



**OHIO DEPARTMENT OF TRANSPORTATION**

JOHN R. KASICH, GOVERNOR

JERRY WRAY, DIRECTOR

# **Considering Large Trucks in Ohio Work Zones**

Duane Soisson, P.E.  
Traffic Control Design Engineer  
Office of Roadway Engineering

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# Presentation Agenda

## Ⓞ Considerations during Design

Ⓞ Lane Closure Policies

Ⓞ Work Site Access

## Ⓞ Considerations during Construction

Ⓞ Portable Changeable Message Signs

Ⓞ Lane Assignments

Ⓞ In Cab Communication

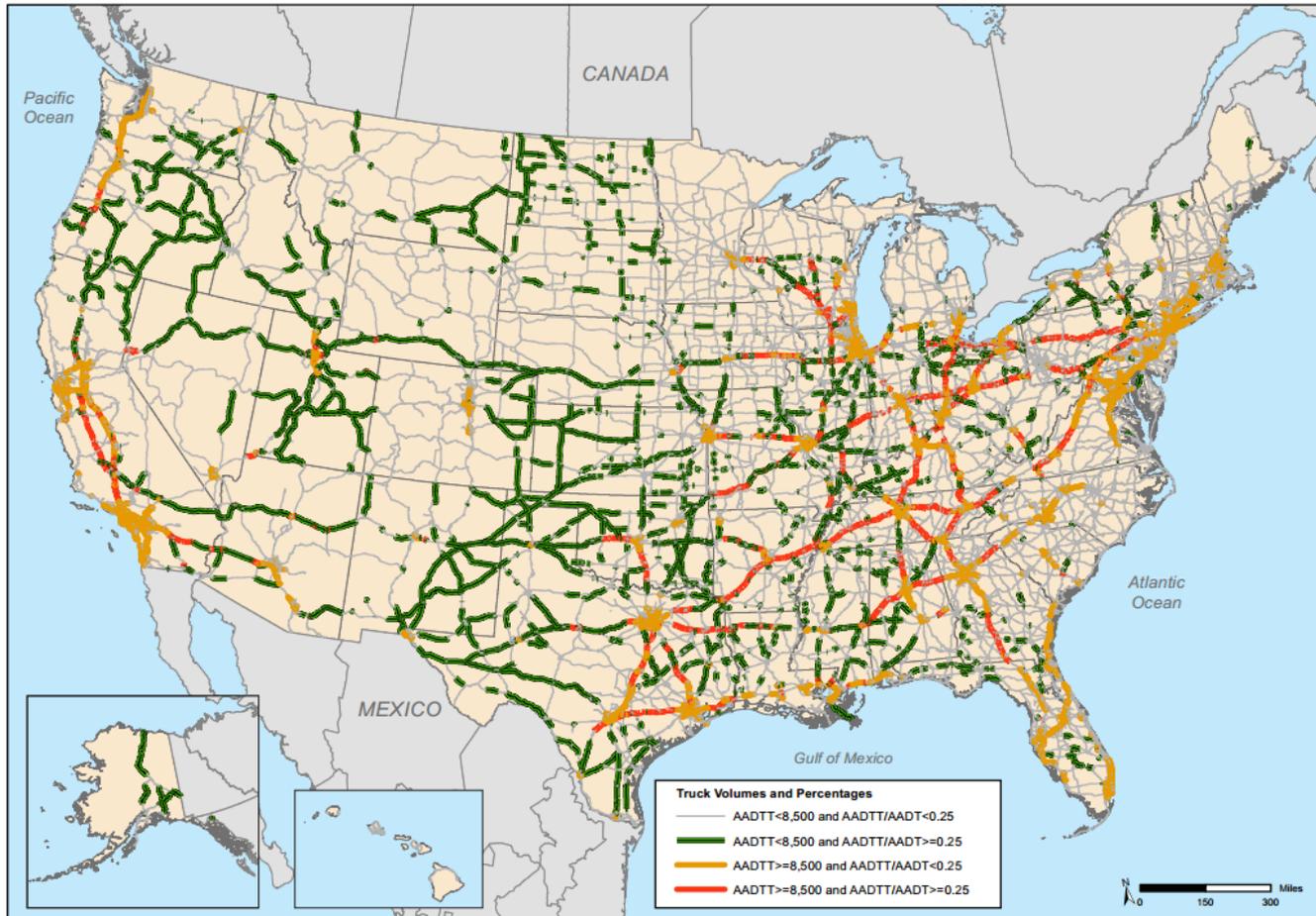


# Why is this important?



# Ohio Statistics

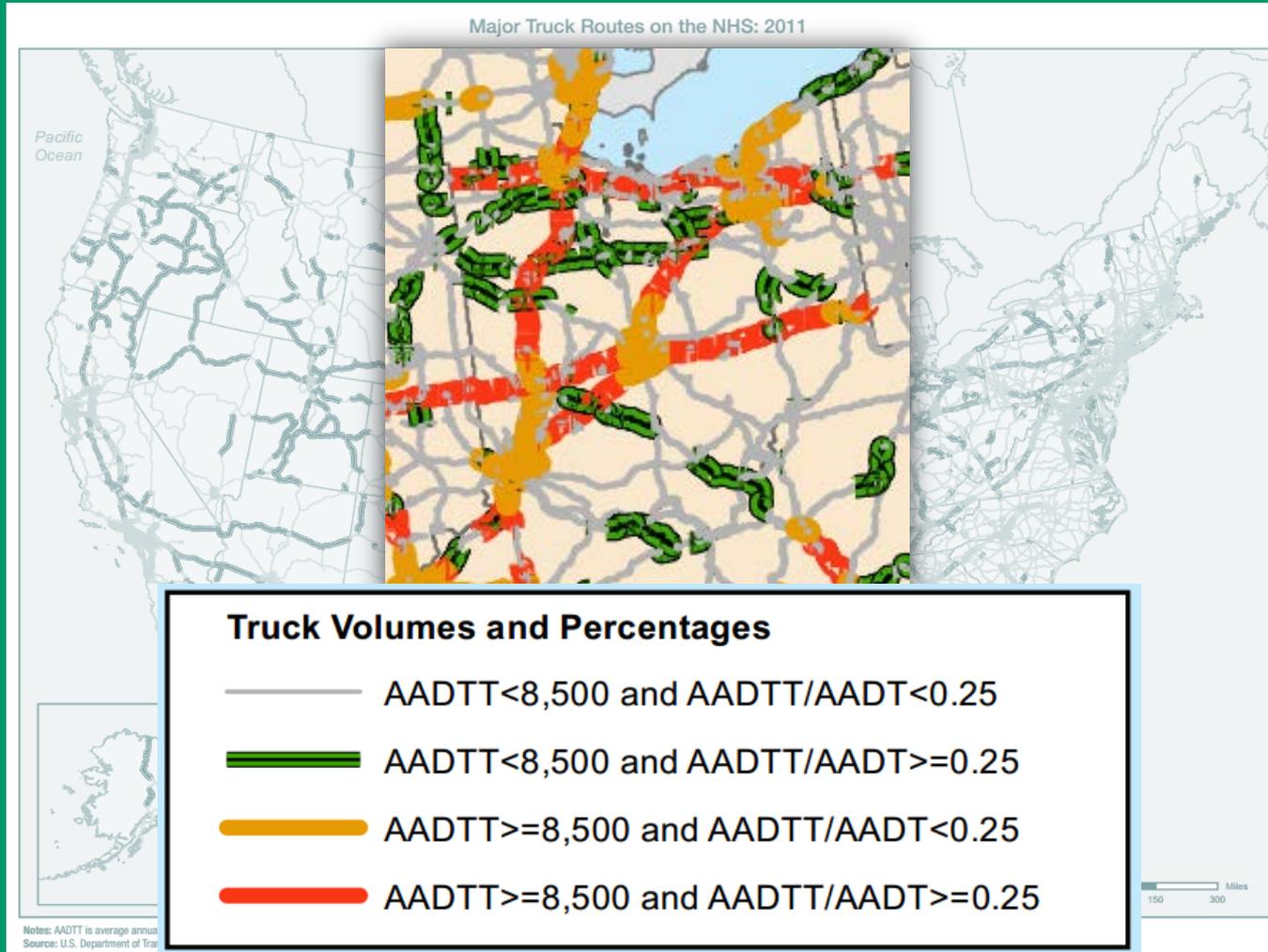
Major Truck Routes on the NHS: 2011



Notes: AADTT is average annual daily truck traffic and includes all freight-hauling and other trucks with six or more tires. AADT is average annual daily traffic and includes all motor vehicles. NHS mileage as of 2011, prior to MAP-21 system expansion.  
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, *Freight Analysis Framework*, version 3.4, 2013.

