

# ENTERPRISE DATA COLLECTION - LESSONS LEARNED



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# CAPITAL PROGRAMS FORECAST

FY 2018 - \$2.3 Billion program

FY 2019 - \$2.0 Billion program

FY 2020 - \$1.9 Billion program

**90% Spent on Taking Care of  
What we have.**

## ODOT Assets



**And GROWING....**

**And GROWING....**

**And GROWING....**

# MEETING/EXCEEDING SYSTEM CONDITIONS

## The TAMP Documents:

- ODOT's preservation strategies
- Planned investments using anticipated funding levels



### Goals for the Transportation Asset Management Plan (TAMP):

- Outline the short- and long-term plans for investments in people, technology, and process improvements.
- Drive investment decisions.
- Hold the agency and its employees accountable.
- Lead to a more reliable, sustainable transportation system.



- Performance Based
- Data Driven

# CRADLE TO GRAVE ASSET MANAGEMENT

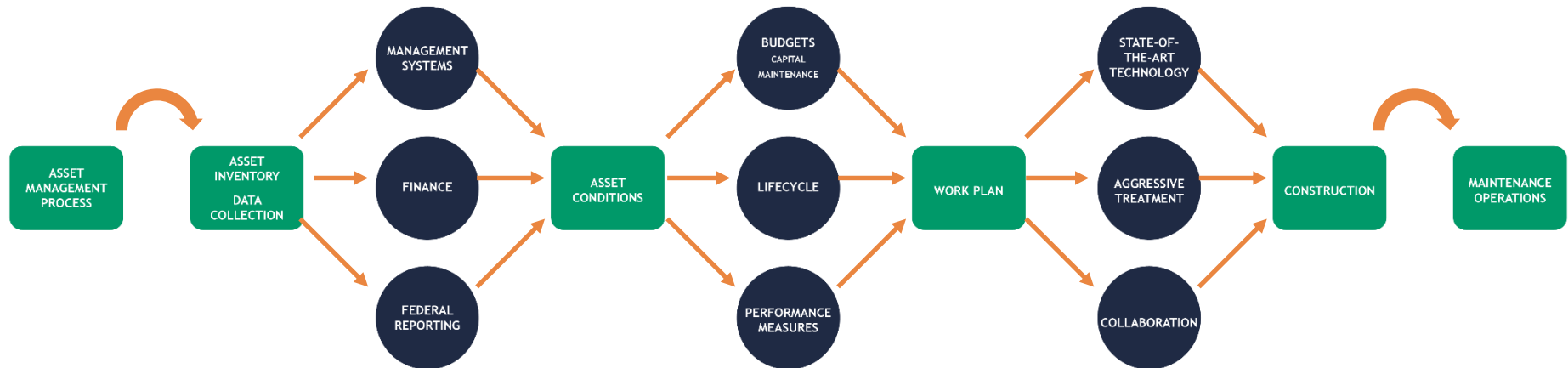
Inventory/Inspect

Use for Decisions

Construct/Maintain

Feed Applications

Develop Workplan



**TAM Audit Group Standards**

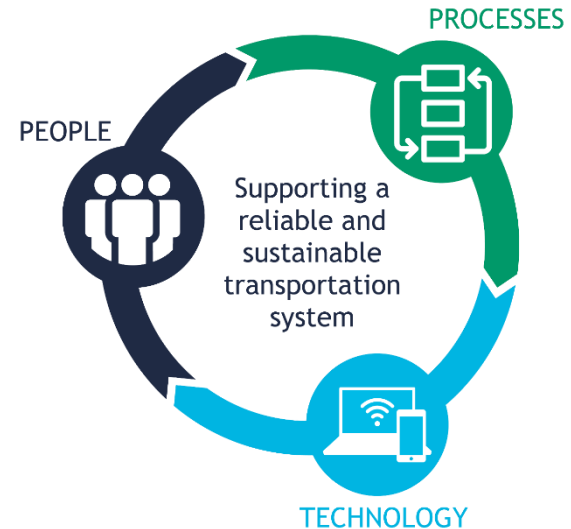
# TAM RESULTS -- HIGHLY SUCCESSFUL

**\$400 Million Dollars in  
Savings Across 6 Years**



# TOOLS FOR SUCCESS

- **People**
- **A Plan**
- **Process**
- **Continuous Improvement**



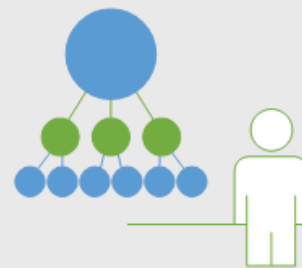
***Data -> Information -> Knowledge***

# PEOPLE - TAM COORDINATORS

## District TAM Coordinators

- **12 ODOT Districts**
- **Coordinate Technology Implementation, Data Analysis, Monitor Asset Life Cycles**
- **Enables More Consistency Across Districts**
- **Support Work Plan Development**

### District TAM Coordinator

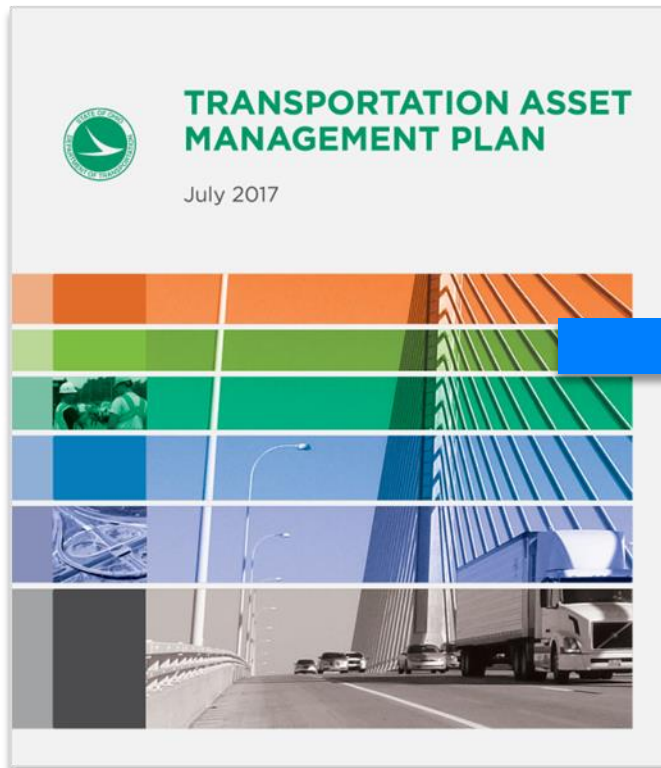


The District TAM Coordinator will provide Direct Communications and Reporting for all Current and Future ODOT Assets. This individual will be the Point Person for all district asset Issues and act as Asset Liaison between the District and the Central Office TAM Audit Group (TAMAG) and the Asset Management Leadership Team (AMLT)



