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OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION 67th ANNUAL CONSULTING ENGINEER INSPECTION REPORT



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Sixty-Seventh Annual Consulting Engineer Inspection Report

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1.0 INTRODUCTION

This report is a general summary of the 2022 routine field inspection findings of Ohio Turnpike and Infrastructure Commission (OTIC) assets; specifically, the bridges, culverts, pavement, signs and buildings including a summary of observations pertaining to new construction, maintenance, revenues, traffic and safety. Detailed 2022 field inspection notes were delivered to the OTIC staff in August of 2022 for their use in the early planning of maintenance and repair programs for 2023 and beyond. In addition, the Ohio Department of Transportation (ODOT) and Federal Highway Administration (FHWA) bridge inspection reports were completed and submitted to the OTIC in August 2022 to meet federal and state reporting requirements.

Pavement and Bridge Conditions

For the 2022 calendar year, just over \$249,300,000 was budgeted for the OTIC Capital Improvement Program. Continued improvements on OTIC bridges resulted in the three (3) structures getting new bridge decks and the repainting of two (2) bridges in 2022. To minimize future maintenance expenses, the removal process of one (1) mainline bridge began in 2022. The first year of two year projects for one (1) bridge replacement, the widening and redecking of two (2) mainline bridges, and the redecking of one (1) mainline bridge also all began in 2022.

Following the 2014 completion of the OTIC Third Lane Program project between MP 59.52 and MP 64.13 in Lucas County, the OTIC carries three continuous lanes in both the eastbound and westbound directions from MP 59.52 to MP 218.70. There are currently no further scheduled OTIC Third Lane Program projects. As a part of the Toll Collection System (TCS) Modernization project, the mainline roadway was widened to accommodate the Open Road Tolling (ORT) lanes of the modernized TCS from MP 47.0 to MP 50.90 and from MP 237.17 to MP 238.63 in 2019.

In 2009, the OTIC completed a study to evaluate the condition of the original concrete pavement for the entire 241 miles of the Turnpike. The purpose and goal of the study was to assess the life expectancy of the pavement and make a recommendation for the sequential reconstruction along the entire length of the Turnpike. The study has shown that the pavement and roadway elements are in relatively good condition for its age, however, the base pavement is in differing states of deterioration. The report has aided in the creation of a 50-year capital plan including replacement, rehabilitation and maintenance of the pavement and bridges on the Turnpike. In

2011, the OTIC began replacement of the original concrete pavement from MP 95.9 to MP 101.2 to be used as a guideline for future original concrete pavement replacement projects. The OTIC continued the program in 2022, resulting in 27.92 lane-miles being replaced. To date including 2022 projects, 310.94 lane-miles of original roadway have been replaced as a part of this program. Additionally, 69.7 lane miles of roadway was resurfaced under two (2) separate resurfacing projects.

Facilities

Over a 15-year period (1998 to 2013), fourteen (14) of the original sixteen (16) service plazas were replaced. Since then, the OTIC service plaza program has been focused on maintaining high standards of service and excellent facility conditions. Currently four (4) of the seven (7) pairs of service plazas constructed during the early phases of the replacement program have been updated. The service plazas are modern, state-of-the-art facilities with improved energy efficiency, designed to accommodate the ever-increasing number of Turnpike travelers. Amenities for the service plazas include a food court arrangement with a sit-down restaurant and multiple fast food vendors, electronic travel and weather information centers, and retail outlets. Special truck driver areas have been incorporated into the facilities which include a lounge, laundry and shower facilities. In 2019 Electric Vehicle Charging stations were added at four (4) service plazas, two (2) were added in late 2021, and six (6) additional locations are expected to be opened in late 2022 or early 2023. In 2017 OTIC entered into a contract with a consultant to develop a more in-depth strategic plan for all facilities including maintenance buildings, service plazas, toll plazas and the administration building. The strategic plan for the maintenance buildings was completed and the subsequent implementation of it is ongoing with planned raze and rebuilding expected to begin in 2028. This strategic plan is still under development for other facilities.

Highway Safety

The OTIC highway safety record continues to compare favorably with other similar interstate type facilities. The accident rate per one-hundred million vehicle-miles increased from 76.9 in 2020 to 77.9 in 2021 (1912 total accidents in 2020 compared to 2390 in 2021). The rate of accidents resulting in fatalities, decreased from 0.4 to 0.3 per one-hundred million vehicle-miles in 2020 and 2021. For the first eight months of 2022, total accidents have increased compared to the same time period in 2021. Total accidents for this time period was 1518 in 2021 compared to 1702 in 2022. The accident rate resulting in fatalities for the first eight (8) months of 2022 remained the same at 0.3 compared to the same time period from 2021.

Revenue

Total revenues for the OTIC from all sources in 2021 were approximately \$373,693,000, up 17.8% compared to 2020. The revenue increase was primarily the result of increased toll revenue and concession revenue due to the continued recovery from the pandemic. Meanwhile, total expenses decreased 13.3% due to a decrease in fringe benefit expenses allocated to each area based on wages relating to a decrease in the non-cash GASB 68 pension expense and GASB 75 other post-employment benefit expense. There was also a decrease in the ODOT Infrastructure Project expense. The total miles traveled for passenger vehicles increased by 30.3% and commercial vehicle total miles traveled increased 13.9% in 2021 compared to 2020. The toll rate increase combined with an increase in total vehicles and average vehicle mileage, resulted in an approximate 21.5% increase in 2021 toll revenue. The revenue data for the first seven months of 2022 shows that, when compared to the same period in 2021, toll revenues from passenger cars was up 3.1 percent and toll revenues from commercial vehicles was up 6.4 percent. Total toll revenues were up 5.2 percent for the first seven months of 2022. Total revenues for the first seven months of 2022 were up 5.7 percent compared to January-July, 2021. The total number of vehicles using the Turnpike during January-July, 2022 was 3.0 percent higher than for this same period in 2021. Based on current trends to date, total revenues from all sources for 2022 are estimated at approximately \$380,000,000.

2.0 REPORT OF FINDINGS AND RECOMMENDATION FOR MAINTENANCE AND REPAIR

2.1 Pavement and Shoulders

In 2009, the OTIC completed the evaluation of the condition of the original concrete pavement for the entire 241 miles of the Turnpike. The comprehensive pavement evaluation and analysis identified the factors contributing to the current condition of both the pavement and the subbase. The purpose and goal of the study was to assess the remaining life expectancy of the original base pavement and make a recommendation for the sequential reconstruction along the entire length of the Turnpike. Based upon the 2009 report and continuing annual pavement assessments, the OTIC is continuing the reconstruction of the original base pavement through the Pavement Replacement Program as detailed below:

Pavement Replacement Project started in 2021 and to be completed in fall of 2022
MP 208.17 to MP 212.76

Pavement Replacement Project started in 2021 and to be completed in fall of 2023
MP 0.00 to MP 7.26
MP 236.34 to MP 241.25

The final project of the Third Lane Expansion Program was completed in 2014 between MP 59.52 and MP 64.13. The OTIC now carries a continuous three-lane roadway spanning 159.18 miles from MP 59.52 near Toledo to MP 218.70 near Youngstown.

As a part of the Toll Collection System Modernization project, the mainline roadway was widened to accommodate the Open Road Tolling (ORT) lanes of the modernized TCS from MP 46.50 to MP 50.92 and from MP 237.17 to MP 238.63 in 2019.

In 2022 the OTIC completed two (2) mainline resurfacing projects totaling approximately 69.70 lane-miles. In addition, 27.92 lane-miles were reconstructed as part of the 2022 Pavement Replacement Program projects. The overall Resurfacing Program continues to be closely coordinated with the Pavement Replacement Program and prioritized based on the annual pavement assessments. See **Appendix B** for additional information on pavement resurfacing. A visual inspection of the roadway, shoulders, embankments and median barrier is performed annually, and a report of these findings is provided to OTIC to assist in the planning of roadway maintenance projects. Overall, the mainline travel lanes on the Turnpike continue to be very

well maintained, earning an average Pavement Condition Rating (PCR) score of 83.81/100 in 2022, decreasing a bit from 85.43/100 in 2021. Based on the Turnpike's continued investment in pavement improvements AECOM expects the PCR ratings to remain the same or improve in the future. The shoulders are also well maintained with an average rating of "GOOD" per the ODOT pavement condition rating criteria from AECOM's inspection. Deductions in the shoulder score were primarily due to rough pavement, spalling and shifting of pavement and scattered areas of erosion. The current Resurfacing and Pavement Replacement Programs continue to prove effective, providing a consistent and reliable driving experience throughout the full length of the Turnpike. AECOM recommends that the OTIC continue the Resurfacing and Pavement Replacement Programs as detailed in the current 50-year Capital Master Plan. **Figure 2.1.1** shows the changes in these scores by percentage over time beginning in 2013 when ODOT PCR scoring criteria was first utilized.

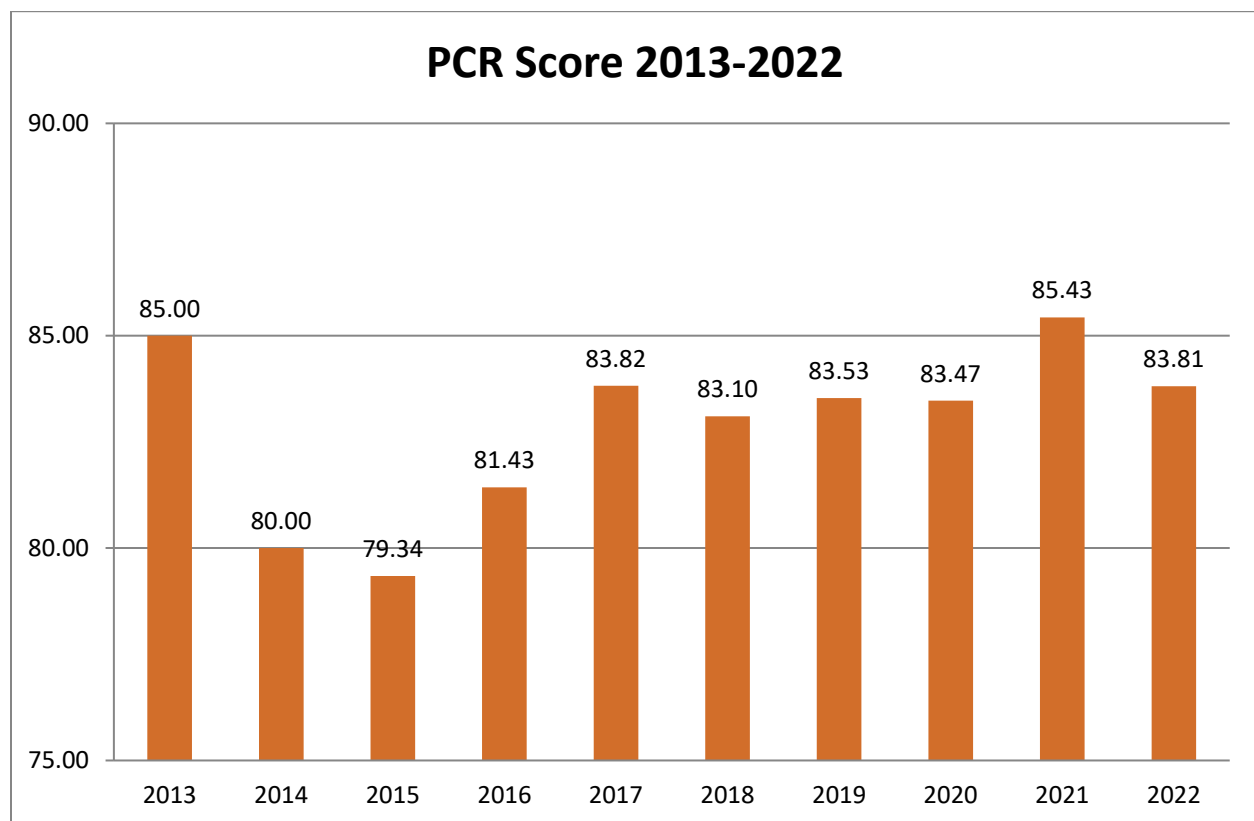


Figure 2.1.1 – Graph showing distribution of Pavement Condition Ratings over time (PCR scoring criteria from ODOT)

2.2 Landscaping

The OTIC landscape personnel continue to supervise the contract herbicide spray program along the mainline and at interchanges and perform minor herbicide and pesticide spraying at interchanges and service plazas. Landscape personnel maintain landscaping along the right-of-way and also construct and maintain the landscaping and plantings at the interchanges, service plazas, maintenance buildings and administration building. The OTIC's landscape personnel developed and implemented the landscaping plans for the seven pairs of newer service plazas. In addition, landscaping plans were developed for exits and interchanges. In partnership with Keep Ohio Beautiful and Davey Resource Group, pollinator gardens, incorporating native Ohio plant species, were installed at the Middle Ridge and Vermilion Valley Service Plazas in 2016, Mahoning Valley and Glacier Hills Service Plazas in 2017, Erie Islands and Commodore Perry Service Plazas in 2022, and Portage and Brady's Leap Service Plazas in 2022. The landscaping beds and lawn areas were upgraded around the service plazas at Middle Ridge, Vermilion Valley, Great Lakes, and Towpath in 2021. Additionally, as part of the pavement replacement projects and individual maintenance contracts, clearcutting and large-scale tree removal are performed at various locations along the mainline and ramp interchanges to improve sight distance and maintain clear zone areas.

The condition of the landscaping was considered during the bridge, culvert, roadway and facilities inspections. The right-of-way continues to be well maintained, with no notable issues. AECOM recommends that landscaping, including clearcutting, continue to be performed.

2.3 Bridges

Based on the bridge condition inspections performed in 2022, the large majority of bridges maintained by the OTIC are in Satisfactory to Excellent Condition (NBIS Scores 6-9) according to National Bridge Inspection Standards (NBIS). Per ODOT and OTIC policy the total number of bridges maintained by OTIC is 533 (418 bridges plus 115 culverts classified as bridges). Out of a total of 533 bridges, only 10.1% of the structures (54 total, 46 bridges plus 8 culverts classified as bridges) rate below Satisfactory Condition (**Figure 2.3.1**) and the majority of deficiencies at these structures is related to substructure (piers and abutments) concrete deterioration. This number is up 3.5% from 2021. Of the substructure deficiencies, the most downgraded element impacting the overall structure rating was found to be the piers. The piers rating below Satisfactory do not currently pose a safety hazard to the public; however, continued deterioration has the potential to increase maintenance and repair costs as well as decrease the overall service life of the structures. Rehabilitation should be performed at these structures in the near future and the deficient elements should be monitored closely until repairs can be made. **Figure 2.3.2** shows the changes in these scores by percentage of inventory over time.

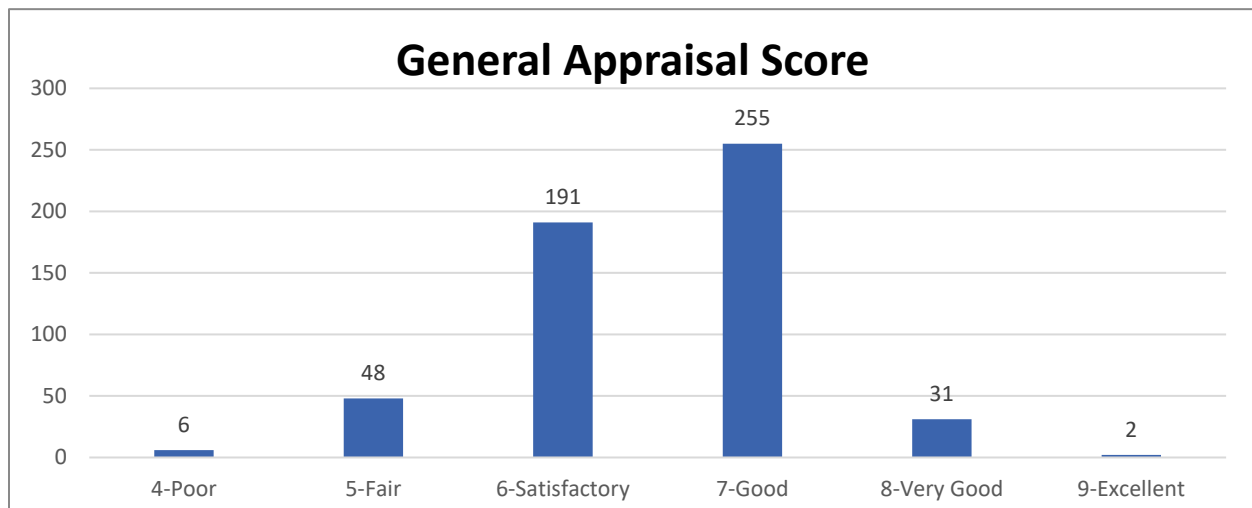


Figure 2.3.1 – Graph showing distribution of overall NBIS Condition Ratings for bridges maintained by the OTIC. NBIS Scoring criteria based on 1-9 evaluation with 1 being Imminent Failure and 9 being Excellent. Ratings of 5 or greater indicate structural elements may or may not show deterioration but remain sound with no significant affects to the main load path. For additional information see ODOT MBI 2014 Table 34.

