Work Zone Safety & Maintenance of Traffic

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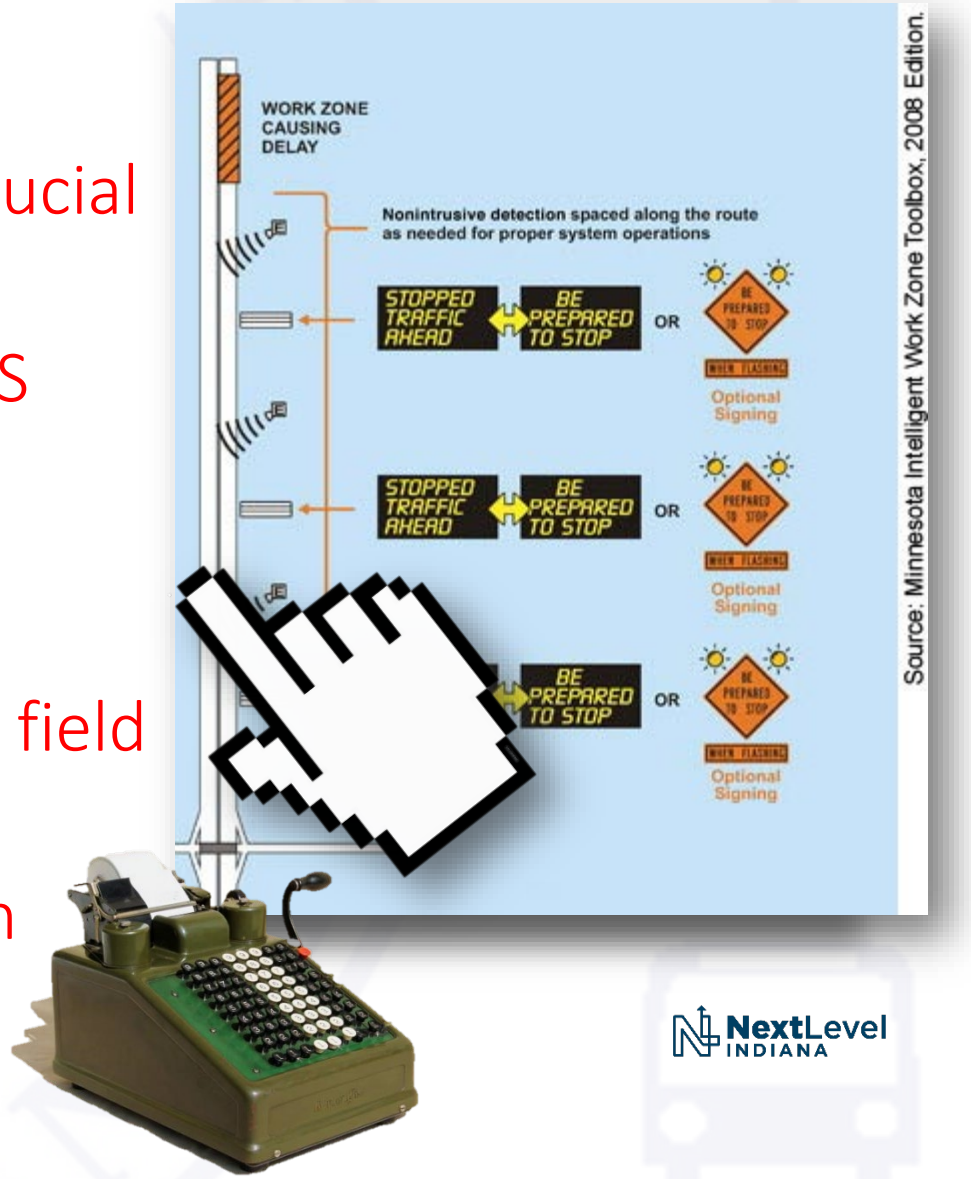
Work Zone Safety & Maintenance of Traffic

In this session, we will cover:

- WORK ZONE TYPE SELECTION
  To increase awareness of the need to make this crucial decision early
- INNOVATIVE COUNTERMEASURES IN WORK ZONES
  To encourage the use innovative technologies and practices
- MAINTENANCE OF TRAFFIC PRACTICE POINTERS
  To provide MOT plan designers feedback from the field
- INDOT'S QUEUE ANALYSIS TOOL
  To (re-) familiarize designers with this tool to aid in decision-making



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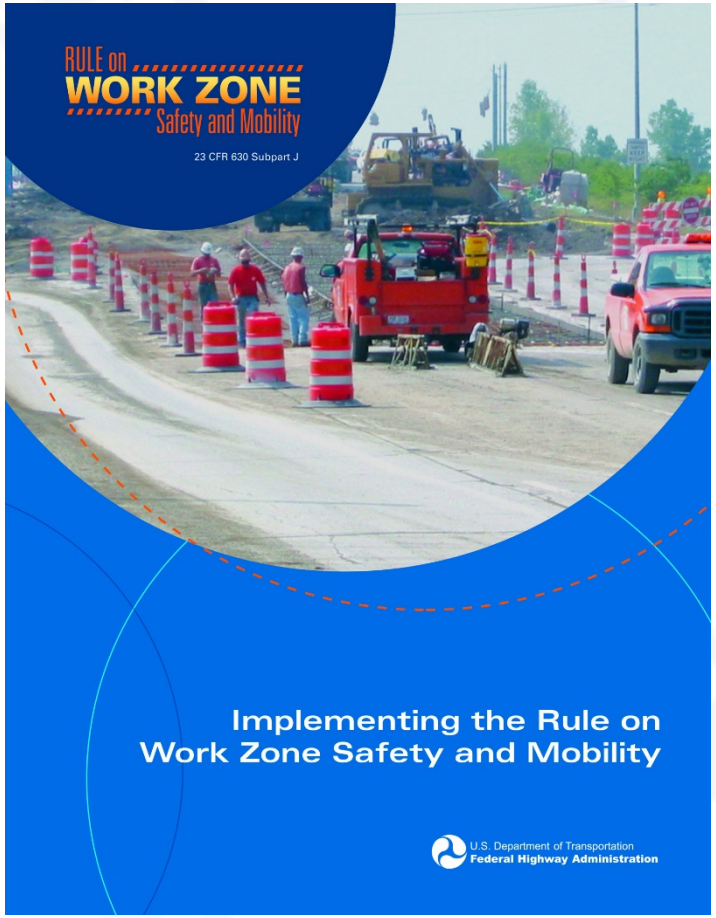
- Why is it so important?
- What are we trying accomplish?
- What does it involve?
- When should it occur?
- What should we consider?

Work Zone Type Selection

- **§ 630.1002 Purpose.**
- Work zones directly impact the safety and mobility of road users and highway workers.
  These safety and mobility impacts are exacerbated by an aging highway infrastructure and growing congestion in many locations. **Addressing these safety and mobility issues requires considerations that start early in project development and continue through project completion.**



Safety and Mobility Policy

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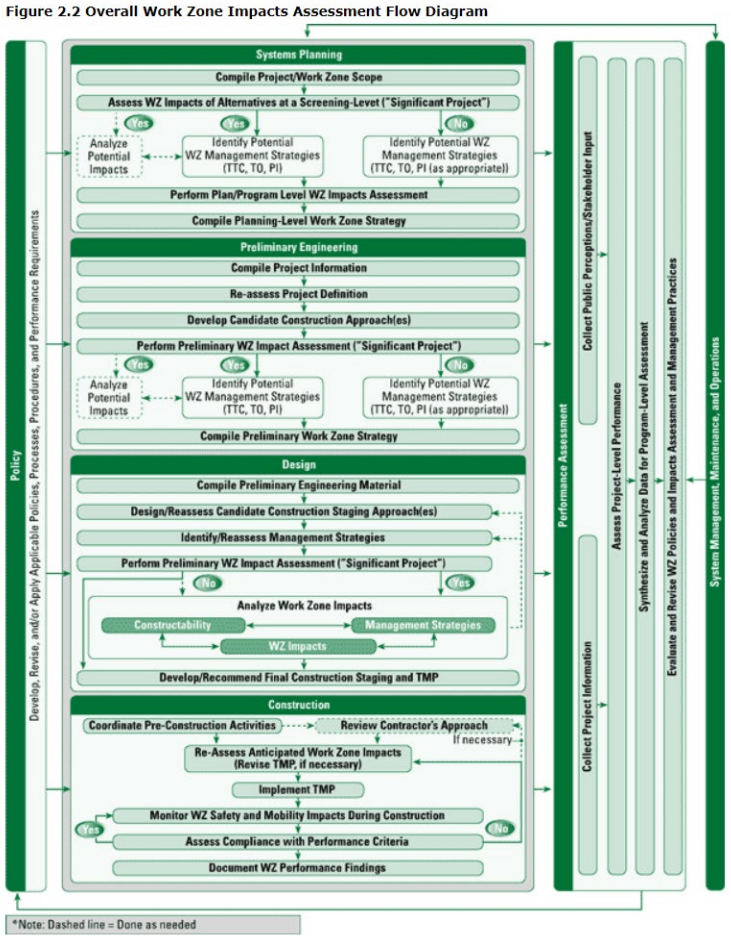
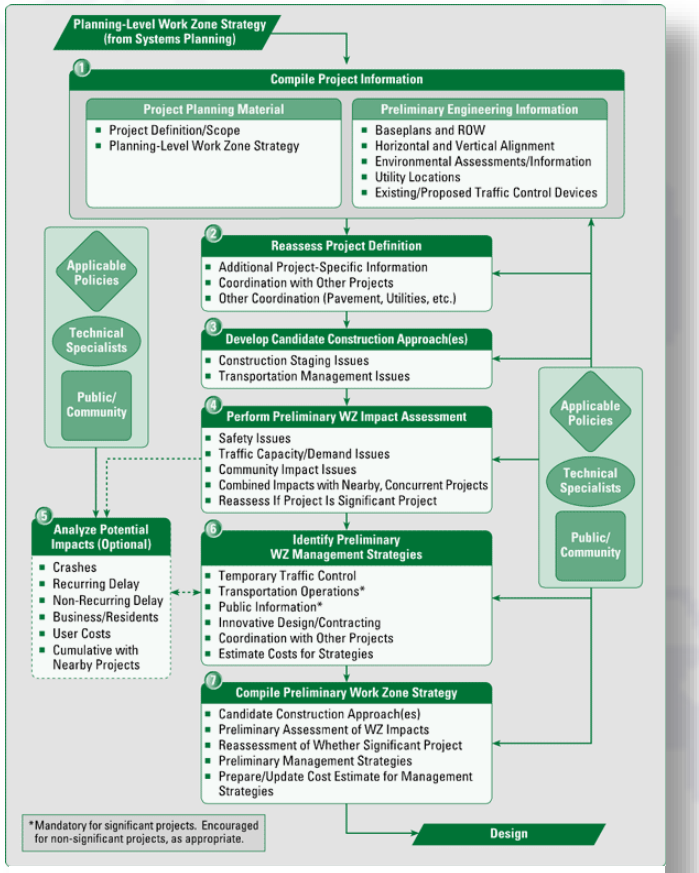
- Systems Planning
- Preliminary Engineering
- Design
- Construction

Overall Work Zone Impact Assessment Flow Diagram



https://ops.fhwa.dot.gov/wz/resources/final_rule/wzi_guide/sec2.htm

- Preliminary Engineering
  - Preform Preliminary Work Zone Impact Assessment
    - Safety Issues
    - Traffic Capacity / Demand Issues
    - Community Impact Issues
    - Combined Impacts with Nearby , Concurrent Projects
    - Reassess if Project is Significant Project



Source: FHWA Website

Important Decisions Prior to Design (or early in Design)

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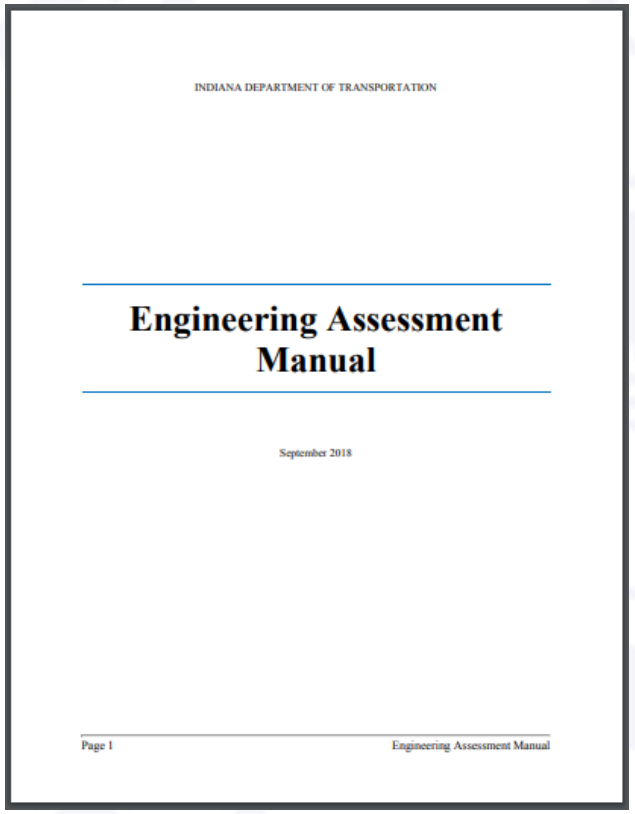
- 3-3.05(02) Maintenance of Traffic Plan
  - Do not defer selection of a conceptual maintenance of traffic plan until the design phase of the project.
- 3-3.03 Task 3 – Develop Project Alternatives (Complex)
  - Consider a Queue Analysis?
- 3-3.05(02) Maintenance of Traffic Plan
  - The Designer should evaluate the Engineering Assessment Manual Page 15 maintenance of traffic concept provided in the engineering assessment document to ensure relevance and completeness prior to developing the final maintenance of traffic plan.
  - Definitely a Queue Analysis.


INDIANA DEPARTMENT OF TRANSPORTATION

Engineering Assessment Manual

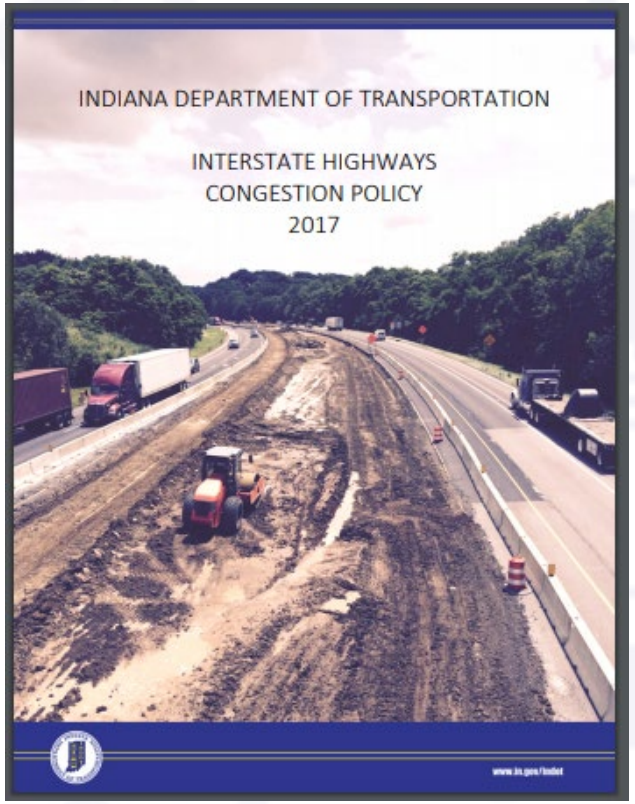
September 2018

Page 1 Engineering Assessment Manual

Conceptual MOT Plan During Scoping per 2018 Engineering Assessment Manual

https://www.in.gov/indot/files/Engr%20Assessment%20Manual%20Final%201809%20Signed.pdf

- 1st Step in Verifying Conceptual MOT.
- Addresses a significant *unknown* factor affecting design.
- Consider Options to MAINTAIN traffic flow during construction.



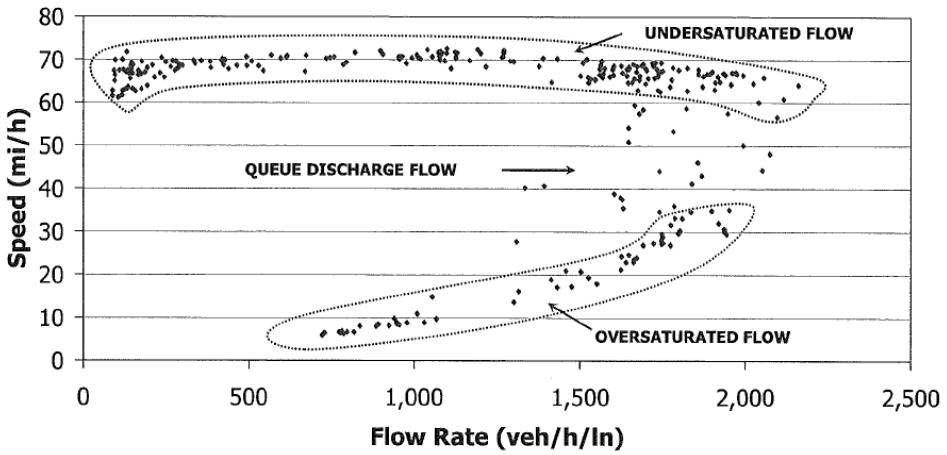
Address IHCP as Early as Possible – Early in the Design Process

https://secure.in.gov/indot/3383.htm#

- Optimal Speed to Maximize Throughput
  - 45-55 MPH
- Oversaturated Flow becomes unstable as speeds drop below 40 to 45 MPH with high traffic demand.

Highway Capacity Manual: A Guide for Multimodal Mobility Analysis

Exhibit 12-3
Three Types of Flow on a Basic Freeway Segment



Speed-Density Diagram

- Remove Edge Line Rumble Strips When Appropriate
- Consider replacing shoulders with full depth pavement for cases where MOT plans required traffic flow on shoulders.
  - Allow traffic to straddle right Edge Line Rumble Strips while rebuilding left shoulder as 1st Phase.
- Consider wider shoulders to help trucks stay on the road.

Addressing Edge Line Rumble Strips

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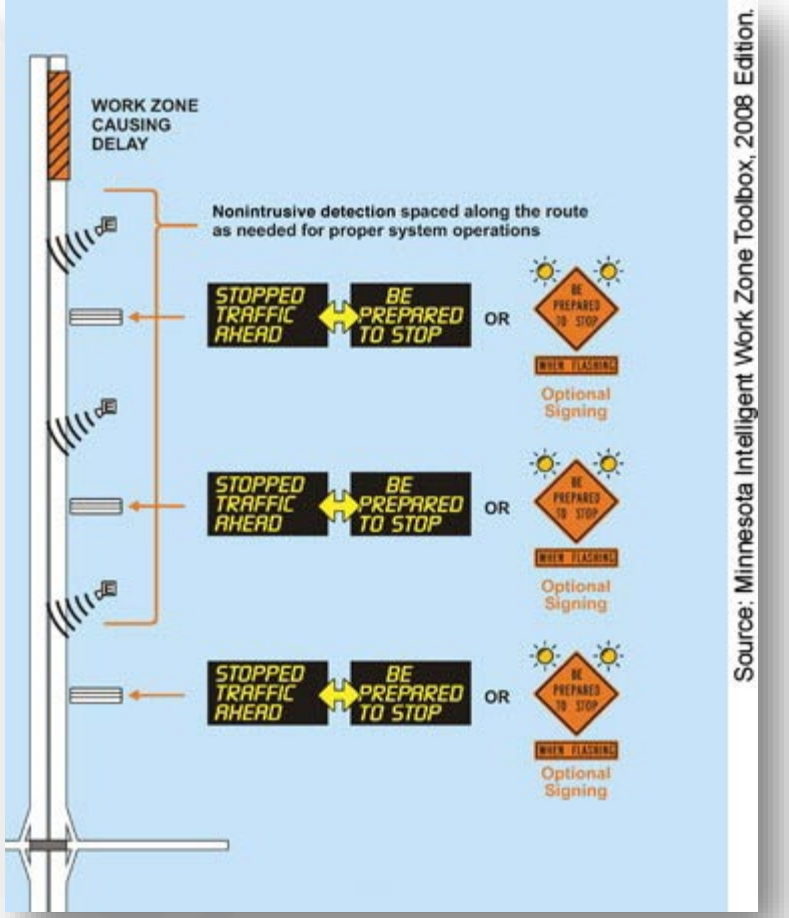
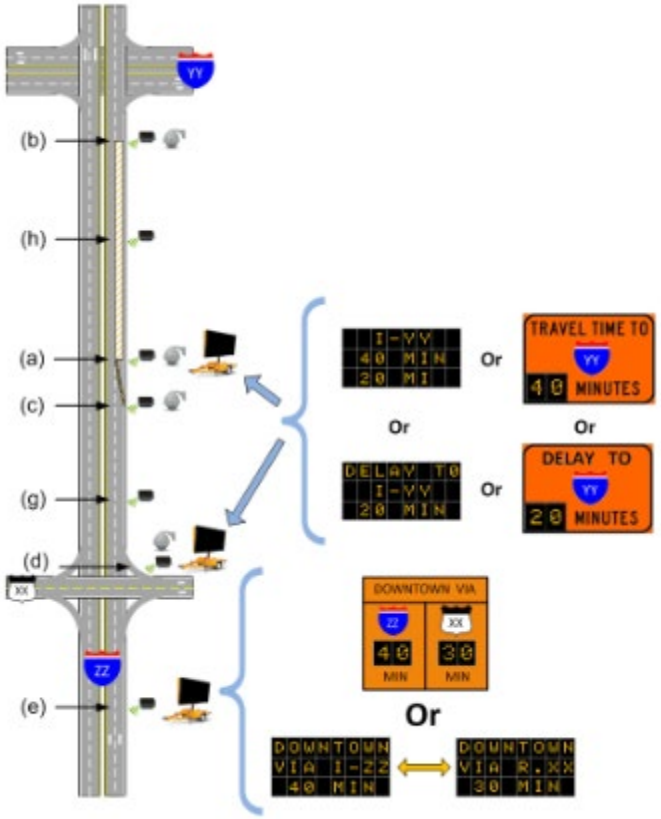
Innovative Countermeasures in Work Zones



Source: Minnesota Intelligent Work Zone Toolbox, 2008 Edition.

- Turn-Key Approach.
- Managed Remotely.
- Good for Locations where Congestion is predictable and repeating -- bridges perhaps.



Smart Work Zones

Protect the Queue

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- More Stable Than Portable Temporary Rumble Strips. (+)
- Less Destructive to Pavement than Durable Rumble Strips. (+)
- Not as loud as Durable Rumble Strips. (-)

Removable Rumble Strips

- Rolling Slowdowns are complex and expensive.
- Concerns exist about lack of braking from 75 MPH down to 10, 15, or 20 MPH.

ALTERNATIVES TO ROLLING SLOWDOWNS – Additional Guidance

Complexity and cost should only be added when there is a safety benefit to workers or the motoring public. Greater complexity creates the possibility for confusion and human error and additional costs should only be incurred when they serve stakeholders. The current language of the IHCP may suggest that Rolling Slowdowns are a preferred approach for short-term activities (such as pulling power lines across an Interstate) but other methods should be considered, particularly in cases where multiple interchanges exist in the affected area in advance of the work area.

Short-Term Stoppages, an alternative to Rolling Slowdowns, are a viable option particularly when they are done during daytime periods of the lowest traffic volume, often Sunday morning just after sunrise. The use of Short-Term Stoppages should be considered as a viable approach to completing many activities of this nature. They are especially useful in urban areas where motorists are more engaged in the driving experience, where messaging is readily available, and where numerous interchanges are affected. An IHCP Exception approval remains a requirement, but the analysis could be minimal and the justification should state clearly that this work is being done during times where traffic volume is the least.

