TODAY'S TOPICS

- D9 Design Tools Update
  - Submission Tracking
  - Design Forms

- Best Practices

- Intersection and Driveway Sight Distance Guidance

SUBMISSION TRACKING

SUBMISSION TRACKING

NEEDS

- Metric needs identified through various quality reviews and initiatives:
  - Reviewer workload
  - Number of submissions
  - Overall submission review/revision time
  - How does this information compare to project schedule timeframes?
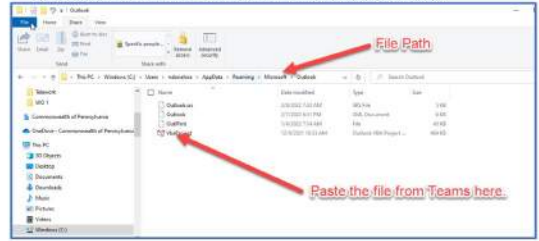
GOALS

- User friendly and automated
  - Automatic timestamped workflow documentation tool
  - Make the transmittal process more efficient

SOLUTION

- 2 Key Components
  - Microsoft Outlook:
    - Transmittals are stored via an Outlook Resource Account:
      - PD, District 9-0 Design Submissions:
        - RA-PDD9DesignSubmissions@pa.gov
    - Timestamped with the Sent Date of the e-mail
    - Subject Line is Key to Project and Submission Specific Information
  - Microsoft Excel:
    - Retrieves the information in the Outlook Resource Account
    - Routines have been developed to process the data and develop reports
- Developed step by step procedure documents to assist in system rollout

Setting Up VBA & Developer

COMMON ERRORS

- "Reply All" Errors
  - Consultant submits another e-mail to the reviewer saying that they have additional information relative to that submission and copies the resource account

  - Consultant asks for additional information but copies the resource account on the request

  - Consultant responds back with a "Thank you" e-mail after a submission is approved, but copies the resource account.

- A submission should be 2 e-mails per sub# and Unit
  - 1 "FOR REVIEW" from PM to the Reviewer
  - 1 "RESUBMIT" or "APPROVED" back to the PM

- Back and forth correspondence should not include the resource account

SUB TRACKING STATS

- 2,454 Reviews Completed Since Inception (10/2021-03/2023)
  - 1,859 Approvals
  - 10.7 calendar days - Average Turnaround Time
  - 1.5 - Average # Submissions

- 323 Reviews Completed in 1st Qtr 2022
  - 239 Approvals
  - 9.0 calendar days - Average Turnaround Time
  - 1.5 - Average # Submissions

- 531 Reviews Completed in 1st Qtr 2023
  - 421 Approvals
  - 10.7 calendar days - Average Turnaround Time
  - 1.4 - Average # Submissions

D9 DESIGN FORMS

NEEDS

- Improve efficiency for staff by reducing the level of effort spent finding and completing forms:
  - Multiple Locations
  - Outdated Forms
  - Trivial Information Lookups
  - Keeping Up To Date with Form Changes

GOALS
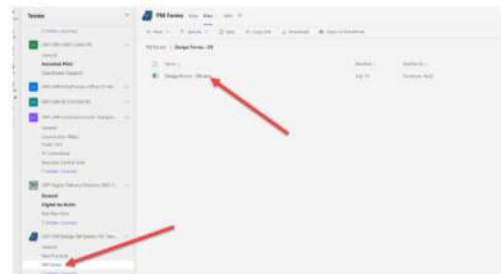
- User friendly and automated
  - One location to store the most up to date form
  - Automatically fill out as many fields as possible
  - Streamline the form update process

SOLUTION

- Project Specific Excel Based File
  - Housed in Teams
  - Used as a gateway to the D9 Forms Catalogue
  - Allows automatic completion of a substantial amount of information
  - Data is built as the project progresses and can be incorporated into future forms

D9 DESIGN FORMS

- Imports initial project info from MPMS (about 50 fields of data) to autofill information on selected form
  - PM completes other info needed that was not auto-populated
  - Archives info to carry forward to use in the next form

