



CENTRAL TEXAS REGIONAL  
MOBILITY AUTHORITY

# 2021 ANNUAL REPORT OF CONDITIONS

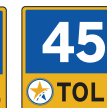


Prepared by:

## ATKINS

Member of the SNC-Lavalin Group

General Engineering Consultant



### CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY SYSTEM





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March 1, 2021

Mr. William Chapman, Interim Executive Director & Chief Financial Officer  
Central Texas Regional Mobility Authority  
3300 N. Interstate 35, Suite 300  
Austin, Texas 78705

Subject: **2021 Annual Report of Conditions – 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest, 183 South, 183 North Mobility Project**

Mr. Chapman:

As General Engineering Consultant to the Central Texas Regional Mobility Authority (Mobility Authority) and in accordance with Section 712 of the Master Trust Indenture, Atkins North America, Inc. (Atkins) is pleased to submit the 2021 Annual Report of Conditions for the 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest and 183 South Interim Build. This report sets forth our findings as to the condition of these facilities, as well as our recommendation of proper operations and maintenance of the facilities during fiscal year (FY) 2022.

Atkins conducted a visual inspection of all portions of the 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest, and the 183 South Interim Build Project in fall 2020. Bridges are inspected as part of TxDOT's 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 the most recent BRINSAP inspections, conducted in 2019 and 2020, were reviewed and are reflected in this report.

The 183 South Interim Build extends approximately 4.3 miles from US 290 southward to the Boggy Creek bridge and opened to traffic and tolling in 2019. The 183 South Ultimate Project Configuration extends approximately 4 additional miles southward to the SH 71 interchange and opened in 2021. The 183 South Ultimate Project Configuration was not in operation at the time of inspections, although expenses for operations and maintenance should be included in the recommended budgets for FY 2022.

Two additional projects were added to the System this fiscal year. The 183A Phase III Project will extend the 183A Turnpike 6.6-miles north from Hero Way to north of SH 29 and is anticipated to begin construction in 2021. The 183 North Mobility Project will include two express lanes in each direction along a 9-mile stretch of US 183 between State Highway (SH) 45 North/Ranch-to-Market (RM) 620 and State Loop 1 (MoPac), the addition of a fourth general-purpose lane in each direction, and two express lane direct connectors to and from MoPac. Construction of the 183 North Mobility Project is also expected to begin in 2021. Both the 183A Phase III and 183 North Mobility Projects were not in operation at the time of inspection, although expenses for capital expenditures should be included in the recommended budgets for FY 2022.

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,

Gregory S. Blake, P.E. Sr. Project Director  
Atkins North America, Inc.  
Enclosure

Cc: Tracie Brown, Director of Operations, Central Texas Regional Mobility Authority  
John Jones, Roadway and Maintenance Facility Manager, Central Texas Regional Mobility Authority  
Mike Sexton, P.E., Acting Director of Engineering, Central Texas Regional Mobility Authority  
File





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# Acronyms and Abbreviations

## ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ASTM	American Society for Testing and Materials
BRINSAP	Bridge Inventory, Inspection and Appraisal Program
CAMPO	Capital Area Metropolitan Planning Organization
CDA	Comprehensive Development Agreement
CFR	Code of Federal Regulations
CIP	Cast in Place
CR	County Road
D/B	Design-Build
DC	Direct Connector
ETC	Electronic Toll Collection
FHWA	Federal Highway Administration
FA	Final Acceptance
FY	Fiscal Year
GEC	General Engineering Consultant
GFCI	Ground-fault Circuit Interrupter
GIS	Geographic Information System
IH	Interstate Highway
ILP	In-Lane Processing
IRI	International Roughness Index
LP	Liquified Petroleum
MBGF	Metal Beam Guard Fence
MMP	Maintenance Management Plan
MSE	Mechanically Stabilized Earth
MUTCD	Manual on Uniform Traffic Control Devices
NBIS	National Bridge Inspection Standards
NEPA	National Environmental Policy Act of 1969
NFPA	National Fire Protection Association
PBMC	Performance Based Maintenance Contractor
R&R	Renewal and Replacement
RM	Ranch to Market Road
ROW	Right-of-Way
RPM	Raised Pavement Markers
SGT	Single Guardrail Terminal
SH	State Highway
TAMP	Transportation Asset Management Plan
TCS	Toll Collection System
TIM	Traffic Incident & Management Center
TOM	Thin Overlay Mix
TxDOT	Texas Department of Transportation
TTC	Texas Transportation Commission
US	United States Highway
WAN	Wide Area Network





# Executive Summary

As per Section 712 of the Master Trust Indenture, the Central Texas Regional Mobility Authority (Mobility Authority) requires the General Engineering Consultant (GEC) to conduct an inspection of the “System” at least once in the fiscal year following substantial completion of the initial project funded with bond obligations, and in each fiscal year thereafter. The System is currently comprised of the 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest, 183 South and the 183 North Mobility Project.

Following each inspection and on or before the 90th day prior to the end of each fiscal year, the GEC should submit to the Mobility Authority a report setting forth:

- ▶ Its findings as to whether the System has been maintained in good repair, working order and condition;
- ▶ Its advice and recommendations as to the proper maintenance, repair and operation of the System during the ensuing fiscal year; and
- ▶ An estimate of the amount of money necessary for such purposes, including its recommendations as to the total amounts and classifications of items and amounts that should be provided for in the annual operating budget, the annual maintenance budget and annual capital budget for the next ensuing fiscal year.

Copies of such reports are to be provided to the Trustee by the Mobility Authority. Atkins North America, Inc. (Atkins), as GEC, completed the inspections in fall 2020 and is pleased to report that the System has been maintained in good repair, working order and condition. This observation was based on a general visual inspection of the roadways, buildings, overhead sign bridges, retaining walls and toll gantries.

Atkins recommends that the Mobility Authority continue to implement the routine maintenance as budgeted and scoped, and also implement the Renewal and Replacement (R&R) Projects planned for the ensuing fiscal year. It is the GEC’s understanding that portions of these R&R projects should be funded through bond proceeds for FY 2022 as summarized, below. Through coordination with Mobility Authority staff, and in review of the anticipated Renewal and Replacement Projects anticipated through 2026, the following budgets are recommended:

## RECOMMENDED BUDGETS

Operating Expenses FY 2022	\$30,300,000
Maintenance Expenses FY 2022	\$7,700,000
183A Phase III Project Fund FY 2022	\$8,100,000
R&R Fund FY 2022	\$1,900,000
R&R Fund FY 2023	\$1,300,000
R&R Fund FY 2026	\$1,600,000

The overall condition of the System, and funding levels for the System operating 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

In compliance with the requirements of the Master Trust Indenture, Atkins conducted a visual inspection of the System roadways currently open to traffic in fall 2020. The inspection was conducted to assess the general condition of roadways, buildings, overhead sign bridges, retaining walls and toll gantries along the facilities 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 amount of money necessary for the proper maintenance, repair and operation of the toll roads during Fiscal Year (FY) 2022, and the amount of funds available in the R&R Fund. Although the Ultimate Project Configuration of the 183 South Project is not currently in operation, expenses for operations and maintenance should be included in the recommended budgets for FY 2022.

## 1.2 INSPECTION PROCESS

The inspection covered all portions of the facilities including pavement, roadside elements, retaining and noise walls, underdeck lighting, drainage structures, signs and sign bridges, pavement markings and associated buildings and equipment. All bridges constructed on the Mobility Authority System, with the exception of the pedestrian bridges that are not located over travel lanes, are inspected as part of as part of the Texas Department of Transportation's (TxDOT) Bridge Inventory, Inspection and Appraisal Program (BRINSAP) to implement the National Bridge Inspection Standards (NBIS). These 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 (TTC) designated State Highway System to 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 (AASHTO).

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 consisted of specific features that were inspected, as shown in Table 1, below.

**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 mainlane 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 (MBGF)	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	

# 1.0 Introduction *continued*

Bridge inspections were conducted in 2019 and 2020 by TxDOT as part of BRINSAP. The resulting reports were provided to the Mobility Authority and serve as the basis for the comments and recommendations in the bridge portion of this report.

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 below.

**Table 2: Bridge Inspection Elements**

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

For bridges, a 10-point numerical rating scale 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 3 below.

**Table 3: Bridge Condition Assessment Rating Scale.**

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

To ensure the health of the System, both new and existing retaining and noise walls, as well as the various components of retaining and noise walls were rated and grouped in categories described in Table 4, below.

**Table 4: Wall Inspection Components**

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

For the purpose of this report, the existing building conditions were rated and grouped by the following categories: (1) Architectural; (2) Structural; (3) Mechanical and (4) Electrical. Each category consisted of specific features that were inspected, as shown in Table 5, page 8.

