performance of maintenance activities.
7. Coordinate with the Mobility Authority and perform duties and functions on their behalf.
8. Perform systematic inspections and maintenance in accordance with the provisions of the Maintenance Management Plan to include contractor's Safety and Health Plan and in accordance with the contract.

The PBMC is administered by the Mobility Authority. MoPac Express Lane and its performance are monitored on a daily basis. Monthly audits are performed through condition assessments on 20% of the roadway and are conducted on randomly selected sections. This ensures the contractor is maintaining the facilities within the tolerances established by the contract performance measures.

## **1.0 Introduction** *continued*

A PBMC was procured and commenced on July 1, 2020. The Contractor was declared in default in October of 2021. The Mobility Authority then entered an emergency maintenance services contract in November of 2021 to ensure safe and continued operations of Mobility Authority facilities. The Mobility Authority entered into a tender agreement with the surety, which established a contractor for completion through the end of the FY 2023 performance bond. The Mobility Authority has entered into an agreement with the completion contractor to resume full-scope services provided by the PBMC through FY 2028.

## 2.0 Annual Report of Conditions

### 2.1 OVERVIEW

Visual daytime and nighttime condition assessments were conducted in the fall of 2023. Most ratings are based on the 5-point rating scale described in Table 7, while bridges are assessed on the 10-point rating scale described in Table 8, and tunnels are assessed on the 4 condition states described in Table 9. The results of this year's annual inspection indicate that the MoPac Express Lane corridor is performing as expected, is being maintained in accordance with the Mobility Authority's asset management program, and is in good repair. Corrective measures are being taken to address deficiencies through the Mobility Authority System-wide PBMC and stand-alone maintenance projects.

### 2.2 PAVEMENT

Pavement and Shoulders: The inspection identified areas of weathering, shallow to isolated deep rutting, isolated alligator cracking, and longitudinal and transverse cracking. Although these deficiencies represent premature degradation of the pavement, they do not affect the safety and operations of the MoPac Express Lane corridor. Preventative maintenance strategies are being reviewed to mitigate the premature pavement degradation, to include replacement of isolated pavement areas where necessary. A pavement repair project is scheduled to let in FY 2025, under which these issues will be addressed.

Curb and Gutter: MoPac Express Lane contains no curb and gutter sections.

Joints: Visual inspection identified several areas of pavement failure at joint locations, several of which had been temporarily patched. A pavement repair project is scheduled to let in FY 2025, under which these issues will be addressed.

### 2.3 ROADSIDE

Culverts: No deficiencies were noted as a result of visual inspection.

Ditches: MoPac Express Lane contains no ditches.

Grates, Inlets, Piping: The most common deficiencies noted consisted of siltation at drainage inlets and pipes with more than 20% capacity blockage, thus reducing the drainage to less than the factor of safety. Deficiencies found fall within the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

Ponds: The MoPac Express Lane project contains no ponds.

The deficiencies found fall within the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

### 2.4 MISCELLANEOUS

Signs: Signs were assessed through both day and nighttime visual inspections during the inspections. Most signs on MoPac Express Lane were clearly visible and legible to the inspector. There were noted instances of MoPac Express Lane signs lacking reflectivity.

Pavement Graphics, Markings, and Raised Pavement Markers: Deficiencies noted as a result of day and nighttime visual inspection include locations on the MoPac Express Lane corridor where raised pavement markers are missing and striping has a minor loss of visibility (less than 10% reduction).

Delineators: Day and nighttime visual inspection indicate that there were several locations on the MoPac Express Lane corridor where the reflectivity of the delineation between the managed and general-purpose lanes is reduced by 30-40% due to dirt or other markings. Numerous locations of missing CTB delineator tabs were noted as well.

## 2.0 Annual Report of Conditions *continued*

Metal Beam Guard Fence, Attenuators and Barriers: Several instances of impact damage to concrete traffic barriers were noted during inspection.

Coatings: Day and nighttime visual inspection did not result in any noted deficiencies to coatings.

