NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

TRB Webinar: Incorporating Maintenance Costs into a Transportation Asset Management Plan

April 23, 2024

1:00 – 2:30 PM

PDH Certification Information

1.5 Professional Development Hours (PDH) – see follow-up email

You must attend the entire webinar.

Questions? Contact Andie Pitchford at TRBwebinar@nas.edu

The Transportation Research Board has met the standards and requirements of the Registered Continuing Education Program. Credit earned on completion of this program will be reported to RCEP at RCEP.net. A certificate of completion will be issued to each participant. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the RCEP.

ENGINEERING
RCEP
REGISTERED CONTINUING EDUCATION PROGRAM

Purpose Statement

This webinar will provide an overview of the framework from NCHRP Research Report 1076: A Guide to Incorporating Maintenance Costs into a Transportation Asset Management Plan and include practical examples from state highway agencies.

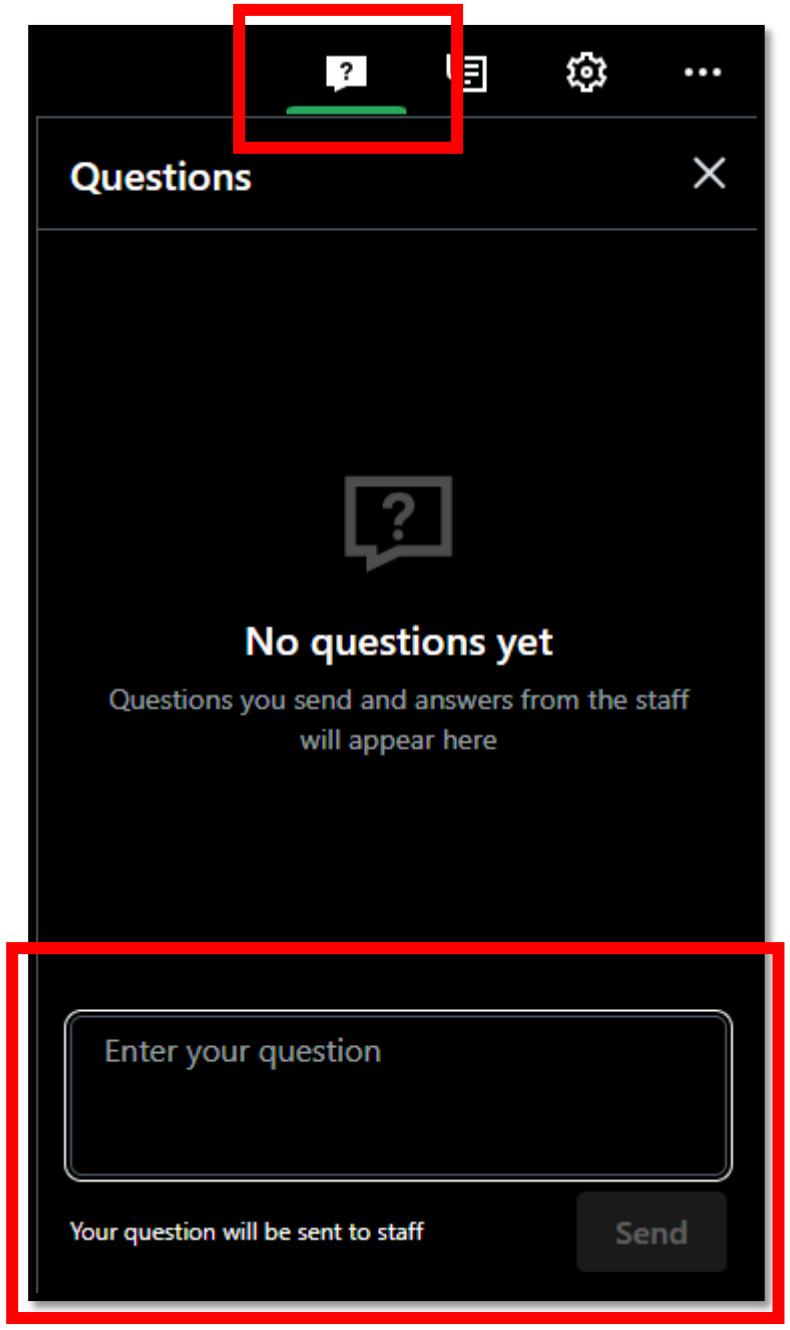
Learning Objectives

At the end of this webinar, you will be able to:

- Utilize the framework for incorporating maintenance costs into a TAMP
- Identify opportunities to implement the framework at their agency

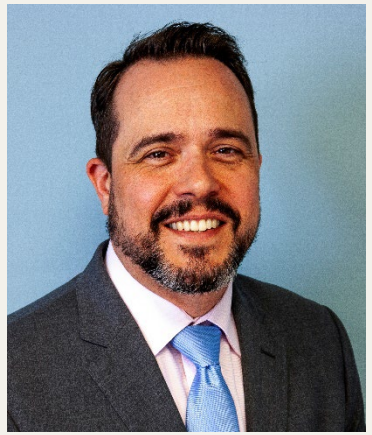
Questions and Answers

- Please type your questions into your webinar control panel
- We will read your questions out loud, and answer as many as time allows



Today's presenters

Rob Zilay
rzilay@dyemanagement.com
Dye Management Group



Brad Allen
ballen@appliedpavement.com
Applied Pavement Technology

Brandye Munn
Brandye.Munn@txdot.gov
Texas DOT

Chris Diaczok
cdiaczok@mdot.maryland.gov
Maryland DOT

Morgan Musick
musickm@dot.state.al.us
Alabama DOT

NCHRP Report 1076: A Guide to Incorporating Maintenance Costs into a TAMP

Agenda

- Overview of the Guide (Brad Allen and Rob Zilay)
  - Background
  - Framework for Incorporating Maintenance into a TAMP
  - Implementation and Continual Improvement
- Texas DOT Case Example (Brandye Munn)
- Alabama DOT Case Example (Morgan Musick)
- Maryland DOT SHA Case Example (Chris Dioczak)

Challenges to Incorporating Maintenance Costs into a TAMP

OBSTACLES

- Lack of a common definition for maintenance
- Lack of quality data
- Limited understanding of the maintenance and asset life-cycle relationship
- Immature risk management practices
- Separation of maintenance and capital budgets
- Maintenance and asset management have different budget or planning periods
- Unlike other work types, maintenance is applicable at all life-cycle stages

Benefits of the Guide

- Better incorporate maintenance costs into TAMPs.
- Establish clear connections between maintenance investments and asset condition.
- Understand how maintenance activities support asset management strategies

Intended Users

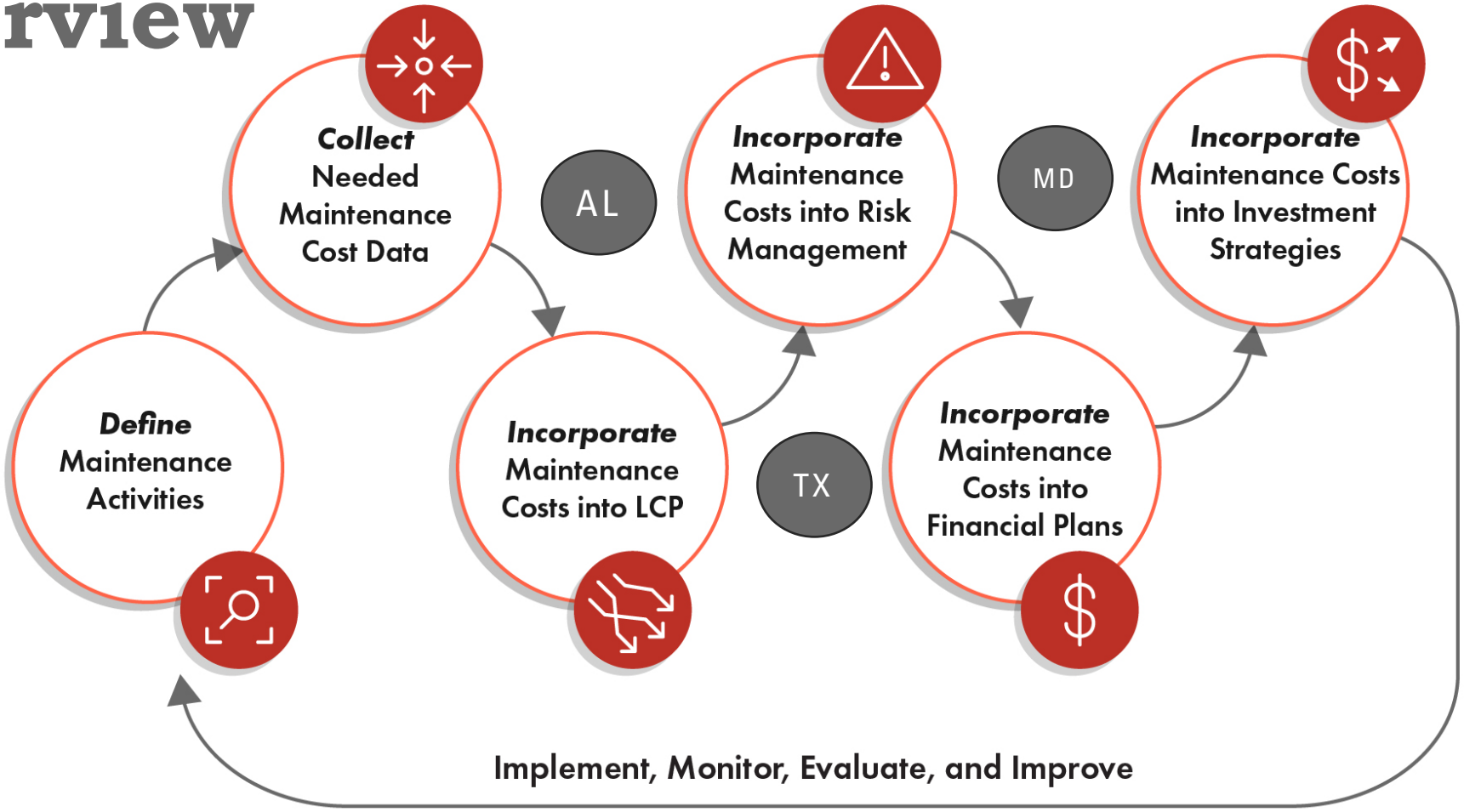
Asset Managers' Concerns

- Long-term planning
- 10-year investment strategies
- Asset condition ratings
- All funding
- Enterprise and programmatic risks

Maintenance Managers' Concerns

- Short-term operations
- Annual budgets
- Maintenance quality assessments
- Maintenance budget
- Implementation of risk mitigation efforts

Framework Overview



Keys to Success

- Coordination with capital program
  - ALDOT's maintenance contracting
  - NYSDOT's innovative maintenance contracting
- Coordinate timing of maintenance delivery
  - TDOT's coordination among maintenanc safety, and operations
- Training, equipping, and supplying
  - NYSDOT's investment in organizational development