- 31 items have been added to the tool
  - Central Office and District 9 Specific Forms
    - Checklists
    - Plan Review Report
    - Cost Driver Analysis
    - Design Exception Requests, etc
  - Also includes helpful references such as:
    - High Level Cost Estimating Data Based on Recent Bid History
    - Driveway and Intersection Sight Distance Spreadsheet – To be discussed later
  - Additional Items are added as needed/identified

v.2022.07.19

Step 1: Import Initial Project Data

Step 2: Import New Form

File   Home   Insert   Draw   Page Layout   Formulas   Data   Review   View   Developer   Help   BLUEBEAM   ProjectWise

Calibri   11

Normal 6 2   Normal 7   Normal 7 2   Norm
Normal 8 2   Normal 9   Normal 9 2   Norm

B16

v.2022.07.19

UserForm4   ✕

MPMS Number   96543   Retrieve

County: Fulton   SR: 522

Project Title: US522 - US 30 to Turnpike

Project Manager: Jake O'Roark

Import MPMS Data

v.2022.07.19

Step 1: Import Initial Project Data

Step 2: Import New Form

File   Home   Insert   Draw   Page Layout   Formulas   Data   Review   View   Developer   Help   BLUEBEAM   ProjectWise

Calibri   11   Wrap Text   General   Conditional Formatting   Format as Table   Normal 6 2   Normal 7   Norma

B   I   U   Merge & Center $ %   ,   Normal 8 2   Normal 9   Norma

Clipboard   Font   Alignment   Number   Styles

B8   v.2022.07.19

A	B
8	*v.2022.07.19*

Step 1: Import Initial Project Data

Step 2: Import New Form

UserForm1   ✕

Form | Select Form ▾ |

Rdwy Cost per Mile History
Reduced Lane and Shldr Width
RR Cert - State Oversight
RULD Apprvl Request
Safety Review Checklist
SFV
Sight Distance - Driveway
Sight Distance - Intersection

SCOPING FIELD VIEW FORM

APPROVED: _____

v.2022.10.14

PROJECT INFORMATION WORKSHEET   **SCOPING FIELD VIEW DATE:**

Beg Limits (Seg/Off) _____

District: ____0____   County: ____0____   SR: 0000   Section: 000   MPMS No. ____0____   End Limits (Seg/Off) _____

Project Short Name: _____ 0   BMS #1: _____

Project Manager: _____ 0   BMS #2: _____

Is There Federal Funding Anticipated on Any Phase? _____   BMS #3: _____

Cost Estimate: ____$0____   Let Date: 1/0/1900   Bridge PM: _____
Typology: _____   ADT: _____   Posted MPH: _____
Functional Class: _____   Truck %: _____   NHS: _____   Terrain: Rolling   Local Let?: _____
WBS: _____   0 :Project Length (Seg Miles)

DESIGN CRITERIA:

☐ New Construction   ☐ Reconstruction   ☐ 3R   ☐ Pavement Preservation   ☐ Replacement Bridge   ☐ Superstructure Replacement

☐ New Bridge   ☐ Deck Replacment   ☐ Bridge Preservation   ☐ Maintenance   ☐ Non-Highway/Non-Bridge

PROJECT DESCRIPTION: 0

ROADWAY AND BRIDGE DATA:

	Existing	Min. Req'd	Proposed	Remarks
Lane Width	??	??	??	
Paved Shoulder Width	??	??	??	
Median (if needed)	??	??	??	
Travel Lanes	??	??	??	
Design Speed	??	??	??	
Bridge Width	??	??	??	
Structure Type	??	NA	??	
Sidewalk	??	??	??	
Other:	??	??	??	

