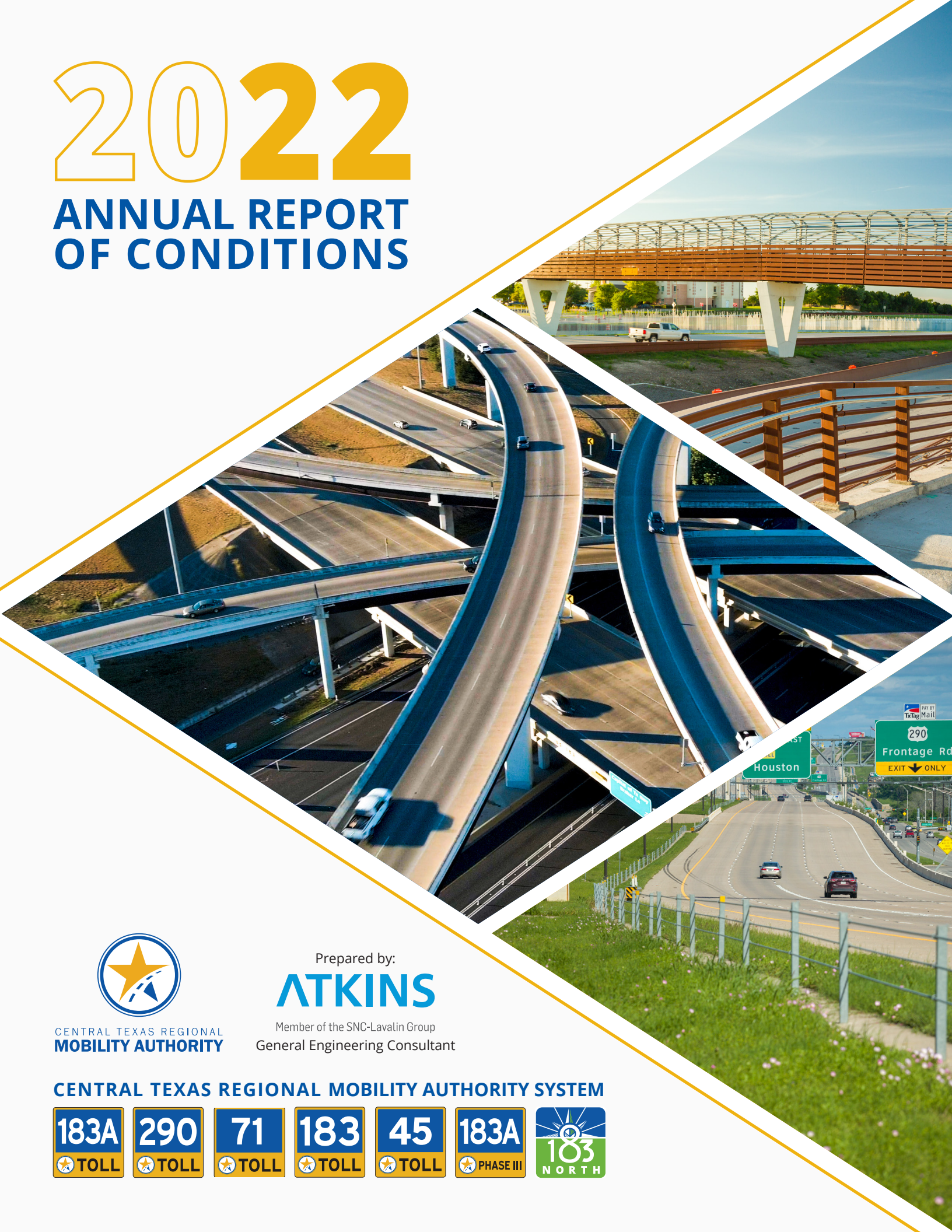


2022

ANNUAL REPORT OF CONDITIONS



CENTRAL TEXAS REGIONAL
MOBILITY AUTHORITY

Prepared by:

ATKINS

Member of the SNC-Lavalin Group
General Engineering Consultant

CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY SYSTEM





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March 22, 2022

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

Subject: **2022 Annual Report of Conditions – 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest, 183 South, 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 2022 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) 2023.

Atkins conducted a visual inspection of all portions of the 183A Turnpike, 290E, SH 71 Express, SH 45 Southwest, and 183 South in fall 2021. 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, are still being compiled and will be provided to the Mobility Authority when they are available. Since analysis for the 2021 bridge inspections are not complete, the 2019 and 2020 data are reflected in this year's report.

There were two projects in the System that were not operational at the time of inspection. The first project, 183A Phase III, commenced construction activities in Spring 2021 and will extend the 183A Turnpike 6.6-miles north from Hero Way to north of SH 29. The second project, 183 North Mobility Project, is set to begin construction 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 are open to traffic, expenses for capital expenditures should be included in the recommended budgets for FY 2023.

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.

