## PAVEMENT REPLACEMENT PROGRAM PAST, PRESENT AND FUTURE



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CONSTRUCTION ENGINEER

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\text { OCTOBER 4, } 2022
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- THEOHIO TURNPIKE ACT WENT INTO EFFECTON SEPT. 1, 1949.
- 38 MONTHSOFCONSTRUCTION BEGAN ON OCTOBER 27, 1952 .
- TURNPIKE OPENONOCTOBER1, 1955 .



## HISTORY OF THE OHIO TURNPIKE

| Summary of Project Costs |  |
| :---: | :---: |
| d | Roadway -----------------------\$ 72,601,309 |
| ect did not include interest during construction |  |
| ch cowers the interest payments in the face |  |
| amount of the bonds that fall due during the perio | Toll Plazas -----------------------3,131,000 |
| of construction and for a period of six to twelv | Maintenance Buildings -------- $1,516,000$ |
| months following the opening of the facility to tra | Toll Collection Equipment ----- 543,420 <br> Radio Communications ------  <br> 886,650  |
| This element of cost is determined after | Administration Building -------- 1,250,000 |
| upon rates of the bonds have been fixed by | Police Barracks ------------ 380,000 |
| financing group. | Snow Fence ----------------164,000 |
| Also excluded from these estimates are the financing items which include bond premium or discount, bond counsel fees and expenses, preparation and printing of the trust indenture, preparation and printing of the prospectus (official statement issued prior to sale of bonds), trustees' fees incidental to the issuance of bonds, cremation of temporary bonds, and other similarly related costs incurred during the development of the financing aspects of the project. | Maintenance of Traffic ---------- 152,000 |
|  | TOTAL Construction Cost .--\$222,213 |
|  | In summary, following are the total estimated project costs, exclusive of financing expenses: |
|  |  |
|  | Construction Cost ----------------120, $222,231,638$ |
|  | Cost of Utility Adjustments ---- $\quad 2,170,000$ |
|  |  |
|  | Expenses -------------------- 900,000 |
| Following is the estimated cost of the construction of Ohio Turnpike Project No. 1 as determined by the Consulting Engineers in August, 1951, prior to the financing of the project: | Cost of Initial Maintenance |
|  | Equipment and Supplies ---- $\quad 1,600,000$ |
|  | Contingencies ----------------- $\frac{25,760,362}{}$ |



- COMMISSION ISSUED \$326,000,000 REVENUE BONDS.
- IN 2022 DOLLARS $=\$ 3.3$ BILLION 241 MILES 2-LANES DIVIDED HIGHWAY
-PEAKCONSTRUCTION - 10,000 WORKER
- 241 CENTERLINE MILES, 550 BRIDGES, 17 TOLL PLAZAS, 8 PAIRS OF SERVICE PLAZAS, AND 8 MAINTENANCE FACILITIES.

HISTORY OF THE OHIO TURNPIKE


## OHIO <br> TURNPIKE <br> HISTORY OF THE OHIO TURNPIKE

 TURNPIKE

## HISTORY OF THE TURNPIKE PAVEMENT



SP404-1-1/4" ASPHALT CONCRETE PG70-22
SP402-3-3/4 ASPHALT CONCRETE PG70-22
SP302-10" ASPHALT CONCRETE BASE PG64-22
SP304-6" AGGREGATE BASE
ITEM 204 - SUBGRADE COMPACTION
1996-2006 \& 2011-2014
3RD LANE WIDENING - NORMAL SECTION
15" ASPHALT PAVEMENT + 6" BASE
MP 59.52 TO MP 218.58 OR 159.06 MILES
NOTE: ALL SHOULDER USE PG64-22 ASPHALT

## PAVEMENT REPLACEMENT PAST

- IN 2009 , RESOURCE INTERNATIONAL WAS CONTRACTED TO PERFORM A MASTER PLAN REPORT.
- IN 2010 , RESOURCE PROVIDED THE PHASE 2 - FEASIBILITY STUDYFOR DESIGN \& CONSTRUCTION.
- IN 2015 , RESOURCE PROVIDED THE 2015 MASTER PLAN UPDATE REPORT.



