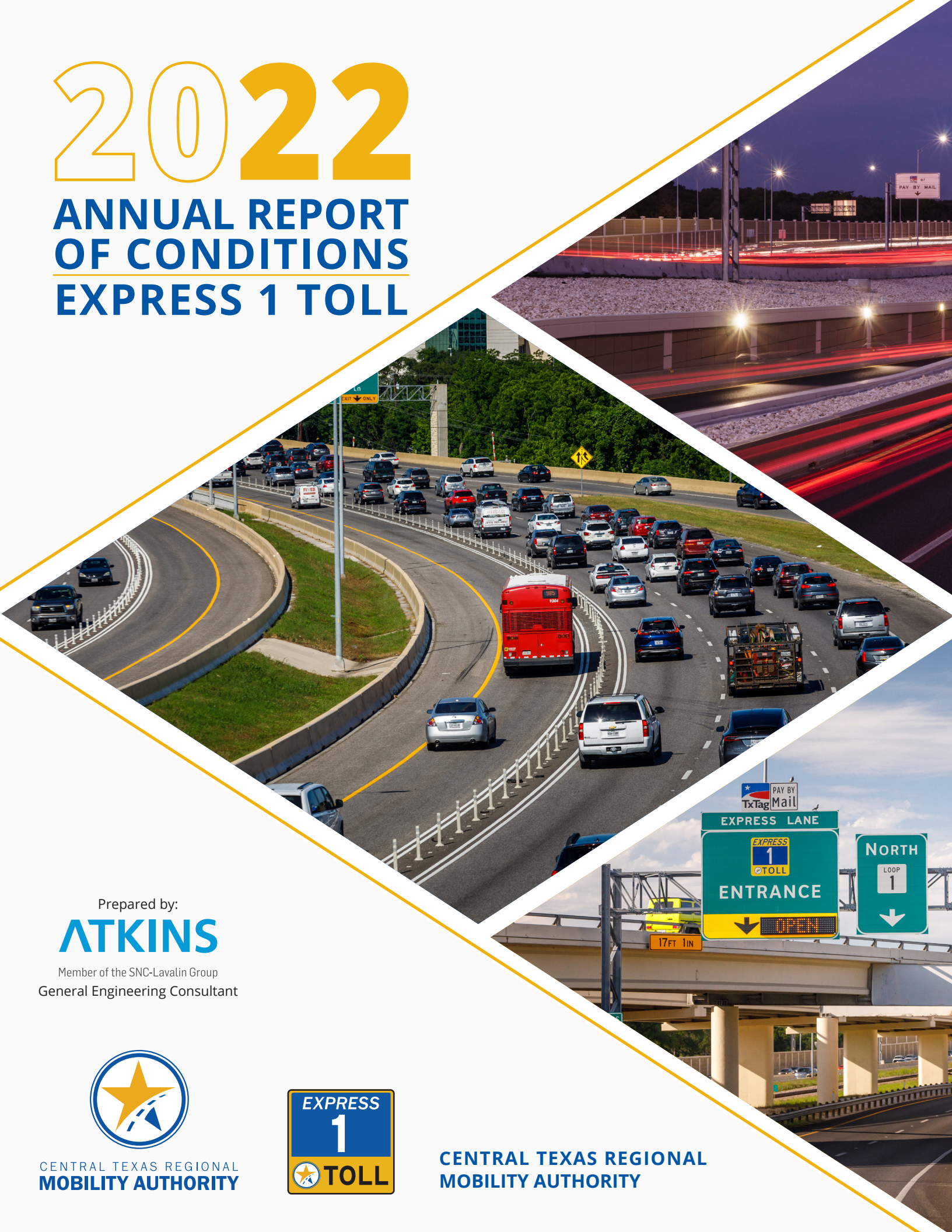


# 2022

## ANNUAL REPORT OF CONDITIONS EXPRESS 1 TOLL



Prepared by:

### ATKINS

Member of the SNC-Lavalin Group  
General Engineering Consultant



CENTRAL TEXAS REGIONAL  
MOBILITY AUTHORITY



CENTRAL TEXAS REGIONAL  
MOBILITY AUTHORITY





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June 8, 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 – Express 1 Toll (MoPac Improvement Project)**

Mr. Bass:

As General Engineering Consultant to the Central Texas Regional Mobility Authority (Mobility Authority), Atkins North America, Inc. (Atkins) is pleased to submit the 2022 Annual Report of Conditions for the Express 1 Toll roadway. This report sets forth our findings as to the condition of this facility, as well as our recommendation of proper operations and maintenance of the facility during fiscal year (FY) 2023.