Background

Rolling Slowdowns are an effective tool for mitigating the risk of short-term roadway restrictions; however, they are complicated and costly. The current language of the IHCP may suggest that Rolling Slowdowns are a preferred approach for short-term activities.

In all cases where either Rolling Slowdowns or Short-Term Stoppages are utilized, active back-of-queue protection must be utilized (police protection is preferred). The use of message boards as an exclusive method for back-of-queue protection is insufficient.

Rolling Slowdowns: Stoppage is Sometimes Preferred to *Textbook* Rolling Slowdowns

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- ISP Patrols planned for 2020.
  - IMPD Patrols to supplement IMPD Likely.
- LEO RSP to Standards Committee.
  - Working to Clarify Role.
    - Leo Works for the Engineer – not the Contractor.
    - Protecting the Queue is Priority.
    - Shall Maintain Flow rather than hinder it.

LEO, ISP, and IMPD Patrols

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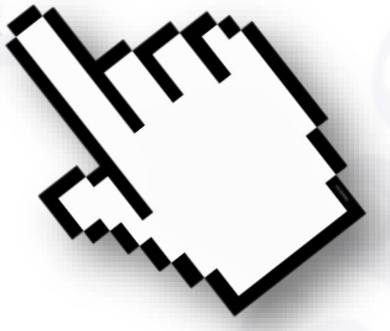
Maintenance of Traffic Practice Pointers



General Considerations

- Human Factors
  - Perception-Reaction Time
  - Motorists Age
  - Familiarity (area, work zone)
  - Typical Motorist Behavior

- Provide clear positive guidance
  1. Alert motorists
  2. Inform motorists
  3. Instruct motorists

- Basically:
  - Don’t overload motorists
  - Provide smooth transitions
  - **NO SURPRISES!**

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Work Zone Entrance Transition Areas

- Use the upstream Existing (Established) Speed Limit → Results in longer tapers
- Provide at least the minimum required sign spacing & SSD-Based Buffer Spaces
  - If needed, use reduced speed limit for remainder of work zone

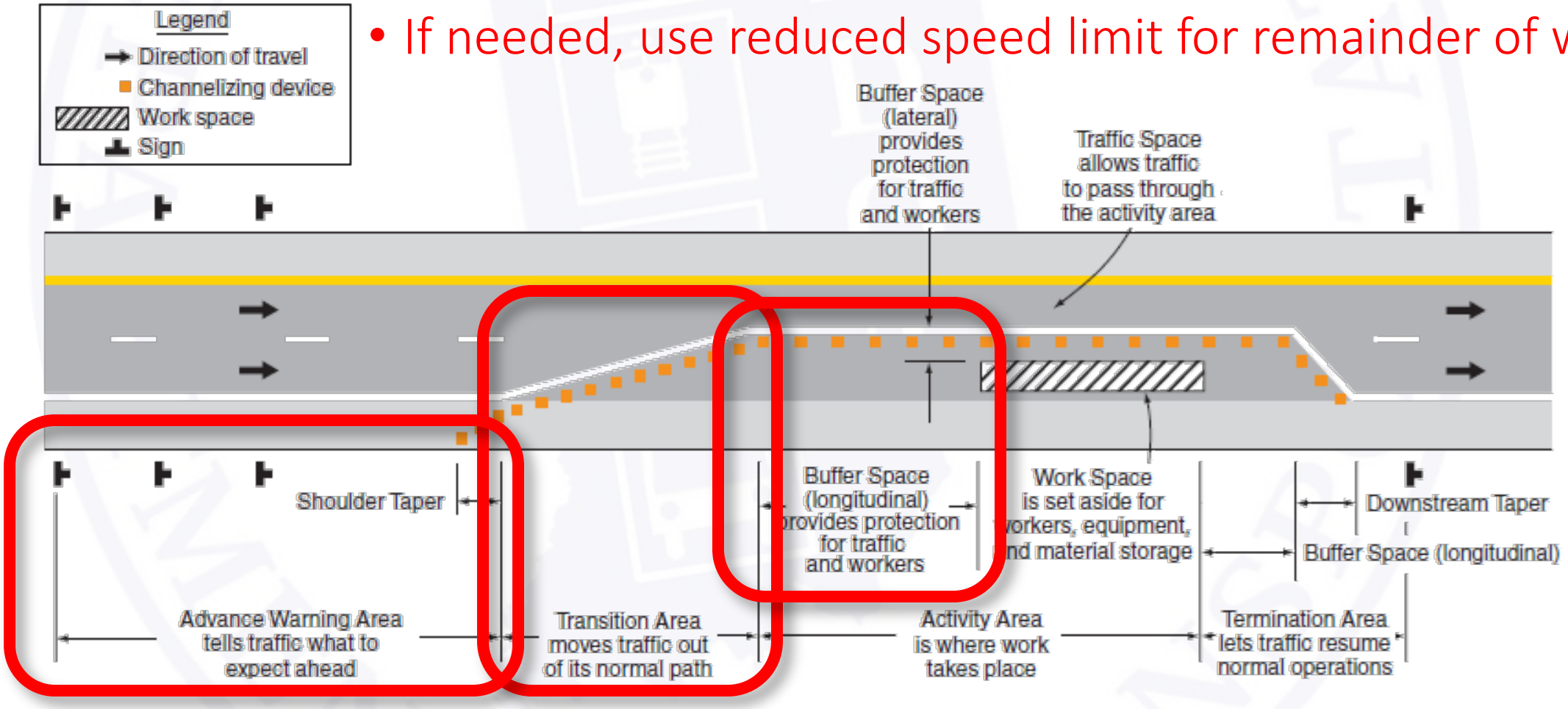

Figure 6C-1. Component Parts of a Temporary Traffic Control Zone

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Always Provide an SSD-Based Long. Buffer Space*

* Unless there is a justifiable reason for not doing so

- Often not provided in MOT plans or of insufficient length
- IMUTCD 6C.06 and Table 6C-2

Table 6C-2 Stopping Sight Distance as a Function of Speed	
Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

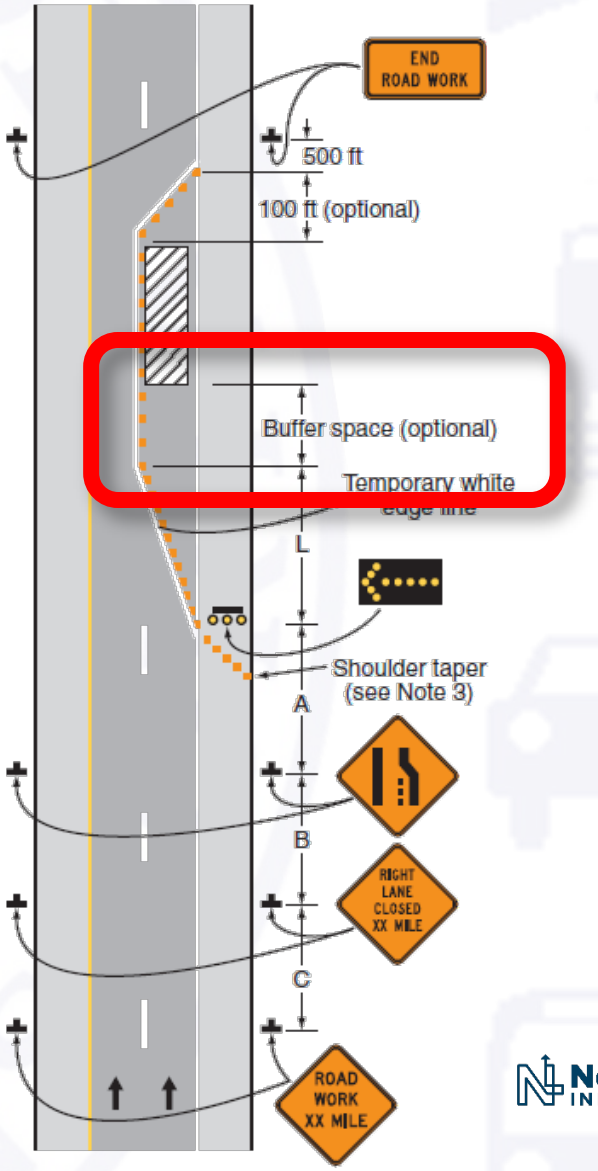

Figure 6H-33. (TA-33)

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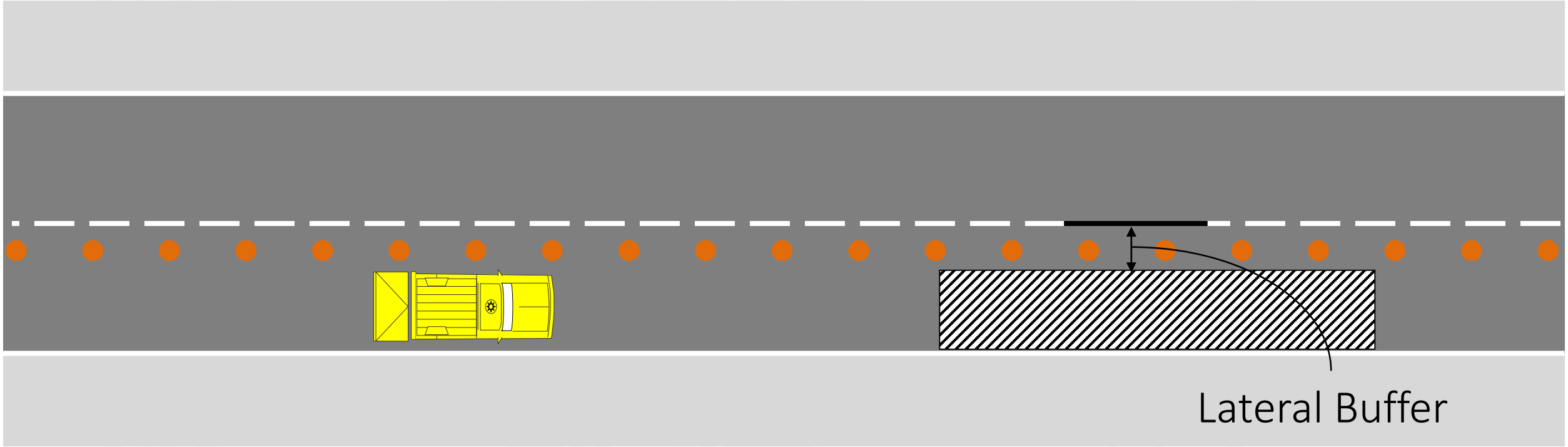
Provide Realistic Lateral Buffers

- Often plans show idealized work areas and buffers…



Provide Realistic Lateral Buffers

- But reality often looks quite different…

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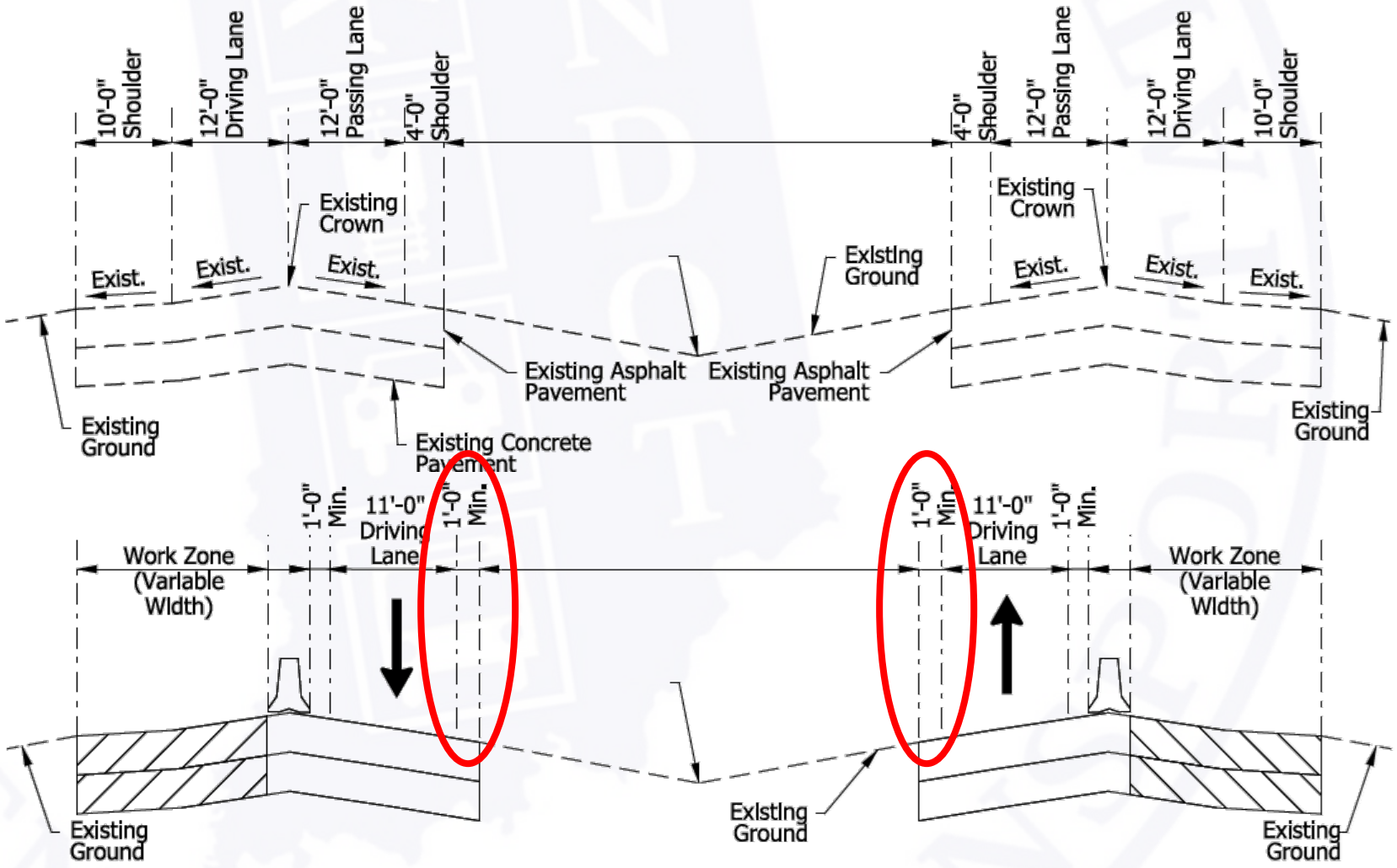
Realistic Typical MOT Cross Sections

- Typical Sections and MOT Typical Sections for one phase as seen in plans:



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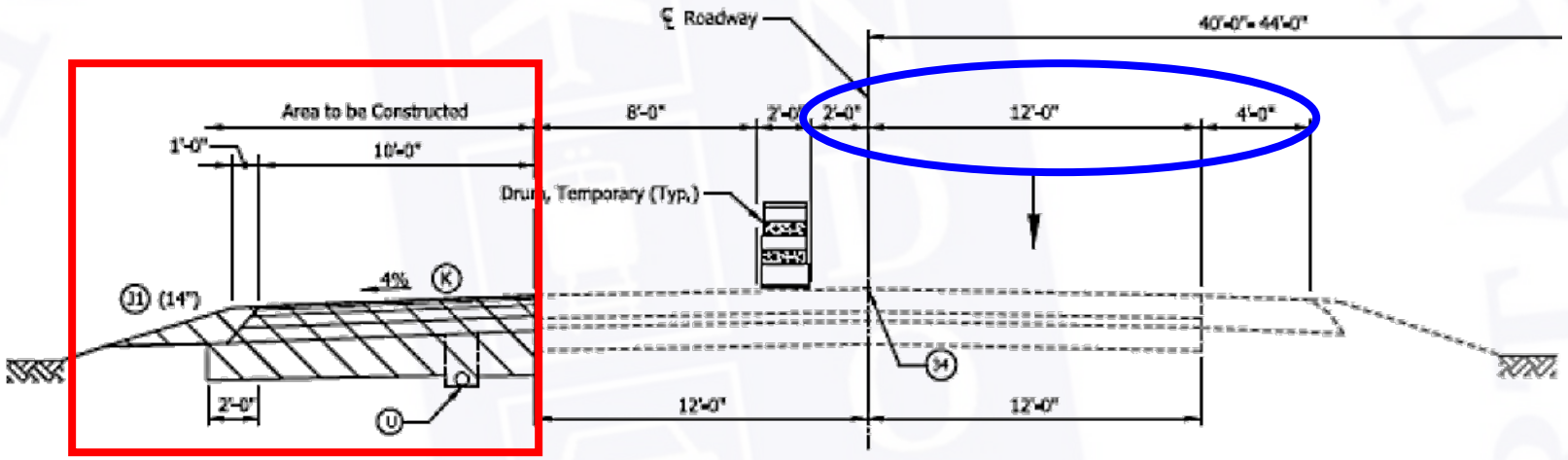
Realistic Typical MOT Cross Sections

- Actual work zone.
- How was this modeled in terms of IHCP queue analysis?
- Would this require a design exception?

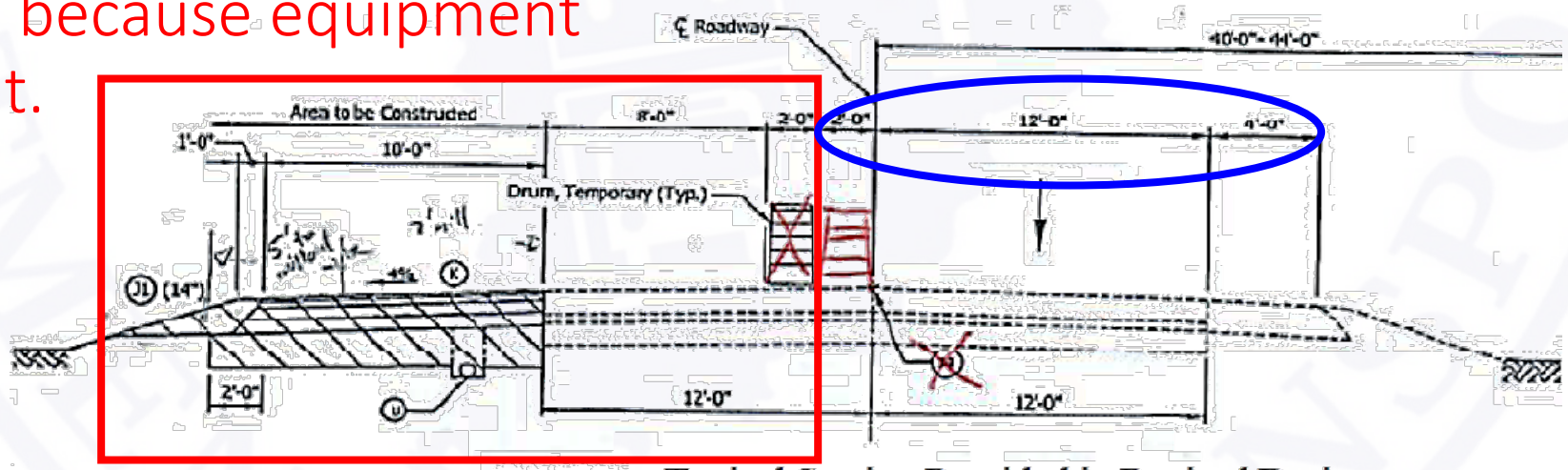
Realistic Typical MOT Cross Sections

- Original plan was to work in 10’ shoulder area, providing 8’ buffer.



PHASE IA Typical Section Provided in Original Design

- Revised because equipment didn’t fit.



PHASE IA Typical Section Provided in Revised Design

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Realistic Construction Drum Placement

- Actual work zone:

- Construction Drums encroach both work and traffic areas
- Shoulders corrugations were left unaddressed
- Width beyond corrugations is narrow (no widening)
- Potential for generating <u>unanticipated</u> queuing
- Potential for overturned trucks

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Take Care of Existing Shoulders

- Address existing shoulder corrugations
- Strengthen existing shoulder used as temporary pavement
  - → Don’t rely on signage to keep trucks off existing shoulders
- Provide sufficient shoulder width beyond travel lane
  - → Especially in tight situations where there is TTB on left but no barrier on right

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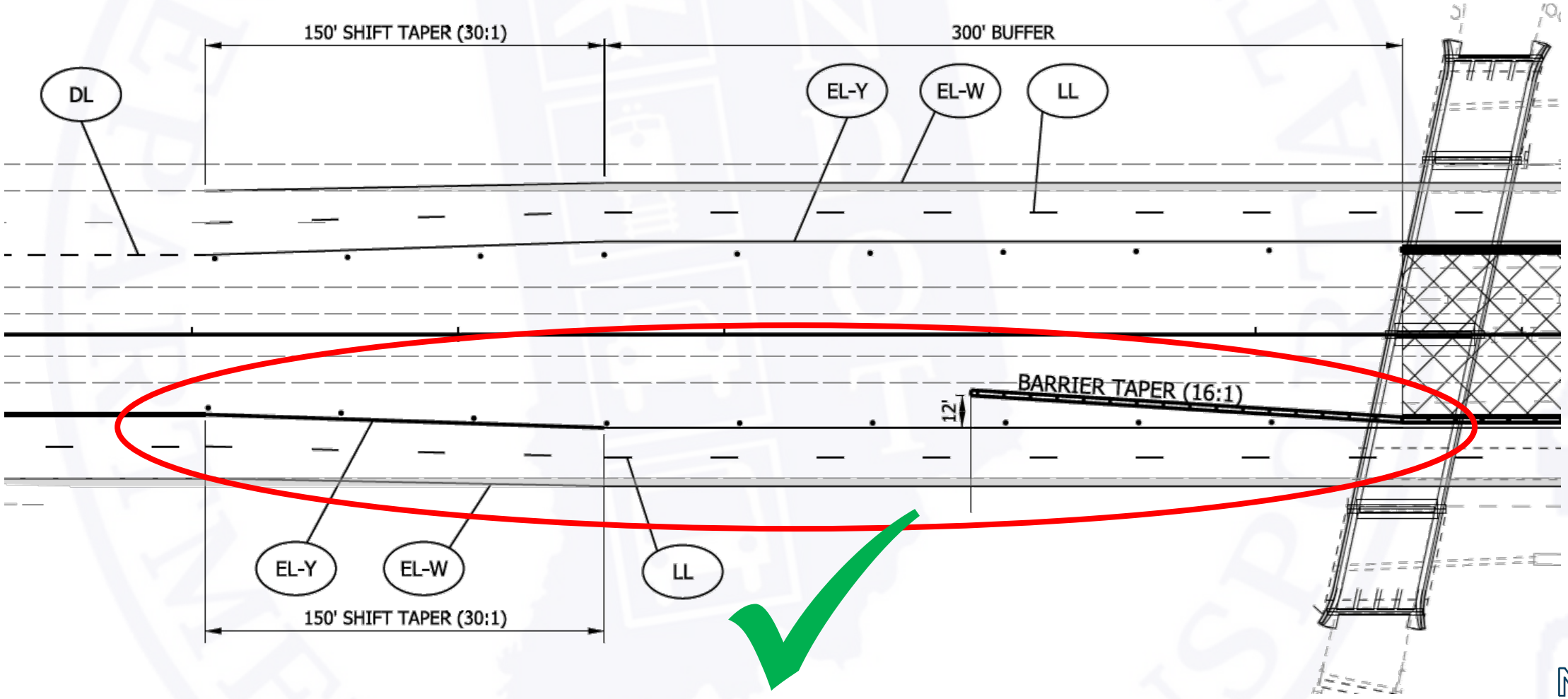
Delineation at Temporary Traffic Barrier Flares

- Lane Shift Taper in advance of TTB as seen in plans:



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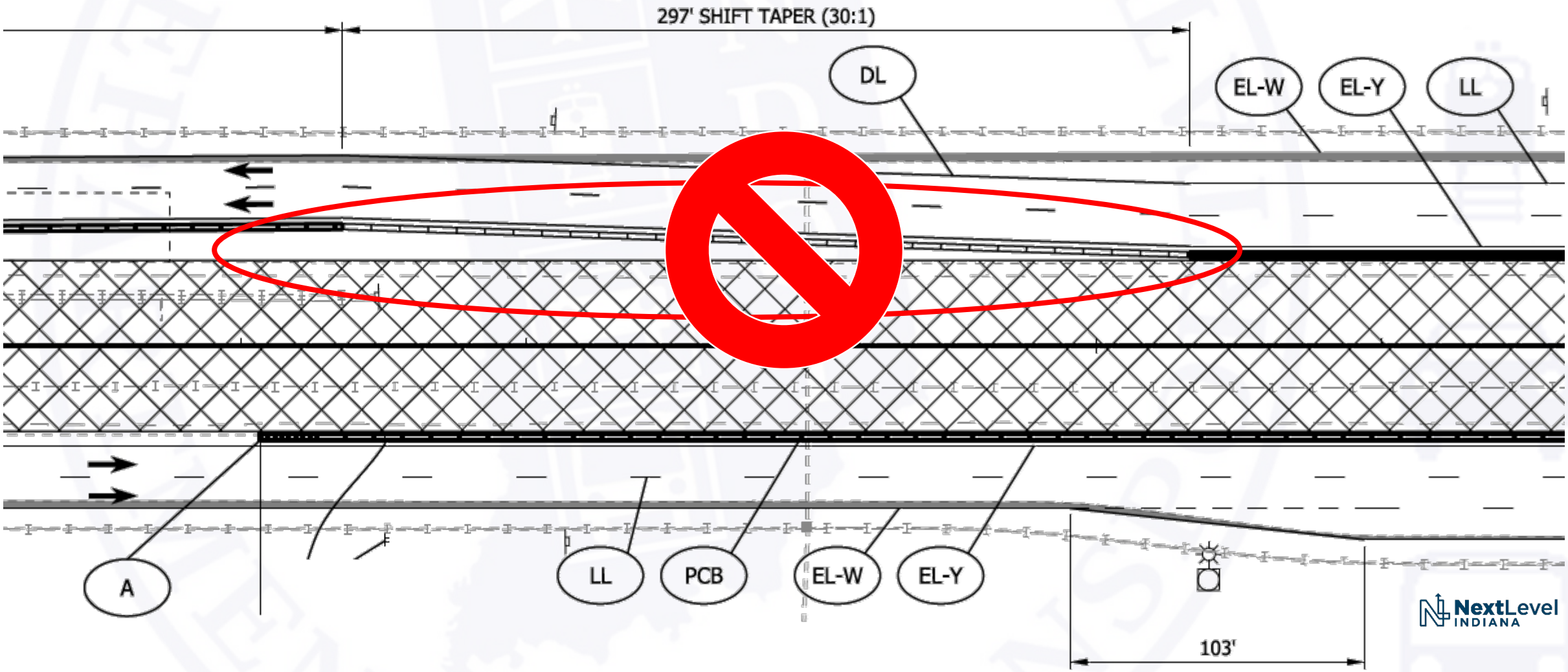
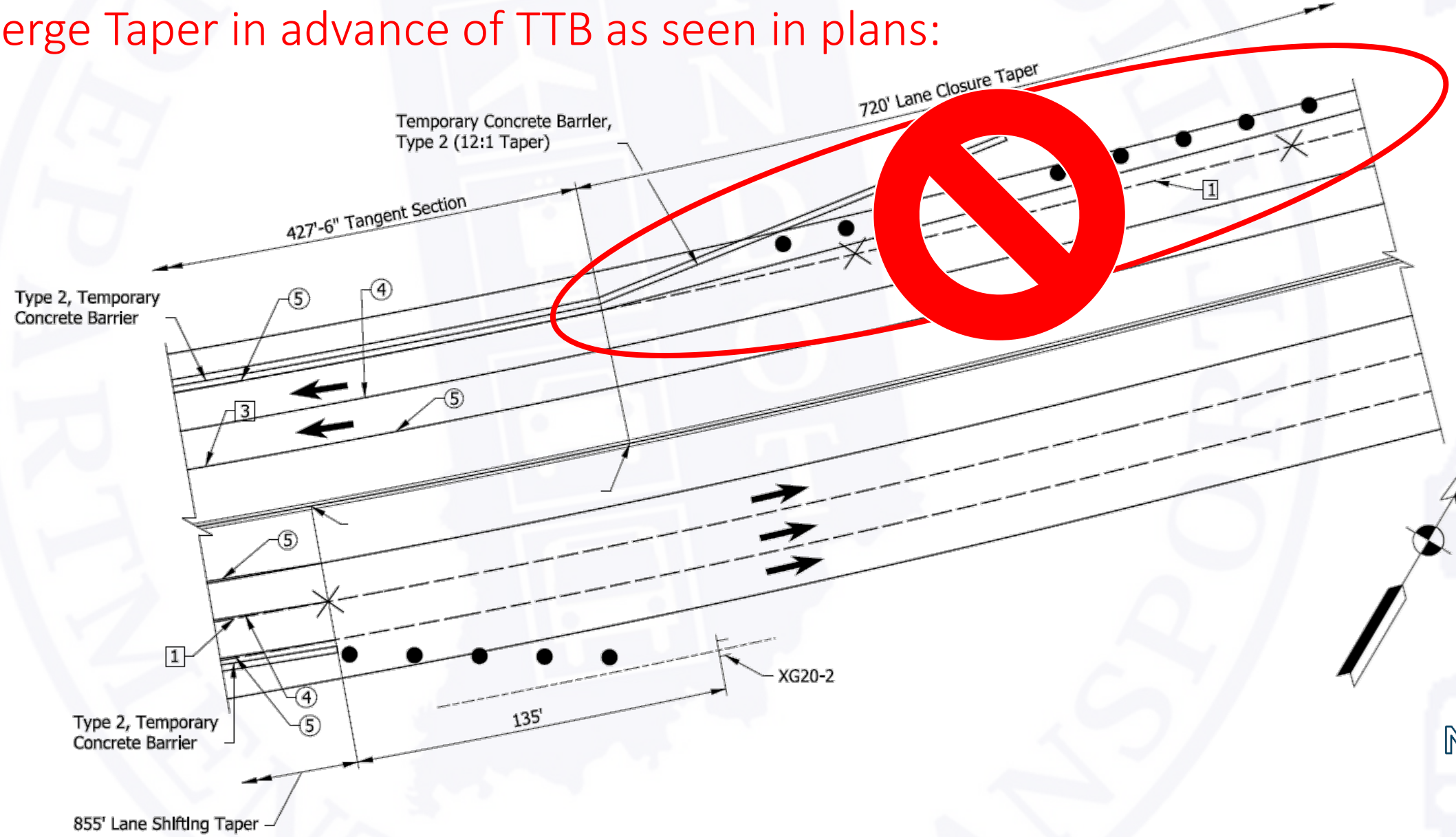
Delineation at Temporary Traffic Barrier Flares

- Lane Shift Taper in advance of TTB as seen in the same plans as prior slide:



Delineation at Temporary Traffic Barrier Flares

- Merge Taper in advance of TTB as seen in plans:



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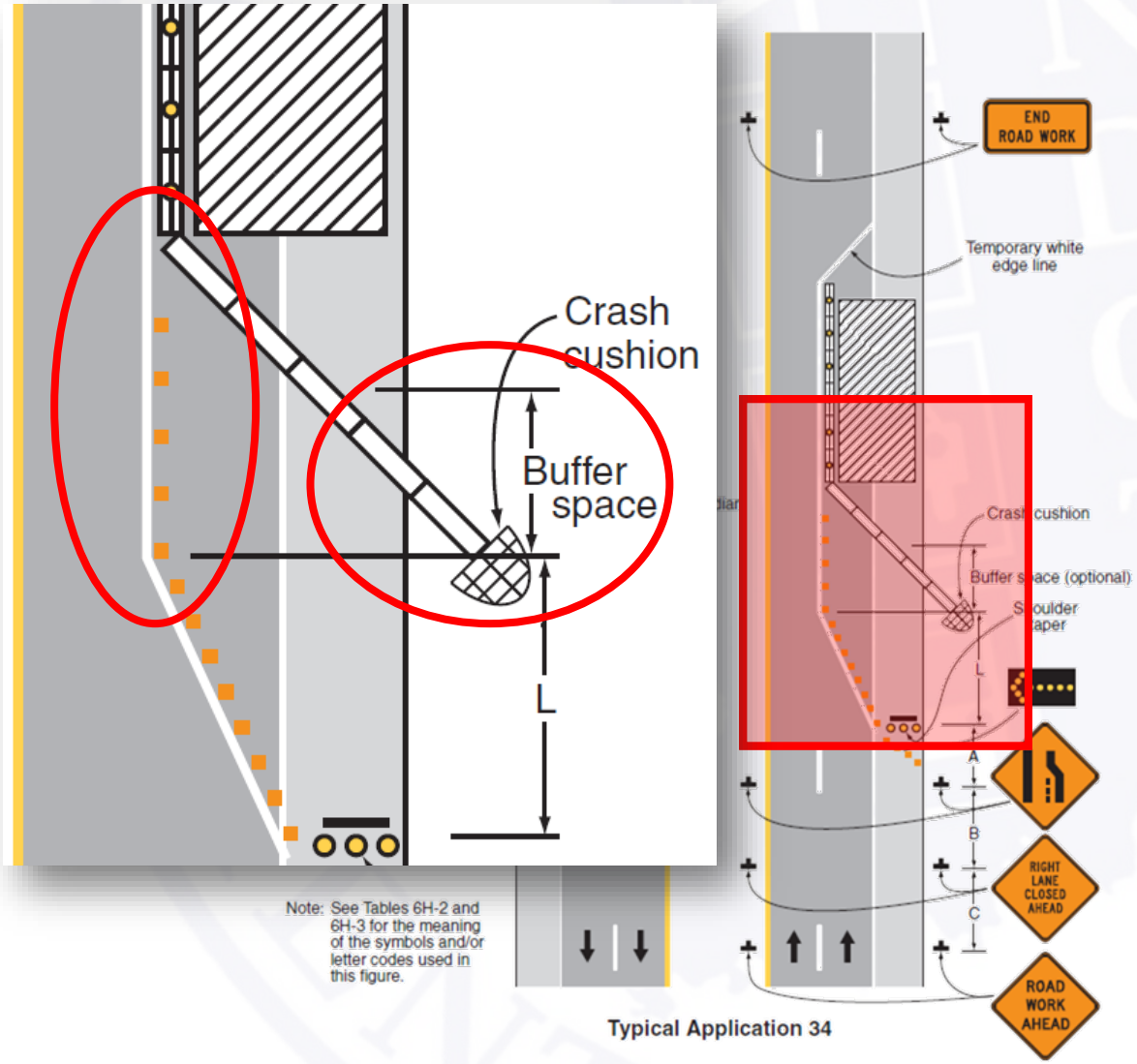
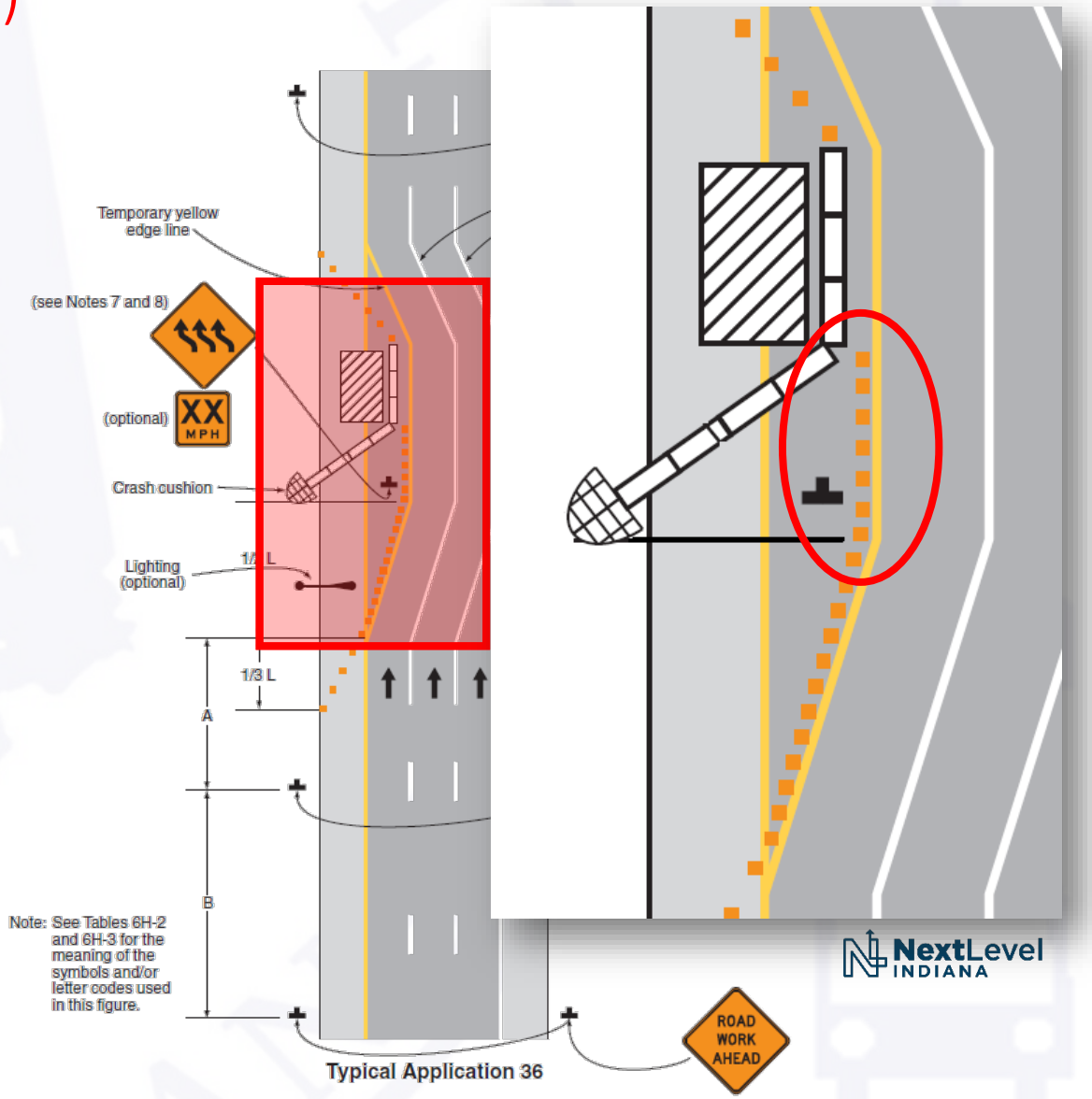
Delineation at Temporary Traffic Barrier Flares

- Lane Shift Taper in advance of TTB as seen in the field:

Delineation at Temporary Traffic Barrier Flares

- IMUTCD, TA-34 (MERGE) and TA-36 (SHIFT)





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Separate Merge and Lane Shift Tapers

- Provide a tangent length between successive tapers:

  → 2L tangent for a merge taper followed by a merge taper. (IMUTCD TA-37)

  → ½L tangent for a merge taper followed by a lane shift. (IMUTCD TA-32)

- Do not combine:

  😩 A merge and lane shift taper.

  🤢 Even worse: merge + shift + lane width reduction!

  🤮 Even worse: merge + shift + lane width reduction ending at end of TTB flare

- Remember: multi-lane lane shifts require temporary lane markings, regardless how short the duration

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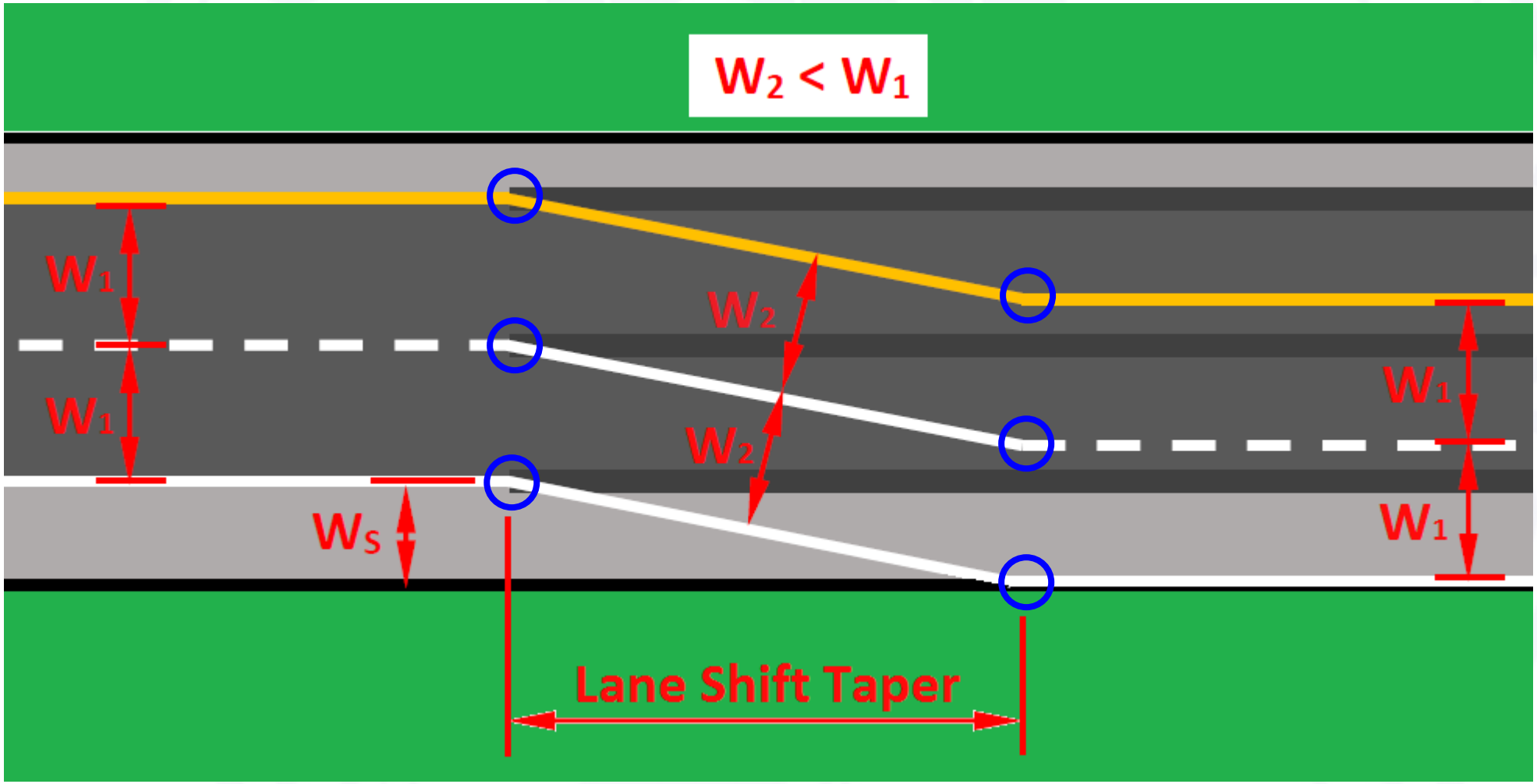
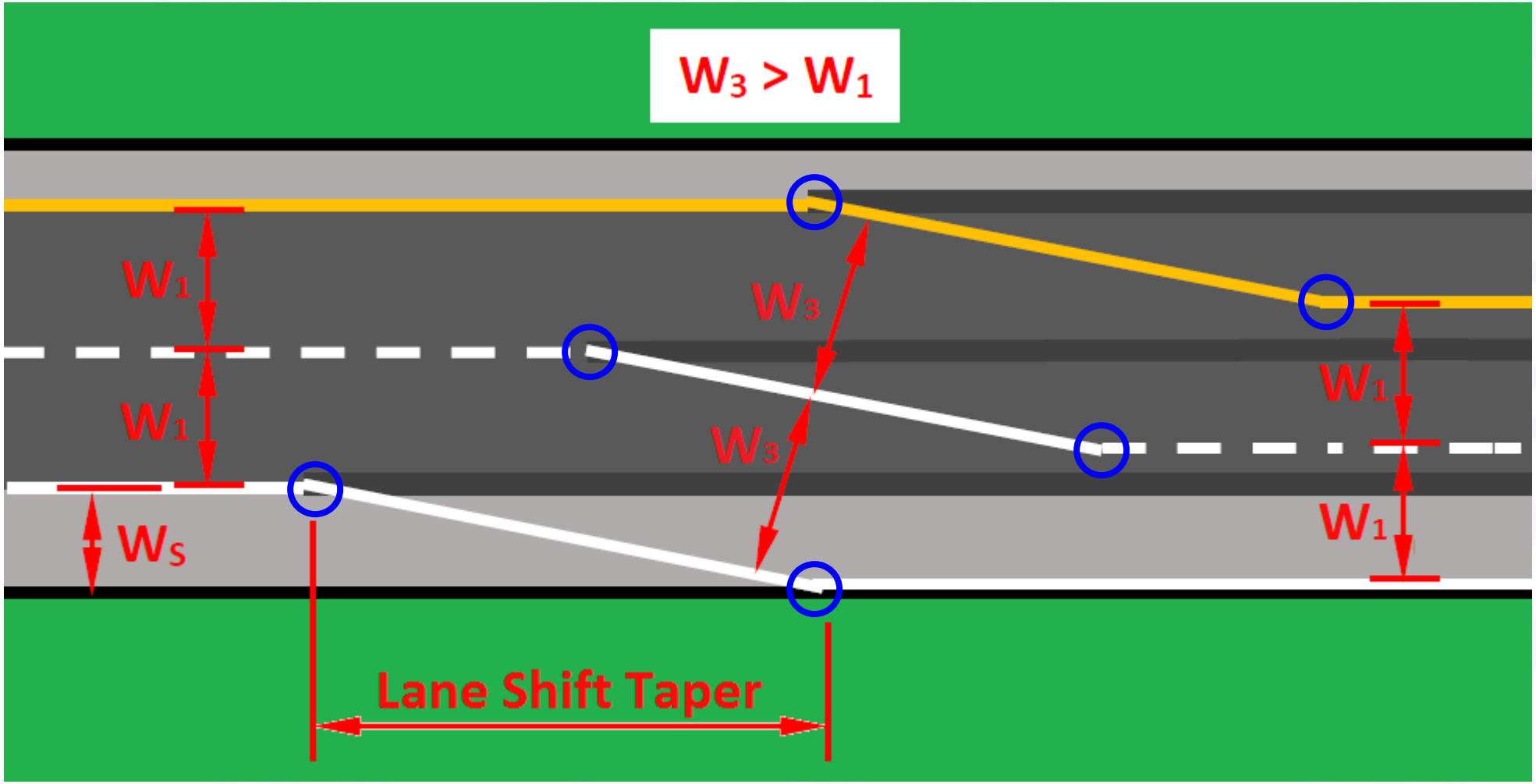
Widen Lanes through Shifts by Staggering the Start

- If all lanes start at same station, lane width decreases through shift!



Widen Lanes through Shifts by Staggering the Start

- To ensure wider lanes through shifts, stagger the start of the lane shift lines.



Construction Zone Design Speed & Speed Limits

- IDM 503-3.04(01) Construction Zone Design Speed
- Construction Zone Design Speed: the speed for which MOT geometric elements are designed
- Construction Zone Design Speed should desirably **match or exceed the established posted speed limit**; if reduced, desirably, not by more than 10 MPH. (IMUTCD 6C.01)
- Posted speed limit during construction should take into account the selected Construction Zone Design Speed for the work zone
- Work zone speed limit (via Official Action) or Worksite speed limit (via CM 14-06) **should not exceed** the Construction Zone Design Speed
- **Consult District Traffic office** to determine Construction Zone Design Speed and speed limit during construction.

