



CENTRAL TEXAS REGIONAL
MOBILITY AUTHORITY

2023

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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Subject: 2023 Annual Report of Conditions - 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest, 183 South, 183A Phase III Project, 183 North Mobility Project

Mr. Bass:

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 2023 Annual Report of Conditions for the 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest and 183 South. 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) 2024.

Atkins conducted a visual inspection of all portions of the 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest, and 183 South in fall 2022. 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 2021, were provided to the Mobility Authority and are reflected in this year's report. In addition, visual observations are performed during alternate years, under the Maintenance Bridge Inspection Tracking System (MBITS) program.

There were two projects in the System that were not operational at the time of inspection. The first project, 183A Phase III Project, commenced construction activities in Spring 2021 and will extend the 183A Turnpike 5.3 miles north from Hero Way to north of SH 29, with approximately 6.6 total miles of road improvements and transitions. The second project, 183 North Mobility Project, commenced construction activities in early 2022 and 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. Although neither project is open to traffic, expenses for capital expenditures should be included in the recommended budgets for FY 2024.

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. Division Manager, Atkins North America, Inc.

Enclosure

Cc: Tracie Brown, Director of Operations, Central Texas Regional Mobility Authority
John Jones, Assistant Director of Engineering - Maintenance, Central Texas Regional Mobility Authority
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File

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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
MBITS	Maintenance Bridge Inspection Tracking System
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

System Map



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, 183A Phase III Project 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 2022 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. Through coordination with Mobility Authority staff, and in review of the anticipated Renewal and Replacement Projects anticipated through 2028, the following budgets are recommended:

RECOMMENDED BUDGETS

Operating Expenses FY 2024	\$39,800,000
Maintenance Expenses FY 2024	\$10,700,000
R&R Fund FY 2024	\$16,000,000
R&R Fund FY 2025	\$5,800,000
R&R Fund FY 2026	\$5,200,000
R&R Fund FY 2027	\$0
R&R Fund FY 2028	\$12,400,000

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 2022. 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) 2024, and the amount of funds available for Renewal and Replacement Projects.

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, pedestrian 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 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). In addition, visual observations are performed by TxDOT maintenance personnel and the Mobility Authority, as inspected through the PBMC, during alternate years, when BRINSAP inspections are not conducted, under the Maintenance Bridge Inspection Tracking System (MBITS) program. This year, the Mobility Authority implemented structural inspections for lighting structures, cantilever and overhead sign bridges, signal poles and pedestrian bridges. These structural inspections were conducted by trained engineers in accordance with TxDOT structural inspection protocols.

For the purpose of this report, the existing roadway conditions were rated and grouped into three major categories: (1) Pavement; (2) Roadside and (3) Miscellaneous. Each category 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 2021 by TxDOT as part of BRINSAP. The findings of the most recent bridge inspections were provided to the Mobility Authority and serve as the basis for the comments and recommendations in the bridge portion of this report. Pedestrian bridge inspections were conducted in 2022 by the GEC as part of the Mobility Authority's structural inspection program.

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

Table 2: Bridge (Traffic and Pedestrian) Inspection Elements

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

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

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

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.

1.0 Introduction *continued*

Table 5: Building Inspection Elements

CATEGORY	ITEM	DESCRIPTION OF INSPECTION
Architectural	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
Structural	Structural	Condition of the foundation, ground floor slab, grade beams, walls, elevated floor slabs, roof, columns, and joints
Mechanical	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
Electrical	Electrical	Condition of the primary transformer, step-down transformer, electrical room, wiring, conduits, emergency power, and communication systems

The overhead sign bridges, lighting and signals 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, Lighting and Signal Elements

CATEGORY	DESCRIPTION OF INSPECTION
Structural	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
TCS	Retaining walls and copings
	Drainage features
	Civil site work, including grading, access driveways and fencing
	Toll gantries, including foundations and gantry structures
	In-Lane Processing (ILP) Equipment Enclosures, environmental protection and climate controls for housing the electronic equipment. ILP Equipment Enclosures consist of either cabinets or communications hub 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 maintenance or the construction contractor to be addressed as part of their punch list.

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



1.3.2. 183A PH III PROJECT

The third phase of the 183A Turnpike has been designed and developed. Construction of the 183A Phase III Project began in 2021. The project includes a 5.3-mile extension of the existing 11-mile 183A Toll Road north from Hero Way to north of SH 29. Together with the associated access ramps, frontage road improvements and transitions the overall project length will be approximately 6.6 miles. It will 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.

1.3.3. 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 southbound SH 130 to westbound 290E flyover opened in January 2019, the northbound SH 130 to westbound 290E flyover opened in January 2020, and the eastbound 290E to southbound SH 130 flyover opened in February 2021 and is owned by TxDOT.

1.3.4. 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.

1.0 Introduction *continued*



The project was designed to eliminate weaving 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 toll 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.

1.3.5. 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.



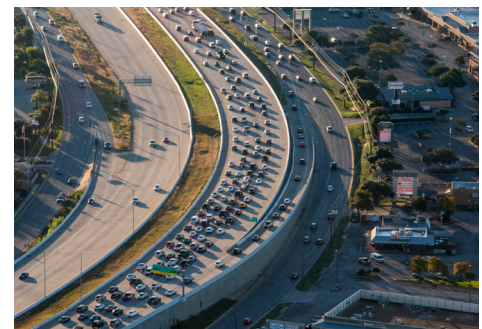
1.3.6. 183 SOUTH

The Mobility Authority constructed, operates, and maintains 183 South, a limited access toll road along US 183, spanning 8-miles from US 290 to SH 71. 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.

1.3.7. 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. Construction began in early 2022.



1.3.8. 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.