Lighting: Lighting along the MoPac Express Lane corridor was inspected for damage and proper functioning at night. In general, illumination features are in good repair. For safety and continuous lighting, there were several areas of lighting not functioning and missing access panels.

The deficiencies found fall within the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

### 2.5 BRIDGES

All of the MoPac Express Lane bridges were inspected and evaluated in 2023, as part of TxDOT's BRINSAP which occurs every two years per federal requirements. The findings of these bridge inspections serve as the basis for the comments and recommendations in the bridge portion of this report. All bridge structures associated with the tolled lanes are shared with the adjacent TxDOT-owned facility. This report reflects the findings understanding further coordination will be needed for repairs that fall outside of routine maintenance.

Based on a review of the 2023 inspection reports and visual observations, the 16 shared SL 1 and MoPac Express Lane corridor bridges are in good repair. Of the 65 total components rated, 17% received a 6-rating. None of the components rated less than a 6. The most common deficiencies noted were vegetation encroachment, clogged deck drains and abutment joint seal failure. These deficiencies fall within the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. One bridge is experiencing what is described as "major erosion and scour as well as concrete riprap undermining." The Mobility Authority will coordinate with TxDOT to develop a work plan to address these issues.

### 2.6 TUNNELS

Both of the MoPac Express Lane tunnels were inspected and evaluated in 2023, as part of TxDOT's tunnel inspection program, which occurs every two years per FHWA requirements. The findings of these inspections serve as the basis for the comments and recommendations in the tunnel portion of this report.

Based on a review of the 2023 inspection reports and visual observations, the two tunnels are in good repair. Of the 32 total elements rated, 16% received a Condition State 3 rating. None of the components rated exceeded Condition State 3. Deficiencies noted include cracking and efflorescence in prestressed concrete roof girders, spalling on girders with exposed reinforcement, height vertical differential between girders, gaps between bottom of girders and bearing pad, and missing anchor bolts for ceiling-mounted lighting fixtures. The cause of the efflorescence in the roof girders and height vertical differential between girders will require additional investigation for mitigation. Spalling and missing anchor bolts are within the scope of the PBMC and should be addressed as part of regularly scheduled maintenance activities.

### 2.7 RETAINING WALLS

The retaining walls on the MoPac Express Lane corridor consist primarily of Mechanically Stabilized Earth walls. Based on visual observations, the Mopac Express Lane corridor retaining walls are in good repair. The most common deficiencies noted consisted of vegetation growth in wall panels and debris accumulation in drainage flumes blocking flow. The deficiencies found fall within the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

### 2.8 OVERHEAD SIGN BRIDGES

Structural inspection of the overhead sign bridges, which include both sign structures and toll gantries was conducted to identify deficiencies associated with their foundations, anchor bolts, base plates, column supports, and arm chord connections and members.

Deficiencies noted include minor rust and anchor bolts in need of tightening, isolated incidences of missing bolts on truss, and missing access cover plates. The most common deficiency is the lack of tack welding on nuts. The deficiencies found fall within the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

### 2.9 TOLL COLLECTION SYSTEM

The fall 2023 annual inspection performed by the GEC included inspection of the toll infrastructure only; it did not include inspection of the tolling equipment itself, which is inspected by a separate party through a discrete inspection initiative.

The MoPac Express Lane corridor includes four ILP cabinets located at the southbound MoPac Express Lane near Parmer Lane (under the mainlane bridge over Park Bend Drive), northbound MoPac Express Lane at Far West Boulevard, northbound MoPac Express Lane at RM 2222, and northbound MoPac Express Lane north of Enfield Road. An emergency generator serves each tolling location. Visual inspections of the toll system infrastructure indicate that primary components are in good repair. Efforts should be made to continue to keep all TCS components clean, well-maintained, and secure.

Retaining Walls and Coping: The MoPac Express Lane TCS has no associated retaining walls or coping.

Drainage Features: The MoPac Express Lane TCS has no associated drainage features.