**Table 5: Building Inspection Elements**

CATEGORY	ITEM	DESCRIPTION OF INSPECTION
<b>Architectural</b>	Building Exterior	Condition of walls, glazing, decks, stairs, handrails, sealants, soffits, doors, paint, and signage
	Building Interior	Conditions of the lobby, finishes, stairs, doors, restrooms, security system, and ceiling tile
	Roof	Condition of the surface condition, seams, expansion joints, and access
	Drainage	Condition of the roof drains, secondary drainage, gutters, downspouts, and edge flashing
	Site	Condition of the ramps, rails, lighting, retaining walls, screen walls, landscaping, irrigation, and parking
<b>Structural</b>	Structural	Condition of the foundation, ground floor slab, grade beams, walls, elevated floor slabs, roof, columns, and joints
<b>Mechanical</b>	Mechanical	Condition of cooling and heating systems, air handlers, exhaust fans, ductwork, piping, and insulation
	Plumbing	Condition of the piping, water flow and pressure, hot water source, water pumps, natural gas plumbing, sanitary sewer plumbing, fixtures, and water softening system
	Fire Protection Systems	Condition of fire protection systems and backflow preventers
<b>Electrical</b>	Electrical	Condition of the primary transformer, step-down transformer, electrical room, wiring, conduits, emergency power, and communication systems

The Overhead Sign Bridges located on each roadway were inspected as part of this report. The inspection covered the structural items of the structures, as shown in Table 6 below.

**Table 6: Overhead Sign Bridge Elements**

CATEGORY	DESCRIPTION OF INSPECTION
<b>Structural</b>	Condition of the 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 toll system infrastructure required to accommodate the Toll Collection System (TCS) consists of various components at each remote tolling location including, but not limited to those indicated in Table 7, below.

**Table 7: TCS Inspection Elements**

CATEGORY	DESCRIPTION OF INSPECTION
<b>TCS</b>	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 buildings.
	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



# 1.0 Introduction *continued*

The assessment is based on general 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 GIS-based collection application for visualization and analysis. The GIS based maps and output data are spot-checked to verify accuracy and consistency. It should also be noted that 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 either the Performance Based Maintenance Contractor (PBMC) or the construction contractor to be addressed.

No representation or warranty is made that all defects have been discovered or that additional defects will not appear in the future. An inspection rating scale of 1 to 5 is used to determine the severity of the asset defect, shown in Table 8 below.

**Table 8: Condition Assessment Rating Scale**

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

**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*

# ▶ 1.0 Introduction *continued*

## 1.3 DESCRIPTION OF SYSTEM

### 1.3.1. 183A TURNPIKE

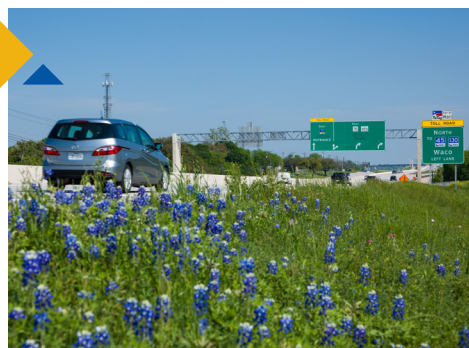
The Mobility Authority constructed, operates and maintains the 183A Turnpike, a tolled facility stretching 10.4 miles from RM 620 to CR 276 in Williamson County. The corridor is a critical link in the highway network serving an area experiencing tremendous development and economic growth. The first phase of 183A Turnpike opened to traffic in March 2007, effectively reducing congestion, enhancing mobility, and providing safer travel. Phase II opened to traffic in April 2012 and included a 4.7-mile extension of the shared use path adjacent to the 183A Turnpike from RM 1431 to Hero Way, resulting in a significant shift of traffic from the non-tolled frontage roads to the new tolled mainlanes. In fall 2015, the intersection of 183A Turnpike and US 183 was reconstructed to make the intersection safer, easier to navigate and to enable better access to developments along the 183A Turnpike corridor. The third phase of the 183A Turnpike has been designed and developed. Construction of the 183A Phase III Project is anticipated to begin in 2021. The new 6.6-mile roadway will extend the existing 183A corridor northward from Hero Way to 1.1 miles north of SH 29 and provide two tolled lanes in each direction, within the existing TxDOT and Mobility Authority right-of-way and within the median of the existing US 183 corridor.



### 1.3.2. 290E

The Mobility Authority constructed, operates, and maintains the 290E, a 6.2-mile limited-access toll road along US 290 East, spanning from US 183 to just east of Parmer Lane. The corridor is a significant link to important roadways in the region including US 183, IH-35 and SH 130, and provides a critical evacuation route from the Gulf Coast region. The first phase of 290E, which consisted of four tolled direct connectors at the US 183 interchange, opened in December 2012. The second phase of the project opened to traffic in May 2014, effectively reducing congestion on US 290 East and bringing reliable travel times for tolled and non-tolled travel.

The Mobility Authority, in partnership with TxDOT, finished construction in 2021 of three new direct connector (DC) flyover bridges at the convergence of 290E and SH 130 to link the two facilities together. This gives drivers a safe, efficient, free-flowing direct connection between the two toll roads. The new flyovers also benefits drivers who prefer the non-tolled option by freeing up capacity at the frontage road intersection. The northbound SH 130 to westbound 290E flyover opened in January 2019, the northbound SH 130 to westbound 290E flyover opened in January 2020, and the southbound SH 130 to eastbound 290E flyover opened in February 2021 and will be owned by TxDOT.



### 1.3.3. SH 71 EXPRESS

The Mobility Authority operates and maintains SH 71 Express, which stretches approximately 4 miles eastward along SH 71 from Presidential Boulevard to east of SH 130 in Travis County. The project, constructed by TxDOT, added a toll lane in each direction along SH 71 and opened to traffic in February 2017.

The facility enhances traffic flow, mobility, and driver and pedestrian safety along SH 71, a key east-west corridor connecting to the Austin-Bergstrom International Airport, the city of Bastrop, and points beyond. The project was designed to eliminate weaving

## ▶ 1.0 Introduction *continued*

and merging caused by airport-bound traffic exiting SH 71 while sharing the road with through-traffic. It also offers drivers an alternative to the long travel times caused by multiple traffic signals within the project limits. The new lanes offer a free-flowing and reliable bypass route for through-traffic, especially during peak hour congestion.

The same number of non-tolled travel lanes that existed prior to the project have been preserved and enhanced. Additionally, approximately 5 miles of shared use path line both sides of the corridor for bicycle and pedestrian recreation and travel.

### 1.3.4. SH 45 SOUTHWEST

The Mobility Authority constructed, operates and maintains SH 45 Southwest, a tolled facility stretching 3.6 miles from State Loop 1 to FM 1626 in Southern Travis and Northern Hays counties. The corridor, which opened to traffic in June 2019, includes two tolled lanes in each direction, and was built without frontage roads to limit impacts to the surrounding environment. The road offers drivers an alternative to congested neighborhood streets like Menchaca Road, Slaughter Lane and Brodie Lane. The corridor also includes a 4.5-mile shared use path.



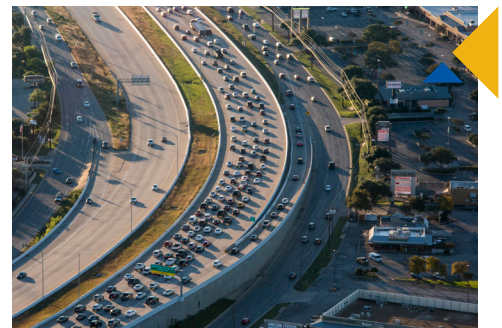
### 1.3.5. 183 SOUTH

The 183 South Project is transforming an 8-mile section of US 183 between US 290 and SH 71 into a new facility built for tolled and non-tolled travel. The project triples the corridor's previous capacity, adding three tolled lanes and rebuilding up to three non-tolled, general-purpose lanes in each direction, offering greater mobility for all users of the corridor. The Interim portion opened to traffic in 2019, and the remaining tolled sections opened in early 2021. Aesthetic enhancements are a major project component and are visible in the unique design of the bridges, walls, and other features. The project also includes amenities for active

transportation users, including continuous bicycle lanes, a shared use path, sidewalks, four pedestrian bridges, two major trailheads and several smaller trailheads.

### 1.3.6. 183 NORTH MOBILITY PROJECT

The 183 North Mobility Project will include two express lanes in each direction along a 9-mile stretch of US 183 between State Highway (SH) 45 North/Ranch-to-Market (RM) 620 and State Loop 1 (MoPac), the addition of a fourth general-purpose lane to bring the total number to four in each direction, and express lane direct connectors to and from southbound MoPac. The project also includes operational improvements for the transition to MoPac, new shared use path connections, new sidewalks, and cross-street connections for bicycles/pedestrians. The Mobility Authority is in the process of procuring a design-build contractor for the project. Construction is expected to begin in 2021.