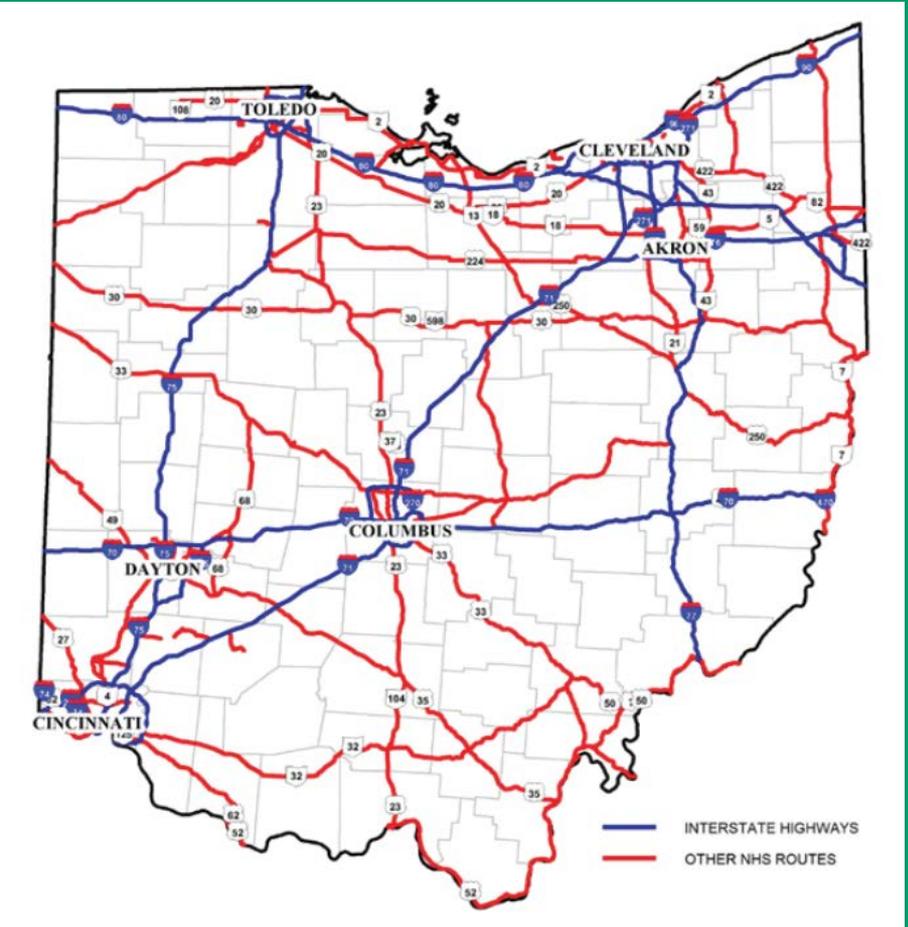


# Ohio Statistics



# Ohio Statistics

- **Three of the longest interstate routes in the country traverse through Ohio: I-90, I-80 and I-70.**



# Ohio Statistics

- **Ohio maintains 21 interstate routes, the 5<sup>th</sup> highest total in the nation.**



# Ohio Statistics

- **More than \$438 billion in goods are shipped annually by trucks – the third largest of any state**
- **In 2013, truck vehicle miles traveled exceeded 13 million on Ohio interstates**



# Considerations During Design of Work Zones



# Traffic Management In Work Zones Policy

- ④ **ODOT is committed to the continuous movement of traffic through all work zones by elimination or reduction of delays.**



# Traffic Management In Work Zones Policy

- ④ **Allow lane closures only during times when traffic volumes are less than the calculated work zone capacity.**



# Traffic Management In Work Zones Policy

- ④ **We've simplified the standard formula in the Highway Capacity Manual for theoretical capacity of a lane.**
- ④ **Reduced to two variables:**
  - ④ Terrain (Rolling or Level)
  - ④ Truck Percentage (0-<15%, 15-<30%, 30%+)



# Traffic Management In Work Zones Policy

Work Zone Capacity – Vehicles per Hour per Lane

Terrain	TRUCK PERCENTAGE		
	0-<15%	15-<30%	30%+
Level	1490	1390	1330
Rolling	1310	1100	1000



# Traffic Management In Work Zones Policy

## 14% Trucks

Hour of the Day	MON-FRI	SAT-SUN
0-1AM	260	195
1-2AM	174	130
2-3AM	145	108
3-4AM	174	130
4-5AM	289	217
5-6AM	694	521
6-7AM	* 1591	1193
7-8AM	* 2228	* 1671
8-9AM	* 1909	1432
9-10AM	1475	1107
10-11AM	1360	1020
11-12PM	1418	1063
12-1PM	1475	1107
1-2PM	* 1533	1150
2-3PM	* 1736	1302
3-4PM	* 2083	* 1562
4-5PM	* 2314	* 1736
5-6PM	* 2343	* 1757
6-7PM	* 1678	1258
7-8PM	1157	868
8-9PM	984	738
9-10PM	839	629
10-11PM	608	456
11-12AM	434	325

## 16% Trucks

Hour of the Day	MON-FRI	SAT-SUN
0-1AM	260	195
1-2AM	174	130
2-3AM	145	108
3-4AM	174	130
4-5AM	289	217
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# Contractor Access to Work Area