Civil Site Work: Visual inspection did not result in any noted grading, access driveway, or fencing deficiencies.

Toll Gantries: It was noted that the upstream gantry along the northbound lanes north of Enfield Road was missing an access plate (top of gantry) to toll equipment wiring at the time of inspection.

ILP Enclosures: ILP enclosures were found to be structurally sound and providing the necessary protection for toll equipment housed within.

Conduit and Ground Boxes: Visual inspection did not reveal any deficiencies.

Power and Wide Area Network: Power connection to the TCS was found to be in good repair.

Emergency Generators: No deficiencies were noted.

Signing, Pavement Markings, and Barriers: Any such assets are not unique to the TCS and are covered under their respective areas in this report.

The deficiencies found fall within the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.



## 3.0 Ongoing Initiatives

### 3.1 ASSET MANAGEMENT

The Mobility Authority continues to improve upon their Transportation Asset Management Plan to optimize the condition and performance of its assets.

The Mobility Authority is using a production version of software, that is web-enabled integrated GIS- based, to serve as their Computerized Maintenance Management System (CMMS). Using this CMMS, the Mobility Authority records maintenance activity accomplishment associated with the GIS- based asset inventory. The maintenance contractor is required to utilize the CMMS, directly entering day-to-day work requests, reporting work accomplishments and other reporting requirements as described in the PBMC contract. The Mobility Authority is using the CMMS to manage the maintenance contractor's activities.

The Mobility Authority has implemented a pavement management program, collecting pavement condition data on regularly scheduled intervals. This inventory and maintenance history will be utilized to support the agency in decision-making, providing a strategy to proactively manage its pavement program.

In addition, the Mobility Authority utilizes dashboards to visualize performance data including crash data, bridge inspections, annual inspection deficiencies and financial data for tracking and planning.

This revised format for reviewing data better serves the quarterly evaluation of the performance of its corridors. Evaluation results are analyzed and used to aid the Mobility Authority in planning and implementing operational improvements as part of the safety management process. If an operational improvement is supported, it should be programmed and considered for funding. In some cases, further investigation is needed to facilitate an informed decision.

### 3.2 TECHNOLOGY INITIATIVES

The Mobility Authority is leveraging industry best practices in technology to enhance safety and operations on its roadway System.

#### 3.2.1. DATA PLATFORM SOLUTION

The Mobility Authority has implemented a toll transaction solution that provides flexibility and increased control of data, providing better and more informed decision-making. This solution began processing transactions in August 2023.

The objective of the Data Platform Solution is to transition all toll transaction data processing and data management capabilities after the point of transaction creation to a Mobility Authority-managed solution. A third-party vendor continues to collect and create the toll transaction at the roadside, then pass the fully formed toll transaction to the data platform. Business logic and rules then consume the transaction and route the payment request to either an interoperability partner or the Pay by Mail vendor.

The Mobility Authority-managed data platform also supports additional business capabilities such as external reporting and internal data analytics. Future development could include adding promotions and discount program logic.

## 3.0 Ongoing Initiatives

### 3.2.2. INTELLIGENT TRAFFIC SYSTEMS MASTER PLAN

The Mobility Authority has continued to follow its existing Intelligent Traffic Systems (ITS) Master Plan to improve and expand the systems along its existing corridors and those under construction. ITS technologies, such as CCTV cameras, Microwave and Bluetooth detectors, Connected Vehicle Roadside Units, Wrong-Way Driving Detection Systems, and Dynamic Message Signs among other technologies improve the Mobility Authority's ability to monitor the performance of its roadways, detect and respond to incidents, and deliver important messaging to drivers. In a continued effort to standardize the approach to ITS, the Mobility Authority is in the process of developing Minimum Technical Requirements and Standards. These will include technical specifications, standard drawings, procedure, and equipment types to ensure all new ITS and ITS-related construction meets the needs of the Mobility Authority ITS Master Plan.