# A PLAN - TAM COORDINATOR WORK PLAN

## Transportation Asset Management Plan (TAMP)



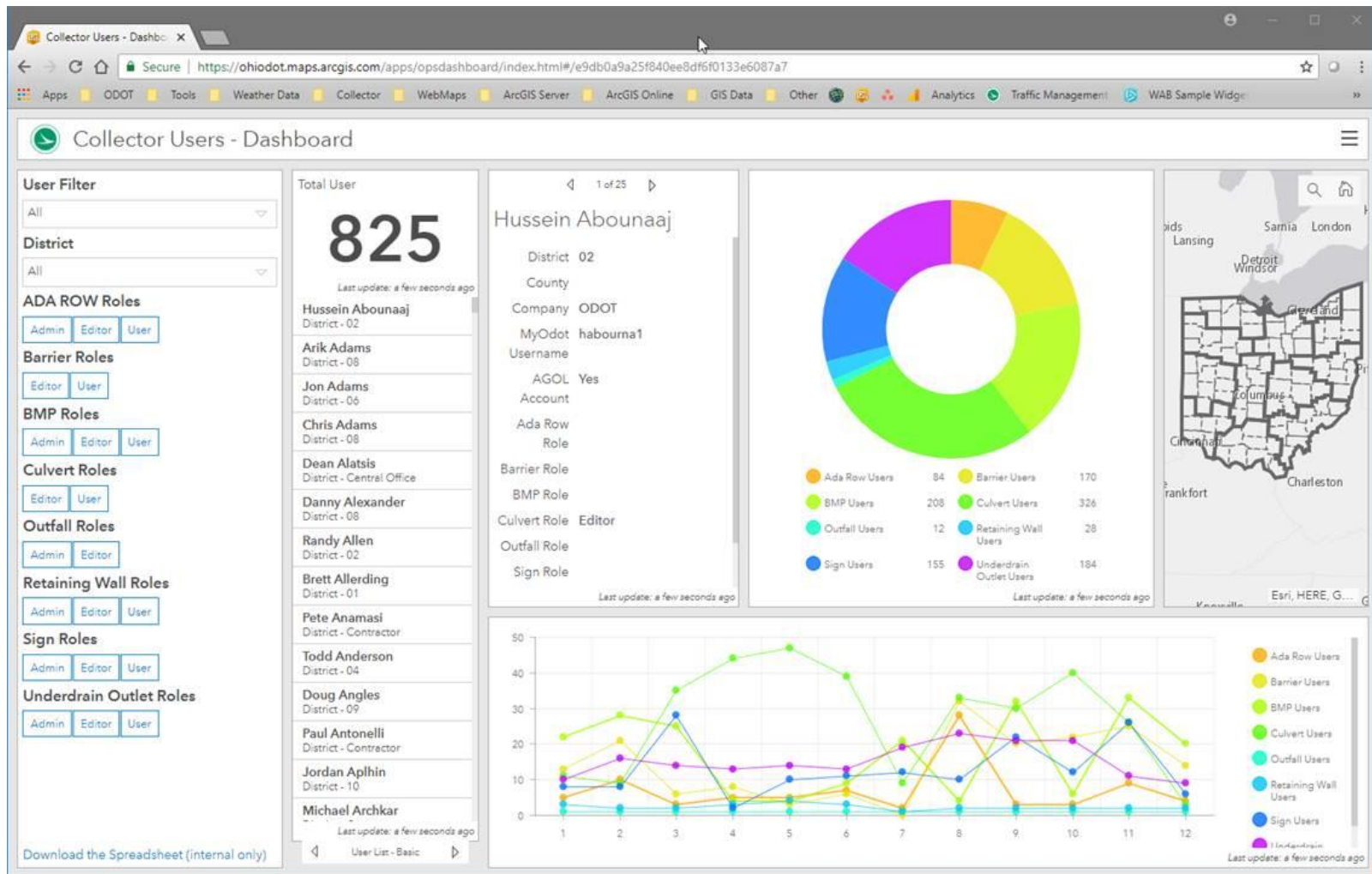
### TAM Coordinator Group Work plan

FY18 Work Plan				
TAMP Category	TAMP Objective	TAM Coordinator Objective	Priority	Comments/Specific Objective
Personnel Development & Capacity Building	Develop & Implement Knowledge Management Plan	Identify Knowledge Risk Areas within District/Counties	1	<ul style="list-style-type: none"><li>Identify District knowledge management</li><li>Identify District asset management</li><li>Identify District Asset Owner / SME</li><li>Support Asset Lifecycle Hand Off Process</li></ul>
Business Process Changes	Capital & Maintenance Work Plan Alignment	Work Plan Support	1	<ul style="list-style-type: none"><li>Provide mapping &amp; analysis of plan</li><li>Develop calendar of work plan support</li><li>Cross District partnership &amp; coordination</li></ul>
		Monitor financial performance of projects	4	<ul style="list-style-type: none"><li>Perform analysis and/or support analysis</li></ul>
	Communication Plan	Identify Communication Strategy for District	1	<ul style="list-style-type: none"><li>Establish District Asset Management</li><li>Provide coordination across District</li><li>Complete Change Management Training</li></ul>
		Establish Feedback mechanisms	2	<ul style="list-style-type: none"><li>Facilitate field staff feedback on asset</li><li>Schedule periodic shadowing with field</li></ul>
		MPO & Local Collaboration	1-2	<ul style="list-style-type: none"><li>Communicate ODOT's TAMP &amp; technical</li><li>Identify performance metrics implications</li><li>Identify plan to address performance</li></ul>
	Asset Performance Monitoring	Ensure Asset Owners have recommended preservation treatments guidance	1	<ul style="list-style-type: none"><li>Need clarification on TAM Coordinator</li></ul>
		Annual preservation treatment performance review	1	<ul style="list-style-type: none"><li>Develop annual asset performance</li></ul>
Data Integration & Governance	Enforce Data Standards	Participate in TAMAG planning meetings	1	<ul style="list-style-type: none"><li>Identify data standard needs</li></ul>
		Design & Engineering Outreach	1	<ul style="list-style-type: none"><li>Ensure data standards are understood</li></ul>
Technology & Management Systems	Integration of Maintenance Management Processes with Asset Management	Coordination across Asset Management & Maintenance Activity Systems	1	<ul style="list-style-type: none"><li>Communicate Asset Management information</li><li>Help identify appropriate labor tracking</li></ul>
		Establish District TAM Meeting	1	<ul style="list-style-type: none"><li>Establish monthly meeting schedule</li></ul>
	Asset Inventories	Monitor Asset Lifecycle Process	1	<ul style="list-style-type: none"><li>Identify personnel responsible for monitoring</li></ul>
		Inventory Status Report	1	<ul style="list-style-type: none"><li>Includes Collector deployment, resource monitoring asset lifecycle schedule</li></ul>
		Maintenance Status Report	1	<ul style="list-style-type: none"><li>Provide oversight to ensure maintenance</li></ul>
		Performance Measure Monitoring	1-2	<ul style="list-style-type: none"><li>Monthly (or based on collection cycle) (TAMC to dev. Requirements)</li></ul>

<http://www.dot.state.oh.us/assetmanagement/>



# PROCESS - TAM COORDINATOR DASHBOARD

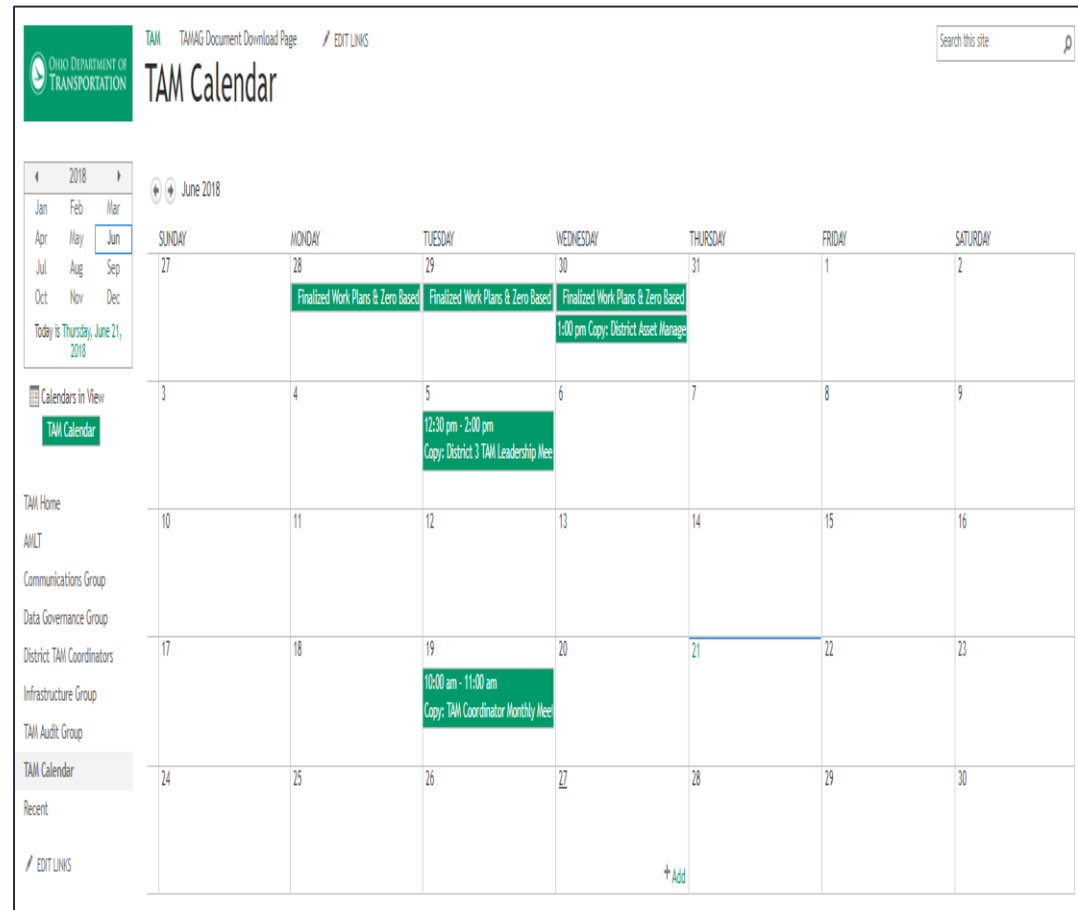


# BI-DIRECTIONAL TAM CALENDAR

## Outlook to SharePoint Integration

### Milestones:

1. District Work Plans
2. Asset Collection Cycles
3. Zero Based Budgets
4. TAM Coordinator Meetings
5. District TAM Meetings