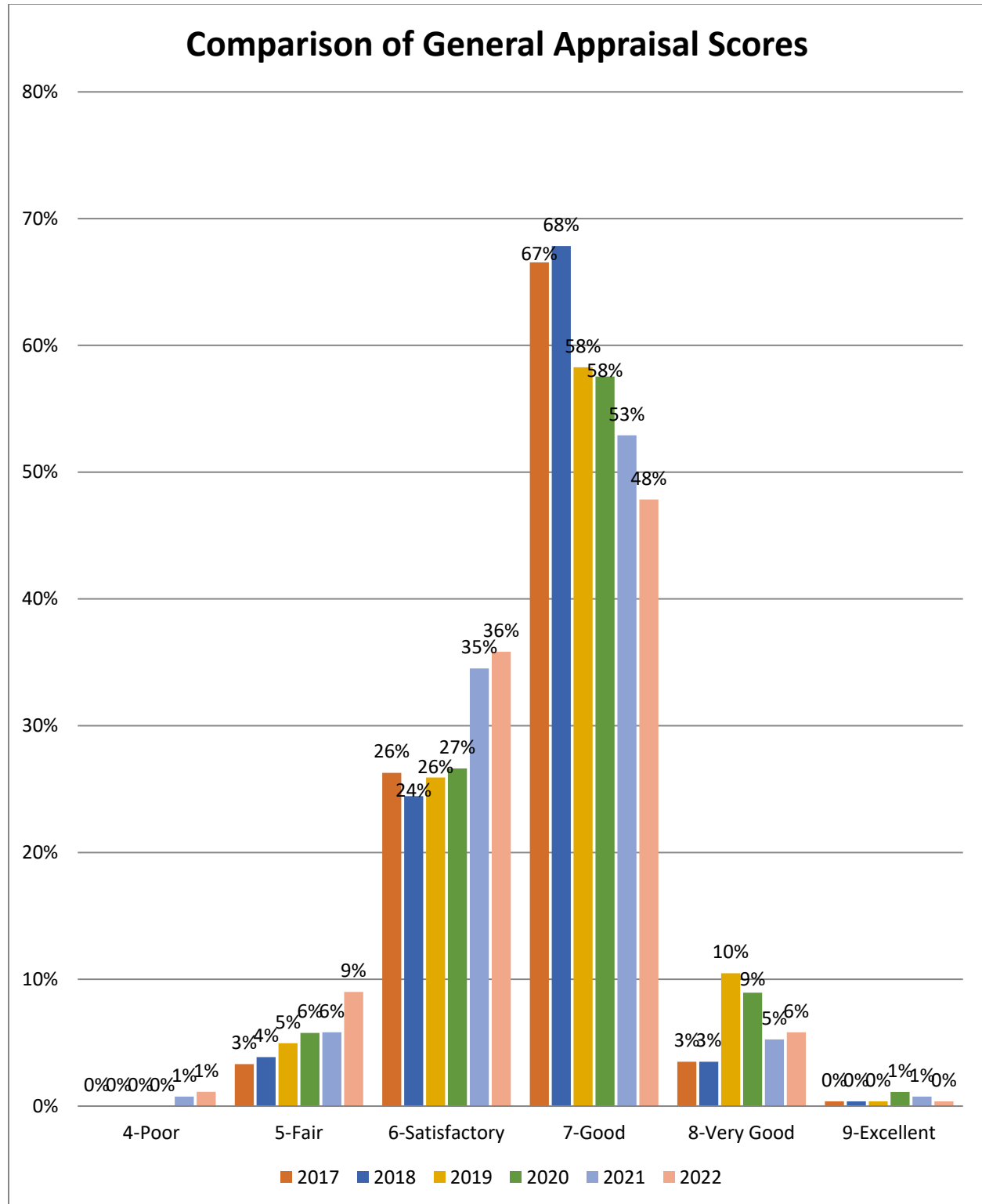


Figure 2.3.2 – Graph showing distribution of General Appraisal ratings for bridges maintained by the OTIC as viewed on the Assetwise inspection form from 2017-2022. (Note due to rounding and for clarity total may not equal 100% in some years)

Major and/or Fracture Critical Bridges

No Major Bridge Inspections were performed in 2022.

An arms-length fracture critical inspection will be performed on the Ohio Turnpike Mainline Bridge over Kelley Road. This inspection will be completed in accordance with FHWA and ODOT guidelines with the inspection reports submitted to OTIC under separate covers.

2022 Structure Improvements

The OTIC 2022 Capital Program includes minor to major repairs and rehabilitations to several structures along the Turnpike (Appendix D). During 2022, a total of four (4) bridges were rehabilitated with various repairs to elements such as decks, fencing, parapets, structural steel, bearings and joints. One (1) bridge was completely replaced, and two (2) bridges were repainted in 2022 to minimize future deterioration of the steel superstructures.

A total of five (5) bridges received significant work in 2022. This includes three (3) bridges receiving deck replacements, one (1) bridge being replaced, and two (2) bridges receiving structural steel repairs to damaged members following a bridge strike from an over-height vehicle.

Maintenance and Repair Recommendations

The “General Appraisal and Operational Status” rating given to each structure describes its overall condition. Based on a scale of 1 through 9, this rating is determined, in essence, by the Substructure or Superstructure (beams) conditions. Review of the summary ratings produced from the findings of the 2022 bridge safety inspections shows that substructure elements remain the predominant controlling factor in the overall General Appraisal ratings. 2014 was the first year Element Level Scoring Criteria was utilized in the bridge safety inspections. Element level scoring criteria assigns the score based on percentage deficient rather than a score based on the lowest deficient item controlling the entire score. For example, under the previous scoring system, a bridge where 90% of the superstructure is good, 5% is satisfactory, and 5% is fair; the entire structure would be rated as fair. Under the new element level scoring the superstructure would be rated as good. **Figure 2.3.3** shows that 5% of OTIC substructure summaries (21 structures) received below a satisfactory rating (NBIS-6), while 6% (28 structures) of the superstructure summaries received a rating below satisfactory (NBIS-6). **Figure 2.3.4 and**

Figure 2.3.5 show the changes over time between superstructure and substructure ratings for the last six (6) years.

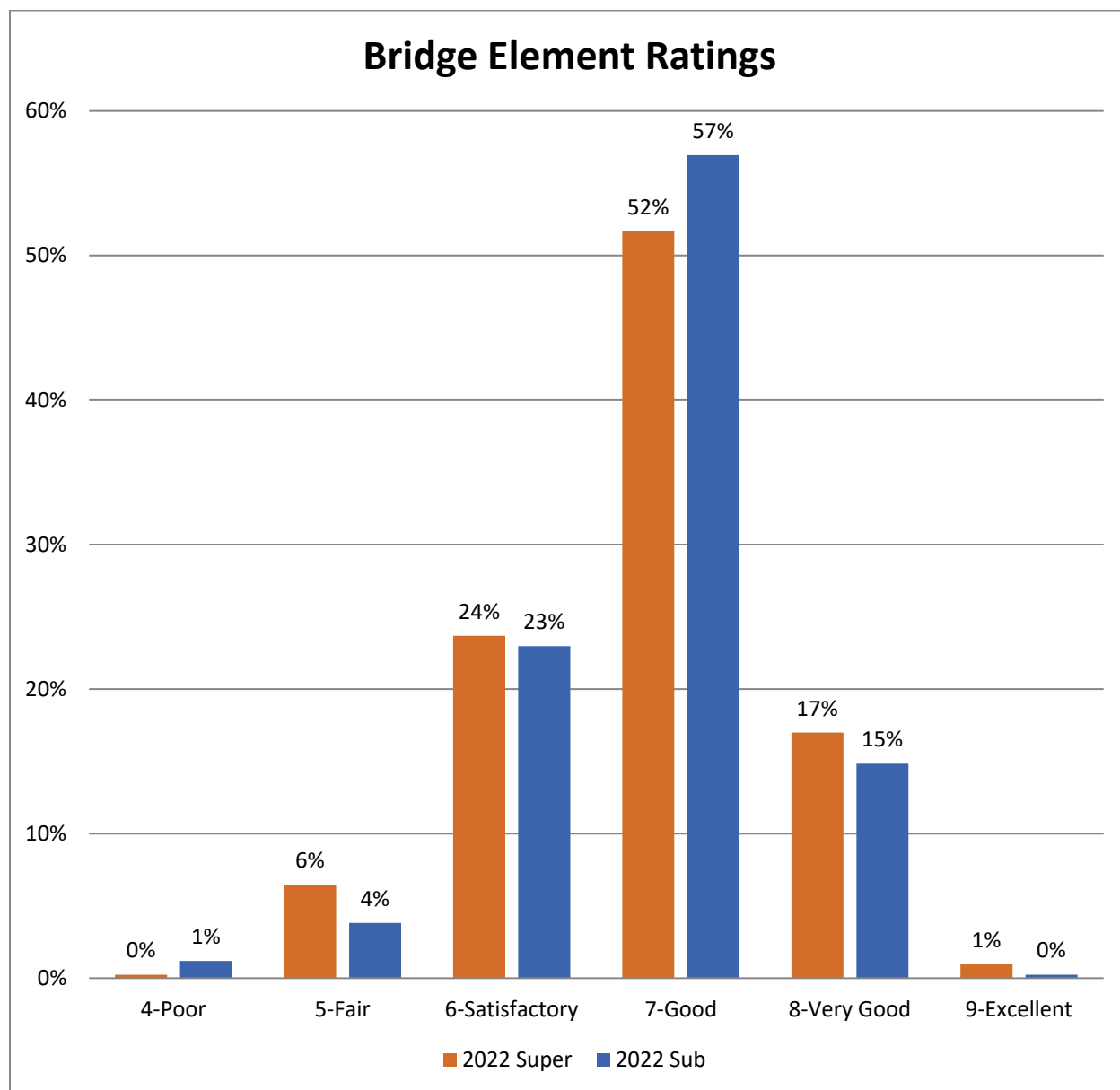


Figure 2.3.3 – Graph showing distribution of Superstructure and Substructure summary ratings for bridges maintained by the OTIC as viewed on the Assetwise inspection form. (Note due to rounding for clarity total may not equal 100%)

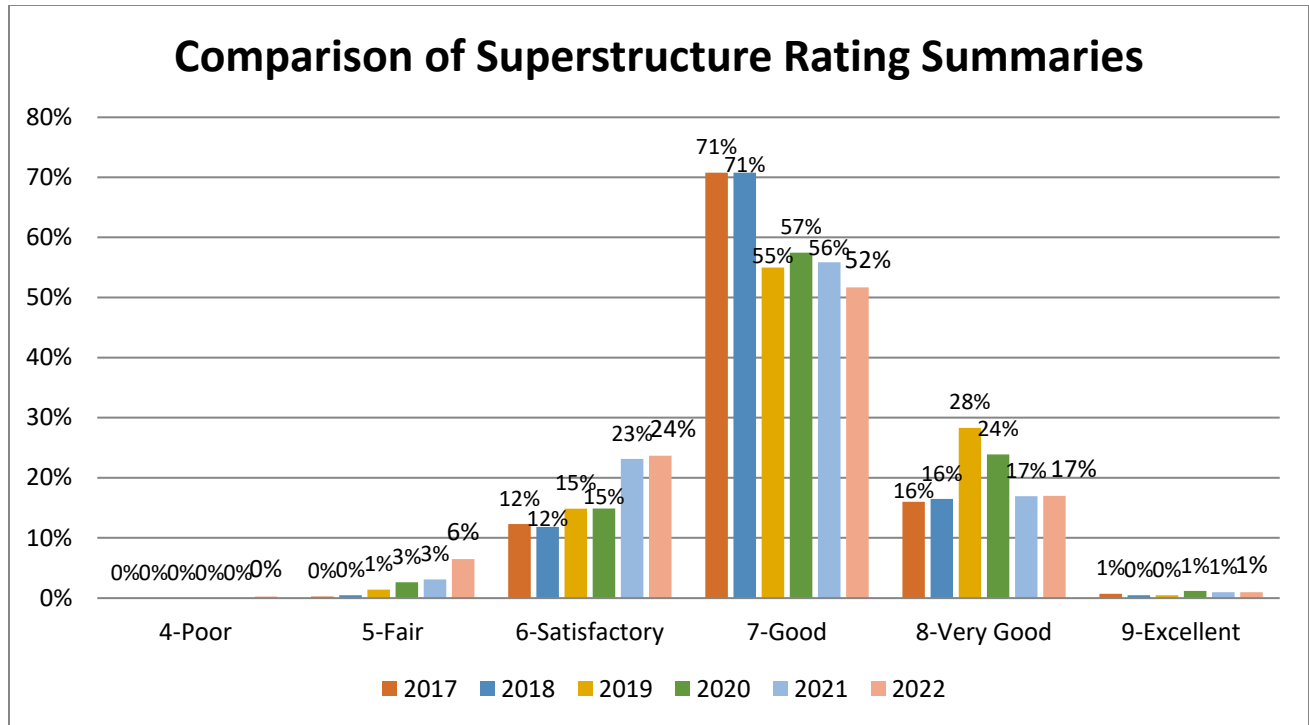


Figure 2.3.4 – Graph showing distribution of Superstructure summary ratings for bridges maintained by the OTIC as viewed on the Assetwise inspection form from 2017-2022. (Note due to rounding for clarity total may not equal 100% in some years)

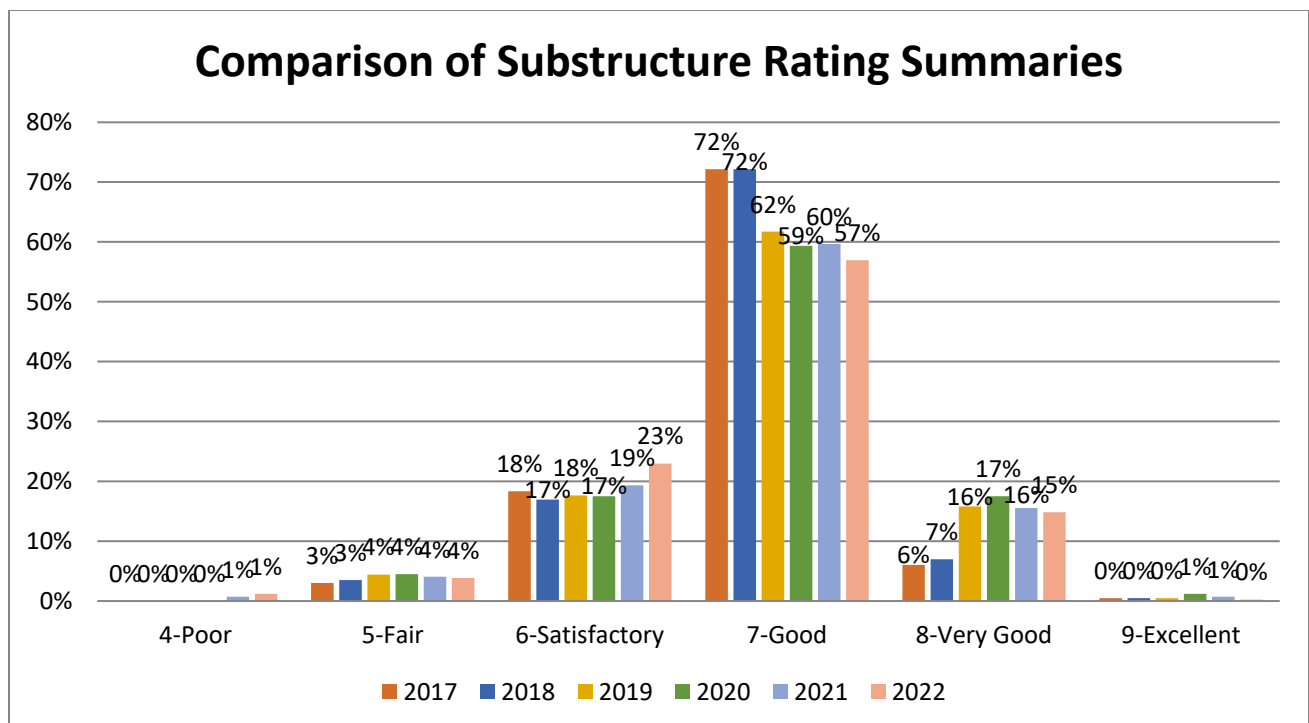


Figure 2.3.5 – Graph showing distribution of Substructure summary ratings for bridges maintained by the OTIC as viewed on the Assetwise inspection form from 2017-2022. (Note due to rounding for clarity total may not equal 100% in some years)

In general, a below satisfactory summary rating does not indicate a condition that is unsafe for either of these elements. However, based on the distribution of ratings, the OTIC should consider developing a substructure preventative maintenance and repair plan aimed to extend the usable life of these critical infrastructure elements as well.

Superstructure ratings for steel structures (the predominant type of superstructure on the Turnpike) are typically controlled by the amount of steel section loss and cracking in secondary diaphragm members and connection plates. The condition of the steel structures is generally good (NBIS-7) with regard to section loss. This can in large part be attributed to the OTIC ongoing bridge painting program.

Some structures were noted to have diaphragm and weld cracks forming as well as loosening connectors. OTIC should consider a long-term maintenance and repair plan to mitigate these effects and extend the useable life of the structures. As of 2022 this continues to occur in approximately fifty (50) structures and, while not being a safety issue, it should continue to be closely monitored. Additionally, as a part of the next inspection cycle, the OTIC should consider provisions for up-close, hands-on inspection of a random sample of bridges with this condition in order to better evaluate the extent of these deficiencies.

The impacts of steel corrosion at the original expansion bearings beneath expansion joints in the bridge decks throughout the Turnpike are pronounced. The development of large quantities of pack rust between the bearing components has created significant problems with bearing alignment and function in some locations. Bearing issues of this nature not only reduce the functionality of the bearing itself, but create significant problems in adjacent members including floating bearings, vertical misalignment of the expansion joints (leading to snow plow blade impact damage), and out of plane bending cracks at beam ends and stiffeners/diaphragms. Under past and ongoing bridge repair contracts, the OTIC rehabilitated and replaced many of these deficient bearings with an elastomeric type. Elastomeric bearings are less prone to this type of deterioration and should alleviate many of these issues in the future. Despite the bearing work already completed, many original and or rehabilitated bearings that were not replaced with elastomeric bearings still exhibit significant issues and the OTIC should consider developing an aggressive bearing rehabilitation and/or replacement program to improve long term serviceability and performance.

Over the past several years, many bridges on the Turnpike have been exhibiting delaminating parapet concrete over the mainline roadways. The potential for falling concrete poses a significant threat to the traveling public and, when discovered, is immediately addressed by both bridge inspectors and OTIC maintenance crews. The bridge safety inspections occur only one time a year and reveal many of these issues; however, these problems develop year-round and, as such, the OTIC should consider implementing a parapet monitoring program to minimize these public safety hazards. These parapet deficiencies typically occur at the vandal fence anchor locations.

AECOM recommends OTIC continue to budget for Bridge Maintenance and Replacement projects including deck overlays, deck replacements, and complete bridge replacements.

Documentation

As required by the Federal Highway Administration and the Ohio Department of Transportation, inspection reports for 2022 have been prepared by AECOM for the OTIC on all Turnpike bridges. A database containing the 2022 field inspection notes for all Turnpike structures, including photos, was submitted to the OTIC staff on July 29, 2022 to use in planning future maintenance and repair programs.