Atkins conducted a visual inspection of all portions of the Express 1 Toll roadway, as well as the adjacent State Loop 1 (SL 1) general-purpose lanes and frontage roads, 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 2021 BRINSAP inspections were provided to the Mobility Authority in March 2022. Since the data was not received in time for analysis for the 2021 report, the 2019 data serve as the basis for the comments and recommendations in the bridge portion of this report.

It should be noted that the following report summarizes the conditions observed in the CTRMA portion of the Express 1 Toll corridor, and does not include deficiencies observed within the TxDOT portion of SL 1. All conditions observed for Express 1 Toll and SL 1 and are fully reported in the 2022 Annual Detailed Inspection Report transmitted to the Mobility Authority's Acting Director of Engineering.

We appreciate the opportunity to provide the services required of the General Engineering Consultant(s), 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.

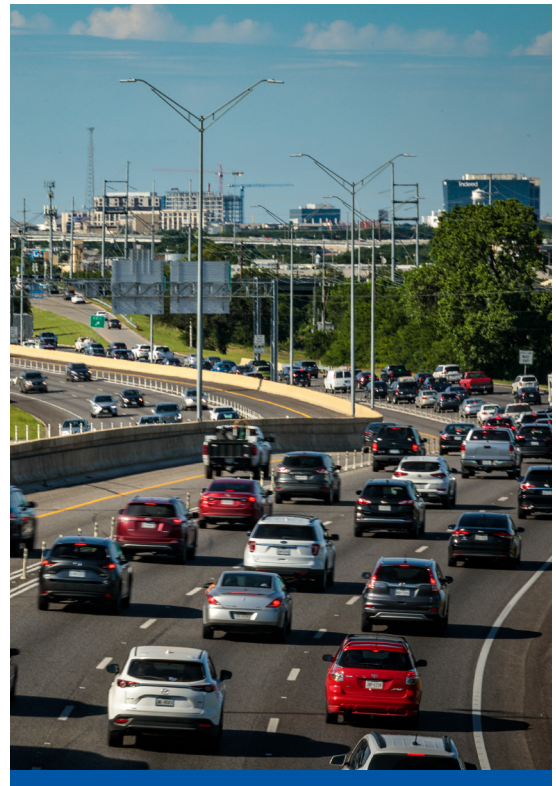
Enclosure

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
SL 1	State Loop 1
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

# Location Map





# Executive Summary

As General Engineering Consultant (GEC) to the Central Texas Regional Mobility Authority (Mobility Authority), Atkins North America, Inc. (Atkins) is pleased to submit the 2022 Annual Report of Conditions for Express 1 Toll for fiscal year (FY) ending June 30, 2022.

The FY 2022 inspections show that the condition of the Express 1 Toll corridor continues to be 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.

It should be noted that deficiencies described in this report only include those observed in the CTRMA portion of Express 1 Toll corridor and does not include deficiencies observed within the TxDOT portion of SL 1. Some assets such as bridge structures are shared with the adjacent TxDOT owned facility. This report reflects the Mobility Authority's level of responsibility, understanding further coordination will be needed for repairs that fall outside of routine maintenance.

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

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 proposed 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	\$4,000,000
Maintenance Expenses FY 2023	\$3,600,000
R&R Fund FY 2023	\$2,100,000
R&R Fund FY 2024	\$11,300,000
R&R Fund FY 2025	\$500,000
R&R Fund FY 2026	\$500,000
R&R Fund FY 2027	\$0

The overall condition of Express 1 Toll, and funding levels for operations budgets exemplifies 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

Atkins conducted a visual inspection of the Express 1 Toll corridor in fall 2021. The inspection was conducted to assess the general condition of roadways, buildings facilities, overhead sign bridges, retaining walls and toll gantries along the roadway and to identify any deficient elements to be restored to good working condition. This report includes conclusions and recommendations concerning the condition, maintenance, repair and operation during the ensuing FY 2023.