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Common Issues with Speed Limits in Work Zones

- Temporary Worksite Speed Limit (TWSL) requirements:
  - Speed Limit MUST be reduced by at least 10 MPH [IC 9-21-5-11(b)]
  - Speed Limit reductions greater than 15 MPH MUST be done in 2 increments
  - All TWSL Assemblies (TWSLA) must have the “WORKSITE” plaque
  - TWSLA’s required on both left and right sides if multiple lanes
  - Provide TWSLA’s at a maximum spacing of 2 mile intervals (ISP prefers 1 mi)
  - Reestablish the existing (established) speed limit by placing sign(s) 500 ft downstream of “END CONSTRUCTION” sign
  - Reestablish the truck speed limit (65 MPH) for rural interstates

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Common Issues with Speed Limits in Work Zones

- Continuous TWSL requirements:
  - No warning lights or flashing strobes on continuous type TWSLA
  - Cover or remove any existing (established) speed limit signs within TWSL
- Intermittent TWSL requirements:
  - Must have Flashing Strobes and “WHEN FLASHING” plaque
  - Place TWSLAs by existing (established) speed limit signs or cover them
- Combination Continuous + Intermittent TWSL requirements:
  - Must separately stage the first 2 TWSLA’s to accomplish the 2 steps: continuous first, then intermittent
  - After first 2, downstream continuous and intermittent TWSLA’s may be placed together

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References on Reduced Speed Limits in Work Zones

- IDM 503-7.01(02) Regulatory Signing
- Construction Memo CM 14-06
- Standard Drawings E 801-TCDV-10, -11, -12
- Standard Specifications 801.15(c)
- IC 9-21-5 (Title 9 – Motor Vehicles;
  Article 21 – Traffic Regulation;
  Chapter 5 – Speed Limits)

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INDOT’s Queue Analysis Tool

WORK ZONE SAFETY

MENU | IN.gov | Indiana Department of Transportation | Districts | Public Meetings & Hearings | Subscribe to Alerts | Careers | Contact INDOT | SEARCH

Online Services | I Want To | FAQs | Find an Agency | Gov. Eric J. Holcomb

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- Hoosier Helpers
- Operation Lifesaver
- Traffic Safety
- Flashing Yellow Arrow Traffic Signals
- Emergency Vehicle Designation
- ***Work Zone Safety***
- Winter Driving Safety Tips
- Pipeline Safety Program
- Fallen Employees

- Major Projects
- Public Involvement
- Contract Letting
- Tolls and Bridges
- Maps
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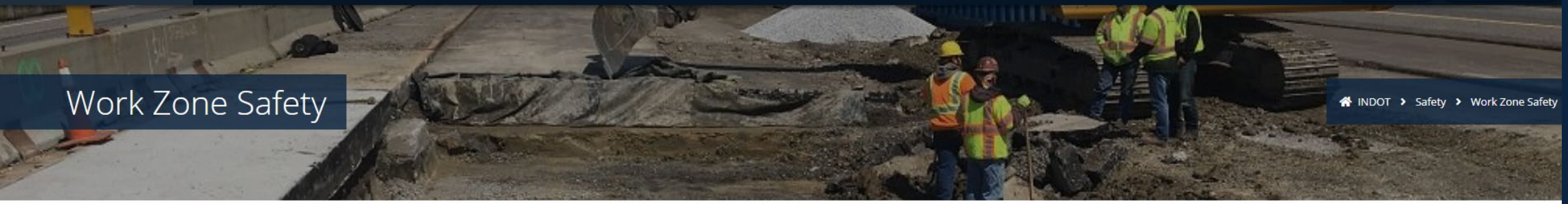
Close Menu



Work Zone Safety

Traveling through highway work zones can be frustrating. INDOT respects your time and understands that there is a real expense associated with road construction delays. INDOT works diligently to reduce the effect of construction activities, particularly on interstate highways, where statistics show there is greater risk of injury or death in a work zone crash.

To reduce the risk of work zone crashes for both workers and motorists, INDOT schedules and manages construction activity in accordance with the INDOT Interstate Highways Congestion Policy. INDOT employees and contractors often work nighttime and off-peak hours to ease congestion caused by construction and maintenance work.

INDOT also works hard to provide timely, accurate, and relevant work zone information to travelers using message boards, the INDOT TrafficWise website, the INDOT Real-Time Traffic Conditions website and social and traditional media. To reduce driver confusion, we focus on building and maintaining work zones where travel paths are clear and where driver expectations are known. Our goal is "No Surprises!" To protect our workers, we require high visibility safety apparel and protective equipment on all INDOT projects. We also work with law enforcement to provide extra police patrols in selected highway work zones to improve compliance with work zone regulations and improve worker and motorist safety.

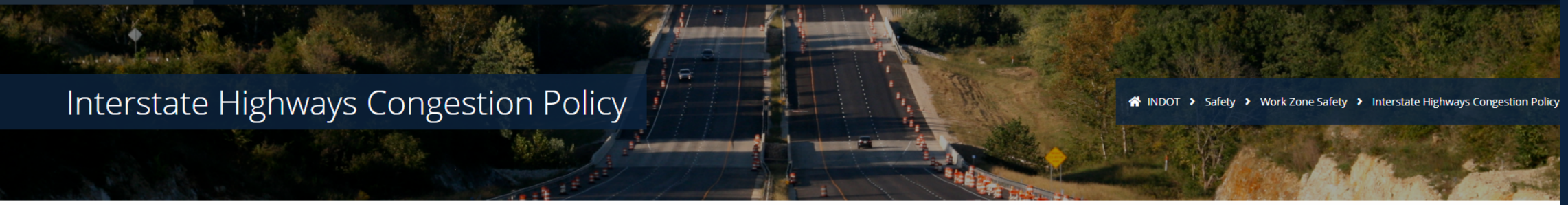
We are dedicated to protecting all workers that build and maintain INDOT roadways. We actively support the efforts of the Road Construction Awareness Corp. (RCAC) as an advocate for worker safety; however, it's important to realize that 4 out of 5 people that die in highway work zones are either drivers or passengers. Accordingly, INDOT's Work Zone Safety group is also dedicated to protecting motorists who drive through our work zones.

As a reminder, INDOT created a highway work zone awareness video to draw attention to worker safety in highway work zones. A partnership between motorists and highway workers is essential to make sure that everyone makes it home safely. As stated by the RCAC: "We're all in this together!"

In 2018, police crash data showed that 14 people were killed and more than 650 were injured in INDOT work zones. The most common causes of collision noted by police include:

- Following too closely.
- Unsafe lane movement.
- Failure to yield right-of-way.
- Ran off roadway.
- Ran over object in roadway.
- Improper lane change.
- Driver inattention.
- Unsafe speed.

WORK ZONE SAFETY



Interstate Highways Congestion Policy

It is the policy of the INDOT to limit operations which reduce the number of lanes, reduce the width of lanes, or may otherwise cause congestion to occur on an interstate route. The goal of this policy is to ensure that, whenever possible, construction and maintenance activities on interstate facilities are scheduled to maximize safety and efficiency, and to minimize risks to all users and workers in and around work zones.

This policy has been developed pursuant to federal requirements as outlined in 23 CFR 630 Subpart J and Subpart K to reduce congestion caused by temporary operations on interstate routes and to improve safety for motorists and workers through the thoughtful selection of work hours and strategy. Operations covered under this policy include, but are not limited to; construction, maintenance, utility work, data gathering, and facilitating special events.

Current Policy

- 2017 Interstate Highways Congestion Policy
  (Signed January 6, 2017. Effective for RFC dates on or after March 7, 2017)
- 2017 Interstate Highways Congestion Policy Tables
- Change Log
- Updates (Minor updates to the policy will be posted here in the future.)
- Past Versions
- Sign up to receive email notifications about changes to the policy or website.

Exception Requests

- Exception Request Form (for internal INDOT use)
- Cover Letters and Exception Request Body Templates
- Analysis Tools
- District Contacts for Exception Request Submittals
- Exception Work Flow Chart
- INDOT Traffic Count Database System
- INDOT Interchange Book

Resources

- Queue Measurement Report Form
- District and Non-District Traffic Restriction Reports

Work Zone Safety Links

THCP

ANALYSIS TOOLS

Interstate Highways Congestion Policy Analysis Tools

Analysis Tools

- INDOT Queue Analysis Spreadsheet
- INDOT Detour Route Summary Spreadsheet
- QuickZone 2.0 Template
- Hourly Day of the Week Conversion Factors (for use with IHCP Exceptions Only)
- Sources of Information on Capacity

IHCP Links

- INDOT Interstate Highways Congestion Policy
- Interstate Highways Congestion Policy Development Tools
- Previous Interstate Highways Congestion Policies
- INDOT Work Zone Safety and Mobility Policy
- INDOT Work Zone Safety

INDOT Events

1/15/2020 Public hearing regarding intersection improvement at S.R. 60 and Salem Bypass in Washington County

1/23/2020 2020 INDOT Highway Design Conference

1/29/2020 Public meeting regarding intersection modification at S.R. 66 and Orchard Road in Spencer County

Top FAQs

Where do I go to report a concern?

Where can I check current traffic conditions?

What district am I in and how can I contact it?

What are the requirements for state certification as a Disadvantaged Business Enterprise (DBE)?

How can I apply for a job at INDOT?

Where can I obtain current Indiana roadway or other maps?

Need Help? Have problems? Who do I call? What Agency?

TCDS

Indiana Department of Transportation

TCDS Help Refresh MS2

Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTIV

Login | Locate | Locate All | Email This

Auto-Locate OFF

Disclaimer: The data is provided pursuant to the Indiana Open Records Act. It represents accurate reproductions of the records on file with the Indiana Department of Transportation; however,... more

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	971290
Type	SPOT
On NHS	Yes
SF Group	U1_SWG
AF Group	U1_A
GF Group	U1_SWG
Class Dist Grp	
Seas Clss Grp	
WIM Group	
QC Group	JUR1SHORT
Fnct'l Class	Interstate
Located On	I 65 1.00 MI NORTH OF KEYSTONE AVE
Loc On Alias	I-65 (INC)

MPO ID | Route 65 | Milepost

PR	MP	PT

More Detail

RURAL / URBAN DESIGNATIONS

STATION DATA

Directions: 2-WAY | NEG | POS

1 2 3 | 1 2 3

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2018	90,845	8,346	9	68	82,282 (91%)	8,562 (9%)	
2017	82,518[3]		9	78	68,495 (83%)	14,022 (17%)	Grown from 2016
2016	83,183	7,154	9	78	69,047 (83%)	14,135 (17%)	
2015	87,828[3]		10	62	68,044 (77%)	19,783 (23%)	Grown from 2014
2014	84,046	8,478	10	62	65,114 (77%)	18,931 (23%)	

1-5 of 16

Travel Demand Model

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

Date	Int	Total
Tue 5/1/2018	15	98,175
Mon 4/30/2018	15	96,645
Tue 5/24/2016	60	79,593
Mon 5/23/2016	60	85,841
Tue 6/24/2014	60	87,328
Mon 6/23/2014	60	93,082
Tue 11/1/2011	60	93,021
Mon 10/31/2011	60	93,766

VOLUME TREND

Year	Annual Growth
2018	10%
2017	-1%
2016	-5%
2015	4%
2014	-8%
2013	-1%
2012	1%
2011	2%
2002	0%
2000	2%

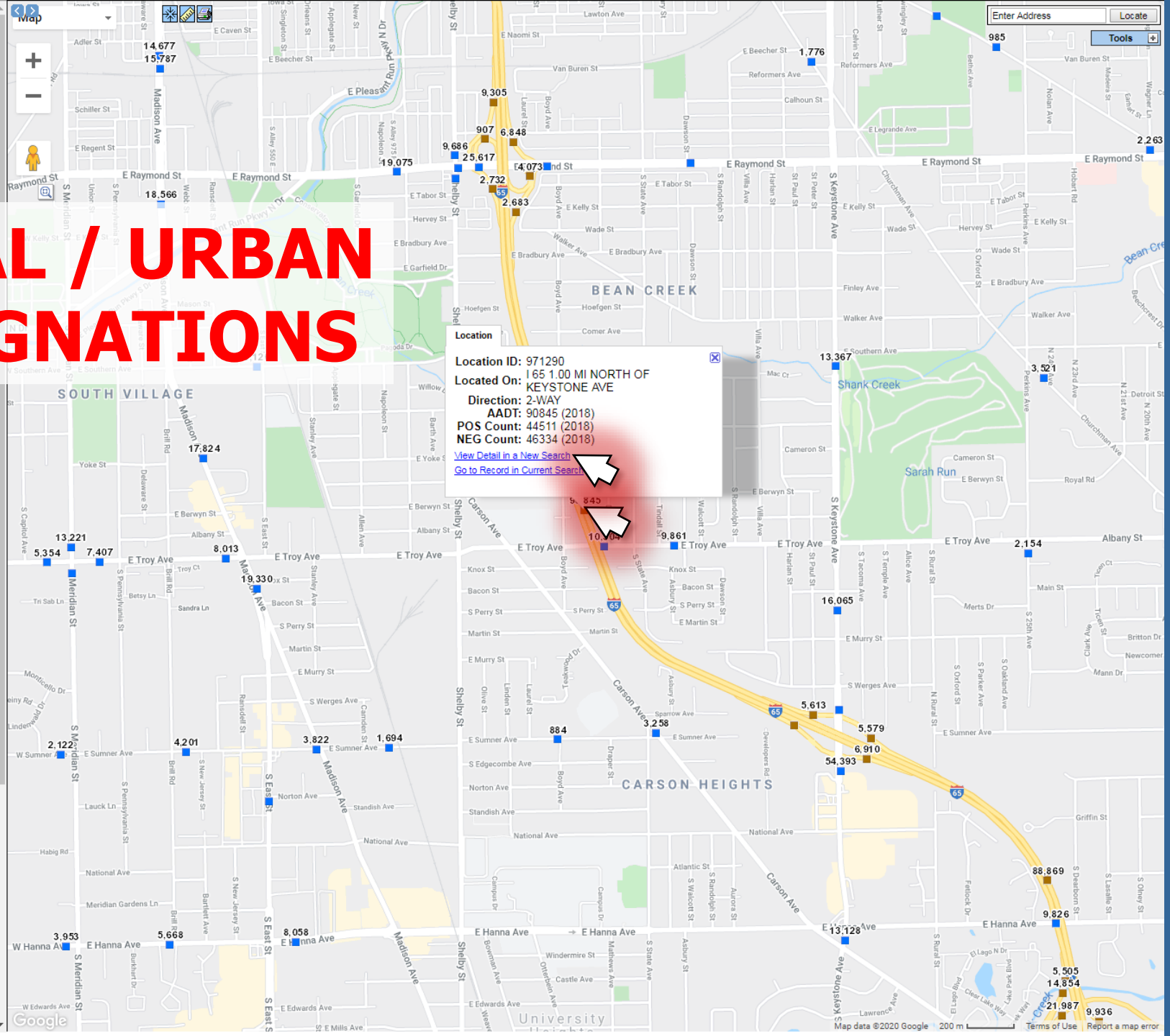
1-10 of 15

SPEED

Date	Int	Pace	85th	Total
Tue 5/24/2016	60	60 - 70	82	79,593

CLASSIFICATION

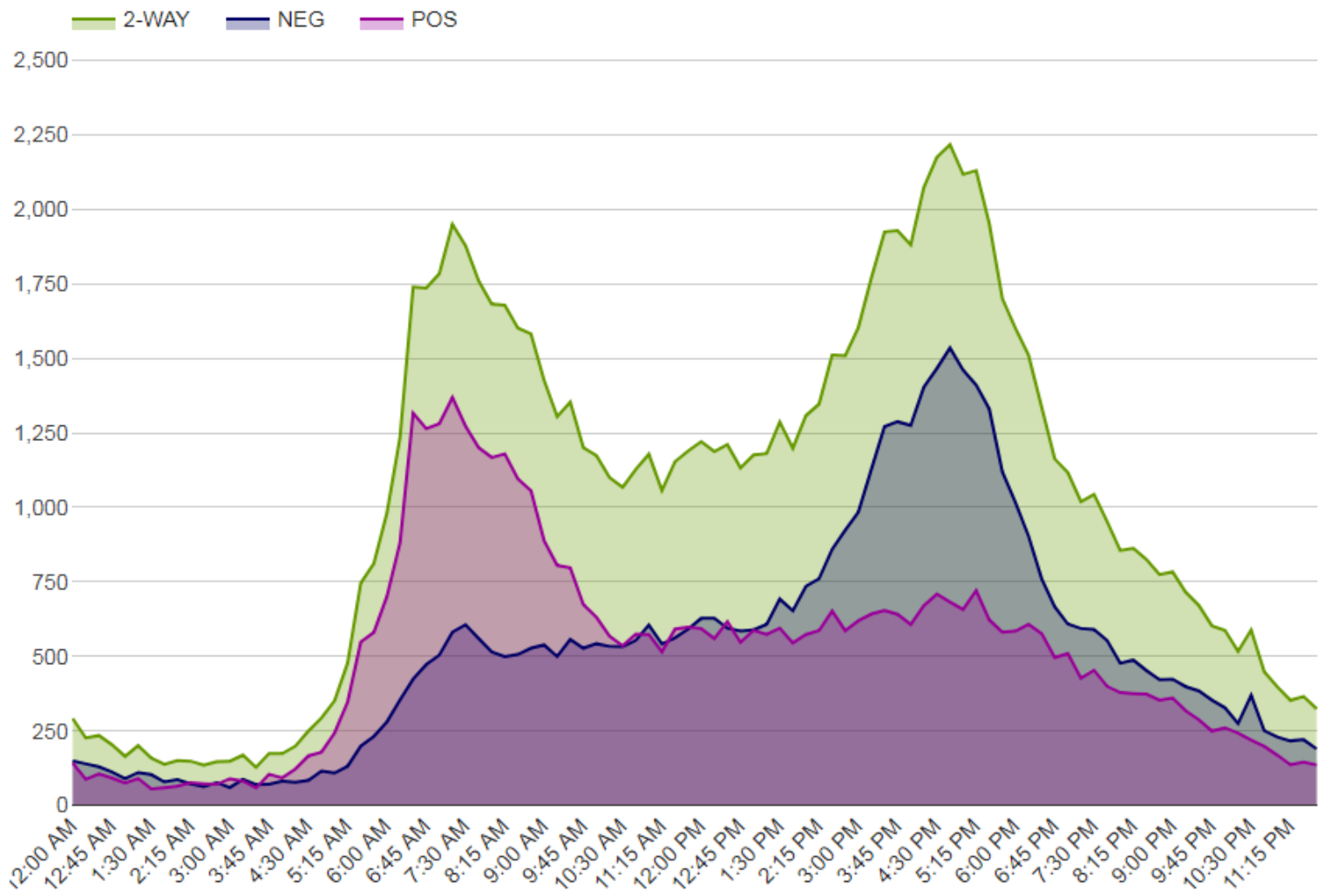
Date	Int	Total
Tue 5/1/2018	15	98,175



https://indot.ms2soft.com/tcds/graph/tcds_vgcs_24hr.aspx?i=971290&sdate=2018-05-01&a=65 - Google Chrome

Secure | https://indot.ms2soft.com/tcds/graph/tcds_vgcs_24hr.aspx?i=971290&sdate=2018-05-01&a=65

971290 - I 65 1.00 MI NORTH OF KEYSTONE AVE - Daily Volume Counts - Tuesday, May 1, 2018



NextLevel INDIANA

TCDS

Class Dist Grp		Category	
Seas Clss Grp			
WIM Group			
QC Group	JUR1SHORT		
Fnct'l Class	Interstate	Milepost	
Located On	I 65 1.00 MI NORTH OF KEYSTONE AVE		
Loc On Alias	I-65 (INC)		

PR	MP	PT

More Detail

STATION DATA

Directions: 2-WAY NEG POS
1 2 3 1 2 3

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2018	90,845	8,346	9	68	82,282 (91%)	8,562 (9%)	
2017	82,518[3]		9	78	68,495 (83%)	14,022 (17%)	Grown from 2016
2016	83,183	7,154	9	78	69,047 (83%)	14,135 (17%)	
2015	87,828[3]		10	62	68,044 (77%)	19,783 (23%)	Grown from 2014
2014	84,046	8,478	10	62	65,114 (77%)	18,931 (23%)	

|<< < > >>| 1-5 of 16

Travel Demand Model

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

Date	Int	Total
Tue 5/1/2018	15	98,175
Mon 4/30/2018	15	96,645
Tue 5/24/2016	60	79,593
Mon 5/23/2016	60	85,841
Tue 6/24/2014	60	87,328
Mon 6/23/2014	60	93,082
Tue 11/1/2011	60	93,021
Mon 10/31/2011	60	93,766

VOLUME TREND

Year	Annual Growth
2018	10%
2017	-1%
2016	-5%
2015	4%
2014	-8%
2013	-1%
2012	1%
2011	2%
2002	0%
2000	2%

|<< < > >>| 1-10 of 15

SPEED

Date	Int	Pace	85th	Total
Tue 5/24/2016	60	60 - 70	82	79,593
Mon 5/23/2016	60	60 - 70	78	85,841

CLASSIFICATION

Date	Int	Total
Tue 5/1/2018	15	98,175
Mon 4/30/2018	15	96,645
Tue 5/24/2016	60	79,593
Mon 5/23/2016	60	85,841
Tue 6/24/2014	60	87,328
Mon 6/23/2014	60	93,082
Tue 11/1/2011	60	93,021
Mon 10/31/2011	60	93,766