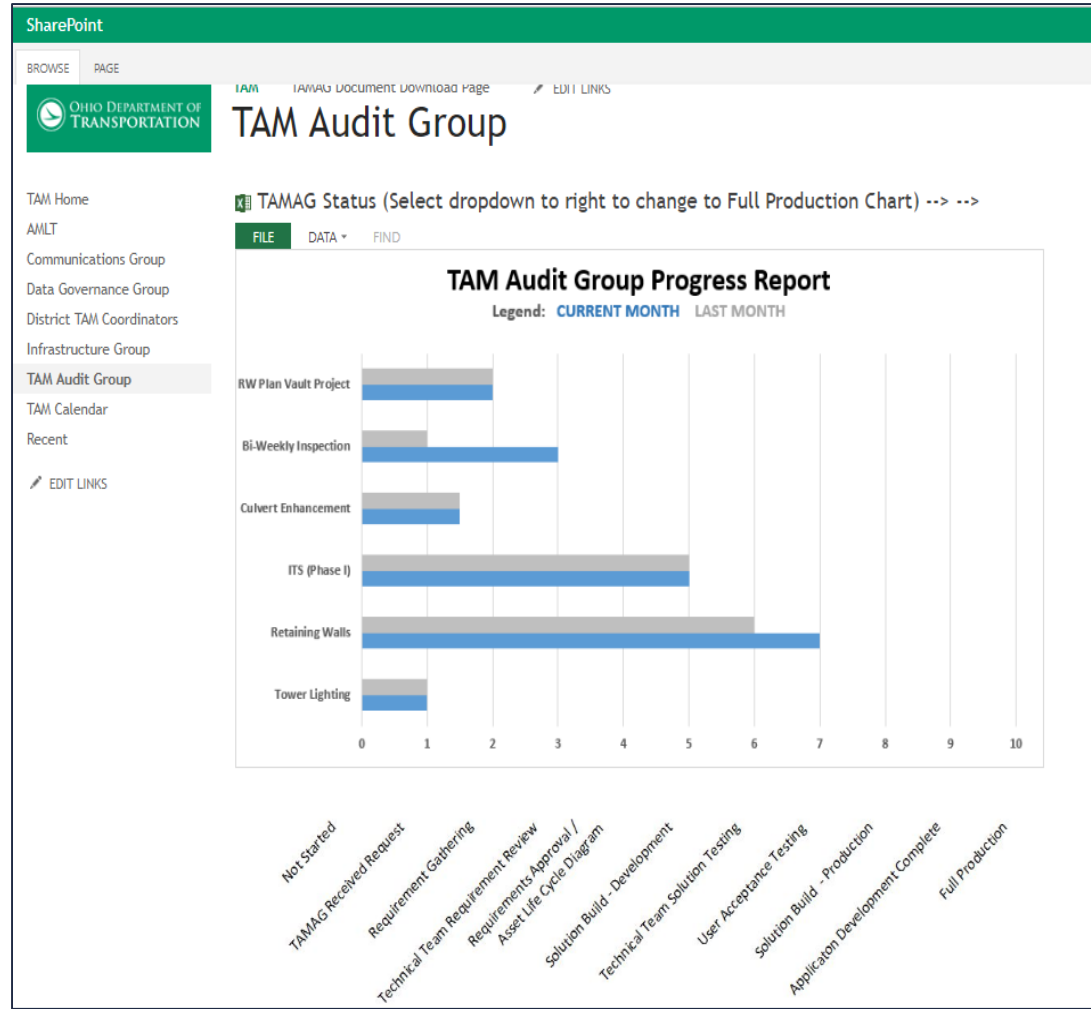


# TAM AUDIT GROUP PROGRESS REPORT

## Excel to SharePoint Integration

### Milestones:

0. Not Started
1. TAMAG Received Request
2. Requirements Gathering
3. Technical Team Requirements Review
4. Requirements Approval and Asset Lifecycle Diagram
5. Solution Build – Development
6. Technical Team Solution Testing
7. User Acceptance Testing (UAT)
8. Solution Build – Production
9. Application Development Complete
10. Full Production



# TAM AUDIT GROUP CALENDAR

## Outlook to SharePoint Integration

### Milestones:

1. TAMAG Process
2. Development UAT
3. User Training
4. Production Releases

June 2018						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
27	28	29	30	31 10:00 am - 1 Collector - E	1	2
3	4 + Add	5	6	7 9:00 am Coll 1:00 pm Coll	8	9
10	11	12 Retaining	13	14 9:00 am - 12 Collector - S	15	16
17	18	19	20	21	22	23
24	25	26	27	28 Retaining	29	30

# ASSET LIFECYCLE EXAMPLE

## Asset Roles and Responsibilities

### Central Office Data Business Owner (DBO)

The Culvert Data Business Owner (DBO) will have the Ultimate Responsibility to Manage the Asset and be the Initial Point of Contact for Issues concerning Asset Ownership, Workflows, Responsibilities, Guidelines, Policy and Business Processes

### District Culvert Manager (SME)

The District Culvert Manager will help Coordinate Field Crews in the Inventory and Assessment of Culverts during the Asset Lifecycle. This will be accomplished utilizing QC reporting and field verification in direct Interaction with the District TAM Coordinator and DBO

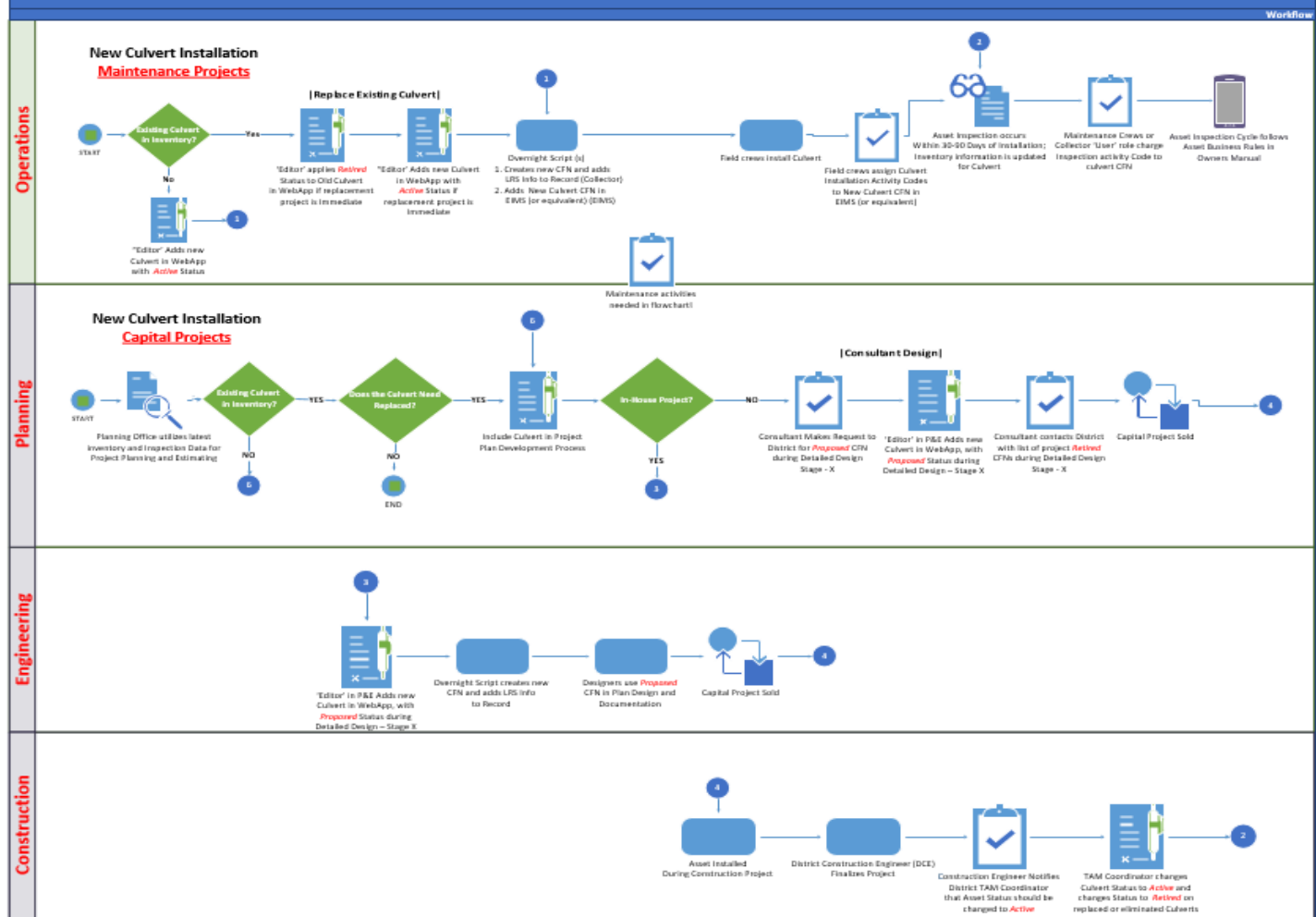
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### Collector User Roles:

User – Field Workers (Edit and Add Assets)  
Internal User – ODOT Employees (View Only)  
Editor – HMA Editor (Edit, Add and Retire Assets)  
Administrator – District TAM Coordinators (All Rights)

## Culvert Lifecycle Handoffs – Introducing New Culverts into Inventory



# CONTINUOUS IMPROVEMENT

## Asset Roles and Responsibilities

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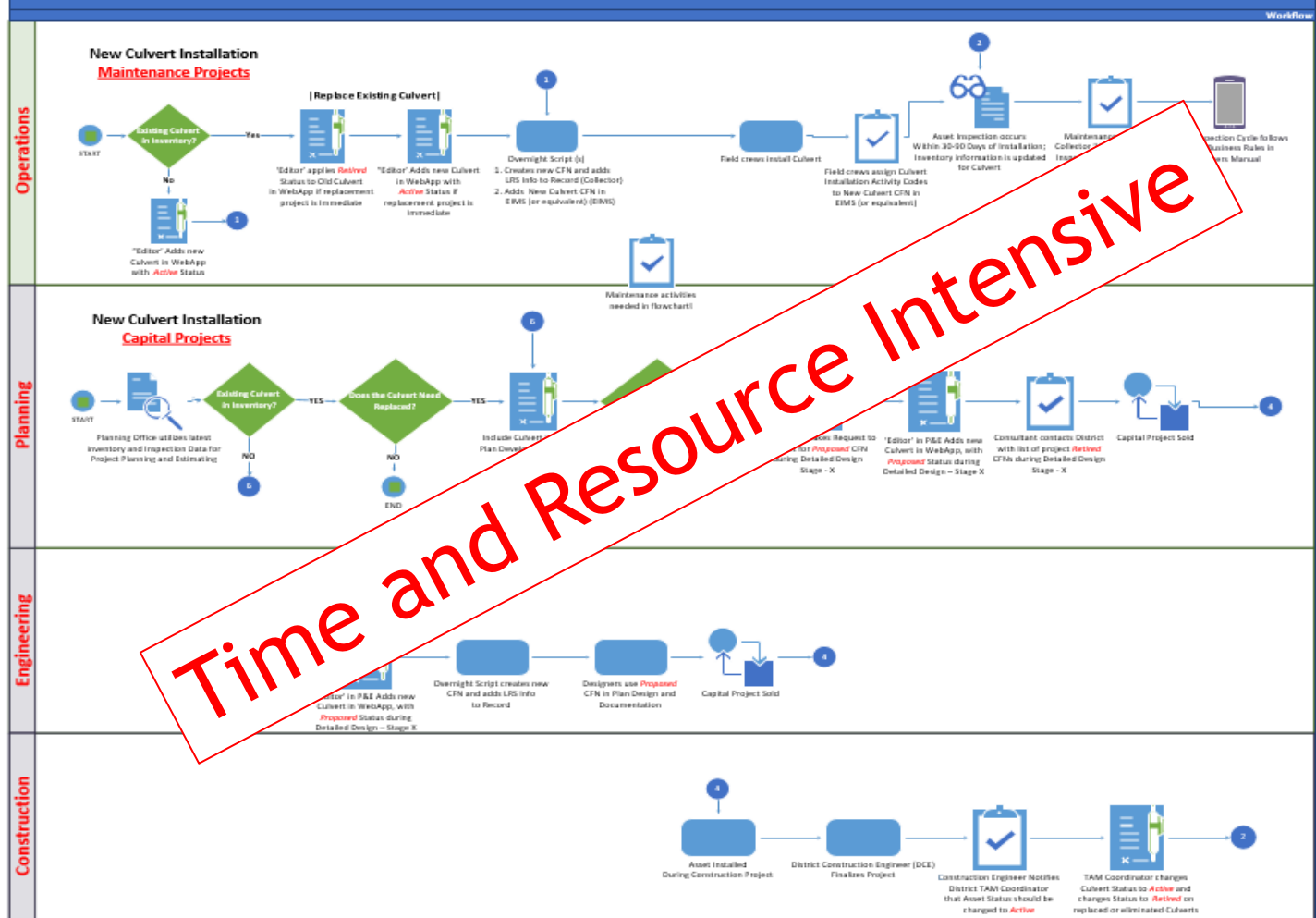
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## Culvert Lifecycle Handoffs – Introducing New Culverts into Inventory





# Title Sheet

- **Latitude and Longitude for Project Only**
- **No LRS Information, except for Begin & End Project**

15 | 12th National Conference on Transportation Asset Management

# MANUAL GIS FUNCTIONALITY

## General Summary

- Sheet Number
- Quantity of each Asset
- No LAT/LON
- No LRS

SHEET NUM.							PART.					ITEM	ITEM	GRAND	UNIT	DESCRIPTION	SEE	GENERAL SUMMARY
48	49	50	171	175	183	191	01/MPD/01/ELDA	02/STR/PH	03/STR/CV	04/NWS/PH	05/CON/OT		EXT	TOTAL			NO.	
																PAVEMENT		
		30,060	49,487								79,547	254	01001	79,547	SY	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN	12	
		442	3,005			100		442		100	3,268	301	46000	3,810	CY	ASPHALT CONCRETE BASE, PG84-22		
		477	3,074	255	786	101		722		101	3,870	304	20000	4,683	CY	AGGREGATE BASE		
9,233	2,913	4,728				33		2,913	9,233	33	4,728	407	10000	16,907	GAL	TACK COAT		
8,966	826	1,060	86	187	33			255	8,966	33	1,904	407	14000	11,158	GAL	TACK COAT FOR INTERMEDIATE COURSE		
			40	87				40			87	441	50000	127	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (44B), PG84-22		
1,721	122								1,721		122	441	50200	1,843	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (44B)	12	
			56	121				56			121	441	50300	177	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (44B)		
5,347	1,642	2,102							5,347		3,744	442	10000	9,091	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (44B)		
	109	657			21			109		21	657	442	10100	787	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (44B)		
											800	442	20200	800	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (44B)	12	
			159	1,635				159			1,635	452	12010	1,794	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS OCI		
			17					17				452	14010	17	SY	10" NON-REINFORCED CONCRETE PAVEMENT, CLASS OCI		
6,591	14,894							6,591			14,894	609	12000	21,885	FT	COMBINATION CURB AND GUTTER, TYPE 2		
				467							467	609	12001	467	FT	COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN	12	
	275			545				275			545	609	26000	820	FT	CURB, TYPE B		
	22			47				22			47	609	54000	69	SY	6" CONCRETE TRAFFIC ISLAND		
783	91							783			91	617	10100	874	CY	COMPACTED AGGREGATE		
63,122								63,122				618	40100	63,122	FT	RUMBLE STRIPS, (ASPHALT CONCRETE)		
																SANITARY SEWER		
											50	611	00100	50	FT	4" CONDUIT, TYPE B, FOR SANITARY		
											50	611	00900	50	FT	6" CONDUIT, TYPE B, FOR SANITARY		
								20				611	01100	20	FT	6" CONDUIT, TYPE C, 701.45		
								1			11	611	99954	12	EACH	MANHOLE ADJUSTED TO GRADE		
																OTHER UTILITIES		
											2	609	98100	2	EACH	CURB, MISC. STEEL MANHOLE CURB ENTRANCE	14	
											4	611	99954	4	EACH	MANHOLE ADJUSTED TO GRADE		
																TRAFFIC CONTROL		
						725					725	621	00100	725	EACH	RPW		