2.4 Culverts

Culverts Classified as Bridges

Structures having a clear span of ten (10) feet or greater are inspected and reported as bridges per Ohio Revised Code Section 5501.74 (Federal definition is twenty (20) feet or greater). There are currently 115 culverts that are owned and maintained by the OTIC which fall into the category of spans ten (10) feet and greater (thus classified as a bridge). The majority of these culverts are cast-in-place reinforced concrete box shapes with single or multiple cells. The most common deficiencies include deteriorated headwalls and wingwalls and obstruction and scour of the waterways. **Figure 2.4.1** shows a summary of the element level ratings for culverts (classified as bridges) maintained by the OTIC for 2017 through 2022.

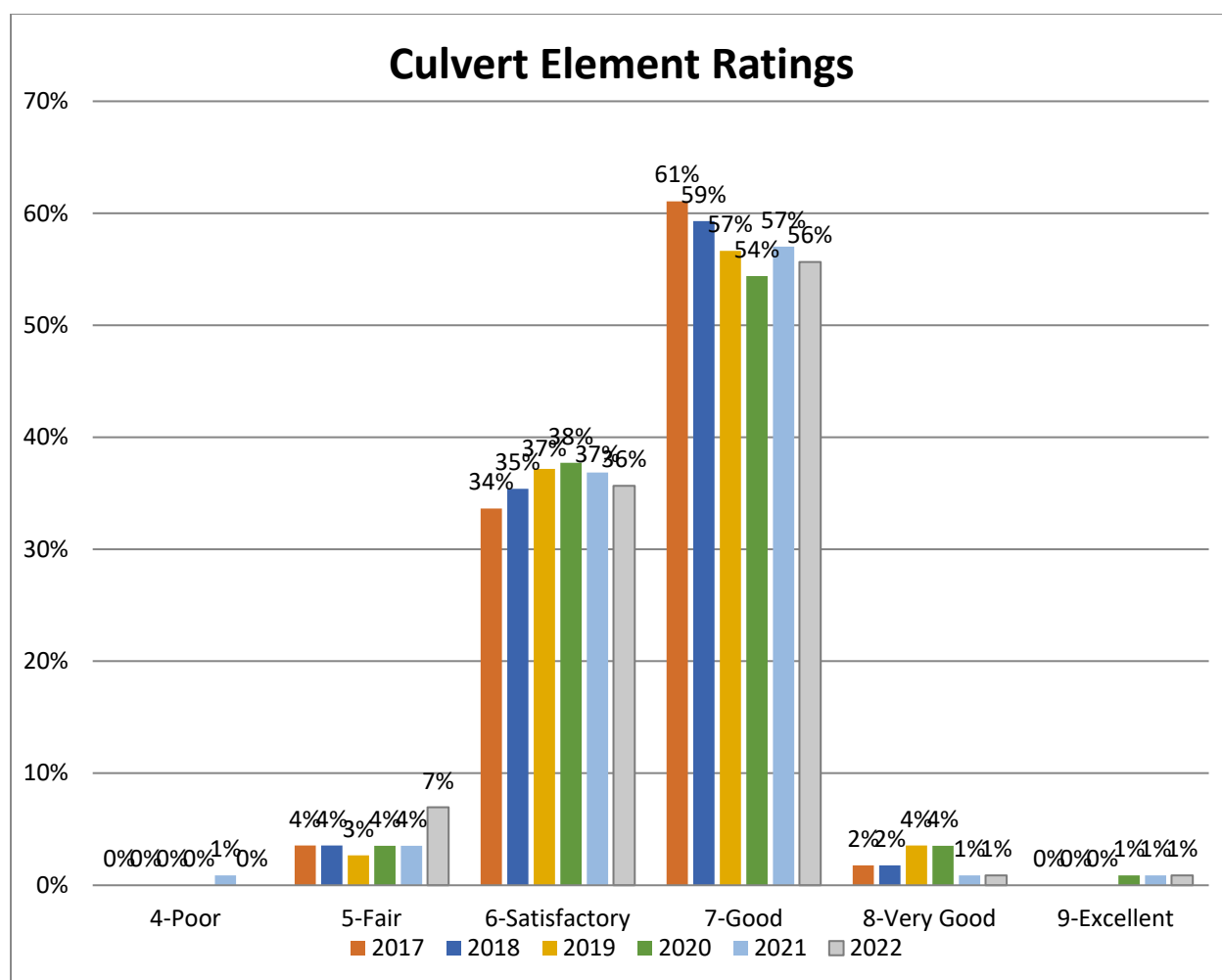


Figure 2.4.1 – Graph showing element ratings for culverts maintained by the OTIC as viewed on the Assetwise inspection form for 2017-2022 (Note due to rounding for clarity total may not equal 100% in some years)

Culverts Not Classified as Bridges

Structures with a clear span of less than ten (10) feet are not classified as bridges; however, their proper function is tied to the long term performance of the OTIC assets. The inventoried and inspected culverts range in size from 30" to 108" and are typically constructed of corrugated steel and reinforced concrete pipes. Culvert barrels are inspected closely to ensure early detection of deterioration which could merit repair or replacement. The deficiencies found in small culverts typically consist of broken channel and ditch protection, headwall deterioration, erosion, obstruction, and scour of the waterways. There are currently 471 culverts identified and inventoried by AECOM inspectors that are inspected annually as of the 2022 inspection. This number changes as drainage patterns are modified and structures are removed and added

to accommodate new drainage requirements resulting from pavement replacement and interchange modification projects.

Culvert Construction and Rehabilitation

Over the past twenty-seven years in conjunction with the Third Lane Program (MP 59.52 to 218.70), and more recently with the Pavement Replacement program, all culverts within a design contract section were inspected by the design consultants and any required repairs were included in the Third Lane or Pavement Replacement construction plans. This work was completed in addition to the annual inspections. Repairs typically included installing pipe liners, recoating bituminous pipes, realigning barrels, wingwall and headwall repairs and/or reconstruction with new flared end sections. Required ditch improvements were also included in these construction contracts. It should be noted here that culverts outside the limits of the Third Lane Program, are 60 plus years old. Per the current ODOT Location and Design manual the design lifespan of pipe materials is required to be 75 years or should be expected to be rehabilitated or replaced when a General Appraisal reaches 4. During 2022 inspections 10 culverts were rated at a 4. However, unlike the currently inspected culverts that are observed annually, culverts less than 30" have never been inspected or repaired outside of the Third Lane or Pavement Replacement programs. Several projects in the last few years have included slope repairs or were dedicated slope repairs themselves and had culvert repairs of conduits less than 30" that either contributed to, or were major reasons why the slope had failed. For these reasons it is recommended that the Commission consider expanding the culvert program to include inspection of culverts 12" to 30", develop a repair program to address the aging storm sewer system and, in general, help to protect the connected and adjacent facilities and roadways from failure.

2.5 Fence and Guardrail

The entire right-of-way of the Turnpike is fenced to deter the entrance of animals and pedestrians onto the roadways. The fence also serves as a demarcation of the right-of-way. The majority of this fence is the welded wire type farm fence. In 1987, a program was implemented to replace this fence in its entirety by the OTIC maintenance forces. As of 2022, approximately 95% of the fence was completed by this program. Portions of the fence have been difficult to replace due to rugged terrain or swampy areas. Currently, a combination of pavement replacement projects and OTIC maintenance forces continue to replace fence where necessary. In some areas, primarily where development has occurred adjacent to the Turnpike, a chain-link fence has replaced the welded wire fence. The chain-link fence is in generally good condition. Minor areas of damage have been noted where the fence terminates at the bridges. Comments and details pertaining to this damage have been included in the 2022 bridge inspection report.

The guardrail replacement program has continued and includes the replacement of deteriorated Type 5 guardrail, posts, blocks and hardware with the new guardrail standard, Midwest Guardrail System (MGS). The major portion of this work is performed with the Pavement Replacement Program and Resurfacing Projects. OTIC maintenance forces also replace portions of the outdated guardrail as part of an annual guardrail upgrade program, and where required, runs of guardrail are replaced in resurfacing projects. Replacement also includes upgrading end terminals and impact attenuators to meet the 2016 AASHTO Manual for Assessing Safety Hardware (MASH) crash standards.

In areas where Third Lane construction is complete, the 56 foot grass median strip has been replaced by two traffic lanes, paved shoulders and a 50-inch concrete median barrier. The concrete median barrier is currently in place for approximately 163 miles of the Turnpike, eliminating the need for interior guardrail in those areas.

AECOM recommends OTIC continue to budget for fence maintenance and replacement, and for guardrail and barrier system improvements as part of other capital projects.

2.6 Interchanges

The number of interchanges on the Turnpike is currently at thirty-one (31). Despite the age of the facility infrastructure, the interchanges and toll plazas are serving their intended function. The pavement resurfacing program for the Turnpike ramps is required to continue to keep the ramp pavement safe and smooth. Some of the tolling equipment, such as the toll booths frame and siding, toll booth HVAC, server room HVAC, and the utility building HVAC system, are in need of dedicated maintenance/replacement. Capital funds have been appropriated to fund the replacement of the aforementioned items on an as-needed basis, AECOM recommends this continue.

The OTIC has been operating with E-ZPass® for over twelve (12) years and continues to benefit from the electronic tolling system. Enhancements continue to be made to further streamline this service for the patrons of the Ohio Turnpike, including an upgrade to the credit card processing system which decreased processing times significantly. To enhance toll operation efficiencies, a total of fourteen (14) Automatic Toll Payment Machines (ATPMs) were installed at Toll Plazas TP-59, TP-64, TP-110, TP-118, TP-142, TP-180 and TP-209 in 2018. Construction of two (2) additional toll lanes for Toll Plaza 180 were completed in 2019, which included two (2) additional ATPMs. Furthermore, the Commission initiated a Toll Collection System and Customer Service Center Strategic Plan in 2016 to evaluate the current systems and plan for their upgrade in the near future.

The Ohio Turnpike's Toll Collection System and Customer Service Center Modernization Plan is expected to provide operational efficiency and meet the needs of customers into the foreseeable future. The plan, adopted by the Commission on December 18, 2017, includes the implementation of highway speed E-ZPass lanes at four (4) mainline locations, Westgate, MP 49, MP 211, and Eastgate. Construction of the new mainline toll plazas at Westgate (MP 4), MP 49, MP 211, and Eastgate is currently underway. This plan also includes the removal of nine (9) existing Toll Plazas (Toll Plazas 13 to 39, and Toll Plazas 215 to 234) after the operationalizing of the modernized toll collection system which is expected to be complete in mid 2023. In addition, the plan calls for the installation of an additional forty-eight (48) ATPMs and the removal of all toll lane gates from all Ohio Turnpike Toll Plaza entrance lanes and in E-ZPass-Only Exit lanes. Toll lane gates will remain in non E-ZPass Exit Lanes. For toll

enforcement, license plate image capture cameras are planned for installation to prevent revenue loss.

Interchange resurfacing continued in 2022, with a portion of the mainline ramps being resurfaced at TP 187. Additionally, the Commission completed the upgrade of the roadway lighting at Interchange 173 in 2022 with high-efficiency LED luminaires that significantly decrease maintenance and energy costs.

An overview of the toll plaza utility buildings and toll booths inspection findings and the Facility Plans is included in Section 2.8 Buildings.

2.7 Technology

The OTIC Technology Department operations are managed and supported by a team of seventeen(17) individuals.

Construction of the OTIC's Technology Building (formerly Telecommunications Building) was completed in 1999. The Technology Building is located adjacent to the Administration Building and continues to serve as the hub site for all OTIC technology systems. Prior to 1999, all telecommunications and data system equipment was installed in various rooms throughout the Administration Building. Installation of the new digital microwave equipment and fiber-optic equipment was completed in late 1999 and installation of the CRT touch-screen dispatch console system was completed in January 2000. The Technology Building became fully equipped and operational in February 2000, initially housing communications centers for both the OTIC and Ohio State Highway Patrol - Turnpike Operations as well as the offices of the Telecommunications Department and Ohio State Highway Patrol staff. In mid-2003, the OTIC Information Systems Department and Data Center were relocated to the Technology Building. In May, 2012 the OTIC combined its Telecommunications and Information Systems departments to form the new Technology Department. In February, 2015 the Ohio State Highway Patrol relocated its Communications Center to Post 18 in Brook Park, Ohio. Today, the Technology Building provides office space for the Technology Department operations, Communication Center operations, and Ohio State High Patrol staff and office personnel.

In 2015, the OTIC made the decision to migrate from its VHF high-band system to the State of Ohio's MARCS system. As part of the first phase of the project, the OTIC procured three (3) Motorola dispatch consoles and three (3) Motorola control points for its Communications Center. Additional control points were procured for each of its eight (8) maintenance facilities. Installation and training was completed in September, 2016. The Ohio State Highway Patrol (OSHP) replaced its entire fleet of portable radios and donated approximately four hundred (400) of the former portable radios to the OTIC, which are installed in OTIC vehicles, contracted disabled service vehicles and construction contractor's zone vehicles. In 2020 the OTIC further leveraged the use of MARCS to replace the antiquated intercom system used for communication between OTIC facilities.

The OTIC's SONET fiber optic system provides voice and data transport to the Berea Administration Building, thirty-one (31) toll plazas, eight (8) maintenance buildings, and fourteen (14) service plazas along the 241 miles of the Ohio Turnpike. In 1984, the OTIC approved a right-of-way agreement allowing Lumen (formerly Qwest Comm, LCI, Litel, CenturyLink) to install fiber-optic cable along the Turnpike right-of-way between MP 40 and MP 228. As part of that agreement, Lumen reserved twenty-four (24) fiber strands for the OTIC to utilize for its private telecommunications network. In 1998, the OTIC awarded contracts to install its own fiber optic cable from MP 40 to the Westgate terminal and from MP 228 to the Eastgate terminal to provide complete paths to all fifty-five (55) facilities. The contract for the design and installation of the OTIC's fiber optic system was also awarded in 1998, which was accepted by the OTIC when all data transport was successfully transferred in December of 1999. In the event of catastrophic failure at the primary hub, the system is designed to automatically switch all SONET traffic to the disaster recovery site. The installation of a secondary 24-strand fiber optic cable between the Technology Building and the disaster recovery site was completed in 2006. In late 2020 a health assessment of the existing fiber optic cabling was completed. This discovery project's primary objective was to gather necessary data on the optical infrastructure and to evaluate options for a "Future-State" network optical architecture.

In 2005, the OTIC awarded a contract for the development of a strategic plan for the implementation of intelligent transportation systems (ITS) components. As part of that study, it was determined that the OTIC existing fiber optic communication equipment would need to be replaced with higher capacity hardware components to provide the additional bandwidth required for future ITS components. As a result, the OTIC awarded a contract in June, 2007 to replace its existing SONET system with new switchgear to provide OC-192 bandwidth capacity for the west leg of the system and OC-48 for the east leg. Installation was completed in September 2008. Following end to end testing of the fiber in late 2020, the Commission approved the purchase of replacement fiber optic equipment in June of 2021, which will convert the existing SONET network to a Dense Wavelength Division Multiplexing (DWDM) packet network. Installation of this equipment began in mid-2022 and is expected to be concluded in early-2023. This change will allow for additional bandwidth and better support the new Toll Collection System scheduled to Go Live in Summer 2023.

The ITS study also resulted in the implementation of a geographic information system (GIS) designed to organize the OTIC's facility and structure data for which installation was completed in 2008. Upgrades to the GIS system were performed in 2014, which include new software versions and remote-access capability. Other ITS components recommended by the study include mainline variable message signs, an all facility messaging and alarm system, pavement weather monitoring system and an integrated video monitoring system. The video monitoring system would allow the OTIC to monitor and record activity at each of the OTIC toll plazas, service plazas, maintenance facilities and key locations along the Turnpike mainline to provide safety for the OTIC's employees and its customers, and would be designed with remote viewing capability to allow staff to view all cameras from the Administration Complex in Berea.

In 2016 a new contract was awarded to AECOM to re-evaluate the current ITS components as well as develop a new strategic plan to update and implement the ITS components. This study is complete and a number of the recommendations are being implemented with the planned new customer service center, toll system, and other technology initiatives underway and planned for in the future.

The OTIC utilizes a voice logging recorder to record all radio calls processed by the OTIC communications center, which features network capability and Blue Ray storage. In spring of 2012, the digital voice logging recorder was upgraded with new hardware and operating system to support the latest software version.

In 2015, the OTIC reviewed options for replacement of its PBX, voicemail and call accounting systems as the existing systems are obsolete and no longer supported by the manufacturers. In November, 2015, the OTIC chose to participate in a State of Ohio offering and contracted with Cincinnati Bell Technology Solutions (CBTS) to subscribe to its Next Generation Telephony System (NGTS). The CBTS NGTS is a subscriber-based Voice over IP (VoIP) phone system that utilizes primarily Cisco Systems hardware. Migration to CBTS was completed in April of 2017. In January 2022 the Commission went live with a new Intelligent Voice Response (IVR) System for its Customer Service Center complete with voice recognition, courtesy call back and support of Spanish as a second language. All features were designed to improve the overall Customer Experience. Future enhancements to better handle Unpaid and Violations Toll Payments are slated to go live in the Summer of 2023.

In mid-2012 the OTIC launched its new Employee Extranet which allows employees to access, forms, newsletters, etc. A project for replacement of the OTIC www.ohioturnpike.org website was awarded in April, 2013. Phase I of the project focused primarily on content and was completed in July, 2013. Phase II of the project, which includes replacement of the content management system and integration of the OTIC's Permitting website, was completed in late 2015. The final phase of the project, which provides for vendor registration and management, was completed in August of 2017.