Design Exception Anticipated: ☐ Yes   ☐ No   ☐ TBD   Criteria Not Met:

Toolbar

Refresh Data

Archive Data

Print Form

SCOPING FIELD VIEW FORM

APPROVED: _____

v.2022.10.14

PROJECT INFORMATION WORKSHEET

SCOPING FIELD VIEW DATE: _____

District: 9	County: Fulton	SR: 0522	Section: 017	MPMS No. 96543	Beg Limits (Seg/Off) _____	
					End Limits (Seg/Off) _____	

Project Short Name: US522 - US 30 to Turnpike

BMS #1: _____

Project Manager: Jake O'Roark

BMS #2: _____

Is There Federal Funding Anticipated on Any Phase? _____

BMS #3: _____

Cost Estimate: $6,200,000   Let Date: 7/13/2023   Bridge PM: _____

Typology: _____   ADT: _____   Posted MPH: _____

Functional Class: _____   Truck %: _____   NHS: _____   Terrain: Rolling   Local Let?: _____

WBS: 20052203017 0940 311

8.85 :Project Length (Seg Miles)

DESIGN CRITERIA:

☐ New Construction	☐ Reconstruction	☐ 3R	☐ Pavement Preservation	☐ Replacement Bridge	☐ Superstructure Replacement
☐ New Bridge	☐ Deck Replacment	☐ Bridge Preservation	☐ Maintenance	☐ Non-Highway/Non-Bridge

PROJECT DESCRIPTION:

Resurfacing on US 522 from SR 1004 (Lincoln Way West) to I-76 turnpike exit 180 in Todd and Dublin Townships and McConnellsburg Borough Fulton County.

ROADWAY AND BRIDGE DATA:

	Existing	Min. Req'd	Proposed	Remarks
Lane Width	??	??	??	
Paved Shoulder Width	??	??	??	
Median (if needed)	??	??	??	
Travel Lanes	??	??	??	
Design Speed	??	??	??	
Bridge Width	??	??	??	
Structure Type	??	NA	??	
Sidewalk	??	??	??	
Other:	??	??	??	

Design Exception Anticipated: ☐ Yes ☐ No ☐ TBD   Criteria Not Met:

Toolbar

[Refresh Data]

[Archive Data]