# Construction Access Points

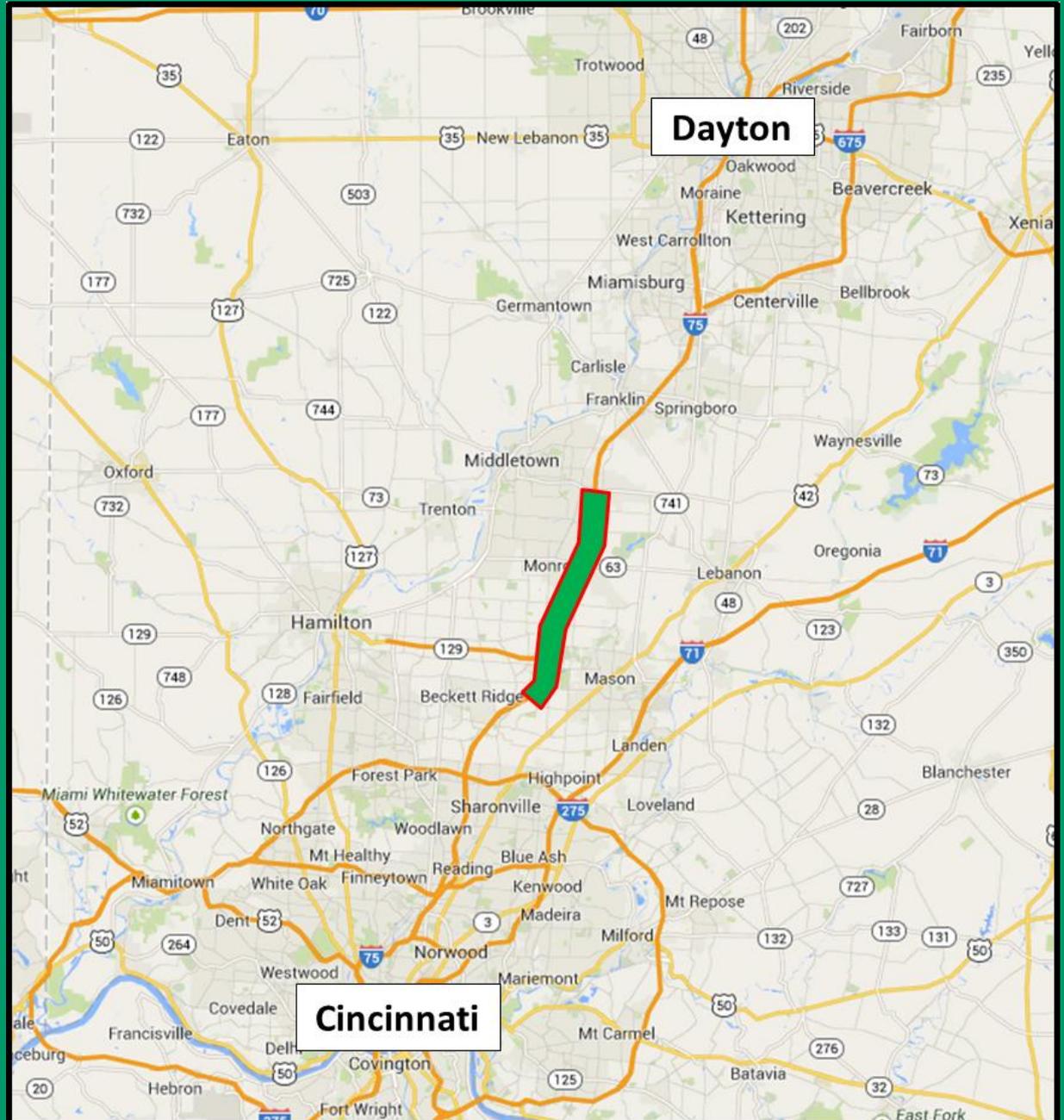
- ④ **Prior to 2009, ODOT didn't have a standard layout for access points**
- ④ **Lane Addition Project on I-75 in Butler and Warren Counties**
  - ④ Affected approximately 12 miles
  - ④ Major Rehabilitation with the addition of a 4<sup>th</sup> lane in each direction