In 2014, the OTIC replaced its network attached storage (NAS) system and obsolete data servers with a converged network infrastructure (CNI). As part of general lifecycle replacement, this hardware was upgraded to a Hyperconverged Infrastructure (HCI) in 2020. The new HCI provides greater server and data storage capacity, and full redundancy between the primary and disaster recovery sites. As part of this project, a new VEEAM Backup System for business continuity and disaster recovery was also implemented. All outdated core and edge data switches were replaced in the Spring of 2016 with new Cisco layer 2 and layer 3 switches that feature power over Ethernet (PoE), which was needed to support the new VoIP phone system. The project also provided for the purchase and installation of an intrusion detection and prevention system (IDS/IPS), a new wireless controller, and Wi-Fi access points for all maintenance facilities, toll plazas and service plazas to provide connectivity for wireless VoIP phones as well as future mobile data needs. This equipment is being upgraded as part of the ongoing total network refresh and will provide Layer 3 connectivity to all locations, along with additional ports to allow for future growth.

Contracts were awarded in 2014 for upgrades to the OTIC's enterprise resource planning (ERP) system and for the replacement of the OTIC's document imaging/management system. Migration to the new ERP version was successfully completed in February, 2015 and deployment of new ERP tools including enhancements to the OTIC's purchasing card process was completed in 2016. Further upgrade to the ERP system was made in 2022 which allowed for increased functionality without the need of a thick client being installed. The pilot phase of the new document management system was completed in September, 2015; subsequent phases are currently undergoing design. In lieu of hosting its own email system, the OTIC determined it was more efficient and cost effective to subscribe to Microsoft Office 365 (O365) via the State of Ohio's Microsoft Enterprise Agreement. All existing email accounts were

migrated in October, 2015. Immediately thereafter, new email accounts were established for OTIC employees that did not previously have an account to provide a direct method of sharing information. The OTIC continues to utilize this service provided by the State of Ohio Office of Information Technology and continues to leverage the suite of O365 applications, such as Teams, which have become vital in continuing operations during the Covid-19 pandemic and subsequent hybrid work environment.

The OTIC selected a Managed Print Services (MPS) solution for the Administration Complex in 2016 when console-type multifunction units were installed in strategic locations throughout the two (2) buildings. The current individual desktop printers will be eliminated as they fail. An assessment of the HR/payroll system conducted in the Spring of 2016 resulted in the addition of an Employee Self-Service (ESS) module, which provides employees online access to pay stub information and leave balances as well as the ability to self-perform open enrollment and contact changes. ESS was implemented in November of 2016. A contract was also awarded for the implementation of Kronos workforce management software and terminals to provide for an efficient system of timekeeping, leave tracking and scheduling. This implementation was completed by the end of 2018.

In 2018, the OTIC implemented the Motorola Premier Computer-Aided Dispatch solution through a hosted agreement with the State of Ohio Multi—Agency Radio Communication System (MARCS) in the OTIC Communications Center. Device (pc/tablet/notebook) life-cycle replacements replacing the Windows 7 operating system with the Windows 10 operating system were rolled out to both maintenance facilities and the technology department. As part of adding ATPMs to various toll plaza lanes, remote monitoring personal computer and large monitors were installed in designated toll plazas to enhance remote monitoring capabilities of toll plazas during un-staffed hours. The Technology Department launched a new maintenance and prevention program for batteries and UPS systems utilized in communication rooms in facilities across the Turnpike and completed a project to better automate the Technology HelpDesk for improved customer service. A vulnerability penetration test was completed on the OTIC network by the Ohio National Guard Cyber Unit to identify cybersecurity strengths and weaknesses across the OTIC network. The OTIC implemented TowBook, a disabled vehicle response system to better manage incident response across the Ohio Turnpike. The DVTEL/FLIR video system utilized to monitor lanes at toll plazas was updated and expanded. Finally, the OTIC

integrated the OTIC incident notification system with WAZE to provide real-time incident traffic alerts to travelers utilizing the WAZE app.

In 2019 the OTIC completed installation of a fleet modernization and safety notification system utilizing DSRC connected vehicle and edge computing technology. This project involved a sixty (60) mile test road on the Ohio Turnpike with fifteen (15) roadside units communicating with thirty-eight (38) OTIC vehicles. The system allows for snow & ice removal operational data and vehicle operational data to be transmitted real-time to an operational management dashboard and allows for safety messages to be transmitted to a human interface installed in these vehicles. In conjunction with Agile Network Builders Public Wi-Fi was made available to customers inside of the Commission's 14 Service Plaza locations. The buildout will also be leveraged to provide fiber redundancy to the OTIC's Fiber Optic Network. Technology assisted HR in the Implementation of the Cornerstone learning content management system for online training and curriculum for all OTIC employees. New presentation and video conferencing systems were installed in three of the conference rooms in the Berea Administrative Complex.

In 2020 the OTIC was able to successfully migrate a large portion of its administrative workforce to work from home as a response to the Covid-19 pandemic. Although operations looked different, upgrades to the Data Center Hardware and Database Servers to better support business-critical applications was completed. Other projects including an enhancement to the Video Surveillance System at the Administration Complex, the configuration and implementation of a Veeam backup solution, implementation of an OnBase solution for the Legal Department, improved integration of password self-reset for O365 accounts with the Innovate Ohio Platform, upgrade of the Kronos Timekeeping Solution to eliminate Flash, and the successful migration of the Toll Intercom to the MARCS network were also completed. The OTIC was also able to rollout and administer Security Awareness Training, in conjunction with the State of Ohio Department of Administrative Services and the Office of Information Security and Privacy, to all its employees.

In February of 2022 the Commission approved replacement of its aged Toll Intercom System which allows for booth-to-booth communications at the Toll Plazas and the ability to talk directly with the Communications Center. This system takes advantage of the MARCS network and has

become a major part of emergency communication. The approved replacement includes upgrade of speakers in the Maintenance Facilities and installation in the Service Plazas to provide paging services, timely severe weather, and emergency notification to customers. Installation is expected to be completed in early 2023. Camera systems were also greatly improved in 2022 as new cameras were installed in all Service Plazas and work began at the Toll Plazas. Installation is expected to be completed in early 2023.

Additional Technology Projects planned for 2022-2023 include the following:

- Continued upgrade and replacement of the existing 48V VDC Batteries and Inverters
- Additional security awareness training programs to all employees
- Continued upgrade and further enhancement of Video Surveillance Systems
- Installation of ITS Cameras
- Upgrade of the Commission's GIS and OnBase Systems
- Hardware Replacement and reconfiguration of the Commission's Wireless Network
- Installation of a proof-of-concept Distributed Antenna System
- Lifecycle replacement of Maintenance and Toll Plaza Computers

AECOM recommends OTIC continue to fund these projects to maintain modern technology systems that support efficient operations.

2.8 Buildings

Inspection

A visual inspection of all buildings maintained by the OTIC is performed annually. The inspection includes, but is not limited to, interior and exterior conditions of all structures and storage facilities, potential health and safety risks due to structure conditions and the condition and performance of roofing, electrical, plumbing and HVAC systems. A database and printed copy of the field inspection notes have been provided to the OTIC by the Consulting Engineer (AECOM) to aid in the future construction planning and maintenance of the OTIC. Please see **Table 2.8.1** for a list of all buildings located on the Turnpike.

In 2017, Prime AE of Akron, Ohio was selected to develop a Facilities Strategic Plan for the Ohio Turnpike Commission's Maintenance Buildings, Administration Buildings, Service and Toll Plazas. The strategic plan for the maintenance buildings was completed and the subsequent implementation of it is ongoing with planned raze and rebuilding expected to begin in 2028.

When completed, the Facilities Strategic Plan will identify, quantify and prioritize capital and facility maintenance activities.

**Table 2.8.1 Total number of buildings on the Turnpike*

Building	Qty
Administration Building	1
Technology Building / Vehicle Maintenance Garage	1
Maintenance Buildings	8
Sign Shop	1
Ohio State Highway Patrol Buildings	1
Toll Plaza/Interchanges	31
Service Plaza Buildings	14
Total	57

*The total does not include ancillary buildings, such as vehicle storage garages, salt domes, equipment storage buildings, toll booths and sewage and water treatment plant buildings.

Administration Building Complex

The Administration Building, located adjacent to the Turnpike in the City of Berea, houses the following administrative departments; Executive, Legal, CFO/Comptroller, Human Resources, Accounting, Procurement, Contract Administration, Audit, Marketing & Communications, Payroll, Office Services, Safety Services, Service Plaza Operations, Toll Operations, Customer Service Center, Maintenance and Engineering. A vehicle maintenance garage and contiguous Technology Building are located east of the Administration Building and houses technology staff, computer center, Turnpike radio communications center and Ohio State Highway Patrol Turnpike operations center. Starting in 2002, there were a series of interior Administration Building renovations to improve the restrooms, use of office space, interior finishes, computer/phone cabling, HVAC and lighting. Renovations completed in 2009 made accommodations for E-ZPass transponder processing and the Customer Service Center. In 2013 and 2014 the Administration Building and Technology Building received upgrades to their aging HVAC systems. In 2017, the north wing boiler at the Administration Building was replaced with a high efficiency boiler and improvements were made to the second floor of the Technology Building. These included a reconfiguration of the office space to allow for eleven (11) work stations. In 2018, additional second floor improvements were made to the Technology Building with the addition of a conference room, storage room and new HVAC units for the Communications Equipment Room. In 2019 the boiler in the Technology Building was replaced with a high efficiency boiler and upgrades to the Administration and Technology building HVAC controls have been completed.

The Administration Building, vehicle maintenance garage, and Technology Building have been maintained in generally good condition. However, the Administration Building does have some deficiencies in the building envelope such as leaking at the skylight and window systems during heavy rains and some water infiltration through the exterior sandstone system. A roof overlay of the existing high roof area was completed in 2020 to address some of these deficiencies, and the foam roof on the South wing of the Administration Building is scheduled to have an overlay installed in 2022. The Commission replaced two (2) of its gasoline powered passenger car type pool vehicles with two (2) fully electric powered vehicles in 2021. To provide reasonable charge rates, a dual dispense Level 2 charger was installed at the pool vehicle parking area.

Maintenance Buildings

The maintenance buildings consist of eight (8) steel and masonry structures housing a central main bay with adjacent offices, restrooms, break room, mechanic bays, inventory and storage areas. Additionally, every maintenance facility includes a salt dome of concrete and wood construction and other storage buildings constructed of metal, wood or a combination. The maintenance buildings were found to be in generally good condition, with deficiencies noted below.

Typical deficiencies include minor scattered damage to the brick façade, minor surface rust to interior and exterior metal surfaces and cracking to the concrete floor throughout the main bay areas. Previously, the roof system on nearly all maintenance buildings was found to be in a deteriorated state, allowing water infiltration in several locations. The Facilities Strategic Plan for Maintenance Buildings calls for a complete raze and rebuild of the buildings beginning in 2028. However, to address the deficient state of the deteriorated, leaking roofs at all Maintenance Buildings, 15-year warranty roof replacements and overlays were completed between 2018 and 2020.

The additional buildings located at the maintenance facilities were also found to be in generally good condition. Typical deficiencies noted include minor damage to exterior of structures due to impact. Several older storage garages throughout the Turnpike are reaching levels of moderate to significant deterioration. These facilities were included in the Facilities Strategic Plan noted previously and are planned to be razed and rebuilt starting in 2028.

In 2019, the FuelMaster fuel management system was installed at all eight (8) maintenance buildings. FuelMaster automates the management of fuel inventory by controlling access to the fuel pumps and recording the employee, vehicle/equipment, mileage, and amount of fuel dispensed for each transaction.

Highway Patrol Facilities

All Ohio State Highway Patrol facilities are in generally good condition and have been well maintained. The parking lot at the Milan Patrol Post 90 (MP 118.5) was resurfaced in 2016.

Toll Plaza Buildings

With limited exception, the overall appearance of the toll plazas, including toll booths, canopies and utility buildings, as well as additional buildings or storage areas where applicable were found to be in satisfactory condition.

Many toll booths are nearing a point of moderate deterioration with areas of complete section loss along the lower portions, requiring consideration for repair or replacement. Newly renovated and newly constructed toll plazas are in good condition and have been generally well maintained.

The mechanical systems that serve the Toll Booths and Utility Buildings require some improvements. The HVAC technology is antiquated with constant volume AHU's and pumps, and inefficient control schemes. Numerous comfort and energy efficient upgrades could be made to the buildings. In 2017, upgrades were made to Toll Plaza 180 air handlers and controls, providing more comfort to the booths and improving efficiency. The air conditioning system for the communication rooms at Toll Plazas 161 & 209 were replaced with ductless units in 2019, and the same replacement was completed in 2020 at Toll Plazas 140 & 239.

In 2017, Jacobs Engineering Group made general recommendations regarding the Commission's aging toll collection system and the associated toll plaza facilities. The implementation of this plan is ongoing with changes to the toll plaza facilities and associated infrastructure. Three new mainline toll plazas are part of the modernization. Toll Plazas 4 and 211 are expected to be completed by the end of 2022. Toll Plaza 49 was completed in 2021 and is being used as a test site for the new toll collection system.

Service Plaza Buildings

Currently there are fourteen (14) Service Plazas in operation on the Turnpike. See **Table 2.8.2** for a list of the Service Plazas.

As of 2013, all the original service plaza facilities dating to the early 1950's have been demolished and/or replaced. The new service plazas are designed to accommodate the Turnpike travelers and professional drivers with amenities including a food court arrangement with a sit-down restaurant and multiple fast food vendors, electronic travel and weather information centers, and retail outlets. Special trucker areas have been incorporated including a lounge, laundry and shower facilities.

Currently, one (1) set of service plazas (Oak Openings and Fallen Timbers at MP 49.0) was demolished in 2012, has not been reconstructed, and will not be as that location will serve as Toll Plaza 49 as part of the Toll Collection System Modernization.

Table 2.8.2 Service Plazas in Operation on the Turnpike

<u>EASTBOUND SERVICE PLAZAS</u>	<u>WESTBOUND SERVICE PLAZAS</u>
Tiffin River (MP 20.8)	Glacier Hills (MP 237.3)
Wyandot (MP 76.9)	Portage (MP 197.0)
Commodore Perry (MP 100.0)	Great Lakes (MP 170.1)
Vermilion Valley (MP 139.5)	Middle Ridge (MP 139.5)
Towpath (MP 170.1)	Erie Islands (MP 100.0)
Brady's Leap (MP 197.0)	Blue Heron (MP 76.9)
Mahoning Valley (MP 237.2)	Indian Meadow (MP 20.8)

Updates to the service plazas continued in 2015, with approximately \$3,400,000 in total renovations being performed at the Great Lakes and Towpath Service Plazas (MP 170.1) and Portage and Brady's Leap Service Plazas (MP 197). Also, in 2014 a program was initiated to upgrade underground gasoline and diesel fuel lines to fiberglass, starting with the Erie Island and Commodore Perry Service Plazas. Fuel system upgrades were completed at the Great Lakes and Towpath Service Plazas in 2016, the Portage and Brady's Leap Service Plazas in 2017, and the Middle Ridge and Vermilion Valley Service Plazas in 2018. In addition, the truck parking areas at Erie Island (MP 100.0) and Vermilion Valley (MP 139.5) were repaired and resurfaced in 2016. Commodore Perry and Erie Islands roof membrane replacements were completed in 2019. Systematic upgrade and replacements of mechanical components continued in 2022 of the service plazas, including hot water tank replacements with tankless-

type systems. AECOM recommends OTIC continue periodic upgrades and rehabilitation of these facilities.

Renovation of Middle Ridge and Vermillion Valley (139.5) were completed in 2021. This renovation included replacement of the chillers and HVAC system upgrades, conversion of the hot water tanks to a new tankless hot water system, Water Tower altitude valve replacement and paint coating, renovation of the trucker lounge area, information center, and community rooms.

The Service Plazas were found to be in generally good condition. The Service Plazas are served by multiple air handling units (AHU's) with air cooled chillers and/or condensing units. Each has hot water heating with two (2) 80% efficient Bryan boilers serving hot water radiators in the rotunda and coils in the AHU's. The cooling at the AHU's is accomplished with refrigerant split systems or chilled water coils. The air-cooled chiller or condensing unit is located outside on grade. In addition to replacing the chillers at Middle Ridge and Vermillion Valley (139.5) with the 2021 renovation project, the condensing units at Great Lakes and Towpath Service Plazas (MP 170.1) and Portage and Brady's Leap Service Plazas (MP 197) were replaced in 2021, which also included replacing R22 refrigerant with Bluon™ alternative refrigerant to reduce energy consumption and comply with the EPA Clean Air Act.

The wastewater treatment plant at Erie Islands Service Plaza (MP 100.0) is in generally good condition, with no significant defects. A Lift Station study was previously completed and the Turnpike has entered into a sewer utility agreement with the City of Clyde to develop the path forward on public sewer treatment. The design of a pump station and sanitary sewer force main is expected be completed during 2022 with construction in 2023.

The Portage Service Plaza (MP 197.0) sanitary pump station was upgraded in 2020 and included replacing existing pumps, equipment, controls, pump house, and included a pigging station for future maintenance.

In 2019 Electric Vehicle Charging stations were added at the Indian Meadow, Tiffin River, Blue Heron, and Wyandot Service Plazas. The Electrify America stations offer CCS, CHAdeMO, and J1772™ connectors that feature 50 kilowatt (kW), 150kW and 350kW DC Fast Chargers. This means that almost every EV model on the road today can charge at one of the 16 available charging stations. Tesla Supercharger stations were installed in 2021 at the Blue Heron and Wyandot Service Plazas. Construction of Tesla Supercharger stations is underway at the Indian Meadow, Tiffin River, Great Lakes, Towpath, Mahoning Valley, and Glacier Hills Service Plazas and will be in service by the end of 2022.

General

OTIC began implementing Asset Essentials software to improve the overall facility management process. This software creates a tracking system for maintenance requests, preventative maintenance work, comprehensive compliance management and insight into asset costs. Key performance indicators will be more visible, enabling the Turnpike to operate with higher efficiency in facility management. On time completion of work orders is currently being tracked and reported monthly and will be used to gauge best practices for properly managing resources.

2.9 Maintenance Organization and Equipment

Eight (8) maintenance buildings are located at approximately 30-mile intervals along the Turnpike. Each of these buildings serves as headquarters for a maintenance section and is headed by a section foreman. Maintenance equipment and supplies are stored in these buildings and in the adjacent yards. The OTIC maintenance organization is divided into two (2) divisions, each under the direction of a division superintendent. Each division consists of four (4) maintenance sections. The western division personnel and equipment is housed in the Elmore Maintenance building, and the eastern division is housed in the Hiram Maintenance building.

