



E-470 Public Highway Authority

# 2024 Annual Certification

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# 2024 E-470 Annual Certification Report

Prepared for the E-470 Public Highway Authority by Short Elliott Hendrickson Inc. (SEH)

## 1 Introduction

### 1.1 Purpose of Report

The E-470 Public Highway Authority's (the Authority) bond covenants require an Annual Certification, which consists of an independent consultant inspecting the Authority's assets and providing a written report summarizing the inspection results. The completion of this process keeps the Authority in compliance with the applicable requirements of the bond documents and allows for a "fresh" set of eyes to look at the Authority's assets and identify areas of concern or items needing specific attention.

Each asset evaluated receives a numerical score from 0-100 as defined in the Authority's Numerical Scoring System (NSS). This scoring system provides a repeatable method to measure asset conditions and provides a scientific method for measurement of quality and the Authority's performance of maintenance of their assets. With such a system, results can be compared to previous years and over time the scores can be tracked. The breakdown of this scoring system can be found in section 2.1 on page 8.

The report, as outlined by the Authority, will include the following:

- 1) Inspection results identifying whether completed portions of the tollway are maintained appropriately as outlined in the NSS.
- 2) Review of the Authority's annual budget to assess the estimated cost of maintenance and improvements needed for the upcoming fiscal year.
- 3) Discussion of upcoming safety initiatives for improvement of the tollway.

### 1.2 Budget

The Authority's annual budget addresses road maintenance and improvements in both the Operating and Capital portions of the budget. Furthermore, the Authority maintains a Capital Improvement Fund as a sub-account within the General Surplus Fund. The Capital Improvement Fund had a balance of \$255,585,462 to fully fund the 2024 capital budget of \$183,900,000. See Section 3: Roadway and Maintenance Budget for details.

### 1.3 Overview

The E-470 Public Highway, described further in Section 1.4, has been, and continues to be, maintained in good working order and safe operating condition. The Authority has an established Asset Management System, which in part is used to monitor assets by conducting specific scheduled inspections to identify deficiencies before potential failure of the asset occurs or the deficiencies increase in severity. This proactive approach has aided the Authority in correcting



minor problems and performing preventative maintenance, thus preventing larger problems in the future, and prolonging the life of their assets. This approach proves to be cost-effective as well, since preventative measures mitigate the chance of failure of an asset, which could pose a danger to the public with potential liability issues.

Capital Improvement Projects have been completed or are scheduled, which address both current and future maintenance and operation issues. The improvement projects are finished before traffic increases impact the level of service to the tollway customers. This approach enables The Authority to maintain levels of service above industry standards. In turn, customers are provided a safe and reliable method of travel.

The findings noted in this report are based on the Authority's NSS to assess and identify the level of maintenance being achieved. The corridor continues to receive ongoing, outstanding maintenance. The capacity, safety upgrades, and operational enhancements exceed those of other highways in Colorado. The safety features on the corridor are continually upgraded to provide the customer a safer and quicker option for a travel route than either the Interstate or State Highway System.

The Authority continues to reinvest in their corridor with several improvements that were completed in recent years or are ongoing, as well as setting the stage for future projects.

## 1.4 E-470 Public Highway Description

E-470 was originally constructed as a 47-mile long 4-lane toll road, designed and constructed to Interstate Highway standards. The first portion of the toll road opened in 1991 and the final portion opened in 2003 traversing the eastern limits of the Denver metro area as shown in Figure 1-1. Since the tollway's original construction, an additional through lane was added in each direction to create a 6-lane highway between the south I-25 interchange and the I-70 interchange. Further construction began in September of 2022 to extend the widened section from I-70 up to 104<sup>th</sup> Avenue and is currently ongoing.

**Lane Miles:** The tollway consists of ~299 lane miles of roadway which includes through lanes, climbing lanes, ramps, interchanges, and auxiliary lanes. The Authority completed an additional 16 lane miles through roadway widening between Quincy Ave and I-70 in 2020, widening this length to three lanes in each travel direction. Similarly, The Authority is currently overseeing an ongoing mainline widening project between I-70 and 104<sup>th</sup> Ave which is expected to be complete in 2025.

**Interchanges:** There are a total of 24 interchanges with five freeway-to-freeway interchanges located at north I-25, I-76, Peña Boulevard, I-70, and south I-25. The remainder of the interchanges are with arterial streets and consist of mostly standard interstate diamond interchanges. Six of the interchanges are non-tolled and located at north I-25, I-76, Peña Boulevard, I-70, Parker Road, and south I-25.

**Tolling:** The tollway was designed and constructed as a "closed" system where every vehicle using the tollway pays a toll, either at an entry point, an exit point, or through one of the five mainline toll plazas. On July 4th, 2009, the tollway was converted to an all-electronic tolling facility. Tolls are now collected using ExpressToll accounts with transponders or through license plate tolling. In November 2021, the Board of Directors unanimously approved yearly toll reductions starting on January 1, 2022. These discounts held steady into 2023, via approval from the Board of

Directors in December of 2022. On December 14, 2023, the E-470 Board of Directors approved once again to freeze current 2023 toll rates into 2024 to reduce burden on commuters. Deeper time of day discounts remain in place to help commercial drivers deliver items and goods to customers on time. Vehicles with three or more axles and an ExpressToll account receive the normal 35% to 40% discount toll rate, as well as an additional 20% discount between 9 a.m. and 12 p.m. (during non-peak travel times) and an additional 5% discount at all other times on E-470. The Authority partnered with the Colorado Motor Carriers Association originally to create this discount in 2020.

**Facilities:** There are five mainline toll plazas along the tollway located at following mile points: 2.5 (Plaza A), 15.5 (Plaza B), 22.5 (Plaza C), 30.0 (Plaza D), and 40.0 (Plaza E). These plazas consist of an overhead canopy structure to house the license plate cameras and electronic toll collection system hardware, along with administrative buildings.

Near Plazas A, C, D, and E, the Authority manages maintenance facilities (“support sites {MSS}”), which provide areas for storage and distribution of snow removal chemicals, granular materials, and plow truck deployment for winter weather. The support site near Plaza C also houses a Central Maintenance Facility (CMF), which provides garage space, wash bays, and additional garage storage space for plow truck maintenance and repair.

The Authority Headquarters Facility (AHF), located near the midpoint of the corridor at the Stephen D. Hogan/6<sup>th</sup> Parkway Interchange, provides office space for Authority and toll operations contractor staff. This facility houses the heart of all electronic Toll Collection System hardware and software. The AHF includes a Traffic Management Center with 24-hour surveillance of all activities on the tollway, including traffic flow, road conditions, toll collection system monitoring, and accident/incident response.

Toll Plaza C and the CMF properties have been sold to private developers in the past several years. Toll Plaza C is no longer under the control of The Authority. The existing CMF shall be decommissioned in Fall of 2024, replaced by a new CMF has be opened adjacent to the AHF off of E Stephen D. Hogan Parkway.