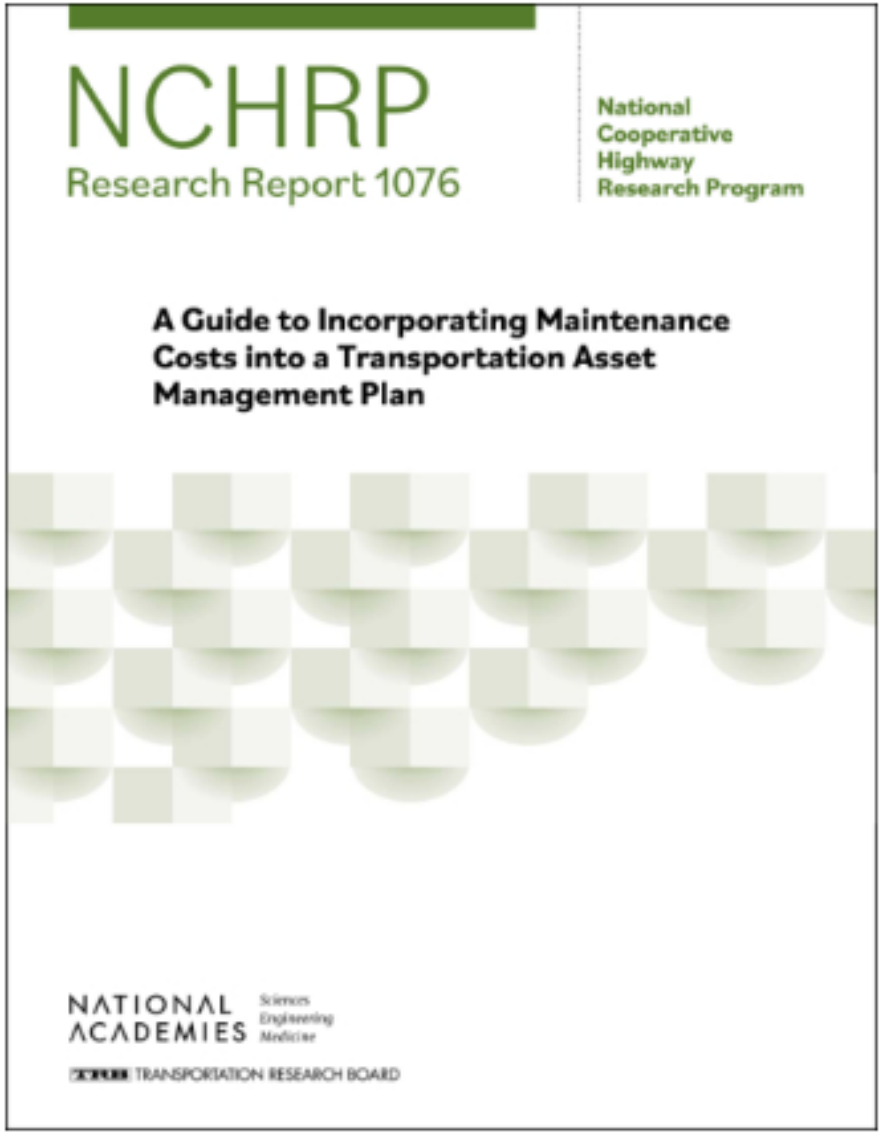
Case Example Presentations

ALABAMA DOT

TEXAS DOT

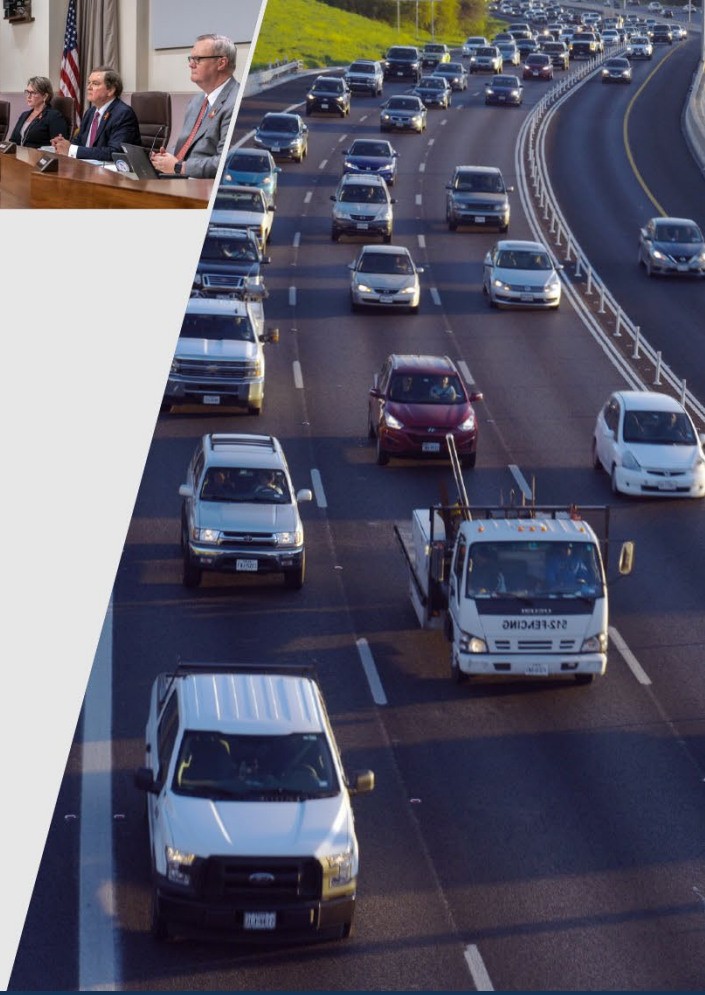
MARYLAND SHA DOT

Questions


NCHRP
Research Report 1076
National Cooperative Highway Research Program
A Guide to Incorporating Maintenance Costs into a Transportation Asset Management Plan
NATIONAL ACADEMIES
Sciences Engineering Medicine
TRANSPORTATION RESEARCH BOARD

Collecting Cost Data from Contractors

NCHRP 23-08 Peer Exchange



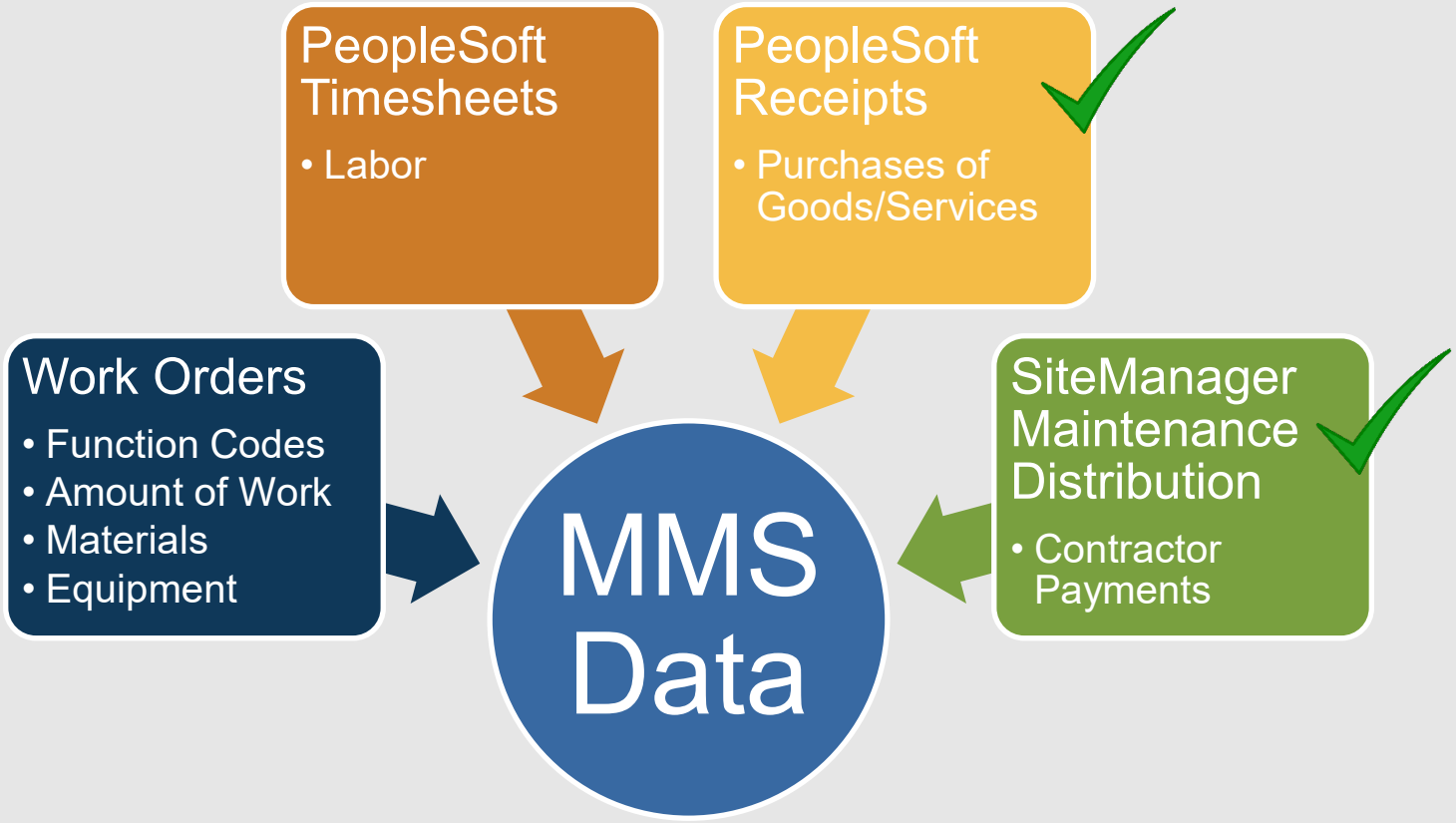
How is MMS Data Used?

- Reporting
  - How and where we spend our $1.6B Routine Maintenance budget
    - **$960M Contracted Work**
    - $640M In House Work
  - Open Records Requests
  - Legal Inquiries
- Routine Maintenance Budget Requests
- Routine Maintenance Budget Allocations
- Federal Reimbursements for Declared Disaster Response

How is Data Organized in MMS?

- Function Codes
  - What work is being performed by either state forces or contractors
- Locations
  - Where the work is being performed
- Amount of Work Performed
  - How much work is being performed
- Cost
  - How much it cost to perform the work

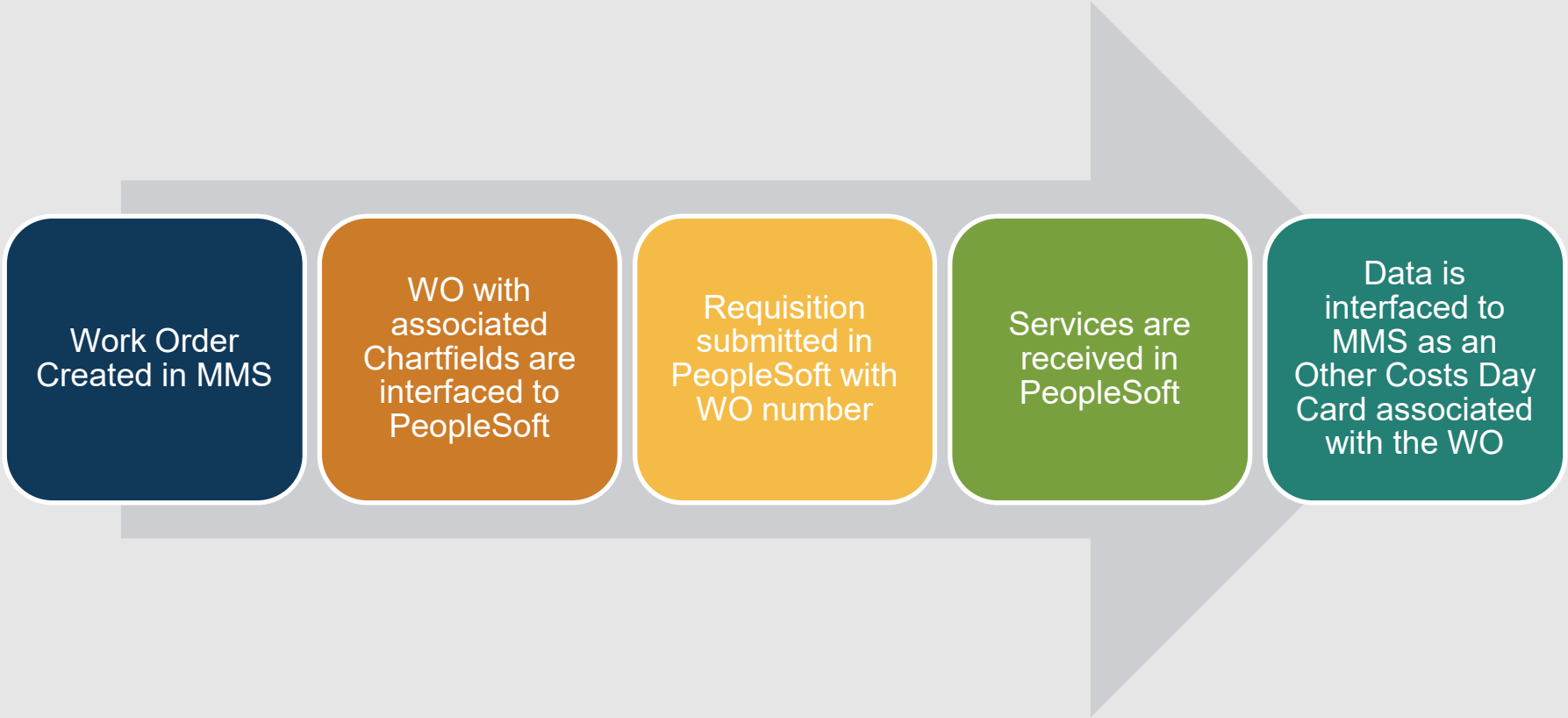
How is Data entered into MMS?



Purchase Orders

- Small contracts < $25,000
- These type contracts will usually meet one of the following conditions:
  - The project does not require detailed specifications
  - There is a need to expedite the project, or
  - It would be impractical to use the regular routine maintenance contract letting procedures
- Examples:
  - Hazardous Materials Removal
  - Intelligent Transportation Services (ITS)
  - Traffic Control
  - Equipment Rentals with Operator

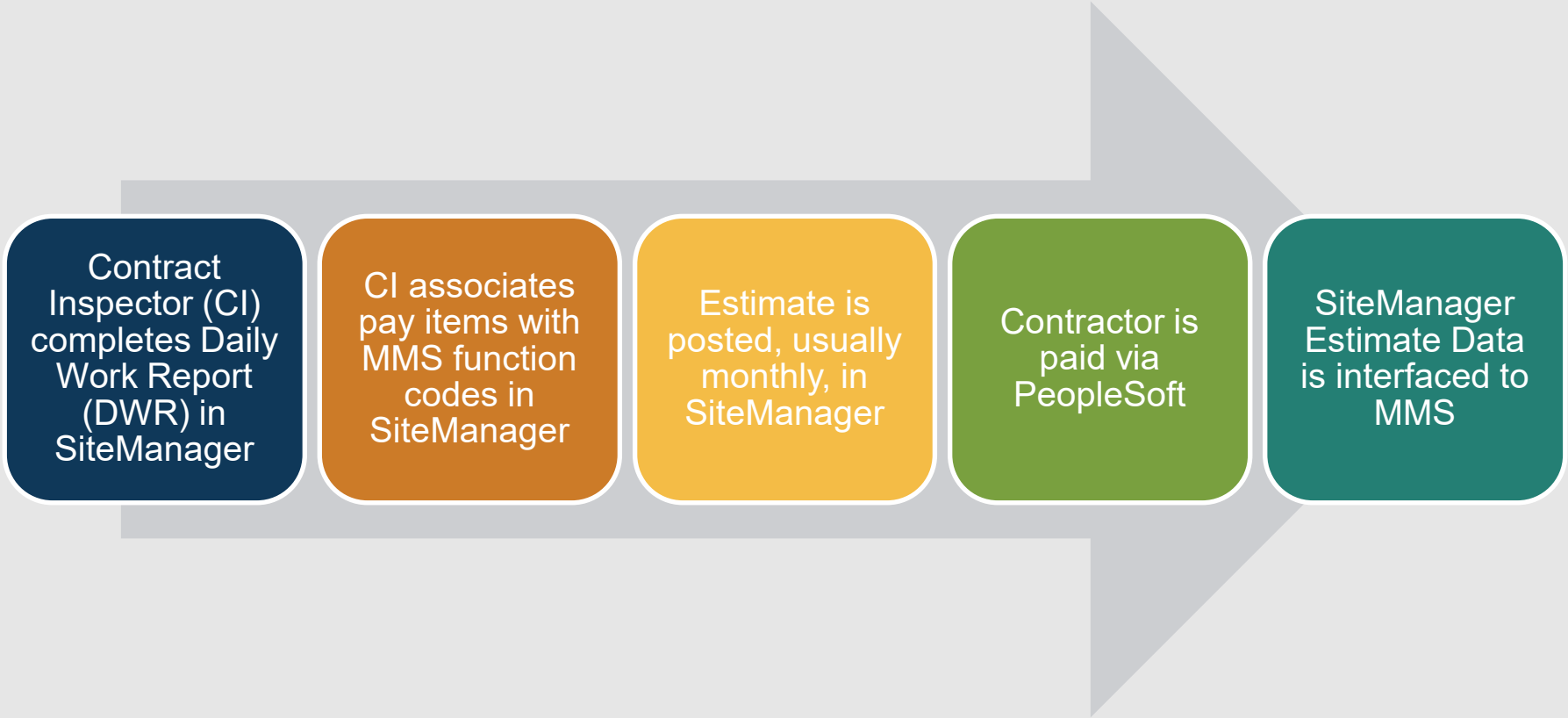
Purchase Orders



Maintenance Distribution

- AASHTOWare SiteManager is a comprehensive construction management tool that tracks, reports, and analyzes contract data from contract award through finalization.
- Daily work reports (DWR) allow inspectors to capture work performed at the job site, such as personnel, equipment, work items, quantities, descriptions, etc.
- TxDOT implemented Routine Maintenance contract administration in SiteManager in 2014.
- TxDOT customized SiteManager by adding a Maintenance Distribution window associated with each DWR.