The maintenance section personnel perform work such as snow removal, mowing, pavement and minor bridge repairs and maintenance, joint sealing of roadways, right-of-way fence repair and replacement, guardrail repair and replacement, storm water and sanitary sewer repairs and replacements, policing the right-of-way and maintenance and repair of vehicles and equipment. The division personnel consist of various tradesmen and mechanics that perform such duties as mechanical and electrical work, equipment repair, operation and maintenance of utilities, and perform major (non-routine) work items, with the assistance of the maintenance section, not performed under contract. Mobile equipment such as trucks, excavators, backhoes and rollers, front-end and skid steer loaders, conveyors, and other construction/maintenance equipment continues to be well maintained by the maintenance personnel and replaced at the end of its service life cycle.

AECOM recommends OTIC continue to fund the Renewal and Replacement Program to ensure maintenance operations and equipment needs are met.

2.10 Safety and Signs

The Ohio State Highway Patrol (OSHP) developed an electronic OH-1 crash reporting system that was instituted on the Turnpike in March of 2008. To accommodate the changes, the OTIC developed a file transfer system in cooperation with the OSHP. The combination of these changes significantly reduces the amount of time between the actual crash and the OTIC's ability to process crash data. This new electronic system allows for a greater level of accuracy in the OTIC reporting system.

The OTIC Safety Services Department has documented an increase in crashes over the past couple years. The crash rate per one hundred million vehicle miles increased from 76.9 in 2020 to 77.9 in 2021, and the fatality rate decreased from 0.5 in 2020 to 0.4 in 2021. **Appendix E** contains crash statistics including traffic accidents and fatalities and annual accident rates and fatality rates per one hundred million vehicle miles of travel. **Table 2.10.1** indicates the causes to which accidents have been attributed for the past ten (10) years.

Table 2.10.1 Ohio Turnpike Accident Causation Factors

CAUSE OF Crash	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
Tire Condition	59	49	48	44	27	23	14	---	1	---	---
Mechanical Failure	1	2	1	2	---	1	6	---	---	---	---
Exceeding Speed Limit	4	4	1	2	5	2	---	3	3	7	3
High Wind	4	3	54	12	---	1	---	---	---	---	---
Unsafe Conditions (Speed, Fog/Smoke, Rain, Snow)	735	1253	808	614	---	300	357	366	336	372	348
Other Reasons	2	2	3	2	---	54	1	---	---	---	---
Improper Parking/Backing/Starting	818	725	881	777	724	690	563	363	318	397	272
Fire	44	40	47	57	38	36	29	16	19	23	18
Improper Passing/ Fail. to Yield	9	19	10	15	7	13	3	11	7	18	7
Driver Asleep/Sleepy	60	53	54	61	56	62	31	155	121	145	101
Driver Ill	8	10	3	15	13	4	6	10	5	6	8
Driver Drinking/ Intoxicated	24	25	31	38	35	36	21	34	41	50	21
Driver Inattention/ Carelessness	84	119	182	47	36	38	20	1	1	1	1
Driver/Other	7	20	20	15	19	17	8	99	89	141	106
Person Fell from Vehicle	2	1	1	---	---	1	---	---	---	---	---
Object on Roadway/ Thrown	9	62	65	82	99	76	74	71	77	49	39
Object Dropped off Overpass	---	---	---	---	---	---	---	---	---	---	---
Deer on Roadway	324	318	319	307	292	279	135	277	224	246	104
Other Animal/Bird on Roadway	15	16	15	14	15	14	7	14	10	18	9
Vehicle Stopped/Slowed	12	17	9	11	6	10	4	68	43	68	46
Unsecure Load	25	15	19	21	15	18	12	---	1	---	3
Pedestrian/Passenger Action	4	3	1	3	1	---	4	1	4	3	2
Illegal Use of Crossover	19	9	2	6	8	5	8	4	3	4	5
Following Too Closely/ A.C.D.A	---	---	---	---	1	---	---	110	90	177	85
Unsafe Vehicle	100	56	52	51	37	23	13	---	1	3	---
Side-Swiped	---	1	---	---	---	144	57	---	---	---	---
Rear-Ended	---	95	106	109	118	115	45	---	---	---	---
Swerving to Avoid	5	4	3	11	8	4	5	---	---	---	---
Failure to Control	61	47	36	34	31	36	19	27	37	38	20
Other Improper Action	101	32	35	50	51	19	15	1	---	---	---
Operation Vehicle in Erratic	---	1	---	1	1	---	1	9	9	11	7
Defective Lights	1	1	---	1	1	---	---	---	---	---	---
Not at fault	743	637	701	685	723	716	374	595	472	613	498
TOTAL	2598	2380	2642	2459	2367	2238	2397	2235	1912	2390	1702

*Eight month span ending in August 31, 2022

A visual inspection of all overhead sign structures is performed every five (5) years. The sign structures are currently in the process of being inspected and a report will be provided later this year or early 2023. Previously, inspections were performed in 2018. With noted exceptions, the sign structures were found to be in generally good condition. Common deficiencies include minor damage to the lettering and sign panels and minor surface corrosion. A detailed inspection report was provided to the OTIC in 2018 to aid in planning for future repairs. In addition to the visual inspection of signs, a visual inspection of light tower poles and foundations was performed in 2020 in accordance with OTIC and ODOT procedures for inspection. With noted exceptions, the light towers were found to be in generally good condition. A detailed inspection report was provided in 2020 to OTIC to aid in future repairs.

The OTIC has a staffed Sign Shop that routinely performs the removal, fabrication and replacement of missing, obsolete, damaged and/or non-reflective traffic signs. Additionally, the Sign Shop fabricates the necessary guide, warning and regulatory signs for the mainline roadway, ramps and plaza areas.

The Sign Shop furnishes all the permanent signs needed for the Pavement Replacement Program, mainline resurfacing contracts, toll plaza ramp resurfacing, bridge construction, as well as toll and service plaza renovation projects.

In 2016, the OTIC began an overhead sign structure replacement program, which includes replacing all deficient overhead sign structures, as well as, replacing all overhead sign structures and signs within the two-lane sections of the Turnpike over a ten (10) year period. The first project, performed in 2016, included eleven (11) sign structures between MP 0.0 and MP 65.0. During 2017 another ten (10) sign structures were replaced near MP 3.75, 53.0, and several between MP 237.2 and MP 240.65. In 2018, thirteen (13) sign structures were replaced primarily in the MP 230.75 to MP 236.25 area. In 2019, eight (8) sign structures were replaced. Two (2) at Toll Plaza 142 and the remaining six (6) are located between MP 214.35 and MP 220.40. In 2020, eight (8) sign structures were replaced at Toll Plaza 13. As a result of the four major Toll Collection System projects, from 2021 to 2023, seven (7) existing sign structures will be replaced, fifteen (15) existing sign structures will be removed and seventy-three (73) new sign structures will be installed.

The OTIC currently, by contract, replaces all pavement markings located on the mainline, the interchange ramps, and service plaza acceleration and deceleration ramps on an annual basis. OTIC Sign Shop employees replace all pavement markings within the service plazas, maintenance buildings and all toll plazas on an annual basis. The OTIC pavement markings are installed using a high quality, fast dry, water-based, acrylic paint system, and glass beads. The glass beads are designed to enhance the retro-reflectivity of the markings during wet pavement and/or nighttime conditions.

Maintenance personnel routinely repair the roadside delineation and replace damaged and/or missing raised pavement marker (RPM) reflectors.

AECOM recommends continued funding for the maintenance and/or replacement of signs, sign structures, pavement markings, raised pavement markers, delineators and lighting.

Traffic Incident Management (TIM) is the coordinated detection, response to and removal of traffic incidents and the restoration of traffic capacity as quickly and safely as possible. TIM is a coordinated effort both internally and externally.

TIM depends on communication among responsible personnel (e.g., in incident reporting, response dispatch, and traffic management). Experience gained from each incident provides opportunities to improve our TIM performance. Both communication and learning from experience are being enhanced by new technology and management practices, such as Google Maps Traffic, geo-located device inventory (GIS), communication procedures (e.g., standardization of terminology and adoption of shared radio frequencies), and channels for communicating with travelers (Facebook, Twitter, Instagram etc.).

The OTIC is committed to the efficient operation of the Ohio Turnpike. While various police and fire agencies have the statutory authority to close travel lanes, the Commission works to minimize the disruption to the traveling public by assisting with traffic control, developing pre-planned diversion routes and advocating quick clearance of major traffic crashes.

To this end, the OTIC continues to refine their Incident Management Playbook. The Playbook can be downloaded at: <https://www.ohioturnpike.org/ohio-turnpike-and-infrastructure-commission-incident-management-playbook>

As a means of decreasing the likelihood and severity of crashes and reducing queuing and delay, OTIC Permitted Lane Closure Schedule (PLC) provides pre-approved lane closure schedules for each segment of the Turnpike.

Some segments are deemed to be so sensitive that even a single lane can be closed only when authorized by the OTIC's upper management. For other segments, a lane or multiple lanes may not be closed except during certain times of the day and/or days of the week. Such segments require an approved waiver to extend lane closures outside the specified times. Other segments have enough surplus capacity that single lane closures are allowed at any time without special approval.

While OTIC strives to eliminate queuing in work zones, the pre-approved closure schedules are based on threshold queuing values which were chosen realizing that this is not always possible to achieve. Special Provision 104 Section H6 stipulates "Approval of any Lane Closure is conditional that the zone must be removed anytime traffic backups extend one half (1/2) mile beyond the first transitional arrow board."

Variations from the pre-approved closure schedules are only allowed when it is shown there are no viable alternatives to performing the work or that the other alternatives are distinctly inferior. The PLC is updated monthly to reflect changes to the traffic demand along the Turnpike.

2.11 State Highway Patrol

The Ohio State Highway Patrol (OSHP) continues to patrol the Turnpike under an agreement between the OTIC and the Director of the Department of Public Safety of Ohio. The OTIC, under this agreement, reimburses the State for all costs of the Turnpike patrol. **Table 2.11.1** shows the contingent of officers designated to the Ohio Turnpike.

Table 2.11.1 Officers designated to the Ohio Turnpike

Category	Count
Captain / Staff Lieutenant	1
Lieutenants	3
Sergeants	12
Communications Technicians	10
Troopers	47
Total	73

The OSHP utilizes 63 patrol vehicles and aircraft from Columbus to accomplish their duties on the Ohio Turnpike. Along with traffic enforcement, some of the duties they perform include removing the criminal element from the Ohio Turnpike by targeting drug traffickers, weapons violations and other criminal behavior. OSHP also provides additional security and assistance at the Service Plazas to vehicles and drivers along the Ohio Turnpike. Commercial Motor Vehicle Troopers are assigned to each post and work on the turnpike daily along with Motor Carrier Enforcement Officers taking enforcement on commercial motor vehicles traveling the Ohio Turnpike to assure equipment safety, driver restrictions and height and weight laws are followed.

Table 2.11.2 Activities of the Patrol, 2017-2021

Activity	2017	2018	2019	2020	2021	Total 2017-2021
Enforcement Stops	39,238	42,189	41,410	26,014	31,802	180,653
Non-Enforcement Stops	56,895	52,320	49,590	42,220	44,567	245,592
Warnings	19,242	18,223	17,004	10,672	13,483	78,624
Motorist Assists	18,198	16,794	15,977	13,006	12,575	76,550
Crashes Investigated	2,187	2,353	2,221	1,924	2,370	11,055
OVI Enforcement	373	336	252	244	221	1,426
Driving Under Suspension Enforcement	782	805	668	648	772	3,675
Aggressive Driving Enforcement	3,440	4,797	8,274	4,078	3,365	23,954
Seat Belt Violations†	1,949	2,434	2,081	1,243	2,046	9,753
Distracted Driving Violations‡	19	24	200	497	863	1,603
Commercial Vehicle Enforcement	3,064	3,443	4,227	2,034	3,142	15,910
Vehicle Defect Notifications	2,893	2,708	2,491	1,648	1,862	11,602
Motor Vehicle Inspections	24	7	8	29	1	69
Case Investigations Initiated*	410	771	749	818	452	3,200
Felony Arrests	137	135	109	167	145	693
Felony Warrants Served	31	25	27	25	24	132
Misdemeanor Summons Issued	617	593	464	538	348	2,560
Misdemeanor Warrants Served	58	64	45	49	86	302
Drug Violations	618	579	433	535	332	2,497
Identity Theft Enforcements	8	6	3	5	3	25
Response to Resistance Cases	19	12	17	19	25	92
Weapons Violations	19	22	16	35	39	131
Criminal Patrol Points	151	128	111	166	102	658
Blue Max Points	16	7	16	11	19	69

Sources: OSHP Computer-Aided Dispatch (CAD) system; OSHP Case Management System. Data includes all activity made by OSHP units assigned to Posts 89, 90, and 91. Criminal Patrol and Blue Max totals include all approved and pending points.

† Seat belt violations include both adult and child safety seat violations.

‡ Distracted driving violations include incidents with one of the following violations: 4511.204, 4511.205, or 4511.991. ORC 4511.991 went into effect 10/29/2018.

*OSHP began collecting misdemeanor summons data in the case management system in December 2017.

2.12 Traffic, Revenues and Expenses

Total revenues for the OTIC from all sources in 2021 were \$373,693,000, which is a 17.8 percent increase compared to 2020. This revenue increase was primarily the result of increased toll and concession revenues due to the continued recovery from the pandemic.

Table 2.12.1 Comparison of the Records of 2021 with 2020

Passenger Vehicle-Miles of Travel	Increased	30.3%
Commercial Vehicle-Miles of Travel	Increased	13.9%
Toll Revenues	Increased	21.5%
Total All Revenue	Increased	17.8%
Operating Expense*	Increased	4.3%
Total Expenses, Including Interest Expense and ODOT Infrastructure Project Expense	Decreased	13.3%

*Excludes non-cash GASB 68 & 75 Pension & OPEB Expense

The revenue data for the first seven (7) months of 2022 shows that, when compared to the same period in 2021, toll revenues from passenger cars were up 3.1 percent and toll revenues from commercial vehicles were up 6.4 percent. Total toll revenues were up 5.2 percent for the first seven (7) months of 2022, concession revenues were up 9.8%, and investment income was up 130.8 percent. Total revenues for the first seven (7) months of 2022 were up 5.7 percent compared to January-July 2021. The total number of vehicles using the Turnpike during January-July 2022 was 3.0 percent higher than for this same period in 2021. Based on current trends to date, total revenues from all sources for 2022 are estimated at approximately \$380,000,000.

3.0 ESTIMATE OF CURRENT EXPENSES

The OTIC fiscal year is based on a January-December time period. Summarized below is an estimate of the amount of money required to maintain and operate the Ohio Turnpike during the calendar year 2022.

Summary

Administration and Insurance	\$ 16,500,000
Maintenance and Operations Expense	\$ 110,700,000
Bond Interest and Principal	\$ 122,300,000

Estimate of Current Expenses

Fiscal Year 2022	\$249,500,000
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AECOM has reviewed historical data of the OTIC pledged revenues, expenses, and debt service payments. Pursuant to Article IV, Section 4.08 (b)(ii) of the Amended and Restated Master Trust Agreement dated April 08, 2013, as amended by the Twentieth Supplemental Trust Agreement dated as of August 21, 2017, between the Ohio Turnpike and Infrastructure Commission and The Huntington National Bank, AECOM expresses its agreement with the Commission's past practice of maintaining the Expense Reserve Account in an amount equal to one-twelfth (1/12) of the annual operating, maintenance and administrative expenses to be paid from pledged revenues, as set forth in the Commission's annual budget for such Fiscal Year. AECOM recommends that the OTIC continue this practice for 2023.

4.0 SCHEDULE OF INSURANCE

The Schedule of Insurance currently in force is shown in **Appendix F**.

The Ohio Turnpike and Infrastructure Commission is required to maintain comprehensive property and casualty insurance coverage in accordance with Article 5, Sections 5.05, 5.06 and 5.07 of the Amended and Restated Master Trust Agreement dated April 8, 2013, as amended by the Twentieth Supplemental Trust Agreement dated as of August 21, 2017, as well as the Junior Lien Master Trust Agreement dated August 1, 2013 (collectively, the “Trust Agreements”). These consist of policies on Major Bridges, Use and Occupancy, and Commercial Liability. In addition to the required policies, a number of other insurance policies are carried in accordance with prudent business practices.

As Consulting Engineer, AECOM has reviewed the current insurance policies held by OTIC and confirmed that they meet and, in several cases, exceed the minimum insurance requirements stated in Article V, Section 5.05 of the Amended and Restated Master Trust Agreement Dated April 08, 2013, as amended by the Twentieth Supplemental Trust Agreement dated as of August 21, 2017.

5.0 RENEWAL, REPLACEMENT AND SYSTEM PROJECT FUNDS

Pledged revenues exceeding those required for operations, maintenance, and administration, bond interest and principal, and the required deposit to the expense reserve account, are deposited into the Renewal and Replacement and System Projects Funds. The revenues in the Renewal and Replacement Fund are used for the purchase of replacement vehicles and equipment and routine annual maintenance operations, while the System Projects Fund is used for the rehabilitation and upgrading of the Turnpike bridges, roadways, buildings, and for construction of new interchanges and other facilities.

It is estimated that total pledged revenues in 2023 will amount to approximately \$387,000,000, of which approximately \$143,000,000 will be needed for the operations, maintenance, and administration of the Turnpike and \$135,000,000 will be required for bond interest and principal expense. Of the remaining amount, approximately \$10,000,000 will likely be deposited into the Renewal and Replacement Fund, leaving a total of approximately \$99,000,000 to be deposited into the System Projects Fund.