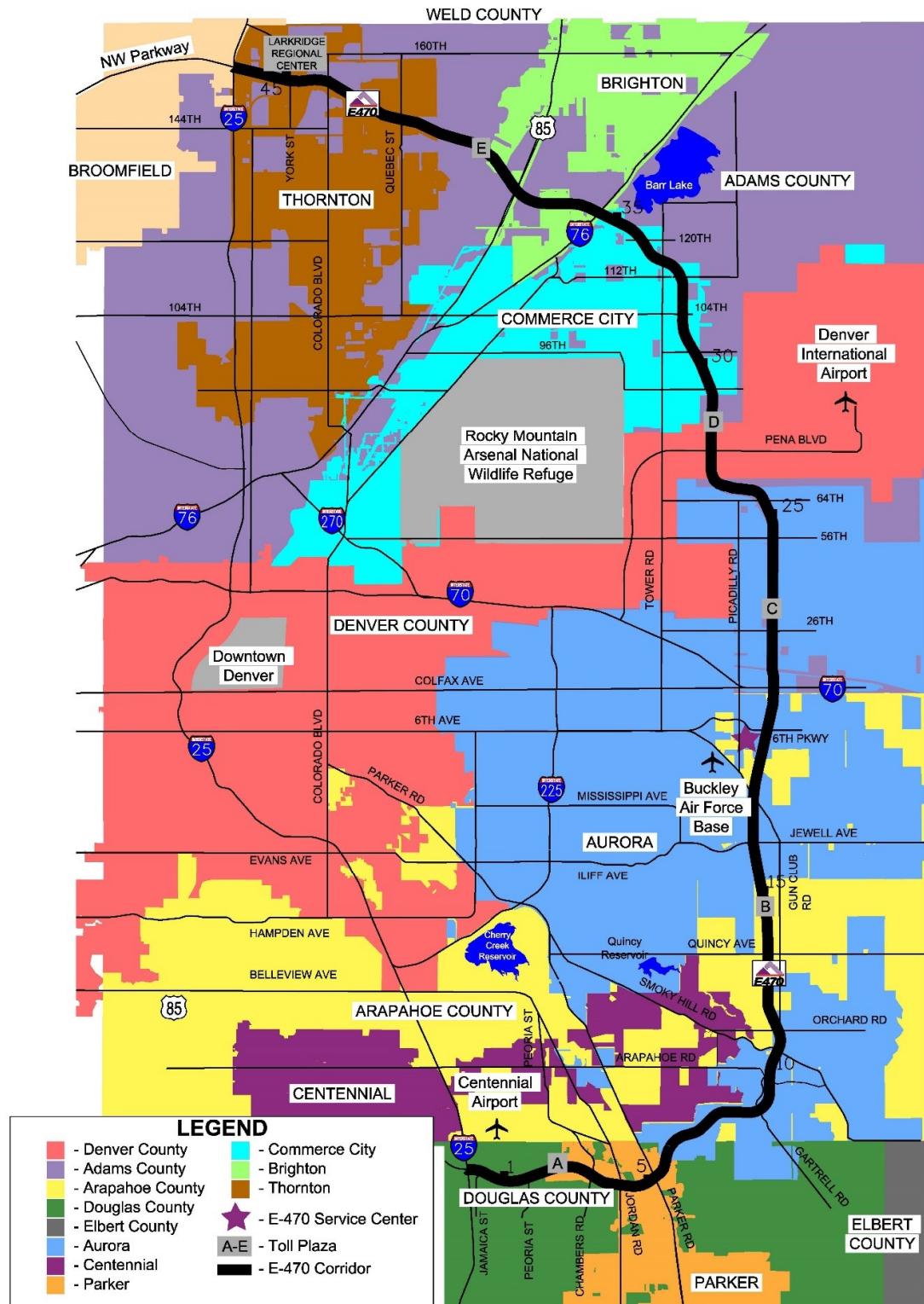


Figure 1-1 – E-470 Mainline Map

## 1.5 Improving the Tollway

The Authority continues to be proactive in responding to traffic and revenue studies by planning and developing to avoid predicted substandard future Level of Service (LOS) ratings. The Authority has set a standard of LOS C or better for its facility. This high LOS standard is set and maintained to ensure customers are provided reliable service with minimal delays at all times throughout the year. The 2020 E-470 Master Plan contains a table that summarizes the proposed timeline of mainline segments that will need to be widened to maintain the desired LOS throughout the corridor through 2040. The Master Plan is updated every 3-5 years to maintain the proactive approach the Authority maintains to achieve the high level of function.

On May 21<sup>st</sup>, 2020, the Authority signed a multi-million-dollar long term contract with Electronic Transaction Consultants (ETC), one of the United States' leading intelligent transportation system and service providers. Within this contract, ETC will deliver and operate its next generation roadside tolling system, RiteSuite™. Some features of this advanced software include enhanced vehicle detection, separation, and classification; redundant toll collection equipment; and upgraded digital video audit system. Implementing this state-of-the-art system will help E-470 continue to grow and expand services to their customers; and efficiently monitor the health and performance of toll collecting equipment. Toll Plaza E is currently being used as a test site for this technology, which was fully installed at the end of 2023.

In March of 2021, the Authority completed a roadway widening project adding a third travel lane between Quincy Avenue and I-70. These eight miles now feature expanded bridge structures, upgraded interchange traffic signals, improved drainage assets, fresh pavement, and expansion to the High Plains Trail. Signalization of the southbound Quincy ramp terminals was completed as part of this widening project.

A Hazardous Materials Route Data and Analysis report was prepared for the E-470 Public Highway Authority to determine whether the E-470 corridor is a feasible route for the transportation of hazardous materials. In August 2020, the Authority's Board of Directors approved proceeding with the petition process based on a HAZMAT Route Analysis. This study compared E-470 to neighboring HAZMAT routes, analyzing environmental, safety, traffic, physical roadway characteristics, and social environmental data. E-470 officially became a HAZMAT route on April 1<sup>st</sup>, 2022.

The 2020 Master Plan also outlines future interchange improvement needs. The Authority partnered with Commerce City to install new traffic signals at E-470 and East 120<sup>th</sup> Avenue. The new signals enhance safety for all turning movements at the ramp intersections and help keep people moving in this growing area. The Authority provided \$550,000 in funding for the construction of these signals. A 2024 Master Plan is currently being developed, and shall be complete by the end of the year.

The Authority continues to pursue agreements and work with local municipalities to strengthen system connectivity between E-470 and surrounding roadways. After listening to the community's concerns, the Authority is partnering with the City of Aurora to improve visibility and facilitate safer left turns from the E-470 ramp intersections at Gartrell Road. In late 2023, temporary traffic signals were installed at these intersections with the Authority providing about \$1.2M for construction. Additionally, the City of Aurora is facilitating the widening of the Gartrell Bridge over E-470.

A recently completed Structure Selection Report identified future need for a new Aurora Parkway bridge over the E-470 corridor. This bridge will carry the proposed extension of Aurora Parkway over E-470 in Douglas and Arapahoe Counties.

The ongoing widening project from I-70 to 104<sup>th</sup> Avenue includes new interchanges at 38<sup>th</sup> Avenue and 48<sup>th</sup> Avenue. The Authority executed an agreement with the Aerotropolis Regional Transportation Authority to jointly fund the construction of the new diamond interchange at 38<sup>th</sup> Avenue mentioned above. The new interchange provides access to and from Aurora Highlands, a 3,150-acre master planned development that will add a projected 32,000 residents.

In addition to roadway facility improvements, E-470 strives to improve transit through promoting electric vehicles. The Authority offers two Chargepoint “DC Fast Charge” electric vehicle (EV) charging units (4 vehicle spaces) free of charge to the public. These fast-charging stations offer two types of plug-ins: CHAdeMO and SAE combo cords. These EV charging units are located at the E-470 headquarters building at 22470 E. Stephen D. Hogan Parkway.

## 1.6 Public Communications

The Authority uses social media as a tool to educate and communicate with its customers. Videos are created quarterly to provide updated and timely information to the public. In addition, the Authority uses this communication channel to inform the traveling public of current and future construction projects on or near E-470 that may impact the customer’s travel. The following is the E-470 Facebook link which shows many of the videos created by the E-470 Communications Team aimed at keeping the customers informed: <https://www.facebook.com/E470PHA>.