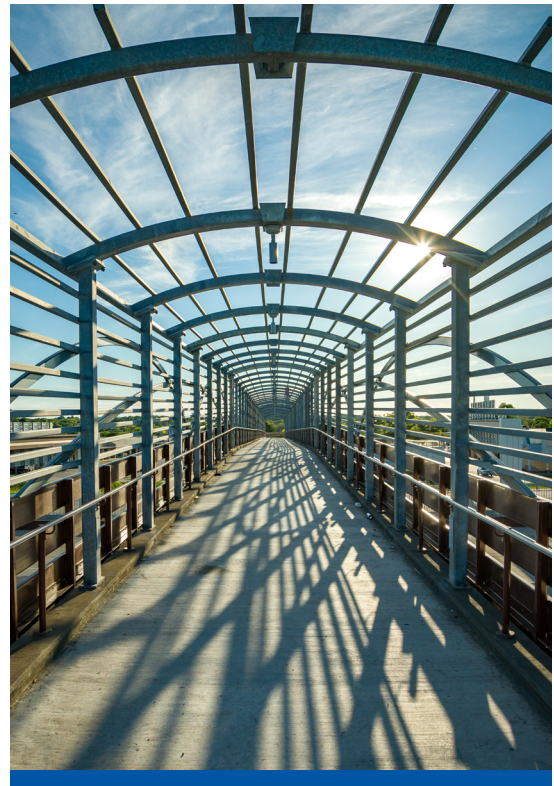
Sr. Division Manager, Atkins North America, Inc.

Enclosure

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

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Acronyms and Abbreviations

ACRONYMS AND ABBREVIATIONS

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

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 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 2021 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 2027, the following budgets are recommended:

RECOMMENDED BUDGETS

Operating Expenses FY 2023	\$36,800,000
Maintenance Expenses FY 2023	\$12,900,000
R&R Fund FY 2023	\$15,300,000
R&R Fund FY 2024	\$12,900,000
R&R Fund FY 2025	\$6,200,000
R&R Fund FY 2026	\$6,000,000
R&R Fund FY 2027	\$2,900,000

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 2021. 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) 2023, 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, 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).

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 are still being compiled and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2019 and 2020 data serve as the basis for the comments and recommendations in the bridge portion of this report.

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

Table 2: Bridge Inspection Elements

CATEGORY	DESCRIPTION OF INSPECTION
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 located on each roadway were inspected as part of this report. The inspection covered the structural items of the structures, as shown in Table 6 below.

Table 6: Overhead Sign Bridge Elements

CATEGORY	DESCRIPTION OF INSPECTION
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 Performance Based Maintenance Contractor (PBMC) 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.

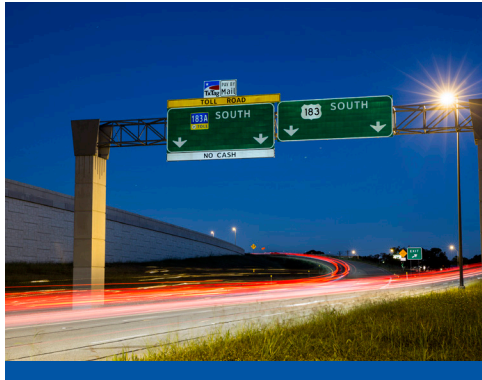
A rating of 3 indicates some level of degradation of the asset performance and requires maintenance action but does not warrant expedited maintenance.

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. The third phase of the 183A Turnpike has been designed and developed. Construction of the 183A Phase III Project began in 2021. The new 6.6-mile roadway will extend the existing 183A Turnpike corridor northward from Hero Way to 1.1 miles north of SH 29 and provide two tolled lanes in each direction, within the existing TxDOT and Mobility Authority right-of-way and within the median of the existing US 183 corridor.



1.3.2. 290E

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

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



1.3.3. SH 71 EXPRESS

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

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

1.0 Introduction *continued*

beyond. 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.



1.3.4. SH 45 SOUTHWEST

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



1.3.5. 183 SOUTH

The 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.



1.3.6. 183 NORTH MOBILITY PROJECT

The 183 North Mobility Project will include two express lanes in each direction along a 9-mile stretch of US 183 between State Highway (SH) 45 North/Ranch-to-Market (RM) 620 and State Loop 1 (MoPac), the addition of a fourth general-purpose lane to bring the total number to four in each direction, and express lane direct connectors to and from southbound MoPac. The project also includes operational improvements for the transition to MoPac, new shared use path connections, new sidewalks, and cross-street connections for bicycles/pedestrians. Construction is expected to begin in early 2022.