WEIGH-IN-MOTION

Date	Axles	Avg GVW	Total
No Data			

PER VEHICLE

Date	Axles	85th	Total
No Data			

GAP

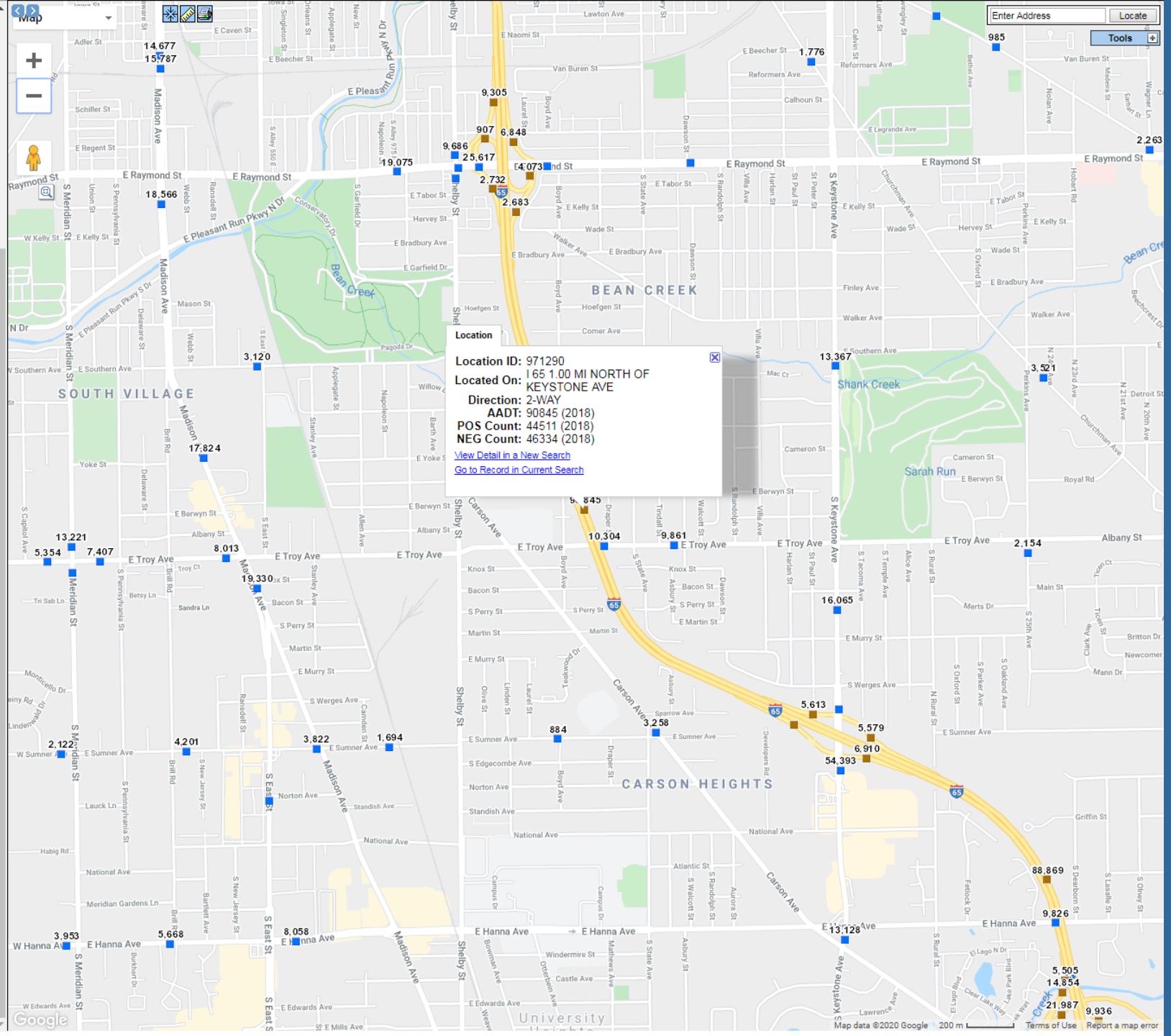
Date	Int	Total
No Data		

PARTIAL COUNT

Date	Int	24-Hr Total

NOTES/FILES

Note	Date



Indiana Department of Transportation

TCDS Help Refresh MS2

Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTTV

Back | Login | Locate | Locate All

Auto-Locate OFF

Classification Report

Location ID	971290	Located On	I 65 1.00 MI NORTH OF KEYSTONE AVE	County	MARION
Counted By	TCDS_Combined			Community	Indianapolis
Start Date	Mon 4/30/2018	Loc On Alias	I-65 (INC)	Station	
Start Time	11:00:00 AM	Direction	2-WAY	Agency	Indiana DOT
Source	TCDS_BIN_IMPORT_COMBINE	Sensor Type	Axle/Tube		
Axle Factor	0.905	Count Status	Accepted		
Display Interval:	60 Min				

Directions: 2-WAY NEG 1 2 3 POS 1 2 3

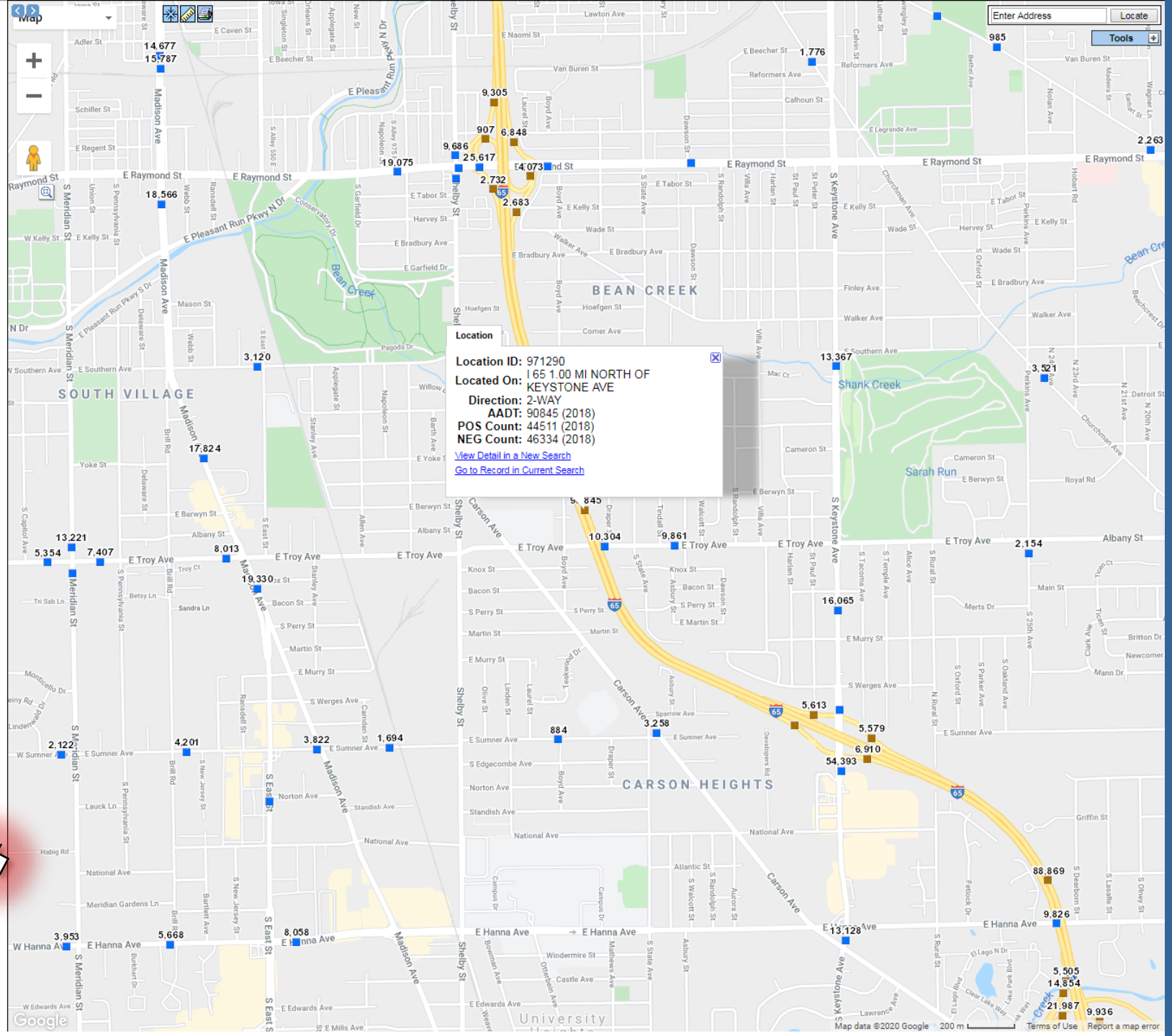
Count Navigation: |<< < > >>| Count Type: CLASS

FHWA-Scheme F Classification

Start Time	Motor cycle	Car	Pick up	Bus	2A SU	3A SU	>3A SU	<5A 2U	5A 2U	>5A 2U	<6A >2U	6A >2U	>6A >2U	14	15	TOTAL
12:00 AM	0	720	16	1	0	8	0	0	167	0	0	0	0	0	0	912
1:00 AM	0	479	19	0	0	35	0	0	146	0	0	0	0	0	0	679
2:00 AM	0	387	4	0	0	28	0	0	152	0	0	0	0	0	0	571
3:00 AM	0	383	17	0	0	30	0	0	149	0	0	0	0	0	0	579
4:00 AM	1	718	16	3	0	21	0	0	183	0	0	0	0	0	0	942
5:00 AM	9	1992	71	12	0	58	0	0	220	0	0	0	0	0	0	2362
6:00 AM	31	4428	839	23	0	117	0	0	226	0	0	0	0	0	0	5664
7:00 AM	20	6183	794	14	0	89	0	0	213	0	0	0	0	0	0	7313
8:00 AM	14	5208	823	14	0	167	0	0	339	0	0	0	0	0	0	6565
9:00 AM	17	3650	727	30	0	292	0	0	354	0	0	0	0	0	0	5070
10:00 AM	13	3168	697	11	0	210	0	0	419	0	0	0	0	0	0	4518
11:00 AM	5	3429	710	5	0	213	0	0	311	0	0	0	0	0	0	4673
12:00 PM	16	3762	619	11	0	221	0	0	256	0	0	0	0	0	0	4885
1:00 PM	7	3801	485	26	0	181	0	0	305	0	0	0	0	0	0	4805
2:00 PM	11	4616	494	22	0	197	0	0	270	0	0	0	0	0	0	5610
3:00 PM	10	5737	972	17	0	172	0	0	311	0	0	0	0	0	0	7219
4:00 PM	29	6741	965	27	0	130	0	0	262	0	0	0	0	0	0	8154
5:00 PM	19	6573	775	13	0	127	0	0	262	0	0	0	0	0	0	7769
6:00 PM	24	4371	481	7	0	79	0	0	270	0	0	0	0	0	0	5232
7:00 PM	19	3111	420	14	0	46	0	0	275	0	0	0	0	0	0	3885
8:00 PM	14	2561	348	12	0	43	0	0	209	0	0	0	0	0	0	3187
9:00 PM	5	2237	73	3	0	40	0	0	223	0	0	0	0	0	0	2581
10:00 PM	1	1747	7	4	0	40	0	0	231	0	0	0	0	0	0	2030
11:00 PM	1	1192	37	2	0	20	0	0	188	0	0	0	0	0	0	1440
TOTAL	266	77194	10409	271	0	2564	0	0	5941	0	0	0	0	0	0	96645

Count Navigation: |<< < > >>|

View Calendar | Bar Graph | Line Graph | View in Excel | Monthly Report | Weekly Class Report | Single Count Class R



TCDS

TCDS RAW DATA

04302018_05012018.xlsx [Repaired] - Excel

Location ID	971290	Located On	I 65 1.00 MI NORTH OF KEYSTONE AVE	Community	Indianapolis
Counted By	TCDS_Combined	Between		County	MARION
Start Date	4/30/2018	And		Module	
Start Time	11:00:00 AM	Direction	2-WAY	Agency	Indiana DOT
AADT		Source	TCDS_BIN_IMPORT_COMBINE	Owner ID	joe

FHWA-Scheme F Classification

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U	(14)	(15)	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
4/30/2018	12:00 AM																0	0	0	0
4/30/2018	1:00 AM																0	0	0	0
4/30/2018	2:00 AM																0	0	0	0
4/30/2018	3:00 AM																0	0	0	0
4/30/2018	4:00 AM																0	0	0	0
4/30/2018	5:00 AM																0	0	0	0
4/30/2018	6:00 AM																0	0	0	0
4/30/2018	7:00 AM																0	0	0	0
4/30/2018	8:00 AM																0	0	0	0
4/30/2018	9:00 AM																0	0	0	0
4/30/2018	10:00 AM																0	0	0	0
4/30/2018	11:00 AM	5	3429	710	5	0	213	0	0	311	0	0	0	0	0	0	4144	218	311	4673
4/30/2018	12:00 PM	16	3762	619	11	0	221	0	0	256	0	0	0	0	0	0	4397	232	256	4885
4/30/2018	1:00 PM	7	3801	485	26	0	181	0	0	305	0	0	0	0	0	0	4293	207	305	4805
4/30/2018	2:00 PM	11	4616	494	22	0	197	0	0	270	0	0	0	0	0	0	5121	219	270	5610
4/30/2018	3:00 PM	10	5737	972	17	0	172	0	0	311	0	0	0	0	0	0	6719	189	311	7219
4/30/2018	4:00 PM	29	6741	965	27	0	130	0	0	262	0	0	0	0	0	0	7735	157	262	8154
4/30/2018	5:00 PM	19	6573	775	13	0	127	0	0	262	0	0	0	0	0	0	7367	140	262	7769
4/30/2018	6:00 PM	24	4371	481	7	0	79	0	0	270	0	0	0	0	0	0	4876	86	270	5232
4/30/2018	7:00 PM	19	3111	420	14	0	46	0	0	275	0	0	0	0	0	0	3550	60	275	3885
4/30/2018	8:00 PM	14	2561	348	12	0	43	0	0	209	0	0	0	0	0	0	2923	55	209	3187
4/30/2018	9:00 PM	5	2237	73	3	0	40	0	0	223	0	0	0	0	0	0	2315	43	223	2581
4/30/2018	10:00 PM	1	1747	7	4	0	40	0	0	231	0	0	0	0	0	0	1755	44	231	2030
4/30/2018	11:00 PM	1	1192	37	2	0	20	0	0	188	0	0	0	0	0	0	1230	22	188	1440
Day Total		**161**	**49878**	**6386**	**163**	**0**	**1509**	**0**	**0**	**3373**	**0**	**0**	**0**	**0**	**0**	**0**	**56425**	**1672**	**3373**	**61470**

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U	(14)	(15)	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
5/1/2018	12:00 AM	0	720	16	1	0	8	0	0	167	0	0	0	0	0	0	736	9	167	912
5/1/2018	1:00 AM	0	479	19	0	0	35	0	0	146	0	0	0	0	0	0	498	35	146	679
5/1/2018	2:00 AM	0	387	4	0	0	28	0	0	152	0	0	0	0	0	0	391	28	152	571
5/1/2018	3:00 AM	0	383	17	0	0	30	0	0	149	0	0	0	0	0	0	400	30	149	579
5/1/2018	4:00 AM	1	718	16	3	0	21	0	0	183	0	0	0	0	0	0	735	24	183	942

Location ID	971290_NEG	Located On	I 65 1.00 MI NORTH OF KEYSTONE AVE	Con	
Counted By	TCDS_Combined	Between		Cou	
Start Date	4/30/2018	And		Moc	
Start Time	11:00:00 AM	Direction	NEG	Age	
AADT		Source	TCDS_BIN_IMPORT_COMBINE	Owr	

FHWA-Scheme F Classification

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U	(14)	(15)	Pa V
4/30/2018	12:00 AM																
4/30/2018	1:00 AM																
4/30/2018	2:00 AM																
4/30/2018	3:00 AM																
4/30/2018	4:00 AM																
4/30/2018	5:00 AM																
4/30/2018	6:00 AM																
4/30/2018	7:00 AM																
4/30/2018	8:00 AM																
4/30/2018	9:00 AM																
4/30/2018	10:00 AM																
4/30/2018	11:00 AM	1	1658	337	3	0	96	0	0	147	0	0	0	0	0	0	
4/30/2018	12:00 PM	5	1883	358	7	0	103	0	0	136	0	0	0	0	0	0	
4/30/2018	1:00 PM	4	2092	197	19	0	97	0	0	141	0	0	0	0	0	0	
4/30/2018	2:00 PM	7	2638	334	10	0	85	0	0	140	0	0	0	0	0	0	
4/30/2018	3:00 PM	6	3754	644	2	0	94	0	0	155	0	0	0	0	0	0	
4/30/2018	4:00 PM	14	4710	660	12	0	51	0	0	137	0	0	0	0	0	0	
4/30/2018	5:00 PM	13	4412	690	6	0	72	0	0	142	0	0	0	0	0	0	
4/30/2018	6:00 PM	11	2657	332	1	0	38	0	0	148	0	0	0	0	0	0	
4/30/2018	7:00 PM	12	1773	259	2	0	23	0	0	156	0	0	0	0	0	0	
4/30/2018	8:00 PM	9	1485	189	5	0	18	0	0	126	0	0	0	0	0	0	
4/30/2018	9:00 PM	5	1194	45	0	0	14	0	0	134	0	0	0	0	0	0	
4/30/2018	10:00 PM	1	946	6	2	0	29	0	0	138	0	0	0	0	0	0	
4/30/2018	11:00 PM	1	665	29	2	0	10	0	0	105	0	0	0	0	0	0	
Day Total		**89**	**####**	**###**	**71**	**0**	**730**	**0**	**0**	**1805**	**0**	**0**	**0**	**0**	**0**	**0**	

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U	(14)	(15)	Pa V
5/1/2018	12:00 AM	0	429	8	1	0	5	0	0	83	0	0	0	0	0	0	
5/1/2018	1:00 AM	0	263	4	0	0	28	0	0	72	0	0	0	0	0	0	
5/1/2018	2:00 AM	0	211	3	0	0	20	0	0	75	0	0	0	0	0	0	
5/1/2018	3:00 AM	0	160	17	0	0	24	0	0	66	0	0	0	0	0	0	
5/1/2018	4:00 AM	0	263	0	2	0	14	0	0	102	0	0	0	0	0	0	

04302018_05012018

READY

TCDS RAW DATA

04302018_05012018.xlsx [Repaired] - Excel

A68 | 5/2/2018

Location ID	971290	Located On	I 65 1.00 MI NORTH OF KEYSTONE AVE	Community	Indianapolis
Counted By	TCDS_Combined	Between		County	MARION
Start Date	4/30/2018	And		Module	
Start Time	11:00:00 AM	Direction	2-WAY	Agency	Indiana DOT
AADT		Source	TCDS_BIN_IMPORT_COMBINE	Owner ID	joe

FHWA-Scheme F Classification

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U	(14)	(15)	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
Monday, April 30, 2018	12:00 AM																0	0	0	0
4/30/2018	1:00 AM																0	0	0	0
4/30/2018	2:00 AM																0	0	0	0
4/30/2018	3:00 AM																0	0	0	0
4/30/2018	4:00 AM																0	0	0	0
4/30/2018	5:00 AM																0	0	0	0
4/30/2018	6:00 AM																0	0	0	0
4/30/2018	7:00 AM																0	0	0	0
4/30/2018	8:00 AM																0	0	0	0
4/30/2018	9:00 AM																0	0	0	0
4/30/2018	10:00 AM																0	0	0	0
4/30/2018	11:00 AM	5	3429	710	5	0	213	0	0	311	0	0	0	0	0	0	4144	218	311	4673
4/30/2018	12:00 PM	16	3762	619	11	0	221	0	0	256	0	0	0	0	0	0	4397	232	256	4885
4/30/2018	1:00 PM	7	3801	485	26	0	181	0	0	305	0	0	0	0	0	0	4293	207	305	4805
4/30/2018	2:00 PM	11	4616	494	22	0	197	0	0	270	0	0	0	0	0	0	5121	219	270	5610
4/30/2018	3:00 PM	10	5737	972	17	0	172	0	0	311	0	0	0	0	0	0	6719	189	311	7219
4/30/2018	4:00 PM	29	6741	965	27	0	130	0	0	262	0	0	0	0	0	0	7735	157	262	8154
4/30/2018	5:00 PM	19	6573	775	13	0	127	0	0	262	0	0	0	0	0	0	7367	140	262	7769
4/30/2018	6:00 PM	24	4371	481	7	0	79	0	0	270	0	0	0	0	0	0	4876	86	270	5232
4/30/2018	7:00 PM	19	3111	420	14	0	46	0	0	275	0	0	0	0	0	0	3550	60	275	3885
4/30/2018	8:00 PM	14	2561	348	12	0	43	0	0	209	0	0	0	0	0	0	2923	55	209	3187
4/30/2018	9:00 PM	5	2237	73	3	0	40	0	0	223	0	0	0	0	0	0	2315	43	223	2581
4/30/2018	10:00 PM	1	1747	7	4	0	40	0	0	231	0	0	0	0	0	0	1755	44	231	2030
4/30/2018	11:00 PM	1	1192	37	2	0	20	0	0	188	0	0	0	0	0	0	1230	22	188	1440
Day Total		**161**	**49878**	**6386**	**163**	**0**	**1509**	**0**	**0**	**3373**	**0**	**0**	**0**	**0**	**0**	**0**	**56425**	**1672**	**3373**	**61470**

Location ID	971290_NEG	Located On	I 65 1.00 MI NORTH OF KEYSTONE AVE		
Counted By	TCDS_Combined	Between			
Start Date	4/30/2018	And			
Start Time	11:00:00 AM	Direction	NEG		
AADT		Source	TCDS_BIN_IMPORT_COMBINE		

FHWA-Scheme F Classification

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U
4/30/2018	12:00 AM													
4/30/2018	1:00 AM													
4/30/2018	2:00 AM													
4/30/2018	3:00 AM													
4/30/2018	4:00 AM													
4/30/2018	5:00 AM													
4/30/2018	6:00 AM													
4/30/2018	7:00 AM													
4/30/2018	8:00 AM													
4/30/2018	9:00 AM													
4/30/2018	10:00 AM													
4/30/2018	11:00 AM	1	1658	337	3	0	96	0	0	147	0	0	0	0
4/30/2018	12:00 PM	5	1883	358	7	0	103	0	0	136	0	0	0	0
4/30/2018	1:00 PM	4	2092	197	19	0	97	0	0	141	0	0	0	0
4/30/2018	2:00 PM	7	2638	334	10	0	85	0	0	140	0	0	0	0
4/30/2018	3:00 PM	6	3754	644	2	0	94	0	0	155	0	0	0	0
4/30/2018	4:00 PM	14	4710	660	12	0	51	0	0	137	0	0	0	0
4/30/2018	5:00 PM	13	4412	690	6	0	72	0	0	142	0	0	0	0
4/30/2018	6:00 PM	11	2657	332	1	0	38	0	0	148	0	0	0	0
4/30/2018	7:00 PM	12	1773	259	2	0	23	0	0	156	0	0	0	0
4/30/2018	8:00 PM	9	1485	189	5	0	18	0	0	126	0	0	0	0
4/30/2018	9:00 PM	5	1194	45	0	0	14	0	0	134	0	0	0	0
4/30/2018	10:00 PM	1	946	6	2	0	29	0	0	138	0	0	0	0
4/30/2018	11:00 PM	1	665	29	2	0	10	0	0	105	0	0	0	0
Day Total		**89**	**####**	**###**	**71**	**0**	**730**	**0**	**0**	**1805**	**0**	**0**	**0**	**0**

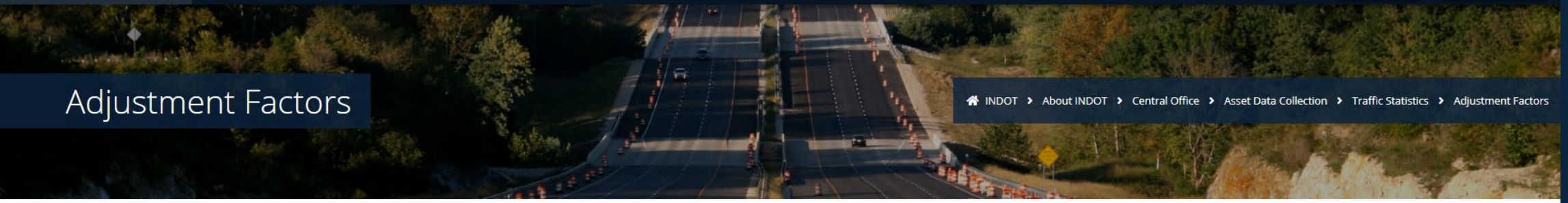
Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U	(14)	(15)	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
Tuesday, May 01, 2018	12:00 AM	0	720	16	1	0	8	0	0	167	0	0	0	0	0	0	736	9	167	912
5/1/2018	1:00 AM	0	479	19	0	0	35	0	0	146	0	0	0	0	0	0	498	35	146	679
5/1/2018	2:00 AM	0	387	4	0	0	28	0	0	152	0	0	0	0	0	0	391	28	152	571
5/1/2018	3:00 AM	0	383	17	0	0	30	0	0	149	0	0	0	0	0	0	400	30	149	579
5/1/2018	4:00 AM	1	718	16	3	0	21	0	0	183	0	0	0	0	0	0	735	24	183	942

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U
5/1/2018	12:00 AM	0	429	8	1	0	5	0	0	83	0	0	0	0
5/1/2018	1:00 AM	0	263	4	0	0	28	0	0	72	0	0	0	0
5/1/2018	2:00 AM	0	211	3	0	0	20	0	0	75	0	0	0	0
5/1/2018	3:00 AM	0	160	17	0	0	24	0	0	66	0	0	0	0
5/1/2018	4:00 AM	0	263	0	2	0	14	0	0	102	0	0	0	0

04302018_05012018

READY

INDOT TRAFFIC STATS.