The E-470 website (<https://www.e-470.com>) provides the public with general information about the tollway, a toll calculator, area maps, a log of current widening projects updates, a history of the tollway, road advisories, safety tips, contests and promotions, as well as customer feedback. The Authority sends out a Quarterly Newsletter via email to its customers and is active on social media platforms such as X (formally known as Twitter).

Road advisories are posted on social media platforms such as Facebook and X ([@e470RoadUpdates](#)) to notify customers of current road conditions. The Authority also provides access to view all live cameras along E-470 through their website for the same purpose.

## 1.7 Safety Initiatives

The Authority continues to prioritize driver safety, addressing known and potential problem areas throughout the corridor. Ongoing safety improvement initiatives include:

- Replacing faded road signs every year with ones that have high retro-reflectivity sheeting, which improves their visibility at night.
- Upgrading facility W-beam guardrail to meet the latest CDOT standards. As large portions of the existing guardrail are damaged, it is replaced with the newest CDOT-compliant W-beam guardrail. New construction projects upgrade the guardrail to the newest standard within the project limits as well.

- Repairing and upgrading Cable Rail annually. Prioritized locations include various on and off ramps of interchanges along the system, as well as in the median to protect large overhead sign monotube foundations.
- Installing speed radar signs, such as the one located just north of 64<sup>th</sup> Avenue. These are installed to help address and mitigate areas where higher-than-average accident numbers are observed.
- The Authority has installed high visibility “WRONG WAY” flashing signs at all E-470 off ramps. These illuminated signs are solar-powered and backlit. These signs, along with accompanying pavement arrows, alert drivers of the direction of travel on these ramps.
- To protect drivers and wildlife, E-470 utilizes deer fencing on long stretches of the corridor. Between Parker Road and Smoky Hill Road, deer vs. vehicle incidents were reduced from 15 to 5 per year after installation of deer fence. As future road widening projects occur, deer fence continues to be installed to reduce vehicle-wildlife accidents.

## 1.8 Customer & Community Initiatives

Beyond safety, The Authority also places a focus on optimizing the customer experience and supporting the rider community. Ongoing initiatives in both of these areas include:

- The Authority has been striping all facilities with 6” wide lane markings for all new construction and restriping projects since 2020. This replaces any existing 4” striping in an effort to increase visibility and driver comfort. All mainline striping is now 6” wide.
- In August 2019, the Authority Board of Directors unanimously approved the Colorado State Patrol 5-year (2019-2024) Patrol Services and Safety Enforcement contract. The Authority has been contracting law enforcement services with the Colorado State Patrol for the past 28 years.
- The Authority provides free 24/7 roadside assistance to motorists on E-470. Services include, but are not limited to, aid with flat tires, gas, oil and radiator refills, and battery jumps. E-470’s Communications Center has full camera coverage and continually monitors the tollway for incidents or distressed vehicles to coordinate Roadside Assistance vehicles toward locations of need.
- The program “Alive at 25”, sponsored by The Authority, provides drivers ages 15 to 24 a half-day driver education course to prevent traffic violations, collisions, and fatalities.
- The E-470 Transportation Safety Foundation is an affiliated non-profit organization that raises its own funds, awarding transportation safety grants up to \$10,000 to nonprofit organizations and tax-exempt government entities supporting transportation safety, public safety, driver education and related educational programs in Colorado. to support teen driving education, seat belt safety, transportation services, safety for seniors and youth, and car seat safety programs.

## 1.9 Independent Engineer Statement

This report was prepared by Short Elliott Hendrickson Inc., which is an independently owned professional engineering firm licensed to provide engineering services in Colorado.



## 2 Annual Maintenance Inspection

### 2.1 Overview of Annual Maintenance Inspection

The consultant responsible for preparing this report is also responsible for the inspection of most of the assets listed in Section 2.1.1, unless the asset is inspected by a third party to ensure compliance with industry standards. The inspections consist primarily of visual inspection, with others utilizing non-destructive testing techniques. The Authority has provided a Numerical Scoring System (NSS) to standardize the results, which can be used in future years to provide a trend analysis. Using the NSS, the inspections for each major and minor asset are categorized as follows:

- 90 to 100 – Excellent Condition
- 80 to 89.9 – Good Condition
- 70 to 79.9 – Average Condition
- 60 to 69.9 – Below Average Condition
- 0 to 59.9 – Poor Condition

#### 2.1.1 Inspection Categories

- Major Assets
  - Roadway Pavement
  - Bridges
  - Lighting
  - Drainage
  - Guardrail, Cable Rail and Barrier
  - Buildings
- Secondary Assets
  - Signing
  - Striping
  - Delineators
  - Native Seeded Areas
  - Fencing
  - Embankment Protectors
- Additional Assets
  - Variable Message Signs
  - Overhead Sign Structures
  - Irrigation and Plant Maintenance
- Traffic Services
  - Safety
  - Litter Control
  - Snow and Ice Removal

## 2.1.2 Evaluation Criteria

Each inspection category was scored according to the Authority's NSS. Any areas of concern were classified under three levels of evaluation. The criteria for the levels of evaluation are:

### Level One – Immediate Requirements

Level One items require immediate attention and should be addressed as quickly as possible. Immediate notification of Level One findings is provided to the Authority. Items in this category include creating potential safety hazards, excessive maintenance, or have the potential to be a liability. They also include items with a NSS value below the minimum requirements established for each major and secondary asset.

### Level Two – Short-Term Requirements

Level Two items are not in need of immediate attention but are not up to standards and should be included in the upcoming maintenance program to be addressed within a year of discovery.

### Level Three – Long-Term Requirements

Level Three items are items in current good condition and do not require any major maintenance within the next year but should be monitored for deterioration in the next two to four years.

## 2.2 Major Assets

### 2.2.1 Roadway Pavement

The Authority contracts with a third-party to conduct a pavement condition assessment in accordance with ASTM 6433-99 for smoothness and pavement distress. Two types of pavements are used on E-470, Hot Mix Asphalt (HMA) on the mainline and ramp gore areas and Portland Cement Concrete Pavement (PCCP) on ramps and approaches to the toll plazas. Projected traffic, revenue studies, and data from the International Roughness Index (IRI) and Pavement Condition Index (PCI) are used to plan five to eight years of renewal and replacement projects on E-470.

#### Hot Mix Asphalt

The latest available third-party pavement analysis was conducted in the summer of 2021. This test yielded an **overall IRI of 66 in/mi**. Based on a 2019 Federal Highway Administration (FHWA) report, roughly 60% of Colorado's interstate miles had an IRI rating below 95 in/mi (a lower number constitutes a smoother ride). The PCI assesses visible signs of deterioration in the roadway and provides a number from 0 to 100, with 100 representing pavement in excellent condition. **The 2021 pavement analysis resulted in a PCI of 83.7, which is considered good condition.**

No further pavement testing was performed from 2022-2024. The Authority acknowledges this gap in testing; this report defaults scoring to the value identified at the time of the last performed test. From extensively driving the corridor and visually assessing the pavement during the 2024 Annual Certification process, SEH agrees that pavement remains in excellent condition in non-construction areas, and good within construction areas. No field observations during inspections indicate that the pavement condition has deteriorated below what it was at the time of this latest analysis.



## Portland Cement Concrete Pavement

The Portland Cement Concrete Pavement (PCCP) is located on ramps and toll plaza approaches and therefore does not get assessed in the pavement analysis report. The Authority strives to repair or replace portions of PCCP before it has failed; however, any PCCP that does fail is quickly reconstructed. For repairs, such as longitudinal cracks, the Authority uses cross-stitching as an effective repair method. No substantial deterioration or damage was observed during the latest provided inspections.