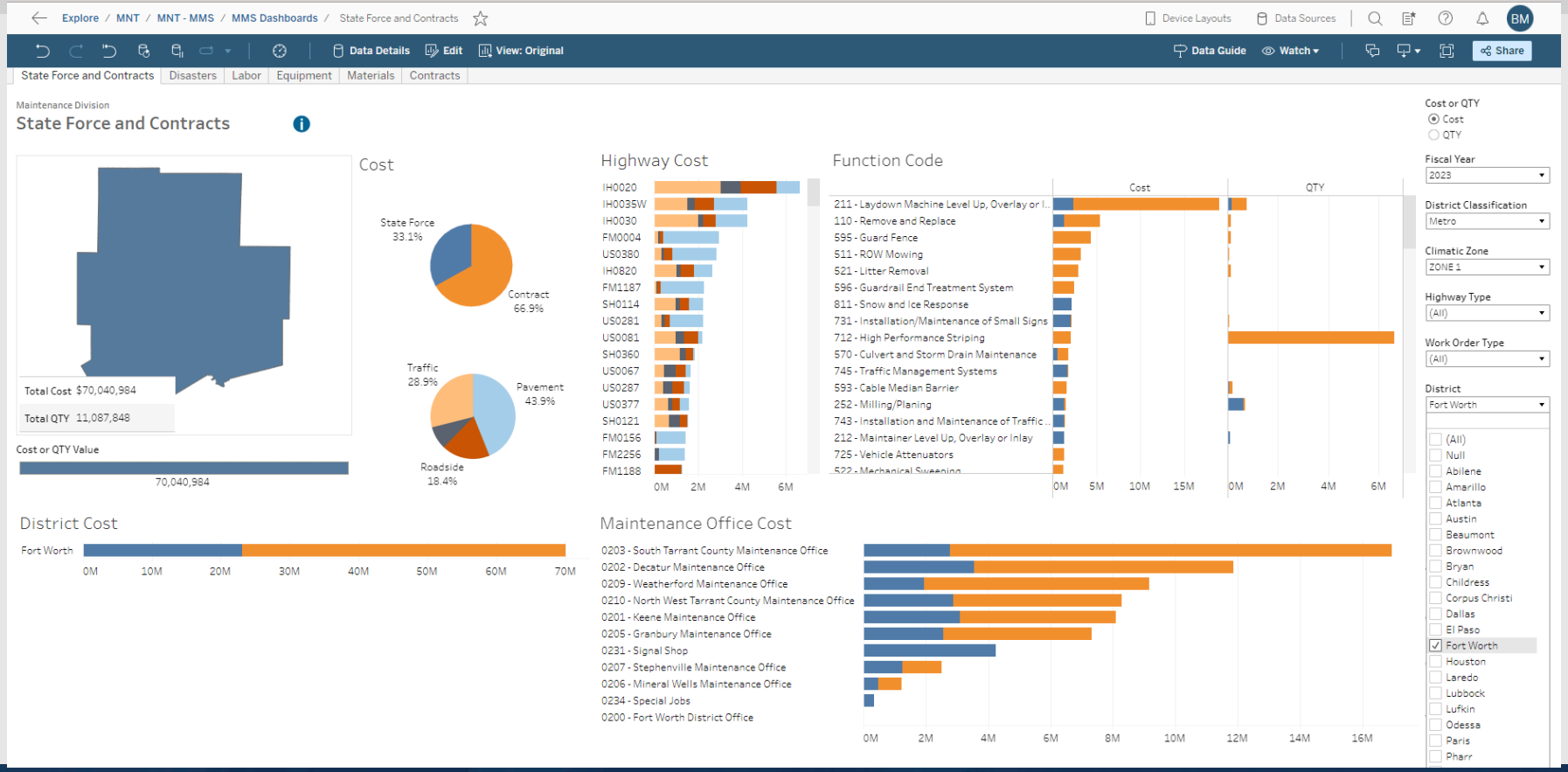
Maintenance Distribution



Maintenance Distribution

- 3700+ pay items are used on routine maintenance contracts.
- The Maintenance Distribution window ties the pay item cost to the MMS function code and amount of work performed.
- When the estimate is posted in SiteManager, the maintenance distribution data for the estimate is summarized and interfaced to MMS.
- MMS provides reports by function code for both in-house work and contracted work.

MMS Reports


Explore / MNT / MNT - MMS / MMS Dashboards / State Force and Contracts
Device Layouts
Data Sources
BM
Data Details
Edit
View: Original
Data Guide
Watch
Share
State Force and Contracts
Disasters
Labor
Equipment
Materials
Contracts
Maintenance Division
State Force and Contracts
Total Cost $70,040,984
Total QTY 11,087,848
Cost or QTY Value
70,040,984
Cost
State Force
33.1%
Contract
66.9%
Traffic
28.9%
Pavement
43.9%
Roadside
18.4%
Highway Cost
IH0020
IH0035W
IH0030
FM0004
US0380
IH0820
FM1187
SH0114
US0281
US0081
SH0360
US0067
US0287
US0377
SH0121
FM0156
FM2256
FM1188
0M
2M
4M
6M
Function Code
Cost
QTY
211 - Laydown Machine Level Up, Overlay or I..
110 - Remove and Replace
595 - Guard Fence
511 - ROW Mowing
521 - Litter Removal
596 - Guardrail End Treatment System
811 - Snow and Ice Response
731 - Installation/Maintenance of Small Signs
712 - High Performance Striping
570 - Culvert and Storm Drain Maintenance
745 - Traffic Management Systems
593 - Cable Median Barrier
252 - Milling/Planing
743 - Installation and Maintenance of Traffic ..
212 - Maintainer Level Up, Overlay or Inlay
725 - Vehicle Attenuators
522 - Mechanical Sweeping
0M
5M
10M
15M
0M
2M
4M
6M
Cost or QTY
Cost
QTY
Fiscal Year
2023
District Classification
Metro
Climatic Zone
ZONE 1
Highway Type
(All)
Work Order Type
(All)
District
Fort Worth
(All)
Null
Abilene
Amarillo
Atlanta
Austin
Beaumont
Brownwood
Bryan
Childress
Corpus Christi
Dallas
El Paso
Fort Worth
Houston
Laredo
Lubbock
Lufkin
Odessa
Paris
Pharr
District Cost
Fort Worth
0M
10M
20M
30M
40M
50M
60M
70M
Maintenance Office Cost
0203 - South Tarrant County Maintenance Office
0202 - Decatur Maintenance Office
0209 - Weatherford Maintenance Office
0210 - North West Tarrant County Maintenance Office
0201 - Keene Maintenance Office
0205 - Granbury Maintenance Office
0231 - Signal Shop
0207 - Stephenville Maintenance Office
0206 - Mineral Wells Maintenance Office
0234 - Special Jobs
0200 - Fort Worth District Office
0M
2M
4M
6M
8M
10M
12M
14M
16M

Brandye Munn

System Analyst, TxDOT

Brandye.Munn@txdot.gov

(512) 779-3998

INCORPORATING MAINTENANCE COSTS

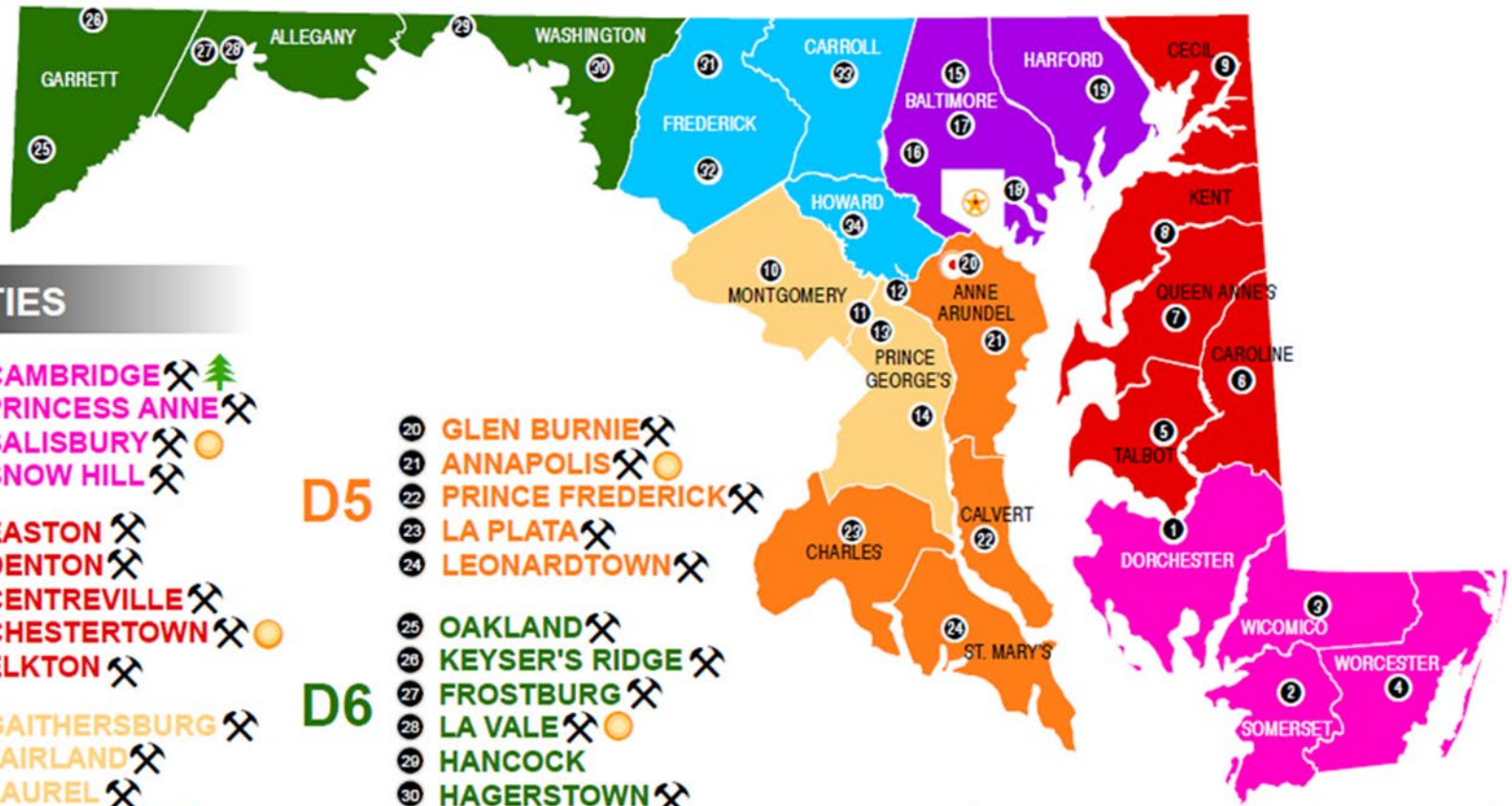
Chris Diaczok
Maryland State Highway Administration
April 23, 2024

MARYLAND BY THE NUMBERS

Context Counts!

- 9th smallest state
- 18th in population
- 5th most densely populated
- 10th most coastline
- Appalachian Mountains in the Western region,
- Piedmont in Central region
- Chesapeake Bay and Beach in Eastern region
- Chesapeake Bay 3rd largest estuary in the world….
- 25% of lane miles
- 75% of traffic