# ▶ 1.0 Introduction *continued*

## 1.3.7. FACILITIES/BUILDINGS

Mobility Authority facilities provide support for the safe and reliable operation of the System. These facilities include the Traffic Incident & Management (TIM) Center adjacent to the 183A Turnpike in Cedar Park, the 183A Turnpike maintenance storage yard at the Brushy Creek Road interchange, the 290E maintenance storage yard on Old Manor Road and various roadway In-Lane Processing (ILP) structures along the Mobility Authority roadways.

## 1.4 MAINTENANCE PROGRAM OVERVIEW

The Mobility Authority utilizes a System-wide PBMC to maintain its infrastructure. Also included in the PBMC are Performance-Based Maintenance services for existing and future shared use paths, trailheads and Mobility Authority building facilities, including the TIM Center adjacent to the 183A Turnpike, existing and future maintenance yard buildings, existing and future ILP enclosures, and emergency generators located at or near toll gantries. 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 documents. The general maintenance obligations of the PBMC are as follows:

- (1) Maintain the Project and Related Transportation Facilities in a proactive and timely manner appropriate for a facility of the character of the Project.
- (2) Minimize delay and inconvenience to users and, to the extent the Contractor is able to control, users of Related Transportation Facilities.
- (3) Identify and manage incidents 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 ROW.
- (6) Minimize the risk of damage, disturbance or destruction of third-party property during the performance of maintenance activities.
- (7) Coordinate with and enable the Mobility Authority and others with statutory duties or functions in relation to the Project or Related Transportation Facilities to perform such duties and functions.
- (8) Perform systematic Project inspections and maintenance in accordance with the provisions of Contractor's Maintenance Management Plan (MMP) to include Contractor's Safety and Health Plan and in accordance with the Contract Documents.

A new performance-based maintenance contract was procured and commenced on July 1, 2020. This contract encompasses an initial 5-year term with two optional 5-year terms.

## 1.5 CONDITION ASSESSMENT

The PBMC is administered by the Mobility Authority. All elements are audited, at minimum, on a monthly basis for contract compliance. In addition, the System and its performance is monitored on a daily basis. These audits are performed by way of a condition assessment consistent with parameters set forth in the PBMC. The condition assessments are conducted on 10% of the roadways on randomly selected sections. This ensures the Contractor is maintaining the facilities within the tolerances established by the performance measures.



# ▶ 2.0 Annual Report of Conditions

## 2.1 OVERVIEW

Visual condition assessments were conducted based on the 5-point rating scale described in Table 8. The results of this year's annual inspection indicate the System is performing as expected and 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.

## 2.2 183A TURNPIKE

### 2.2.1. 183A TURNPIKE ROADWAY

#### ▶ ASPHALT PAVEMENT

Although minor issues were noted, the inspection conducted in fall 2020 did not identify a significant number of deficiencies in the asphalt pavement that would affect the safety and operations of 183A Turnpike. Areas indicating pavement surface degradation were identified in the form of longitudinal cracking and minor failures. An overlay of 183A Turnpike frontage road pavement is tentatively scheduled for summer 2022. The intent of this overlay will be to correct current deficiencies and to prevent further degradation by rejuvenating the pavement and providing a new driving surface for motorists. This preventative maintenance supports a pavement management plan that is focused on maximizing the useful life.

#### ▶ CONCRETE PAVEMENT

A minimal number of deficiencies were present along the toll lane concrete pavement. There were a few exhibiting minor degradation consisting of small concrete punchouts and cracking in isolated areas. Transverse cracking was noted along the mainlanes which is normal behavior of continuously reinforced concrete pavement and does not require corrective action. The noted deficiencies do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

#### ▶ ROADSIDE

The roadside visual inspection did not identify any deficiencies that were outside of the PBMC scope. Deficiencies should be addressed as part of regularly scheduled maintenance activities. The most common deficiencies noted consisted of sediment buildup and vegetation growth at drainage pipes and inlets, edge drop off, drainage ditch erosion and signs blocked by vegetation.

#### ▶ MISCELLANEOUS

The PBMC includes performance measures for identifying deficiencies and work planning responsibilities for the following miscellaneous roadway inspection elements:

Deficiencies as a result of day and nighttime visual inspection indicate the pavement graphics, markings and markers show signs of wear, lack of reflectivity, or are missing and in need of replacement. As part of the PBMC contractor responsibilities, an independent inspection and work plan should be developed to address the deficient graphics, markings and markers.

Signs were assessed by a day and a nighttime visual inspection during the fall 2020 inspections. Most signs were clearly visible and legible to the inspector, however there were instances of fading and lost reflectivity. A contract for large sign replacement was developed for 183A Phase I, with construction completed in November 2020. A contract for large sign replacement is being developed for 183A Phase II, with construction anticipated to commence in the fall of 2021.

The illumination elements were inspected for damage and to ensure proper functioning of the lights at night. In general, illumination features are in good repair. Visual inspection did not identify any deficiencies that were outside of the PBMC scope. The most common deficiencies noted were burnt-out light bulbs and damaged or missing access panels, all of which are addressed as part of regularly scheduled maintenance activities.

## 2.0 Annual Report of Conditions *continued*

183A Turnpike has 22 traffic signals and 18 pedestrian signals on the frontage road that are the Mobility Authority's responsibility located at the following intersections: Crystal Falls Parkway, Hero Way, RM 2243, Scottsdale Drive and San Gabriel Parkway. The signals were found to be in good repair with only minor deficiencies, including a missing cover plate at the bottom of a signal pole.

183A Turnpike has numerous detention and water quality ponds along the length of the facility. These ponds serve to provide water quality treatment of the runoff from the roadway and detain the storm water where necessary. The most common issues noted were minor erosion, vegetative growth at inlet and outlet drainage structures and sediment buildup.

### 2.2.2. 183A TURNPIKE BRIDGES

All of the 183A Turnpike bridges were inspected and evaluated in either 2019 or 2020, as part of TxDOT's BRINSAP Program, which occurs every two years per federal requirements. The available findings of the most recent BRINSAP inspections were provided to the Mobility Authority and serve as the basis for the comments and recommendations for the bridge portion of this report.

The pedestrian bridges were not inspected by TxDOT and were thus included in the GEC's annual inspection. There are four pedestrian bridges along the shared use path adjacent to the 183A Turnpike. These bridges were found to be in good repair with minor deficiencies including pin sized rust observed on galvanized sections of handrail, and in one instance, trees growing through trusses.

Based on a review of the most recent inspection reports and visual observations, all 183A Turnpike bridges, including those for the shared use path, remain in good repair. Of the 342 total components rated for the 44 bridges on 183A, less than 10% received a 6-rating. None of the components were rated less than a 6. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. The most common deficiencies noted were minor to moderate longitudinal and transverse cracks, loss of adhesion and missing sealant at bridge joints, and channel erosion. There also appears to be an issue with a deck drainpipe on the bridge over Crystal Falls Parkway.

### 2.2.3. 183A TURNPIKE RETAINING WALLS

The retaining walls on the 183A Turnpike corridor consist primarily of MSE walls. There are also concrete noise walls adjacent to neighborhoods in the Phase I segment of 183A Turnpike, a concrete block subdivision wall at the Block House Creek neighborhood, and soil nail and drilled shaft wall systems at the Scottsdale Drive underpass.

183A Turnpike retaining walls were found to be in good repair. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. The majority of the defects noted included the presence of vegetation growth causing minor drainage obstruction, trees growing into wall panels, erosion around walls, silt buildup and water ponding against walls, and spalling of joints at precast copings.

### 2.2.4. 183A TURNPIKE BUILDINGS FACILITIES

The 183A Turnpike inspection consisted of visual observations of the Mobility Authority's TIM Center/Park Street Plaza building. ILP enclosures were also inspected and are described in Section 2.2.7, 183A Turnpike Toll Collection System.

## ▶ 2.0 Annual Report of Conditions *continued*

The Mobility Authority's TIM Center is in good repair. The following is a general summary of condition assessment for each building category.