Adjustment Factors

Adjustment Factors

- 2018 Adjustment Factors
- 2017 Adjustment Factors
- 2016 Adjustment Factors
- 2015 Adjustment Factors
- 2014 Adjustment Factors
- 2013 Adjustment Factors - Revised 08/28/2014
- 2012 Adjustment Factors
- 2011 Adjustment Factors
- 2010 Adjustment Factors
- 2009 Adjustment Factors
- 2008 Adjustment Factors
- 2007 Adjustment Factors
- 2006 Adjustment Factors

Table of INDOT Adjustment Factors

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SEASONAL ADJUSTMENT FACTORS
BY FUNCTIONAL CLASSIFICATION 2014-2018*

U1_SWG — Urban - Interstate (1), Principal Arterial (Freeways and Expressways) (2)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	1.189	1.072	1.002	0.986	0.96	0.941	0.952	0.945	0.989	0.958	0.985	1.038
2017	1.151	1.033	1.000	1.012	0.970	0.932	0.969	0.941	0.979	0.984	0.999	1.071
2016	1.213	1.067	0.977	1.011	0.996	0.934	0.943	0.969	1.001	0.992	1.008	1.058
2015	1.158	1.125	1.017	0.965	0.980	0.933	0.940	0.958	0.974	0.949	0.993	1.037
2014	1.167	1.102	1.044	0.981	0.964	0.958	0.946	0.953	0.977	0.960	1.010	1.021
5 YR AVG	1.176	1.080	1.008	0.991	0.974	0.940	0.950	0.953	0.984	0.969	0.999	1.045

U2_SWG — Urban - Other Principal Arterials (3), Minor Arterials (4), Collectors (5 & 6), Locals (7)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	1.135	1.047	1.013	1.000	0.960	0.958	0.975	0.939	0.998	0.976	1.015	1.054
2017	1.105	1.000	1.008	0.997	0.969	0.948	1.009	0.943	0.970	0.986	1.013	1.054
2016	1.099	1.026	1.000	0.947	0.984	0.973	1.002	0.961	0.972	0.969	1.000	1.026
2015	1.128	1.076	1.034	0.966	0.968	0.980	0.971	0.955	0.959	0.970	1.036	1.048
2014	1.112	1.059	1.020	0.973	0.963	0.969	0.975	0.981	0.982	0.973	1.032	1.025
5 YR AVG	1.116	1.042	1.015	0.977	0.969	0.966	0.986	0.956	0.976	0.975	1.019	1.041

R1_SWGA — Rural - Interstate (1), Principal Arterial (Freeways and Expressways) (2)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	1.239	1.137	1.023	1.010	0.943	0.906	0.898	0.916	0.975	0.961	1.000	1.088
2017	1.224	1.125	1.029	0.991	0.956	0.892	0.911	0.928	0.967	0.974	0.997	1.084
2016	1.261	1.159	1.027	1.017	0.971	0.911	0.897	0.941	0.951	0.968	1.040	1.107
2015	1.232	1.182	1.056	1.000	0.950	0.909	0.888	0.915	0.965	0.954	0.997	1.053
2014	1.291	1.219	1.066	1.008	0.957	0.906	0.875	0.896	0.989	0.963	1.027	1.056
5 YR AVG	1.249	1.164	1.040	1.005	0.955	0.905	0.894	0.919	0.969	0.964	1.012	1.078

R2_SWGA — Rural - Principal Arterials (3), Minor Arterials (4)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	1.180	1.077	1.052	1.011	0.952	0.938	0.975	0.922	0.959	0.954	1.010	1.091
2017	1.136	1.027	1.025	1.014	0.959	0.927	0.981	0.944	0.955	0.979	1.025	1.071
2016	1.202	1.102	1.046	0.965	0.963	0.923	0.964	0.954	0.921	0.958	1.013	1.062
2015	1.174	1.119	1.081	0.994	0.958	0.961	0.948	0.930	0.914	0.972	1.055	1.090
2014	1.219	1.145	1.081	0.988	0.938	0.935	0.940	0.937	0.936	0.946	1.022	1.060
5 YR AVG	1.182	1.094	1.057	0.994	0.954	0.937	0.962	0.937	0.937	0.962	1.025	1.075

R3_SWGA — Rural - Major Collectors (5), Minor Collectors (6), Locals (7)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	1.213	1.134	1.072	0.994	0.932	0.918	0.945	0.94	0.952	0.946	1.014	1.083
2017	1.186	1.064	1.053	0.981	0.936	0.896	0.933	0.934	0.952	0.978	1.034	1.130
2016	1.153	1.115	1.064	0.921	0.937	0.896	0.956	0.965	0.951	0.943	0.993	1.114
2015	1.138	1.103	1.058	0.965	0.915	0.943	0.961	0.951	0.950	0.963	1.022	1.043
2014	1.150	1.121	1.077	0.952	0.923	0.954	0.955	0.979	0.958	0.981	1.045	1.074
5 YR AVG	1.168	1.107	1.065	0.963	0.929	0.921	0.950	0.954	0.953	0.962	1.022	1.089

The seasonal adjustment factors are used to expand average 24-hour volumes to estimated Annual Average Daily Traffic (AADT).

Source: Indiana Department of Transportation
Division of Engineering and Asset Management, Asset Planning

April 2019

IANA DEPARTMENT OF TRANSPORTATION

North Senate Avenue
m N955
napolis, Indiana 46204

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Eric Holc
Joe McG

INDOT Traffic Adjustment Facto

Effective for 2018

Transportation (INDOT), through its Traffic Monitori
nformation on the traffic traveling on the state's high
tion needs, system performance and to develop hig
ons. Traffic data also plays a very important role in
cts.

he Department operates two traffic monitoring syste
s the total volume for the year divided by 365 days.
quipped with Continuous Traffic counters. The rema
term or "Coverage Count" program. The Coverage
0 count locations, approximately one-third of which
ount data is collected at each count location and, th
utilizing factors developed from Continuous Traffic
ed. AADT is necessary for presenting a statewide pi
nputing accident rates, planning and designing high

oring System consisting of 135 permanent continuo
ehicle classification data 24 hours per day, 365 day
-in motion (WIM) technology to collect continuous t
ughout the state to monitor overall traffic trends. Inf
e ANNUAL TRAFFIC GROWTH trends as well as
adjustment factors used with the state's coverage
al average daily traffic (AADT).

ount program utilizes portable pneumatic road-tube
hour traffic counts on all State Highway System traf
and all highway performance monitoring sections (
The coverage count program operates on a two-yea
e Owned routes and many non-state owned urban
ycle for low volume rural Federal Aid Eligible routes
ally, or approximately 8,000 of the 25,000 count site
so that approximately 65% of all coverage counts
video data collection expands the reach of classific
taken within this program to support specific state
ome Metropolitan Planning Organizations (MPOs)
lect coverage count data within their areas as well
ling the number of MPO and RPO counting partner

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ANNUAL GROWTH FACTORS
BY FUNCTIONAL CLASSIFICATION 2008 - 2018*

U1_SWG — Urban - Interstate (1), Principal Arterial (Freeways and Expressways) (2)

Year To \ Year From	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2008	-	0.981	0.977	0.963	0.954	0.966	0.945	0.904	0.902	0.909	0.897
2009	1.019	-	0.996	0.981	0.973	0.984	0.963	0.922	0.919	0.927	0.914
2010	1.023	1.004	-	0.985	0.976	0.988	0.967	0.925	0.923	0.930	0.917
2011	1.038	1.019	1.015	-	0.991	1.003	0.982	0.939	0.936	0.944	0.931
2012	1.048	1.028	1.024	1.009	-	1.012	0.990	0.948	0.945	0.952	0.939
2013	1.035	1.016	1.012	0.997	0.988	-	0.978	0.936	0.934	0.942	0.929
2014	1.058	1.038	1.034	1.019	1.010	1.022	-	0.957	0.954	0.962	0.948
2015	1.106	1.085	1.081	1.065	1.055	1.068	1.045	-	0.997	1.005	0.991
2016	1.109	1.088	1.084	1.068	1.058	1.071	1.048	1.003	-	1.008	0.994
2017	1.100	1.079	1.075	1.059	1.050	1.062	1.040	0.995	0.992	-	0.986
2018	1.115	1.094	1.090	1.074	1.065	1.077	1.055	1.009	1.006	1.014	-

U2_SWG — Urban - Other Principal Arterials (3), Minor Arterials (4), Collectors (5 &6), Locals (7)

Year To \ Year From	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2008		1.004	0.997	0.979	0.980	0.994	0.984	0.943	0.940	0.931	0.928
2009	0.996	-	0.993	0.975	0.976	0.990	0.981	0.938	0.935	0.927	0.923
2010	1.003	1.007	-	0.982	0.983	0.997	0.987	0.945	0.943	0.934	0.930
2011	1.021	1.025	1.018	-	1.001	1.015	1.005	0.962	0.959	0.951	0.947
2012	1.020	1.024	1.017	0.999	-	1.014	1.004	0.961	0.958	0.950	0.946
2013	1.006	1.010	1.003	0.985	0.986	-	0.990	0.948	0.945	0.936	0.933
2014	1.016	1.020	1.013	0.995	0.996	1.010	-	0.978	0.976	0.967	0.963
2015	1.061	1.066	1.058	1.040	1.041	1.055	1.022	-	0.997	0.988	0.984
2016	1.064	1.069	1.061	1.043	1.044	1.058	1.025	1.003	-	0.991	0.987
2017	1.074	1.079	1.071	1.052	1.053	1.068	1.034	1.012	1.009	-	0.996
2018	1.078	1.083	1.075	1.056	1.057	1.072	1.038	1.016	1.013	1.004	-

R1_SWGA — Rural - Interstate (1), Principal Arterial (Freeways and Expressways) (2)

Year To \ Year From	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2008	-	1.009	1.013	1.011	0.991	0.992	0.980	0.938	0.926	0.934	0.935
2009	0.991	-	1.004	1.002	0.982	0.983	0.972	0.930	0.918	0.926	0.927
2010	0.987	0.996	-	0.998	0.978	0.979	0.968	0.927	0.915	0.923	0.923
2011	0.989	0.998	1.002	-	0.980	0.981	0.970	0.929	0.917	0.924	0.925
2012	1.009	1.018	1.022	1.020	-	1.001	0.989	0.947	0.935	0.943	0.943
2013	1.008	1.017	1.021	1.019	0.999	-	0.988	0.945	0.933	0.941	0.942
2014	1.020	1.029	1.033	1.031	1.011	1.012	-	0.961	0.948	0.955	0.956
2015	1.066	1.075	1.079	1.077	1.056	1.058	1.041	-	0.987	0.995	0.996
2016	1.080	1.089	1.093	1.091	1.070	1.072	1.055	1.013	-	1.008	1.009
2017	1.071	1.08	1.084	1.082	1.061	1.063	1.047	1.005	0.992	-	1.001
2018	1.070	1.079	1.083	1.081	1.06	1.062	1.046	1.004	0.991	0.999	-

R2_SWGA — Rural - Other Principal Arterials (3), Minor Arterials (4)

Year To \ Year From	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2008	-	1.005	1.008	1.007	1.000	0.969	0.956	0.915	0.899	0.894	0.891
2009	0.995	-	1.003	1.002	0.995	0.964	0.951	0.910	0.894	0.890	0.887
2010	0.992	0.997	-	0.999	0.992	0.961	0.948	0.907	0.892	0.887	0.883
2011	0.993	0.998	1.001	-	0.993	0.962	0.949	0.908	0.893	0.888	0.884
2012	1.000	1.005	1.008	1.007	-	0.969	0.956	0.914	0.898	0.894	0.890
2013	1.032	1.037	1.040	1.039	1.032	-	0.986	0.943	0.928	0.923	0.920
2014	1.046	1.052	1.055	1.054	1.046	1.014	-	0.981	0.965	0.961	0.957
2015	1.093	1.099	1.102	1.101	1.094	1.060	1.019	-	0.983	0.978	0.975
2016	1.112	1.118	1.121	1.120	1.113	1.078	1.036	1.017	-	0.995	0.991
2017	1.118	1.124	1.127	1.126	1.119	1.083	1.041	1.022	1.005	-	0.996
2018	1.122	1.128	1.132	1.131	1.123	1.087	1.045	1.026	1.009	1.004	-

R3_SWGA — Rural - Major Collectors (5), Minor Collectors (6), Locals (7)

Year To \ Year From	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2008	-	0.992	0.996	0.992	0.992	0.985	0.975	0.934	0.929	0.934	0.951
2009	1.008	-	1.004	1.000	1.000	0.993	0.983	0.941	0.936	0.941	0.959
2010	1.004	0.996	-	0.996	0.996	0.989	0.979	0.937	0.933	0.937	0.955
2011	1.008	1.000	1.004	-	1.000	0.993	0.983	0.941	0.936	0.941	0.959
2012	1.008	1.000	1.004	1.000	-	0.993	0.983	0.941	0.936	0.941	0.959
2013	1.015	1.007	1.011	1.007	1.007	-	0.990	0.948	0.943	0.948	0.966
2014	1.025	1.017	1.021	1.017	1.017	1.010	-	0.994	0.989	0.994	1.013
2015	1.071	1.063	1.067	1.063	1.063	1.055	1.006	-	0.995	1.000	1.019
2016	1.076	1.068	1.072	1.068	1.068	1.060	1.011	1.005	-	1.005	1.025
2017	1.071	1.063	1.067	1.063	1.063	1.055	1.006	1.000	0.995	-	1.019
2018	1.051	1.043	1.047	1.043	1.043	1.035	0.987	0.981	0.976	0.981	-

Factors in this table are used to adjust previous year AADTs to a more current year for similarly classed roads (e.g. to adjust a 2014 urban interstate AADT to a 2017 equivalent, you would multiply the 2014 AADT by 1.040).

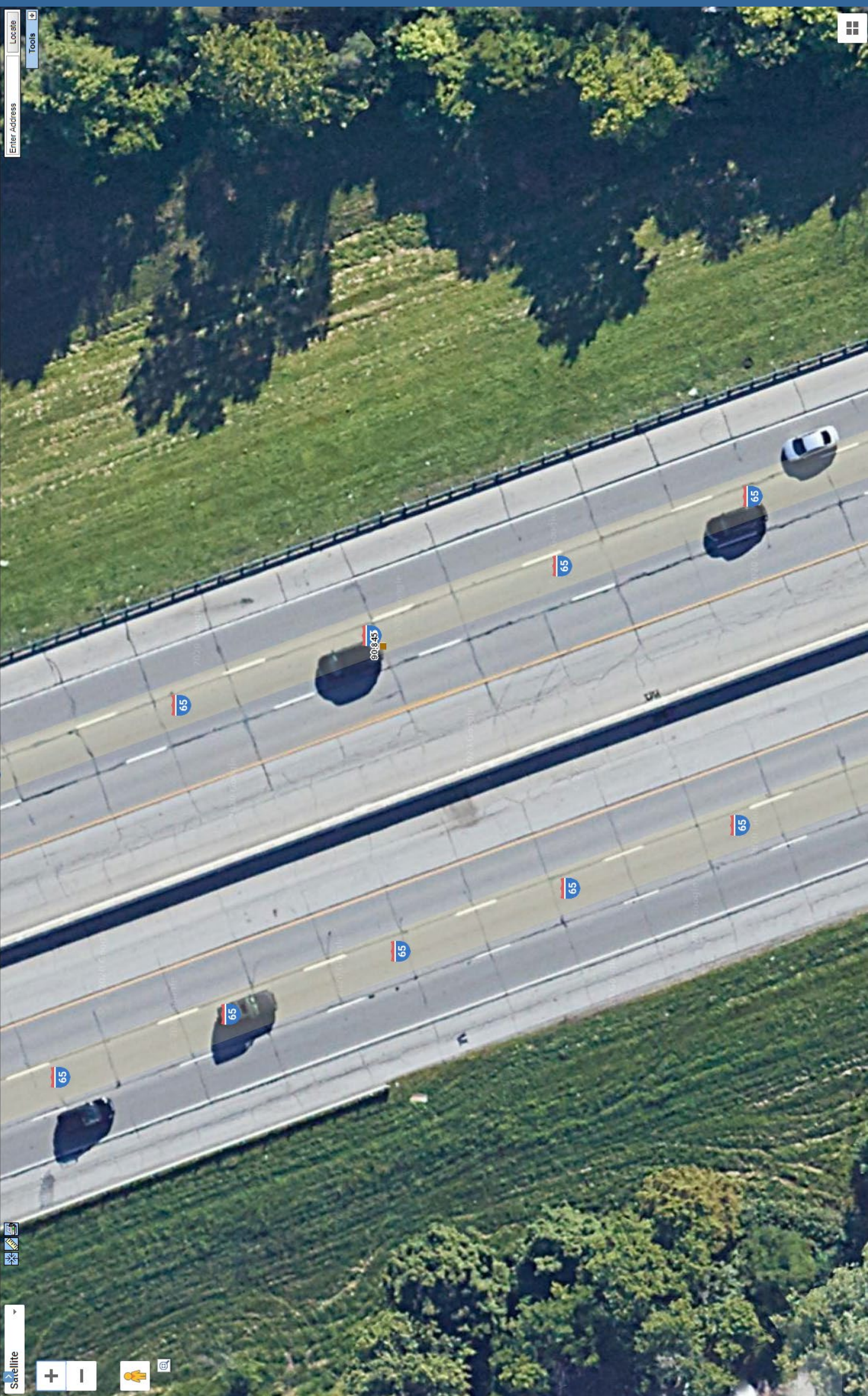
Average of Annual Growth Rates

Factor Group	U1_SWG	U2_SWG	R1_SWGA	R2_SWGA	R3_SWGA
Average of Last Five (5) Annual Growth Rates	1.015	1.010	1.011	1.012	0.999
Average of Last Ten (10) Annual Growth Rates	1.005	1.005	1.007	1.009	1.001

Source: Indiana Department of Transportation
Division of Asset Planning
Office of Engineering and Asset Management

April 2019

TCDS: Project Location



Problem Statement

Perform a Queue Analysis at the subject location for a hypothetical project:

- HMA Resurfacing on I-65 on segment at MM 110
- I-65 has 3 lanes in each direction
- 2024 Construction Season, model worst case month to cover season
- Will need up to a 2-lane closure
- Based on available pavement, it looks like 12 ft or 11 ft lanes can be provided
- Based on location and traffic volumes, given the type of work, look at

  → Nighttime and Weekend Closures as a starting point

NextLevel INDIANA

ABOUT

INDOT Queuing Analysis v1_29 (1).xlsx - Excel

Information About this File

Version: 1.29
Last Updated: 9/12/19

PURPOSE

This tool estimates queuing on interstates where lane closures or another restriction that would reduce capacity is necessary. This tool should be used in place of Quickzone 2.0 for the purposes of preparing analyses for INDOT Interstate Highway Congestion Policy Exceptions.

LEGEND

Instructions

User Entered Value
Formula-Derived Value

GENERAL INSTRUCTIONS

Use the latest version of this file which can be downloaded from the Work Zone Safety Section website (see 'Links' section on this tab). Complete the tabs, working from left to right beginning with the "Raw Weekday Traffic Volumes" tab. Fill out necessary cells with BLUE text.

RETRIEVING TRAFFIC COUNTS FROM THE INDOT TRAFFIC COUNT DATA SYSTEM (TCDS)

Retrieve weekday traffic volumes from TCDS (see 'Links' section on this tab) by selecting a node on the map for the count station along the appropriate the segment of interstate to be analyzed.

Click "View Detail". The left panel of the browser will present information specific to this segment.

Under the "Record x of y" header, note the prefix of the SF, AF and GF Group. If the prefix begins with 'U' the segment is Urban. If the prefix begins with 'R' the segment is Rural. The rural or urban designation in TCDS shall supercede any other conflicting source.

Under the "Classification" header, find the most recent weekday (typically a Monday or Tuesday) with the highest total and click the 'eye' icon next to it. New information will be shown in that same panel.

At the bottom of the panel, click "Single Count Class Report" or the Excel icon above it to download the necessary file.

Click the 'Back' button at the top of the panel to return to the previous view. If a Friday count is available under "Classification", then download that data by clicking the 'eye' icon and then selecting the "Single Count Class Report". If there are no weekend counts in TCDS for this particular count station then skip 'Raw Weekend Hourly Volumes' tab and complete the "Weekend Adjustment Factors" tab.

WEEKEND ADJUSTMENT FACTORS

When the count station of interest does not have downloadable weekend counts (which is the preferable way to obtain weekend count), the 'Raw Weekend Hourly

QUEUING CALCULATIONS

For the purposes of this queue analysis, traffic counts are converted to Passenger Car Equivalents (PCE) by the following formula:

$$PCE = [\text{Volume of Passenger Vehicles}] + 2 \times [\text{Volume of Trucks}]$$

Queuing will be calculated with the following formula:

$$L = L_0 + \frac{(V - C) * 1\,hr}{(k * N)}$$

Where L = *Length of Queue for Specified Hour (mi)*
L_0 = *Length of Queue in the Hour Prior to Specified Hour (mi)*
V = *Hourly Volume (PCE/hr)*
C = *Hourly Capacity (PCE/hr)*
k = *Jam Density (PCE/mi/lane)*
N = *Number of Storage Lanes Upstream of Restriction (lanes)*

The equation considers if the volume of vehicles is greater than the capacity of the road segment under different conditions. If volume does exceed capacity, then the jam density and number of lanes prior to the work zone will be added to the previous hour's queue to determine the total queue for that given hour. If volume does not exceed capacity, then the magnitude by which capacity is greater than the volume informs how much of the previous hour's queue can disipate during the specified hour. The L and L_0 terms can never be less than zero and the default value for k is 190 and should remain so unless otherwise allowed by the WZ Safety Section.

Due to circular references an hour on one day of the week was selected to exclude the L_0 term from the formula. Wednesday at 2 am was selected since there are other representative days of work on a 'weekday' evening continuing into another 'weekday' morning such as Monday evening into Tuesday morning. This is only an issue if there is queuing at 1 am Wednesday, which is often very unlikely.

OUTPUT TO PDF

Hold the "Ctrl" key while in the "Report" tab and select any applicable "Chart" tabs. Create a PDF by using a PDF print driver (such as Adobe Acrobat or CutePDF) or by using a COM Add-in (such as Adobe PDF Maker). Remove any unnecessary pages from the PDF. If pictures are lower resolution than they appear in excel, change the pdf print settings to turn off 'downsizing'.

LINKS

- INDOT Traffic Count Database System (TCDS)
- INDOT Adjustment Factors (Use the latest version)
- INDOT Hourly Day of the Week Conversion Factors
- INDOT Work Zone Safety Section Web Site

SUPPORT

Please direct questions or requests for assistance to:
Adam Tyra AdTyra@indot.in.gov

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

USER INPUT

INDOT Queuing Analysis v1_29 (1).xlsx - Excel

User Input

INSTRUCTIONS:

Fill in the cells with BLUE text.

▼ Indicates cell has a pull down menu.

CONTACT INFORMATION

Requestor:	Who requested the exception
Requestor's Position:	Requestor's position
Analyst:	Person Preparing this Analysis
Analyst's Position:	Analyst's position

ROUTE INFORMATION

Route:	I-XX
Milemarker(s):	MM XXX.XX
Rural/Urban (*see 'About' tab*):	
Positive Direction:	
Negative Direction:	

The convention for the "Positive" and "Negative" directions are always in the ascending and descending directions of the mile markers, respectively. Typically, North or East are the "Positive" directions and South and West are the "Negative" but not in all cases (see portions of I-465).

WORK INFORMATION

Work Type:	
Contract Number (if applicable):	X-XXXXX
Work Description:	Work Description

Provide a brief description of the nature of the work that will inform whether the requested times are appropriate and necessary.

Planned Month:	
Planned Year:	999999

If the expected month of work is uncertain, select either JUN for Urban locations and JUL for Rural locations since those are the most conservative cases.