[Print Form]
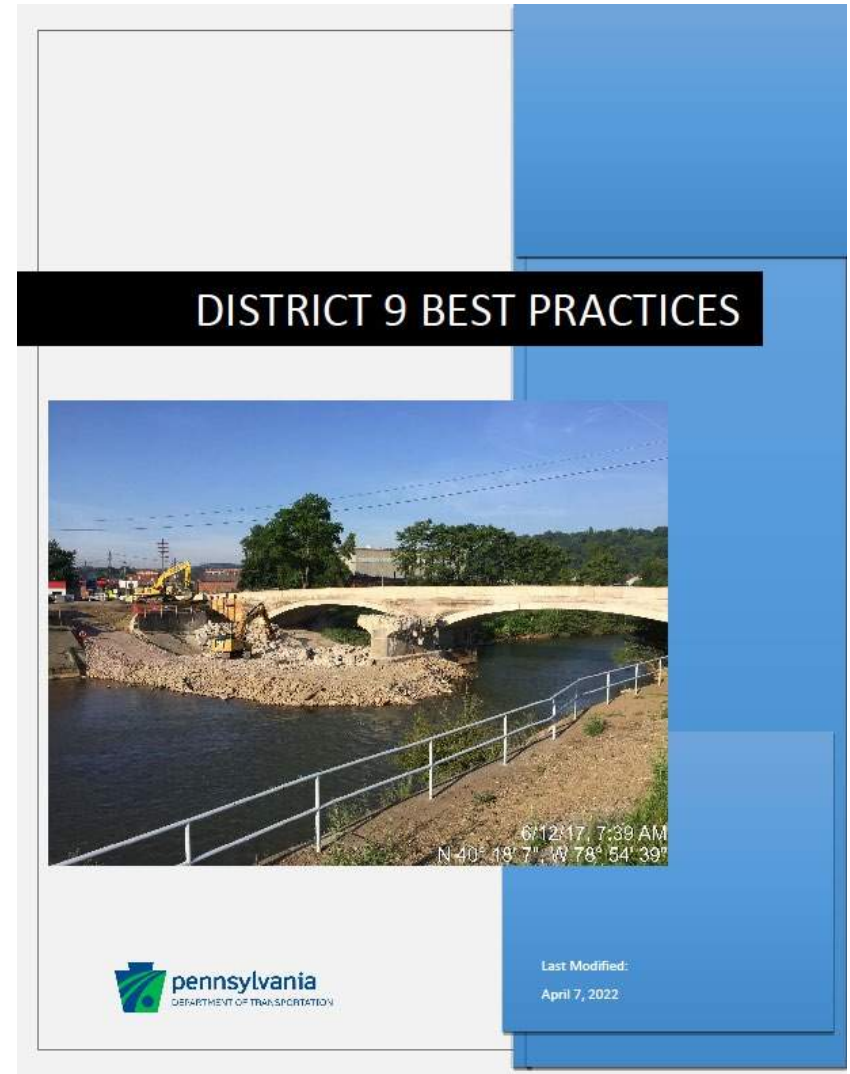
BEST PRACTICES

D9 BEST PRACTICES

- District Best Practices
  - Summary of District Design Circulars, Design Memos and Policy Related e-mails
  - Available in ECMS File Cabinet
    - Last Updated: April 2023
  - Attachments are not accessible in the File Cabinet
    - Ask your PM for any documents of interest
  - Working on a Teams Channel for consultant access of the document and attachments

DISTRICT 9 BEST PRACTICES

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Last Modified:
April 7, 2022

INTERSECTION AND DRIVEWAY SIGHT DISTANCE

Intersection and Driveway Sight Distance Guidance

District 9

January 2023

Agenda

- Intersection vs Driveway
- When is a Design Exception warranted?
- D9 Intersection Sight Distance Requirements
- 3 Project Design Criteria
  - Pavement/Bridge Preservation
  - 3R/Bridge Replacement/Rehab
  - New/Reconstruction/New Bridge on New Alignment
- Reminders
- Driveways
- Intersection Sight Distance Documentation Requirements

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Intersection vs Driveway

- Intersections are defined as the general area where two or more roadways join or cross – AASHTO Green Book Section 9.1
- Driveways are connections of adjacent properties to public roadways for vehicle access – AASHTO Green Book Section 5.2.2.6
- Pub 282 – HOP Operations Manual – Page 49 of 520
  - This will be D9s general guidance.

2.4 – DRIVEWAY HOP PLAN REQUIREMENTS

Driveway Classification

Driveway classification is determined from anticipated access ADT for the property, as defined in 441.1 (i.e., one vehicle = two trips = ADT of two):

Minimum Use =   Less than or equal to 50 ADT
Low Volume =   51 to 1500 ADT
Medium Volume =   1501 to 3000 ADT
High Volume =   3001 ADT and higher
Local Road =   More than three properties served or acts as a connecting link between two or more roadways

- Exceptions to this may arise from time to time

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District 9 Intersection Sight Distance Requirements

- **Lessor of Match Existing or Stopping Sight Distance**
  - Applies To: PPG, Bridge Preservation, 3R, Bridge Replacement/Rehab with no crash history relative to sight distance and no specific, verifiable concerns are brought to light through PennDOT Connects and/or field observation

- **Stopping Sight Distance (SSD)**
  - Applies To: Avoids Design Exceptions for PPG and 3R with a crash history relative to sight distance and new construction/realignments