## 2.2.2 Bridges

Each year, the Authority contracts with an independent consultant for the bridge inspections in accordance with the Federal Highway Administration's National Bridge Inspection Standards (NBIS). The Authority maintains 102 bridges, approximately half of which are inspected one year, and the remaining bridges are inspected the following year, providing the required two-year cycle for bridge inspections per the NBIS. Some culverts are part of the inspections and are inspected on a 4-year cycle. The NBIS defines a bridge as any structure that has a clear span or opening of at least 20 feet along the centerline of the roadway, including culverts that meet these criteria. Thus, some concrete box culverts are considered "bridges" per this definition.

Sixty-seven (67) bridges and culverts located in Segments I-III were inspected in July and August 2024. Only minor preventative repair or maintenance items were recommended. No major structural or safety concerns were identified. Numerous bridges were found to have minor repairs made, including re-coating of bridge rails, and sealing of asphalt cracks.

A Sufficiency Rating is automatically calculated through the inspection database for each bridge, which rates the overall structural and functional adequacy of the bridge on a 0-100 scale. **The inspected bridges were found to be in an overall excellent condition with an average sufficiency rating of 94.43.** Table 2-1 summarizes the individual sufficiency ratings for the bridges inspected in 2023. Note that non-vehicular bridges do not receive a sufficiency rating, thus are shown as "N/A".

**Table 2-1 – 2024 Structures Inspected and Sufficiency Rating**

Structure Number	Facility Carried	Feature Intersected	Sufficiency Rating
E-470-0.47A	E-470 EB	Cottonwood Ck & Jamaica	98.1
E-470-0.47B	E-470 WB	Cottonwood Ck & Jamaica	98.0
E-470-0.47C	E-470 On-Ramp	Cottonwood Creek	97.9
E-470-0.47D	E-470 Off-Ramp	Cottonwood Creek	99.9
E-470-1.71A	E-470 EB	Peoria Street	91.6
E-470-1.71B	E-470 WB	Peoria Street	94.3
E-470-3.26A	E-470 EB	Happy Canyon Creek	89.3
E-470-3.26B	E-470 WB	Happy Canyon Creek	98.0
E-470-3.54C	Chambers Road NB	E-470	91.8
E-470-3.54D	Chambers Road SB	E-470	88.3

Structure Number	Facility Carried	Feature Intersected	Sufficiency Rating
E-470-4.33A	E-470 EB	Jordan Road	98.1
E-470-4.33B	E-470 WB	Jordan Road	98.0
E-470-05.13A	E-470 NB	Cherry Creek	98.2
E-470-5.13B	E-470 SB	Cherry Creek	98.0
E-470-5.13D	Ramp A	Cherry Creek	92.3
E-470-05.25A	E-470 EB	Parker Road	98.2
E-470-05.25B	E-470 WB	Parker Road	98.0
E-470-05.76A	E-470 NB	Cottonwood Drive	96.1
E-470-05.76B	E-470 SB	Cottonwood Drive	96.0
E-470-07.78C	Ireland Way	E-470	84.0
E-470-08.90C	Gartrell Road	E-470	85.0
E-470-09.57A	E-470 NB	Piney Creek	98.3
E-470-09.57B	E-470 SB	Piney Creek	98.2
E-470-09.83A	E-470 NB	Arapahoe Road	98.3
E-470-09.83B	E-470 SB	Arapahoe Road	96.1
E-470-10.66C	Smoky Hill Road	E-470	87.3
E-470-13.31A	E-470 NB	Quincy Avenue	98.3
E-470-13.31B	E-470 SB	Quincy Avenue	94.2
E-470-14.32C	Hampden Avenue	E-470	99.3
E-470-16.35C	Jewell Avenue	E-470	98.6
E-470-17.58C	State Highway 30	E-470	98.5
E-470-17.78CBC	E-470	Murphy Creek	81.3
E-470-18.44A	E-470 NB	Coal Creek	98.5
E-470-18.44B	E-470 SB	Coal Creek	98.5
E-470-18.71CBC	E-470	Coal Creek Trib.	81.4
E-470-18.91C	6th Parkway	E-470	94.3
E-470-20.13A	E-470 NB	Ramp B	98.6
E-470-20.13B	E-470 SB	Ramp B	98.6
E-470-20.13C	E-470 Ramp H	E-470 Ramp B	98.6
E-470-20.32A	E-470 NB	Colfax Avenue	98.6
E-470-20.32B	E-470 SB	Colfax Avenue	98.6
E-470-20.46A	E-470 Ramp H	I-70, Colfax, E470 ML	95.7
E-470-20.50A	E-470 NB	I-70	92.3
E-470-20.50B	E-470 SB	I-70	91.8
E-470-20.60CBC	19th Avenue	First Creek	83.9

Structure Number	Facility Carried	Feature Intersected	Sufficiency Rating
E-470-20.67CBC	E-470 Ramp G	First Creek	84.8
E-470-20.70A	E-470 NB	19th Avenue	97.6
E-470-20.70B	E-470 SB	19th Avenue	97.6
E-470-20.81CBC	E-470	First Creek	81.7
E-470-20.88A	E-470 NB	Ramp E	98.6
E-470-20.88B	E-470 SB	Ramp E	98.6
E-470-21.01A	E-470 NB	Smith Road & UPRR	97.0
E-470-21.01B	E-470 SB	Smith Road & UPRR	90.8
E-470-21.01C	Ramp E	Smith Road & UPRR	94.5
E-470-21.43C	26th Avenue	E-470	99.9
E-470-22.44C	38th Ave/Aurora Highlands Pkwy	E-470	92.8
E-470-23.38CBC	E-470	Local Drainage	78.7
E-470-23.43C	48th Avenue-Future	E-470	91.3
E-470-24.44C	56th Avenue	E-470	98.5
E-470-25.48C	64th Avenue	E-470	98.5
E-470-27.86A	E-470 NB	Pena Boulevard	87.0
E-470-27.86B	E-470 SB	Pena Boulevard	94.1
E-470-29.39C	88th Avenue	E-470	89.2
E-470-30.46C	96th Avenue	E-470	93.5
E-470-31.57C	104th Avenue	E-470	99.7
E-470-32.57C	112th Avenue	E-470	99.4
E-470-33.22C	Tower Road	E-470	95.9

## 2.2.3 Lighting

The Authority maintains approximately 1,450 lights and strives to keep 95% of the lights working at any given time. The Authority conducts a lighting inspection no less than once a month with its own personnel and keeps records as to how many high mast lights are operational or not; this does not assess the structural components of the lights. A complete structural verification of fifty-nine (59) high mast lights was completed in the northern areas of E-470, such as around the I-25 interchange and ramps for Washington Street.

A random selection of 146 lights (10%) were inspected for bolt tightness, weld conditions, rust, cracks, flaking paint, and erosion around the poles. **The detailed light inspection confirmed the lights are in excellent operating condition with the average individual light achieving a score of 99.68.** We found no loose anchor bolts during inspection. Rust, weld, or paint issues were present on 37 light poles at the time of inspection. It was noted for informational purposes that 33 of these faults were electrical access panel doors or plates missing or detached on the ground. Examples of this are depicted in Figures 2-1 and 2-2 below.



**Figure 2-1 – Open access panel with wires exposed, median at Toll Plaza B**



**Figure 2-2 – Multiple open access panels, observed at multiple locations**

A nighttime driving inspection was conducted to inspect the working conditions of all 1,450 lights. One point, out of 100, was deducted from the NSS score for every 14, or portion thereof, lights not working. Most of the observed outages were on the E Stephen D. Hogan Parkway exit, which the Authority was already aware of. **This inspection found 30 lights with at least one bulb burnt out, resulting in a score of 97.93.** Based on the NSS, a total numerical score from 0-100 is calculated for the average score of working lights and the average score of the randomly inspected poles and bases. **The overall condition of the lights was found to be in excellent condition with an average score of 98.81.**



## 2.2.4 Drainage

The Authority maintains 59 box culverts, which are inspected every two to four years depending on their structural condition. The frequency is determined by the culvert's clear opening as described in Section 2.2.2. The Authority also maintains approximately 160 reinforced concrete pipe culverts. For the Annual Certification, a random sample of 10 concrete box culverts and 15 reinforced concrete pipe culverts were inspected for sediment, trash, tumbleweeds, and capacity.