1.0 Introduction *continued*

1.4 MAINTENANCE PROGRAM OVERVIEW

The Mobility Authority utilizes a System-wide Performance Based Maintenance Contract (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 PBMC was procured and commenced on July 1, 2020. The contractor was declared in default in October of 2021. The Mobility Authority entered into an emergency maintenance services contract in November of 2021 to ensure safe and continued operations of Mobility Authority facilities. The Mobility Authority entered into a tender agreement with the surety, established a contractor for completion through the end of the FY 2023 performance bond. The Mobility Authority anticipates entering into an agreement with the completion contractor to resume full scope services provided by the PBMC through FY 2025.

1.5 CONDITION ASSESSMENT

The PBMC is administered by the Mobility Authority. The System and its performance is monitored on a daily basis and monthly audits are performed by way of a condition assessment consistent with parameters set forth in the PBMC. The condition assessments are conducted on 20% 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 2022 did not identify a significant number of deficiencies in the asphalt pavement that would affect the safety and operations of 183A Turnpike. The frontage roads were overlaid with a thin- overlay mix after the previous inspection cycle, correcting the deficiencies. The north end of the corridor will be maintained and overlaid as part of the ongoing 183A Phase III project that is anticipated to be complete in 2025.

▶ CONCRETE PAVEMENT

The concrete pavement along the corridor was found to be in good repair, with some minor deficiencies present. Deficiencies noted included minor transverse cracking across lanes, which is typical and an expected cracking pattern for continuously reinforced concrete pavement (CRCP). The PBMC will monitor to seal cracks and repair spalls as needed as part of regularly scheduled maintenance activities.

▶ ROADSIDE

The roadside visual inspection did not identify any deficiencies that were outside of the PBMC scope. The most common deficiencies noted consisted of siltation at drainage inlets and pipes with more than 20% capacity blockage, some areas reported as high as 100% blocked, thus reducing the drainage to less than the factor of safety. Other deficiencies observed included untreated vegetation growth in isolated areas, minor turf loss in various locations, and some urban areas with right-of-way encroachments. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

▶ MISCELLANEOUS

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

Pavement Graphics, Striping, and Markers: Deficiencies as a result of day and nighttime visual inspection indicate that there were several locations where the pavement graphics exhibited section loss, striping either exhibited section loss or was missing, raised pavement markers were missing or non-reflective, and missing attenuators at concrete traffic barriers. As part of the PBMC contractor responsibilities, an independent inspection and work plan should be developed to address the deficient graphics, markings and markers. As a result of their inspections, a plan was developed and work planned for fall of 2022.

Signs: Signs were assessed by a day and a nighttime visual inspection during the fall 2022 inspections. Most signs were clearly visible and legible to the inspector, however there were instances of fading and letters peeling along the corridor. The Mobility Authority received construction bids in January and will commence replacement of small signs spring of 2023.

Illumination: Lighting along the 183A Turnpike corridor was inspected for damage and proper functioning at night. Visual inspection did not identify any deficiencies that were outside of the PBMC scope. For high mast lights, there were locations where illumination outages and minor rust were noted. For safety lighting, there were significant areas of lighting not functioning and missing access panels, although structurally sound.

Traffic Signals: 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. Visual inspection did not identify deficiencies that were outside of the PBMC scope. Deficiencies noted included loose anchor bolts and minor impact damage to column supports, but remain structurally sound.

2.0 Annual Report of Conditions *continued*

Safety Barriers: Safety barriers and guardrail end treatment were inspected for damage and proper functioning. Visual inspection did not identify deficiencies that were outside of the PBMC scope. The most common deficiencies noted were areas of impact damage on metal beam guard fence and guardrail end treatments.

Ponds: 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. Visual inspections did not identify deficiencies that were outside of the PBMC scope. The most common deficiencies observed were erosion in isolated areas, vegetation growth, and graffiti along pond retaining walls.

Shared Use Path: A 7-mile paved shared use path runs along the 183A corridor from south of Brushy Creek Road to Hero Way. Visual inspection of the shared use path indicates it is in good repair and deficiencies are within the PBMC scope. Minor deficiencies that were noted include vegetation growth and minor separation and chipping at joints, rust noted at railings, minor spalling and cracking on sidewalk paving, vertical displacement with adjacent curb and inlets in isolated locations, vegetation encroachment, and tree trimming needed in isolated areas.

2.2.2. 183A TURNPIKE BRIDGES

The 183A Turnpike bridges were inspected and evaluated in 2021, as part of TxDOT's BRINSAP Program, which occurs every two years per federal requirements. The findings of the 2021 bridge inspections serve as the basis for the comments and recommendations in the bridge portion of this report. Additionally, visual observations performed by TxDOT maintenance personnel and the Mobility Authority, as inspected through the PBMC, from the 2022 MBITS Program findings are included herein.

The pedestrian bridges were not inspected by TxDOT and were thus included in the GEC's annual inspection. There are five pedestrian bridges along the shared use path adjacent to the 183A Turnpike. None of the components were rated less than a 6. These bridges were found to be in good repair with no significant repair needs.

Based on a review of the most recent inspection reports and visual observations, all CTRMA-owned bridges on the 183A Turnpike corridor remain in good repair. Of the 234 total components rated for the 39 CTRMA-owned bridges on 183A Turnpike, 14% of the components within the deck, superstructure, substructure, channel, culvert, or approaches categories received a 6-rating, and none were rated less than a 6. The most common deficiencies noted in the BRINSAP reports were joint seals at relief joints with minor to moderate deterioration and some failures, deck surfaces with minor to moderate spalling along construction joints, leaking or broken drainage pipes, detached guardrail extruder terminals, and runoff erosion. Additional deficiencies noted in MBITS reports included debris in joints. The deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

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 were primarily vegetation growth at multiple locations. Sounds walls were found to be in good repair. Isolated areas of settlement occurring along the bottom edge of a wall were noted and should be monitored. Vegetation growth was also noticed at isolated locations.