STATE HIGHWAY ADMINISTRATION FACILITIES



FACILITIES

D1
1. CAMBRIDGE
2. PRINCESS ANNE
3. SALISBURY
4. SNOW HILL

D2
5. EASTON
6. DENTON
7. CENTREVILLE
8. CHESTERTOWN
9. ELKTON

D3
10. GAITHERSBURG
11. FAIRLAND
12. LAUREL
13. GREENBELT
14. UPPER MARLBORO

D4
15. HEREFORD
16. OWINGS MILLS
17. HUNT VALLEY
18. GOLDEN RING
19. CHURCHVILLE

D5
20. GLEN BURNIE
21. ANNAPOLIS
22. PRINCE FREDERICK
23. LA PLATA
24. LEONARDTOWN

D6
25. OAKLAND
26. KEYSER'S RIDGE
27. FROSTBURG
28. LA VALE
29. HANCOCK
30. HAGERSTOWN

D7
31. THURMONT
32. FREDERICK
33. WESTMINSTER
34. DAYTON

SHA HEADQUARTERS

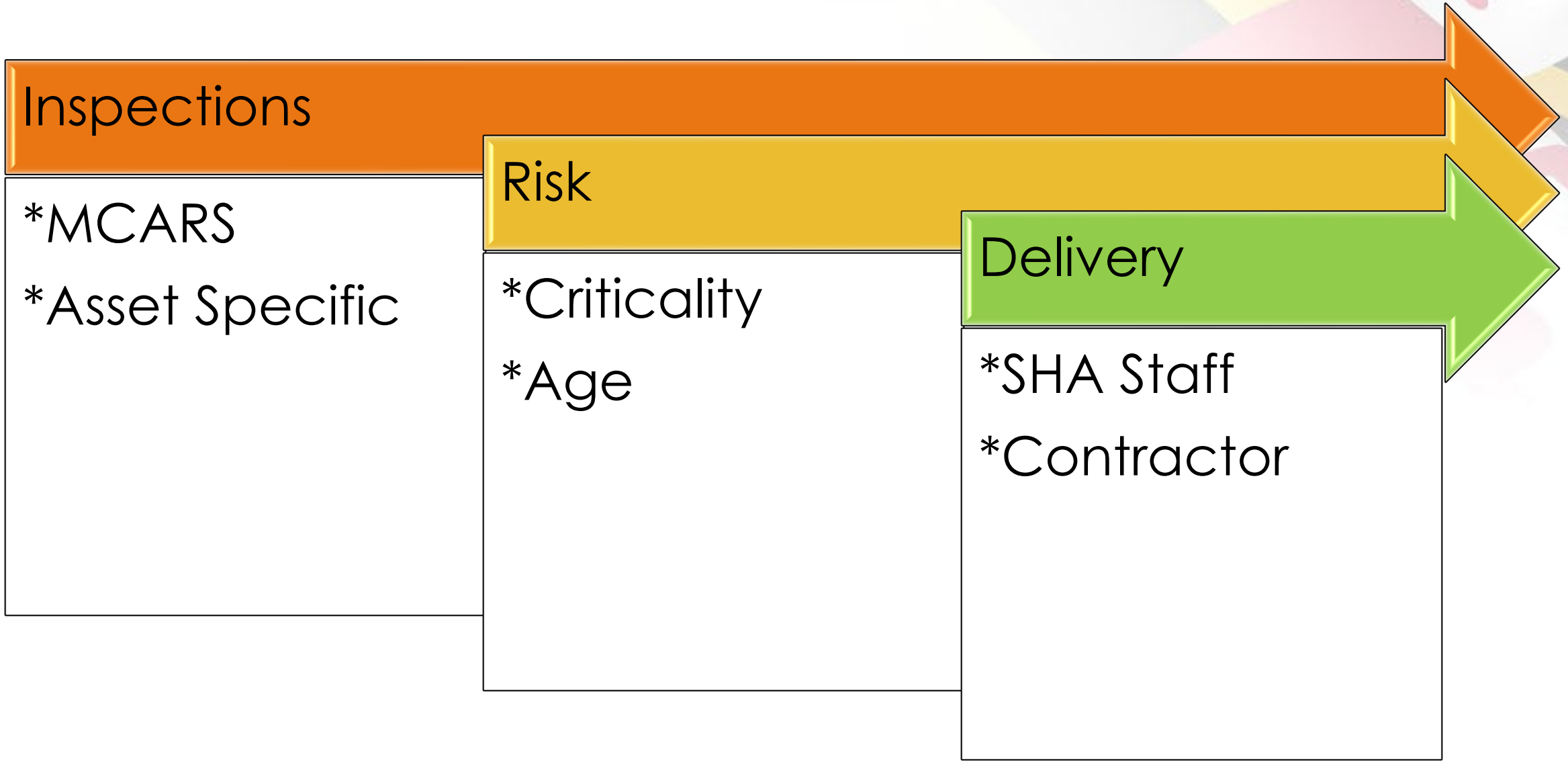
HANOVER COMPLEX

KEY

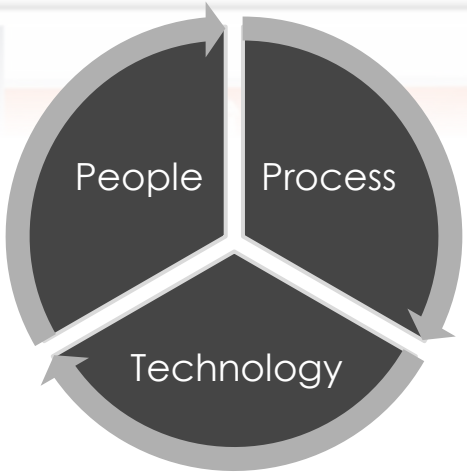
- DISTRICT OFFICE
- LANDSCAPE DEPOT
- MAINTENANCE OFFICE
- REGIONAL LABS

5/2009

THE ROAD WE'RE TRAVELING



WHAT ARE SOME OF THE CHALLENGES….

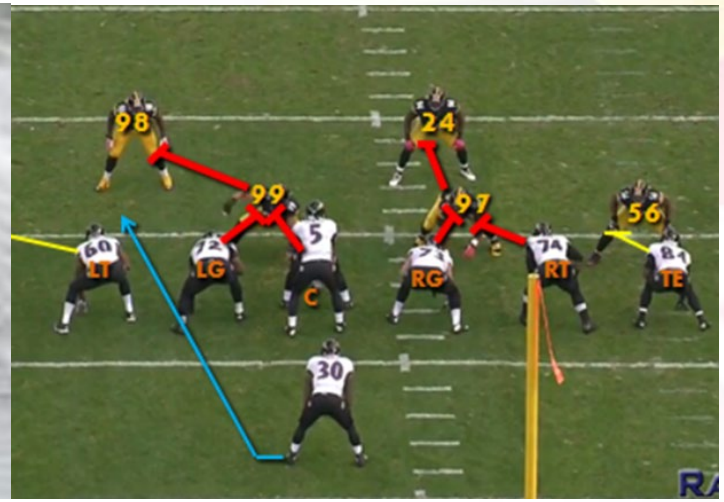


- Funding
- Staffing
- Contracts / Contractors / Procurement

- Customer Expectations
- Adding new processes & initiatives…
- Permitting

- Equipment
- Technologies
- Inspections (Safety / Equipment)

WHERE ARE WE NOW? WHERE ARE WE GOING?



How Much?

How Well?

Value Added

LEVEL OF SERVICE (LOS)

Report Query Page

Report Type:	Route — Please select route and related county.		
Route:	IS 97 IS 195 IS 270 IS 270 LS IS 270 Y IS 295	**Related Route County's:**	(AA) Glen Burnie - ANNE ARUNDEL (AA) Annapolis - ANNE ARUNDEL
District		**County:**	
Review Date:	2017	**LOS:**	All
Category:	Roadside	**Element:**	Brush & Tree Control

Search | Reset | Back to Report Page

No of Records found: 7

Export to Excel

Maps

County	Route	Category	Element	Begin Point	LOS
Anne Arundel / Glen Burnie	IS 97	Roadside	Brush & Tree Control	9.5	N
Anne Arundel / Glen Burnie	IS 97	Roadside	Brush & Tree Control	11	N
Anne Arundel / Glen Burnie	IS 97	Roadside	Brush & Tree Control	12.5	N
Anne Arundel / Glen Burnie	IS 97	Roadside	Brush & Tree Control	15.5	N
Anne Arundel / Glen Burnie	IS 97	Roadside	Brush & Tree Control	15.5	Y
Anne Arundel / Glen Burnie	IS 97	Roadside	Brush & Tree Control	17	Y
Anne Arundel / Glen Burnie	IS 97	Roadside	Brush & Tree Control	17	Y

Inventory Item	Accomplishment Unit	Desired Level of Service	3 Year Average LOS
Mowing	acre	70%	83.5%
Litter	truck load	70%	94.5%
Ditches	linear foot	85%	88.8%
Culverts	linear foot	85%	87.2%

MCARS – CONDITION ASSESSMENT

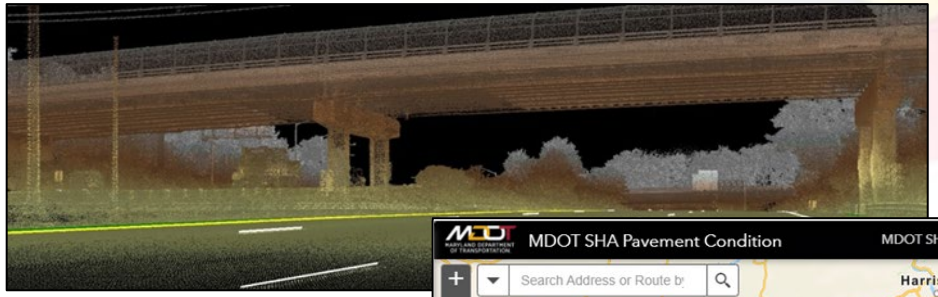
Maintenance Quality Assurance Program

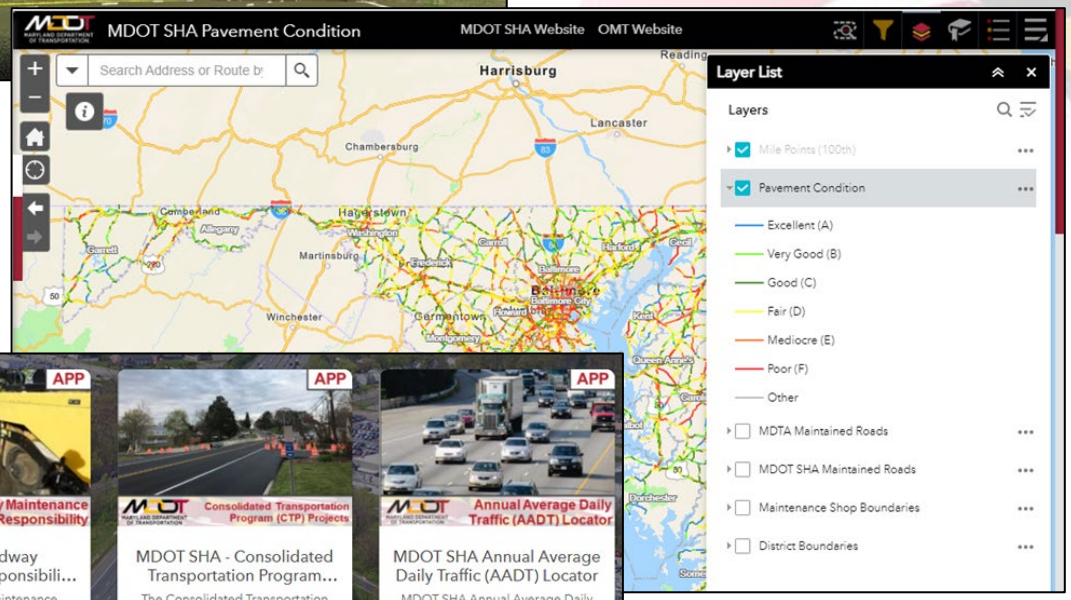
- 1/3 of Network annually inspected
- 1/2 Mile segments
- Not asset based approach
- PASS/FAIL scoring
- Windshield Assessment

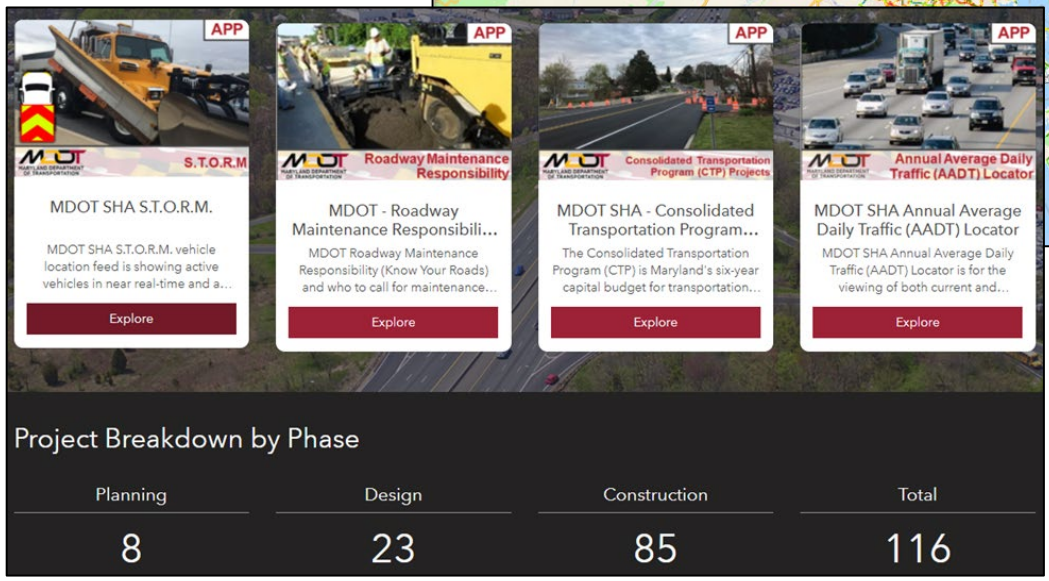
ASSET SERVICE WAREHOUSE & STATEWIDE DATA COLLECTION

- Consolidated data collection with Data Governance
- AGOL tools to maintain inventories
- Policy/Directive needs to require inventory maintenance process
- Funding for regular inspections
- AI / Machine Learning
- Crowdsourced data