## PAVEMENT REPLACEMENT PAST

## MASTER PLAN REPORT (284 PAGES)

1. COLLECT DATA ON EXISTING PAVEMENT

- REVIEW ALL AVAILABLE REPORTS, CONSTRUCTION AND MAINTENANCE HISTORY.
- LOOK AT TRAFFIC VOLUMES AND WEIGHTS.

2. PAVEMENT CONDITION SURVEY UTILIZING A DATA COLLECTION VEHICLE.

- COLLECTED CROSS SLOPES, RUTTING AND TRANSVERSE JOINT FAULTING BETWEENLANES.

3. NON-DESTRUCTIVE PAVEMENT EVALUATION TESTING.

- PERFORMED GROUND PENETRATING RADAR SURVEY.
- PERFORMED FALLING WEIGHT DEFLECTOMETER

4. GEOTECHNICAL / SUBSURFACEINVESTIGATION.

- PERFORMED PAVEMENT CORING AND SOIL BORING INVESTIGATION.

5. PERFORMCOST BENEFIT ANALYSIS

- COMPARE POTENTIAL PAVEMENT OPTIONS/LIFE CYCLE COST

6. PREPARE A MASTER PLAN

- UTILIZE ALL INFORMATION GATHERED AND DEVELOP A SYSTEM TO PRIORITIZE THE 48 SECTIONS WITH 5-MILE LENGTHS TO BE RECONSTRUCTED.


## PAVEMENT REPLACEMENT PAST



## PAVEMENT REPLACEMENT PAST

## PHASE 2 - FEASIBILITY STUDY (FOR DESIGN \& CONSTRUCTION)

- TYPICAL SECTION BASED ON A PAVEMENT TYPE STUDY.
- MAINTENANCE OF TRAFFIC USING CONTRA FLOW
- CROSSOVER DETAIL
- PROBABLECONSTRUCTIONCOST
- CONSTRUCTABILITY ALTERNATIVE STUDY.

2019 CONSTRUCTION SEASON PROJECT 39-18-02A WESTBOUND RIGHT TWO (2) LANES AND SHOULDER RECONSTRUCTION

MP $\mathbf{1 6 9 . 7 4}$ TO MP 176.34 SUMMIT AND CUYAHOGA COUNTIES, OHIO


CONTRAFLOW TRAFFIC PATTERN MP 169.74 TO MP 176.34 DURING PHASE $4 \& 4 A$ OPERATIONS

## PAVEMENT REPLACEMENT PAST

## 2015 MASTER PLAN UPDATE REPORT

UPDATED THE 2009 MASTER PLAN DATABASE.
USED THE DEGRADATION MODEL DEVELOPED IN THE 2009 MASTER PLAN AND RANKING PROCESS TO PRIORITIZED THE NEXT 9 SECTIONS OF PAVEMENT TO BE REPLACED OR RESURFACED
A RECOMMENDATION TO THE CHIEF ENGINEER BASED ON THE FOLLOWING:

- REVIEW THE RECOMMENDATION OF THE MASTER PLAN
- PAVEMENT CONDITION PROVIDED BY ODOT WITH MAINTENANCE SUPERINTENDENTS INPUT.
- OTHER CONSTRUCTION PROJECTS. PR PROJECTS USUALLY TAKES 1ST PRIORITY
- BUDGETARY CONSTRAINTS WHICH ARE LINKED TO THE COMMISSION'S 50 YEAR PLAN



## PAVEMENT REPLACEMENT PAST

## PAVEMENT REPLACEMENT 2011-2023

- THE PAVEMENT REPORT RECOMMENDED IMPROVEMENT OF THE SUBGRADE DUE TO THE LOW CBR VALUES ON THE FIRST PROJECT.
- BASED ON SOILS AND THE GP-1 DESIGN, EITHER LIME AND CEMENT STABILIZATION IS USED. (GENERALLY, $4 \%$ TO 6\%).
- SP 302 HAS VARIED BETWEEN 11 "AND 13 ". (12" MINIMUM THICKNESS)