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. These assets are maintained as part of the PBMC scope.

- ▶ **BUILDING EXTERIOR**
Building exterior components, including wall systems, sealants, paint, and doors are in good repair.
- ▶ **ROOFING**
The surface, seams, expansion joints and roofing were observed to be in good repair. No roofing deficiencies were noted at the TIM Center.
- ▶ **BUILDING INTERIOR**
Building interior components, including the TIM Center lobby area, corridor finishes, windows, restrooms, security, and paint were in good repair. No building interior deficiencies were noted at the TIM Center.
- ▶ **SITE IMPROVEMENTS**
Site improvement components were observed to be in good repair. Deficiencies noted were lid damage at multiple locations for water meters, irrigation, and clean outs.
- ▶ **STRUCTURE**
Structural components were observed to be in good repair. The only deficiency noted was sealant needed for porch columns on concrete foundation.
- ▶ **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. It also appears that toll equipment was removed in the bridge above the cash lanes at the Park Street Plaza 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 at the TIM Center 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. Otherwise, no mechanical systems deficiencies were noted.
- ▶ **FIRE PROTECTION**
Fire protection equipment include alarm systems, smoke detectors, heat detectors, fire extinguishers, and fire suppression system in the server room. Inspection of fire protection equipment are typically performed by the PBMC in January of each year. No deficiencies were observed with the fire protection system.
- ▶ **PLUMBING**
Plumbing components, including water piping, insulation, and fixtures were found to be in good repair.

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 unsealed cracks in asphalt, corrosion at the liquid anti-icing storage tank, fire extinguishers not present, scattered debris with hazardous materials uncontained, and a damaged container rollup door.

2.2.6. 183A TURNPIKE OVERHEAD SIGN BRIDGES

A structural inspection of the overhead sign bridges, which include toll gantries, sign structures and monotube sign structures was conducted to identify deficiencies associated with their foundations, anchor bolts, base plates, column supports, and arm chord connections and members. The inspection did not identify any deficiencies that were outside of the PBMC scope. Deficiencies noted include minor rust and locations where leveling nuts to base plates needed tightening.

2.0 Annual Report of Conditions *continued*

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 fall 2022 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 Turnpike 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. 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. No deficiencies were noted.
- ▶ **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.
- ▶ **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 Lakeline mainlane locations.
- ▶ **MECHANICAL SYSTEMS**
No deficiencies were observed for mechanical components, including cooling, heating, air handlers, exhaust fans, and alarm systems.
- ▶ **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

- ▶ **ASPHALT PAVEMENT**
The visual inspections conducted during fall of 2022 indicated that the asphalt mainlane pavement on the east end of the project was found to be in good repair, with some minor deficiencies present. The noted deficiencies do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. Cracking on the asphalt pavement was observed on the frontage roads. There was also one pavement failure noted at the Springdale intersection.

2.0 Annual Report of Conditions *continued*

▶ CONCRETE 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. As issues are discovered through this monitoring, routine maintenance repairs are performed to stabilize the pavement.

The visual inspections conducted during fall of 2022 indicated that the concrete pavement along the 290E mainlanes was found to be in good repair, with some minor deficiencies present. Transverse cracking was noted along the mainlanes, which is normal behavior for continuously reinforced concrete pavement (CRCP). In addition, areas of longitudinal cracking were noted. As part of regularly scheduled maintenance activities, the PBMC will monitor to seal cracks and repair spalls as needed.

▶ ROADSIDE

The roadside visual inspection did not identify any deficiencies that were outside of the PBMC scope. The most common deficiencies noted included minor erosion under riprap, erosion at pavement edges, siltation at drainage inlets causing more than 20% capacity blockage, untreated and undesired vegetation growth, minor turf loss, litter and debris, encroachment in urban areas, and trees encroaching the view of roadway signs.

▶ MISCELLANEOUS

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

Pavement Graphics, Striping, and Markers: Day and nighttime visual inspections were conducted for pavement graphics, markings, and markers. The most common deficiencies included section loss and missing striping, faded graphics, missing or non-reflective raised pavement markers (RPMs), faded or dirty attenuator reflectors, attenuator impact damage, and missing delineators and object markers throughout the corridor. As part of the PBMC contractor responsibilities, an inspection and work plan should be developed to address the deficient graphics, markings and markers. As a result of their inspections, a plan was developed and work planned for fall of 2022.

Signs: Signs were also assessed by a day and a nighttime visual inspection. The most common deficiencies noted for small signs were for cracking, fading, leaning, and turned signs. Large sign deficiencies that were noted included yellow sheeting that was faded at several locations along the corridor. All sign deficiencies noted fall under the PBMC's scope of work. A sign replacement project is planned for FY 2024.

Illumination: Lighting was inspected for damage and proper function 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 bulb outages and sections of lighting not functioning at continuous and safety light pole locations, as well as bulb outages and foundation cracking at high mast light locations.

Traffic Signals: 290E has two sign mounted flashing beacon assemblies per frontage road location, one set east of Arterial A and the second set west of Johnny Morris Road. Both are the Mobility Authority's responsibility, placed as an advanced warning for signals on approach to these intersections. No deficiencies were noted during the inspection cycle.

Safety Barriers: Safety barriers and guardrail end treatment were inspected for damage and proper functioning. Visual inspection did not identify deficiencies that were outside of the PBMC scope. The most common deficiencies noted were areas of impact damage on metal beam guard fence and spalling at concrete traffic barriers.

Ponds: Minimal deficiencies were observed on 290E retention ponds. Only a few elements were identified as minor problems, with the most common deficiencies consisting of vegetation and silt buildup at inlets, and erosion causing rock displacement and exposing underlying filter fabric. 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*

Shared Use Path: A 5-mile paved shared use path runs along the 290E corridor from US 183 to east of SH 130. Visual inspection of the shared use path indicates that it is in good repair. Deficiencies that were noted include vegetation growth and minor separation at joints, rust on railings, minor spalling on sidewalk paving at several locations, isolated locations where vertical displacement with adjacent curb and inlets is occurring, spalling at locations where rebar is near the surface, edge drop-offs, and minor areas of turf loss. Correction of vertical displacement is recommended through the PBMC scope.