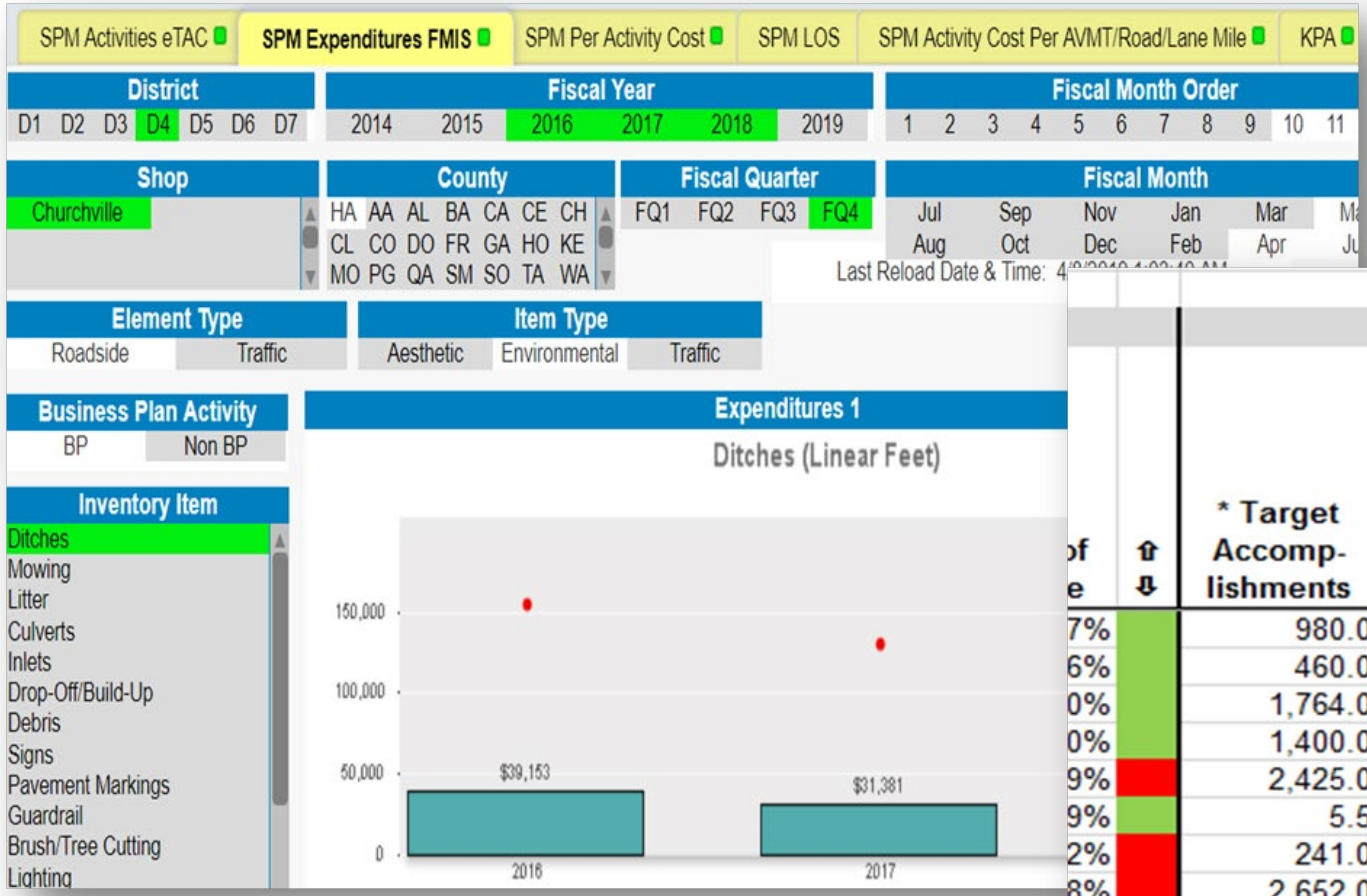
District Operations will have **better information** to assist in project prioritization & over time the asset performance improvements will lead to **less reactive maintenance issues**







BUDGET



		Fiscal Year 2017					
of e	⇧ ⇩	* Target Accomp-lishments	* Target Expend-itures	Comments	3 Year Average Expend-itures	3 Year Average Accomp-lishments	Uni
7%		980.0	$311,640		$404,205	1,268.6	$
6%		460.0	$411,332		$496,421	336.3	$1
0%		1,764.0	$25,384		$22,132	1,726.8	
0%		1,400.0	$9,828		$14,337	1,135.7	
9%		2,425.0	$157,601		$103,797	1,597.1	
9%		5.5	$19,949		$4,395	1.6	$2
2%		241.0	$176,412		$120,322	164.2	$
8%		2,652.0	$266,844		$260,426	2,588.3	$
4%		8,200.0	$54,776		$39,224	5,874.4	
6%		6,800.0	$362,576		$309,243	5,799.4	
2%		49,000.0	$245,000		$202,857	40,565.4	
		1,550.0	$147,250		$148,913	1,563.0	
			$2,188,592		$2,126,273		

TIERED ASSESSMENT APPROACH

Function:

A = Acceptable

D = Reconstruction

Condition:

A = Acceptable

B = Minor Maintenance

C = Major Maintenance

D = Reconstruction

ACCOMPLISHMENTS

Route Number	Anti-Icing	Applying Winter Materials/Plowing Snow and Ice	Boom-Axe Mowing	Bridge Cleaning	Brush and Tree Cutting	Chemical Control of Vegetation	Clean Minc Draina Structu
IS 195	25.60	2.00					2
IS 695	49.52			10.00	150.00	202.90	139
IS 895	10.20		10.00				
IS 895 A							
IS 895 B							
IS 97	215.40				3		
MD 10	109.40		1.00		1		
MD 100	205.99	84.00	17.15	21.00	2		
MD 100 M							
MD 100 T							
MD 103	2.49		0.50				
MD 162	9.24	15.00	0.05				
MD 162 A							
MD 168	2.56						
MD 169	1.94		1.00				
MD 170	25.96	32.00	6.40				
MD 171	1.86						
MD 173	80.60	13.00	1.00		2		

Team Activity Card

Maryland Department of Transportation
State Highway Administration
Highway Maintenance Division

TEAM ACTIVITY CARD

Date:	07/02/2014	Team Leader:	SAUTER, SANDI
TAC #	C-28311	Status:	Open
Print Status :	Original	Version :	0.0
Work Order #			

Team Leader Index #	08225	Name :	ELKTON (Cecil County)
Charge Index #	08225	Name :	ELKTON (Cecil County)

PCA/Activity	Project #	Route #	Beginning Mile Point	Ending Mile Point	Direction	Lane	WZTC #	WZTC Modified?	Quantity	Units
23-476		MD 10	1.0	3.0	N	2	0		1.0	Each

LABOR:	Team Member	Type	CD	RT	OT	Agency	ART	AOT	Size
	SAUTER, SANDI	State Employee		8.0			0.0	0.0	
		Inmate (DOC or Sheriff Department)		4.0			0.0	0.0	3.0

EQUIPMENT:	Unit#	TAG#	Description	Used	Total	Agency	AC Hours	Mileage	Driver	Company
	7939930000	SG 81186	ARROW BOARD	5.0	8.0			56487.0	SAUTER, SANDI	

MATERIALS:	Stock#	Description	Agency	Qty Used	Unit of Measure	Equipment
	23456	Pencil		1.0		

Remarks : This field can be used to document extra information that is specific to this routine card.

Submitted By:		Submitted Date:	
Approved By:		Approved Date:	

- The team activity card displays all the information pertaining to the accomplishments, including labor, equipment and materials.

HOW WE ARE GETTING THERE

VUEWORKS PILOT PROJECT

END TREATMENTS AND

TRAFFIC BARRIERS

Software Requirements Specifications for Maintenance Management System

Date: February 9, 2022

ASSET MANAGEMENT

PRESERVING ASSETS | OPTIMIZING PERFORMANCE

MARYLAND DEPARTMENT OF TRANSPORTATION | STATE HIGHWAY ADMINISTRATION

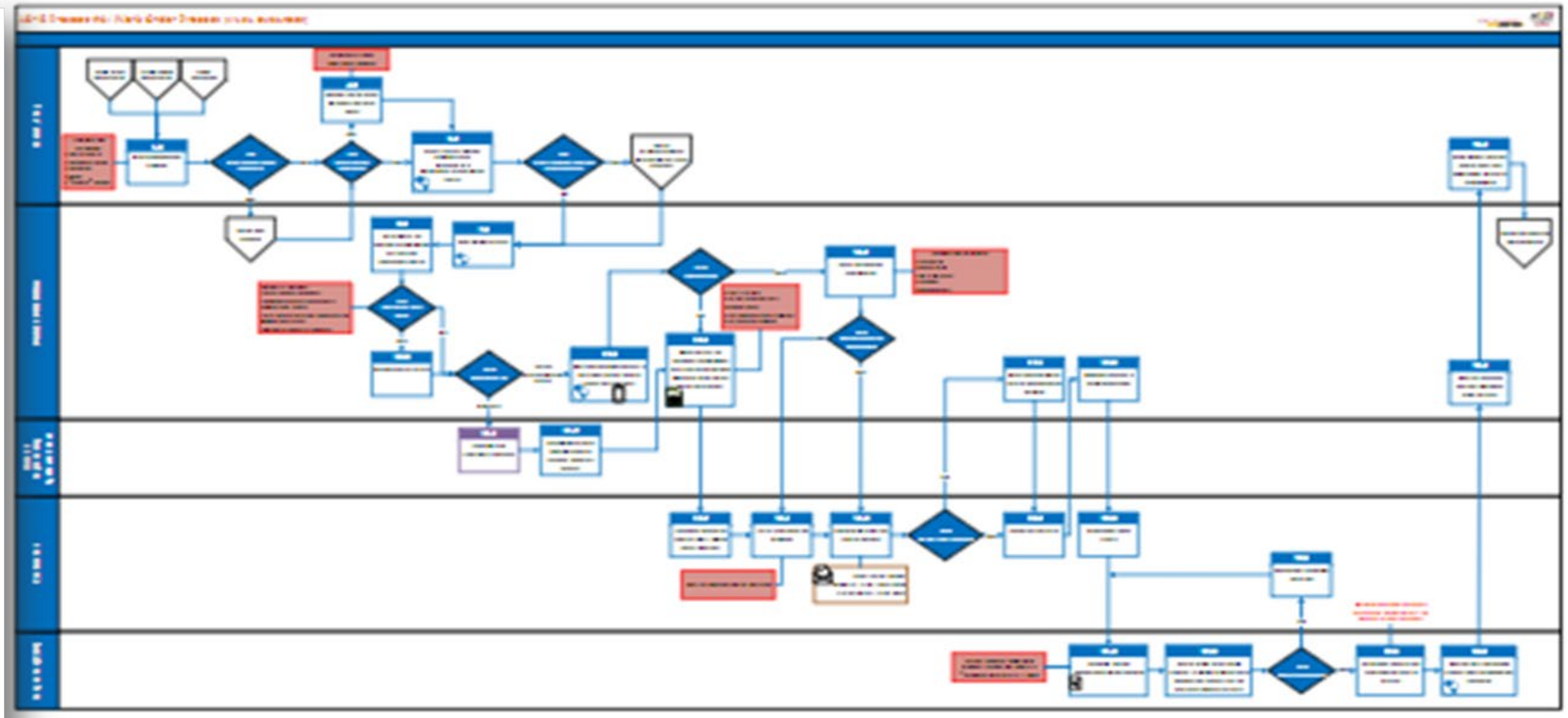


Figure 1.1 Process #1: Work Order

HOW TO ADD IT UP

MAINTENANCE ACTIVITIES

PCA #	PCA Name	23---	27---	28---
401	Spot Patching	☑	☑	☑
402	Permanent Patching	☑	☑	☑
403	Continuous Patching	☑	☑	☑

Spot Patching

23 --- Maintenance
27 --- Reimbursable
28 --- Non-Reimbursable

401

Description and Purpose: Temporary patching of small areas of bituminous roadway and shoulder surfaces and P.C.C. pavement, with hot or cold bituminous material, using hand tools to correct abrupt depressions, potholes, edge failures, and other potential surface hazards.

Scheduling: Repair hazardous surface failures immediately upon discovery.

The following should be interpreted as a statewide guide only.
Actual practice at the local level may vary, while maintaining a similar degree of efficiency.

Team:

Facility Maintenance Technician IV	1
Facility Maintenance Technician	4

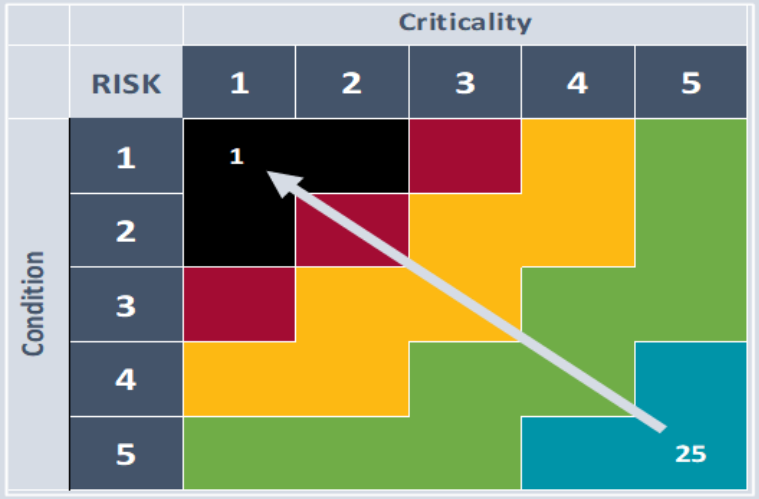
Equipment:

Dump Truck	3
Hand Impactor	1
MOT/Safety Equipment	1

Work Method:

1. Follow guidelines for recommended personal protective equipment.
2. Place signs and other safety devices in accordance with MUTCD and WZTC.
3. Remove all loose material.
4. Ensure the area is as dry as conditions permit.
5. Apply light and uniform tack coat to pothole.
6. Shovel patching material into area to be patched. Material should be placed in layers not exceeding 2". Each layer should be compacted before next layer is placed.
7. Clean work area. Sweep loose material away from patched area and off road surface.
8. Remove signs and other safety devices.