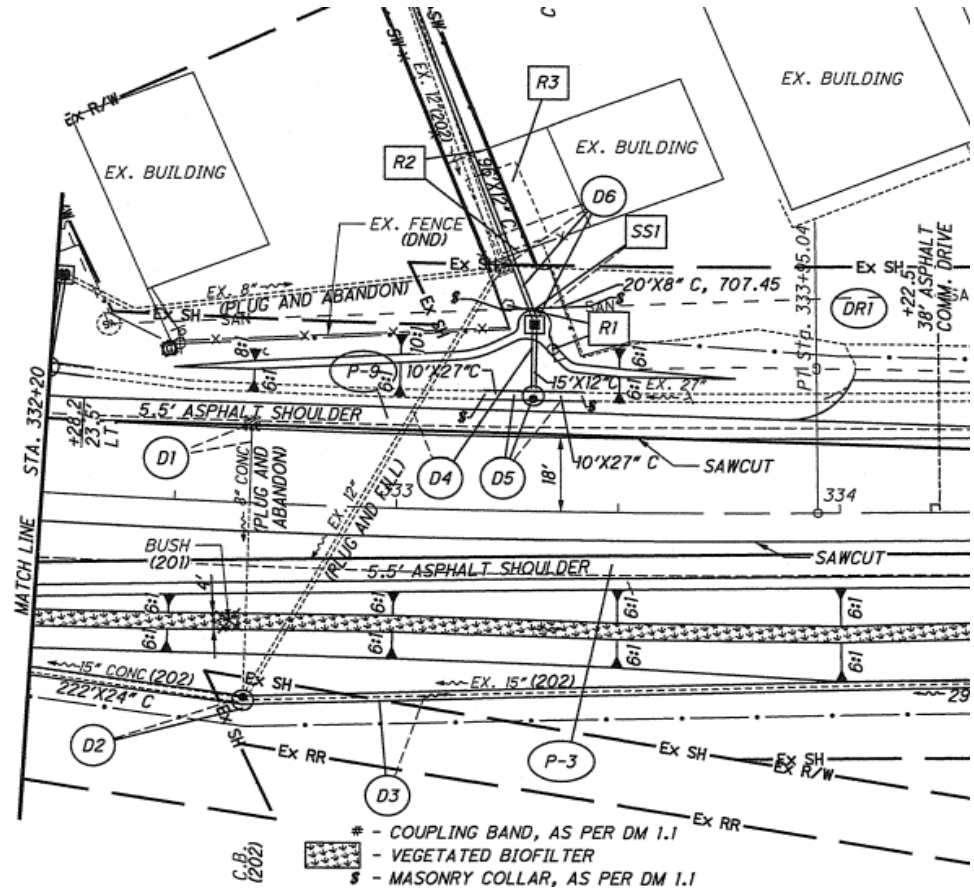
# MANUAL GIS FUNCTIONALITY

# Plan and Profile Sheets

- **Station and Offset Only**
- **No LRS Information**

# Now What???

## How do we Improve???



# AUTOMATED GIS FUNCTIONALITY

## Construction Plan Note:

### Item 623 Construction Layout Stakes and Survey, As Per Plan

#### Item 623 Construction Layout Stakes and Surveying, As Per Plan

In addition to the requirements of Item 623 Construction Layout Stakes and Surveying, the contractor shall provide the following information to the department:

The contractor shall provide As-Built data for the specified completed construction items in State Plane Grid Coordinates (Ohio North or South Zone). The construction items shall be located as per the survey feature code list found on the Ohio Department of Transportation Office of CADD & Mapping services website. A CD containing the surveyor's raw data collector file, comma delimited ascii file of points collected, a processed and clean Microstation DGN file, and a surveyor's certification shall be delivered to the Project Engineer after all information has been collected. The ASCII files shall include a header containing name of surveyor, dates of collection, horizontal datum (i.e. NAD 83, NAD83, NATRF2022), vertical datum (i.e.: NAVD 88) and method of collection (IE: Ohio VRS, GPS RTK, Total Station, etc.) and be in a table form as follows: Point number, Northing, Easting, elevation, feature code, description

Below is the list of assets the contractor is required to provide:

1. Right of Way fence (points at all changes of direction)
2. Barrier
  - a. Guardrail
  - b. Concrete
  - c. Cable
3. BMPs (See project site plan for information)
4. Culverts
  - a. Inlet invert
  - b. outlet invert
  - c. type
  - d. size
5. Catch Basins, Manholes and inlets
6. Underdrain Outlets
7. Signs
  - a. Overhead
  - b. Ground mounted, with description
8. ITS/Traffic Assets

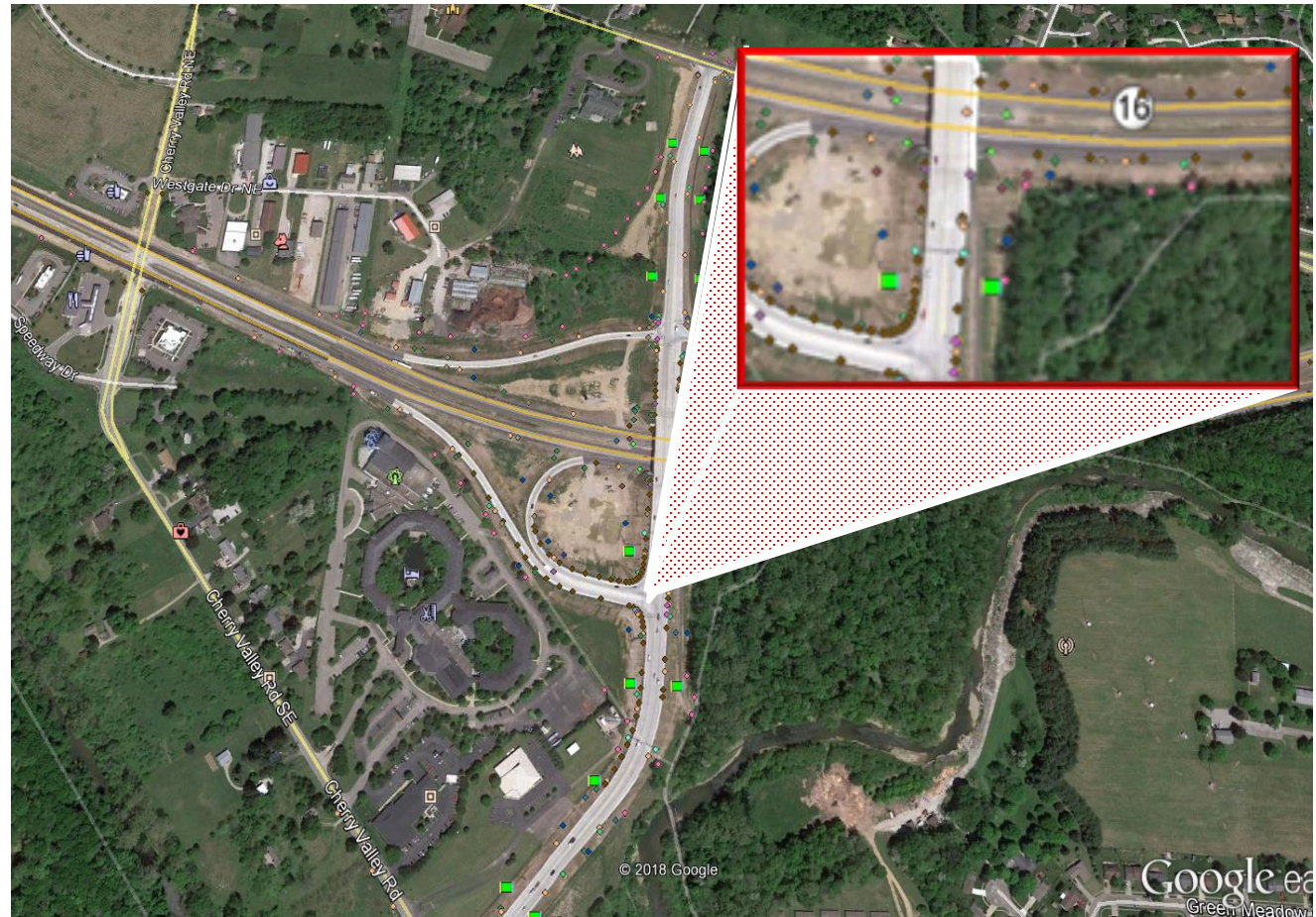


# AUTOMATED GIS FUNCTIONALITY

## Point & Linear Assets

### Construction Plan Note

- As Built
- Survey Grade
- CADD Mapping Standards
- Improved workflows
- Notifications
- **Consultants**
- **Contractors**
- **\$\$\$\$\$\$\$\$**