2.3.2. 290E BRIDGES

All of the 290E bridges were inspected and evaluated in 2021, as part of TxDOT's BRINSAP Program, which occurs every two years per federal requirements. The findings of the 2021 bridge inspections serve as the basis for the comments and recommendations in the bridge portion of this report. Additionally, visual observations performed by TxDOT maintenance personnel and the Mobility Authority, as inspected through the PBMC, from the 2022 MBITS Program findings are included herein.

As part of an ongoing plan to address ride quality caused by uneven transitions from the roadway section to the bridge section, the ride quality is assessed and repairs are made as needed using foam injection to realign approach and departure slabs with the adjacent pavement, ultimately improving the ride quality for the driver. No significant ride quality issues were noted during this inspection.

Based on a review of the most recent inspection reports and visual observations, 290E bridges are in good repair. Of the 84 total components rated for the 14 CTRMA-owned bridges on 290E, less than 5% (4 components) received a 6-rating. No components received a rating lower than a 6. The most common deficiencies noted in BRINSAP and MBITS reports were bridge scour due to a drain downspout, debris in joints, bridge structure number not present, and several drains being blocked by debris. 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 not inspected by TxDOT and was thus included in the GEC's annual inspection. There is one pedestrian bridge along the shared use path adjacent to 290E. None of the components were rated less than a 6. This bridge was found to be in good repair with no significant repair needs.

2.3.3. 290E RETAINING WALLS

The retaining walls on the 290E corridor consist primarily of MSE walls. Deficiencies noted included erosion under mow strips, flume settlement, and minor sound wall settlement. Two wall locations, one at Parmer Lane and the second at Harris Branch Parkway, do show signs of panel movement, which is an indication of wall settlement. A testing and monitoring plan was put in place to establish the source of movement in FY 2023. Repairs at the Harris Branch location are scheduled to be made spring of 2023. The Parmer Lane location shows slow but consistent movement and will continue to be monitored, with mitigation planned for FY 2024. Sound walls are in good repair, also with settlement noted in isolated areas to be monitored.

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 2022 inspection observed cracking in the parking area, interior lights not functioning, garage door having been pried open, hole/gap in fencing and gate, and open holes on a couple of the exterior walls. The fencing and gate were repaired soon after inspections by the PBMC contractor.

2.3.5. 290E OVERHEAD SIGN BRIDGES

A structural inspection of the overhead sign bridges, which include toll gantries, sign structures and monotube sign structures was conducted to identify 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

2.0 Annual Report of Conditions *continued*

and sign structures. Inspectors observed areas where foundation undermining caused by erosion, brackets, and truss repair is needed, as well as tightening needed of loose leveling nuts to base plates.

2.3.6. 290E TOLL INFRASTRUCTURE

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 fall 2022 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 were observed to be 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 EB DC on-ramp at US 183 consisting of GFCI devices not operational, as well as findings at the WB DC on-ramp to US 183 consisting of missing electrical panel label and missing duct seal for wiring/conduit.
- ▶ **MECHANICAL SYSTEMS**
Mechanical systems components, including cooling, exhaust fans, and alarm systems, were observed to be in good repair.
- ▶ **FIRE PROTECTION**
Inspection of fire protection equipment are typically performed by the PBMC in January of each year. Alarm systems and smoke detectors appeared to be in good repair.

2.4 SH 71 EXPRESS

2.4.1. SH 71 EXPRESS ROADWAY

- ▶ **ASPHALT PAVEMENT**
Most of the deficiencies that were noted occurred within the asphalt transition area from concrete to existing flexible pavement. The most common deficiencies observed were cracking and header material failing at bridge joints at isolated areas, which fall within the PBMC's scope and should be addressed as part of regularly scheduled maintenance activities.
- ▶ **CONCRETE PAVEMENT**
The concrete pavement sections along the corridor are in good repair. As stated above, most of the

2.0 Annual Report of Conditions *continued*

deficiencies that were noted occurred within the asphalt transition area from concrete to existing flexible pavement.

▶ **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 siltation blocking 20% capacity at drainage inlets, isolated areas of edge drop-offs, litter and debris build-up, untreated and undesired vegetation growth, minor turf loss at various locations, and slope erosion undermining rip rap. Dead trees were also reported, and, although minimal, trees that were obstructing signs.

▶ **MISCELLANEOUS**

Pavement Graphics, Striping, and Markers: Overall, pavement striping, symbols and reflective pavement markers are in good repair. Deficiencies observed included locations where striping and graphics exhibited section loss due to damage, missing delineation along portions of guardrail, and nonreflective delineation. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

Signs: Deficiencies were minimal with the only noted deficiency being leaning signs at 3 locations. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

Illumination: Deficiencies noted included safety lighting not functioning and light bulbs burnt out. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

Safety Barriers: Typical deficiencies noted included areas of impact damage on MBGF, spalling at concrete traffic barrier bases, and missing object markers and faded markings at attenuators. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

Shared Use Path: A 5-mile paved shared use path runs along both sides of the SH 71 corridor from US 183 to SH 130. Visual inspection of the shared use path indicates that it is in good repair. Deficiencies that were noted include rail damage or missing due to impact, minor spalling at several locations, broken sidewalk sections due to construction, vertical displacement with adjacent curb and inlets in isolated locations, blocked sight distance at one location, and edge drop-off at one location. Correction is recommended through the PBMC scope.