1.0 Introduction *continued*

1.3.7. FACILITIES/BUILDINGS

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

1.4 MAINTENANCE PROGRAM OVERVIEW

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

- (1) Maintain the Project and Related Transportation Facilities in a proactive and timely manner appropriate for a facility of the character of the Project.
- (2) Minimize delay and inconvenience to users and, to the extent the Contractor is able to control, users of Related Transportation Facilities.
- (3) Identify and manage incidents and correct all defects and damages from Incidents to include cleanup of spilled cargo, removal and disposal of damaged and unsalvageable materials, obtaining required permits, etc.
- (4) Monitor and observe weather and weather forecasts to proactively deploy resources to minimize delays and safety hazards due to heavy rains, snow, ice or other severe weather events.
- (5) Remove debris, including litter, graffiti, animals, and abandoned vehicles or equipment from the ROW.
- (6) Minimize the risk of damage, disturbance or destruction of third-party property during the performance of maintenance activities.
- (7) Coordinate with and enable the Mobility Authority and others with statutory duties or functions in relation to the Project or Related Transportation Facilities to perform such duties and functions.
- (8) Perform systematic Project inspections and maintenance in accordance with the provisions of Contractor's Maintenance Management Plan (MMP) to include Contractor's Safety and Health Plan and in accordance with the Contract Documents.

A 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 anticipates entering into a tender agreement with the surety, resulting in compensation for additional expenses. This compensation includes reimbursement for increased costs of maintenance services, which will be applied in the FY22 accounting period and therefore is not reflected in the FY23 budget. In April 2022, the Mobility Authority anticipates entering into a contract with a completion contractor who will resume full scope services provided by the PBMC through FY 2023.

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 10% of the roadways on randomly selected sections. This ensures the Contractor is maintaining the facilities within the tolerances established by the performance measures.

2.0 Annual Report of Conditions

2.1 OVERVIEW

Visual condition assessments were conducted based on the 5-point rating scale described in Table 8. The results of this year's annual inspection indicate the System is performing as expected and is being maintained in accordance with the Mobility Authority's asset management program and is in good repair. Corrective measures are being taken to address deficiencies through the Mobility Authority System-wide PBMC.

2.2 183A TURNPIKE

2.2.1. 183A TURNPIKE ROADWAY

▶ ASPHALT PAVEMENT

Although minor issues were noted, the inspection conducted in fall 2021 did not identify a significant number of deficiencies in the asphalt pavement that would affect the safety and operations of 183A Turnpike. Cracking and asphalt failures were noted on the frontage roads. 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 Fall 2024. The remainder of the corridor was overlaid with a thin-overlay mix after the inspection cycle. Other repairs to address pavement surface degradation such as longitudinal cracking, spalling, rutting, and minor failures will be made through the PBMC.

▶ 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, isolated concrete pavement failures, and isolated settlement at bridge approach and departure slabs. The Mobility Authority has plans in FY 2023 for a concrete pavement stabilization project consisting of injecting high-density polyurethane foam beneath the settling concrete slabs to address the settlement issues. The remainder of noted deficiencies fall within the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

▶ ROADSIDE

The roadside visual inspection did not identify any deficiencies that were outside of the PBMC scope. Deficiencies should be addressed as part of regularly scheduled maintenance activities. The most common deficiencies noted consisted of siltation at drainage inlets and pipes with more than 20% capacity blockage, untreated vegetation growth, litter and debris along shoulders, areas exhibiting turf loss, and right-of-way encroachments in urban areas. Dead trees were also present in the landscape areas due to winter storms that occurred in 2021.

▶ 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, delineators were missing on guardrail, and object markers were missing at culverts. As part of the PBMC contractor responsibilities, an independent inspection and work plan should be developed to address the deficient graphics, markings and markers.

Signs: Signs were assessed by a day and a nighttime visual inspection during the fall 2021 inspections. Most signs were clearly visible and legible to the inspector, however there were instances of fading, peeling, and lost reflectivity along the Phase II portions of the corridor. A large sign replacement project for 183A Phase II is scheduled to begin in the spring of 2022. The Mobility Authority also has a project planned for FY 2023 to replace small signs.

2.0 Annual Report of Conditions *continued*

Illumination: Lighting along the 183A Turnpike 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 on high mast lights and areas of safety lighting that were not functioning.

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. The signals were found to be in good repair with no deficiencies noted.

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 damage to guardrail end treatment at one location.

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 indicated that there are no significant repair needs.

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 at joints, rust noted at railings, minor spalling on sidewalk paving, vegetation encroachment, and areas of minor turf loss.

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 most recent bridge inspections are still being compiled and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2019 and 2020 data serve as the basis for the comments and recommendations in the bridge portion of this report.

The pedestrian bridges were not inspected by TxDOT and were thus included in the GEC's annual inspection. There are four pedestrian bridges along the shared use path adjacent to the 183A Turnpike. These bridges were found to be in good repair with no significant repair needs.

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

2.2.3. 183A TURNPIKE RETAINING WALLS

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

183A Turnpike retaining walls were found to be in good repair. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. The majority of the defects noted included vegetation growth at multiple locations, erosion and standing water. Sounds walls were

2.0 Annual Report of Conditions *continued*

found to be in good repair. Isolated areas with settlement occurring along the bottom edge of a wall were noted for monitoring.