### 3.2.3. ITS RETROFITS AND EXPANSIONS

Continuing the effort to leverage new technology to maximize safety along its roadways, the Mobility Authority has initiated multiple projects to retrofit existing ITS equipment and install new ITS systems along its managed corridors.

System-Wide Weather Sensor Deployment will bring Road Weather Information System devices to existing ITS sites along the MoPac Express Lane corridor. These devices will provide the Mobility Authority the ability to monitor roadway weather conditions in real-time, including ambient temperature, pavement temperature, precipitation, visibility, wind speed, and more. This will reduce reliance on third-party weather reports allowing for quicker notifications to motorists (through DMS messaging, Twitter, etc.), law enforcement and emergency services, as well as partnering mobility agencies. This project is anticipated to be complete in May 2024.

### 3.2.4. REGIONAL COLLABORATION

The Mobility Authority remains a proactive contributor in the exploration and execution of leading-edge solutions and presently participates in numerous regional initiatives.

Central Texas Traffic Management System: This partnership, involving the Mobility Authority, CAMPO, TxDOT, Capital Metro Transportation Authority (CapMetro), and the cities of Austin, Cedar Park, Georgetown, Kyle, Leander, Pflugerville, Round Rock, and San Marcos, aims to formulate a region-wide strategy for traffic management. It leverages shared information and collective problem-solving throughout all stages of project development and delivery. An integrated system will utilize a unified data environment that links with individual agency traffic management systems.

Central Texas Construction Partnership: This partnership represents a collaboration with the Mobility Authority, TxDOT, City of Austin, Travis County, CapMetro, CAMPO, and the Austin Transit Partnership, with the central goal of actively informing both the public and relevant agencies about ongoing construction work zones and related traffic impacts. The aim is to foresee and manage traffic flow to sustain existing service standards. A collaborative methodology has been forged with partner organizations to facilitate the creation of a Mobility App and Dashboard. This resource aims to keep the public, state and local officials, and contractors updated, aid in decision-making processes, and enhance safety across the transportation network.

Texas SMARTTrack: This partnership showcases collaboration at its finest, involving the Mobility Authority, the University of Texas at Austin, CAMPO, TxDOT, and the City of Austin. Texas SMARTTrack, an acronym for Safety, Mobility, and Autonomy Research and Testing, serves as a world-class testing ground for shared insights from transportation agencies, academia, and the private sector in order to promote improved traffic safety, operations and management, via smart transport infrastructure and automated vehicles. Texas SMARTTrack is designed to be used by governmental bodies for technology evaluations, academic researchers for technology development, and private sector Original Equipment Manufacturers for testing both new vehicles and state-of-the-art technical innovations.

## 4.0 Annual Budgets

### 4.1 ANNUAL OPERATING BUDGET

Annual budgets are currently being prepared by the Mobility Authority for the proper maintenance, repair, and operation of MoPac Express Lane for FY 2025. These budgets, which are based on estimated cost projections, together with the factors that may influence costs during this period, should be reviewed by the GEC as they are made available from the Mobility Authority. These budgets should take into account the recommended maintenance and repairs included in the Annual Report of Conditions; and they should be based on current operating practices and agency organization, anticipated changes in methods of operations, and changes in Mobility Authority staff and organization projected through FY 2025.

The operations costs consist of administration costs, including: accounting, financial and legal expenses, toll collection and toll system maintenance, customer service, violation processing, banking services, policing, and other costs associated with the operations of the MoPac Express Lane corridor. The estimated costs for the proper operation of these facilities for the coming fiscal year is based on a review of existing conditions, together with a variety of factors that may influence costs during this period. The GEC estimates the FY 2025 Operating Expenses to be \$3.8 million.

The actual Annual Operating Budget should be finalized by the Mobility Authority on or before June 30, 2024.

It is the opinion of the GEC that the costs projected for the operation of MoPac Express Lane are reasonable estimations of anticipated costs for the FY 2025 Annual Operating Budget.