2.4.2. SH 71 EXPRESS BRIDGES

All of the SH 71 Express bridges were inspected and evaluated in 2021, as part of TxDOT's BRINSAP Program, which occurs every two years per federal requirements. The findings of the 2021 bridge inspections serve as the basis for the comments and recommendations in the bridge portion of this report. Additionally, visual observations performed by TxDOT maintenance personnel and the Mobility Authority, as inspected through the PBMC, from the 2022 MBITS Program findings are included herein.

Based on a review of the most recent inspection reports and visual observations, SH 71 Express bridges are in good repair. Of the 18 total components rated for the 3 bridges on SH 71, 5.6% (1 component) received a 6-rating. No components received a rating lower than a 6. No follow up action items were noted and no additional deficiencies were noted in MBITS reports.

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, 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 isolated reports of silt build-up in flumes, as well as erosion at the base of a flume.

2.0 Annual Report of Conditions *continued*

2.4.4. SH 71 EXPRESS OVERHEAD SIGN BRIDGES

A structural inspection of the overhead sign bridges, which include toll gantries, sign structures and monotube sign structures was conducted to identify 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 the most common deficiency noted as loose leveling nuts at base plates.

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 fall 2022 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.

2.5 SH 45 SOUTHWEST

For SH 45 Southwest, the remaining warranty provisions in place for various items, are as summarized in Table 9, below.

Table 9: SH 45 Southwest Summary of Project Warranties

GENERAL SUBJECT	WARRANTY PERIOD AFTER FA
Radar Presence Detection Devices (RPDD): Free from material and workmanship defects	5 Years
Radar Advance Detection Devices (RADD): Free from material and workmanship defects	5 Years
Battery Back-Up System for Signal Cabinets: Replace when non operable due to defect in material or workmanship	5 Years

2.5.1. SH 45 SOUTHWEST ROADWAY

▶ ASPHALT PAVEMENT

The pavement sections along the corridor are in good repair. Visual inspections did not identify any deficiencies that were outside of the PBMC scope. The most common deficiencies noted were asphalt pavement cracking and potholes at isolated locations. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

On FM 1626 which intersects SH 45 Southwest on the south end of the corridor, shows signs of pavement surface failure where frequent turning movements occur. An asphalt mill and inlay is recommended to correct this issue.

▶ ROADSIDE

The roadside elements along the SH 45 Southwest corridor are in good repair. Visual Inspection did not identify any deficiencies that were outside of the PBMC scope. Only a few deficiencies were noted, such as multiple locations of siltation at drainage inlets blocking more than 20% capacity, untreated and undesired vegetation growth, and isolated areas of dead trees. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

2.0 Annual Report of Conditions *continued*

▶ MISCELLANEOUS

Pavement Graphics, Striping, and Markers: Overall, pavement striping, symbols and reflective pavement markers are in good repair. Only a few deficiencies were noted, including missing and non-reflective RPMs, graphics showing section loss, cracking, and loss of reflectivity at several locations, and striping section loss due to damage at a few locations, mainly on cross streets. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

Signs: Signs were also assessed by a day and a nighttime visual inspection and were found to be in good repair. Only a few deficiencies were noted, including leaning and missing small signs, cracked and faded small signs, and missing and nonreflective raised pavement markers. It is recommended that reflectivity testing continue to be performed every three to five years to ensure compliance with requirements.

Illumination: Lighting along the SH 45 Southwest corridor was inspected for damage and proper functioning 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, a missing access panel, and areas of safety lighting that were not functioning.

Traffic Signals: SH 45 Southwest has two traffic signals and two beacon assemblies that are the Mobility Authority's responsibility, located at FM 1626. The signals were found to be in good repair. Deficiencies noted at the time of inspections were a detached signal head at one location with impact damage to the column.

Safety Barriers: Safety barriers and guardrail end treatment were inspected for damage and proper functioning. Visual inspection did not identify deficiencies that were outside of the PBMC scope. The most common deficiencies noted were isolated areas of impact damage on metal beam guard fence and one location where there was minor damage at an attenuator.

Ponds: Minimal deficiencies were observed on SH 45 Southwest retention ponds. The most prevalent deficiency consisted of silt and debris in pond bedding at one location, erosion in the sides of a pond wall at one location, unwanted vegetation and tree growth around ponds and outfalls, signs of erosion around the perimeter of a pond retaining wall, isolated locations where there was sediment and debris blocking flow at pond riprap area, and standing water and debris at a drainage inlet.

Shared Use Paths: A 4.5-mile paved shared use path runs along the 45SW corridor from MoPac and Escarpment Boulevard to FM 1626. Visual inspection of the shared use path indicates that it is in good repair. Minor deficiencies that were noted includes edge drop offs where erosion is occurring along sidewalk paving and vegetation encroachment.

2.5.2. SH 45 SOUTHWEST BRIDGES

SH 45 SW bridges were inspected and evaluated in 2021, as part of TxDOT's BRINSAP Program, which occurs every two years per federal requirements. The findings of the 2021 bridge inspections serve as the basis for the comments and recommendations in the bridge portion of this report. Additionally, visual observations performed by TxDOT maintenance personnel and the Mobility Authority, as inspected through the PBMC, from the 2022 MBITS Program findings are included herein.

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. Of the 48 total components rated for the 8 bridges on SH 45, 12.5% (6 components) received a 6-rating. No components received a rating lower than a 6. Deficiencies noted in the BRINSAP report included unfenced/unprotected filtration basins, broken connections associated with storm drains, and minor debris caught in expansion joints and drain scuppers. Additional deficiencies noted in MBITS reports included minor amount of joint debris and gravel mostly at edges.

2.0 Annual Report of Conditions *continued*

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, retaining walls on SH 45 Southwest are in good repair, with minor deficiencies noted, including vegetation growth in mow strips at several locations.