- ▶ **BUILDING EXTERIOR**  
Building exterior components, including wall systems, sealants, paint, and doors are in good repair. Deficiencies observed included minor rusting on stairwell treads.
- ▶ **ROOFING**  
The surface, seams, expansion joints and roofing were observed to be in good repair.
- ▶ **BUILDING INTERIOR**  
Building interior components, including the TIM Center lobby area, corridor finishes, windows, restrooms, security, and paint were in good repair. Deficiencies observed included minor scratches in hallways and the TIM Center breakroom and minor scuffing in office flooring.
- ▶ **SITE IMPROVEMENTS**  
Site improvement components were observed to be in good repair. Deficiencies noted were exposed areas in the irrigation system, as well as faded parking striping.
- ▶ **STRUCTURE**  
Structural components were observed to be in good repair. No structural deficiencies were noted.
- ▶ **ELECTRICAL SYSTEMS**  
Electrical components, including panels, wiring, emergency power, transformers, and lighting were in good repair, although there were some isolated electrical issues that were found. Deficiencies noted included the ground-fault circuit interrupter (GFCI) outside the TIM Center mechanical room not operational. It also appears that toll equipment was removed in the bridge above the cash lanes where power wires were exposed and capped, but not placed in a covered junction box. In addition, junction boxes around the doors in multiple telecommunication rooms were not secured, and wires were exposed.
- ▶ **MECHANICAL SYSTEMS**  
Mechanical components, including cooling, heating, air handlers, exhaust fans, and alarm systems were in good repair. It was noted, however, that the AC units for the telecommunications room and elevator room were unplugged, and therefore were not inspected.
- ▶ **FIRE PROTECTION**  
Fire protection equipment include alarm systems, smoke detectors, heat detectors, fire extinguishers, and fire suppression system in the server room. The alarm system, smoke detectors, and heat detectors appeared to be in excellent working order. However, there was no indication that the fire extinguishers and fire suppression systems, which are inspected by a licensed professional contracted by the Mobility Authority, were inspected at the time of the GEC inspections.
- ▶ **PLUMBING**  
Plumbing components, including water piping, insulation, and fixtures were found to be in good repair. The only deficiency noted was limited hot water in the break room.

### 2.2.5. 183A TURNPIKE MAINTENANCE STORAGE YARD

The Maintenance Storage Yard at the Brushy Creek Road interchange provides a secured area for storage of various materials, including signs, lighting poles and fixtures, and other miscellaneous materials. The facility also stores a fully operational anti-icing storage tank and space for solid de-icing agents. This facility, together with the TIM Center, meets the immediate needs for storage of equipment and materials for the northern portion of the System. The building and the surrounding areas remain in good repair. Deficiencies noted were corrosion at the liquid anti-icing storage tank and fire extinguishers were not present at this location.

## ▶ 2.0 Annual Report of Conditions *continued*

### 2.2.6. 183A TURNPIKE OVERHEAD SIGN BRIDGES

Overhead sign bridges, which include toll gantries, sign structures and monotube sign structures were visually inspected for deficiencies associated with their foundations, anchor bolts, base plates, column supports, and arm chord connections and members.

The inspection did not reveal any unsatisfactory deficiencies in the condition and operation of the toll gantries and sign structures. The most common deficiencies noted were cosmetic spalls, galvanization failure, and rusting.

### 2.2.7. 183A TURNPIKE TOLL COLLECTION SYSTEM

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the Customer Service Center, and the Violation Processing Center. The TCS is fully interoperable with all Texas toll roads so Electronic Toll Collection (ETC) customers from other cities, such as Houston and Dallas, can use the Mobility Authority's System, and vice versa. Violation processing and collections, as well as the operation and maintenance of the toll collection systems, are provided through separate contracts.

The fall 2020 annual inspection, performed by the GEC, only included inspection of the toll infrastructure; it did not include inspection of the tolling equipment itself as this equipment is inspected by a separate party.

The 183A toll infrastructure includes nine ILP enclosures, which are communication hub buildings that house various ETC equipment and are located at the northbound (NB) exit and southbound (SB) entrance ramps for Brushy Creek Road, the NB entrance and SB exit ramps for Crystal Falls Parkway, Crystal Fall Parkway mainlane, NB and SB Lakeline mainlane, NB Scottsdale Drive exit ramp, and the NB Park Street Mainlane, which is located at the TIM Center. Emergency generator sites serve the toll locations.

Overall, the ILP enclosures on 183A Turnpike are in good repair. The following is a summary of condition assessment results for ILP enclosures for each hub building category.

#### ▶ HUB BUILDING EXTERIOR AND ROOFING

Building exterior components, including wall systems, sealants, paint, and doors are in good repair. There were some degraded elements noted at the SB Lakeline mainlane ILP enclosure, such as surface rust on an exterior door and a loose door handle. No deficiencies were noted for roofing components, including roof surfaces, seams, and expansion joints.

#### ▶ HUB BUILDING INTERIOR

Building interior components, including finishes, doors, and paint were in good repair. Deficiencies observed were interior walls having had signs of mildew, although it appears that most have been addressed from the previous inspection.

#### ▶ SITE IMPROVEMENTS

Site improvement components were observed to be in good repair. There were some degraded elements at the NB and SB Brushy Creek locations consisting of faded parking striping, as well as degraded elements at the NB Crystal Falls ILP, Crystal Falls mainlane, and NB Scottsdale locations consisting of faded or missing liquid propane (LP) tank National Fire Protection Association (NFPA) labels.

#### ▶ STRUCTURE

No deficiencies were noted for structural components, including foundations, floor slabs, expansion joints, and walls.

#### ▶ ELECTRICAL SYSTEMS

Electrical components, including panels, wiring, emergency power, and lighting were in good repair. However, there were instances of degraded findings at the NB and SB Brushy Creek locations consisting of GFCI devices not operational, as well as conduit duct seal missing. Likewise, GFCI devices were not operational at the NB and SB Lakeline mainlane locations.

#### ▶ MECHANICAL SYSTEMS

No deficiencies were observed for mechanical components, including cooling, heating, air handlers, exhaust fans, and alarm systems.



## ▶ 2.0 Annual Report of Conditions *continued*

### ▶ FIRE PROTECTION

No deficiencies were observed for alarm systems and smoke detectors. However, it was observed from the service tag that, as of the inspection date, fire extinguishers had not been inspected by a licensed professional at the time of inspections.

## 2.3 290E

### 2.3.1. 290E ROADWAY

#### ▶ PAVEMENT

Through the Mobility Authority's asset management program, ride quality on concrete pavement mainlanes, including bridge approach and departure transitions, are being actively monitored. Through this monitoring the condition is determined, and routine maintenance repairs are performed to stabilize the pavement.

The concrete pavement along the mainlanes was found to be in good repair, with some minor deficiencies present. Transverse cracking was noted along the mainlanes. This is normal behavior of continuously reinforced concrete pavement and is not a concern. The most common deficiencies found were unsealed longitudinal cracks, spalling at longitudinal construction joints, and pavement settlement. These noted deficiencies do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

#### ▶ ROADSIDE

The roadside visual inspection did not identify any deficiencies that were outside of the PBMC scope. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. The most common deficiencies noted included embankment erosion, edge drop-offs, vegetation overgrowth, and tree growth in drainage areas causing impeded flows.

#### ▶ MISCELLANEOUS

The PBMC includes performance measures for identifying deficiencies and work planning responsibilities for the following miscellaneous roadway inspection elements.

Day and nighttime visual inspections were conducted for pavement graphics, markings, and markers. The most common deficiencies included faded striping or graphics at several locations, missing or non-reflective raised pavement markers (RPMs), and missing delineators and/or object marker. As part of the PBMC contractor responsibilities, an inspection and work plan should be developed to address the deficient graphics, markings and markers.

Signs were also assessed by a day and a nighttime visual inspection. Except for a few small signs, signs along 290E are still in good repair and most do not need to be replaced at this time. The most common deficiencies noted included some missing signs, dirty signs affecting reflectivity, or signs slightly damaged.

The illumination elements were inspected for damage and proper functioning of the lights at night. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. The most common deficiencies noted were bulb outages on high mast light poles, outages on sections of safety light poles, or missing access panels in a couple of locations.

290E has two sign mounted flashing beacons on the frontage road that are the Mobility Authority's responsibility placed as an advanced warning for signals on approach to the Giles Lane intersection. The flashing beacons were not functioning at the time of inspection.

Minimal deficiencies were observed on 290E retention ponds. Only a few elements were identified as minor problems, with the most common deficiencies consisting of minor vegetation and silt buildup at inlets, vegetation and scour at outflow pipes, and ditch erosion. Pond deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

## 2.0 Annual Report of Conditions *continued*

### 2.3.2. 290E BRIDGES

All of the 290E bridges were inspected and evaluated in 2019, as part of TxDOT's BRINSAP Program, which occurs every two years per federal requirements. The available findings of the most recent BRINSAP inspections were provided to the Mobility Authority and serve as the basis for the comments and recommendations for the Bridge portion of this report.

As part of an ongoing plan to address ride quality caused by uneven transitions from the roadway section to the bridge section, repairs are scheduled for spring 2021. These repairs should be made using foam injection to lift and stabilize this location, realigning the approach and departure slabs with the adjacent pavement, ultimately improving the ride quality for the driver. In addition, this smooth transition ensures less wear and tear on the bridge and adjacent pavement. Diagonal cracking was identified on bridge approach slabs and is being corrected under warranty using epoxy injection.