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.

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. Deficiencies observed included minor rusting on stairwell treads.

▶ **ROOFING**

The surface, seams, expansion joints and roofing were observed to be in good repair.

▶ **BUILDING INTERIOR**

Building interior components, including the TIM Center lobby area, corridor finishes, windows, restrooms, security, and paint were in good repair. Deficiencies observed included minor scratches in hallways and the TIM Center breakroom and minor scuffing in office flooring.

▶ **SITE IMPROVEMENTS**

Site improvement components were observed to be in good repair. Deficiencies noted were exposed areas in the irrigation system, as well as faded parking striping.

▶ **STRUCTURE**

Structural components were observed to be in good repair. No structural deficiencies were noted.

▶ **ELECTRICAL SYSTEMS**

Electrical components, including panels, wiring, emergency power, transformers, and lighting were in good repair, although there were some isolated electrical issues that were found. Deficiencies noted included the ground-fault circuit interrupter (GFCI) outside the TIM Center mechanical room not operational. It also appears that toll equipment was removed in the bridge above the cash lanes where power wires were exposed and capped, but not placed in a covered junction box. In addition, junction boxes around the doors in multiple telecommunication rooms were not secured, and wires were exposed.

▶ **MECHANICAL SYSTEMS**

Mechanical components, including cooling, heating, air handlers, exhaust fans, and alarm systems were in good repair. It was noted, however, that the AC units for the telecommunications room and elevator room were unplugged, and therefore were not inspected.

▶ **FIRE PROTECTION**

Fire protection equipment include alarm systems, smoke detectors, heat detectors, fire extinguishers, and fire suppression system in the server room. 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. The only deficiency noted was limited hot water in the break room.

2.0 Annual Report of Conditions *continued*

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, leaking fluid at anti-icing lower plumbing unit, fire extinguishers not present, scattered debris with hazardous materials uncontained, portable fuel tanks being stored on ground with fuel in them, and used oil filter and drain pan stored on ground.

2.2.6. 183A TURNPIKE OVERHEAD SIGN BRIDGES

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

The inspection did not reveal any unsatisfactory deficiencies in the condition and operation of the toll gantries and sign structures.

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 2021 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. There were some degraded elements noted at the SB Lakeline mainlane ILP enclosure, such as surface rust on an exterior door and a loose door handle. No deficiencies were noted for roofing components, including roof surfaces, seams, and expansion joints.

▶ HUB BUILDING INTERIOR

Building interior components, including finishes, doors, and paint were in good repair. 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, as well as degraded elements at the NB Crystal Falls ILP, Crystal Falls mainlane, and NB Scottsdale locations consisting of faded or missing liquid propane (LP) tank National Fire Protection Association (NFPA) labels.

▶ STRUCTURE

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

2.0 Annual Report of Conditions *continued*

▶ 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

Inspection of fire protection equipment are typically performed by the PBMC in January of each year. No deficiencies were observed for alarm systems and smoke detectors.

2.3 290E

2.3.1. 290E ROADWAY

▶ ASPHALT PAVEMENT

The visual inspections conducted during fall of 2021 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 ramps and the east end of the corridor. To address the asphalt pavement cracking, these areas were overlaid with a thin overlay mix that followed the 2021 inspection cycle.

▶ 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 2021 indicated that the concrete pavement along the 290E mainlanes 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. 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.

▶ ROADSIDE

The roadside visual inspection did not identify any deficiencies that were outside of the PBMC scope. The most common deficiencies noted included slope erosion, 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, and trees encroaching the view of roadway signs. Dead trees were also present in the landscape areas due to winter storms that occurred in 2021.

▶ 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, missing or non-reflective raised pavement markers (RPMs), and missing delineators on guardrail, and missing object markers at culverts. As part of the PBMC contractor responsibilities, an inspection and work plan should be developed to address the deficient graphics, markings and markers.

2.0 Annual Report of Conditions *continued*

Signs: Signs were also assessed by a day and a nighttime visual inspection. The most common deficiencies noted were for small signs, including leaning and missing signs, cracking, and fading. Large sign deficiencies that were noted included faded toll panel signs and peeling letters. All sign deficiencies noted fall under the PBMC's scope of work.

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 poles, as well as bulb outages on high mast lights.

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, tree growth at an outflow pipe, standing water due to lack of flow from vegetation on a concrete ditch, ditch erosion, 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.

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, minor spalling on sidewalk paving at several locations, vegetation encroachment, isolated locations where vertical displacement with adjacent curb and inlets is occurring, 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 most recent bridge inspections are still being compiled and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2019 and 2020 data serve as the basis for the comments and recommendations in the bridge portion of this report.

As part of an ongoing plan to address ride quality caused by uneven transitions from the roadway section to the bridge section, repairs were made in 2021 using foam injection to realign approach and departure slabs with the adjacent pavement, ultimately improving the ride quality for the driver. In addition, diagonal cracking was identified on bridge approach slabs and is being corrected under warranty using epoxy injection.