2.5.4. SH 45 SOUTHWEST OVERHEAD SIGN BRIDGES

A structural inspection of the overhead sign bridges, which include toll gantries, sign structures and monotube sign structures was conducted to identify 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 INFRASTRUCTURE

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 fall 2022 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, with no deficiencies noted. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS.

2.6 183 SOUTH

183 South extends approximately 8.3 miles from US 290 southward to the SH 71 interchange. 183S opened in phases with the north end (183 Interim Build) opening to traffic in August 2019, and the south end (183 Ultimate Build) opening in early 2021. The Mobility Authority is currently working through punch list items with the contractor prior to final acceptance of the project. The corridor includes continuous bicycle lanes, a shared use path, sidewalks, four pedestrian bridges, two major trailheads and several smaller trailheads.

2.6.1. 183 SOUTH ROADWAY

▶ PAVEMENT

The concrete pavement sections along the corridor are in good repair, with no pavement deficiencies reported in the corridor mainlanes.

▶ ROADSIDE

The roadside elements along the 183 South corridor are in good repair. Deficiencies reported include isolated areas where siltation removal is needed at drainage inlets, untreated and undesired vegetation growth, litter and debris, minor turf loss, isolated areas of erosion in the center median, and dead trees noted in isolated areas along the corridor. These deficiencies noted were added to the construction contractor punch list for repair.

▶ MISCELLANEOUS

Pavement Graphics, Striping, and Markers: Day and nighttime visual inspections were conducted for pavement graphics, markings, and markers. Overall, pavement striping, symbols and reflective pavement markers are in good repair. However, there appears to be missing delineation on CTBs in multiple locations. Delineation will be reviewed to determine if it was properly installed during construction and added to the construction final punch list for repair.

Signs: Signs were also assessed by a day and a nighttime visual inspection. No deficiencies were noted for large signs. However, for small signs, there were several locations where signs were damaged, out of plumb, dirty, or missing. All sign deficiencies noted were added to the construction contractor punch list for repair.

2.0 Annual Report of Conditions *continued*

illumination: Lighting was inspected for damage and proper function at night. Deficiencies noted included lighting outages at high mast, continuous, and safety lighting locations, areas of lighting not functioning and access panels missing at safety light pole locations.

Traffic Signals: There are no traffic signals that are owned or maintained by the Mobility Authority on the 183S corridor.

Safety Barriers: Safety barriers and guardrail end treatment were inspected for damage and proper functioning. No major deficiencies were noted on the 183S corridor.

Ponds: No deficiencies were noted along the 183S corridor.

Shared Use Path: The 183 Trail is a 10-foot-wide shared use path adjacent to 183S from US 290 to SH 71. This bicycle and pedestrian route includes pedestrian bridges crossing the highway at Springdale/Manor Road, 51st Street, and Bolm Road. It also includes connections to other regional trails such as the 290 Trail, the Walnut Creek Trail, the Lance Armstrong Bikeway, the 71 Trail, and trailheads at 51st Street and Levander Loop. Visual inspection of the shared use path indicates that it is in good repair. Deficiencies that were noted include vegetation growth and minor separation and chipping at joints, minor spalling and cracking on sidewalk paving at several locations, graffiti, missing signs, tree trimming needed, areas where vegetation establishment hasn't occurred, and missing and downed safety light poles. These deficiencies were added to the construction contractor punch list for repair.

2.6.2. 183 SOUTH BRIDGES

Although bridges on the north end (183 South Interim Build) were inspected in fall of 2021 as part of TxDOT's BRINSAP Program, the south end (183 South Ultimate Build) of the corridor was not inspected during the cycle since those bridges were not turned over from the roadway contractor to CTRMA until after the 2021 BRINSAP inspections were complete. Additionally, visual observations performed by TxDOT maintenance personnel and the Mobility Authority, as inspected through the PBMC, from the 2022 MBITS Program findings are included herein.

The findings of the BRINSAP and MBITS bridge inspections serve as the basis for the comments and recommendations in the bridge portion of this report.

Based on a review of the most recent inspection reports and visual observations, 183 South bridges are in good repair. Of the 84 total components rated for the 14 bridges on 183S, 7.1% (6 components) received a 6-rating. No components received a rating lower than a 6. Deficiencies noted in the BRINSAP report included failed relief joints and impact damage and a missing reflective decal at a crash attenuator. Additional deficiencies noted in MBITS reports included deck joints with debris, horizontal cracks in rip rap, missing delineation in bridge approaches, superstructure bearings leaning forward thus causing a gap in the deck, and graffiti. The deficiencies noted were added to the construction contractor punch list for repair.

2.6.3. 183 SOUTH RETAINING WALLS

The retaining walls on 183 South consist primarily of MSE walls. Based on visual observations, retaining walls deficiencies were minor, and included wall graffiti and undesirable vegetative growth.

2.6.4. 183 SOUTH OVERHEAD SIGN BRIDGES

A structural inspection of the overhead sign bridges, which include toll gantries, sign structures and monotube sign structures was conducted to identify 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 minor deficiencies found, including rust and loose anchor bolts.

2.6.5. 183 SOUTH TOLL INFRASTRUCTURE

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the

2.0 Annual Report of Conditions *continued*

Customer Service Center and the Violation Processing Center. The fall 2022 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 corridor included inspection of eleven (11) ILP enclosures, which are cabinets that house various ETC equipment, and are located at the following points: 51st Street NB Entrance Ramp, 51st Street NB Mainlane, MLK Jr. Blvd NB Exit Ramp, 51st Street SB Exit Ramp, MLK JR. Blvd SB Mainlane, Smith Road NB Exit Ramp, Smith Road SB Entrance Ramp, Thompson NB Mainlane Plaza, Thompson SB Mainlane Plaza, the Direct Connector Flyover from 71 EB to 183S NB, and the Direct Connector Flyover from 183S SB to & 71 WB. 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, with the only deficiency noted being a cover missing on a GFCI junction box. 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 continues to improve upon their Transportation Asset Management Plan (TAMP).