Based on a review of the most recent inspection reports and visual observations, 290E bridges are in good repair. Of the 296 total components rated for the 37 bridges on 290E, approximately 4% received a 6-rating. No components received a rating lower than a 6. The most common deficiencies notes were channel erosion, hairline cracking of bridge components, deck drain blocked with sediment, bridge expansion joint material failing, spalling and damaged metal beam guard fence at a bridge approach. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

The pedestrian bridge was inspected by the GEC in fall 2020. Other than rust present on a section of railing, no significant deterioration was noted. The railing is being repainted as part of warranty requirements.

### 2.3.3. 290E RETAINING WALLS

The retaining walls on the 290E corridor consist primarily of MSE walls. Based on visual observations, retaining walls on 290E are in good repair. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. The majority of the defects noted were minor cracks at abutment wall caps and vegetation growth which can cause minor drain obstruction and minor panel misalignment.

### 2.3.4. 290E MAINTENANCE STORAGE YARDS

The Maintenance Storage Yard on Manor Road near 290E provides a secured area for storage of various materials, including signs, lighting poles and fixtures, and other miscellaneous materials. The facility also stores a fully operational anti-icing storage tank and space for solid de-icing agents. The facility remains in good repair. The fall 2020 inspection observed cracking in the parking area, interior lights not functioning, lack of fire extinguishers, and open holes on a couple of the exterior walls. Additionally, there was vegetation encroachment along fences and railings, and various piles of debris found.

### 2.3.5. 290E OVERHEAD SIGN BRIDGES

Overhead sign bridges, which include toll gantries, sign structures and monotube sign structures were visually inspected for deficiencies associated with their foundations, anchor bolts, base plates, column supports, and arm chord connections and members.

The inspection did not reveal any unsatisfactory deficiencies in the condition or operation of the toll gantries and sign structures. Inspectors observed minor cracking and spalling, which does not require immediate attention. This should continue to be monitored during future condition inspections to ensure that safety and operations are not adversely impacted.

Other observations include members of a column support beginning to reveal rust stains from the presence of an iron ore aggregate which can occur naturally in the concrete coarse aggregate known as marcasite. These rust stains are limited to a cosmetic concern. Minor galvanization was observed with no rust present on overhead sign bridges. The Mobility Authority is monitoring the condition.

### 2.3.6. 290E TOLL COLLECTION SYSTEM

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the Customer Service Center and the Violation Processing Center. The TCS is fully interoperable with all Texas toll roads so that ETC customers from other cities, such as Houston and Dallas, can use the Mobility Authority's System and vice versa. Violation processing and collections, as well as the operation and maintenance of the toll collection systems, are provided through private contracts.

The fall 2020 annual inspection performed by the GEC only included inspection of the toll Infrastructure. It did not include inspection of the tolling equipment itself. This equipment is inspected by a separate party. The 290E toll infrastructure includes 12 ILP enclosures, consisting of three hub buildings and nine cabinets that house various ETC equipment, and are located at the WB and EB tolling locations at the 183 South direct connector flyovers; the Parmer mainlane tolling location; eastbound (EB) and westbound (WB) Giles mainlane; EB and WB Giles ramp locations; EB and WB Harris Branch locations; the EB and WB Springdale ramp locations, and the WB direct connector flyover at SH 130. Emergency generators serve all tolling locations.

Overall, the ILP enclosures on 290E are in good repair. The following is a general summary of condition assessment for each category.

- ▶ **HUB BUILDING EXTERIOR AND ROOFING**  
Building exterior components for the ILP enclosures, including wall systems, sealants, paint, and doors are in good repair. No deficiencies were noted for roofing components, including surfaces, seams, and expansion joints.
- ▶ **HUB BUILDING INTERIOR**  
Building interior components, including the finishes, doors, and paint were in good repair.
- ▶ **SITE IMPROVEMENTS**  
Site improvement components, including lighting and fences, were observed to be in good repair.
- ▶ **STRUCTURE**  
No deficiencies were noted for structural components, including foundations and floor slabs on the ILP enclosures.
- ▶ **ELECTRICAL SYSTEMS**  
Electrical components, including panels, wiring, emergency power, and lighting were in good repair. However, there were instances of degraded findings at the WB DC on-ramp to US 183 that consisted of GFCI devices not operational. In addition, the Parmer ILP location consisted of missing electrical panel label and missing duct seal for wiring/conduit.
- ▶ **MECHANICAL SYSTEMS**  
Mechanicals systems components, including cooling, exhaust fans, and alarm systems, were observed to be in good repair. However, there was an instance of degraded findings at the EB Giles Mainlane location where it was observed that the air conditioning thermostat displayed elevated readings at the time of inspection.
- ▶ **FIRE PROTECTION**  
Alarm systems and smoke detectors appeared to be in good repair. However, it was observed from the service tag that, as of the inspection date, fire extinguishers had not been inspected by a licensed professional at the time of this inspection for the EB DC off-ramp from US 183, WB DC on-ramp to US 183, Giles Mainlane, and the Parmer Mainlane. Furthermore, the fire suppression systems for EB DC off-ramp from US 183 and Parmer Mainlane were not inspected by a licensed professional at the time of this inspection.

## 2.4 SH 71 EXPRESS

As part of the design-build agreement between TxDOT and their contractor, the remaining warranty provisions in place for various items, are as summarized in Table 9, below. The warranty provisions for miscellaneous paved areas, drainage systems, pavement markings, safety barrier, signs, lighting, Intelligent Traffic Systems (ITS) and plantings have expired and are now solely the responsibility of the Mobility Authority.

**Table 9: SH 71 Express Warranty Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	WARRANTY TERM	TXDOT INSPECTION AND MEASUREMENT METHOD	PERFORMANCE REQUIREMENT
<p><b>Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's Pavement Management Information System (PMIS) Rater's Manual.</b></p>					
ROADWAY	1.2	Pavement	5 years, except for mill and overlay section shaving a 2-year performance Warranty Term per Note 1	<p><b>a) Ruts – Mainlanes:</b> shoulders &amp; ramps depth as measured using an automated device in compliance with TxDOT Standards.</p> <p>10-foot straight edge used to measure rut depth for localized areas.</p> <p><b>b) Ride Quality:</b> Measurement of International Roughness Index (IRI) according to TxDOT standard Tex-1001-S, Operating Inertial Profilers and Evaluating Pavement Profiles</p> <p>3-foot straight edge used to measure discontinuities</p> <p><b>c) Failures:</b> Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures</p> <p><b>d) Skid Resistance:</b> ASTM E274/E274M-11 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E524-08 .</p>	<p>No wheel path length with ruts greater than ¼" in depth</p> <p>No length with depth of rut at any location greater than 0.5"</p> <ul style="list-style-type: none"> <li>• Mainlanes, ramps – no results greater than 95" per mile</li> <li>• Frontage roads – no results greater than 120" per mile</li> </ul> <p>No individual discontinuities greater than 0.75"</p> <p>No occurrence of failure</p>
	1.4	Joints in concrete	5 years	Visual inspection of joints- measurement of joint width and level difference of two sides of joints.	<p>No length with unsealed joints greater than ¼"</p> <p>No joint width more than 1" or faulting more than ¼"</p>
STRUCTURES	3.1	Structures having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes	5 years	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual	No occurrences of condition rating below seven for any deck, superstructure, substructure or components as required in the TxDOT Bridge Inspection Manual.

## 2.0 Annual Report of Conditions *continued*

ELEMENT CATEGORY	REF	ELEMENT	WARRANTY TERM	TXDOT INSPECTION AND MEASUREMENT METHOD	PERFORMANCE REQUIREMENT
STRUCTURES	3.3	Non-bridge class culverts	5 years	Visual inspection	Non-bridge-class culverts are free of: <ul style="list-style-type: none"> <li>defects in sealant to movement joints</li> <li>scour damage</li> </ul>
	3.4	Gantries and high masts	5 years	Visual inspection	Sign signal gantries, high masts are structurally sound and free of defects in surface protection systems
	3.5	Load ratings	5 years	Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual. Load restriction requirements as per the TxDOT Bridge Inspection Manual	All structures maintain the design load capacity.
FENCES, WALLS AND SOUND ABATEMENT	9.2	Construction	5 years	Structural assessment if visual inspection warrants	Integrity and structural condition of the fence is maintained
EARTHWORKS, EMBANKMENTS AND CUTTINGS	12.1	Slope Failure	5 years	Visual inspection by geotechnical specialist and further tests as recommended by the specialist	All structural failures of the embankment and cut slopes of the Facility are repaired

**NOTE:** Where indicated, mill and overlay sections specified in Technical Provisions Section 1.2.1 shall meet performance requirements for a period of 2 years from Final Acceptance (rather than for the 5-year Warranty Term generally applicable to the element category).