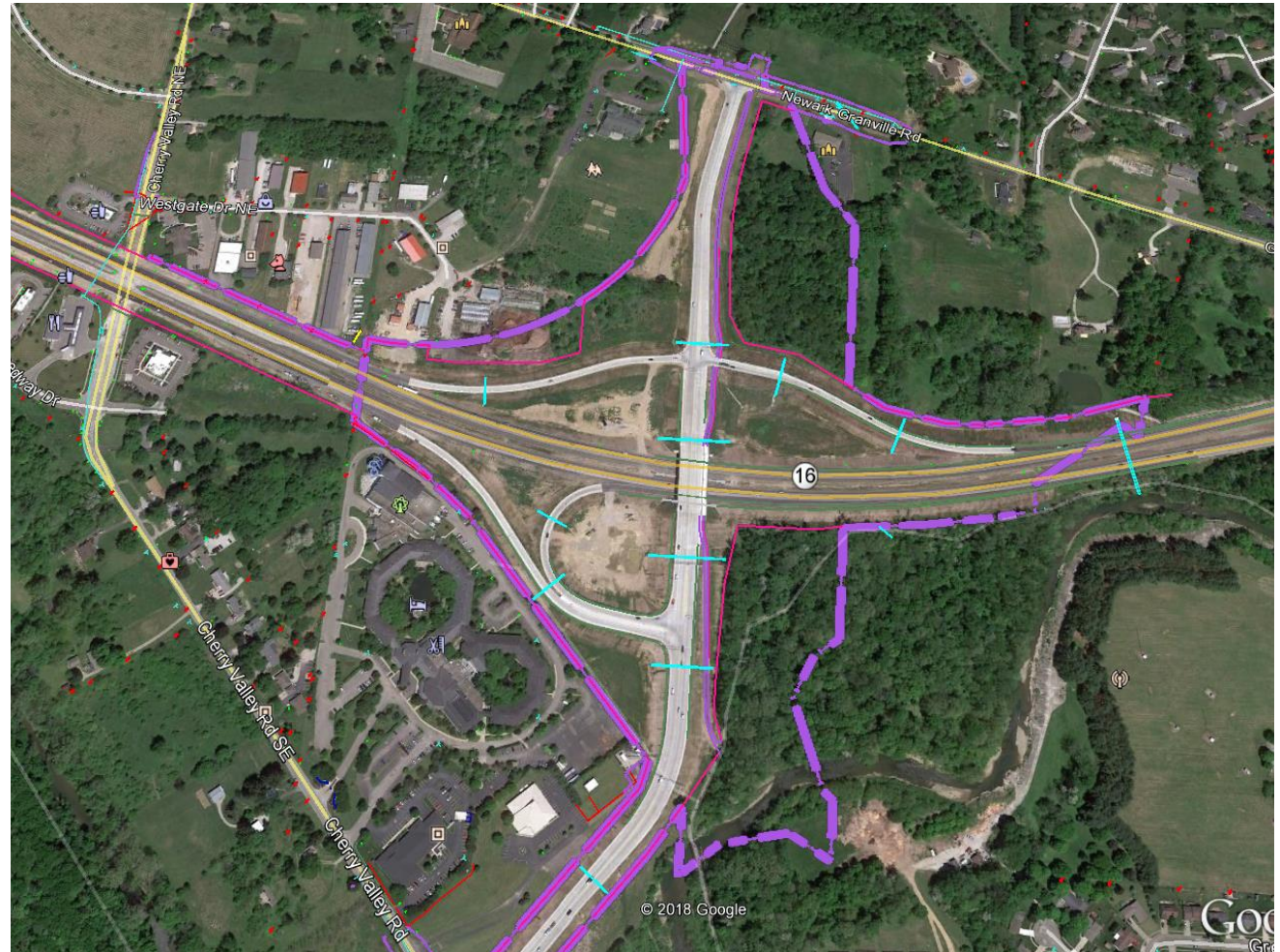


# AUTOMATED GIS FUNCTIONALITY

## Point & Linear Assets

### CADD to GIS

- CADD Mapping Standards
- Microstation Design (CADD)
- Feature Manipulation Engine (FME)
- Improved workflows
- **Consultants (min)**
- **Contractors (none)**





# CONTINUOUS IMPROVEMENT - ASSET PRIORITIES

Asset Planning

Resource Planning

Enterprise Priorities

- Mandates
- Executive Staff Input

TAM Audit Group Asset Priorities		
Calendar Year 18		
Q1	ADA Rights of Way	BRS sign off end of January 2018. AISI digitizing efforts to concluded January 5, 2018; three weeks ahead of schedule.
	Signs	Database consolidation taking place – need time frame for completion from Ravi
	Retaining Walls	BRS sign off end of January 2018
Q2	Signals (Tier 3 asset)	
	Phase 1	ODOT Collector Application needed for field location of assets with minimal attributes. Primarily locational information only. Funding available for contractor collections - coordination with Wendy Snyder
	HIM Web App Update	Van application updates for HPMS segments and Road Inventory collection
	RW Plans Web App	Web application to expose PDF R/W applications and
	Tower Lighting (Tier 2 asset)	Full Collector deliverables for high mast and low mast tower lighting A partially complete, with minimal attributes, High Mast Tower lighting inventory exists