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

The pedestrian bridge was inspected by the GEC in fall 2021. Other than rust present on a section of railing, no significant deterioration was noted. The railing is being repainted as part of warranty requirements.

2.0 Annual Report of Conditions *continued*

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 will be set in place to establish the source of movement, and if needed, a solution to stabilize and/or repair the walls will be determined. 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 2021 inspection observed cracking in the parking area, interior lights not functioning, lack of fire extinguishers, and open holes on a couple of the exterior walls. Additionally, there was vegetation encroachment along fences and railings, and various piles of debris found.

2.3.5. 290E OVERHEAD SIGN BRIDGES

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

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

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

2.3.6. 290E TOLL COLLECTION SYSTEM

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the Customer Service Center and the Violation Processing Center. The fall 2021 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.

2.0 Annual Report of Conditions *continued*

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

▶ **HUB BUILDING EXTERIOR AND ROOFING**

Building exterior components for the ILP enclosures, including wall systems, sealants, paint, and doors are in good repair. No deficiencies were noted for roofing components, including surfaces, seams, and expansion joints.

▶ **HUB BUILDING INTERIOR**

Building interior components, including the finishes, doors, and paint were in good repair.

▶ **SITE IMPROVEMENTS**

Site improvement components, including lighting and fences, were observed to be in good repair.

▶ **STRUCTURE**

No deficiencies were noted for structural components, including foundations and floor slabs on the ILP enclosures.

▶ **ELECTRICAL SYSTEMS**

Electrical components, including panels, wiring, emergency power, and lighting were in good repair. However, there were instances of degraded findings at the EB DC on-ramp at US 183 consisting of a missing junction box cover, at the WB DC on-ramp to US 183 consisting of GFCI devices not operational, and at the Parmer ILP location 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.



2.0 Annual Report of Conditions *continued*

2.4 SH 71 EXPRESS

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

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

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

2.0 Annual Report of Conditions *continued*

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

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

2.4.1. SH 71 EXPRESS ROADWAY

▶ 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 potholes, 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 deficiencies that were noted occurred within the asphalt transition area from concrete to existing flexible pavement. There is a ride quality issue at one location across lanes in both directions where the pavement transitions, also located within the pavement transition area. These values exceed the warranty threshold referenced in Table 9, section 1.2 Pavement, Ride Quality. This issue does not require immediate attention; however, it should continue to be monitored during the warranty period. No additional movement has been observed thus far.

▶ ROADSIDE

Roadside elements on SH 71 Express are in good repair. Deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities. The most common deficiencies noted were litter and debris build-up, untreated and undesired vegetation growth, and minor turf loss in various locations. Dead trees were also present in the landscape areas due to winter storms that occurred in 2021.

▶ 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, damaged, or non-reflective RPMs, missing delineation along portions of guardrail, and missing object markers at drainage culverts. 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*

Signs: Deficiencies noted included leaning and missing signs, cracking, and fading. 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 for high mast and safety lighting. 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 and spalling at concrete traffic barrier bases. 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 vegetation growth, joint separation with vertical displacement, leaning light poles, rail damage due to impact, minor spalling at several locations, vertical displacement with adjacent curb and inlets in isolated locations, and one location with blocked sight distance. 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 most recent bridge inspections are still being compiled and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2020 data 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, SH 71 Express bridges are in good repair. Of the 24 total components rated for the three bridges on SH 71, approximately 5% received a 6-rating. No components received a rating lower than a 6.

2.4.3. SH 71 EXPRESS RETAINING WALLS

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

2.4.4. SH 71 EXPRESS OVERHEAD SIGN BRIDGES

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

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

2.4.5. SH 71 EXPRESS TOLL COLLECTION SYSTEM

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the Customer Service Center and the Violation Processing Center. The fall 2021 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.

2.0 Annual Report of Conditions *continued*

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 10, below. The warranty provisions for monument sign lighting, detention pond control systems and ethernet cable and connectors have expired and is now solely the responsibility of the Mobility Authority. The warranty provisions for the ITS Solar Power System is set to expire in July of this year.

Table 10: 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
ITS Solar Power System	3 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. There were also isolated areas of ride quality deficiencies at bridge ends that will need to be monitored. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

▶ 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, litter and debris, minor turf loss, trees encroaching sign view and roadway at bridges. Dead trees were also present in the landscape areas due to winter storms that occurred in 2021. The Mobility Authority plans to budget for tree replacement in FY 2023. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

▶ 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, missing delineators on guardrail and concrete barrier, and striping section loss at a few locations. 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 two damaged large signs. It is also recommended that reflectivity testing continue to be performed every three to five years to ensure compliance with requirements.

2.0 Annual Report of Conditions *continued*

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 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. The one deficiency noted was a flashing beacon that was not working at the time of inspection.

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.

Ponds: 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.