Appendix A

Ohio Turnpike Straight Line Diagram (Strip Map)

TOLL PLAZAS

FULL INTERCHANGE

PARTIAL INTERCHANGE

SERVICE PLAZAS

SERVICE PLAZA (OPEN)

SERVICE PLAZA (CLOSED)

MAINTENANCE ZONES

MAINTENANCE BUILDING

3 LANES

2 LANES

SNOW AND ICE LIMITS

SALT STORAGE

MAINTENANCE BUILDING

3 LANES

2 LANES

COUNTY LINES

MAJOR BRIDGE/ RIVER CROSSING

DISABLED VEHICLE SERVICE ZONES

EMERGENCY MEDICAL SERVICE ZONES

OTHER COVERAGE AREA (contact Comm. Center for more information)

FIRE DEPARTMENT SERVICE ZONES

OTHER COVERAGE AREA (contact Comm. Center for more information)

STATE HIGHWAY PATROL ZONES

North Arrow

Date: 9/24/2021

TOLL PLAZAS

Westgate PH: (440) 971-2134 Indiana-Ohio Line MP 2.7

Delta-Lyons PH: (440) 971-2198 SR 103 MP 39.8

Perrysburg-Toledo PH: (440) 971-2243 I-75 MP 64.9

Fremont-Port Clinton PH: (440) 971-2302 SR 53 MP 91.6

Sandusky-Bellevue PH: (440) 971-2302 SR 4 MP 110.2

Sandusky-Norwalk PH: (440) 971-2312 US 250 MP 118.5

Vermilion PH: (440) 971-2327 Baumhart Rd. MP 135.9

Lorain Co. West PH: (440) 971-2358 I-90 MP 142.8

N. Ridgeville-Cleveland PH: (440) 971-2383 I-480 MP 151.8

Strongsville-Cleveland PH: (440) 971-2413 US 42, I-71 MP 161.8

Akron PH: (440) 971-2443 SR 8 MP 180.3

Ravenna PH: (440) 971-2470 SR 44 MP 193.9

Lordstown-West PH: (440) 971-2499 Ellsworth-Bailey Rd. MP 215

Niles-Youngstown PH: (440) 971-2527 I-80E, I-76W, CR 18 MP 216.7

Youngstown-Poland PH: (440) 971-2552 I-680 MP 234.1

Eastgate PH: (440) 971-2569 Ohio-PA Line MP 239.1

SERVICE PLAZAS

HMS HOST, SUNOCO Indian Meadow 20.8

Oak Openings (Closed) 49.0

Hardees Blue Heron 76.9

HMS HOST Erie Islands 100.0

HMS HOST, COVELLI ENTERPRISES Middle Ridge 139.5

HMS HOST, COVELLI ENTERPRISES Great Lakes 170.1

HMS HOST, MCDONALDS Portage 197.0

COVELLI ENTERPRISES, SUNOCO Mahoning Valley 237.2

MAINTENANCE ZONES

Kunkle PH: (440) 971-2712 Zone 1

Swanton PH: (440) 971-2721 Zone 2

Elmore PH: (440) 971-2741 Zone 3

Castalia PH: (440) 971-2750 Zone 4

Amherst PH: (440) 971-2759 Zone 5

Berea Ad. Bldg. PH: (440) 234-2081 Comm. Center PH: (440) 971-2055 Zone 6

Boston PH: (440) 971-2771 Zone 7

Hiram (includes TP 187) PH: (440) 971-2791 Zone 8

Canfield (includes TP 216) PH: (440) 971-2800 Zone 8

SNOW AND ICE LIMITS

Kunkle

TP-34

TP-59

River Road

Amherst

Boston

TP-187

Hiram

TP-218

Canfield

COUNTY LINES

Williams MP 0 to 22.3

Fulton MP 22.3 to 48.4

Lucas MP 48.4 to 63

Wood MP 63 to 74.1

Ottawa MP 74.1 to 75.6

Sandusky MP 75.6 to 78.7

Ottawa MP 78.7 to 81.9

Sandusky MP 81.9 to 106.1

Erie MP 106.1 to 132.4

Lorain MP 132.4 to 153.2

Cuyahoga MP 153.2 to 172.1

Summit MP 172.1 to 185.7

Portage MP 185.7 to 206.1

Trumbull MP 206.1 to 216.9

Mahoning MP 216.9 to 241.26

DISABLED VEHICLE SERVICE ZONES

CAR NO. 405

CAR NO. 425

CAR NO. 435

CAR NO. 445

CAR NO. 455

CAR NO. 465

CAR NO. 475

Hutch's Towing & Recovery, Inc. Holiday City, OH PH: (419) 485-4209

Abco Services Toledo, OH PH: (419) 536-6123

Madison Motor Service, Inc. Fremont, OH PH: (419) 332-0727

Interstate Towing Norwalk, OH PH: (419) 660-8000

Rich's Towing Service, Inc. Middleburg Heights, OH PH: (440) 234-3435

Interstate Towing Macedonia, OH PH: (330) 425-4111

Jeswald's Auto Truck Service Youngstown, OH PH: (330) 799-7054

EMERGENCY MEDICAL SERVICE ZONES

Williams County EMS (419) 636-1151 MP 0 to 22.2 (EB & WB)

Fulton County EMS (419) 335-4010 MP 22.2 to 48.4 (EB & WB)

Lucas County EMS (419) 243-5111 MP 48.4 to 58.5 (EB & WB)

Perrysburg Fire/EMS (419) 897-7000 MP 58.5 to 63 (EB & WB)

Rosford Fire/EMS (419) 666-5230 MP 63 to 64.5 (EB & WB)

Lake Twp Fire/EMS (419) 874-3551 MP 64.5 to 65.4 (EB & WB)

Lake Twp Fire/EMS (419) 874-3551 MP 65.4 to 71.7 (Eastbound)

Allen-Clay Joint District (419) 734-4404 MP 71.7 to 76 (Westbound)

Sandusky County EMS (SCSO) (419) 334-4401 MP 76 to 99.9 (Westbound)

North Central EMS (419) 499-2515 MP 99.9 to 126.3 (Westbound)

Lorain Lifecare (440) 244-6467 MP 126.3 to 152.2 (Westbound)

North Ridgeville EMS (440) 327-4001 MP 145.5 to 152.2 (Westbound)

Berea (440) 238-7373 MP 152.2 to 159.5 (Westbound)

Strongsville EMS (440) 238-7373 MP 159.5 to 161.8 (Westbound)

Broadview Hgts Res (440) 526-7122 MP 161.8 to 169.9 (Westbound)

Brecksville EMS (440) 526-1212 MP 169.9 to 173.1 (Westbound)

Valley FD (330) 657-2911 MP 173.1 to 180.3 (Westbound)

Hudson EMS (330) 342-1800 MP 180.3 to 184.7 (Westbound)

Streetsboro EMS (330) 342-1800 MP 184.7 to 187.4 (Eastbound)

Streetsboro EMS (330) 626-4113 MP 187.4 to 194 (Eastbound)

Mantua-Shalersville EMS (330) 274-2251 MP 194 to 197.0 (Eastbound)

Community Ambulance (330) 296-5100 MP 197.0 to 201 (Eastbound)

Braceville Fire (330) 675-2730 MP 201 to 210 (Eastbound)

Cardinal Joint Fire District (330) 533-3371 MP 210 to 223 (Eastbound)

Boardman PD (330) 726-4155 MP 223 to 228 (Eastbound)

Springfield FD (330) 542-2895 MP 228 to 231 (Eastbound)

Clemente-McKay (330) 755-1401 MP 231 to 235 (Eastbound)

FIRE DEPARTMENT SERVICE ZONES

Florence Twp MP 0 to 6.2 (EB & WB)

West Unity-Brady MP 15.1 to 22.2 (EB & WB)

Wauseon MP 30.3 to 35.2 (Westbound)

Delta MP 35.2 to 44.4 (Westbound)

Swanton MP 44.4 to 52 (EB & WB)

Milmau MP 52 to 59 (Eastbound)

Perryburg MP 59 to 63 (EB & WB)

Rosford MP 63 to 64.5 (EB & WB)

Perryburg MP 64.5 to 65.4 (EB & WB)

Lake Twp MP 65.4 to 71.7 (Eastbound)

Allen-Clay MP 71.7 to 76 (Eastbound)

Woodville Twp MP 76 to 79 (Eastbound)

Harris-Elmore MP 79 to 81.6 (Eastbound)

Sandusky Twp MP 81.6 to 91.5 (Westbound)

Clyde MP 91.5 to 99.9 (Westbound)

Groton MP 99.9 to 116.8 (Westbound)

Milan MP 116.8 to 118.5 (Westbound)

Berlin Hts Twp MP 118.5 to 125.3 (Westbound)

Florence Twp MP 125.3 to 135.5 (Westbound)

Amherst MP 135.5 to 141.2 (Westbound)

Elyria Twp MP 141.2 to 144.6 (Westbound)

Elyria MP 144.6 to 145.5 (Westbound)

North Ridgeville MP 145.5 to 152.2 (Westbound)

Berea MP 152.2 to 159.5 (Westbound)

Strongsville MP 159.5 to 161.8 (Westbound)

Broadview Hgts MP 161.8 to 169.9 (Westbound)

Brecksville MP 169.9 to 173.1 (Westbound)

Valley FD MP 173.1 to 180.3 (Westbound)

Hudson MP 180.3 to 184.7 (Westbound)

Streetsboro MP 184.7 to 187.4 (Eastbound)

Mantua-Shalersville MP 187.4 to 194 (Eastbound)

Streetsboro MP 194 to 197.0 (Eastbound)

Community Ambulance MP 197.0 to 201 (Eastbound)

Braceville MP 201 to 210 (Eastbound)

Cardinal Joint MP 210 to 223 (Eastbound)

Boardman MP 223 to 228 (Eastbound)

Springfield Twp MP 228 to 231 (Eastbound)

STATE HIGHWAY PATROL ZONES

Swanton Patrol Post 89 PH: (419) 826-5871 MP 48.4

Milan Patrol Post 90 PH: (419) 499-4808 MP 118.6

Turnpike Operations PH: (440) 234-2096 MP 159.5

Hiram Patrol Post 91 PH: (330) 527-2168 MP 198.6

Appendix B

Pavement Resurfacing and Replacement

Table 1: Third Resurfacing

Year	Milepost Limits	Length (Miles)	Total Length for Year (Miles)
1980	144.0 to 153.5	9.5	20.1
	230.6 to 241.2	10.6	
1981	132.3 to 144.0	11.7	11.7
1983	92.4 to 101.4	9	25.7
	186.9 to 196.3	9.4	
	223.3 to 230.6	7.3	
1985	153.5 to 161.6	8.1	19.4
	161.6 to 172.9	11.3	
1986	214.2 to 223.3	9.1	9.1
1987	71.0 to 80.7	9.7	19.5
	111.7 to 118.7	7	
	177.4 to 180.2	2.8	
1988	27.5 to 38.9	11.4	18.3
	180.1 to 187.0	6.9	
1989	205.4 to 214.3	8.9	8.9
1990	39.0 to 48.6	9.6	14.0
	173.0 to 177.4	4.4	
1991	118.8 to 132.3	13.5	13.5
1992	62.5 to 71.1	8.6	18.9
	101.4 to 111.7	10.3	
1993	0.0 to 5.7	5.7	5.7
1994	5.7 to 14.8	9.1	20.7
	80.8 to 92.4	11.6	
1996	14.8 to 27.5	12.7	19.7
	55.5 to 62.5	7	
1998	48.6 to 55.5	6.9	6.9
2006	196.3 to 205.4(*)	9.1	9.1
2007	196.3 to 205.4 (**)	9.1	
Total to Date			241.2

(*) – Eastbound lanes only.

(**) – Westbound Lanes only.

Table 2: Fourth Resurfacing

Year	Milepost Limits	Length (Miles)	Total Length for Year (Miles)
1989	144.0 to 153.0	9	9
1990	230.6 to 234.9	4.3	4.3
1991	234.9 to 241.2	6.3	6.3
1992	132.0 to 144.0	12	12
1993	91.2 to 101.4	10.2	20.6
	161.6 to 172.0	10.4	
1994	214.2 to 223.3	9.1	9.1
1995	111.7 to 118.8	7.1	23.8
	186.9 to 196.3	9.4	
	223.3 to 230.6	7.3	
1996	153.5 to 160.0	6.5	6.5
1997	71.1 to 80.8	9.7	14
	160.0 to 161.6	1.6	
	177.4 to 180.1	2.7	
1998	27.5 to 38.9	11.4	11.4
1999	38.9 to 48.6	9.7	16.5
	180.1 to 186.9	6.8	
2000	101.4 to 111.7	10.3	21.3
	172.9 to 177.0	4.1	
	207.4 to 214.3	6.9	
2001	118.8 to 127.23	8.4	8.4
2002	0.0 to 5.7	5.7	5.7
2003	62.5 to 69.3	6.8	6.8
2004	55.5 to 63.8	8.3	8.3
2007	80.9 to 91.2	10.3	10.3
2008	5.7 to 14.8	9.1	9.1
2011	14.8 to 27.5	12.75	12.75
2012	69.3 to 71.1	1.8	1.8
2013	127.3 to 132.1	4.8	4.8
2014	48.6 to 55.45	6.85	6.85
2018	196.3 to 205.2	8.9	11.7
	172.0 to 172.8	2.8	
Total to Date			241.3

Table 3: Fifth Resurfacing

Year	Milepost Limits	Length (Miles)	Total Length for Year (Miles)
1997	144.0 to 153.5	9.5	9.5
2001	230.6 to 241.3	10.7	10.7
2002	92.4 to 101.4	9	12.2
	161.6 to 164.8	3.2	
2003	132.1 to 144.4	12.3	12.3
2004	168.6 to 172.0	3.4	11.9
	214.8 to 223.3	8.5	
2006	111.2 to 111.7	0.5	0.5
2006	186.9 to 196.3(*)	9.4	9.4
2007	186.9 to 196.3 (**)	9.4	
2008	111.7 to 118.8	7.1	7.1
2010	223.3 to 230.6	7.3	7.3
2011	205 to 210	3	10
	153 to 160	7	
2012	101.2 to 109.2	8	8
2012	118.8 to 127.3	8.5	8.5
2012	209.6 to 214.4	4.8	4.8
2013	27.5 to 38.9	11.4	21.22
	127.2 to 127.3	.10	
	176.3 to 186.02	9.72	
2014	43.3 to 48.6	5.3	5.3
2015	0.0 to 5.7	5.7	12.1
	74.1 to 80.5	6.4	
2016	38.9 to 43.3	4.4	18.25
	55.45 to 69.3	13.85	
2017	69.3 to 74.1	4.8	4.8
2018	127.2 to 132.1	4.9	4.9
2019	8.20 to 14.80	6.6	6.6
2020	80.50 to 90.02	9.52	9.52
2021	7.26 to 8.2 (**)	0.94	0.94
Total to Date			195.83

(*) – Eastbound lanes only.

(**) – Westbound lanes only.

Table 4: Sixth Resurfacing

Year	Milepost Limits	Length (Miles)	Total Length for Year (Miles)
2006	144.4 to 153.5	9.1	9.1
2010	91.2 to 101.5	10.3	14.4
	132.1 to 136.2	4.1	
2011	160 to 161.6	1.6	1.6
2012	172 to 176.3	4.3	4.3
2013	136.2 to 144.4	8.2	13.85
	230.35 to 236.0	5.65	
2014	217.3 to 218.3 (*)	1.0	6.26
	236.0 to 241.26	5.26	
2015	221 to 223 (**)	2.0	4.0
	214 to 216 (**)	2.0	
2016	221 to 223 (*)	2.0	2.0
2018	191.39 to 196.3	4.91	4.91
2020	118.8 to 127.23	8.43	10.18
	176.3 to 178.05	1.75	
2021	112.45 to 118.80	6.35	6.35
2022	73.95 to 80.5	6.55	14.15
	178.05 to 185.65	7.60	
Total to Date			91.10

(*) – Eastbound lanes only.

(**) – Westbound lanes only.

Table 5: Seventh Resurfacing

Year	Milepost Limits	Length (Miles)	Total Length for Year (Miles)
2011	152 to 153.5	1.5	1.5
2013	132.1 to 132.2	.1	.1
2017	136.0 to 144.1	8.1	8.1
2018	132.1 to 136.2	4.1	4.1
Total to Date			13.8

(*) – Eastbound lanes only.

(**) – Westbound lanes only.

Table 6: Third Lane - First Resurfacing

Year	Milepost Limits	Length (Miles)	Total Length for Year (Miles)
2003	193.4 to 199.0	5.6	5.6
2005	145.0 to 152.0	7	7
2006	199.0 to 205.4 (*)	6.4	6.4
2007	199.05 to 205.4 (**)	6.4	6.4
2015	141.1 to 145.4	4.3	7.3
2015	215.0 to 218.0	3.0	
2016	187.44 to 193.38	5.94	5.94
2017	160.1 to 169.1	9.0	14.10
2017	136.0 to 141.1	5.10	
2018	127.2 to 136.2	9.0	21.14
2018	149.2 to 154.1	4.9	
2018	169.1 to 176.34 (*)	7.24	
2019	205.2 to 215.9	10.7	10.7
2020	80.5 to 90.02	9.52	20.18
2020	176.34 to 178.05 (*)	1.71	
2020	169.1 to 178.05 (**)	8.95	
2021	112.45 to 118.80	6.35	6.35
2022	73.95 to 80.5	6.55	6.55
Total to Date			117.66

(*) – Eastbound lanes only.

(**) – Westbound lanes only.