### 2.4.1. SH 71 EXPRESS ROADWAY

#### ▶ PAVEMENT

The concrete pavement sections along the corridor are in good repair. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. Deficiencies were noted within the asphalt transition area from concrete to existing flexible pavement. The most common deficiencies noted were pop-outs along wheel paths. There is a ride quality issue at one location across lanes in both directions where the pavement transitions, also located within the pavement transition area. These values exceed the warranty threshold referenced in Table 9, section 1.2 Pavement, Ride Quality. This issue does not require immediate attention; however, it should continue to be monitored during the warranty period. The Mobility Authority has been in discussions with TxDOT regarding this issue.

#### ▶ ROADSIDE

Roadside elements on SH 71 Express are in good repair. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. The most common deficiencies noted were litter and debris build-up against the inside wall, vegetation observed growing in expansion joints, and grass observed growing between wall and pavement.

#### ▶ MISCELLANEOUS

Overall, pavement striping, symbols and reflective pavement markers are in good repair. Deficiencies observed included missing, damaged, or non-reflective RPMs, missing delineation along portions of guardrail, and missing object markers at drainage structures. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.



## 2.0 Annual Report of Conditions *continued*

### 2.4.2. SH 71 EXPRESS BRIDGES

All of the SH 71 Express bridges were inspected and evaluated in 2019, as part of TxDOT's BRINSAP Program, which occurs every two years per federal requirements. The available findings of the most recent BRINSAP inspections were provided to the Mobility Authority and serve as the basis for the comments and recommendations for the Bridge portion of this report.

Based on a review of the most recent inspection reports and visual observations, SH 71 Express bridges are in good repair. Of the 24 total components rated for the three bridges on SH 71, approximately 5% received a 6-rating. No components received a rating lower than a 6.

### 2.4.3. SH 71 EXPRESS RETAINING WALLS

The retaining walls on the SH 71 Express corridor consist primarily of MSE walls. Based on visual observations, newly constructed retaining walls on SH 71 Express are in good repair. Only a few elements were identified as minor problems, with the most common deficiency being silt and vegetation build-up at drainage inlets, and vegetation growing into wall panels.

### 2.4.4. SH 71 EXPRESS OVERHEAD SIGN BRIDGES

Overhead sign bridges, which include toll gantries, sign structures and monotube sign structures, were visually inspected for deficiencies associated with their foundations, anchor bolts, base plates, column supports, and arm chord connections and members.

All inspected elements appear to be in good repair with no deficiencies noted.

### 2.4.5. SH 71 EXPRESS TOLL COLLECTION SYSTEM

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the Customer Service Center and the Violation Processing Center. The TCS is fully interoperable with all Texas toll roads so that ETC customers from other cities, such as Houston and Dallas, can use the Mobility Authority's System and vice versa. Violation processing and collections, as well as the operation and maintenance of the toll collection systems, are provided through private contracts.

The fall 2020 annual inspection performed by the GEC only included inspection of the toll infrastructure. It did not include inspection of the tolling equipment itself. This equipment is inspected by a separate party.

The SH 71 Express toll infrastructure includes two ILP enclosures, which are communication cabinets that house various ETC equipment and are located on the north and south sides of the toll gantry, east of FM 973. An emergency generator site that serves the tolling location is located next to the ILP south of the toll gantry. The exterior, interior, structural, electrical, and mechanical cooling components of the ILP enclosures are in good repair. However, it was observed that the generator, which is located on the south side of the toll gantry in the EB direction, does not appear to be grounded.



## 2.0 Annual Report of Conditions *continued*

### 2.5.2. SH 45 SOUTHWEST BRIDGES

The available findings of the most recent BRINSAP inspections for SH 45 Southwest were provided to the Mobility Authority and serve as the basis for the comments and recommendations for the Bridge portion of this report.

Based on a review of the most recent inspection reports and visual observations, SH 45 Southwest bridges are in good repair, with no deficiencies noted.

### 2.5.3. SH 45 SOUTHWEST RETAINING WALLS

The retaining walls on the SH 45 Southwest corridor consist primarily of MSE walls. Based on visual observations, newly constructed retaining walls on SH 45 Southwest are in good repair. Deficiencies noted included broken corners on wall coping at interface with a mow strip, and vegetation growth between a wall and mow strip.

### 2.5.4. SH 45 SOUTHWEST OVERHEAD SIGN BRIDGES

Overhead sign bridges, which include toll gantries, sign structures and monotube sign structures, were visually inspected for deficiencies associated with their foundations, anchor bolts, base plates, column supports, and arm chord connections and members. All inspected elements appear to be in good repair and no deficiencies were noted.

### 2.5.5. SH 45 SOUTHWEST TOLL COLLECTION SYSTEM

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the Customer Service Center and the Violation Processing Center. The TCS is fully interoperable with all Texas toll roads so that ETC customers from other cities, such as Houston and Dallas, can use the Mobility Authority's System and vice versa. Violation processing and collections, as well as the operation and maintenance of the toll collection systems, are provided through private contracts.

The fall 2020 annual inspection performed by the GEC only included inspection of the toll Infrastructure. It did not include inspection of the tolling equipment itself. This equipment is inspected by a separate party.

SH 45 Southwest toll infrastructure includes one ILP enclosure, which is a cabinet that houses various ETC equipment, and is located on the west side of the mainlane tolling location, approximately 2.3 miles southeast of Loop 1. An emergency generator site that serves the tolling location is located next to the ILP. The visual inspection of the toll system infrastructure indicates that the primary components are in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS.

## 2.6 183 SOUTH INTERIM BUILD

The 183 South Interim Build extends approximately 4.3 miles from US 290 southward to the Boggy Creek bridge and opened to traffic and tolling in 2019. The 183 South Ultimate Project Configuration, which extends approximately 4 additional miles southward to the SH 71 interchange, was not inspected since this segment was not operational at the time of inspection activities.

### 2.6.1. 183 SOUTH INTERIM BUILD ROADWAY

#### PAVEMENT

The newly constructed concrete pavement sections along the corridor are in good repair with no deficiencies noted.

## ▶ 2.0 Annual Report of Conditions *continued*

### ▶ ROADSIDE

The roadside elements along the 183 South Interim Build corridor are in good repair. Only a few deficiencies were noted, such as areas of silt accumulation in travel lanes.

### ▶ MISCELLANEOUS

Overall, pavement striping, symbols and reflective pavement markers are in good repair with no noted maintenance needs.

### 2.6.2. 183 SOUTH INTERIM BUILD BRIDGES

Bridges on 183 South Interim Build were inspected in fall of 2019 as part of TxDOT's BRINSAP Program. The available findings of the most recent BRINSAP inspections for 183 South Interim Build were provided to the Mobility Authority and serve as the basis for the comments and recommendations for the Bridge portion of this report.

Based on a review of the most recent inspection reports and visual observations, 183 South Interim Build bridges are in good repair. Deficiencies noted were minor, including minor spalling at joints, hairline transverse and longitudinal cracks, and some longitudinal cracking.

### 2.6.3. 183 SOUTH INTERIM BUILD RETAINING WALLS

The retaining walls were not inspected in this year's cycle due to construction activity in the area.

### 2.6.4. 183 SOUTH INTERIM BUILD OVERHEAD SIGN BRIDGES

Overhead sign bridges, which would include toll gantries, sign structures and monotube sign structures, were not inspected in this year's cycle due to construction activity in the area.

### 2.6.5. 183 SOUTH INTERIM BUILD TOLL COLLECTION SYSTEM

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the Customer Service Center and the Violation Processing Center. The TCS is fully interoperable with all Texas toll roads so that ETC customers from other cities, such as Houston and Dallas, can use the Mobility Authority's System and vice versa. Violation processing and collections, as well as the operation and maintenance of the toll collection systems, are provided through private contracts.

The fall 2020 annual inspection performed by the GEC only included inspection of the toll Infrastructure. It did not include inspection of the tolling equipment itself. This equipment is inspected by a separate party.

The 183 South Interim Build corridor included inspection of four ILP enclosures, which are cabinets that house various ETC equipment, and are located at the NB mainlane tolling location north of 51st Street, the NB on-ramp and SB off-ramp tolling locations at 51st Street, and the NB off-ramp at MLK. Emergency generator sites serving the tolling locations are located next to the ILPs. The visual inspection of the toll system infrastructure indicates that the primary components are in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS.

## 3.0 Ongoing Initiatives

### 3.1 ASSET MANAGEMENT

The Mobility Authority Board of Directors approved a budget for implementation of a formal Transportation Asset Management Plan (TAMP). As part of this TAMP, the Mobility Authority has implemented a web-enabled integrated Geographic Information System (GIS), enterprise asset management software solution.