## PAVEMENT REPLACEMENT PRESENT

## MODERNIZED OHIO TURNPIKE TOLL COLLECTION SYSTEM



## PAVEMENT REPLACEMENT PRESENT

NEW MAINLINE TOLL PLAZAS: TP4, TP49 \&TP 211


## PAVEMENT REPLACEMENT PRESENT



## PAVEMENT REPLACEMENT PRESENT

## PAVEMENT REPLACEMENT PROGRAM - STATS

- 12 YEARS OF CONSTRUCTION.
- $33 \%$ CONSTRUCTION IS COMPLETE.
- 17 PR PROJECTS - 15 SECTIONS - 79.53 CENTERLINE MILES COMPLETE.
- \$ $514,000,000$ CONSTRUCTION DOLLARS SPENT TO DATE.
- 34 PR PROJECTS TO COMPLETE.
- 21 TYPICAL PR PROJECTS (2 CONSTRUCTION SEASONS).
- 13 PR PROJECTS WITH 3RD LANE WIDENING (3 CONSTRUCTION SEASONS).
- CONSULTANT FEES WITH RESPECT TO CONSTRUCTION:
- DESIGN = $2.0 \%$
- CONSTRUCTION MANAGEMENT/PROGRAM MANAGEMENT=5.8\%
- MATERIAL TESTING = $1.8 \%$
- TOTALCONSULTANT FEE ESTIMATED AT $10 \%$ OF CONSTRUCTION.


## PAVEMENT REPLACEMENT PRESENT




## PAVEMENT REPLACEMENT FUTURE

## PAVEMENT REPLACEMENT PROGRAM - FUTURE CONTRACTS

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PROGRAM MANAGER CONTRACT - LOI - END OF OCTOBER 2022
    - 10 PROJECTS (APPROXIMATELY 8 YEARS)
TWO PR DESIGN CONTRACTS - LOI - END OF NOVEMBER 2022
    1. CONTRACT 71-23-01
        - MP 154.10 TO MP 159.80-5.7 MILES IN CUYAHOGA COUNTY
    2. CONTRACT 71-23-02
        - MP 212.76 TO MP 216.25 - 3.49 MILES IN TRUMBULL COUNTY
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## PAVEMENT REPLACEMENT FUTURE



## PAVEMENT REPLACEMENT FUTURE

CONTRACT 71-23-01 (39-25-01)

- MP 154.10 TO MP 159.80-5.7 MILES IN CUYAHOGACOUNTY.
- NO INTERCHANGES
- LOWER ROAD UNDER THE OVERHEAD RAILROAD BRIDGE AT MP157.2.
- IN FRONT OF THE ADMINISTRATION BUILDING.



## PAVEMENT REPLACEMENT FUTURE

## CONTRACT 71-23-02 (39-25-01)

- MP 212.76 TO MP $216.25-3.49$ MILES IN TRUMBULL COUNTY.
- 1 HALF INTERCHANGES - TP 215 (WESTBOUND ONLY).



## PAVEMENT REPLACEMENT FUTURE



SP404-1-1/2" ASPHALT CONCRETE PG76-22 SP402-1-3/4 ASPHALT CONCRETE PG76-22 SP302-12" ASPHALT CONCRETE BASE PG64-22 SP304-6" AGGREGATE BASE ITEM 206-GLOBAL CEMENT OR LIME STABLIZATION NOTE: ALL SHOULDER USE PG64-22 ASPHALT

2025 AND BEYOND
PAVEMENT REPLACEMENT \& 3RD LANE WIDENING - NORMAL SECTION 15.25" ASPHALT PAVEMENT + 6" BASE MP 0-MP 59.52 AND MP 218.58-241.26

## PROGRAM MANAGER

## CONSISTENCY



## PROGRAM MANAGER

## MISCELLANEOUS TASKS:

- BASICALLY, WHATEVER I NEED TO MANAGE THE PAVEMENT REPLACEMENTPROGRAM.
- DESIGN AND CADD MANUAL.
- PLANNING - FORECASTING ANDESTIMATINGFUTURECONSTRUCTIONCOSTS.
- CONSTRUCTABILITY REVIEWS.
- CREATING AND/OR REVIEWING STANDARD NOTES AND DETAIL.
- CREATESTANDARD CHECKLISTS FOR DESIGN AND CONSTRUCTION.
- ASSISTING AND REVIEWING BIDDING ADDENDUMS AND BULLETINS.
- MAINTAIN AND UPDATE THE HISTORICALCONSTRUCTION COST DATABASE.
- CONSTRUCTION ESTIMATES.
- MAINTAIN AND UPDATE THE MASTER PLAN AND DATA BASE.