Permanent Speed Limit (mph):	70
Work Zone Speed Limit (mph):	45
Existing Lane Width (ft):	12
Work Zone Lane Width (ft):	12
Type of Channelizing Devices:	Typically Construction Drums, Cones or Barrier Wall.

Typically Drums, Cones, or Barrier Wall.

Additional Information:	Enter a description

Enter pertinent additional information, such as a description of the segment being covered by this spreadsheet.

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

RAW WEEKDAY DATA

INDOT Queuing Analysis v1_29 (1).xlsx - Excel

INSTRUCTIONS:

See the 'About' tab for instruction on accessing and downloading weekday traffic counts from TCDS.

From the downloaded file for Weekdays, Copy and Paste the TCDS Volumes (including header) for Weekdays into this tab.

Specifically: copy range A2:BM91 from the TCDS file into A2:BM91 of this file.

Check Data Source, Potentially Weekend Counts Instead of Weekday

About | User Input | **Raw Weekday Hourly Traffic Vols** | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

RAW WEEKEND DATA

INDOT Queuing Analysis v1_29 (1).xlsx - Excel

FILE | Main | Macros | MK Edit | HOME | INSERT | PAGE LAYOUT | FORMULAS | DATA | REVIEW | VIEW | DEVELOPER | ACROBAT | POWERPIVOT

Kachler, Mischa

A2

INSTRUCTIONS:

See the 'About' tab for instruction on accessing and downloading weekend traffic counts from TCDS, if available.

If there are NO weekend counts in TCDS for this particular count station then skip this tab and continue with the "Weekend Adjustment Factors" tab.

If there are weekend counts, Copy the TCDS Volumes (including header) from the downloaded file for Weekends and Paste into this tab.

Specifically: copy range A2:BM91 from the TCDS file into A2:BM91 of this file.

About | User Input | Raw Weekday Hourly Traffic Vols | **Raw Weekend Hourly Traffic Vols** | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

READY 100%

WEEKEND ADJ. FACTORS

INDOT Queuing Analysis v1_29 (1).xlsx - Excel

Weekend Adjustment Factors

INSTRUCTIONS:

Revisions to this tab are necessary only if weekend counts are not available at the count station of interest. See the 'About' tab for information on contriving factors to be entered in the table below.

If Weekend Counts are available and have been pasted to the 'Raw Weekend Hourly Volumes' tab, then all factors below shall be set equal to 1.

The formula below explains how the factors will be used in subsequent calculations.

Formula: $V_d = f * V_0$

Where:

V_d = *Volume for specific hourly weekend day*

V_0 = *Volume for specific hour from weekday counts*

f = *Factor specified below*

Source: Provide the source of the factors with brief description/justification

There does not appear to be raw weekend data. Provide factors in the table, below.

	Friday		Saturday		Sunday	
Time	Negative/ bound Direction	Positive/ bound Direction	Negative/ bound Direction	Positive/ bound Direction	Negative/ bound Direction	Positive/ bound Direction
12	1.000	1.000	1.000	1.000	1.000	1.000
1	1.000	1.000	1.000	1.000	1.000	1.000
2	1.000	1.000	1.000	1.000	1.000	1.000
3	1.000	1.000	1.000	1.000	1.000	1.000
4	1.000	1.000	1.000	1.000	1.000	1.000
5	1.000	1.000	1.000	1.000	1.000	1.000
6	1.000	1.000	1.000	1.000	1.000	1.000
7	1.000	1.000	1.000	1.000	1.000	1.000
8	1.000	1.000	1.000	1.000	1.000	1.000
9	1.000	1.000	1.000	1.000	1.000	1.000
10	1.000	1.000	1.000	1.000	1.000	1.000
11	1.000	1.000	1.000	1.000	1.000	1.000
12	1.000	1.000	1.000	1.000	1.000	1.000
1	1.000	1.000	1.000	1.000	1.000	1.000
2	1.000	1.000	1.000	1.000	1.000	1.000
3	1.000	1.000	1.000	1.000	1.000	1.000
4	1.000	1.000	1.000	1.000	1.000	1.000
5	1.000	1.000	1.000	1.000	1.000	1.000
6	1.000	1.000	1.000	1.000	1.000	1.000
7	1.000	1.000	1.000	1.000	1.000	1.000
8	1.000	1.000	1.000	1.000	1.000	1.000
9	1.000	1.000	1.000	1.000	1.000	1.000
10	1.000	1.000	1.000	1.000	1.000	1.000
11	1.000	1.000	1.000	1.000	1.000	1.000

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

INDOT ADJ. FACTORS

INDOT Queuing Analysis v1_29 (1).xlsx - Excel

INDOT Adjustment Factors

INSTRUCTIONS:
Update this tab to the most recent factors available (see 'Links' section on the 'About' tab). If they are current, then no additional action is needed in this tab. To update data on this tab, enter the date of the "Latest INDOT Traffic Adjustment Factors." Then enter the appropriate "Urban - Interstate" and "Rural - Interstate" seasonal and annual growth factors into the yellow highlighted cells.

Adjustment Factor Year: 2018
Current Year: 2020

Seasonal Adjustment Factors (5 yr Average)

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Most Cons. Month
Urban	1.176	1.080	1.008	0.991	0.974	0.940	0.950	0.953	0.984	0.969	0.999	1.045	JUN
Rural	1.249	1.164	1.040	1.005	0.955	0.905	0.894	0.919	0.969	0.964	1.012	1.078	JUL

Denotes most conservative month for given category

Annual Growth Factors

Year From	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Urban:													
2018 Factor	1.115	1.094	1.090	1.074	1.065	1.077	1.055	1.009	1.006	1.014	1.000	n/a	n/a
2020 Factor	1.137	1.116	1.112	1.096	1.086	1.099	1.076	1.029	1.026	1.034	1.020	1.010	1.000
Rural:													
2018 Factor	1.070	1.079	1.083	1.081	1.060	1.062	1.046	1.004	0.991	0.999	1.000	n/a	n/a
2020 Factor	1.092	1.101	1.105	1.103	1.081	1.083	1.067	1.024	1.011	1.019	1.020	1.010	1.000

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

HOURLY VOLUMES (PCEs)

INDOT Queuing Analysis v1_29 (1).xlsx - Excel

Hourly Volumes

INSTRUCTIONS:

Inspect this tab for reasonable hourly volume results.

Count Information:

Count Station Number:	
Rural/Urban:	
Year of Count:	Invalid Date
Month of Count:	Invalid Date
Annual Adj. Factor:	
Monthly Adj. Factor:	

Planned Work Information:

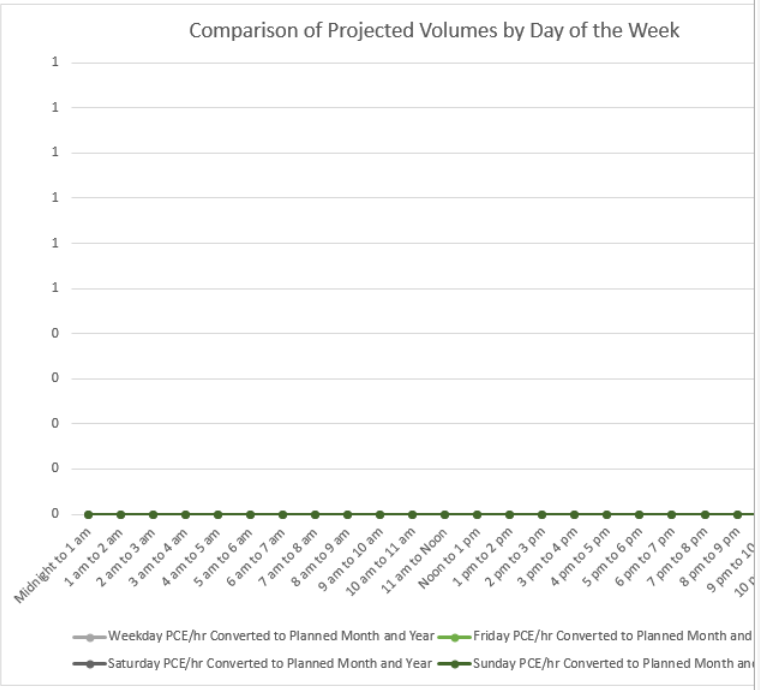
Planned Year:	Invalid Date
Planned Month:	Invalid Date
Annual Adj. Factor:	
Monthly Adj. Factor:	

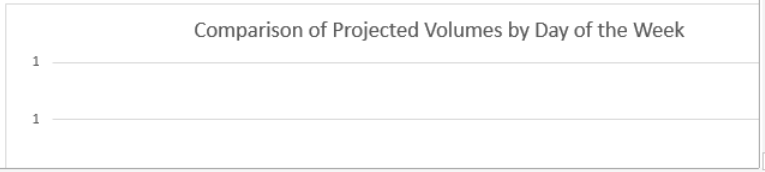
% Reduction due to Detouring Traffic:

bound Monday-Thursday:	0%
bound Friday:	0%
bound Saturday-Sunday:	0%

bound Volumes

Time	Weekday			Friday			Saturday			Sunday		
	Raw PCE/hr	PCE/hr Annualized to Current Year	PCE/hr Converted to Planned Month and Year	Raw PCE/hr	PCE/hr Annualized to Current Year	PCE/hr Converted to Planned Month and Year	Raw PCE/hr	PCE/hr Annualized to Current Year	PCE/hr Converted to Planned Month and Year	Raw PCE/hr	PCE/hr Annualized to Current Year	PCE/hr Converted to Planned Month and Year
Midnight to 1 am				0			0			0		
1 am to 2 am				0			0			0		
2 am to 3 am				0			0			0		
3 am to 4 am				0			0			0		
4 am to 5 am				0			0			0		
5 am to 6 am				0			0			0		
6 am to 7 am				0			0			0		
7 am to 8 am				0			0			0		
8 am to 9 am				0			0			0		
9 am to 10 am				0			0			0		
10 am to 11 am				0			0			0		
11 am to Noon				0			0			0		
Noon to 1 pm				0			0			0		
1 pm to 2 pm				0			0			0		
2 pm to 3 pm				0			0			0		
3 pm to 4 pm				0			0			0		
4 pm to 5 pm				0			0			0		
5 pm to 6 pm				0			0			0		
6 pm to 7 pm				0			0			0		
7 pm to 8 pm				0			0			0		
8 pm to 9 pm				0			0			0		
9 pm to 10 pm				0			0			0		
10 pm to 11 pm				0			0			0		
11 pm to Midnight				0			0			0		





About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

INDOT Queuing Analysis v1_29 (1).xlsx - Excel
FILE Main Macros MK Edit HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW DEVELOPER ACROBAT POWERPIVOT
Kachler, Mischa

WORK INFORMATION

Work Information

INSTRUCTIONS:
Enter the expected hourly capacities for the work zone for each segment/direction/alternative. Capacities must be converted from PCE/hr/ln to PCE/hr by multiplying by number of available lanes for a given alternative on a particular day and time. For capacities, refer to the tables at the right, which are based on Appendix C of the IHCP. The recommended non-work capacities have been derived below which can be deviated from, but justification will be necessary.

Permanent Speed: 70 mph
10% Urban Increase: No
Permanent Lanes B: X
Recommended B
Non-work Capacity: #VALUE!

Non-Work Zone Capacities (PCE/hr/ln)	
Permanent Speed (mph)	Capacity
45	1900
50	2075
55	2250
60	2300
65	2350
70	2400
75	2400

Work Zone Capacities (PCE/hr/ln)				
# Pre-work Open Lanes	# Work Zone Open Lanes	Lane Width		
		12'-11'	10.9'-10.0'	9.9'-9.0'
2	1	1550	1400	1325
3	2	1600	1450	1375
3	1	1475	1350	1275
4	3	1650	1500	1425
4	2	1550	1400	1325
4	1	1425	1325	1250

Capacities for Alternative 1 for bound (Enter a brief, distinguishing description.)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
1 am to 2 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
2 am to 3 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
3 am to 4 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
4 am to 5 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
5 am to 6 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
6 am to 7 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
7 am to 8 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
8 am to 9 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
9 am to 10 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
10 am to 11 am	99999999	99999999	99999999	99999999	99999999	99999999	99999999
11 am to Noon	99999999	99999999	99999999	99999999	99999999	99999999	99999999
Noon to 1 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
1 pm to 2 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
2 pm to 3 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
3 pm to 4 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
4 pm to 5 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
5 pm to 6 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
6 pm to 7 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
7 pm to 8 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
8 pm to 9 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
9 pm to 10 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
10 pm to 11 pm	99999999	99999999	99999999	99999999	99999999	99999999	99999999
11 pm to Midnight	99999999	99999999	99999999	99999999	99999999	99999999	99999999

Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information
READY 100%

QUEUING CALCULATIONS

INDOT Queuing Analysis v1_29 (1).xlsx - Excel

Queuing Calculations

INSTRUCTIONS:

Review the results in the table(s) for whether they appear reasonable and within acceptable policy limits (See Appendix C of the IHCP). If there are queues outside policy limits, reconsider if there are any steps that can be taken to mitigate queuing.

Jam Density (k) [Default = 190]	190
# Pre-work Lanes for SB Direction (N)	X
# Pre-work Lanes for NB Direction (N)	X

Anticipated Queuing (mi) for Alternative 1 for bound Traffic (Enter a brief, distinguishing description.)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1 am to 2 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2 am to 3 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
3 am to 4 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
4 am to 5 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5 am to 6 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
6 am to 7 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
7 am to 8 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
8 am to 9 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
9 am to 10 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10 am to 11 am	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
11 am to Noon	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Noon to 1 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1 pm to 2 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2 pm to 3 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
3 pm to 4 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
4 pm to 5 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5 pm to 6 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
6 pm to 7 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
7 pm to 8 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
8 pm to 9 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
9 pm to 10 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10 pm to 11 pm	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
11 pm to Midnight	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced

INDOT Queuing Analysis v1_29 (1).xlsx - Excel
FILE Main Macros MK Edit HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW DEVELOPER ACROBAT POWERPIVOT
Kachler, Mischa
A1 Report for IHCP Queuing Analysis

Report for IHCP Queuing Analysis

Prepared by: **Person Preparing this Analysis** Position: **Analyst's position**
Prepared for: **Who requested the exception** Position: **Requestor's position**

Work Zone Information

Route:	I-XX
Mile marker:	MM XXX.XX
Positive Direction:	0
Contract:	X-XXXXX
Work Year:	999999
Work Month:	0
Work Type:	0
Work Description:	Work Description
Permanent Speed Limit:	70 mph
Work Zone Speed Limit:	45 mph
Workzone Lane Width:	12 ft
Channelizing Devices:	Typically Construction Drums, Cones or Barrier Wall.
Additional Information:	Enter a description

Queuing Formula

$$L = L_0 + \frac{(V - C) * 1\,hr}{(k * N)}$$

Where:

- L= Length of Queue for Specified Hour (mi)
- L_0= Length of Queue in the Hour Prior to Specified Hour (mi)
- V= Hourly Volume (PCE/hr)
- C= Hourly Capacity (PCE/hr)
- k= Jam Density (PCE/mi/lane)
- N= Number of Storage Lanes Upstream of Restriction (lanes)

Jam Density (k)= 190 PCE/mi/ln
N for B= X

Traffic Information

Count Information Count Station Number:

Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced) | Report | ChartAlt1-1 | ChartA ...
READY 100%

REPORT

USER INPUT (PT 1)

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel

User Input

INSTRUCTIONS:

Fill in the cells with BLUE text.

▼ Indicates cell has a pull down menu.

CONTACT INFORMATION

Requestor:	Anne Individual
Requestor's Position:	Engineer
Analyst:	Mischa Kachler
Analyst's Position:	Engineer

ROUTE INFORMATION

Route:	I-65
Milemarker(s):	MM 107
Rural/Urban (*see 'About' tab*):	Urban
Positive Direction:	North
Negative Direction:	South

The convention for the "Positive" and "Negative" directions are always in the ascending and descending directions of the mile markers, respectively. Typically, North or East are the "Positive" directions and South and West are the "Negative" but not in all cases (see portions of I-465).

WORK INFORMATION

Work Type:	Design
Contract Number (if applicable):	R-12345
Work Description:	HMA Resurfacing

Provide a brief description of the nature of the work that will inform whether the requested times are appropriate and necessary.

Planned Month:	JUN
Planned Year:	2024

If the expected month of work is uncertain, select either JUN for Urban locations and JUL for Rural locations since those are the most conservative cases.

Permanent Speed Limit (mph):	55
Work Zone Speed Limit (mph):	45
Existing Lane Width (ft):	12
Work Zone Lane Width (ft):	12
Type of Channelizing Devices:	Construction drums or moveable TTB

Typically Drums, Cones, or Barrier Wall.

Additional Information:	3-lane section of urban I-65 in Marion County south of downtown.

Enter pertinent additional information, such as a description of the segment being covered by this spreadsheet.

WORK INFORMATION

Work Type:	Design
Contract Number (if applicable):	R-12345
Work Description:	HMA Resurfacing

Provide a brief description of the nature of the work that will inform whether the requested times are appropriate and necessary.

Planned Month:	JUN
Planned Year:	2024

If the expected month of work is uncertain, select either JUN for Urban locations and JUL for Rural locations since those are the most conservative cases.

Permanent Speed Limit (mph):	55
Work Zone Speed Limit (mph):	45
Existing Lane Width (ft):	12
Work Zone Lane Width (ft):	12
Type of Channelizing Devices:	Construction drums or moveable TTB

Typically Drums, Cones, or Barrier Wall.

Additional Information:	3-lane section of urban I-65 in Marion County south of downtown.

Enter pertinent additional information, such as a description of the segment being covered by this spreadsheet.

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

USER INPUT (PT 2)

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel

Additional Information:
Enter pertinent additional information, such as a description of the segment being covered by this spreadsheet.

3-lane section of urban I-65 in Marion County south of downtown.

DETOURED TRAFFIC

Percent Reduction due to Detouring Traffic

Reductions are no longer typically allowed. Detoured Traffic values shall be the default of 0%. Proposed diversions should be discussed with your reviewer prior to submittal.

Northbound Monday-Thursday:	0%
Northbound Friday:	0%
Northbound Saturday-Sunday:	0%

Queuing Calculations

Jam Density (k) [Default = 190]	190

If the Jam Density is changed from the default of 190, a justification needs to be included with the analysis.

# Pre-work Lanes for NB Direction (N)	3

ANALYSES

Number of Alternatives being analyzed: 3

For each direction of each alternative, enter a brief description below for the closure that will distinguish it from the other alternatives, such as "Nighttime", "Weekend", or "No Work Fridays".

Description for Alternative 1 NB:	Double lane closure, 9 PM to 6 AM
Description for Alternative 2 NB:	Double lane closure, Adjusted Nighttime Hrs (1)
Description for Alternative 3 NB:	Double lane closure, Adjusted Nighttime Hrs (2)

DETOURED TRAFFIC

Percent Reduction due to Detouring Traffic

Reductions are no longer typically allowed. Detoured Traffic values shall be the default of 0%. Proposed diversions should be discussed with your reviewer prior to submittal.

Northbound Monday-Thursday:	0%
Northbound Friday:	0%
Northbound Saturday-Sunday:	0%

Queuing Calculations

Jam Density (k) [Default = 190]	190

If the Jam Density is changed from the default of 190, a justification needs to be included with the analysis.

# Pre-work Lanes for NB Direction (N)	3

ANALYSES

Number of Alternatives being analyzed: 3

For each direction of each alternative, enter a brief description below for the closure that will distinguish it from the other alternatives, such as "Nighttime", "Weekend", or "No Work Fridays".

Description for Alternative 1 NB:	Double lane closure, 9 PM to 6 AM
Description for Alternative 2 NB:	Double lane closure, Adjusted Nighttime Hrs (1)
Description for Alternative 3 NB:	Double lane closure, Adjusted Nighttime Hrs (2)

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

COPY RAW TCDS DATA

INDOT TCDS RAW TRAFFIC DATA - 04302018_05012018 (Sta 971290).xlsx - Excel

FILE | Main | Macros | MK Edit | HOME | INSERT | PAGE LAYOUT | FORMULAS | DATA | REVIEW | VIEW | DEVELOPER | ACROBAT | POWERPIVOT

Kachler, Mischa

A2 | Location ID

Location ID	971290	Location On	I 65 1.88 MI NORTH OF KEYSTONE AVE	Community	Indianapolis
Counted By	TCDS_Combined	Direction		County	MARION
Start Date	4/30/2018	End		Module	
Start Time	11:00:00 AM	Direction	Z-WAY	Agency	Indiana DOT
AADT		Source	TCDS_DIM_IMPORT_COMBINE	Owner ID	jar

FHWA-Scheme F Classification

Date	Begin Interval Time	[1] Motor Cycle	[2] Car	[3] Pick up	[4] Bus	[5] 2A SU	[6] 3A SU	[7] >3A SU	[8] <5A 2U	[9] 5A 2U	[10] >5A 2U	[11] <6A >2U	[12] 6A >2U	[13] <6A >2U	[14] >6A >2U	[15]	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
Monday, April 30, 2018	12:00 AM																0	0	0	0
4/30/2018	1:00 AM																0	0	0	0
4/30/2018	2:00 AM																0	0	0	0
4/30/2018	3:00 AM																0	0	0	0
4/30/2018	4:00 AM																0	0	0	0
4/30/2018	5:00 AM																0	0	0	0
4/30/2018	6:00 AM																0	0	0	0
4/30/2018	7:00 AM																0	0	0	0
4/30/2018	8:00 AM																0	0	0	0
4/30/2018	9:00 AM																0	0	0	0
4/30/2018	10:00 AM																0	0	0	0
4/30/2018	11:00 AM	5	3425	248	5	0	215	0	0	311	0	0	0	0	0	0	4144	248	311	4703
4/30/2018	12:00 PM	16	3762	515	11	0	224	0	0	255	0	0	0	0	0	0	4337	252	255	4843
4/30/2018	1:00 PM	7	3895	482	26	0	205	0	0	305	0	0	0	0	0	0	4395	287	305	4987
4/30/2018	2:00 PM	11	4616	454	22	0	157	0	0	278	0	0	0	0	0	0	5121	215	278	5614
4/30/2018	3:00 PM	18	5237	572	17	0	172	0	0	311	0	0	0	0	0	0	5719	189	311	7219
4/30/2018	4:00 PM	23	6741	365	27	0	138	0	0	262	0	0	0	0	0	0	7135	157	262	8154
4/30/2018	5:00 PM	13	6579	225	15	0	127	0	0	262	0	0	0	0	0	0	7357	140	262	7763
4/30/2018	6:00 PM	24	4574	181	2	0	75	0	0	278	0	0	0	0	0	0	4872	80	278	5232
4/30/2018	7:00 PM	13	3111	128	16	0	46	0	0	275	0	0	0	0	0	0	3358	68	275	3801
4/30/2018	8:00 PM	14	2555	148	12	0	45	0	0	285	0	0	0	0	0	0	2928	57	285	3182
4/30/2018	9:00 PM	5	2257	73	3	0	48	0	0	223	0	0	0	0	0	0	2515	45	223	2781
4/30/2018	10:00 PM	5	1747	7	4	0	48	0	0	231	0	0	0	0	0	0	1753	44	231	2028
4/30/2018	11:00 PM	1	1132	37	2	0	28	0	0	188	0	0	0	0	0	0	1238	32	188	1448
Day Total		161	88	88	88	0	88	0	0	88	0	0	0	0	0	0	56425	1672	3373	888

Location ID	971290_BEG	Location On	I 65 1.88 MI NORTH OF KEYSTONE AVE	Community	Indianapolis
Counted By	TCDS_Combined	Direction		County	MARION
Start Date	4/30/2018	End		Module	
Start Time	11:00:00 AM	Direction	BEG	Agency	Indiana DOT
AADT		Source	TCDS_DIM_IMPORT_COMBINE	Owner ID	jar