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 include vegetation growth and minor separation at joints, rust and small dents noted at railings, edge drop offs where erosion has occurred along sidewalk paving, and vegetation and tree 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 most recent bridge inspections are still being compiled and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2020 data serve as the basis for the comments and recommendations in the bridge portion of this report.

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

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

2.5.3. SH 45 SOUTHWEST RETAINING WALLS

The retaining walls on the SH 45 Southwest corridor consist primarily of MSE walls. Based on visual observations, retaining walls on SH 45 Southwest are in good repair.

2.5.4. SH 45 SOUTHWEST OVERHEAD SIGN BRIDGES

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

2.0 Annual Report of Conditions *continued*

2.5.5. SH 45 SOUTHWEST TOLL COLLECTION SYSTEM

The basic components for the TCS are the TCS Infrastructure, the TCS Operations and Maintenance, the Customer Service Center and the Violation Processing Center. The fall 2020 annual inspection performed by the GEC only included inspection of the toll Infrastructure. It did not include inspection of the tolling equipment itself. This equipment is inspected by a separate party.

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

2.6 183 SOUTH

183 South extends approximately 8.3 miles from US 290 southward to the SH 71 interchange. The Interim Build portion opened to traffic in 2019, and the remaining ultimate build tolled sections opened in early 2021. Maintenance for the ultimate build segment was transitioned from the roadway contractor to the Mobility Authority in December 2021. Limited inspections were performed on the interim pavement section, since the construction contractor is in the process of correcting final punch list items on the ultimate build. 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. The construction contractor is in the process of correcting final punch list items.

▶ ROADSIDE

The roadside elements along the 183 South corridor are in good repair. The construction contractor is in the process of correcting final punch list items.

▶ MISCELLANEOUS

Overall, pavement striping, symbols and reflective pavement markers are in good repair. The construction contractor is in the process of correcting final punch list items.

2.6.2. 183 SOUTH BRIDGES

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 this cycle since maintenance was recently transferred over from the roadway contractor to CTRMA in December 2021. The construction contractor is currently in the process of correcting final punch list items.

The findings of the most recent bridge inspections are still being compiled and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2020 data 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. Deficiencies noted were minor, including minor spalling at joints, hairline transverse and longitudinal cracks, and some longitudinal cracking.

2.0 Annual Report of Conditions *continued*

2.6.3. 183 SOUTH RETAINING WALLS

Retaining walls are in good repair. The construction contractor is in the process of correcting final punch list items.

2.6.4. 183 SOUTH OVERHEAD SIGN BRIDGES

Overhead sign bridges, which include toll gantries, sign structures and monotube sign structures, are in good repair with no noted maintenance needs. The construction contractor is in the process of correcting final punch list items.

2.6.5. 183 SOUTH 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 2021 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 four ILP enclosures, which are cabinets that house various ETC equipment, and are located at the NB mainlane tolling location north of 51st Street, the NB on-ramp and SB off-ramp tolling locations at 51st Street, and the NB off-ramp at MLK. An additional five locations were not inspected during this cycle since maintenance was recently transferred over from the roadway contractor to CTRMA in December 2021. Emergency generator sites serving the tolling locations are located next to the ILPs. The visual inspection of the toll system infrastructure indicates that the primary components are in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS.

3.0 Ongoing Initiatives

3.1 ASSET MANAGEMENT

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

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

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

3.0 Ongoing Initiatives *continued*

3.2 QUARTERLY SAFETY COMMITTEE MEETINGS

Each quarter, the Mobility Authority evaluates the performance of its corridors using a variety of safety and operational metrics. Evaluation results are analyzed and used to aid the Mobility Authority in planning and implementing operational improvements as part of the Safety Management Process. The Mobility Authority is utilizing GIS to record crash data to improve analysis efforts. If an operational improvement is supported, it should be programmed and considered for funding. In some cases, further investigation is needed to facilitate an informed decision.

3.3 TECHNOLOGY INITIATIVES

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

3.3.1. INTELLIGENT TRAFFIC SYSTEMS (ITS) MASTER PLAN

The Mobility Authority has undertaken the development of a long-term Master Plan to improve and expand its Intelligent Traffic Systems (ITS) on the Mobility Authority System. ITS technologies, such as CCTV cameras, Microwave and Bluetooth detectors, Connected Vehicle Roadside Units, Wrong-Way Driving Detection Systems, and Dynamic Message Signs among other technologies can improve the Mobility Authority's ability to monitor the performance of its roadways, detect and respond to incidents, and deliver important messaging to drivers. Improving the Mobility Authority's ability to perform these functions directly increases safety on the System as well as maintains performance and mobility of the roadways.

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

3.3.2. ITS RETROFITS AND EXPANSIONS

The Mobility Authority has initiated the first steps of the ITS Master Plan through projects to retrofit ITS equipment on the existing 183A 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 will include the installation of fixed-view and pan/tilt/zoom CCTV cameras, microwave detectors, and dynamic message signs. These retrofit installations will provide additional ITS equipment along the 183A 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 will facilitate the pilot evaluation of automated incident detection software for potential full-scale deployment across the rest of the Mobility Authority System. Automated incident detection software can immediately detect accidents, debris, or pedestrians on the roadway utilizing artificial intelligence, and can deploy response teams and/or messaging to the roadway instantly.