The Mobility Authority is using a production version of software, that is web-enabled integrated Geographic Information System (GIS) based, to serve as their Computerized Maintenance Management System (CMMS). Using this CMMS, the Mobility Authority records maintenance activity accomplishment associated with the GIS based asset inventory. The 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 will be utilized to support the Mobility Authority in decision-making, providing a strategy to proactively manage its program.

In addition, the Mobility Authority utilizes dashboards to include crash data, bridge inspection data, annual inspection deficiency data and financial data for tracking and planning.

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

3.2 TECHNOLOGY INITIATIVES

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

3.2.1. DATA PLATFORM SOLUTION

The Mobility Authority has developed plan to implement a toll transaction solution that will provide flexibility and more control of data, providing better and more informed decision-making. In March 2021, the Mobility Authority awarded a contract to begin development of the Data Platform Solution to move to a stratagem wherein all toll transaction processing and data management capabilities after the point of transaction creation is advanced to a Mobility Authority-managed solution. To achieve the new transaction processing arrangement, the Mobility Authority defined a multi-faceted strategic plan to implement an end-to-end scalable tolling transaction system to meet current and future business capabilities. The solution is planned to begin processing transaction in Q2 2023.

The objective of the data platform project is to transition all toll transaction data processing and data management capabilities after the point of transaction creation to a Mobility Authority-managed solution. A third-party vendor will continue to collect and create the toll transaction at the roadside, then pass the fully formed toll transaction to the data platform. Business logic and rules will then consume the transaction and route the payment request to either the Central United States Interoperability (CUSIOP) Hub or the Pay by Mail (PBM) vendor.

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

3.2.2. 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 (ITS) on the Mobility Authority System. ITS technologies, such as CCTV cameras,

3.0 Ongoing Initiatives *continued*

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 expansion 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.

3.2.3. ITS RETROFITS AND EXPANSIONS

The Mobility Authority has completed the first steps of the ITS Master Plan through projects retrofitting ITS equipment on the existing 183A Turnpike 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 Turnpike ITS retrofit project included the installation of fixed-view and pan/tilt/zoom CCTV cameras, microwave detectors, and dynamic message signs. These retrofit installations provide additional ITS equipment along the 183A Turnpike 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 have facilitated the 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.

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 2024. 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 consider 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 2024. 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 2023 System Operating Expenses to be \$39.8 million. The factors that determine this estimate include the utilization of consultants/ vendors and the assignment of Mobility Authority personnel. The Annual Operating Budget should be finalized by the Mobility Authority on or before June 30, 2023.

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 2024 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 GEC estimates the FY 2024 Maintenance Expenses to be \$10.7 million.

This budget includes the cost of the PBMC contract and asset management support. The actual Annual Maintenance Budget should be finalized by the Mobility Authority on or before June 30, 2023.

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 2024 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. Planned capital expenditures for FY 2024 are summarized below.

The Mobility Authority's 183A Phase III Project began construction in the spring of 2021. The new 5.3-mile roadway will extend the existing 183A Turnpike corridor northward from Hero Way, 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. The capital expenditures for this project are estimated to be \$65 million for FY 2024 and are funded by the Project Fund.

The Mobility Authority's 183 North Mobility Project began construction in 2022. 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 is comprised of construction of two express lanes in each direction, widening of the existing US 183

4.0 Annual Budgets *continued*

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. Capital expenditures and Mobility Authority costs for this project are estimated to be \$199 million for FY 2024, funded by the Project Fund.

The Mobility Authority's System of Projects continues to increase in both overall lane miles and geographical footprint. The existing maintenance facilities, currently located along 290E and 183A Turnpike are approaching capacity. With the expansion of 183A Turnpike and construction of the 183N Project, it is recommended that additional maintenance facilities be added for effective maintenance. Additional maintenance yard real estate and planning support is estimated to cost \$5.2 million and is recommended for the FY 2024.

The Mobility Authority's intelligent transportation system (ITS) devices enable the monitoring of the Mobility Authority's facilities at the Traffic Incident & Management (TIM) Center. With the expansions of the 183A Turnpike and construction of the 183 North Mobility Project, it is recommended that the TIM Center be expanded and reconfigured to effectively monitor the Mobility Authority's system. Renovation of the TIM Center building is estimated to cost \$5 million and is recommended for the FY 2024.

5.0 Renewal and Replacement Funding

Under the terms of the Master Trust Indenture, R&R Funding should be established for the purpose of paying the cost of:

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

A thin overlay mix (TOM) on SH71 Express is tentatively scheduled for FY 2026 as a preventative measure to rejuvenate the asphalt surface, ensuring the useful life of pavement is met and is estimated to cost \$2.9 million.

The 183A Turnpike corridor is scheduled to receive a metal beam guard fence (MBGF) upgrade in FY 2024. Phase I of the MBGF replacement along with median cable barrier installation was completed in FY 2023 with Phase II scheduled for in FY 2024, expected to cost \$3 million. The proposed project will install new MBGF that meets current safety requirements.

A small and large sign replacement is recommended for the 290E corridor phases I and II in FY 2024, expected to cost \$3.7M

Based on the results of the inspection, a pavement surface improvement project is planned for the SH 45 Southwest intersection with FM 1626 in FY 2024, with an expected cost of \$650 thousand.

The Mobility Authority is replacing and upgrading its electronic toll system on system corridors through FY 2028. It is expected that replacements and the associated costs, will occur in the future as shown in the following:

PROJECT	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
290 Toll System Replacement (Includes PH III)	\$8,200,000				
SH 45 Southwest Toll System Replacement			\$2,100,000		
183S Toll System Replacement					\$12,400,000
183A Turnpike Toll System Replacement		\$5,600,000	\$5,100,000		

As a result of the inspection findings in FY 2023, the Mobility Authority installed wall monitoring equipment on 290E at Harris Branch and Parmer Lane. Based on the results of the monitoring the Authority developed and implemented a project to stabilize the wall at Harris Branch. Continued monitoring at both locations is recommended through FY 2024; the expected cost is \$5 thousand.