**The project  
was located  
between  
Dayton and  
Cincinnati**

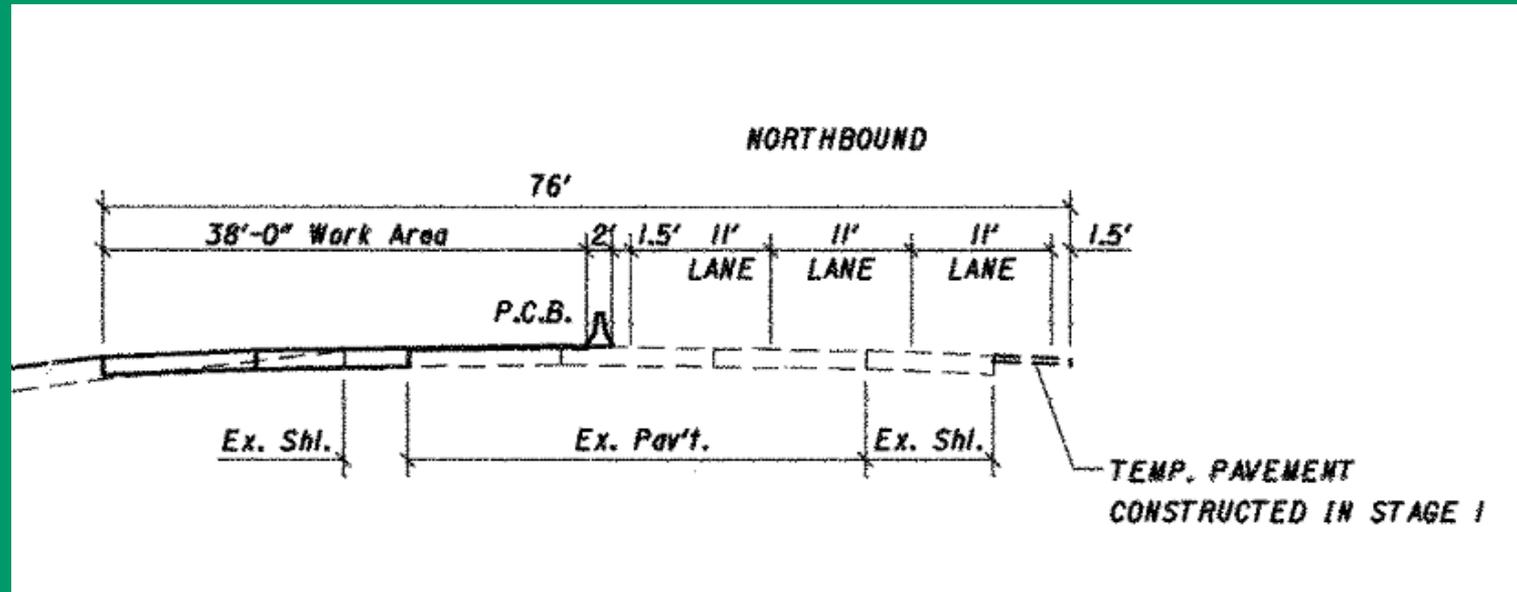
**ADT of 93000-  
119000**

**22% trucks**



# MOT Typical Section

- ① First major phase of construction was built part-width with contractor working in the median



**Here's an example of one of the openings that was being used on the project.**



# How Did We Get Here?

- ④ **Ohio DOT maintains a work zone crash database**
  - ④ Database was updated on a biweekly basis
  - ④ 10-15 work zones are monitored for work zone crash trends during construction
- ④ **After a couple of months of construction, an increase in crashes was identified in the BUT/WAR-75 work zone**

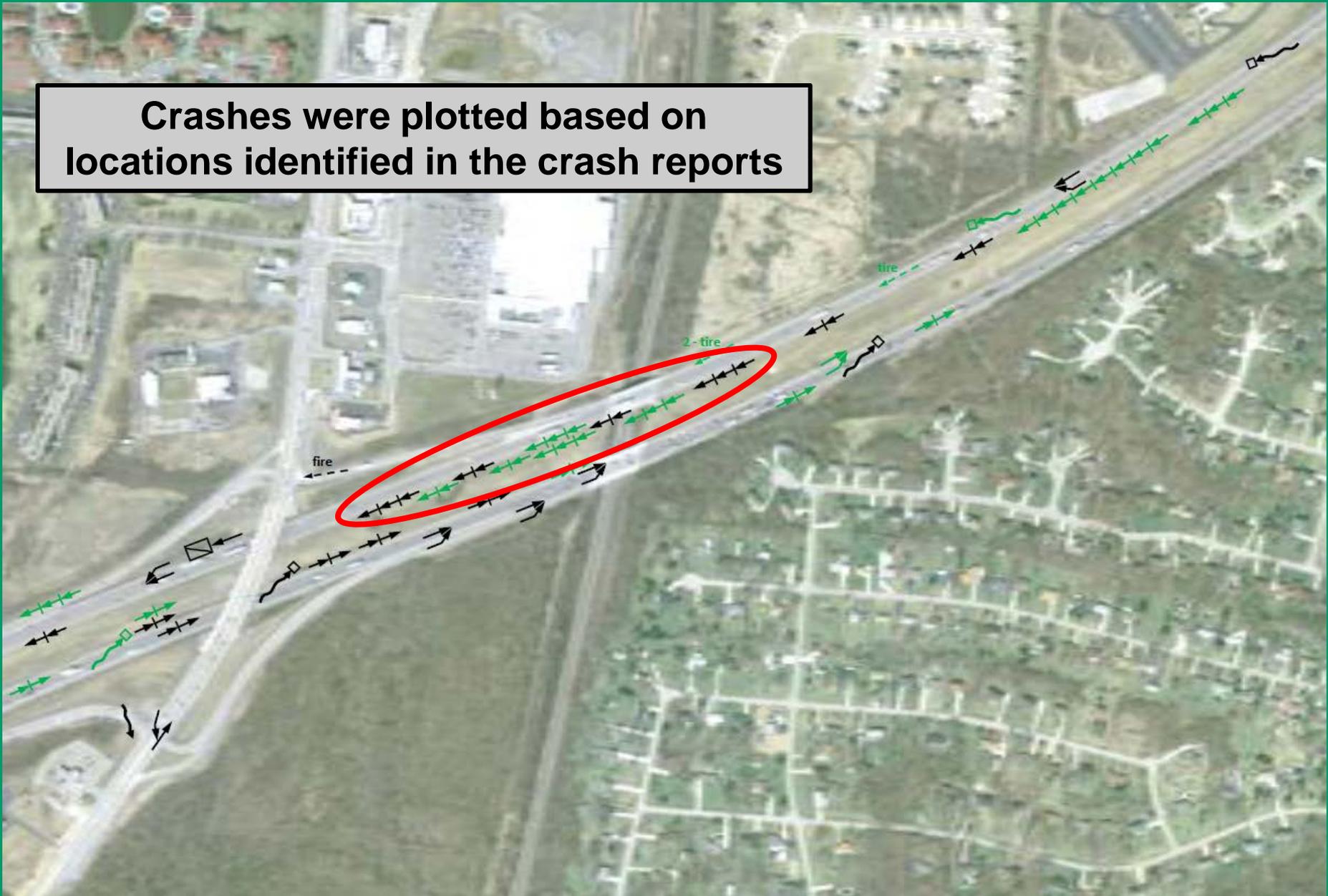


# Work Zone Crash Analysis

- ④ **Field reviews and crash analysis were used to identify issues and trends**
- ④ In May, the project saw 62 crashes. The pre-work zone average was 34.
- ④ In 50 crashes from May 19<sup>th</sup>-June 13<sup>th</sup>, 40% of the crashes were rear ends in the SB left lane