No culverts were found to have sediment greater than 4", and two culverts were found to have tumbleweeds impacting the water flow. Trash was not present in any inspected pipes. See **Figure 2-3** for an example of major tumbleweed blockage observed in a box culvert, and **Figure 2-4** for a picture of heavy scour observed at the front of the inlet apron for another culvert location. **Overall, the box culverts are in excellent condition with an average score of 99.80. The reinforced concrete pipes were also in the excellent condition range with an average of 99.73. Both drainage assets combined averaged a 99.77**



**Figure 2-3 – Box Culvert with significant tumbleweed build-up at MP 37.5**



**Figure 2-4 – Box 2ft of scour at inlet of culvert near TPE (SB)**

## Guardrail, Cable Rail, and Barrier

The Authority maintains three types of barriers, 217,500 feet of median cable rail, 108,500 feet of W-beam guardrail, and 4,000 feet of concrete Jersey barrier.

Since a small percentage of the barrier total is concrete Jersey barrier, and the concrete can be damaged and still perform to its full capacity, no score is associated. However, a visual inspection of the concrete barrier was conducted and no substantial damage requiring replacement was noted.

## Guardrail

An initial driving inspection of all W-beam guardrail was conducted to note any areas of visual damage to the systems. The Authority strives to repair any significant damage to W-beam within one week. A second visual inspection of all barriers was conducted within three weeks to provide the Authority a sufficient period of repair. No significant damage was noted during the first driving inspection. Based on these, inspections, the authority has an overall score of 100 for this aspect of guardrail inspections.

Twenty random locations of W-beam guardrail were selected for a detailed visual inspection in accordance with the NSS, where thorough inspection of the posts and W-beam for missing or broken bolts, posts out of plumb, and areas exhibiting significant distress was performed. **Figure 2-3** showcases minor guardrail damage observed during the on-foot inspections. Since multiple posts in a row were damaged, the Authority was notified to replace and repair. **The results of the detailed inspection found the guardrail to be in excellent condition; an average score of 99.88. The overall score of the guardrail driving and field inspections is excellent: 99.90.**



**Figure 2-5 – Minor guardrail damage near NB MP1**



**Figure 2-6 – Stretch of damaged cable rail in median near 96<sup>th</sup> Avenue**

## Cable Rail

Although cable rail may still be functional if damaged, the Authority strives to repair cable rail as soon as possible after any significant damage occurs to minimize accident severity of a potential secondary accident at the same location. There was no damage noted during the first inspection for cable rail. This results in a score of 100 for the driving portion of the cable rail inspection.

In addition to repairing any loose cables, the Authority's roadway contractor provides tension tests for cable rail throughout the corridor. The tension tests provided by the Authority show that most of the sections tested met or exceeded the required tension design loads.

Twenty 200-foot sections of cable rail were randomly selected for a detailed visual inspection deducting points for any significant damage, posts out-of-plumb by more than two inches, and rust. **The overall condition found in the detailed inspection is excellent with an average score of 99.95. The overall average score of the cable rail driving and field inspections is excellent with a score of 99.98.**

## 2.2.5 Buildings

Two types of buildings are maintained by the Authority according to the NSS – large buildings and ramp buildings. There are eight large buildings including four Toll Plazas (TP A, TP B, TP D, and TP E), three Maintenance Support Sites (MSS A, MSS D, and MSS E), and the Authority Headquarters Facility (AHF). All large buildings are inspected annually along with 10 of the 32 ramp buildings, selected at random, for the Annual Certification inspection. Toll Plaza C (TPC) and the Central Maintenance Facility (CMF) were sold in 2020 and are being leased to the Authority. These properties are no longer under the Authority’s control and therefore no longer inspected as part of the Annual Certification process.

To quantify the overall state of the buildings, a balanced score card is used that summarizes the score for each building’s major components. Each component of the building was scored on a 100-point scale and the average of the applicable components were used for the overall building health score. The average building scores are shown in the **Table 2-2**.

**Table 2-2 – Buildings Balanced Scorecard – Buildings Summary**

Component	TPA	TPB	TPD	TPE
Exterior	99	100	98	100
Interiors	81	88	86	88
Tunnels	89	99	94	99
Mechanical Equipment	-*	94	97	98
<b>Average</b>	<b>89.67</b>	<b>95.25</b>	<b>93.75</b>	<b>96.25</b>

Component	MSSA	MSSD	MSSE
Exterior	99	100	100
Interiors	96	100	98
Barns	99	98	96
Mechanical Equipment	100	97	98
<b>Average</b>	<b>98.50</b>	<b>98.75</b>	<b>98.00</b>

Component	AHF	Ramps
Exterior	99	98.20
Interiors	91	
Mechanical Equipment	99	-
<b>Average</b>	<b>96.33</b>	<b>98.20</b>

\* Fire Suppression System inspections for Toll Plaza A were not performed at the time of the completion of this report.



## Large Buildings

The major components of the large buildings include building exterior, building interior, HVAC systems, mechanical components within the buildings, and the underground tunnels at the Toll Plazas. Buildings were inspected for, but not limited to, cracks larger than ¼", visible leaks, water damage, voids larger than ½" in masonry walls, structural damage, vandalism, and mold/mildew. Inspections of the HVAC equipment is supplied by a specialized independent HVAC contractor to generate a condition assessment to be used in the Annual Certification.

The following summarizes the findings and scoring of the large buildings:

- **MSS A:** The building is in excellent condition with an **overall rating of 98.00**. No Level One findings. Water damage and discoloration to the ceiling and walls in three locations were considered Level Two findings. Minor door damage observed on two interior doors was noted as a Level Three concern, along with several drilled holes in the walls.
- **TP A:** The building is in excellent condition with an **overall rating of 89.67**. No Level One findings. Level Two findings were widespread water damage observed in both the main building and in the tunnel system. Areas with observed damage were ceiling panels, walls, around piping, etc. Drilled holes in the drywall were deemed Level Three findings. **Figure 2-7** displays the typical water damage and discoloration observed.
- **TP B:** The building is in excellent condition with an **overall rating of 95.67**. No Level One findings were noted. Level Two findings consisted entirely of water damage observed in the main building, along with visible water on the tunnel walls. No Level Three finding were observed.
- **Authority Headquarters Facility (AHF):** The AHF is in excellent condition with an **overall rating of 95.00**. There were no Level One findings. Level Two findings included a handful of water damaged ceiling panels. Level Three findings included a crack along the top of one window, as well as several drills holes through the drywall.
- **TP D:** The building is in excellent condition with an **overall rating of 92.67**. No Level One findings were noted. Level Two findings were water damage along the ceiling and walls and standing water in the tunnel area. Eleven ceiling panels were found to have water damage. Level Three findings consisted of a couple of cracks greater than 1/16" and small leaks in window gaskets. **Figure 2-8** showcases the standing water observed.
- **MSS D:** The building is in excellent condition with an **overall rating of 99.33** with only Level Three findings noted: Minor damage and discoloration of plywood sheeting.
- **TP E:** The building is in excellent condition with an **overall rating of 95.67**. There were no Level One or Three findings. Level Two findings were primarily water damaged ceiling panels and drip stains down the nearby walls.
- **MSS E:** The building is in excellent condition with an **overall rating of 98.00**. There were no Level One or Two findings. The Level Three findings were minor water damage to interior panels and damage to plywood paneling.