In addition, monitoring of the remainder of the system is recommended, with the cost valued at \$350 thousand for FY 2024.

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 2022 did not identify any major deficiencies in the pavement that would affect the safety and operations of 183A Turnpike. The north end of the corridor will be maintained and overlaid as part of the ongoing 183A Phase III project that is anticipated to be complete by spring 2025.

Pavement markings, graphics, and raised pavement markings show areas in need of maintenance. This work is part of the PBMC scope and has been included in the PBMC workplan.

Inspection of signs along 183A Turnpike identified faded and peeling small signs. The Mobility Authority will replace the small signs in spring of 2023.

Retaining walls and sound walls on the 183A Turnpike corridor are in good repair. Isolated areas of settlement occurring along the bottom edge of a sound wall were noted. A wall monitoring program is recommended as a proactive asset management program. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

The findings of the 2021 bridge inspections conducted as part of the TxDOT BRINSAP Program, as well as inspections conducted under the MBITS program, serve as the basis for the bridge comments and recommendations in this report. The Mobility Authority should continue to address deficiencies as part of the bridge maintenance program. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

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

The 2022 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.

6.0 Recommendations

6.3 290E RECOMMENDATIONS

In general, concrete pavement along the mainlanes was found to be in good repair, with some minor deficiencies present. The noted deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. Transverse cracking was noted along the mainlanes, which is normal behavior of continuously reinforced concrete pavement and is not a concern. Minor failures at concrete pavement joints were also noted.

Continued monitoring and routine maintenance should be performed to minimize the pavement 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.

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 noted included erosion under mow strips, flume settlement, and minor sound wall settlement. Two wall locations, one at Parmer Lane and the second at Harris Branch Parkway, do show signs of panel movement, which is an indication of wall settlement. A testing and monitoring plan was set in place to establish the source of movement in FY 2023. Repairs at the Harris Branch location are scheduled to be made spring of 2023 this fiscal year. The Parmer Lane location shows slow but consistent movement and will continue to be monitored, with mitigation planned for FY 2024. A wall monitoring program for the entire corridor is recommended as a proactive asset management program.

The findings of the 2021 bridge inspections conducted as part of the TxDOT BRINSAP Program, as well as inspections conducted under the MBITS program, serve as the basis for the bridge comments and recommendations in this report. The Mobility Authority should continue to address deficiencies as part of the bridge maintenance program. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

Structural inspections revealed that overhead sign bridges, which include toll gantries, sign structures and monotube sign structures were in good repair. Inspectors observed areas where foundation undermining caused by erosion, brackets, and truss repair is needed, as well as tightening needed of loose leveling nuts to base plates. Deficiencies should be addressed as part of regularly-scheduled maintenance activities.

The 2022 annual inspection revealed that the 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.

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 pavement sections along the corridor are in good repair. Most of the deficiencies that were noted occurred within the asphalt transition area from concrete to existing flexible pavement. The most common deficiencies observed were cracking and header material failing at bridge joints at isolated areas. 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.

6.0 Recommendations *continued*

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. A wall monitoring program is recommended as a proactive asset management program.

The findings of the 2021 bridge inspections conducted as part of the TxDOT BRINSAP Program, as well as inspections conducted under the MBITS program, serve as the basis for the bridge comments and recommendations in this report. No follow up action items were noted and no additional deficiencies were noted in MBITS reports. The Mobility Authority should continue to address deficiencies as part of the bridge maintenance program.

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

The 2022 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.

6.5 SH 45 SOUTHWEST RECOMMENDATIONS

The 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. Noted deficiencies included asphalt pavement cracking and potholes at several locations. Deficiencies should be addressed as part of regularly-scheduled maintenance activities. FM 1626 which intersects SH 45 Southwest on the south end of the corridor, shows signs of pavement surface failure where frequent turning movements occur. An asphalt mill and inlay is recommended to correct this issue.

Minimal deficiencies were observed on SH 45 Southwest retention ponds. The most prevalent deficiency consisted of unwanted vegetation and tree growth around ponds and outfalls and standing water and debris.

The retaining walls on the SH 45 Southwest corridor consist primarily of MSE walls. Based on visual observations, retaining walls on SH 45 Southwest are in good repair. A wall monitoring program is recommended as a proactive asset management program.

The findings of the 2021 bridge inspections conducted as part of the TxDOT BRINSAP Program, as well as inspections conducted under the MBITS program, serve as the basis for the bridge comments and recommendations in this report. Deficiencies noted were routine in nature. 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.

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.

6.0 Recommendations *continued*

6.6 183 SOUTH RECOMMENDATIONS

183 South extends approximately 8.3 miles from US 290 southward to the SH 71 interchange. 183S opened in phases with the north end (183 Interim Build) opening to traffic in August 2019, and the south end (183 Ultimate Build) opening in early 2021. The Mobility Authority is currently working through punch list items with the contractor prior to final acceptance of the project.

All assets observed as part of the fall 2022 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 initiated.

The retaining walls are in good repair with no noted maintenance needs. A wall monitoring program is recommended as a proactive asset management program.

Bridges on 183 South Interim Build were inspected in fall of 2021 as part of TxDOT's BRINSAP Program. The newly constructed bridges within the 183 South Ultimate Build segment were not inspected during the 2021 inspection cycle. The construction contractor is currently in the process of correcting final punch list items. The findings of the 2021 bridge inspections conducted as part of the TxDOT BRINSAP Program, as well as inspections conducted under the MBITS program, serve as the basis for the bridge comments and recommendations in this report. 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.

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.



2023



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