## 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 TxDOT's 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.

**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 the Texas Department of Transportation (TxDOT) as part of their Bridge Inventory, Inspection and Appraisal Program (BRINSAP). The findings of the 2021 BRINSAP inspections were provided to the Mobility Authority in March 2022. Since the data was not received in time for analysis for the 2021 report, the 2019 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.

**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 Express 1 Toll corridor, 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

# 1.0 Introduction *continued*

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, below.

**Table 5: Building Inspection Elements**

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

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

**Table 6: Overhead Sign Bridge Elements**

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

# 1.0 Introduction *continued*

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	

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 base 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 the Performance Based Maintenance Contractor (PBMC).

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.

**Table 8: Condition Assessment Rating Scale**

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

**NOTES:**

- (1) *Timeframe for which, under normal circumstances, repair work would be prioritized and scheduled.*
- (2) *The need for emergency repair should be determined based on response times set forth in maintenance protocols set forth by the Mobility Authority as appropriate for a specific deficiency.*

*A rating of 5 indicates the asset is adequately performing or is in "like-new" condition and does not require maintenance action.*  
*A rating of 4 indicates some level of degradation of the asset but has not affected performance and does not require maintenance.*

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

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

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

# 1.0 Introduction *continued*

## 1.3 DESCRIPTION OF CORRIDOR

Although not considered a system corridor, the Mobility Authority constructed, operates and maintains the Express Toll 1 roadway, an 11-mile variably priced tolled express lane along SL 1 between Cesar Chavez Street and Parmer Lane in Travis County. The express lane is located in the middle of the SL 1 corridor, separated from the existing lanes by a buffer zone. Drivers are able to access the Express 1 Toll Lane at Cesar Chavez Street, at Far West Boulevard and Anderson Lane, or at Parmer Lane. SL 1 is one of Austin's most important arteries, serving as a key route to downtown and points beyond.

## 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 Traffic and Incident Management (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 2021. The Mobility Authority entered into an Emergency Maintenance Services Contract in November of 2021 to ensure safe and continued operations of Mobility Authority facilities. The Mobility Authority entered into a tender agreement with the surety, 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 entered into a contract with the 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. Express 1 Toll and its performance are 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 OF EXPRESS 1 TOLL

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 that the Express 1 Toll corridor 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 WARRANTY PROVISIONS

The Express 1 Toll corridor was financed through grants from the Capital Area Metropolitan Planning Organization (CAMPO) and TxDOT and is therefore considered “Non-System.” As part of the Design-Build (D/B) agreement, a warranty provision is in place for various items, as summarized in Table 9, below.

**Table 9: Express 1 Toll Summary of Project Warranties**

GENERAL SUBJECT	WARRANTY PERIOD AFTER FA	EXPIRATION DATE
Flexible Pavement: Pavement Failure in Surface/Base	3 years	April 8, 2022
Flexible Pavement: Cracking, Raveling, Flushing, Rutting, and Pop Outs	5 years	April 8, 2024
Rigid Pavement: Cracking, Joint Deficiencies, Punch-Outs, and Surface Defects	5 years	April 8, 2024
Buildings, Structures, Toll Structures, Gantries, and Related Facilities	5 years	April 8, 2024
Structural Concrete	5 years	April 8, 2024
Steel Paint System	5 years	April 8, 2024
Settlement: New Roadway Grade	5 years	April 8, 2024
Settlement: Noise and Retaining Walls	5 years	April 8, 2024

## 2.3 PAVEMENT

The inspection conducted in fall 2021 identified areas of cracking, raveling and header joint material failure. A Notice of Corrective Action has been sent to the construction Contractor in accordance with the applicable warranty items. Although these deficiencies represent premature degradation of the pavement, they do not affect the safety and operations of the Express 1 Toll corridor.

## 2.4 ROADSIDE

Roadside deficiencies noted include litter and debris in between toll lane barriers. Deficiencies found have been included in the 2022 Annual Detailed Inspection Report. These deficiencies are within the PBMC scope and are addressed as part of regularly scheduled maintenance activities.