- **ISD +5mph**
  - Applies To: <u>MINIMUM</u> for PPG and 3R with crash history relative to sight distance and for new construction/realignments
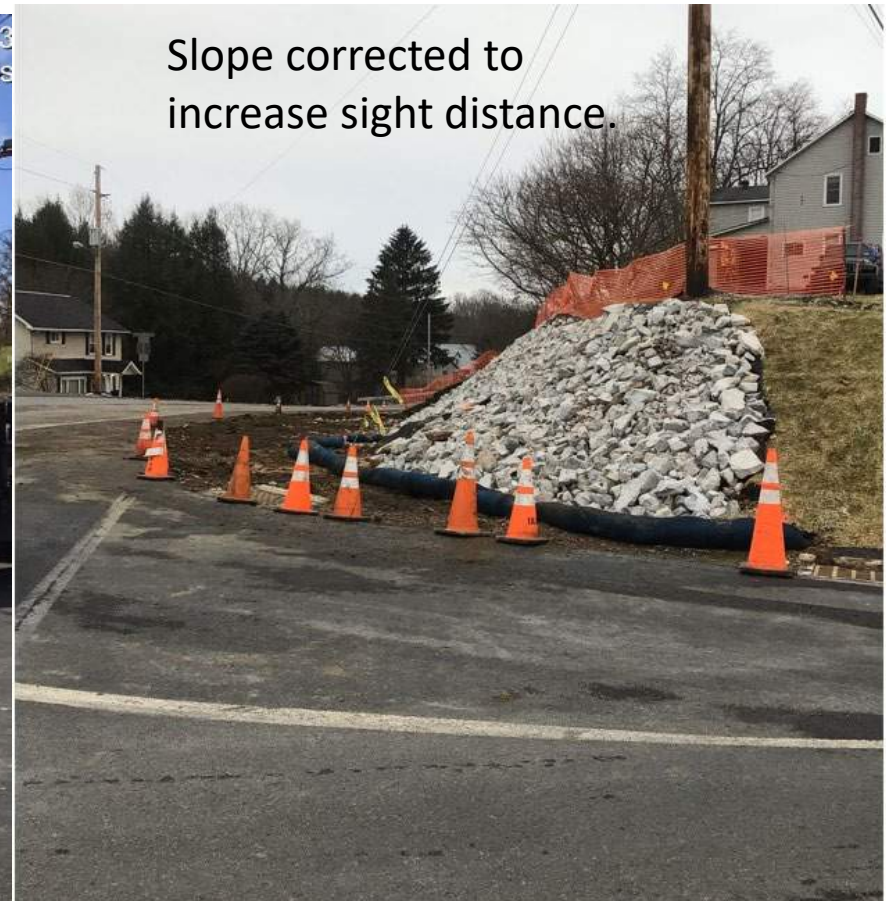
Discussion with your PM3 and Portfolio Manager is needed at least 1 month before Safety Review if the above guidelines cannot be met.

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Determining ISD

- Measurement Set-Up
  - Object Height – 3.5' – Not 2.0' as in typical SSD Calc
  - Driver's Eye Height
    - 3.5' Car
    - 7.6' Truck
  - Decision Point – **14.5**' from edge of major road traveled way along the approximate centerline of the minor road travel lane. **DO NOT USE 10' decision point for intersections!!!**
  - Measurement is taken along the approaching vehicles path of travel along the centerline of the major road traveled lane.
  - Refer to Figures 9-16 and 9-17 in the AASHTO Green Book for example ISD diagrams
- Determining Required Value:
  - Use the District 9 ISD Spreadsheet, available in the Design Forms catalog

- Example

Elton PA 15963
United States

Slope corrected to increase sight distance.

As designed cut slope with incorrect offset for determining ISD.

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Pavement Preservation Project

- No existing guide rail
- No crash history
- Determined guide rail was warranted
- Sight distance complaint received after placement of guide rail

End Result

Determined existing sight distance governed and pulled back the guide rail to meet existing SD (governed by vertical crest curve) and allowed the slope/embankment hazard to be exposed in an effort to achieve existing SD.

DRIVEWAY SIGHT DISTANCE

Driveways

- Criteria:
  - Pub 13M DM2: Chapter 7
  - PA Code, Title 67 – Transportation, Chapter 441
    - Sight Distance to be evaluated with Form M-950S
      - Use Formula Sight Distance (FSD)
      - Consider Grade of Approaching Vehicle
        - » Note: Driveway sight distance to not take the grade of the driveway into consideration like ISD does with the minor road.
- Evaluate and include completed M-950S in the Safety Review Submission if:
    - A potential reduction in sight distance might occur (GR, Barrier, access modifications, within close proximity crest vertical curve, etc.)
    - Along and/or adjacent to re-aligned or widened sections of roadway
    - There is a crash history related to substandard sight distance (1 or more crashes in 5 years)
    - All required and measured sight distances will be shown on the Driveway FSD Spreadsheet that is available within the District 9 Design Forms

Driveways

- ## Set-Up:
  - Object Height – 3.5' (Except for Case B we would use 2')
  - Driver's Eye Height – 3.5'

  - Decision Point – **10'** from edge of major road travel lane along the centerline of the driveway
  - Measurement is taken along the approaching vehicle's path of travel along the centerline of the major road traveled lane.