# TAMAG ASSETS

## Full Production

Signs – Overhead and Ground Mounted

ADA Rights of Way

Underdrain Outlets

Outfalls

BMPs

ITS Power Service

Horizontal Curves

Culverts

## Remainder of Year

ITS Phase I

Retaining Walls

R/W Plan Vault

Tower Lighting

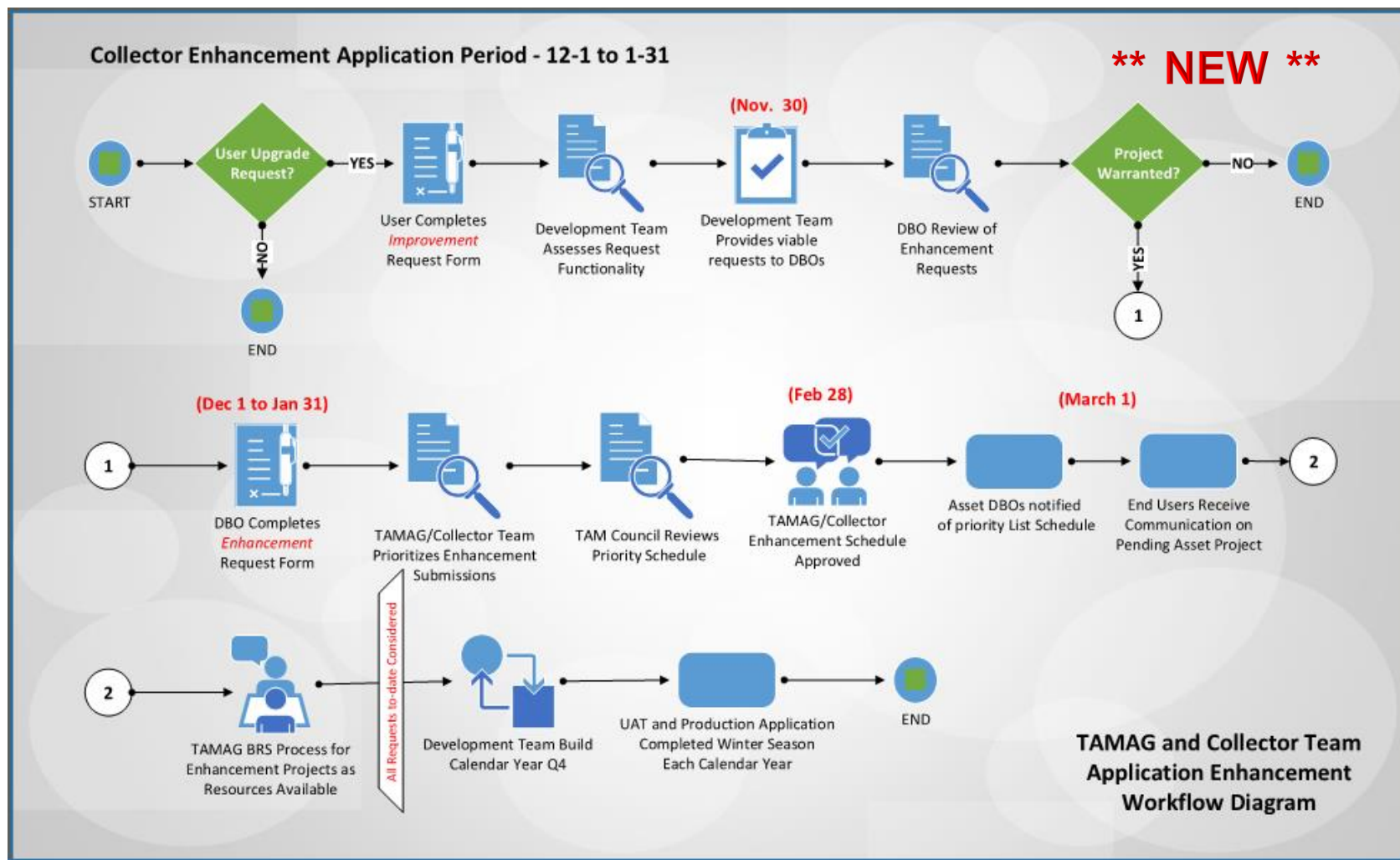
Bi-Weekly Inspection

ITS Phase II

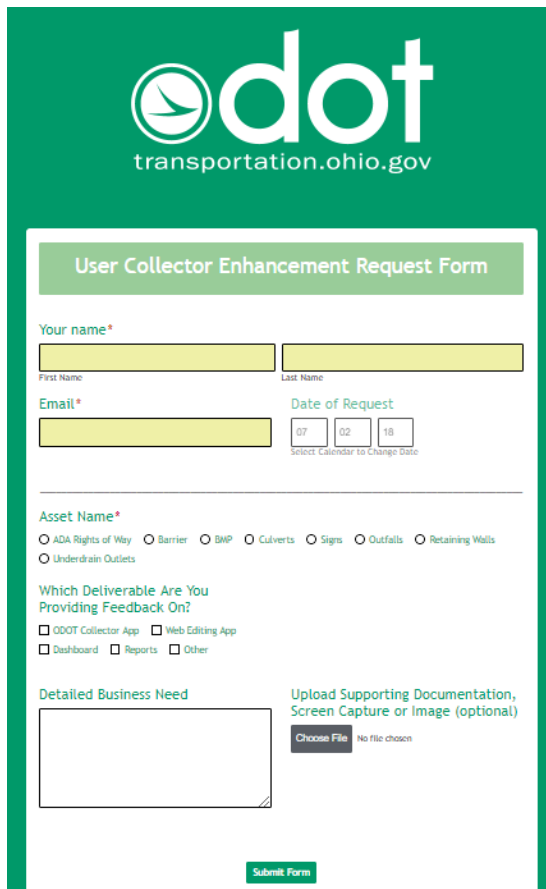
GeoHazards

Adopt-A-Highway

# COLLECTOR ENHANCEMENT PROJECTS - DBO

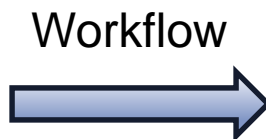


# USER ENHANCEMENT REQUESTS



The screenshot shows the 'User Collector Enhancement Request Form' on the Ohio Department of Transportation website. The form includes fields for 'Your name' (First Name and Last Name), 'Email', and 'Date of Request'. It also has a section for 'Asset Name' with radio button options: ADA Rights of Way, Barrier, BMP, Culverts, Signs, Outfalls, Retaining Walls, and Underdrain Outlets. Below this is a section for 'Which Deliverable Are You Providing Feedback On?' with checkboxes for ODOT Collector App, Web Editing App, Dashboard, Reports, and Other. There is a 'Detailed Business Need' text area and an 'Upload Supporting Documentation' section with a 'Choose File' button. A 'Submit Form' button is at the bottom.

User Creates Request



The screenshot shows the 'Request Review (TAMAG/Development Team)' form. It includes fields for 'Name' (First Name and Last Name), 'Email', and 'Today's Date'. It also has a section for 'Can Current Collector Version Support Request?' with checkboxes for YES, NO, and Additional Scripting/Programming Required. Below this is a 'Level Of Effort Details' table with columns for Low, Medium, High, and N/A, and rows for BRS, App Development, Database, Back-End Scripting, and Reporting. There is also a 'Can This Request be Expedited?' section with checkboxes for YES and NO, and an 'Overall Level of Effort' dropdown menu.


	Low	Medium	High	N/A
BRS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
App Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Database	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Back-End Scripting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Reporting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Development Team Assessment

# USER ENHANCEMENT REQUESTS



**DBO Collector Enhancement Request Form**

 Date of Request  
07 02 18  
Select Calendar for Change Date

Data Business Owner  
   
First Name Last Name

Email

Asset Name  
☐ ADA Rights of Way ☐ Barrier ☐ BMP ☐ Culverts ☐ Signs ☐ Outfalls ☐ Retaining Walls  
☐ Underdrain Outlets

Which Deliverable Are You Providing Feedback On?  
☐ ODOT Collector App ☐ Web Editing App  
☐ Dashboard ☐ Reports ☐ Other

ODOT Business Need  
☒ Application Enhancement ☐ New FHWA Mandate ☐ New EPA Mandate ☐ New ODOT Policy

Detailed Business Need

Upload Sorted Requirements Spreadsheet  
 No file chosen

Workflow



SECTION

**Enhancement Request Received Form**

Project Received Acknowledgement  
☐ Yes

Date/Time

Name  
   
First Name Last Name

DBO Makes Project Request

TAMAG Project Acknowledgment

# COLLECTOR ENHANCEMENT PROJECTS

## Cover all the Bases

User Requests

Developer Assessment

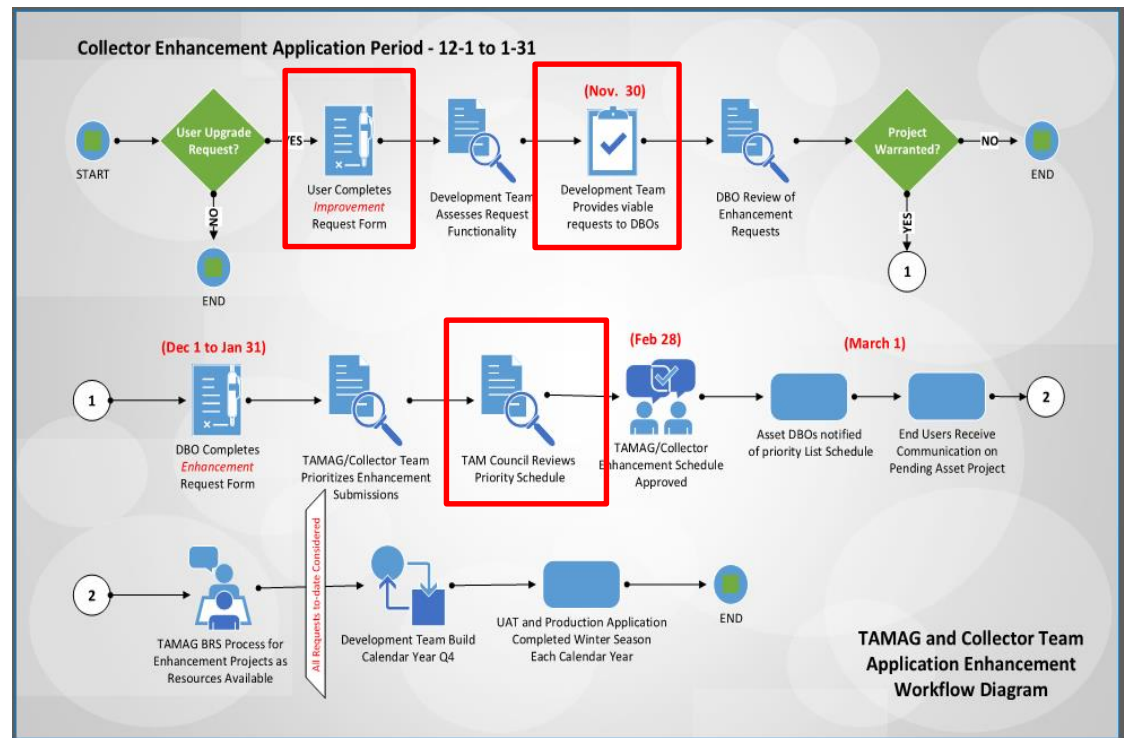
DBO Review

TAM Council Review

Project Request

TAMAG Process

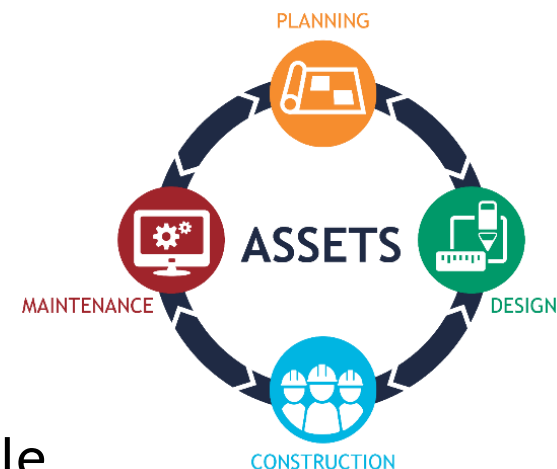
Winter Quarter Development





# IMPROVED TECHNIQUES

- Culverts
  - Automated General Appraisal
    - Scour and Headwall Information
  - Related Records
    - Historical Reference during Asset Lifecycle
- Database Integration
  - ELLIS Project Information (Federal Project Tracker)
  - EIMS Activity Codes (Work Management System)
  - Decision Support Tool (TAMDST)
  - Integrated Enterprise Assets (ODOT Collector)



# CONTINUOUS IMPROVEMENT - TAMDST

**ODOT TAMDST**  
Transportation Asset Management  
Decision Support Tool

**WELCOME TO TAMDST**

The Transportation Asset Management Decision Support Tool (TAMDST) is a web-based application for accessing and reporting on Ohio Department of Transportation assets. It lets you extract relevant transportation information for display on a map and in reports.