Data collection providing inventory of assets to include pavement, bridges, drainage, walls, traffic devices, environmental features and special features such as shared-use paths has been completed. The Mobility Authority utilized a production version of software to serve as their Computerized Maintenance Management System (CMMS). Record collection of maintenance activity accomplishment associated with the asset inventory began on July 1, 2020. The new PBMC requires the maintenance contractor to utilize the CMMS, directly entering day-to-day work requests, reporting work accomplishments and other reporting requirements as described in the PBMC documents. The Mobility Authority is using the CMMS to manage the PBMC.

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

### 3.2 QUARTERLY SAFETY COMMITTEE MEETINGS

Each quarter, the Mobility Authority evaluates the performance of its corridors using a variety of safety and operational metrics. Evaluation results are analyzed and used to aid the Mobility Authority in planning and implementing operational improvements as part of the Safety Management Process. The Mobility Authority is utilizing GIS to record crash data to improve analysis efforts. 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.

### 3.3 TECHNOLOGY INITIATIVES

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

#### 3.3.1. INTELLIGENT TRAFFIC SYSTEMS (ITS) MASTER PLAN

The Mobility Authority has undertaken the development of a long-term Master Plan to improve and expand its Intelligent Traffic Systems on the Mobility Authority System. 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 can improve the Mobility Authority's ability to monitor the performance of its roadways, detect and respond to incidents, and deliver important messaging to drivers. Improving the Mobility Authority's ability to perform these functions directly increases safety on the System as well as maintains performance and mobility of the roadways.

The ITS Master Plan aims to set a priority and schedule for the expansion of ITS upon the existing roadway network, as well as determine the preferred technologies to implement on the current and future projects under development. The ITS Master Plan sets a goal for the agency to establish a network of expanded CCTV video coverage (to support the potential implementation of Automated Incident Detection), Wrong-Way Driving Detection Systems, Roadside Units (to support Connected Vehicle Applications), and Dynamic Message Signs. The technologies are being implemented at strategic locations across the Mobility Authority System by a phased approach, currently testing and piloting equipment and applications for benefit before more comprehensive expansions and installations are undertaken System-wide.



## 3.0 Ongoing Initiatives *continued*

### 3.3.2. ITS RETROFITS AND EXPANSIONS

The Mobility Authority has initiated the first steps of the ITS Master Plan through projects to retrofit ITS equipment on the existing 183A corridor and has installed additional ITS equipment on the SH 45 Southwest and 290E corridors for the purposes of pilot evaluations and testing.

The 183A ITS retrofit project will include the installation of fixed-view and pan/tilt/zoom CCTV cameras, microwave detectors, and dynamic message signs. These retrofit installations will provide additional ITS equipment along the 183A corridor, allowing improved monitoring of the facility by the Traffic Management Center, decreased incident response times, and better messaging to drivers. The implementation of the fixed-view CCTV cameras will facilitate the pilot evaluation of automated incident detection software for potential full-scale deployment across the rest of the Mobility Authority System. Automated incident detection software can immediately detect accidents, debris, or pedestrians on the roadway utilizing artificial intelligence, and can deploy response teams and/or messaging to the roadway instantly.

ITS expansions have been completed on the SH 45 Southwest project and are planned on the 290E project to install Roadside Units (RSU) with Connected Vehicle applications, as well as fixed-view CCTV cameras. The RSUs will position the Authority to utilize the Connected Vehicle technologies and applications being brought to the automotive market. This technology allows communications directly to and from vehicles on the roadway, both receiving diagnostic data from vehicles, and delivering focused messages directly to vehicles on the roadway. Fixed-view cameras installed on SH 45 Southwest are supporting a pilot evaluations of automated incident detection software.

### 3.3.3. REGIONAL TECHNOLOGY CORRIDOR STRATEGY

The Mobility Authority remains an active partner in the provision of smart technology solutions being considered and delivered to the Austin region. This partnership, seeded by the USDOT Smart City Challenge, includes the City of Austin, TxDOT, and a large team of universities, researchers and consultants all working together to deliver smart, multimodal transportation solutions to the Austin region. The Mobility Authority is involved in the project to ensure that when viable deployment and/or partnership opportunities present themselves, the agency can deliver.

The Mobility Innovation and Research Team (MIRT) continues this regional partnership to foster and develop regional ITS and technology infrastructure. This coordination and planning aim to improve mobility and performance across the region and on the Mobility Authority System.

## 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 the System for FY 2022. 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 GECs as they are made available from the Mobility Authority. These budgets should take into account the recommended maintenance and repairs noted in the System roadways 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 2022. The budgets shown below do not include non-system costs.

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 System roadways. 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 GECs estimate the FY 2022 System Operating Expenses to be \$30.3 million. The factors that determine this estimate include the utilization of consultants/ vendors and the assignment of Mobility Authority personnel. The actual Annual Operating Budget should be finalized by the Mobility Authority on or before June 30, 2021.

It is the opinion of the GECs that the costs projected for the operation of the System are reasonable estimations of anticipated costs for the FY 2022 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 the System roadways. The estimated costs for the proper maintenance and repair of these facilities for the coming year is based on a review of existing conditions, together with the factors that may influence costs during this period. The GECs estimate the FY 2022 Maintenance Expenses to be \$7.7 million.

This budget includes the cost of the PBMC contract, asset management support and remediation costs for 290E. The actual Annual Maintenance Budget should be finalized by the Mobility Authority on or before June 30, 2021.

It is the opinion of the GECs that the costs projected for the maintenance of the System are reasonable estimations of anticipated costs for the FY 2022 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 and the portion of capital expenditures expected to be funded from the R&R Fund. As defined by the Master Trust Indenture, the Annual Capital Budget for each fiscal year includes: the expected beginning balance in the R&R Fund; the amounts to be transferred by the Trustee to the R&R Fund from the Revenue Fund; the amount of proceeds of Obligations expected to become available during the fiscal year; and the desired year-end balance in the R&R Fund.

The Mobility Authority recently completed construction of the 290E Phase III Flyovers Project, which provides a safe and efficient link between two heavily traveled toll facilities: the Mobility Authority's 290E Project and TxDOT's SH 130 Toll. Construction of the third and final flyover was completed in 2021. The Mobility Authority anticipates issuing final acceptance prior to the start of FY 2022, therefore, capital expenditures for the project in FY 2022 are not expected.

## ▶ 4.0 Annual Budgets *continued*

The Mobility Authority anticipates that construction of the 183A Phase III Project will commence by March 30, 2021. The new 6.6-mile roadway will extend the existing 183A corridor northward from Hero Way to 1.1 miles north of SH 29 and provide two tolled lanes in each direction within the existing TxDOT and Mobility Authority right-of-way and within the median of the existing US 183 corridor. Final design of the project was completed in the fall of 2020 and was subsequently let for construction in September of 2020. The capital expenditures for this project are estimated to be \$45.5 million for FY 2022 and funded by the Project Fund.

The Mobility Authority is developing the 183 North Mobility Project through the design-build delivery method. The project extends from State Highway (SH) 45 North/Ranch-to-Market (RM) 620 and State Loop 1 (MoPac), a distance of approximately 9 miles, and comprises construction of two express lanes in each direction, widening of the existing US 183 as required to bring the total number of general purpose lanes to four in each direction, and direct connector ramps between the new 183 North express lanes and the existing express lanes on MoPac. The new 183 North express lanes will be located within the existing TxDOT right-of-way and within the median of the existing US 183 corridor. The Project scope also includes new shared-use path, new sidewalks, and cross-street connections for bicycles/pedestrians along US 183. The project received approval for the environmental re-evaluation in February 2020. Construction is expected to commence in 2021. Capital expenditures and Mobility Authority costs for this project are estimated to be \$110 million for FY 2022, funded by the Project Fund.

## ▶ 5.0 Renewal and Replacement Fund

The R&R Fund was established under the terms of the Master Trust Indenture for the purpose of paying the cost of:

- i. Unusual or extraordinary maintenance or repairs not occurring annually, and renewals and replacements, including major items of equipment;
- ii. Repairs or replacements resulting from an emergency caused by some extraordinary occurrence, so characterized by a certificate signed by an authorized representative, approved by the Consulting Engineer and filed with the Trustee stating that the moneys in the Reserve Fund and insurance proceeds, if any, available therefore are insufficient to meet such emergency; and,
- iii. Paying all or any part of the cost of any capital improvements to the System.

To finance future repairs, replacement, and rehabilitation work required on the System, the cumulative amount in the R&R Fund should be sufficient to finance the next anticipated R&R Activities.

A thin overlay mix (TOM) for the existing Mobility Authority owned and operated frontage roads within the 183A Turnpike Project corridor, south of the 183A Phase III Project construction, is estimated to cost \$8.1 million and is tentatively scheduled for summer of 2021. This project is included as part of System improvements to be financed with a portion of the Bond proceeds for the 183A Phase III Project, and therefore should not be budgeted as part of the R&R Fund for the System.