## PR DESIGN

DESIGN CONTRACTS FOR 2025 CONSTRUCTION
DESIGN PERIOD - $15 \pm$ MONTH

- PLANS ARE DUE IN JULY AND AUGUST 2024.
- CONSTRUCTION BIDDING IN OCTOBER AND NOVEMBER OF 2024.

DESIGN SUBMITTALS

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION PR PROJECT MANAGEMENT ORGANIZATIONAL CHART


## PR DESIGN

## DESIGN CRITERIA FOR PAVEMENT REPLACEMENT PROJECTS

- OTIC GENERALLY FOLLOWS THEODOT MANUALS, POLICIES, GUIDES AND STANDARDS FOR THE OHIO TURNPIKE.
- ODOTL\&D MANUAL, VOLUME1, ROADWAY DESIGN.
- ODOTL\&D MANUAL, VOLUME 2, DRAINAGEDESIGN.
- ODOT CONSTRUCTION AND MATERIALSPECIFICATIONS.
- ODOTSTANDARDCONSTRUCTION DRAWINGS.
- OTICSPECIALCONDITIONS
- OTICSTANDARD DRAWINGS


## PR DESIGN

## OTIC DESIGN AND CADD GUIDELINES

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GUIDELINES ARE AS FOLLOWS:
DESIGN GUIDELINES
1. FUNCTIONAL CLASSIFICATION AND DESIGN SPEED
2. SURVEY AND CONTROL
3. STANDARD TYPICAL SECTIONS
4. STANDARD GENERAL NOTES
5. PAVEMENT ELEVATION AND SUPERELEVATION TABLES
6. EXISTING BASEMAP PREPARATION
7. PROFILE DESIGN
8. EXISTING RAMP ANALYSIS AND IMPROVEMENT
9. DRAINAGE DESIGN
10. GRADING AND SIDE SLOPES
11. GUARDRAIL DESIGN
12. GRADING AND SIDE SLOPES
CADD GUIDELINES
1. GENERAL REQUIREMENTS
2. TEMPLATE FILES
3. ETC.
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## OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION <br> PAVEMENT REPLACEMENT PROGRAM



DESIGN AND CADD GUIDELINES

## PR DESIGN

## CHALLENGES AND CHANGES RELATED TO DESIGN

- STABILIZATION OF THE SUBGRADE.
- PAVEMENT JOINT AT THE $3^{R D}$ LANE.
- CHANGEDSP404 AND SP402 FROMPG 70-22 TO PG 76-22.
- FULL DEPTH STONE BERMS WITHOUT GUARDRAIL.
- LINING THE CORRUGATED METAL PIPE (CMP) CULVERTS.
- CLEARING THE CLEAR ZONE OF TREES.
- RIGHTOF WAY FENCE REPLACEMENT INCLUDING CLEARING AND GRUBBING.


## PR DESIGN



## PR DESIGN



## PR DESIGN



## PR - DESIGN

## THE OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION <br>  <br> PROJECT NO. 39-20-02A MAINLINE PAVEMENT REPLACEMENT <br>  <br>  <br> 