THE FOCUS

Condition	x	Criticality	=	Risk Score
Physical / Visual Functional Capacity Safety / Regulatory Obsolescence Level of Service Resources Resiliency		Safety Level of Service Regulatory Environmental Operations & Maintenance Financial / Economic		

- Renew
- Replace
- Operations & Maintenance
- Redesign / Enhance

Failure Modes Analysis	Effects Analysis / Maintenance Planning	Service Level Impacts / Critical Failures	Intervention Strategy

Outcomes

- **Drive Proactive Maintenance and Risk Strategy**
- **Extend Life and Deliver Level of Service**
- **Maximize Reliability Focused on Critical Assets**

DATA DRIVEN DECISIONS

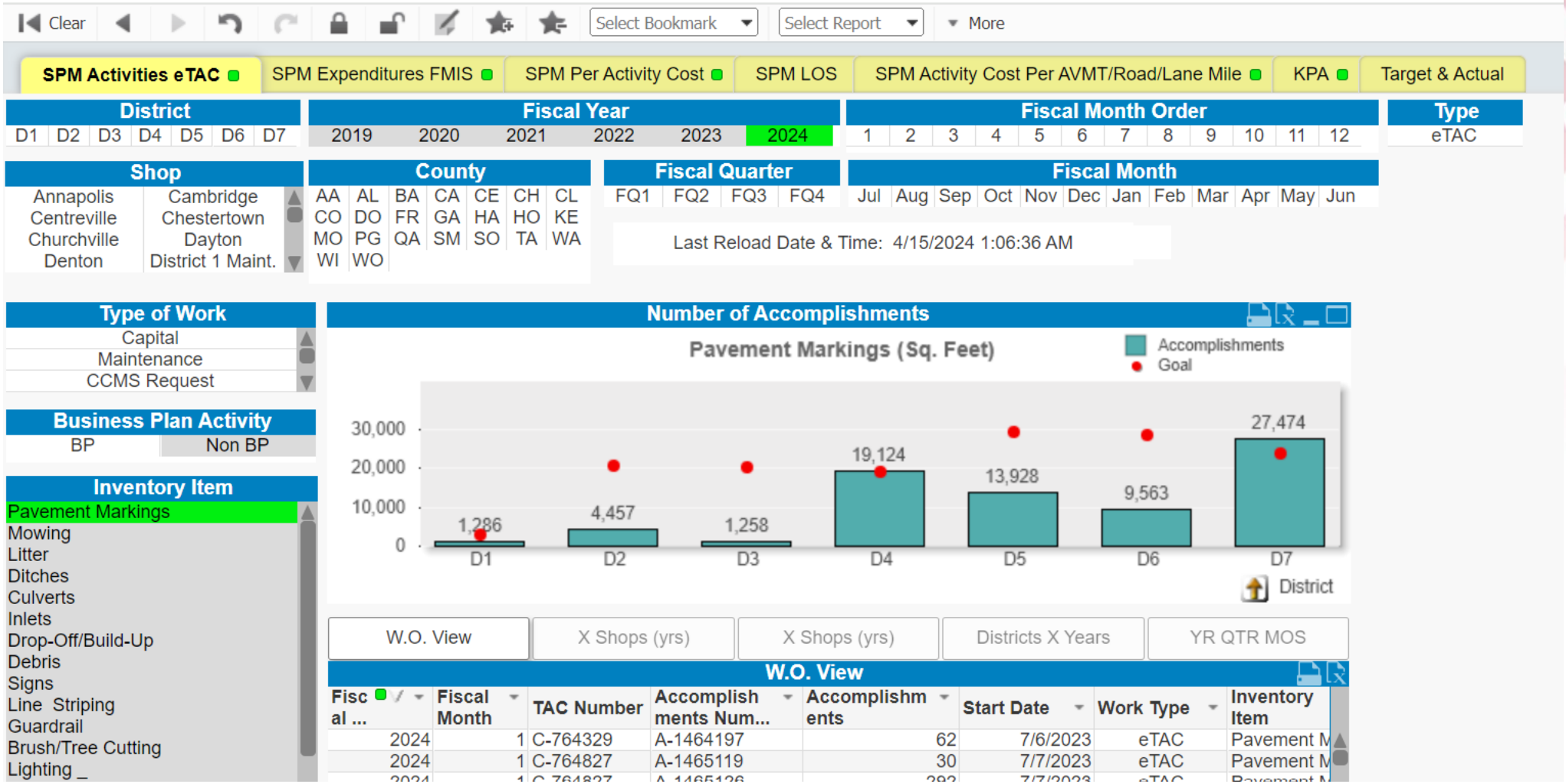
What are your goals?

What are you deciding?

- Life cycle planning/replacement cycles
- Maintenance work planning/preparation
- Project planning
- Special analysis – e.g., evaluate change in standards or technology
- Other

What business processes use/need asset data?

ANALYSIS TOOLS



BENEFITS

Have more control over your area

Have more control over budget

Ability to define and quantify needs

Ability to communicate impacts of more or less resources

- Staff
- Equipment
- Funding
- Materials

Ability to plan large portion of work years out

THANK YOU!

Data Collection

TRB | Webinar

Morgan Musick, P.E.

April 23, 2024

Today's Agenda

1. Data Collection Process
2. Average Daily Production
3. Level of Service
4. Budgeting & Analytics
5. Custom Views
6. Questions

Data Collection

01

Focused Asset Groups

- Pavement
- Concrete
- Paved Shoulders
- Unpaved Shoulders
- Roadside
- Drainage
- Traffic Services
- Other

Collection Process + Assessments

- **Annual Process:** used in-house & vendor collection
- **Final Product:** Scorecards to District - Road Class level
- **Approach:** Sample-Based

Assessment Process

- Select asset to collect
- Who collects the data
- Set up collection process
- Generate samples
- Conduct trainings
- Summarize results
- QA/QC results
- Push to LOS Calculator

Why Data Collection is Critical

Standardize Condition Ratings

ALDOT will take this information and normalize it by calculating a raw score of deficiency within a specific management unit - road class. This metric will be crucial for level - of - service scoring.

Target LOS

Accomplishment unit cost will be used to calculate level of effort to achieve a target LOS to help calculate budget required to change current score to achieve a target score.

Defining Condition Procedures

ALDOT will continue to work through varying condition assessments relative to individual asset types vs. accomplish unit(s). This can change year over year.

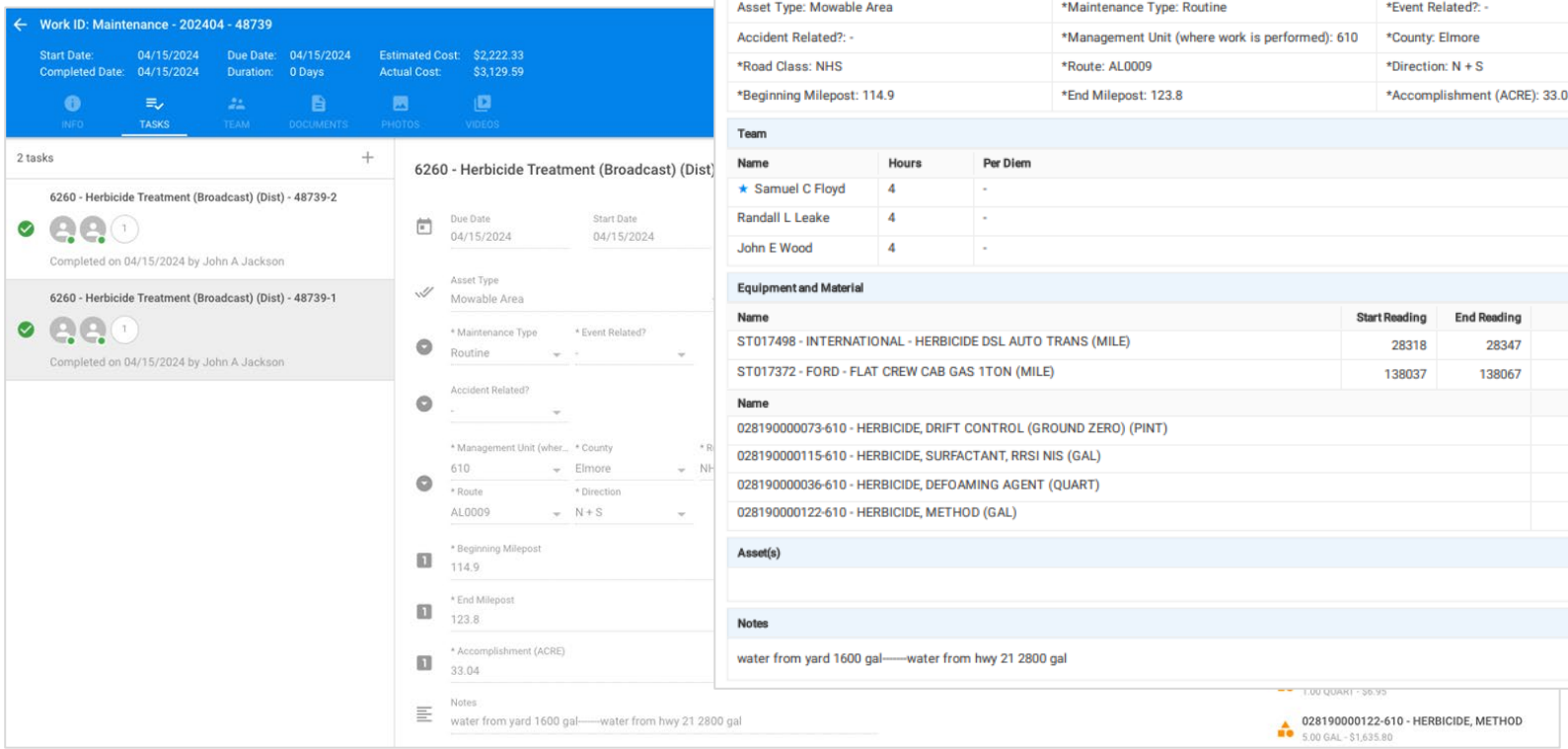
Enabling Performance - Based Budgeting

Each step builds upon the previous one, ensuring a smooth rollout and fostering data quality. The eventual goal should be enabling individuals to understand current condition as well as cost associated with target condition(s).

Daily Production

02

Work in MMS



Maintenance Work Report

Maintenance - 202404 - 48739
Work Date: 04/15/2024
Work Status: Closed
Created By: John A Jackson
Closed By: John A Jackson
Total Actual Cost: **$3,129.59**

6260 - Herbicide Treatment (Broadcast) (Dist) - 48739-1
9002-06-01-02-6260

Actual Cost: **$2,342.45**

Asset Type: Mowable Area	*Maintenance Type: Routine	*Event Related?: -
Accident Related?: -	*Management Unit (where work is performed): 610	*County: Elmore
*Road Class: NHS	*Route: AL0009	*Direction: N + S
*Beginning Milepost: 114.9	*End Milepost: 123.8	*Accomplishment (ACRE): 33.04

Team — **$426.94**

Name	Hours	Per Diem	Cost
★ Samuel C Floyd	4	-	$148.62
Randall L Leake	4	-	$156.18
John E Wood	4	-	$122.14

Equipment and Material — **$1,915.51**

Name	Start Reading	End Reading	Used	Cost
ST017498 - INTERNATIONAL - HERBICIDE DSL AUTO TRANS (MILE)	28318	28347	29	$155.15
ST017372 - FORD - FLAT CREW CAB GAS 1TON (MILE)	138037	138067	30	$33.90

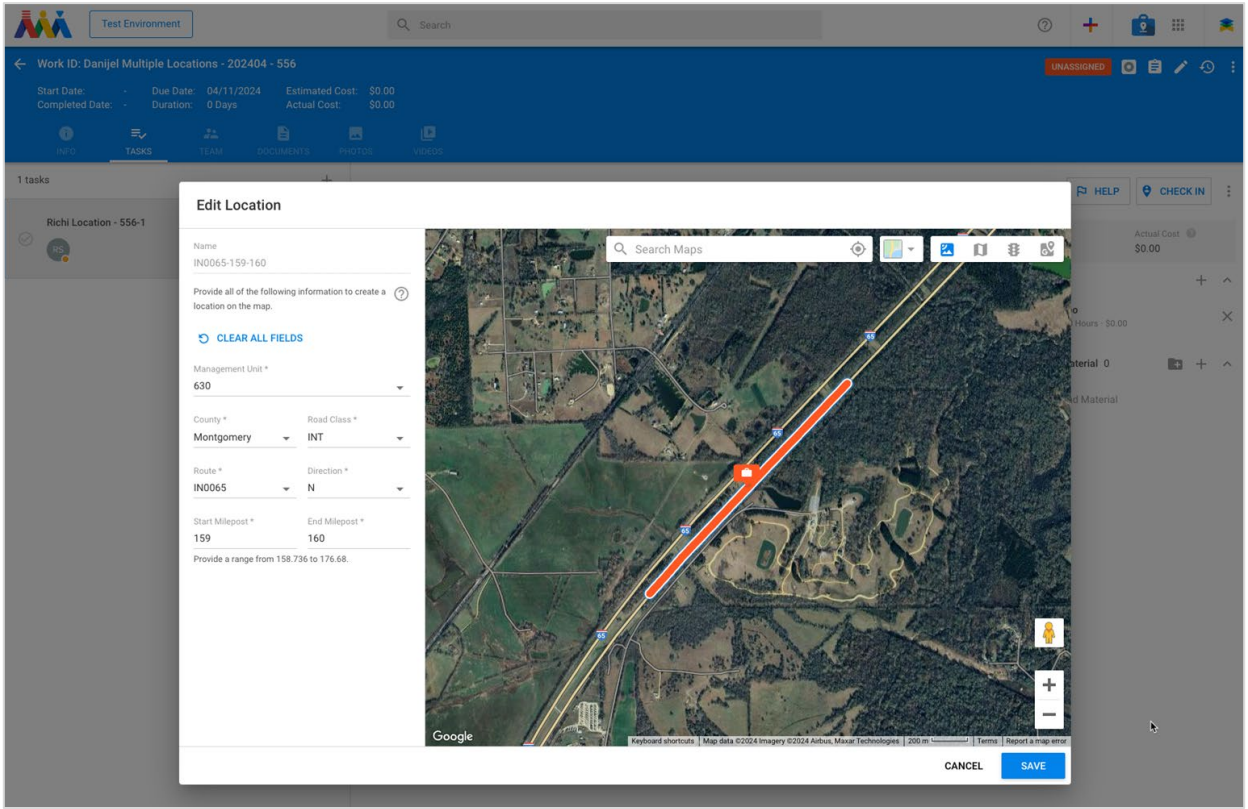
Name	Used	Cost
028190000073-610 - HERBICIDE, DRIFT CONTROL (GROUND ZERO) (PINT)	2	$15.76
028190000115-610 - HERBICIDE, SURFACTANT, RRSI NIS (GAL)	5	$67.95
028190000036-610 - HERBICIDE, DEFOAMING AGENT (QUART)	1	$6.95
028190000122-610 - HERBICIDE, METHOD (GAL)	5	$1,635.80

Asset(s)