The transitions to the existing US 290 East facility at the eastern limits of 290E are comprised of flexible pavement. A TOM is tentatively scheduled for Summer 2021 to coincide with the TOM overlay of 183A Turnpike frontage roads. The estimated value for this work is estimated to be \$0.4 million and should be budgeted and included in the 2022 R&R Fund.

In addition, replacement of signs on 183A Phase II Turnpike is tentatively scheduled for fall of 2021 and is estimated to cost \$1.5 million.

A TOM on SH71 Express is tentatively scheduled for FY 2023 as a preventative measure to rejuvenate the asphalt surface, ensuring the useful life of pavement is met and is estimated to cost \$1.3 million.

Potential bridge deck repairs are anticipated in FY 2026 on the 183A Turnpike based on typical frequencies for normal wear and tear and is estimated to cost \$1.6 million.

## 6.0 Recommendations

### 6.1 OVERVIEW

Based on the findings of the annual visual inspections as well as the inventory and condition assessment, the current maintenance program that has been implemented should be continued to effectively secure and maintain the overall condition of each asset. The continued efforts by the Mobility Authority to maintain the roadways, bridges, roadside appurtenances, toll plazas and buildings have kept the overall condition of the Mobility Authority assets in good repair. The Mobility Authority is mandated by State Law, as well as by the terms of the Master Trust Indenture, to maintain a safe highway facility in sound condition and good working order. An effective maintenance policy contributes significantly to ensuring a safe highway for System users, as well as preserving the investment.

### 6.2 183A TURNPIKE RECOMMENDATIONS

Although minor issues were noted, the inspection conducted in fall 2020 did not identify any major deficiencies in the pavement that would affect the safety and operations of 183A Turnpike. For preventative maintenance purposes, an overlay of 183A Turnpike frontage road pavement is tentatively scheduled for summer 2021. This preventative maintenance supports a pavement management plan that is focused on maximizing the useful life.

Pavement markings, graphics, and raised pavement markings show areas in need of maintenance. This work is part of the PBMC scope and should be scheduled accordingly.

Signs along 183A Turnpike are beginning to show signs of fading. A contract for large sign replacement is being developed for 183A Phase II, with construction anticipated to commence the fall of 2021.

Retaining walls on the 183A Turnpike corridor are in good repair. Most of the defects noted included the presence of vegetation growth causing minor drainage obstruction, trees growing into wall panels, erosion around walls, silt build-up and water ponding against walls, and minor spalling from precast coping. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

Bridges were inspected in either 2019 or 2020, as part of TxDOT's BRINSAP Program. The Mobility Authority should continue to address deficiencies as part of the bridge maintenance program.

Structural inspections revealed that toll gantries and overhead sign structures were in good repair. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

The 2020 visual inspection revealed that the TIM Center and the nine ILP enclosures (one of which is located within the TIM Center) on 183A Turnpike are in good repair. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

Of the items inspected, the TCS infrastructure was observed to be in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

### 6.3 290E RECOMMENDATIONS

Multiple locations along the concrete pavement were observed to have degraded ride quality during the fall 2020 visual inspection period. In addition, bridge approach and departure transitions show signs of settlement.

Continued monitoring and routine maintenance should be performed to minimize the settlement and prevent wear and tear to bridge structures. Continued routine maintenance for stabilization is recommended to prevent further movement and to correct transition settlement.

In general, concrete pavement along the mainlanes was found to be in good repair. The most common deficiencies found were unsealed longitudinal cracks, spalling at longitudinal construction joints, and pavement settlement. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

## 6.0 Recommendations *continued*

Pavement markings, graphics and raised pavement markings show areas in need of maintenance. This work is part of the PBMC scope and should be scheduled accordingly.

Based on visual observations, retaining walls along the 290E corridor are in good repair. Deficiencies observed included, minor cracks at abutment wall caps and vegetation growth which can cause minor drain obstruction and minor panel misalignment. Deficiencies found should be addressed as part of regularly scheduled maintenance activities.

Bridges were inspected in 2019, as part of TxDOT's BRINSAP Program. The Mobility Authority should continue to address deficiencies as part of the bridge maintenance program.

Structural inspections revealed that toll gantries and overhead sign structures were in good repair. The rust stains caused by the presence of marcasite in the concrete large aggregate are limited to a cosmetic concern. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

The 2020 annual inspection revealed that the three ILP enclosures on 290E are in good repair. Deficiencies found should be addressed as part of regularly scheduled maintenance activities.

Of the items inspected, the TCS infrastructure was observed to be in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

The inspection did not reveal any unsatisfactory deficiencies in the condition and operation of the toll gantries and sign structures. The rust stains caused by the presence of marcasite in the concrete large aggregate are limited to a cosmetic concern.

Of the items inspected, the results did not reveal any unsatisfactory deficiencies in the condition and operation of the TCS infrastructure..

### 6.4 SH 71 EXPRESS RECOMMENDATIONS

The SH 71 Express concrete pavement sections along the corridor are in good repair. The most common deficiencies noted were pop outs along wheel paths where the pavement transitions from concrete to existing flexible pavement. In addition, there is a ride quality issue at one location across lanes in both directions where the pavement transitions from concrete to existing flexible pavement. Deficiencies should be addressed as part of regularly scheduled maintenance activities and monitored in accordance with applicable warranty specifications.

Based on visual observations, the SH 71 Express retaining walls are in good repair. Only a few elements were identified as minor problems, with the most common deficiency being silt and vegetation build-up at drainage inlets, and vegetation growing into wall panels. Deficiencies found should be addressed as part of regularly scheduled maintenance activities.

Bridges were inspected in 2019, as part of TxDOT's BRINSAP Program. The Mobility Authority should continue to address deficiencies as part of the bridge maintenance program.

Structural inspections revealed that toll gantries and overhead sign structures were in good repair. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

The 2020 annual inspection revealed that the TCS infrastructure, which includes two ILP enclosures on SH 71 Express, is in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS. Deficiencies found should be addressed as part of regularly scheduled maintenance activities.



## **6.0 Recommendations** *continued*

### **6.5 SH 45 SOUTHWEST RECOMMENDATIONS**

The newly constructed pavement sections along the SH 45 Southwest corridor are in good repair. Visual inspection did not identify any deficiencies that were outside of the PBMC scope. The most common deficiencies noted were asphalt pavement rutting at several locations. Deficiencies should be addressed as part of regularly scheduled maintenance activities and monitored in accordance with applicable warranty specifications.

Minimal deficiencies were observed on SH 45 Southwest retention ponds. The most prevalent deficiency consisted of vegetation growth, sediment build-up in drainage structures, and erosion.

The retaining walls on the SH 45 Southwest corridor consist primarily of MSE walls. Based on visual observations, newly constructed retaining walls on SH 45 Southwest are in good repair. Deficiencies noted included broken corners on wall coping at interface with a mow strip and vegetation growth between a wall and mow strip. Deficiencies found should be addressed as part of regularly scheduled maintenance activities.

BRINSAP inspections for SH 45 Southwest were provided to the Mobility Authority and serve as the basis for the comments and recommendations for the Bridge portion of this report. Based on a review of the most recent inspection reports and visual observations, SH 45 Southwest bridges are in good repair, with no deficiencies noted.

Structural inspections revealed that toll gantries and overhead sign structures were in good repair. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

Of the items inspected, the TCS infrastructure, including the ILP enclosure and generator, was observed to be in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS. Deficiencies should be addressed as part of regularly scheduled maintenance activities..

### **6.6 183 SOUTH INTERIM BUILD RECOMMENDATIONS**

The newly constructed concrete pavement sections along the corridor are in good repair with no deficiencies noted.

All newly constructed assets observed as part of the fall 2020 visual inspection are in good repair and should be maintained as part of the Mobility Authority's established PBMC and monitored in accordance with applicable warranty specification once the ultimate configuration reaches final acceptance. Until this time, the construction contractor should perform maintenance in accordance with the contract provisions.

The 183 South Interim Build retaining walls were not inspected in this year's cycle due to construction activity in the area. The walls should be included in next year's inspection cycle.

Newly constructed bridges on 183 South Interim Build were inspected in fall of 2019 as part of TxDOT's BRINSAP Program. Based on a review of the most recent inspection reports and visual observations, 183 South Interim Build bridges are in good repair. Deficiencies noted were minor, including minor spalling at joints, hairline transverse and longitudinal cracks, and some longitudinal cracking

Of the items inspected, the TCS infrastructure, including the four ILP enclosures and associated generators, were observed to be in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS. Deficiencies should be addressed as part of regularly scheduled maintenance activities.





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