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

3.0 Ongoing Initiatives *continued*

3.3.3. REGIONAL TECHNOLOGY CORRIDOR STRATEGY

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

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

4.0 Annual Budgets

4.1 ANNUAL OPERATING BUDGET

Annual budgets are currently being prepared by the Mobility Authority for the proper maintenance, repair, and operation of the System for FY 2023. 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 2023. 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 \$36.8 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, 2022.

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 2023 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 2023 Maintenance Expenses to be \$12.9 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, 2022.

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 2023 Annual Maintenance Budget.

4.0 Annual Budgets *continued*

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 2023 are summarized below.

The Mobility Authority's 183A Phase III Project began construction in the spring of 2021. The new 6.6-mile roadway will extend the existing 183A Turnpike corridor northward from Hero Way to 1.1 miles north of SH 29 and provide two tolled lanes in each direction within the existing TxDOT and Mobility Authority right-of-way and within the median of the existing US 183 corridor. The capital expenditures for this project are estimated to be \$79.7 million for FY 2023 and are funded by the Project Fund.

The Mobility Authority is developing the 183 North Mobility Project through the design-build delivery method. The project extends from State Highway (SH) 45 North/Ranch-to-Market (RM) 620 and State Loop 1 (MoPac), a distance of approximately 9 miles and comprises of construction of two express lanes in each direction, widening of the existing US 183 as required to bring the total number of general-purpose lanes to four in each direction, and direct connector ramps between the new 183 North express lanes and the existing express lanes on MoPac. The new 183 North express lanes will be located within the existing TxDOT right-of-way and within the median of the existing US 183 corridor. The Project scope also includes new shared-use path, new sidewalks, and cross-street connections for bicycles/pedestrians along US 183. The project received approval for the environmental re-evaluation in February 2020 and design is currently underway. Construction is expected to commence in early 2022. Capital expenditures and Mobility Authority costs for this project are estimated to be \$205.4 million for FY 2023, 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 2023.

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 large sign replacement Project on SH 71 Express is scheduled to be constructed in FY 2023. The project aims to replace signs that need maintenance and improve operations of the corridor through a series of sign relocations and new sign location installations. The estimated cost for this project is approximately \$1.6 million and should be budgeted as such.

A thin overlay mix (TOM) on SH71 Express is tentatively scheduled for FY 2024 as a preventative measure to rejuvenate the asphalt surface, ensuring the useful life of pavement is met and is estimated to cost \$2.6 million.

5.0 Renewal and Replacement Funding *continued*

The 183A Turnpike corridor is scheduled to receive a metal beam guard fence (MBGF) upgrade and cable barrier installation in FY 2023. The proposed project will install new MBGF that meets current safety requirements. Additional safety improvements include the installation of median cable barrier along the corridor in areas where it currently doesn't exist. Phase I of the MBGF replacement and the median cable barrier installation is expected to cost \$3.6 million in FY 2023 with Phase II in FY 2024, expected to cost \$2.3 million.

A small sign replacement is recommended for 183A Turnpike Phases I and II in FY 2023, expected to cost \$1.5 million.

Potential bridge deck repairs are anticipated in FY 2026 on the 183A Turnpike based on typical frequencies for normal wear and tear and is estimated to cost \$3.2 million.

The Mobility Authority is expecting to replace and upgrade its electronic toll system on system corridors starting in FY 2023 and continuing through FY 2027. It is expected that replacements, and the associated costs, will occur in the as shown in the following:

PROJECT	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
SH 71 Express Toll System Replacement	\$6,000,000				
290 Toll System Replacement (Includes Ph III)	\$500,000	\$3,700,000	\$3,400,000	\$100,000	\$100,000
SH 45 SouthWest Toll System Replacement		\$500,000	\$400,000	\$400,000	\$400,000
183S Toll System Replacement		\$500,000	\$1,840,000	\$1,840,000	\$1,840,000
183A Turnpike Toll System Replacement		\$500,000	\$500,000	\$500,000	\$500,000

Additionally, on the 183A Turnpike, the toll system zone controllers are due for replacement in FY 2023 at an estimated cost of \$500 thousand.

Dynamic message signs are anticipated to be installed on the 183A Turnpike in FY 2023. The cost for this project is anticipated to be approximately \$1.8 million.

As a result of the inspection findings, it is recommended the Mobility Authority monitor the walls on 290E at Harris Branch and Parmer Lane. The expected value for monitoring these specific walls is \$76 thousand for FY 2023. It is anticipated that mitigation will be needed to prevent further movement. Based on the value of typical repairs, mitigation is estimated to cost \$3.0 million.