Notes

water from yard 1600 gal------water from hwy 21 2800 gal

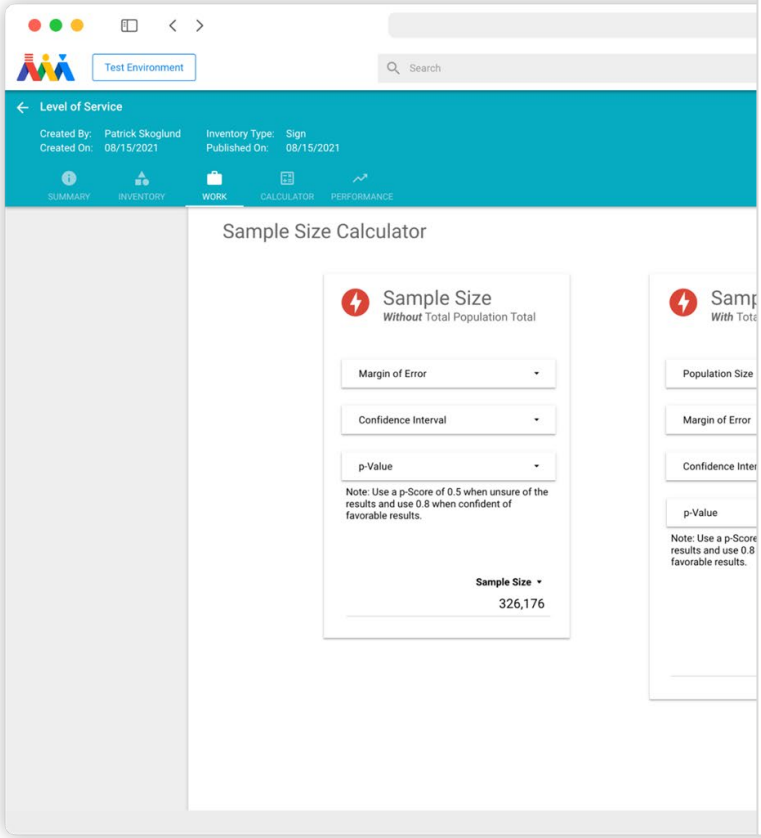
Multiple Work Locations



Level of Service

03

Level of Service



ALDOT LOS Report Asphalt Pavement

Area | District | Roadclass | RouteID

Level of Service Asphalt Potholes

Pothole Score
0.19
Grade
B+
Number of Potholes
55
Total Lane Miles
288.40

Feature	Grade	Score (Potholes/Ln Mi)	Number of Potholes to Fix	Current Number of Potholes
Potholes	A+	0.03	54	55
Potholes	A	0.07	53	55
Potholes	A-	0.10	53	55
Potholes	B+	0.40	46	55
Potholes	B	0.70	39	55
Potholes	B-	1.00	33	55
Potholes	C+	1.67	18	55
Potholes	C	2.33	3	55
Potholes	C-	3.00	-12	55
Potholes	D+	3.67	-26	55
Potholes	D	4.33	-41	55
Potholes	D-	5.00	-56	55
Potholes	F	5.10	-58	55

1 - 13 / 13

Level of Service Asphalt Raveling

Raveling Score
0.19%
Grade
B+
Raveling Area
34,365
Total Surface Area
18,273,024

Feature	Grade	Score (% of Area)	Surface Area of Raveling to fix	Current Raveling Surface Area
Raveling	A+	0.00	34,365	34,365
Raveling	A	0.00	34,365	34,365
Raveling	A-	0.00	34,365	34,365
Raveling	B+	0.67	-88,064	34,365
Raveling	B	1.33	-208,666	34,365
Raveling	B-	2.00	-331,095	34,365
Raveling	C+	3.00	-513,826	34,365
Raveling	C	4.00	-696,556	34,365
Raveling	C-	5.00	-879,286	34,365
Raveling	D+	6.67	-1,184,446	34,365
Raveling	D	8.33	-1,487,778	34,365
Raveling	D-	10.00	-1,792,937	34,365
Raveling	F	10.10	-1,811,210	34,365

1 - 13 / 13

Budgeting & Analytics

04

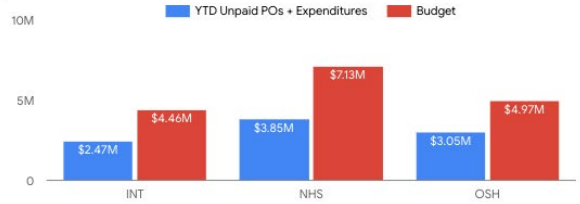
Budgeting

Area 1 Detailed Report

District | Activity | Road Class

% Budget Spent

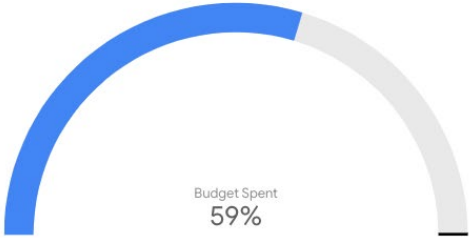
By Road Class



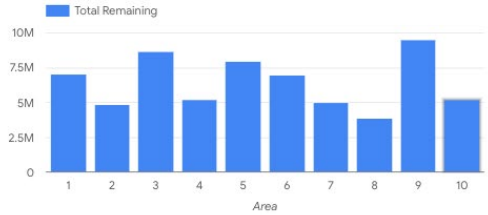
Statewide Summary Report

Month: Mar 2024 (1)

Total % Budget Spent

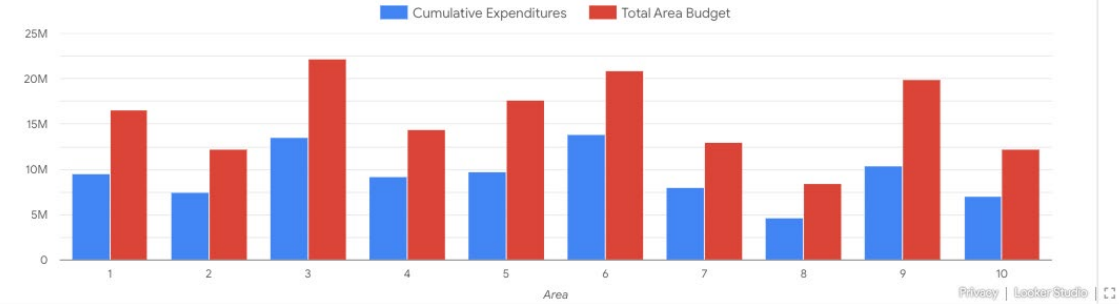


Total Remaining



Budget	Expenditure	Unspent PO	Cumulative Expen...	Total Remaining
000.00	$27,343.82	$0.00	$27,343.82	$32,656.18
500.00	-	-	-	$6,500.00
500.00	$631.48	-	$631.48	$28,868.52
000.00	$36,671.00	-	$36,671.00	$33,329.00
000.00	-	-	-	$70,000.00
000.00	$33,974.08	-	$33,974.08	$-23,974.08
000.00	-	-	-	$3,000.00
000.00	-	-	-	$13,000.00
500.00	$13,364.03	-	$13,364.03	$8,135.97

Annual Budget vs. Cumulative Expenditures

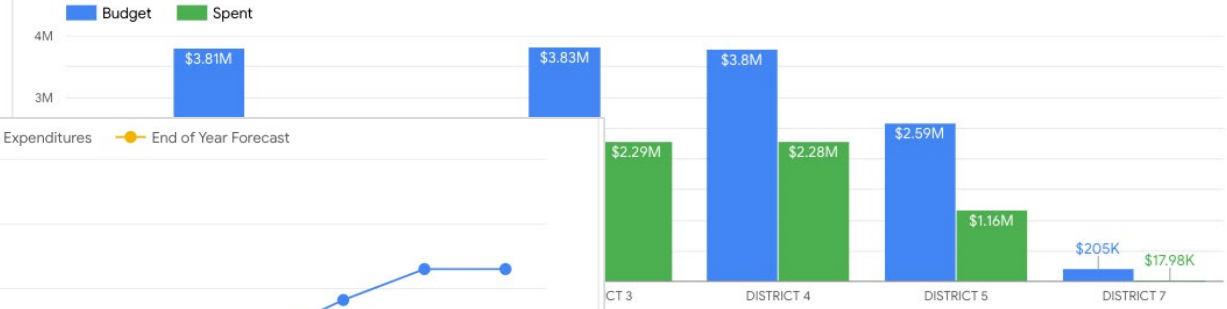


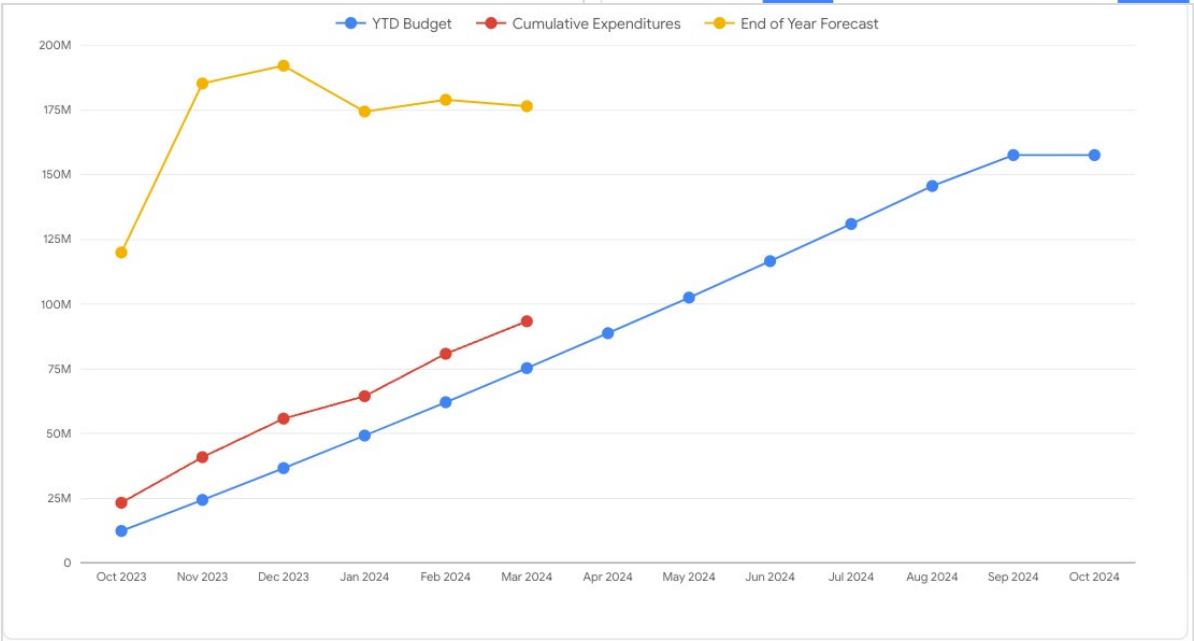
Privacy | Looker Studio

Budgeting

Area 1 Summary Report

District | Road Class

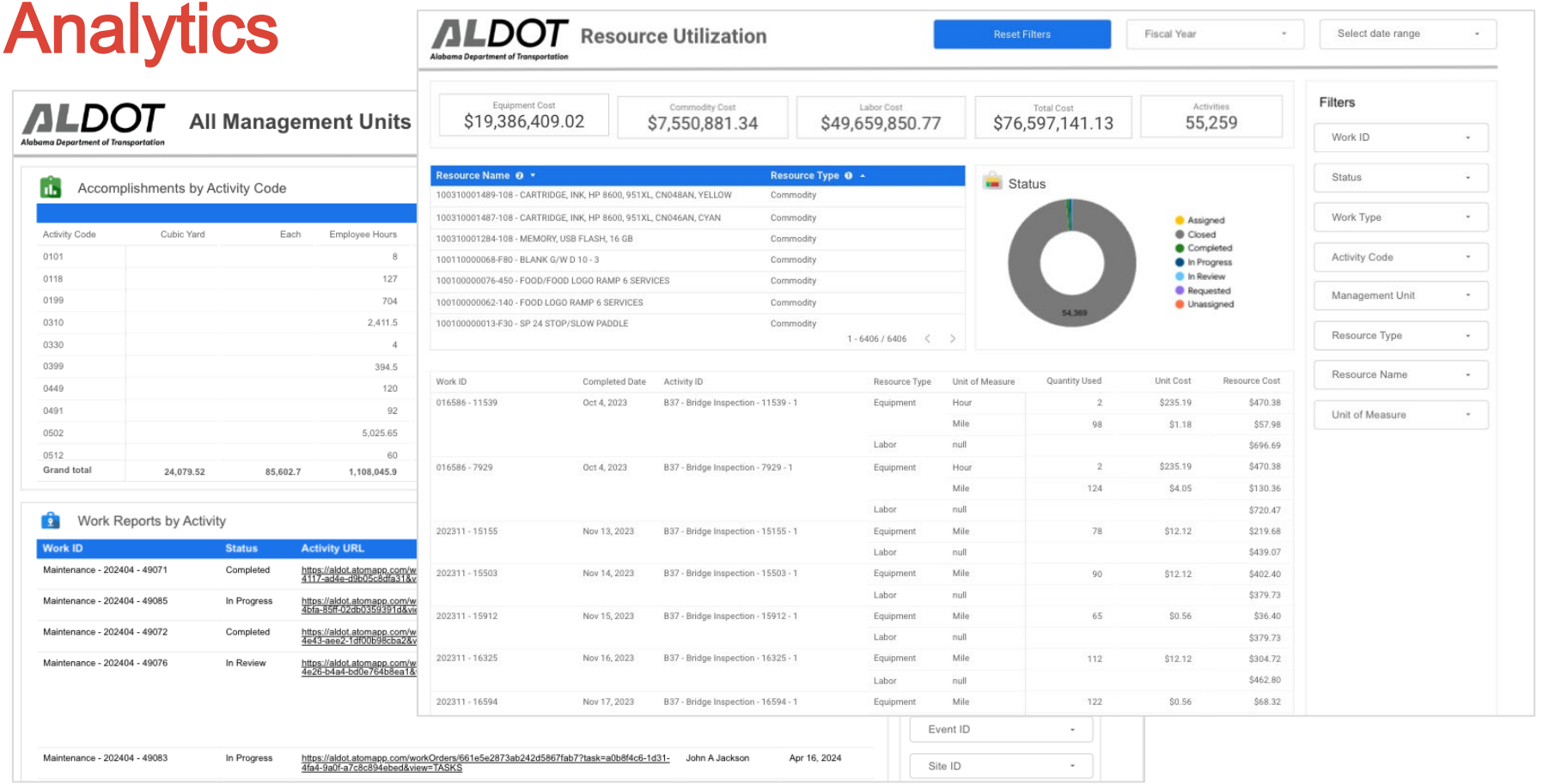




Transfers	Unspent POs	Cumulative Exp...	Annual Remaini...	% Annual Rema...
$0.00	-	$192,507.98	$403,471.02	67.7%
$0.00	$5,453.51	$1,338,678.54	$951,821.46	41.6%
$0.00	$2,400.00	$414,869.49	$505,630.51	54.9%
$0.00	**$7,853.51**	**$1,946,056.01**	**$1,860,922.99**	**48.9%**
$0.00	-	$193,556.89	$307,159.36	61.3%
$0.00	$4,970.80	$863,460.19	$829,813.14	49.0%
$0.00	$5,309.60	$73,235.95	$70,511.47	49.1%
$0.00	**$10,280.40**	**$1,130,253.03**	**$1,207,483.97**	**51.7%**