Whether you use a desktop computer or a tablet, or do your best work from maps, tables, or graphs, TAMDST has it all ... everything you need to make well-informed decisions!

Getting started is as simple as 1 – 2 – 3 – 4.  
Just go to the green title bar at the top of the screen and select the following:

- 1 PREFERENCES**  
Pop up the Preferences window and decide what type of asset data you want available.  
**NOTE:** You typically will do this infrequently.
- 2 FILTERS**  
Pop up the Filters window to narrow down the assets you want to work with.
- 3 CONDITION MAP**  
Display the Map page and zoom and pan, turn assets on or off, select assets and get information about them.
- 4 REPORTS**  
Display the Reports panel and select a report to generate, restrict the data you want to see in the report, and drill-down for more details.

**ASSET TYPES**  
Toggle on or off data for available assets.

**PAVEMENT** **BRIDGE** **CULVERT**

**INVENTORY**  
Inventory Summary  
Inventory Detail

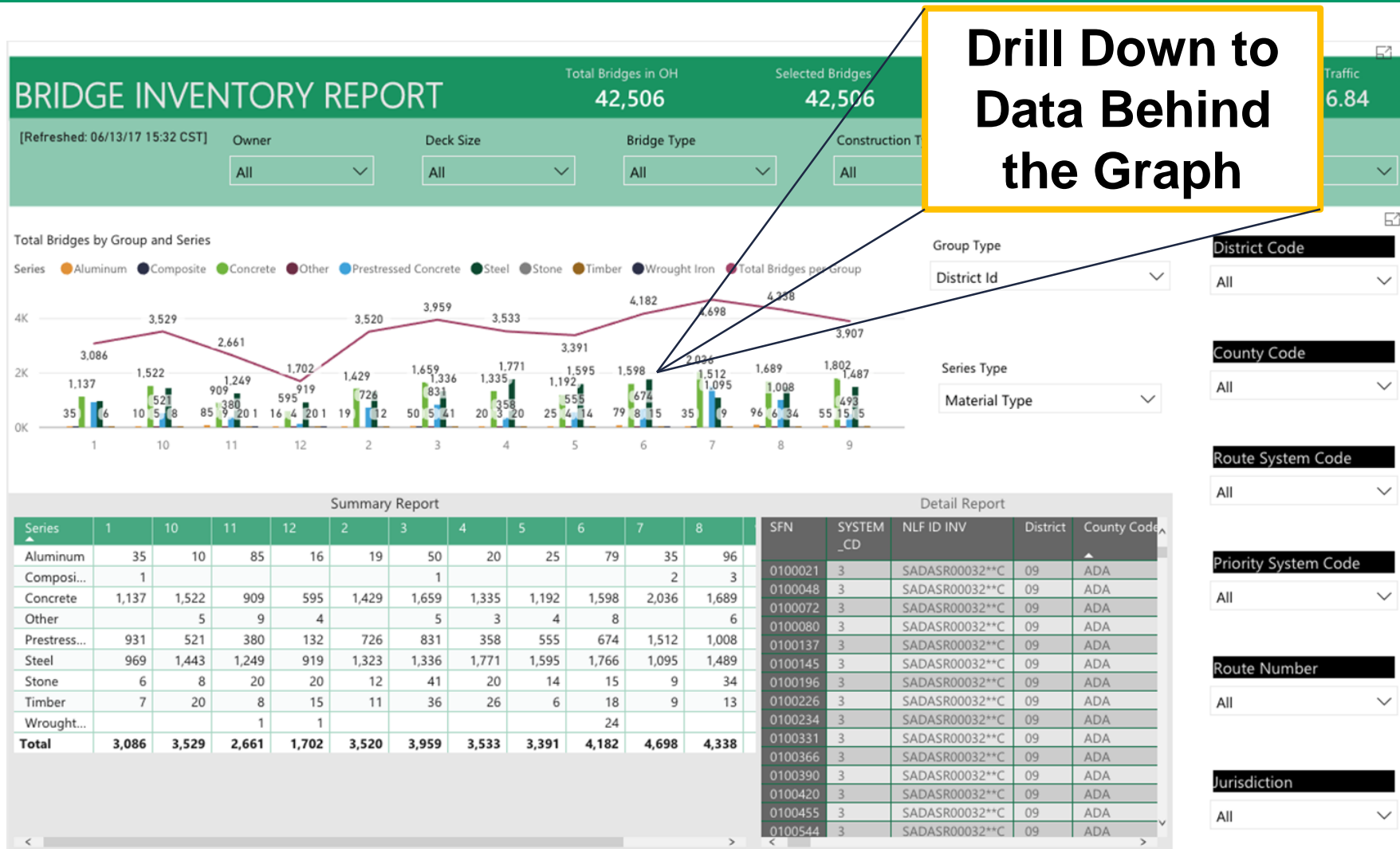
**CONDITION**  
Condition Summary  
Condition Detail  
Distress Distribution  
Poor Condition List  
Condition History Grid  
Predicted PCR

**INVESTMENT**  
Asset Expenditure

**PLANNING**  
Planned Expenditures

**FILTERS** **REPORTS** **CONDITION MAP** **PREFERENCES**

# DATA ANALYTICS- TAMDST



# DIRECT INTEGRATION WITH TIMS

**TIMS** TRANSPORTATION INFORMATION MAPPING SYSTEM

## Better Data. Better Decisions.

TIMS is ODOT's web-mapping portal where you can discover information about Ohio's transportation system, create maps, and share information.

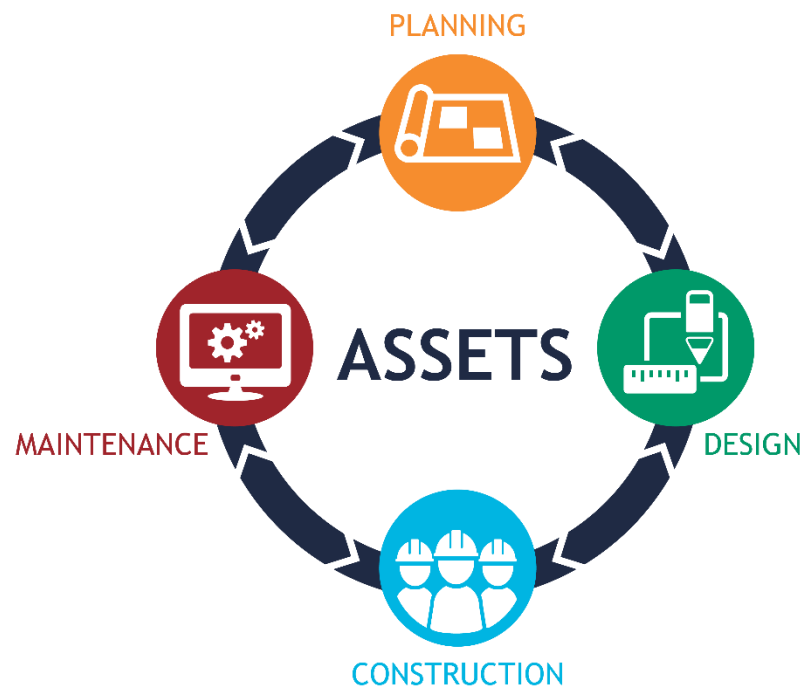
- PROJECT SEARCH
- CREATE A MAP
- DATA DOWNLOAD
- STANDARD PDF MAPS
- MAP VIEWERS
- DATA GLOSSARY
- CRASH DATA SEARCH

Search by PID

# REALIZED BENEFITS

## Improved Communications \*

- **ODOT Central Office**
- **Districts**
- **Counties**
- **Consultants**
- **Contractors**



## DBO Stewardship

- **Training done by DBO Office**
- **They are the Experts, We are the Support**

# TAM AUDIT GROUP DOCUMENT DOWNLOAD PAGE



## TAMAG Document Download Page

TAM Home

AMLT

Communications Group

Data Governance Group

District TAM Coordinators

Infrastructure Group

TAM Audit Group

TAM Calendar

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- 3. Asset Lifecycle Diagram
- 4. Asset User Roles
- 5. Asset Report Template(s)
- 6. Asset Data Model
- 7. Asset User Manual
- 8. Asset Collector Workflow

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# THANK YOU!