Table 7: Third Lane - Second Resurfacing

Year	Milepost Limits	Length (Miles)	Total Length for Year (Miles)
2018	193.39 to 205.2	11.81	11.81
Total to Date			11.81

Table 8: Full Depth Replacement

Year	Direction	Milepost Limits	Length (Miles)	Total Length for Year (Miles)
2011	WB	95.90 – 101.20	5.30	5.3
2012	EB	95.90 to 101.20	5.30	10.22
	WB	164.82 to 169.74	4.92	
2013	WB	90.00 to 95.90	5.90	10.82
	EB	164.82 to 169.74	4.92	
2014	EB	159.80 to 164.82	5.02	11.12
	EB	101.20 to 107.30	6.10	
2015	WB	159.80 to 164.82	5.02	21.42
	WB	101.20 to 107.30	6.10	
	EB	144.10 to 149.24	5.14	
	WB	216.10 to 221.26	5.16	
2016	EB	107.30 to 112.50	5.20	20.54
	WB	144.10 to 149.24	5.14	
	EB	186.35 to 191.39	5.04	
	EB	216.10 to 221.26	5.16	
2017	EB	90.00 to 95.90	5.90	16.14
	WB	107.30 to 112.50	5.20	
	WB	186.35 to 191.39	5.04	
2018	EB	149.24 to 154.10	4.86	11.46
	EB	169.74 to 176.34	6.60	
2019	WB	149.24 to 154.10	4.86	11.69
	WB	169.74 to 176.57	6.83	
2020	WB	46.50 to 50.92	4.42	4.42
2021	WB	2.80 to 7.26	4.46	18.38
	EB	46.50 to 50.92	4.42	
	WB	208.17 to 212.76	4.59	
	EB	236.34 to 241.25	4.91	
2022	EB	2.80 to 7.26	4.46	13.96
	EB	208.17 to 212.76	4.59	
	WB	236.34 to 241.25	4.91	
Total to Date				155.47

Right two lanes and shoulder only included in full depth replacement limits shown in Table 8

Appendix C

Bridge Deck Replacement and Rehabilitation,
Third Lane Construction and Expansion,
And
Bridge Removals

Mainline Bridge Deck Replacements

*Bridges replaced or rehabilitated as part of Third Lane Construction are shown in *italics*
(Typical for all of Appendix C)

Year	Bridge	Milepost
1983	Maumee River – EBL	63.0
1983	Cuyahoga River – WBL	176.9
1984	S.R. 109	40.3
1984	D T & I Railroad	40.5
1984	Bad Creek	41.3
1984	Maumee River - WBL	63.0
1984	S.R. 53	92.0
1984	Sandusky River	92.3
1984	N & S Railroad	98.9
1984	S.R. 510	99.1
1984	S.R. 412	99.7
1984	S.R. 99	111.2
1984	Vermilion River	132.1
1984	Quarry Road	138.0
1984	Penn Central Railroad	138.2
1984	Black River	145.9
1984	S.R. 301	147.3
1984	Chestnut Ridge Road	152.0
1984	Over Ramp at Exit 152	152.2
1984	Lorain Road	152.3
1984	Conrail Railroad	152.6
1984	S.R. 82 (Royalton Road)	165.4
1984	York Road	165.5
1984	Bennett Road	166.2
1984	Cuyahoga River – EBL	176.9
1984	Tinkers Creek	185.6
1984	S.R. 45	217.3
1984	Penn Central Railroad	217.3
1984	Meander Reservoir	221.3
1984	Evans Lake-Yellow Creek	234.4
1984	Poland-Unity Road	237.8
1984	Columbiana Road	238.1
1984	Garfield Road	240.8

Mainline Bridge Deck Replacements (continued)

Year	Bridge	Milepost
1985	S.R. 49	2.1
1985	Swan Creek	47.4
1985	S.R. 64	47.5
1985	Little Muddy Creek	90.2
1985	S.R. 19	90.3
1985	N & W Railroad	90.7
1985	Green Creek	96.2
1985	Branch of South Creek	96.7
1985	Erlin Road and South Creek	97.1
1985	Raccoon Creek	97.9
1985	S.R. 58 (Oberlin N. Road)	140.2
1985	N & W Railroad	140.6
1985	Penn Central Railroad	141.7
1985	Cuyahoga River	191.4
1985	Bryant Road	202.8
1985	Tumor Road	222.7
1985	Kirk Road	222.8
1985	Erie Lackwanna Railroad	223.0
1986	Sugar Creek	81.3
1986	Wolf Creek	82.0
1986	Wagoner Road	83.3
1986	Penn Central Railroad	83.3
1986	Berlin Road	124.0
1986	S.R. 61 & Ceylon-Norwalk Rd.	124.5
1986	Humm Road	125.3
1986	Ditch	126.6
1986	Baumhart Road	136.2
1986	Lake Avenue	144.4
1986	B & O Railroad	144.6
1986	S.R. 57	145.1
1986	Penn Central Railroad	147.9
1986	U.S. 20	148.0
1986	W. Branch of Rocky River	157.4
1986	Lindbergh Blvd.	157.5
1986	N. Royalton-Brecksville Pkwy.	168.6
1986	Western Reserve Road	230.7
1986	Sharott Road	232.0
1986	S.R. 7	232.0

Mainline Bridge Deck Replacements (continued)

Year	Bridge	Milepost
1987	Grand Trunk Western Railroad	34.2
1987	S.R. 108	34.5
1987	S.R. 295	51.4
1987	Penn Central Railroad	52.3
1987	Albion Road	56.1
1987	Penn Central Railroad	56.3
1987	Swan Creek	58.5
1987	S.R. 65	63.3
1987	B & O Railroad	63.5
1987	White Road	63.6
1987	Simmons Road	63.9
1987	East Branch Grassy Creek	64.2
1987	Nine Mile Creek	85.3
1987	Muddy Creek	87.3
1987	Fuller Creek	101.5
1987	Dirt Access Road	103.4
1987	Pickel Street	103.5
1987	Mills Creek	108.3
1987	Penn Central Railroad	109.1
1987	Portland Road	109.2
1987	Hudson Aurora Road	184.2
1987	Norfolk and Western Railroad	186.0
1987	Erie Lackawanna and Penn Central Railroads	208.1
1987	Penn Central Railroad	208.7
1987	Newton Falls - Braceville Road	208.9
1987	Newton Falls - Bailey Road	211.5
1987	B & O and Penn Central Railroads	211.7
1987	Branch of Duck Creek	212.6
1987	Carson - Salt Springs Road	213.6
1987	Tippecanoe Road	228.4
1987	Indian Run	228.6
1987	Mill Creek	230.4

Mainline Bridge Deck Replacements (continued)

Year	Bridge	Milepost
1988	Nettle Creek	10.6
1988	St. Joseph River	11.3
1988	Conrail	19.6
1988	U.S. 127	20.1
1988	U.S. 20	59.8
1988	Eastgate Road	61.1
1988	Norfolk & Western Railroad & Stengel Avenue	61.5
1988	Glenwood Road	66.0
1988	Conrail Railroad	66.2
1988	Cedar Creek	68.0
1988	Conrail Railroad & C.R. 10	68.8
1988	S.R. 163	73.0
1988	Conrail Railroad	74.0
1988	County Line Road	74.1
1988	Trapp Road	77.4
1988	Toussaint Creek	77.5
1988	Lime Road	77.6
1988	Bark Creek	94.2
1988	U.S. 6	95.4
1988	N & W Railroad - Kelley Road	117.3
1988	U.S. 250	118.1
1988	Huron River - N & W Railroad	119.6
1988	Infirmity Road	193.1
1988	Parkman Road	203.7
1988	South Fork Eagle Creek	205.2
1988	Ohio Turnpike over Interchange 16 Ramps	232.9
1989	St. Joseph Beaver Road	14.1
1989	N & W Railroad	14.2
1989	Tiffin River	24.7
1989	C & O Railroad	70.2
1989	Cummins Road	70.3
1989	S.R. 420 & I-280	71.4
1989	S.R. 43	188.2
1989	Mahoning Avenue	219.8

Mainline Bridge Deck Replacements (continued)

Year	Bridge	Milepost
1990	Portage River	80.5
1990	B & O Railroad	113.7
1990	Ransom Road	114
1990	S.R. 5	209.6
1990	Mahoning River	209.9
1990	Ravenna-Warren Road	210.1
1990	B & O Railroad	210.3
1991	Eastland Road	160.4
1991	East Branch of Rocky River	160.7
1991	Rocky River Road	160.7
2002	Turnpike over I-76	219
2006	Turnpike over Meander Reservoir	221.3
2017	Garfield Road – CR8 (WB)	240.8
2018	Garfield Road – CR8 (EB)	240.8
2018	Wheeling & Lake Erie RR (WB)	186.0
2019	Ai Creek	47.4
2019	State Route 64	47.5
2019	Wheeling & Lake Erie RR (EB)	186.0
2019	Poland-Unity Road	237.8
2019	Columbiana-New Castle	238.1
2020	State Route 108	34.5
2021	Turner Road	222.7
2021	Kirk Road	222.8
	Total to Date	157 Pairs

Overhead and Ramp Deck Replacements

Year	Bridge	Milepost
1980	Gulf Road	146.4
1983	Bagley Road	152.9
1983	Sprague Road	159.0
1983	U.S. 42 (Pearl Road)	161.1
1983	S.R. 91	183.2
1984	Holland Road	59.0
1984	Ramp over Chestnut Ridge Road at Exit 152	152.0
1984	Usher Road	156.1
1984	Webster Road	162.9
1984	Abbey Road	164.4
1984	Ramp over S.R. 21 at Exit 173	172.9
1984	S.R. 303	207.3
1985	Ramp over Turnpike at Exit 13	13.4
1985	Ramp over Turnpike at Exit 173	173.2
1985	S.R. 21	172.9
1986	Ramp over Turnpike at Exit 34	34.9
1986	Ramp over S.R. 57 at Exit 145	145.1
1986	Jennings Road over Turnpike	154.0
1986	W. 130th Street over Turnpike	163.8
1986	Turnpike Ramp over S.R. 8	180.0
1987	Ramp over US 250 at Exit 118	118.1
1987	Ramp over Turnpike at Exit 118	118.6
1987	West Ridge Road	142.6
1987	Ramp over Turnpike at Exit 145	145.5
1987	S.R. 83	150.5
1987	S.R. 252	156.9
1987	Edgerton Road	169.6
1987	Highland Road	171.1
1987	Barr Road	171.6
1987	Raccoon Road	226.7
1988	Race Road	149.2
1988	Maddock Road	149.8
1988	Ramp over C.R. 12 at Exit 152	152.3
1988	Old Exit 161 Ramp over Turnpike	161.5
1988	S.R. 3	166.8
1988	Ramp over S.R. 7 at Exit 232	232.6
1988	S.R. 164	233.8

Overhead and Ramp Deck Replacements (continued)

Year	Bridge	Milepost
1989	S.R. 66	26.3
1989	Wilkens Road	50.4
1989	S.R. 2	52.9
1989	Eber Road	53.5
1989	Crissey Road	54.8
1989	Manley Road	58.6
1989	S.R. 590	85.5
1989	Fought Road	86.6
1989	Four Mile House Road	88.1
1989	Fangbonner Road	91.1
1989	Ramp over Turnpike at Exit 91	91.6
1989	Ramp over S.R. 53 at Exit 91	92.0
1989	Shannon Road	93.0
1989	Carley Road	94.7
1989	Northwest Road	106.1
1989	S.R. 269	106.8
1989	Deyo Road	107.5
1989	Billings Road	108.7
1989	Patten-Tract Road	112.5
1989	Thomas Road	115.1
1989	S.R. 13	119.3
1989	Gore-Orphanage Road	133.1
1989	Vermilion Road	135.0
1989	South Amherst Road	138.7
1989	Oberlin Road	141.3
1989	Stearns Road	154.6
1989	Big Creek Parkway	161.0
1989	Black Road over EB Turnpike	174.1
1989	Black Road over WB Turnpike	174.1
1989	Boston Mills Road	178.0
1989	S.R. 8 Northbound	180.0
1989	S.R. 8 Southbound	180.0
1989	Ramp over Turnpike at Exit 180	180.3
1989	Stow Road	184.7
1989	U.S. 224	227.6
1989	New Springfield Road	235.6
1989	Beard Road	236.7
1989	S.R. 170	240.4

Overhead and Ramp Deck Replacements (continued)

Year	Bridge	Milepost
1990	Nettle Creek Road	6.2
1990	Farmer Center Road	9.0
1990	S.R. 576	10.2
1990	Townline Road	12.1
1990	S.R. 15 over Exit 13 Ramp	13.2
1990	S.R. 15	13.2
1990	Pleasant Hill Road	15.1
1990	Holloway Road	57.3
1990	Camper Road	75.6
1990	Gibbs Road	97.6
1990	Karbler Road	98.1
1990	Yorktown Road	100.2
1990	Vickery Road	101.2
1990	Mugg Road	102.3
1990	Albion Road	162.2
1990	S.R. 94	167.3
1990	S.R.176	169.5
1990	Old S.R. 8	179.5
1991	Exit 59 Ramp over US 20	59.8
1991	Portage River-South Road	80.6
1991	Murray Ridge Road	143.4
1991	West River Road	145.8
1991	Page Road	189.2
1991	Diagonal Road	191.2
1992	Harrison Road	130.8
1992	Prospect Road	182.1
1992	Exit 187 Ramp over Turnpike	187.2
1992	Exit 187 Ramp over S.R. 14	187.2
1992	Peck Road	195.2
1993	S.R. 105	79.5
1993	Joppa Road	128.5
1993	S.R. 60	131.6
1993	Coit Road	192.4
1993	Limeridge Road	196.7
1993	S.R. 534	207.6
1993	Exit 209 Ramp over Turnpike	209.2
1993	Exit 209 Ramp over S.R. 5	209.6

Overhead and Ramp Deck Replacements (continued)

Year	Bridge	Milepost
1994	Township Line Road	94.1
1994	S.R. 101	104.2
1994	Exit 161 over Turnpike	161.8
1994	S.R. 88	199.5
1994	S.R. 4 over Turnpike	110.7
1994	S.R. 44 over Turnpike	194.2
1995	River Road	62.8
1996	EB I-480 over Turnpike	186.8
1996	WB I-480 over Turnpike	186.8
1999	Gibson Road	223.9
1999	US 62/S.R. 46	225.2
2000	Shiets Road	96.1
2000	Jacobs Road	96.5
2000	Vickery Road	101.2
2000	Dirt Access Road	103.4
2000	S.R. 101 Bridge	104.2
2000	EB I-90 over West Ridge Road	142.6
2000	EB I-90 over Turnpike	142.8
2001	Stanley Road	201.8
2001	Lintz Road	214.5
2002	Pemberville Road	72.0
2002	Prospect Street	159.5
2002	Ramp over I-71	161.5
2002	Lipkey Road	220.3
2003	Slagle Road	200.2
2003	Horn Road	204.7
2004	Shiloh-Whiteville Road	44.4
2004	Scott Road	49.4
2004	Ramp over Turnpike at Exit 234	234.1
2004	Ramp over Yellow Creek at Exit 234	234.1
2005	Fulton-Lucas County Road	48.4
2005	Cass Road	60.3
2005	Ramp Over Turnpike at Exit 71	71.7
2007	Reighard-Whiteville	43.9
2007	Utah Road	45.4
2012	Gulf Road	146.4
2014	Fish Creek Road	0.9
2014	Stryker-Lockport Road	22.0
2014	Werth Road	93.5

Overhead and Ramp Deck Replacements (continued)

Year	Bridge	Milepost
2015	Old SR596 – CR 17	16.1
2015	Clay's Church Road – TR 19	18.1
2015	Liberty-Adrian Road – CR 8-1	41.1
2015	Key Street – CR 101	60.8
2015	Gibson Road – TR118	223.9
2016	Eberly-Home Road	17.1
2016	Alvordton Road	19.1
2016	Clifton-Gunn Road	21.4
2016	Rueger-Shetler Road	23.9
2016	Fulton-Williams Road	24.4
2016	Spies-Handy Corners Road	27.3
2016	Raker-Barden Road	41.9
2016	Delta-Santee Road	42.4
2016	Brigham-Fraker Road	42.9
2016	SR 83	150.5
2016	Asbury Road	197.8
2016	SR 700	198.5
2017	Arlington Road - TR 130	122.3
2017	Joppa Road - CR 140	128.5
2017	Dean Road - TR 66 (County Line)	132.4
2017	West River Road	145.8
2017	State Route 252 - Columbia Road	156.9
2017	Boston Mills Road - CR 32	178.0
2017	Olde Eight Road	179.5
2017	Nichols Road - CR 225	199.2
2018	USR 42 - Pearl Road	161.1
2018	I-480 EB - Exit 187	186.8
2019	Ramp over State Route 420	71.4
2019	South Billman Road	75.2
2019	Hessville Road	84.4
2019	River Road	120.0
2019	Wikel Road	121.9
2019	Chapin Road	123.1
2019	State Route 60	131.6
2019	Gifford Road	135.4

Overhead and Ramp Deck Replacements (continued)

Year	Bridge	Milepost
2020	Tedrow-Morenci Road	31.4
2020	Wauseon-Ottokee Road – CR 14	35.2
2020	Winameg-Lyons Road	38.3
2020	Heller-Lyons Road	39.3
2020	Webster Road	162.9
2020	Abbey Road	164.4
2021	Fangboner Road – TR 166	91.1
2021	Ohio Turnpike Ramp over Turnpike	91.6
2022	Ohio Turnpike Ramp over Lorain Road	152.3
2022	Jennings Road – CR 234	153.9
2022	East Edgerton Road – CR 63	169.9
	Total to Date	178

Bridge Deck Overlay Projects

Year	Bridge	Type	Milepost
1982	Prospect Street (S.R. 237)	Latex	159.5
1983	Key Street	Latex	60.8
1983	Ramp over I-71 at Exit 161	Latex	161.5
1983	Ramp over Turnpike at Exit 161	Latex	161.5
1984	S.R. 101	Latex	104.2
1984	U.S. 62 – S.R. 46	Latex	225.2
1985	EB Turnpike over I-77	Latex	172.5
1985	WB Turnpike over I-77	Latex	172.5
1985	EB Turnpike over I-271	Latex	175.3
1985	Ramp over Turnpike at Exit 218	Latex	219.0
1985	EB Turnpike over I-76	Latex	219.0
1985	WB Turnpike over I-76	Latex	219.0
1988	Root Road over Turnpike	Latex	151.1
1989	Heller Lyon Road over Turnpike	Latex	39.3
1989	Liberty-Adrian Road over Turnpike	Latex	41.1
1989	Raker-Barden Road over Turnpike	Latex	41.9
1989	Delta-Santee Road over Turnpike	Latex	42.4
1989	Lime City Road over Turnpike	Latex	65.4
1989	Oregon Road	Latex	67.2
1989	Ramp under Toll Plaza, Exit 161	Latex	162.0
1990	Pettisville-Morenci Road	Latex	30.3
1990	Tedrow-Morenci Road	Latex	31.4
1990	Hartman-Inlet Road	Latex	32.5
1990	Lena-Morenci Road	Latex	33.2
1990	Exit 71 Ramp over S.R. 420	Latex	71.4
1990	Pemberville Road	Latex	72.0
1990	Billman Road	Latex	75.2
1991	Fish Creek Road	Latex	0.9
1991	Malcolm Church Road	Latex	3.1
1991	Ricketts Bridge Road	Latex	4.1
1991	West Eagle Church Road	Latex	5.1
1991	White Bridge Road	Latex	6.9
1991	Champion Road	Latex	7.6
1991	Cummins Road	Latex	11.6
1991	Old State Route 259	Latex	16.1
1991	Eberly Home Road	Latex	17.1
1991	Clays Church Road	Latex	18.1
1991	Alvordton Road	Latex	19.1