**Crashes were plotted based on locations identified in the crash reports**



# Development of Standards

- ④ **Construction Access Points Plan Insert Sheet was published on April 17, 2009**
- ④ Based on similar designs that were being used within some ODOT Districts and the Ohio Turnpike
- ④ **Drawing is to be used on freeway projects using portable barrier**

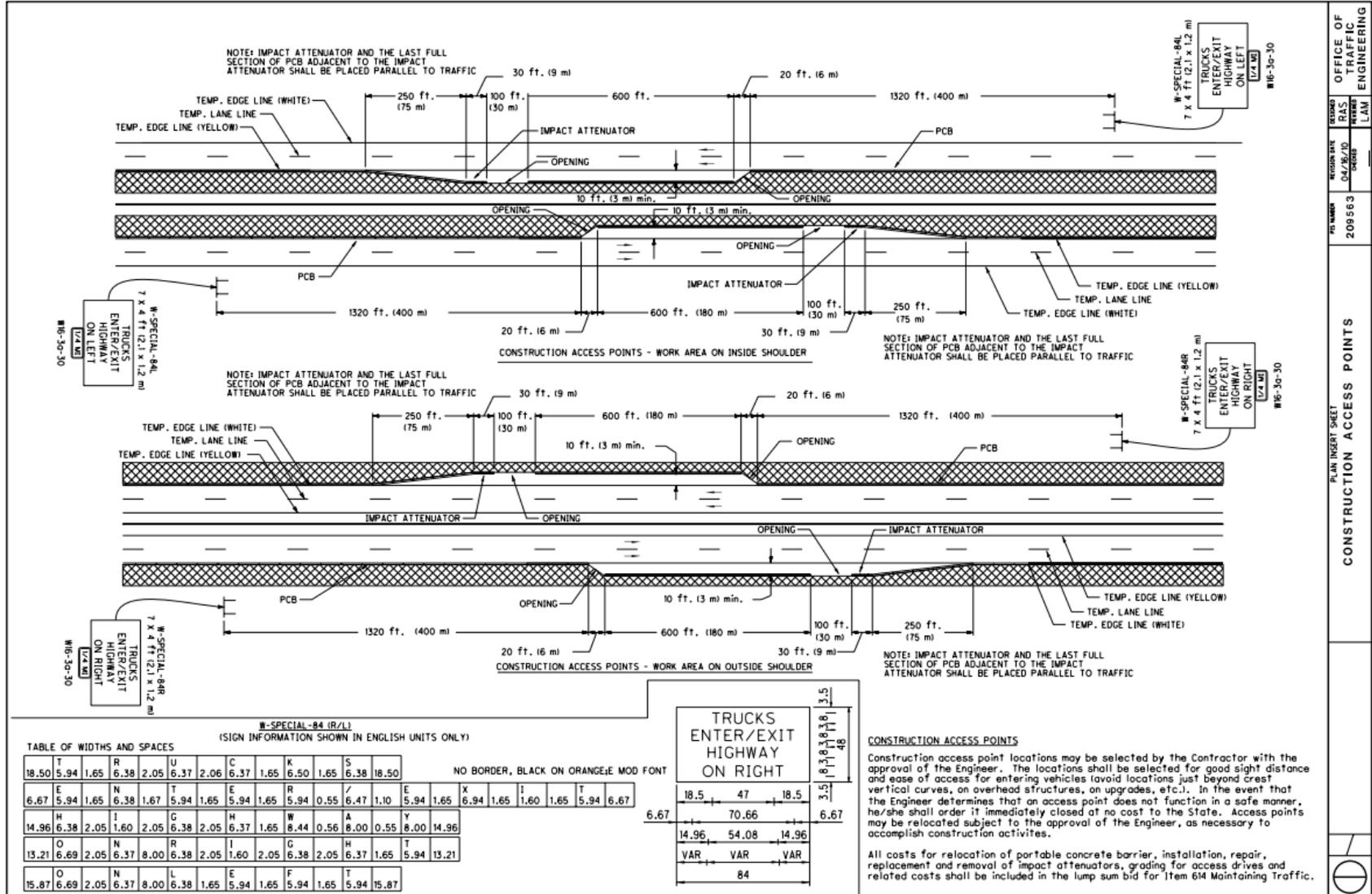


# Key Features

- ④ **Provides areas for acceleration and deceleration**
  - ④ 620' of deceleration space followed by a 100' opening (based on stopping sight distance)
  - ④ 1000' of acceleration space
- ④ **Includes signage to warn motorists of upcoming access points**