**Figure 2-7 – TPA – Water damage**



**Figure 2-8 – TPD – Standing water in tunnel area.**

For the mechanical HVAC components within the buildings, an Asset Condition Report is typically prepared summarizing equipment into the rating categories of Good, Fair, Critical, or Not Rated. Some of the different items rated throughout the buildings include air conditioning units, exhaust fans, pumps, rooftop units, and water heaters. The Authority contracts with independent contractors to inspect and maintain other mechanical systems. SEH received reports for some, but not all, of the Authority facilities and display the results in **Table 2-3** below:

**Table 2-3 – Mechanical Components/HVAC Certifications**

P.M. Type	Frequency	Certifying Entity	Latest Inspection Completed	2024 Certification Status
Fire Extinguishers	Annually	Frontier Fire	June 2024	Current
Fire Suppression (sprinklers)	Annually	Frontier Fire	July 2024	Current
Smoke Detectors	Annually	Frontier Fire	July 2024	Current
Fire Control Panel	Annually	Frontier Fire	July 2024	Current
Backflows	Annually	Frontier Fire	May 2024	Current
Pump House	Annually	Frontier Fire	July 2024	Current
HVAC	Monthly*	Haynes Mechanical	July 2024	Current
Elevators	Annually	MEI Total Elevator Solutions	May 2024	Current

\* - Inspections take place monthly and are discussed with The Authority twice per year

## Ramp Buildings

Ten ramp buildings were randomly selected from the 32 total under Authority control. No Level Three or Level Two issues were observed during the ramp building inspections. There were two Level Three findings discovered. The southbound 6<sup>th</sup>/Stephen D Hogan Parkway off-ramp building exhibited cracked bricks on the exterior. At the northbound Quincy Avenue off-ramp building, ponding water was observed around the outside of the building. **Table 2-4** summarizes the ramp buildings inspected and where deficiencies were observed. **Overall, the ramp buildings are in excellent condition with an average score of 99.70.**

**Table 2-4 – Ramp Building Inspection Results**

Ramp Building	Exterior Damage	Interior Damage	Water Damage	Other*
(NB) On-ramp from Chambers Rd to E-470				X
(NB) Off-ramp from E-470 to Gartrell Rd	X			
(NB) Off-ramp from E-470 to Smoky Hill Rd	X			
(NB) On-ramp from Quebec St to E-470				
(NB) On-ramp from York St to E-470			X	
(SB) Off-ramp from E-470 to 104 <sup>th</sup> Ave				X
(SB) Off-ramp from E-470 to 64 <sup>th</sup> Ave			X	X
(SB) On-ramp from Smoky Hill Rd to E-470	X		X	
(SB) On-ramp from Gartrell Rd to E-470			X	
(SB) On-ramp from Peoria St to E-470			X	

\* - See Summary of Findings Table for more information

## Overall Buildings Summary

**Table 2-5** summarizes the average scores of the large and ramp buildings, as well as the comparison to last year's scores:

**Table 2-5 – Building Scores Summary**

Building	2024 Average Score	2023 Average Score
TP A	<b>89.67</b>	97.33
MSS A	<b>98.00</b>	97.00
TP B	<b>95.67</b>	98.67
Authority Headquarters Facility (AHF)	<b>95.00</b>	99.50
MSS D	<b>99.33</b>	98.67
TP D	<b>92.67</b>	99.00
TP E	<b>95.67</b>	99.33
MSS E	<b>98.00</b>	98.33
Ramps	<b>98.20</b>	99.70

## 2.3 Secondary Assets

### 2.3.1 Signing

The Authority maintains approximately 4,000 signs and aims to always keep 95% in good condition. This is defined as signs with no damage, secure, straight facing towards oncoming traffic, and good retro-reflectivity and readability during both day and night.

Forty signs were chosen randomly for inspection. Each sign was assessed for secureness to post and base. Points were deducted for signs that were bent, unclean, out-of-plumb by more than 1 inch per 4 feet of height, and/or unreadable during daytime or nighttime conditions. Four signs were found to be less securely attached than desired, two signs were found to be less clean, five sign panels were bent at time of inspection, and two signs were out of plumb.

The most significant deficiency of the selected signs was that the 50mph exit caution sign at the northbound (NB) I-25 ramp was found to have poor reflectivity and damaged peeling paint.

**Figure 2-9** below highlights its current condition. The other areas of deficiency were within the ongoing construction zone between I-70 to 104<sup>th</sup> Avenue, which were factored into the scoring.

**Figure 2-10** shows an example of a sign which has been struck and bent by a passing vehicle while mounted on the jersey barrier. **Figure 2-11** highlights an example of the new signs which are currently resting on temporary stanchion, which will be relocated to its final proposed location once construction nears completion.

The majority of inspected signs were clean, plumb, secure, with sufficient retro-reflectivity readings. **All signs were readable during both day and night inspections. The overall condition of the signs is excellent with an average score of 99.20.**



Figure 2-9 – Faded peeling sign near I-25 North Ramp Exit



Figure 2-10 – Bent sign panel on out-of-plumb pole in work zone

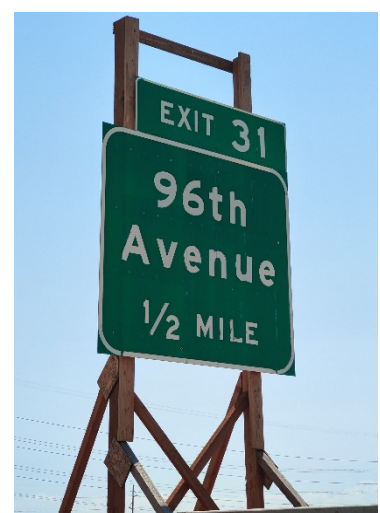


Figure 2-11 – New 96<sup>th</sup> Ave sign on temporary support structure

## 2.3.2 Striping

Approximately 1,350,000 linear feet of roadway striping is maintained by the Authority. For the inspection, five separate, random, one-mile mainline sections of roadway in each direction were visually inspected for nighttime visibility. The Authority contracts with an outside consultant to measure the retro-reflectivity of all the striping using a Laserlux retroreflectometer. The recorded measurements will be compared to the visual spot check. If the retro-reflectivity is measured less than 100 cd/lx/m<sup>2</sup>, 50 points will be deducted from that mile section score. It is also recommended that striping stretches with a reading less than 100 cd/lx/m<sup>2</sup> mandate restriping. **Visually, the striping is in excellent condition with an overall score for pavement markings of 98.**

Retroreflectivity testing was performed in September of 2024, with an overall value of 303 cd/lx/m<sup>2</sup> for the entire tollway. This is up from the previous testing: 295 cd/lx/m<sup>2</sup> in June of 2023.

## 2.3.3 Delineators

The Authority maintains approximately 6,000 delineators, with approximately 20 delineators per mile section of road, and targets for 80% to be in good condition. Five separate, random, one-mile mainline sections of delineators in each direction were visually inspected for straightness (measuring out-of-plumb by more than four inches), nighttime visibility of yellow and white reflective squares, and number of delineators knocked down or missing. **Based on the random sections inspected the overall condition of the delineators is excellent with a score of 92.40.**

## 2.3.4 Native Seeded Areas

Ten randomly selected 100-foot x 100-foot areas were inspected out of the approximately 1,200 acres of native seeded area maintained by the Authority. The areas were inspected for bare spots larger than two square feet and erosion greater than two inches deep. **The overall condition is good with an median score of 89.00.**

Heavy rain events in the previous year, mixed with windy dry months leading up to the July weeks of inspection, may have contributed to the erosion ruts and gaps in seeding observed. **Figure 2-12** displays an example of the deep rutting observed in three separate locations.