## 2.0 Annual Report of Conditions *continued*

### 2.5 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 on the Express 1 Toll corridor where the pavement graphics exhibited section loss, striping either exhibited section loss or was missing, raised pavement markers were missing or non-reflective. 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 on Express 1 Toll were clearly visible and legible to the inspector, however there were instances of fading and peeling. As part of the PBMC contractor responsibilities, an independent inspection and work plan should be developed to address the deficient signs. In addition, the Mobility Authority has a sign replacement project planned for FY 2023.

Illumination: Lighting along the Express 1 Toll 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 burned out light bulbs on high mast lights and areas of safety lighting that were not functioning. One location of continuous lighting was observed with impact damage.

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.

### 2.6 BRIDGES

All of the Express 1 Toll bridges were inspected and evaluated in 2021, as part of TxDOT's BRINSAP Program, which occurs every two years per federal requirements. The findings of the 2021 BRINSAP inspections were provided to the Mobility Authority in March 2022. Since analysis for the 2021 bridge inspections are not complete, the 2019 data serve as the basis for the comments and recommendations in the bridge portion of this report. Some bridge structures are shared with the adjacent TxDOT owned facility. This report reflects the Authority's level of responsibility, understanding further coordination will be needed for repairs that fall outside of routine maintenance.

Based on a review of the 2019 inspection reports and visual observations, the Express 1 Toll corridor bridges are in good repair. Of the 128 total components rated for the 16 bridges on the corridor, 10% received a 6-rating. None of the components rated less than a 6. The most common deficiencies noted were hairline cracks and spalls on bridge decks, bent caps and other bridge components, minor exposure of drilled shafts due to scouring, and moderate channel scour.

### 2.7 RETAINING WALLS

The retaining walls on the Express 1 Toll corridor consist primarily of MSE walls. Based on visual observations, the Express 1 Toll corridor retaining walls 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 consisted of vegetation growth in wall panels, debris accumulation in drainage flumes, and one location noted with a broken mow strip.



## 2.0 Annual Report of Conditions *continued*

### 2.8 OVERHEAD SIGN BRIDGES

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

The inspection did not reveal any unsatisfactory deficiencies in the condition and operation of the toll gantries and sign structures. The most common deficiencies noted was surface rust on OSB columns and truss connections.

### 2.9 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 Express 1 Toll corridor includes 4 ILP cabinets, which house various ETC equipment, and are located at SB Express 1 Toll near Parmer (under the mainlane bridge over Park Bend Drive), NB Express 1 Toll at Far West Blvd, NB Express 1 Toll at 2222, and NB Express 1 Toll north of Enfield Road. Emergency generator sites serve the tolling locations. The visual inspection of the toll system infrastructure, including exterior components, finishes, lighting, structural components, electrical components, and mechanical components, indicate that primary components are in good repair. The only deficiency noted was pole-mounted lighting that was not working at the Far West ILP cabinet location. Efforts should be made to continue to keep all components clean, well maintained and secure for the TCS.

#### ▶ 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 generally observed to be in good repair. However, one of two lights were out at the NB Far West location.

#### ▶ 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.

#### ▶ 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 August of each year. Fire protection components, including alarm systems and smoke detectors, were observed to be in excellent working order.

## 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.

### 3.2 SAFETY MONITORING

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 has undertaken the development of the ITS Master Plan through projects to install additional ITS equipment on the Express 1 Toll corridor for the purposes of pilot evaluations and testing. The ITS expansion will consist of installation of 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 will support the pilot evaluations of automated incident detection software.

## 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 Express 1 Toll 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 take into account the recommended maintenance and repairs included in the Annual Report of Conditions; and they should be based on current operating practices and agency organization, anticipated changes in methods of operations, and changes in Mobility Authority staff and organization projected through FY 2023.

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 Express 1 Toll. 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 Operating Expenses to be \$4.0 million. The factors that determine this estimate include the utilization of consultants/ vendors and the assignment of Mobility Authority personnel. The actual Annual Operating Budget should be finalized by the Mobility Authority on or before June 30, 2022.

It is the opinion of the GECs that the costs projected for the operation of Express 1 Toll 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 Express 1 Toll. The estimated costs for the proper maintenance and repair of this facility for the coming year is based on a review of existing conditions, together with the factors that may influence costs during this period. The GECs estimate the FY 2023 Maintenance Expenses to be \$3.6 million.