Driveways

- Design Exceptions are not required for substandard driveway sight distance.
  - Concurrence is needed by the Safety Review Committee for a proposed driveway that:
    - Reduces sight distance below required FSD, or
    - In the case of an existing driveway that does not meet FSD, further reduces sight distance
  - Safety Review Concurrence will only be provided if the reduction in sight distance is the result of a net benefit to safety
  - **This must be documented in the Safety Review Minutes**

Documentation Requirements

Required Documentation for Safety Review

- Label all dimensions on plan
- Identify limiting factor on plan
- Show profile of sight line (Proposed sight line, ISD +5mph sight line, and SSD sight line)
- Show cross sections with sight line (dot) (Proposed sight line, ISD +5mph sight line, and SSD sight line)
  - Cut cross section at limiting factor
  - For projects that do not have survey, photo documentation with the limiting factor labeled can be used in lieu of cross sections
- This will be required for any driveway and intersection within the sight line of the project limits where the paved shoulder and/or lane width or alignment changes or potential sight distance impacts (vertical and/or horizontal).
- All evaluated existing intersections/driveways will have photo documentation.
- Line Striping - Any issues that needs addressed when looking left or right

D9 Intersection Sight Distance (ISD) and Driveway Formula Sight Distance (FSD) Spreadsheet

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Intersection Sight Distance Spreadsheet

**Don't use symbols (> or +) for proposed.
Use the actual number.**

Page 1

Intersection Sight Distance Spreadsheet

Color Coding For the Proposed Value on the Spreadsheet

- Red � red box
    - Design Exception is Required

- Yellow the yellow box
    - PPG/3R: Yes to crash history and proposed is greater than or equal to SSD
    - New/Recon: Proposed is greater than or equal to SSD

- Green the green box
    - PPG/3R: No crash history and proposed is greater than or equal to the min between existing and SSD
    - PPG/3R: Yes to crash history and proposed is greater than or equal to ISD+5mph
    - New/Recon: Proposed is greater than or equal to ISD+5mph

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Driveway Sight Distance Spreadsheet

Driveway Sight Distance Table

Note: Refer to PennDOT Form M-950S for Driveway Sight Distance Diagrams

	Red cells do not meet lessor of existing or FSD
	Yellow cells meet existing or FSD, but have crash history
	Green cells meet FSD or Existing w/ no Crash History
	Gray cells are auto-calculated

v.23.01.26

Location (STA or Seg/Off) / Driveway (Use Engineering Judgement When Determining Driveways To Be Evaluated)	Side	Relative Crash History?	Design Speed	Looking Left From Driveway (Section A)				Looking Right From Driveway (Section A)				Stopping Sight Distance (Section B)				LT From Major Roadway (Section C)			
				Average Grade Looking Left	Existing	Formula Sight Distance	Proposed	Average Grade Looking Right	Existing	Formula Sight Distance	Proposed	Average Grade Looking Straight Ahead	Existing	Formula Sight Distance	Proposed	Average Grade Looking Straight Ahead	Existing	Formula Sight Distance	Proposed
123 Second St	RT	Yes	25	-4.0%	250	153	200	4.5%	100	141	125	-1.0%	100	148	85	1.0%	100	145	85

Driveway Sight Distance Spreadsheet

Color Coding For the Proposed Value on the Spreadsheet

- Red ▮
    - Does not meet the lesser of existing or FSD. Safety Review discussion required.

- Yellow ▮
    - Meets existing but not FSD and no crash history. Safety Review discussion required.
    - Meets FSD but has a crash history. Safety Review discussion required.

- Green ▮
    - Meets FSD or existing with no crash history