**Figure 2-12 – Multiple 12in+ ruts observed on embankment SE of I-76**





## 2.3.5 Fencing

Three main types of fencing are maintained by the Authority, Right of Way (ROW) fence, snow fence, and deer fence. Twenty locations of ROW fencing, ten locations of snow fencing, and twenty locations of deer fence were randomly selected for inspection. Fences were inspected for structural soundness, no openings or breaks in the fabric, plumbness of posts, secure attachments of fence to the posts, and fabric being intact to the required height. The Authority was alerted of one area with catastrophic fence damage, which was repaired within one week of notification. Following that repair, no major areas of concern were observed during the 2024 corridor inspections. **The overall condition of the fencing is excellent with an average score of 99.60.**

## 2.3.6 Embankment Protectors

Similar to the previously detailed culvert inspections, embankment protectors (EPs) are inspected for debris and depth of erosion at the discharge location. Fifteen (15) embankment protectors out of the seventy maintained by the Authority were randomly selected for inspection. Two out of the 15 embankment protectors inspected had openings restricted by at least 25%. Several were found to have trash slightly hindering the inlet and/or outlet. Signs of slight erosion and/or debris were all that was observed at the other inspection locations.

One location of note was the EP at the SW corner of S Parker Rd Bridge heading NB; the outlet of this EP was substantially clogged with a mixture of trash and sediment buildup. **Figure 2-13** below showcases this observed condition. **The overall condition of this asset is excellent, with an average score of 91.60.**



**Figure 2-13 – Trash and sediment buildup at EP outlet, SW of S Parker Rd Bridge (NB)**

## **Additional Assets**

### **2.3.7 Variable Message Signs**

At the time of inspection, all the 12 Variable Message Signs (VMS) signs along the E-470 corridor were operating and providing drivers with informative and necessary information for safe travel. VMS are used to warn of accidents, closed lanes, and of adverse road conditions.

### **2.3.8 Overhead Sign Structures**

The Authority has an independent consultant inspect overhead signs every five years. In addition, the Authority Roadway Maintenance staff inspects each overhead sign structure for loose or missing anchor bolt nuts and checks the welds at the base of overhead sign structure yearly as part of an Asset Management Program. The 4-year inspections are performed in accordance with the “Colorado Signs, Signals, and High-Mast Lights Inventory and Inspection Manual” published by CDOT. Thirty-four (34) overhead sign structures in Segment IV were inspected in 2022 and those in Segments I, II, and III were inspected in 2021. These signs will be inspected again in 2026 and 2025, respectively.

### **2.3.9 Irrigation and Plant Maintenance**

The Authority has multiple water sources for irrigation and plant maintenance along the tollway. Irrigation is used at the Toll Plazas, Maintenance Support Sites and the Authority Headquarters Facility. From Milepoint (MP) 0.0 to 5.0, the Authority works with Meridian Metropolitan District for its irrigation water needs. From MP 5.0 to 34.0, the Authority has agreements with public and private agencies as well as the use of an Authority-owned well near Toll Plaza D. From MP 34.0 to 46.0, water from the Todd Creek Farms Metro District is utilized.

The Authority has a dead plant removal inspection twice a year: during spring and fall. Plant maintenance is a perpetually ongoing activity.

## **2.4 Additional Traffic Services**

### **2.4.1 Safety**

A list of the safety protocols and initiatives that The Authority provides and/or engages in are given in Section 1.7 – Safety Initiatives.

### **2.4.2 Litter Control**

Road debris and litter is removed daily by the Authority’s maintenance crew and Roadside Assistance crew between calls. Cleanup of the road was witnessed regularly during the inspections for the Annual Certification. E-470 is well maintained and has an excellent appearance.

## 2.4.3 Snow and Ice Removal

The Authority monitors E-470 for weather conditions and uses strategically placed weather stations and pavement sensors to be proactive for inclement weather. Two outside professional forecasting firms are also utilized to provide advanced notifications of storm systems. One proactive measure includes the Authority's use of liquid magnesium chloride prior to snow or ice conditions. When conditions require, the Authority will also use dry road salt as necessary. Snow plowing efforts are contracted and organized and coordinated by the Authority's maintenance staff. Plowing is prompt and E-470 is normally cleared before the adjoining highways.

## 2.5 Inventory of Findings

Notable findings are summarized in **Table 2-6** and the overall NSS condition scores are summarized in **Table 2-7**. The definitions of the three levels of findings are repeated below for reference:

### Level One – Immediate Requirements

Level One items require immediate attention and should be addressed as quickly as possible. The Authority is immediately notified of Level One findings. Items in this category include posing potential safety hazards, creating excessive maintenance, or possessing the potential to be a liability. They also include items with a NSS value below the minimum requirements established for each major and secondary asset.

### Level Two – Short-Term Requirements

Level Two items are not in need of immediate attention but are not up to standards and should be included in the upcoming maintenance program to be addressed within a year of discovery.

### Level Three – Long-Term Requirements

Level Three items are items currently in good condition and do not require any major maintenance within the next year but should be monitored for deterioration in the next two to four years.

**Table 2-6 – Inventory of 2024 Findings**

Level	Asset Type	Location	Description of Finding
Two	Buildings	AHF	A handful of water damaged ceiling panels.
Two	Buildings	MSS A	Water damage and discoloration to the ceiling and walls in three locations.
Two	Buildings	MSS B	The air compressor in the fire valve closet failed to initiate during independent inspections.
Two	Buildings	MSS E	Old battery in entrance communicator. Expired equipment in fire valve room.
Two	Buildings	TP A	Widespread water damage observed in both the main building and in the tunnel system. Areas with observed damage were ceiling panels, walls, around piping, etc.

Level	Asset Type	Location	Description of Finding
Two	Buildings	TP B	Water damage observed in the main building, along with visible water on the tunnel walls. Air compressor failed inspection
Two	Buildings	TP D	Water damage along the ceiling and walls and standing water in the tunnel area. Eleven ceiling panels were found to have water damage.
Two	Buildings	TP E	Water damaged ceiling panels and drip stains down the nearby walls.
Two	Buildings	Ramp – SB 104 <sup>th</sup> Interchange	Settlement of building observed.
Two	Cable Rail	Milepoint 45.5	Stretch of 5 cable posts damaged and knocked over (has since been repaired)
Two	Delineators	NB MP 7 to 8	At least six delineators missing 6.
Two	Delineators	NB MP 36 to 37	At least six delineators missing 6.
Two	Delineators	NB MP 43 to 44	Five delineators missing, several not visible at night.
Two	Delineators	SB MP 8 to 7	Five delineators missing, several not visible at night.
Two	Delineators	SB MP 18 to 17	Four delineators missing and two not visible at night.
Two	Delineators	NB MP 37 to 36	At least five delineators missing and several not visible at night.
Two	Drainage	CBC at MP 37.5	Significant tumbleweed buildup through entire length of culvert.
Two	Drainage	RCP at MP 39.80	Significant scour at edge of inlet apron.
Two	EPs	NB SW corner of S Parker Rd. bridge	Outlet is approximately 50% blocked with sediment and trash.
Two	EPs	SB SW corner of 104 <sup>th</sup> Ave. bridge	Outlet is approximately 25% blocked with sediment.
Two	Lights	Numerous locations throughout inspections	Open back panels and hatches, with exposed wiring.
Two	Lights	Numerous locations throughout inspections	Ill-fitting bolt holes, meaning openings for water to penetrate light bases.