This budget includes the cost of the PBMC contract, asset management support and remediation costs. The actual Annual Maintenance Budget should be finalized by the Mobility Authority on or before June 30, 2022.

It is the opinion of the GECs that the costs projected for the maintenance of Express 1 Toll are reasonable estimations of anticipated costs for the FY 2023 Annual Maintenance Budget.

### 4.3 ANNUAL CAPITAL BUDGET

The Annual Capital Budget details the Mobility Authority's planned capital expenditures during the ensuing fiscal year. There are no planned capital expenditures for FY 2023 at this time.

## 5.0 Renewal and Replacement Funding

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

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

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

### Express 1 Toll Cemetery Tree Planting:

The Mobility Authority is upholding its environmental commitments set forth in the environmental document for the construction of Express 1 Toll. Part of such obligations include enhancing the Austin Memorial Cemetery's visual experience along the newly construction Express 1 Toll retaining walls adjacent to the cemetery. The project will include trees to screen the wall and installation of an irrigation system. The project is anticipated to cost \$500 thousand in FY 2023.

### Express 1 Toll Retaining Wall Monitoring Program:

The Mobility Authority takes a proactive approach to maintaining its assets on all facilities. As part of this approach, it is recommended that the Mobility Authority monitor the retaining walls for movement within the project limits. If movement is detected, appropriate maintenance countermeasures are taking to address the problem. The cost for wall monitoring in FY 2023 is anticipated to be \$100 thousand.

### Express 1 Toll Sign Replacement Project:

The Mobility Authority anticipates replacing all large signs on the facility to address inspection deficiencies. Expected costs for this project are anticipated to be \$1.5 million in FY 2023.

### Express 1 Toll Overlay Project and Bollard Replacement Project:

The Mobility Authority expects to perform preventative maintenance of the Express 1 Toll corridor pavement. A possible solution is to mill and overlay the corridor as part of normal renewal and replacement cycles. This will require the removal of existing traffic bollards and replacement with new traffic bollards once the new pavement is constructed. The Mobility Authority is anticipating a cost of \$10.8 million in FY 2024. Other effective alternatives are being considered to extend the life of the asset while reducing and/or spreading preventative maintenance costs over multiple years.

### Express 1 Toll Electronic Toll System Replacement:

The Mobility Authority anticipates replacing the toll system on Express 1 Toll as part of typical renewal and replacement cycles starting in FY 2024 and continuing through FY 2026. The estimate expenditures in each of the three fiscal years noted is \$500 thousand.

## 6.0 Recommendations

The inspection conducted in fall 2021 identified areas of cracking, raveling and header joint material failure. A Notice of Corrective Action has been sent to the construction contractor in accordance with the applicable warranty items. Other deficiencies found do not fall outside of the PBMC scope and should be addressed as part of regularly scheduled maintenance activities.

The visual Inspection of pavement graphics and markers, signs, and illumination did not identify any deficiencies that were outside of the PBMC scope. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

Visual inspections of signs on Express 1 Toll indicated that most signs were clearly visible and legible. However, there were instances of fading and peeling. As part of the PBMC contractor responsibilities, an independent inspection and work plan should be developed to address the deficient signs. In addition, the Mobility Authority has a sign replacement project planned for FY 2023.

In general, visual inspection of lighting on the Express 1 Toll corridor indicated that illumination features are in good repair. 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.

Inspection of safety barriers and guardrail end treatment 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, which should be addressed as part of regularly scheduled maintenance activities.

The findings of the 2021 BRINSAP inspections were provided to the Mobility Authority in March 2022. Since analysis for the 2021 bridge inspections are not complete, the 2019 bridge data serve as the basis for the comments and recommendations. Based on visual observations, the Express 1 Toll corridor bridges are in good repair. The most common deficiencies noted were hairline cracks and spalls on bridge decks, bent caps and other bridge components, minor exposure of drilled shafts due to scouring, and moderate channel scour. The Mobility Authority should continue to address deficiencies as part of the bridge maintenance program.

In general, the Express 1 Toll corridor retaining walls are in good repair. The most common deficiencies noted consisted of vegetation growth in sound wall panels, debris accumulation in drainage flumes, and one location noted with a broken mow strip. Deficiencies should be addressed as part of regularly scheduled maintenance activities.

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 4 ILP sites 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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