In addition, monitoring of the remainder of the system is recommended, with the cost valued at \$334 thousand for FY 2023.

Based on the established cycle for sign replacement, it is anticipated that 290E small and large signs will require replacement in FY 2024, valued at \$2.8 million.

6.0 Recommendations

6.1 OVERVIEW

Based on the findings of the annual visual inspections as well as the inventory and condition assessment, the current maintenance program that has been implemented should be continued to effectively secure and maintain the overall condition of each asset. The continued efforts by the Mobility Authority to maintain the roadways, bridges, roadside appurtenances, toll plazas and buildings have kept the overall condition of the Mobility Authority assets in good repair. The Mobility Authority is mandated by State Law, as well as by the

6.0 Recommendations *continued*

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 2021 did not identify any major deficiencies in the pavement that would affect the safety and operations of 183A Turnpike. For preventative maintenance purposes, an overlay of 183A Turnpike frontage road pavement was completed following the inspection. This preventative maintenance supports a pavement management plan that is focused on maximizing the useful life. In addition, 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 Fall 2024.

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

Signs along 183A Turnpike are beginning to show signs of fading. A large sign replacement project for 183A Phase II is scheduled to begin in the spring of 2022. The Mobility Authority also has a project planned for FY 2023 to replace small signs.

Retaining walls on the 183A Turnpike corridor are in good repair. Most of the defects noted included vegetation growth at multiple locations, erosion and standing water, and settlement occurring along the bottom edge of a wall causing noise wall panel separation in multiple locations. 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 most recent bridge inspections for the 183A Turnpike are still being compiled by TxDOT and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2019 and 2020 data 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.

The 2021 visual inspection revealed that the TIM Center and the nine ILP enclosures (one of which is located within the TIM Center) on 183A Turnpike are in good repair. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

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

6.3 290E RECOMMENDATIONS

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

In general, concrete pavement along the mainlanes was found to be in good repair, 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. Cracking on the asphalt pavement was observed on the ramps and the east end of the corridor. To address the asphalt pavement cracking, these areas were overlaid with a thin overlay mix that followed the 2021 inspection cycle.

6.0 Recommendations *continued*

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

Based on visual observations, retaining walls along the 290E corridor are in good repair. Deficiencies 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 will be set in place to establish the source of movement, and if needed, a solution to stabilize and/or repair the walls will be determined. A wall monitoring program for the entire corridor is recommended as a proactive asset management program.

The findings of the most recent bridge inspections for the 290E are still being compiled by TxDOT and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2019 and 2020 data 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. The rust stains caused by the presence of marcasite in the concrete large aggregate are limited to a cosmetic concern. Deficiencies should be addressed as part of regularly-scheduled maintenance activities.

The 2021 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.

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

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

6.4 SH 71 EXPRESS RECOMMENDATIONS

The SH 71 Express concrete pavement sections along the corridor are in good repair. The most common deficiencies observed were cracking and potholes. 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. For preventative maintenance purposes, a thin overlay mix (TOM) is tentatively scheduled for FY 2023.

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 most recent bridge inspections for SH 71 Express are still being compiled by TxDOT and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2019 data 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.

The 2021 annual inspection revealed that the TCS infrastructure, which includes two ILP enclosures on SH 71 Express, is in good repair. Efforts should be made to continue to keep all components clean, well-maintained and secure for the TCS. Deficiencies found should be addressed as part of regularly-scheduled maintenance activities.

6.0 Recommendations *continued*

6.5 SH 45 SOUTHWEST RECOMMENDATIONS

The 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. There were also isolated areas of ride quality deficiencies at bridge ends that will need to be monitored. Deficiencies should be addressed as part of regularly-scheduled maintenance activities and monitored in accordance with applicable warranty specifications.

Minimal deficiencies were observed on SH 45 Southwest retention ponds. The most prevalent deficiency consisted of 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 most recent bridge inspections for SH 45 SW are still being compiled by TxDOT and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2020 data 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 ILP enclosure and generator, was observed to be in good repair. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS. Deficiencies should be addressed as part of regularly-scheduled maintenance activities.

6.6 183 SOUTH RECOMMENDATIONS

The Interim Build portion opened to traffic in 2019, and the remaining ultimate build tolled sections opened in early 2021. Maintenance for the ultimate build segment was transitioned from the roadway contractor to the Mobility Authority in December 2021. Limited inspections were performed on the interim pavement section, considering the construction contractor is in the process of correcting final punch list items on the ultimate build.

All assets observed as part of the fall 2021 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.

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 this cycle since maintenance was recently transferred over from the roadway contractor to CTRMA in December 2021. The construction contractor is currently in the process of correcting final punch list items. The findings of the 2021 bridge inspections are still being compiled and will be provided to the Mobility Authority when they are available. Since analysis is not complete, the 2020 data serve as the basis for the comments and recommendations in the bridge portion of this report. The Mobility Authority should continue to address deficiencies as part of the bridge maintenance program.

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



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