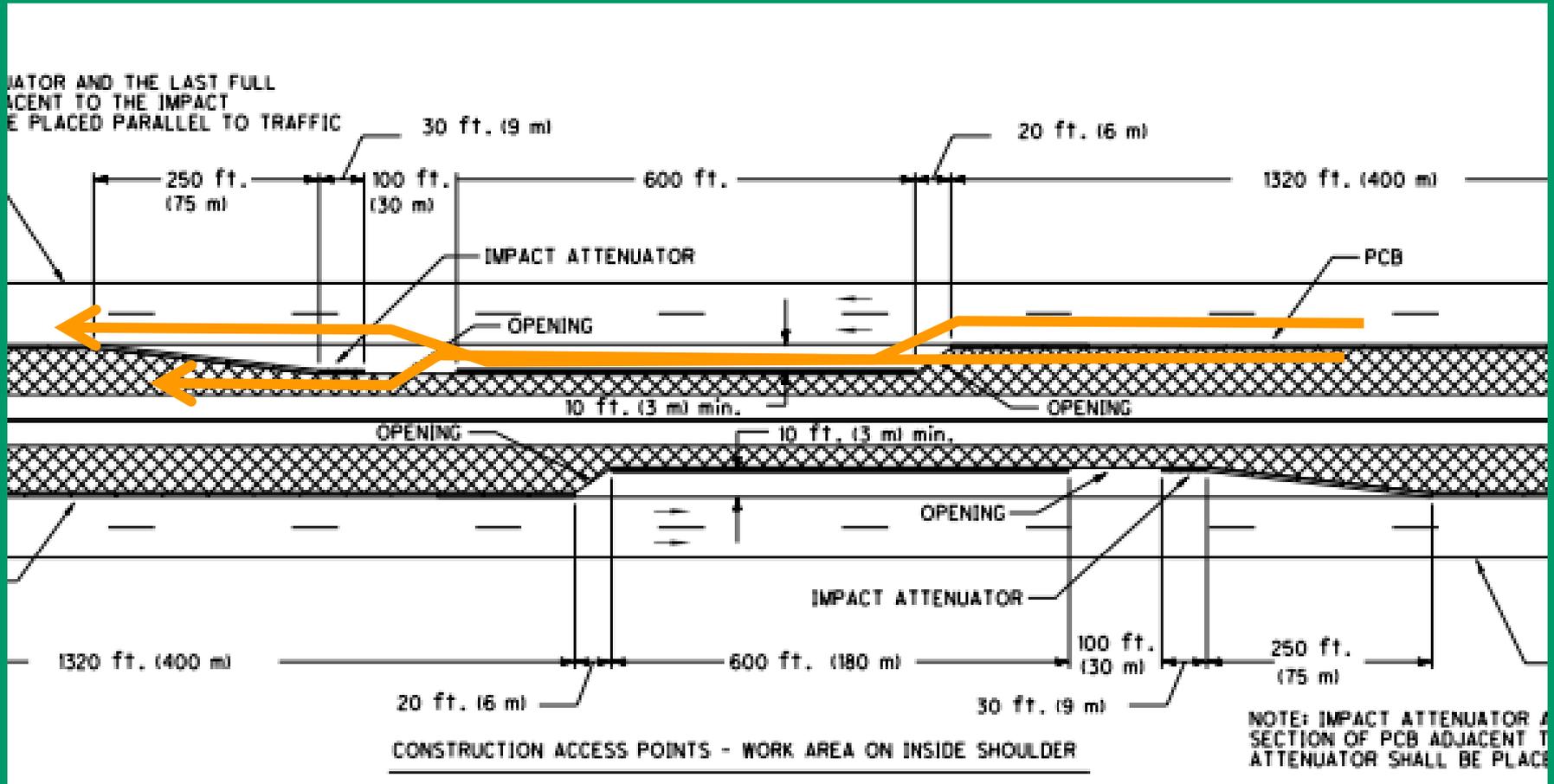


# Current Version of Ohio's Drawing



OFFICE OF TRAFFIC ENGINEERING  
 RAS  
 DATE: 04/16/10  
 SHEET: 209563  
 PLAN INSERT SHEET  
 CONSTRUCTION ACCESS POINTS  
 W-30-30  
 W-30-30  
 W-30-30  
 W-30-30

# How Am I Supposed To Use It?



# Common Issues/Next Steps

- ④ **This is not a “one-size-fits-all” solution**
  - ④ The layout doesn't always fit
  - ④ Some projects have chosen to increase the acceleration distance since space was available
  - ④ Constructability concerns
- ④ **Request to create similar standards for freeway operations that use drums and cones**