Bridge Deck Overlay Projects (continued)

Year	Bridge	Type	Milepost
1991	Clifton Gunn Road	Latex	21.4
1991	Zone-Southern Road	Latex	25.3
1991	Spies Handy Corners Road	Latex	27.3
1991	Lauber Hill-Ritter Road	Latex	28.3
1991	Eckley-Powers Road	Latex	29.3
1991	Reighard-Whiteville Road	Latex	43.9
1991	Shiloh-Whiteville Road	Latex	44.4
1991	Utah Road	Latex	45.4
1991	Brailey Road	Latex	46.6
1991	Fulton-Lucas Road	Latex	48.4
1991	Scott Road	Latex	49.4
1991	Exit 59 Ramp	Latex	59.5
1991	Cass Road	Latex	60.3
1991	Crystal Street	Latex	62.0
1991	US 24 – SR 25	Latex	62.3
1991	Swartzman Road	Latex	82.2
1991	Hessville Road	Latex	84.4
1991	Dean Road	Latex	132.4
1991	Gifford Road	Latex	135.4
1991	Exit 142 Eastbound Ramp over West Ridge Road	Latex	142.6
1991	Lipkey Road	Latex	220.3
1991	Herbert Road	Latex	225.0
1991	Exit 234 Eastbound Ramp over Turnpike	Latex	234.1
1991	Exit 234 SB Ramp over the Yellow Creek	Latex	234.4
1992	Asbury Road	Latex	197.8
1992	Nichols Road	Latex	199.2
1992	Jewel-North Road	Latex	206.3
1993	Stryker-Lockport Road	Latex	22.0
1993	Shilling-Ely Road	Latex	22.7
1993	Ruegar Shelter Road	Latex	23.9
1993	Fulton-Williams Road	Latex	24.4
1993	Wauseon-Ottokee Road	Latex	35.2
1993	W. Barre-Advance Road	Latex	36.3
1993	Biddle Scott Road	Latex	37.1
1993	Winnemeg-Lyons Road	Latex	38.3
1993	Brigham-Fraker Road	Latex	42.9
1993	Dutch Road	Latex	76.3
1993	Martin- Williston Road	Latex	78.7

Bridge Deck Overlay Projects (continued)

Year	Bridge		Milepost
1993	Dishinger Road	Latex	81.5
1993	River Road	Latex	120.1
1993	Wikel Road	Latex	121.9
1993	Arlington Road	Latex	122.3
1993	Chapin Road	Latex	123.1
1993	Frailey Main Road	Latex	126.3
1993	Angling Road	Latex	129.0
1993	S.R. 700	Latex	198.5
1995	Copp Road	Latex	104.3
2012	Royalton Road	Micro-Silica	165.4
2012	York Road	Micro-Silica	165.5
2012	Bennet Road	Micro-Silica	166.2
2013	Turnpike Ramp over Turnpike	Micro-Silica	161.5
2013	Turnpike Ramp over Turnpike	Micro-Silica	161.8
2013	Turnpike Ramp over Turnpike	Micro-Silica	173.2
2014	Maddock Road	Type K	149.8
2014	State Route 3	Type K	166.8
2015	Turnpike Ramp over Turnpike	Type K	34.9
2015	NS RR (Conrail) (NYC RR) (EB)	Type K	147.9
2015	Turnpike Ramp over Turnpike	Type K	218.7
2016	EB & WB Turnpike over Kelly Road	Micro-Silica	117.3
2016	EB & WB Turnpike over SR 250	Micro-Silica	118.1
2016	NS RR (Conrail) (NYC RR) (WB)	Micro-Silica	147.9
2018	Turnpike Ramp over Turnpike	Micro-Silica	218.7
2019	Quarry Road	Micro-Silica	138.0
2022	EB Turnpike over Western Reserve Road – CR 32	Micro Silica	230.7
Total to Date			102

Third Lane Construction Program Overhead Bridge Replacement or Reconstruction

Year	Bridge	Milepost
1996	Dishinger Road	81.5
1996	Billings Road	108.7
1996	Root Road	151.2
1996	S.R. 88	199.5
1997	Lime City Road	65.4
1997	Tracy Road	67.7
1997	Lemoyne Road	70.8
1997	Billman Road	75.2
1997	Dutch Road	76.3
1997	Martin-Williston Road	78.7
1997	Swartzman Road	82.2
1997	Kingsway Road	89.4
1997	Patten-Tract Road	112.5
1997	Thomas Road	115.1
1997	Gate 7 Ramp	118.6
1997	Gate 8 Ramp	145.5
1997	West 130th Street	163.8
1997	S.R. 176	169.5
1997	Black Road	174.1
1997	Metroparks Bikeway	179.2
1997	Selkirk-Bush Road	212.5
1998	Crystal Avenue	62.0
1998	Detroit Avenue	62.3
1998	Vermilion Road	135.0
1998	Albion Road	162.2
1999	Camper Road	75.6
1999	S.R. 105	79.5
1999	Angling Road	129.0
1999	S.R. 60	131.6
1999	Abbey road	164.4
1999	Edgerton Road	169.6
2000	Oregon Road	67.2
2000	Luckey Road	69.7
2000	Harrison Road	130.8
2000	Berea-Bagley Road	152.9
2000	Sprague Road	159.0
2000	Elsworth Bailey NB	215.4
2000	Elsworth Bailey SB	215.4

Third Lane Construction Program (continued) Overhead Bridge Replacement or Reconstruction

Year	Bridge	Milepost
2000	Exit 218 Ramp Over Turnpike	219.0
2002	S.R. 795 Over Turnpike	65.1
2002	Pemberville Road	72.0
2003	Ramp over Turnpike	59.5
2003	CSX Railroad	157.2
2006	Norfolk Southern Railroad	182.0
2019	Perrysburg-Holland Road	59.0
	Total to Date	45

Bridge Removals

Year	Bridge	Milepost
2019	Ohio Turnpike over Inactive Railroad	138.0
2020	Ohio Turnpike over Inactive Railroad	34.2
2020	Ohio Turnpike over Millcreek Bikeway*	223.0
2021	Ohio Turnpike Ramp over S.R. 53	92.0
2022	Ohio Turnpike Ramp over French Creek*	151.3
	Total to Date	5

Pedestrian Bridges

Year	Bridge	Milepost
2021	Toll Plaza 49 Pedestrian Bridge over the Ohio Turnpike	49.0
2022	Toll Plaza 4 Pedestrian Bridge over the Ohio Turnpike	4.6
2022	Toll Plaza 211 Pedestrian Bridge over the Ohio Turnpike	211.0
	Total to Date	3

* Replaced with precast concrete culvert

Appendix D

Current Bridge Repairs, Rehabilitations, And Replacements

Table 1: Embankment Rehabilitation

Milepost	Intersecting Roadway	Status
73.8	Slope Repairs Milepost 73.8 Eastbound and Westbound	Completed 09/2022

Table 2: Various Repairs Including Fence, Parapet, Bearings, Joints etc.

Milepost	Intersecting Roadway	Status
N/A	N/A	None under Contract

Table 3: Bridge Painting

Milepost	Intersecting Roadway	Status
222.7	Turner Road Mainline	Completed 7/2022
222.8	Kirk Road Mainline	Completed 7/2022

Table 4: Emergency Repairs

Milepost	Intersecting Roadway	Status
95.4	U.S. Route 6 Mainline	Completed August 2022
219.8	Mahoning Avenue – CR 18 Mainline	Completion Expected November 2022

Table 5: Bridge Deck Overlays

Milepost	Intersecting Roadway	Status
230.7	EB Turnpike over Western Reserve Road – CR 32	Completed May 2022

Table 6: Bridge Deck Replacements

Milepost	Intersecting Roadway	Status
40.3	Ohio Turnpike over S.R. 109	Completion Scheduled 11/2023
40.5	Ohio Turnpike over DT&I Railroad	Completion Scheduled 11/2023
99.1	Ohio Turnpike over S.R. 510	Completion Scheduled 11/2023
152.3	Ohio Turnpike Ramp over Lorain Road	Completion Scheduled 10/2022
153.9	Jennings Road - CR 234 over the Ohio Turnpike	Completion Scheduled 10/2022
169.9	East Edgerton Road over the Ohio Turnpike	Completion Scheduled 10/2022
172.9	Brecksville Rd. (S.R. 21) over Ohio Turnpike	Completion Scheduled 11/2023

Table 7: Bridge Removals

Milepost	Intersecting Roadway	Status
92.0	Ohio Turnpike Ramp over SR 53	Completed 11/2021

Table 8: Bridge Replacements

Milepost	Intersecting Roadway	Status
151.3	Ohio Turnpike Ramp over French Creek	Completion Scheduled 11/2022

Appendix E

Crash Statistics

Crash Statistics (1955 to 2022 Year to Date)

Year	Accidents	Accident Rate	No. of Fatalities	Fatality Rate
1955	233	147	4	2.5
1956	806	102.5	16	2.0
1957	775	85	28	3.1
1958	666	72.5	29	3.1
1959	763	77.7	18	1.8
1960	756	73.2	20	1.9
1961	735	72.3	23	2.3
1962	773	72.6	13	1.2
1963	778	71.6	16	1.5
1964	966	83.3	35	3.0
1965	1,039	86.3	32	2.6
1966	1,193	93.4	40	3.1
1967	1,268	98.7	27	2.1
1968	1,485	108.4	35	2.6
1969	1,502	104.1	40	2.8
1970	1,478	100.2	24	1.6
1971	1,542	101.3	34	2.2
1972	1,832	114.9	26	1.6
1973	1,902	115.4	28	1.7
1974	1,491	98.1	10	0.7
1975	1,366	88.5	24	1.6
1976	1,496	90.7	21	1.3
1977	1,770	103.4	26	1.5
1978	1,726	98.4	19	1.1
1979	1,543	95.5	38	2.4
1980	1,393	88.4	26	1.7
1981	1,583	94.6	20	1.2
1982	1,552	98.3	12	0.8
1983	1,625	98.6	13	0.8
1984	1,821	107.8	11	0.7

Crash Statistics (1955 to 2022 Year to Date)

Year	Crashes	Crash Rate	No. of Fatalities	Fatality Rate
1985	1,814	104.8	19	1.1
1986	1,698	93	8	0.4
1987	1,944	101.7	12	0.6
1988	1,874	93	18	0.9
1989	1,944	92.7	21	1.0
1990	1,847	84.6	13	0.6
1991	1,759	81.5	13	0.6
1992	1,755	78.5	21	0.9
1993	1,846	80	12	0.5
1994	1,978	81.8	19	0.8
1995	2,019	80.3	12	0.5
1996	2,248	90.5	13	0.5
1997	2,035	82.9	10	0.4
1998	1,889	73.5	8	0.3
1999	2,303	86.7	8	0.3
2000	2,443	90.4	12	0.4
2001	2092	77	14	0.5
2002	2373	84.5	10	0.4
2003	2433	85.9	11	0.4
2004	2609	89.6	17	0.6
2005	2858	95.6	14	0.5
2006	2342	77.0	8	0.3
2007	2532	85.0	11	0.5
2008	2689	95.0	5	0.2
2009	2125	81.6	8	0.3
2010	2268	80.9	7	0.2
2011	2583	92.7	6	0.2
2012	2598	92.7	7	0.2
2013	2380	83.5	8	0.3

Crash Statistics (1955 to 2022 Year to Date)

Year	Crashes	Crash Rate	No. of Fatalities	Fatality Rate
2014	2642	91.1	9	0.4
2015	2459	90.2	11	0.4
2016	2367	91.7	12	0.5
2017	2238	73.0	5	0.2
2018	2397	78.3	9	0.3
2019	2235	74.4	14	0.5
2020	1912	76.9	12	0.5
2021	2390	77.9	11	0.4
*2022	1702	97.2	6	0.3

* 8 months

Appendix F

Schedule of Insurance



	A	B	C	E
	COVERAGE	AGENT/BROKER	CARRIER	COVERAGE SUMMARY
1	General Liability, including Sexual Abuse & Molestation Employers Liability Employee Benefits Liability	Jackson, Dieken & Associates	US Specialty Insurance Co.	Limit \$1,000,000 each occurrence (Bodily Injury/Property Damage) \$3,000,000 aggregate Self Insured Retention \$100,000 each occurrence \$250,000 aggregate (Including loss adjustment expense)
	Public Officials Liability	Jackson, Dieken & Associates	US Specialty Insurance Co.	Limit \$1,000,000 each wrongful act \$1,000,000 aggregate Self Insured Retention \$100,000 each wrongful act \$250,000 each policy period Retro Date 07/01/98
	Employment Practices Liability	Jackson, Dieken & Associates	US Specialty Insurance Co.	Limit \$1,000,000 each wrongful act \$1,000,000 aggregate Self Insured Retention \$100,000 each wrongful act \$250,000 each policy period
	Automobile Liability	Jackson, Dieken & Associates	US Specialty Insurance Co.	Limit \$1,000,000 each occurrence - bodily injury and property damage Self Insured Retention \$100,000 each occurrence \$250,000 aggregate Includes owned, non-owned autos Includes Garagekeepers Legal Liability
2	1st Layer Excess Liability Sexual Abuse & Molestation General Liability Employers Liability Employee Benefits Liability Automobile Liability Public Officials Liability Employment Practices Liability	Jackson, Dieken & Associates	US Specialty Insurance Co.	Limit \$10,000,000 Each Occurrence/\$10,000,000 General Aggregate
3	2nd Layer Excess Liability General Liability Employers Liability Employee Benefits Liability Automobile Liability Public Officials Liability Employment Practices Liability	Arthur J. Gallagher Risk Mgmt Services, Inc.	Homesite Insurance Company of Florida	Limit \$10,000,000 Each Occurrence/\$10,000,000 General Aggregate
4	3rd Layer Excess Liability General Liability Employers Liability Employee Benefits Liability Automobile Liability	Arthur J. Gallagher Risk Mgmt Services, Inc.	The North River Insurance Company/Crum & Forster	Limit \$15,000,000 Each Occurrence/\$15,000,000 General Aggregate



	A	B	C	E
	COVERAGE	AGENT/BROKER	CARRIER	COVERAGE SUMMARY
5	4th Layer Excess Liability General Liability Employers Liability Employee Benefits Liability Automobile Liability	Arthur J. Gallagher Risk Mgmt Services, Inc.	Great American Insurance Co. of New York	Limit \$15,000,000 Each Occurrence/\$15,000,000 General Aggregate
6	5th Layer Excess Liability General Liability Employers Liability Employee Benefits Liability Automobile Liability	Britton Gallagher & Associates	Cincinnati Insurance Company	Limit \$15,000,000 Each Occurrence/\$15,000,000 General Aggregate
7	Inland Marine/Bridge	Arthur J. Gallagher Risk Mgmt Services, Inc.	Continental Casualty Company	Limit \$278,141,000 agreed value \$100,000,000 per occurrence property damage Cuyahoga, Huron, Sandusky, Maumee River, Vermilion and Tinkers Creek bridges; NY Central and Penn Central RR structures Includes vandalism and malicious and civil disorder Loss of Revenue \$15,000,000 per occurrence Deductible \$100,000 deductible all losses (Also 120 hours for Loss of Revenue)
8	Property Boiler & Machinery Electronic Data Processing Contractors Equipment	Arthur J. Gallagher Risk Mgmt Services, Inc.	Travelers Indemnity Company	Limit \$615,188,900 Total Insured Value \$550,000,000 limit - Buildings and Business Personal Property blanket replacement cost per occurrence \$100,000,000 limit - Boiler and Machinery \$50,000,000 limit - Earth Movement, Flood Additional sub-limits for Electronic Data Processing Equipment, Business Income, Extra Expense, Ordinance or Law, Builders Risk, Fungus, Transit, and other coverages Increased coverage at adjusted rate as insured locations and contents are added Deductibles \$100,000 deductible earthquake, flood \$50,000 deductible windstorm, boiler and Machinery \$50,000 deductible all other covered losses
	Maintenance/Contractors Equipment	Arthur J. Gallagher Risk Mgmt Services, Inc.	Travelers Indemnity Company	Limit \$16,295,000 Specific amounts of insurance per item, as per schedule on file \$500,000 newly acquired equipment



A B C			E
COVERAGE AGENT/BROKER CARRIER			COVERAGE SUMMARY
9	Crime	Arthur J. Gallagher Risk Mgmt Services, Inc. Travelers Casualty & Surety of America	Limit \$15,000,000 limit - Employee Theft, Forgery or Alteration, On Premises, In Transit, Money Orders/Counterfeit Money, Computer Fraud, Funds Transfer Fraud \$100,000 limit - Data Restoration Expense \$5,000 limit- Claim Expense Deductible \$50,000 deductible per loss
10	Pollution Legal Liability	Arthur J. Gallagher Risk Mgmt Services, Inc. Ironshore Specialty Insurance Company	Limit \$1,000,000 each incident \$2,000,000 aggregate Includes terrorism Third-party claims for BI/PD or remediation; first party remediation; emergency response; business interruption Coverage excess of customers, contractors, service plaza operators, etc., if applicable Includes transportation activities of Commission and customers Deductible \$50,000 deductible
11	Cyber/Privacy Liability	Arthur J. Gallagher Risk Mgmt Services, Inc. Crum & Forster	Limit \$2,000,000 with various sub-limits Deductible \$100,000 Third party enterprise security & privacy liability, regulatory action, breach response, computer system extortion; first party forensic and legal services, public relations expense, website media liability, business interruption, data restoration
12	Terrorism		Included in all coverages above, except Travelers Crime policy