### 4.2 ANNUAL MAINTENANCE BUDGET

The maintenance costs include administration costs, roadway contract maintenance activities, and other costs associated with the maintenance of Mopac Express Lane. The estimated costs for the proper maintenance and repair of this facility for the coming year is based on a review of existing conditions, together with the factors that may influence costs during this period. The GEC estimates the FY 2025 Maintenance Expenses to be \$0.8 million.

This budget includes the cost of the PBMC contract, asset management support and remediation costs. The actual Annual Maintenance Budget should be finalized by the Mobility Authority on or before June 30, 2024.

It is the opinion of the GEC that the costs projected for the maintenance of MoPac Express Lane are reasonable estimations of anticipated costs for the FY 2025 Annual Maintenance Budget.

### 4.3 ANNUAL CAPITAL BUDGET

The Annual Capital Budget details the Mobility Authority's planned capital expenditures during the ensuing fiscal year. There are no planned capital expenditures for FY 2025 at this time.

## 5.0 Recommendations

### 5.1 ROUTINE MAINTENANCE

AtkinsRéalis recommends that the Mobility Authority continue to implement the routine maintenance as budgeted and scoped through the PBMC. Deficiencies found were outlined in Sections 2.2 through 2.9 of this report.

### 5.2 RENEWAL & REPLACEMENT PROJECTS

The purpose of R&R funding is to pay the cost of:

- Unusual or extraordinary maintenance or repairs not occurring annually, and renewals and replacements, including major items of equipment;
- Repairs or replacements resulting from an emergency caused by some extraordinary occurrence; and,
- Paying all or any part of the cost of any capital improvements.

The following summarize potential R&R projects and their anticipated costs:

#### MoPac Express Lane PFC Repair:

The Mobility Authority expects to perform preventative maintenance of the MoPac Express Lane pavement. A possible solution is to repair localized PFC deterioration and perform isolated repairs as part of normal R&R cycles. The estimated expenditure for this project is \$1.8 million in FY 2025.

#### MoPac Express Lane Overlay Project and Bollard Replacement Project:

The Mobility Authority expects to perform preventative maintenance of the MoPac Express Lane corridor pavement. A possible solution is to mill and overlay the corridor as part of normal R&R cycles. This will require the removal of existing traffic bollards and replacement with new traffic bollards once the new pavement is constructed. The estimated expenditure for this project is \$15.3 million in FY 2026. Other effective alternatives are being considered to extend the life of the asset while reducing and/or spreading preventative maintenance costs over multiple years.

#### MoPac Express Lane Electronic Toll System Replacement:

The Mobility Authority anticipates replacing the toll system on MoPac Express Lane as part of its typical R&R cycle. Roadside equipment including servers, equipment cabinets, and other tolling hardware and software will be replaced, configured, and tested for each toll zone location at approximately seven-year intervals. The estimated expenditure for this project is \$4.0 million in FY 2025.

#### MoPac Express Lane Roadway Traveler Communications:

The Mobility Authority is planning a project to improve roadway traveler communications through installation of 15 Connected Vehicle roadside units along the MoPac Express Lane corridor. These will enable the Mobility Authority to communicate directly to in-vehicle systems and improve the overall safety and mobility of the corridor. The estimated expenditure for this project is \$236,000 in FY 2025.

#### MoPac Zone Controller Upgrades:

The Mobility Authority anticipates replacement, configuration, and data migration of core infrastructure equipment within the Mobility Authority TCS. This project is considered a hardware refresh of the image storage, data storage, application servers, and host servers for both primary and secondary systems. The estimated expenditure for this project is \$300 thousand in FY 2025.

#### MoPac Express Lane Safety Technology:

As a part of the Mobility Authority's ITS Master Plan, this safety project will deploy video-based vehicle detection systems to two locations along MoPac Express Lane. The intent of these systems is to accurately detect and identify express lane violators, also known as "lane divers." This project is for proof of concept and documentation of this behavior. The estimated expenditure for this project is \$1.6 million in FY 2026.







# 2024



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