# Communication Efforts During Construction



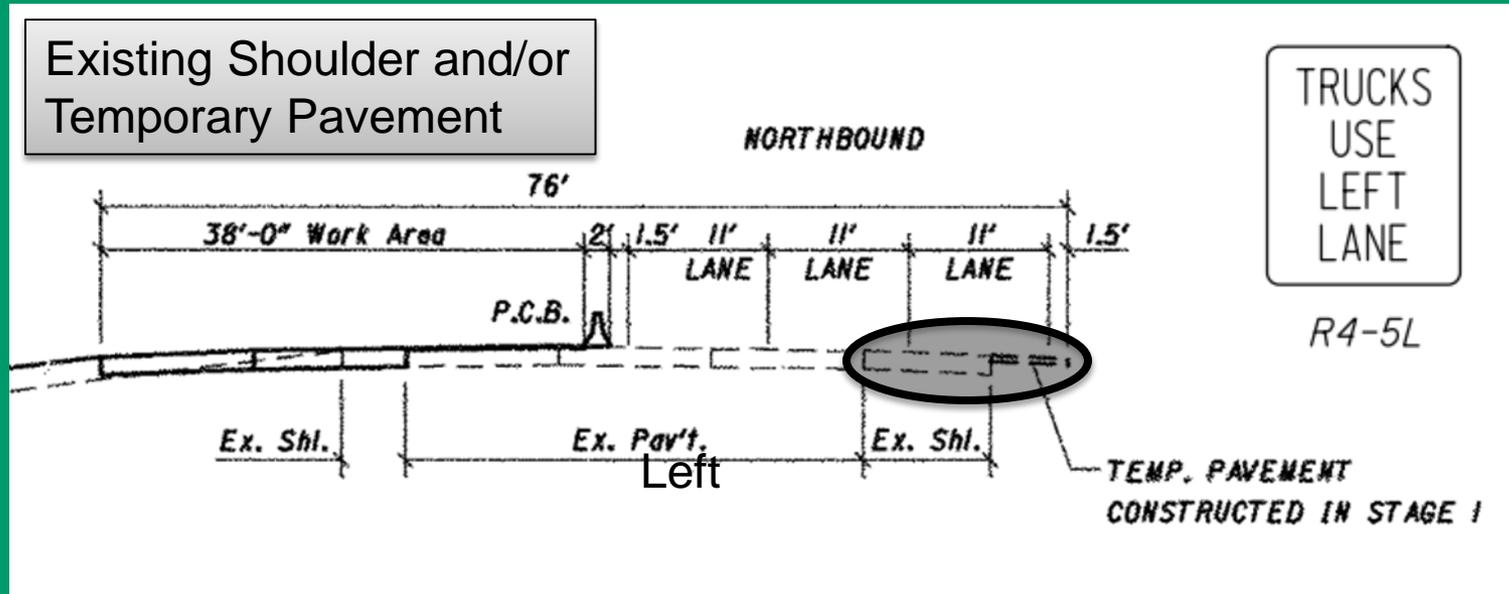
# Portable Changeable Message Signs (PCMS)

- ④ **Reduced roadway/ramp width warnings**
  - ④ Wide Loads
- ④ **Reduced clearance on overhead bridges**
  - ④ Particularly on shoulders
- ④ **Alternate detours for trucks**



# Lane Assignment for Trucks

## Trucks Use Left Lane



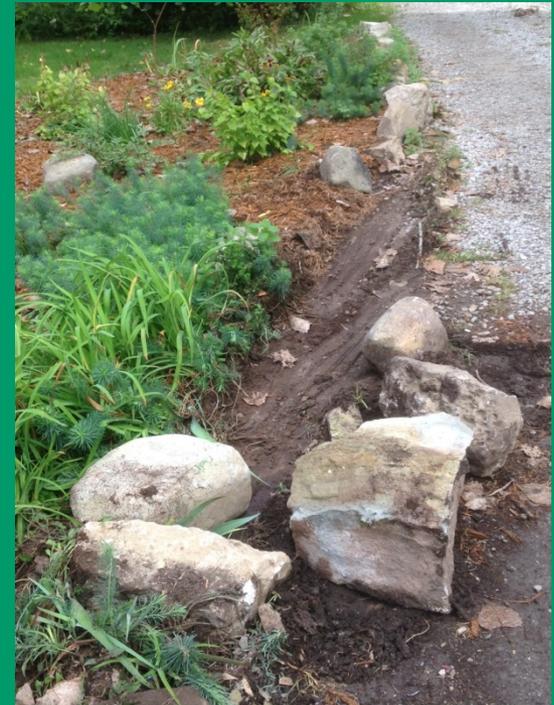
# CB Wizard Alert System

- ④ **Automatically broadcasts advisory messages directly to the cab of truck drivers equipped with CB radios**
- ④ **Broadcast every 30, 60 or 90 seconds**
- ④ **Message length is 7-10 seconds**
- ④ **Range is approximately 4 miles**



# CB Wizard Alert System

- ④ **For high volume truck routes**
- ④ **Used to improve compliance with work zone instructions and/or detours**
- ④ **Used to minimize confusion in complex geometric situations**



# Summary

- ④ **Know our truck percentages and include them in the work zone design, including work zone capacity calculations.**
- ④ **Include allowable lane closure schedules in our plans.**
- ④ **Design and integrate a safe area for trucks to enter/leave the work zone.**
- ④ **Use different means for communicating work zone conditions early and often.**



# **Thank You For Your Time!**

**Duane Soisson, P.E.**  
**Traffic Control Design Engineer**  
**Office of Roadway Engineering**  
**(614) 466-3649**  
**Duane.Soisson@dot.state.oh.us**