Level	Asset Type	Location	Description of Finding
Two	NSAs	NB East of Riverdale Rd.	Multiple deep (>12") ruts.
Two	NSAs	SB SE of I-76	Multiple deep (>12") ruts.
Two	NSAs	SB south of Jewell Ave.	Deep eroded channel along shoulder ditch.
Two	Signing	NB at Peña Blvd.	Work Zone Merge sign loose, bent, and out of plumb.
Two	Signing	NB I-25 Off-Ramp	50MPH sign unclean, paint is sun damaged and peeling.
Two	Signing	SB Exit 45	45MPH sign unclean, bent, and out of plumb.
Three	Buildings	AHF	A crack along the top of one window, as well as several drills holes through the drywall. Expired fire extinguishers.
Three	Buildings	MSS A	Minor door damage observed on two interior doors, along with several drilled holes in the walls. Expired fire extinguishers.
Three	Buildings	MSS D	Minor damage and discoloration of plywood sheeting. Expired fire extinguishers.
Three	Buildings	MSS E	Minor water damage to interior panels and damage to plywood paneling. Expired fire extinguishers.
Three	Buildings	TP A	Drilled holes in the drywall. No HVAC/facility certifications received for this structure.
Three	Buildings	TP B	Fourteen fire extinguishers due for hydrostatic testing and maintenance.
Three	Buildings	TP D	Couple of cracks greater than 1/16" and small leaks in window gaskets. Expired fire extinguishers and panels.
Three	Buildings	TP E	Five extinguishers due for hydrostatic testing and maintenance.
Three	Buildings	Ramp (NB) – Chambers Rd.	Graffiti on exterior.
Three	Buildings	Ramp (NB) – Gartrell Rd.	Minor exterior damage.
Three	Buildings	Ramp (NB) – York St.	Mold/mildew in interior.

Level	Asset Type	Location	Description of Finding
Three	Buildings	Ramp (NB) – 64 <sup>th</sup> Ave.	Mold/mildew in interior.
Three	Buildings	Ramp (SB) – Smoky Hill Rd.	Minor exterior damage. Mildew in interior. Damage to door.
Three	Drainage	RCP at MP 31.88 (NB 104 <sup>th</sup> Ave On-Ramp)	Moderate tumbleweed buildup at outlet.
Three	EPs	NW corner of SH 30 Bridge	10% opening restriction at outlet.
Three	EPs	NW Corner of 88 <sup>th</sup> Ave. Bridge	10% opening restriction at outlet.
Three	EPs	NW Corner of 120 <sup>th</sup> Ave. Bridge	10% opening restriction at outlet.
Three	EPs	NW Corner of US285 Bridge	10% opening restriction at outlet.
Three	Guardrail	Median S of I-76 Bridge	Five damaged posts and post connectors.
Three	Guardrail	Median N of Brighton Rd Bridge	Five damaged posts and post connectors.
Three	Guardrail	SB shoulder of Jordan Rd Off-Ramp	Five damaged posts and post connectors.
Three	Lights	Numerous Locations	Smashed or missing bolt covers.
Three	NSAs	North of Gartrell Rd. On-Ramp	Bare patches.
Three	Signing	(NB) MP 17.5	Exit 19 1 ¼ Mile Ahead sign is loose.
Three	Signing	(NB) 64 <sup>th</sup> Ave	Exit 28 2 Miles Ahead sign is loose.
Three	Signing	(SB) Toll Plaza E	Keep Left sign is loose and bent out of plumb.
Three	Signing	(SB) MP 37	MP Marker sign is out of plumb.
Three	Signing	(SB) Exit 28B	Exit 28B sign has low reflectivity and is loose.

**Table 2-7 – Numerical Scoring System Summary**

	Inspection Category	2024	2023	Asset Condition
Major Assets	Roadway Pavement (PCI)	<b>83.70</b>	83.7	<b>Good</b>
	Bridges	<b>94.43</b>	93.8	<b>Excellent</b>
	Lighting	<b>98.81</b>	99.3	<b>Excellent</b>
	Drainage	<b>99.77</b>	96.3	<b>Excellent</b>
	Guardrail and Cable Rail			
	-Guardrail	<b>99.90</b>	99.9	<b>Excellent</b>
	-Cable Rail	<b>99.98</b>	100	<b>Excellent</b>
	Buildings	<b>95.80</b>	98.4	<b>Excellent</b>
Secondary Assets	Signing	<b>99.20</b>	98.0	<b>Excellent</b>
	Striping	<b>98</b>	100	<b>Excellent</b>
	Delineators	<b>92.40</b>	91.4	<b>Excellent</b>
	Native Seeded Areas	<b>89.00</b>	93.2	<b>Good</b>
	Fencing	<b>99.60</b>	98.5	<b>Excellent</b>
	Embankment Protectors	<b>91.60</b>	84.1	<b>Excellent</b>

## 3 Roadway and Maintenance Budget

### 3.1 Roadway and Maintenance Budget

The Authority continues to allocate funds appropriately for the maintenance of the corridor. The Engineering and Roadway Maintenance Department's 2024 Budget Summary for Roadway Specific Expenses is shown in **Table 3-1**.

**Table 3-1 – 2024 Roadway and Maintenance Expenses**

Roadway and Maintenance Expenses	2024 Budget
Vehicle Expenses - Fuel	\$165,000
Electrical Repairs	\$103,000
General Landscape Maintenance	\$65,000
Mowing & Irrigation	\$105,000
Drainage Maintenance	\$60,000
Shouldering	\$43,000
Pavement Maintenance	\$125,000
Structure Maintenance	\$70,000
Roadway Maintenance	\$652,000

Snow Removal	\$4,965,400
Roadway & Engineering Support	\$700,000
Land Management Support	\$172,600
Legal Support	\$50,000
<b>Total Roadway Specific Expenses</b>	<b>\$7,276,000</b>

## 3.2 Fiscal Year Roadway and Maintenance Budget

The 2024 budget for the proper maintenance and repair appears to be adequate based on the required historical expenditures and the very good condition of the tollway.

When additional repairs become necessary, the Authority has a Capital Improvement Fund, which is available for unusual or immediate maintenance needs as well as future capital improvements.

The Authority also maintains a Five-Year Capital Projects Budget, as shown in **Table 3-2**. This includes interchange improvements, pavement resurfacing, and future construction projects such as widening from four to six lanes from I-70 to 104<sup>th</sup> Avenue, and 104<sup>th</sup> Avenue to I-76.

**Table 3-2 – Five-Year Capital Projects Budget Summary**

Project Category	2024 Budget	2025 Estimate	2026 Estimate	2027 Estimate	2028 Estimate
Renewal and Replacement	\$32,867,100	\$15,501,000	\$12,680,000	\$10,388,000	\$6,665,000
Construction Projects	\$183,900,000	\$93,970,000	\$21,300,000	\$8,922,000	\$28,000,000
Other Capital Requirements	\$400,000	\$100,000	-	-	-
<b>Total Capital Expenditures</b>	<b>\$217,167,100</b>	<b>\$109,571,000</b>	<b>\$33,980,000</b>	<b>\$19,310,000</b>	<b>\$34,665,000</b>

## 4 Summary

The Authority continues to maintain and improve the tollway at a very high standard. Out of the 12 major and secondary assets, **10 are rated in Excellent condition**. The Authority continues to address any immediate concerns in a timely manner and remains responsive when concerns are brought to their attention. Our interactions suggest that The Authority appropriately allocates their resources and funding to maintain their assets in an overall excellent condition.

The Authority maintains operations during ever-changing circumstances surrounding workplace commuting and daily travelers. The Authority continues to show prudent financial management of the roadway asset while pushing forward towards rider quality and connectivity improvements.



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Sustainable buildings, sound infrastructure, safe transportation systems, clean water, renewable energy and a balanced environment. Building a Better World for All of Us communicates a company-wide commitment to act in the best interests of our clients and the world around us.

We're confident in our ability to balance these requirements.

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