Accounting Month	YTD Budget	Cumulative Expenditures	End of Year Forecast	Forecast %
Oct 2023	$12,292,169.14	$23,187,973.02	$119,879,208.84	76%
Nov 2023	$24,279,360.12	$40,795,912.65	$185,169,364.24	118%
Dec 2023	$36,564,052.10	$55,690,868.87	$192,030,880.29	122%

Analytics



ALDOT Alabama Department of Transportation

All Management Units

Accomplishments by Activity Code

Activity Code	Cubic Yard	Each	Employee Hours
0101			8
0118			127
0199			704
0310			2,411.5
0330			4
0399			394.5
0449			120
0491			92
0502			5,025.65
0512			60
Grand total	**24,079.52**	**85,602.7**	**1,108,045.9**

Work Reports by Activity

Work ID	Status	Activity URL
Maintenance - 202404 - 49071	Completed	https://aldot.atomapp.com/w 4117-ad4e-d9b05c8dfa31&v
Maintenance - 202404 - 49085	In Progress	https://aldot.atomapp.com/w 4bfa-85ff-02db0359391d&vis
Maintenance - 202404 - 49072	Completed	https://aldot.atomapp.com/w 4e43-aee2-1df00b98cba2&v
Maintenance - 202404 - 49076	In Review	https://aldot.atomapp.com/w 4e26-b4a4-bd0e764b8ea1&
Maintenance - 202404 - 49083	In Progress	https://aldot.atomapp.com/workOrders/661e5e2873ab242d5867fab7?task=a0b8f4c6-1d31-4fa4-9a0f-a7c8c894ebed&view=TASKS

John A Jackson — Apr 16, 2024

ALDOT Alabama Department of Transportation

Resource Utilization

Reset Filters | Fiscal Year | Select date range

Equipment Cost	Commodity Cost	Labor Cost	Total Cost	Activities
$19,386,409.02	$7,550,881.34	$49,659,850.77	$76,597,141.13	55,259

Resource Name	Resource Type
100310001489-108 - CARTRIDGE, INK, HP 8600, 951XL, CN048AN, YELLOW	Commodity
100310001487-108 - CARTRIDGE, INK, HP 8600, 951XL, CN046AN, CYAN	Commodity
100310001284-108 - MEMORY, USB FLASH, 16 GB	Commodity
100110000068-F80 - BLANK G/W D 10 - 3	Commodity
100100000076-450 - FOOD/FOOD LOGO RAMP 6 SERVICES	Commodity
100100000062-140 - FOOD LOGO RAMP 6 SERVICES	Commodity
100100000013-F30 - SP 24 STOP/SLOW PADDLE	Commodity

1 - 6406 / 6406

Status

Work ID	Completed Date	Activity ID	Resource Type	Unit of Measure	Quantity Used	Unit Cost	Resource Cost
016586 - 11539	Oct 4, 2023	B37 - Bridge Inspection - 11539 - 1	Equipment	Hour	2	$235.19	$470.38
				Mile	98	$1.18	$57.98
			Labor	null			$696.69
016586 - 7929	Oct 4, 2023	B37 - Bridge Inspection - 7929 - 1	Equipment	Hour	2	$235.19	$470.38
				Mile	124	$4.05	$130.36
			Labor	null			$720.47
202311 - 15155	Nov 13, 2023	B37 - Bridge Inspection - 15155 - 1	Equipment	Mile	78	$12.12	$219.68
			Labor	null			$439.07
202311 - 15503	Nov 14, 2023	B37 - Bridge Inspection - 15503 - 1	Equipment	Mile	90	$12.12	$402.40
			Labor	null			$379.73
202311 - 15912	Nov 15, 2023	B37 - Bridge Inspection - 15912 - 1	Equipment	Mile	65	$0.56	$36.40
			Labor	null			$379.73
202311 - 16325	Nov 16, 2023	B37 - Bridge Inspection - 16325 - 1	Equipment	Mile	112	$12.12	$304.72
			Labor	null			$462.80
202311 - 16594	Nov 17, 2023	B37 - Bridge Inspection - 16594 - 1	Equipment	Mile	122	$0.56	$68.32

Filters

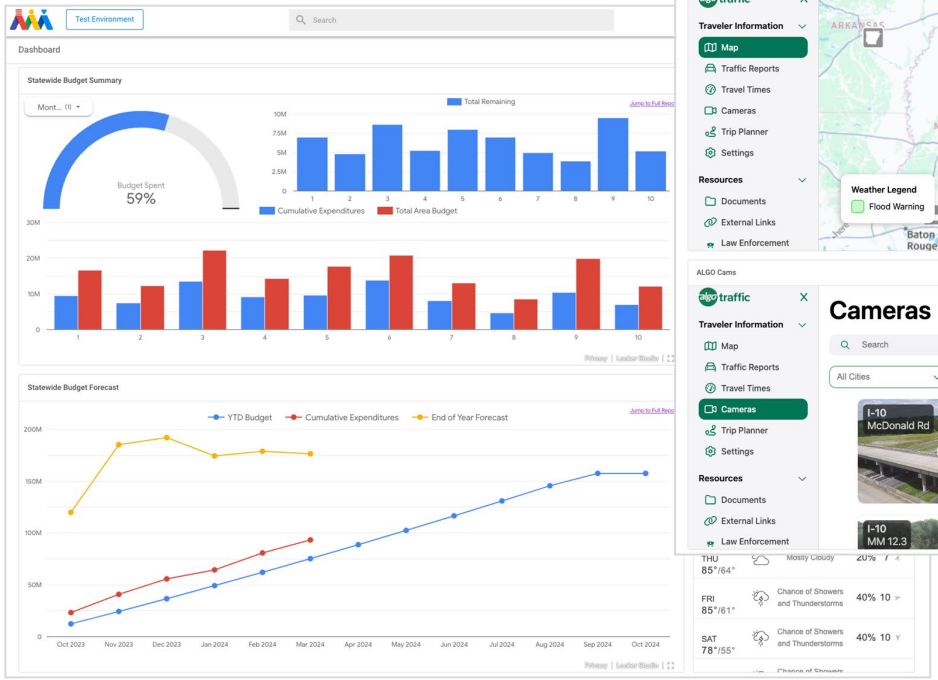
Work ID | Status | Work Type | Activity Code | Management Unit | Resource Type | Resource Name | Unit of Measure

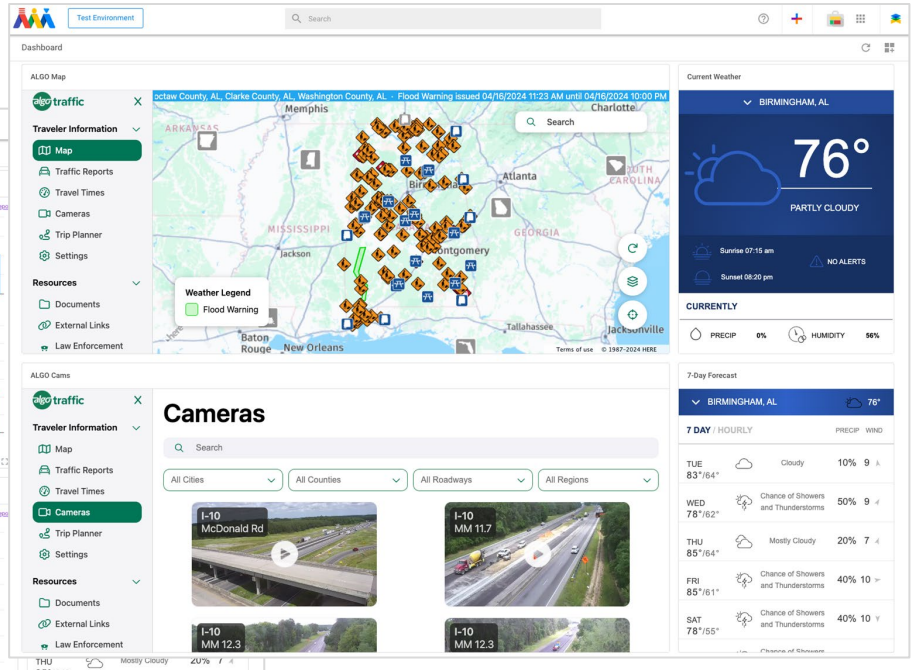
Event ID | Site ID

Data Driven Decisions

05

Dashboards

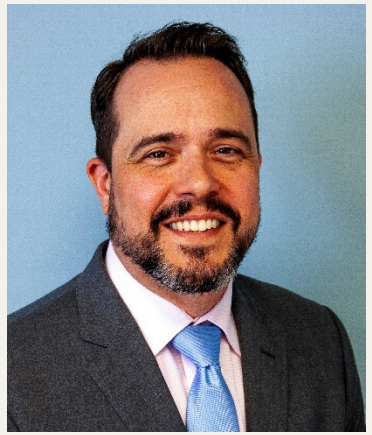

Test Environment
Search
Dashboard
Statewide Budget Summary
Budget Spent
59%
Total Remaining
Cumulative Expenditures
Total Area Budget
Statewide Budget Forecast
YTD Budget
Cumulative Expenditures
End of Year Forecast


Test Environment
Search
Dashboard
ALGO Map
algo traffic
Traveler Information
Map
Traffic Reports
Travel Times
Cameras
Trip Planner
Settings
Resources
Documents
External Links
Law Enforcement
Weather Legend
Flood Warning
Current Weather
BIRMINGHAM, AL
76°
PARTLY CLOUDY
Sunrise 07:15 am
Sunset 08:20 pm
NO ALERTS
CURRENTLY
PRECIP 0%
HUMIDITY 56%
ALGO Cams
Cameras
All Cities
All Counties
All Roadways
All Regions
I-10 McDonald Rd
I-10 MM 11.7
I-10 MM 12.3
I-10 MM 12.3
7-Day Forecast
BIRMINGHAM, AL 76°
7 DAY / HOURLY
TUE 83°/64° Cloudy 10% 9
WED 78°/62° Chance of Showers and Thunderstorms 50% 9
THU 85°/64° Mostly Cloudy 20% 7
FRI 85°/61° Chance of Showers and Thunderstorms 40% 10
SAT 78°/55° Chance of Showers and Thunderstorms 40% 10

Questions

Today's presenters

Rob Zilay
rzilay@dyemanagement.com
DYE MANAGEMENT GROUP, INC.



Brad Allen
ballen@appliedpavement.com
applied pavement TECHNOLOGY

Brandye Munn
Brandye.Munn@txdot.gov
Texas Department of Transportation

Chris Diaczok
cdiaczok@mdot.maryland.gov
MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Morgan Musick
musickm@dot.state.al.us
ALABAMA DEPARTMENT OF TRANSPORTATION

Upcoming events for you

April 24, 2024

TRB Webinar: Valuation and Compensation Approaches for Utility Accommodations

May 1, 2024

TRB Webinar: Power of Partnerships to Improve Transportation Decision-Making

https://www.nationalacademies.org/trb/events

NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

Subscribe to *TRB Weekly*

If your agency, university, or organization perform transportation research, you and your colleagues need the *TRB Weekly* newsletter in your inboxes!

Each Tuesday, we announce the latest:

- RFPs
- TRB's many industry-focused webinars and events
- 3-5 new TRB reports each week
- Top research across the industry

Spread the word and subscribe!
https://bit.ly/ResubscribeTRBWeekly

Discover new TRB Webinars weekly

Set your preferred topics to get the latest listed webinars and those coming up soon every Wednesday, curated especially for you!

https://mailchi.mp/nas.edu/trbwebinars

And follow #TRBwebinar on social media

@NASEMTRB
@NASEMTRB
Transportation Research Board

NATIONAL ACADEMIES Sciences Engineering Medicine
TRB TRANSPORTATION RESEARCH BOARD

Guide public transportation research

Submit your TCRP problem statement by June 14.

NATIONAL ACADEMIES Sciences Engineering Medicine

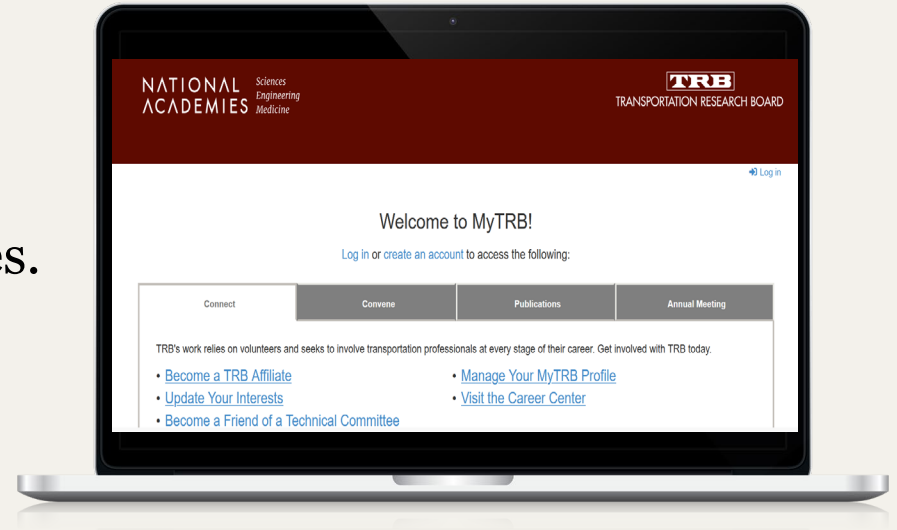
TRB TRANSPORTATION RESEARCH BOARD

Get involved

TRB mobilizes expertise, experience, and knowledge to anticipate and solve complex transportation-related challenges.

TRB's mission is accomplished through the hard work and dedication of more than **8,000 volunteers**.

https://www.nationalacademies.org/trb/get-involved



We want to hear from you

- **Take our survey**
- **Tell us how you use TRB Webinars in your work at trbwebinar@nas.edu**

NATIONAL ACADEMIES Sciences Engineering Medicine