## PR - DESIGN




TURNPIKE

## PR - DESIGN




## PR - DESIGN



OHIO
TURNPIKE

## PR - DESIGN



## PAVEMENT REPLACEMENT PROGRAM

## WHAT HAS MADE THE PAVEMENT REPLACEMENT PROGRAM SUCCESSFUL?

- CONSISTENCY - IN DESIGN AND CONSTRUCTION ADMINISTRATION!!!
- LESSON LEARNED - NOT MAKING THE SAME MISTAKE.
- CONSISTENCY - IN PROVIDING THE EXCELLENT STAFF YEAR AFTER YEAR.
- HOLDING THECONTRACTORTOTHEDESIGN AND SPECIFICATIONS.
- COMPETENT AND KNOWLEDGEABLE RESIDENT ENGINEER (RE) AND TEAM!
- PAVEMENT SMOOTHNESS - CONSISTENT IRI(S) IN THE 3O(S)
- PRO-ACTIVE RE. THEY ACT RATHER THAN REACT AND DOCUMENT.
- MANAGING AND USING THE CONSTRUCTION SCHEDULE TO BE PRO-ACTIVE. WHAT'S NEXT?
- CM TEAM KNOWS AND UNDERSTANDS THE PLANS AND SPECIFICATION.
- EXTRA ATTENTION ON THE DAILY MOT AND TRAFFIC SWITCHES.
- LEARN FROM YOUR MISTAKES.
- AS THE PROGRAM MANAGER, I HAVE AN EXPECTATION OF EXCELLENCE!
- CONSISTENCY!


## PAVEMENT REPLACEMENT PROJECT MANAGEMENT



## PR - CONSTRUCTION ADMINISTRATION

## CONSTRUCTION DEPARTMENT

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ANNE POWELL, PE
ED WALSH
CONSTRUCTION ENGINEER
CONSTRUCTION AREA MANAGER
EAST (AND TEMP WEST)

\section*{PR - CONSTRUCTION ADMINISTRATION}

\section*{OTIC CONSTRUCTION GOAL}

\section*{CONSISTENT CONSTRUCTION PROJECT ADMINISTRATION}
- PAVEMENT REPLACEMENT PROJECTS
- STRUCTURE PROJECTS
- RESURFACING
- TOLL PLAZA, SERVICE PLAZAS

\section*{PR - CONSTRUCTION ADMINISTRATION}

\section*{CONSTRUCTION MANAGEMENT SOFTWARE- UPDATE}

STILL UNDER REVIEW
- APPIA
- AASHTOWARE

OTIC MANAGED SHAREPOINT FOR PROJECT LIBRARY
- CHANGE ORDERS
- DOCUMENTATION
- ESTIMATES

\section*{OHIO TURNPIKE \\ PR - CONSTRUCTION ADMINISTRATION}


\section*{PR -CONSTRUCTION ADMINISTRATION}

NEXT PR PROJECT LOI
CONSTRUCTION ADMINISTRATION AND INSPECTION

\section*{FUTURE ADVERTISING - FALL 2024}

TWO EAST PROJECTS:

> 1) 39-25-01 MP 154.10 TO MP 159.80-5.7 MILES
- In FRONT OF Otic Administration office
2) 39-25-02 MP 212.76 TO MP 216.25-3.49 MILES

CONTINUE FROM CURRENT PR 208 PROJECT

\section*{OHIO PR-CONSTRUCTION ADMINISTRATION}
\(\mathrm{OHIO}_{\text {TURNPIKE }}^{\text {OHR-CONSTRUCTION ADMINISTRATION }}\)

OHIO PR-CONSTRUCTION ADMINISTRATION


\section*{OHIO PR-CONSTRUCTION ADMINISTRATION}


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\(\underset{\substack{\text { OHIO } \\ \text { TURNIKE }}}{\text { PR-CONSTRUCTION ADMINISTRATION }}\)


\section*{PR - CONSTRUCTION ADMINISTRATION}

\section*{WHAT ARE WE LOOKING FOR IN OUR CONSTRUCTION MANAGEMENT TEAM?}
- MOT REVIEW HIGH PRIORITY
- INVOLVEMENT ABOVE OBSERVE AND REPORT
- TIMELY DOCUMENTATION, INCLUDING CHANGE ORDERS, ESTIMATES

\section*{PR - MATERIAL TESTING}

\section*{NEXT PR PROJECT LOI MATERIAL TESTING}

\section*{FUTURE ADVERTISING - FALL 2024}

TWO EAST PROJECTS:
39-25-01 MP 154.10 TO MP 159.80-5.7 MILES
39-25-02 MP 212.76 TO MP 216.25-3.49 MILES
TYPES OF TESTING
- CONCRETE TESTING
- COMPACTION TESTING
- ASPHALT TESTING

\section*{PR - WRAP UP}
- FUTURE OPEN HOUSES ARE PLANNED FOR JANUARY 2023.
- QUESTIONS AND ANSWERS```


[^0]:    CHRIS MATTA, P.E
    CHIEF ENGINEER