FHWA-Scheme F Classification

Date	Begin Interval Time	[1] Motor Cycle	[2] Car	[3] Pick up	[4] Bus	[5] 2A SU	[6] 3A SU	[7] >3A SU	[8] <5A 2U	[9] 5A 2U	[10] >5A 2U	[11] <6A >2U	[12] 6A >2U	[13] <6A >2U	[14] >6A >2U	[15]	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
4/30/2018	12:00 AM																0	0	0	0
4/30/2018	1:00 AM																0	0	0	0
4/30/2018	2:00 AM																0	0	0	0
4/30/2018	3:00 AM																0	0	0	0
4/30/2018	4:00 AM																0	0	0	0
4/30/2018	5:00 AM																0	0	0	0
4/30/2018	6:00 AM																0	0	0	0
4/30/2018	7:00 AM																0	0	0	0
4/30/2018	8:00 AM																0	0	0	0
4/30/2018	9:00 AM																0	0	0	0
4/30/2018	10:00 AM																0	0	0	0
4/30/2018	11:00 AM	4	1658	337	3	0	35	0	0	147	0	0	0	0	0	0	1935	35	147	2242
4/30/2018	12:00 PM	5	1883	358	7	0	183	0	0	155	0	0	0	0	0	0	2246	190	155	2592
4/30/2018	1:00 PM	2	2032	457	15	0	37	0	0	141	0	0	0	0	0	0	2535	110	141	2558
4/30/2018	2:00 PM	7	2638	394	18	0	85	0	0	148	0	0	0	0	0	0	2979	95	148	3214
4/30/2018	3:00 PM	6	3754	544	2	0	34	0	0	155	0	0	0	0	0	0	4404	36	155	4655
4/30/2018	4:00 PM	14	4718	658	12	0	51	0	0	137	0	0	0	0	0	0	5384	63	137	5584
4/30/2018	5:00 PM	13	4412	638	6	0	72	0	0	142	0	0	0	0	0	0	5115	78	142	5335
4/30/2018	6:00 PM	11	2657	332	4	0	38	0	0	148	0	0	0	0	0	0	3000	55	148	3187
4/30/2018	7:00 PM	12	1775	257	2	0	23	0	0	155	0	0	0	0	0	0	2044	25	155	2225
4/30/2018	8:00 PM	5	1485	183	5	0	18	0	0	125	0	0	0	0	0	0	1693	23	125	1842
4/30/2018	9:00 PM	5	1134	45	0	0	14	0	0	134	0	0	0	0	0	0	1244	14	134	1392
4/30/2018	10:00 PM	1	546	5	2	0	23	0	0	138	0	0	0	0	0	0	553	25	138	1122
4/30/2018	11:00 PM	1	665	23	2	0	18	0	0	185	0	0	0	0	0	0	695	18	185	892
Day Total		89	0	0	71	0	730	0	0	88	0	0	0	0	0	0	34036	801	1805	888

Location ID	971290_POS	Location On	I 65 1.88 MI NORTH OF KEYSTONE AVE	Community	Indianapolis
Counted By	TCDS_Combined	Direction		County	MARION
Start Date	4/30/2018	End		Module	
Start Time	11:00:00 AM	Direction	POS	Agency	Indiana DOT
AADT		Source	TCDS_DIM_IMPORT_COMBINE	Owner ID	jar

FHWA-Scheme F Classification

Date	Begin Interval Time	[1] Motor Cycle	[2] Car	[3] Pick up	[4] Bus	[5] 2A SU	[6] 3A SU	[7] >3A SU	[8] <5A 2U	[9] 5A 2U	[10] >5A 2U	[11] <6A >2U	[12] 6A >2U	[13] <6A >2U	[14] >6A >2U	[15]	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
4/30/2018	12:00 AM																0	0	0	0
4/30/2018	1:00 AM																0	0	0	0
4/30/2018	2:00 AM																0	0	0	0
4/30/2018	3:00 AM																0	0	0	0
4/30/2018	4:00 AM																0	0	0	0
4/30/2018	5:00 AM																0	0	0	0
4/30/2018	6:00 AM																0	0	0	0
4/30/2018	7:00 AM																0	0	0	0
4/30/2018	8:00 AM																0	0	0	0
4/30/2018	9:00 AM																0	0	0	0
4/30/2018	10:00 AM																0	0	0	0
4/30/2018	11:00 AM	4	1771	373	2	0	117	0	0	164	0	0	0	0	0	0	2148	119	164	2431
4/30/2018	12:00 PM	11	1873	261	4	0	118	0	0	128	0	0	0	0	0	0	2145	122	128	2393
4/30/2018	1:00 PM	3	1783	288	7	0	84	0	0	154	0	0	0	0	0	0	2080	91	154	2325
4/30/2018	2:00 PM	4	1978	158	12	0	112	0	0	158	0	0	0	0	0	0	2142	124	158	2386
4/30/2018	3:00 PM	4	1983	328	15	0	78	0	0	156	0	0	0	0	0	0	2315	93	156	2564
4/30/2018	4:00 PM	15	2055	385	15	0	79	0	0	125	0	0	0	0	0	0	2455	94	125	2673
4/30/2018	5:00 PM	6	2161	85	7	0	55	0	0	128	0	0	0	0	0	0	2252	62	128	2494
4/30/2018	6:00 PM	13	1744	143	6	0	41	0	0	122	0	0	0	0	0	0	1875	47	122	2045
4/30/2018	7:00 PM	7	1338	161	12	0	23	0	0	115	0	0	0	0	0	0	1506	35	115	1656
4/30/2018	8:00 PM	5	1075	153	7	0	25	0	0	85	0	0	0	0	0	0	1240	32	85	1357
4/30/2018	9:00 PM	3	1045	28	3	0	26	0	0	85	0	0	0	0	0	0	1074	29	85	1188
4/30/2018	10:00 PM	1	881	1	2	0	11	0	0	53	0	0	0	0	0	0	882	13	53	948
4/30/2018	11:00 PM	1	527	8	0	0	18	0	0	83	0	0	0	0	0	0	535	18	83	636
Day Total		72	0	0	0	0	779	0	0	88	0	0	0	0	0	0	22389	871	1563	888

Date	Begin Interval Time	[1] Motor Cycle	[2] Car	[3] Pick up	[4] Bus	[5] 2A SU	[6] 3A SU	[7] >3A SU	[8] <5A 2U	[9] 5A 2U	[10] >5A 2U	[11] <6A >2U	[12] 6A >2U	[13] <6A >2U	[14] >6A >2U	[15]	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
Tuesday, May 01, 2018	12:00 AM	0	728	16	1	0	0	0	0	167	0	0	0	0	0	0	745	0	167	912
5/1/2018	1:00 AM	0	473	13	0	0	33	0	0	145	0	0	0	0	0	0	486	33	145	664
5/1/2018	2:00 AM	0	387	4	0	0	28	0	0	152	0	0	0	0	0	0	391	28	152	571
5/1/2018	3:00 AM	0	383	17	0	0	38	0	0	143	0	0	0	0	0	0	400	38	143	581
5/1/2018	4:00 AM	1	718	16	3	0	24	0	0	183	0	0	0	0	0	0	739	24	183	946
5/1/2018	5:00 AM	3	1332	74	12	0	58	0	0	228	0	0	0	0	0	0	1472	70	228	1762
5/1/2018	6:00 AM	31	4428	833	23	0	117	0	0	226	0	0	0	0	0	0	5288	148	226	5664
5/1/2018	7:00 AM	28	5183	734	14	0	83	0	0	213	0	0	0	0	0	0	5797	183	213	7193
5/1/2018	8:00 AM	14	5288	823	14	0	157	0	0	333	0	0	0	0	0	0	6141	181	333	6655
5/1/2018	9:00 AM	17	5658	727	18	0	232	0	0	354	0	0	0	0	0	0	6454	322	354	7130
5/1/2018	10:00 AM	13	5168	537	11	0	218	0	0	413	0	0	0	0	0	0	5878	221	413	6512
5/1/2018	11:00 AM	24	5328	548	3	0	213	0	0	353	0	0	0	0	0	0	5903	228	353	6276
5/1/2018	12:00 PM	13	5535	541	11	0	188	0	0	368	0	0	0	0	0	0	6100	193	368	6743
5/1/2018	1:00 PM	23	5541	538	23	0	155	0	0	368	0	0	0	0	0	0	6264	218	368	6849
5/1/2018	2:00 PM	33	4211	883	23	0	287	0	0	387	0	0	0	0	0	0	5155	232	387	5774
5/1/2018	3:00 PM	48	5414	1117	23	0	285	0	0	354	0	0	0	0	0	0	6640	285	354	7279
5/1/2018	4:00 PM	35	5886	833	14	0	153	0	0	358	0	0	0	0	0	0	7815	173	358	8346
5/1/2018	5:00 PM	33	5815	514	15	0	112	0	0	384	0	0	0	0	0	0	7468	127	384	7979
5/1/2018	6:00 PM	23	4422	213	14	0	184	0	0	328	0	0	0	0	0	0	5172	198	328	5698
5/1/2018	7:00 PM	33	3323	134	8	0	57	0	0	278	0	0	0	0	0	0	3798	65	278	4131
5/1/2018	8:00 PM	28	2524	486	11	0	47	0	0	288	0	0	0	0	0	0	3053	58	288	3399
5/1/2018	9:00 PM	5	2443	82	2	0	34	0	0	285	0	0	0	0	0	0	2537	36	285	2858
5/1/2018	10:00 PM	7	1876	18	4	0	23	0	0	285	0	0	0	0	0	0	1904	23	285	2213
5/1/2018	11:00 PM	3	1218	18	1	0	28	0	0	154	0	0	0	0	0	0	1248	28	154	1430
Day Total		403	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83529	2394	6464	888

Date	Begin Interval Time	[1] Motor Cycle	[2] Car	[3] Pick up	[4] Bus	[5] 2A SU	[6] 3A SU	[7] >3A SU	[8] <5A 2U	[9] 5A 2U	[10] >5A 2U	[11] <6A >2U	[12] 6A >2U	[13] <6A >2U	[14] >6A >2U	[15]	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
5/1/2018	12:00 AM	0	423	0	1	0	5	0	0	83	0	0	0	0	0	0	437	5	83	526
5/1/2018	1:00 AM	0	283	4	0	0	20	0	0	72	0	0	0	0	0	0	287	20	72	367
5/1/2018	2:00 AM	0	241	3	0	0	28	0	0	75	0	0	0	0	0	0	244	28	75	347
5/1/2018	3:00 AM	0	168	17	0	0	24	0	0	66	0	0	0	0	0	0	177	24	66	267
5/1/2018	4:00 AM	1	263	8	2	0	14	0	0	182	0	0	0	0	0	0	263	16	182	461
5/1/2018	5:00 AM	1	503	11	0	0	33	0	0	122	0	0	0	0	0	0	521	47	122	690
5/1/2018	6:00 AM	4	1001	173	12	0	72	0	0	118	0	0	0	0	0	0	1258	84	118	1460
5/1/2018	7:00 AM	4	1751	232	18	0	56	0	0	113	0	0	0	0	0	0	2057	56	113	2226
5/1/2018	8:00 AM	3	1427	216	3	0	32	0	0	157	0	0	0	0	0	0	1726	188	157	1871
5/1/2018	9:00 AM	4	1418	233	5	0	184	0	0	183	0	0	0	0	0	0	1721	189	183	2093
5/1/2018	10:00 AM	5	1425	317	4	0	111	0	0	133	0	0	0	0	0	0	1745	115	133	2013
5/1/2018	11:00 AM	15	1632	284	6	0	117	0	0	188	0	0	0	0	0	0	1935	123	188	2246
5/1/2018	12:00 PM	5	1887	345	3	0	185	0	0	164	0	0	0	0	0	0	2238	118	164	2524
5/1/2018	1:00 PM	3	1919	385	15	0	183	0	0	183	0	0	0	0	0	0	2309	183	183	2541
5/1/2018	2:00 PM	14	2326	437	8	0	184	0	0	188	0	0	0	0	0	0	2777	192	188	3177
5/1/2018	3:00 PM	31	3536	833	14	0	88	0	0	183	0	0	0	0	0	0	4402	183	183	4768
5/1/2018	4:00 PM	27	4778	545	6	0	66	0	0	165	0	0	0	0	0	0	5442	72	165	5679
5/1/2018	5:00 PM	25	4718	578	5	0	45	0	0	156	0	0	0	0	0	0	5315	50	156	5519
5/1/2018	6:00 PM	17	2687	435	2	0	41	0	0	163	0	0	0	0	0	0	3133	43	163	3343
5/1/2018	7:00 PM	15	1912	264	2	0	28	0	0	151	0	0	0	0	0	0	2191	22	151	2364
5/1/2018	8:00 PM	15	1486	212	5	0	24	0	0	38	0	0	0	0	0	0	1713	26	38	1837
5/1/2018	9:00 PM	5	1372	66	5	0	16	0	0	55	0	0	0	0	0	0	1448	16	55	1518
5/1/2018	10:00 PM	7	1287	18	5	0	14	0	0	156	0	0	0	0	0	0	1313	14	156	1483
5/1/2018	11:00 PM	3	733	7	0	0	11	0	0	188	0	0	0	0	0	0	743	11	188	934
Day Total		205	0	0	0	0	88	0	0	88	0	0	0	0	0	0	45030	1521	3191	888

Date	Begin Interval Time	[1] Motor Cycle	[2] Car	[3] Pick up	[4] Bus	[5] 2A SU	[6] 3A SU	[7] >3A SU	[8] <5A 2U	[9] 5A 2U	[10] >5A 2U	[11] <6A >2U	[12] 6A >2U	[13] <6A >2U	[14] >6A >2U	[15]	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
5/1/2018	12:00 AM	0	231	0	0	0	3	0	0	84	0	0	0	0	0	0	233	3	84	316
5/1/2018	1:00 AM	0	216	15	0	0	7	0	0	74	0	0	0	0	0	0	231	7	74	312
5/1/2018	2:00 AM	0	176	1	0	0	1	0	0	77	0	0	0	0	0	0	177	1	77	255
5/1/2018	3:00 AM	0	223	0	0	0	6	0	0	83	0	0	0	0	0	0	229	6	83	312
5/1/2018	4:00 AM	1	455	16	1	0	7	0	0	84	0	0	0	0	0	0	472	8	84	564
5/1/2018	5:00 AM	3	1483	68	4	0	19	0	0	38	0	0	0	0	0	0	1554	23	38	1615
5/1/2018	6:00 AM	27	3347	666	11	0	45	0	0	188	0	0	0	0	0	0	4046	56	188	4290
5/1/2018	7:00 AM	16	4422	582	4	0	33	0	0	188	0	0	0	0	0	0	4948	37	188	5187
5/1/2018	8:00 AM	11	3751	357	5	0	73	0	0	182	0	0	0	0	0	0	4119	84	182	4385
5/1/2018	9:00 AM	13	2232	428	23	0	188	0	0	171	0	0	0	0	0	0	2673	193	171	2037
5/1/2018	10:00 AM	8	1745	388	7	0	33	0	0	226	0	0	0	0	0	0	2133	186	226	2545
5/1/2018	11:00 AM	5	1625	564	3	0	182	0	0	173	0	0	0	0	0	0	1935	185	173	2277
5/1/2018	12:00 PM	5	1723	256	2	0	87	0	0	156	0	0	0	0	0	0	2038	93	156	2315
5/1/2018	1:00 PM	14	1623	385	7	0	86	0	0	185	0	0	0	0	0	0	2024	93	185	2303
5/1/2018	2:00 PM	21	1683	372	17	0	183	0	0	133	0	0	0	0	0	0	2078	128	133	2337
5/1/2018	3:00 PM	5	1873	358	3	0	115	0	0	183	0	0	0	0	0	0	2245	124	183	2553
5/1/2018	4:00 PM	3	2146	248	0	0	53	0	0	133	0	0	0	0	0	0	2379	184	133	2697
5/1/2018	5:00 PM	14	2837	244	18	0	67	0	0	148	0	0	0	0	0	0	2955	77	148	2580
5/1/2018	6:00 PM	12	1735	284	12	0	63	0	0	157	0	0	0	0	0	0	2031	75	157	2263
5/1/2018	7:00 PM	16	1411	178	5	0	37	0	0	147	0	0	0	0	0	0	1597	43	147	1787
5/1/2018	8:00 PM	5	1138	154	5	0	26	0	0	118	0	0	0	0	0	0	1297	32	118	1447
5/1/2018	9:00 PM	1	1072	15	1	0	17	0	0	165	0	0	0	0	0	0	1089	18	165	1273
5/1/2018	10:00 PM	2	793	5	3	0	13	0	0	83	0	0	0	0	0	0	813	16	83	913
5/1/2018	11:00 PM	1	477	3	1	0	9	0	0	94	0	0	0	0	0	0	488	10	94	584
Day Total		203	0	0	0	0	88	0	0	88	0	0	0	0	0	0	43499	1373	3273	888

Date	Begin Interval Time	[1] Motor Cycle	[2] Car	[3] Pick up	[4] Bus	[5] 2A SU	[6] 3A SU	[7] >3A SU	[8] <5A 2U	[9] 5A 2U	[10] >5A 2U	[11] <6A >2U	[12] 6A >2U	[13] <6A >2U	[14] >6A >2U	[15]	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
Wednesday, May 02, 2018	12:00 AM	0	248	5	0	0	29	0	0	177	0	0	0	0	0	0	254	29	177	454
5/2/2018	1:00 AM	3	453	17	0	0	28	0	0	158	0	0	0	0	0	0	473	28	158	659
5/2/2018	2:00 AM	1	328	12	4	0	3	0	0	184	0	0	0	0	0	0	344	7	184	535
5/2/2018	3:00 AM	1	406	14	2	0	35	0	0	153	0	0	0	0	0	0	421	37	153	612
5/2/2018	4:00 AM	1	675	16	1	0	24	0	0	196	0	0	0	0	0	0	692	25	196	913
5/2/2018	5:00 AM	3	2088	117	3	0	57	0	0	288	0	0	0	0	0	0	2208	60

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel
FILE Main Macros MK Edit HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW DEVELOPER ACROBAT POWERPIVOT
Kachler, Mischa
A2 Location ID

INSTRUCTIONS:
See the 'About' tab for instruction on accessing and downloading weekday traffic counts from TCDS.
From the downloaded file for Weekdays, Copy and Paste the TCDS Volumes (including header) for Weekdays into this tab.
Specifically: copy range A2:BM91 from the TCDS file into A2:BM91 of this file.

Location ID	971290	Located On	I 65 1.00 MI NORTH OF KEYSTONE AVE	Community	Indianapolis
Counted By	TCDS_Combined	Between		County	MARION
Start Date	4/30/2018	And		Module	
Start Time	11:00:00 AM	Direction	2-WAY	Agency	Indiana DOT
AADT		Source	TCDS_BIN_IMPORT_COMBINE	Owner ID	joe

Location ID	971290_NEG
Counted By	TCDS_Combined
Start Date	4/30/2018
Start Time	11:00:00 AM
AADT	

FHWA-Scheme F Classification

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U	(14)	(15)	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
Monday, April 30, 2018	12:00 AM																0	0	0	0
4/30/2018	1:00 AM																0	0	0	0
4/30/2018	2:00 AM																0	0	0	0
4/30/2018	3:00 AM																0	0	0	0
4/30/2018	4:00 AM																0	0	0	0
4/30/2018	5:00 AM																0	0	0	0
4/30/2018	6:00 AM																0	0	0	0
4/30/2018	7:00 AM																0	0	0	0
4/30/2018	8:00 AM																0	0	0	0
4/30/2018	9:00 AM																0	0	0	0
4/30/2018	10:00 AM																0	0	0	0
4/30/2018	11:00 AM	5	3429	710	5	0	213	0	0	311	0	0	0	0	0	0	4144	218	311	4673
4/30/2018	12:00 PM	16	3762	619	11	0	221	0	0	256	0	0	0	0	0	0	4397	232	256	4885
4/30/2018	1:00 PM	7	3801	485	26	0	181	0	0	305	0	0	0	0	0	0	4293	207	305	4805
4/30/2018	2:00 PM	11	4616	494	22	0	197	0	0	270	0	0	0	0	0	0	5121	219	270	5610
4/30/2018	3:00 PM	10	5737	972	17	0	172	0	0	311	0	0	0	0	0	0	6719	189	311	7219
4/30/2018	4:00 PM	29	6741	965	27	0	130	0	0	262	0	0	0	0	0	0	7735	157	262	8154
4/30/2018	5:00 PM	19	6573	775	13	0	127	0	0	262	0	0	0	0	0	0	7367	140	262	7769
4/30/2018	6:00 PM	24	4371	481	7	0	79	0	0	270	0	0	0	0	0	0	4876	86	270	5232
4/30/2018	7:00 PM	19	3111	420	14	0	46	0	0	275	0	0	0	0	0	0	3550	60	275	3885
4/30/2018	8:00 PM	14	2561	348	12	0	43	0	0	209	0	0	0	0	0	0	2923	55	209	3187
4/30/2018	9:00 PM	5	2237	73	3	0	40	0	0	223	0	0	0	0	0	0	2315	43	223	2581
4/30/2018	10:00 PM	1	1747	7	4	0	40	0	0	231	0	0	0	0	0	0	1755	44	231	2030
4/30/2018	11:00 PM	1	1192	37	2	0	20	0	0	188	0	0	0	0	0	0	1230	22	188	1440
Day Total		**161**	**49878**	**6386**	**163**	**0**	**1509**	**0**	**0**	**3373**	**0**	**0**	**0**	**0**	**0**	**0**	**56425**	**1672**	**3373**	**61470**

Date	Begin Interval Time	(1) Motor Cycle	(2) Car
4/30/2018	12:00 AM		
4/30/2018	1:00 AM		
4/30/2018	2:00 AM		
4/30/2018	3:00 AM		
4/30/2018	4:00 AM		
4/30/2018	5:00 AM		
4/30/2018	6:00 AM		
4/30/2018	7:00 AM		
4/30/2018	8:00 AM		
4/30/2018	9:00 AM		
4/30/2018	10:00 AM		
4/30/2018	11:00 AM	1	165
4/30/2018	12:00 PM	5	188
4/30/2018	1:00 PM	4	209
4/30/2018	2:00 PM	7	263
4/30/2018	3:00 PM	6	375
4/30/2018	4:00 PM	14	47[illegible]
4/30/2018	5:00 PM	13	44[illegible]
4/30/2018	6:00 PM	11	265
4/30/2018	7:00 PM	12	177
4/30/2018	8:00 PM	9	148
4/30/2018	9:00 PM	5	119
4/30/2018	10:00 PM	1	94
4/30/2018	11:00 PM	1	66
Day Total		**89**	**298[illegible]**

Date	Begin Interval Time	(1) Motor Cycle	(2) Car	(3) Pick up	(4) Bus	(5) 2A SU	(6) 3A SU	(7) >3A SU	(8) <5A 2U	(9) 5A 2U	(10) >5A 2U	(11) <6A >2U	(12) 6A >2U	(13) >6A >2U	(14)	(15)	Passenger Vehicle Total	Single Unit Truck Total	Combination Truck Total	Hourly Total
Tuesday, May 01, 2018	12:00 AM	0	720	16	1	0	8	0	0	167	0	0	0	0	0	0	736	9	167	912
5/1/2018	1:00 AM	0	479	19	0	0	35	0	0	146	0	0	0	0	0	0	498	35	146	679
5/1/2018	2:00 AM	0	387	4	0	0	28	0	0	152	0	0	0	0	0	0	391	28	152	571
5/1/2018	3:00 AM	0	383	17	0	0	30	0	0	149	0	0	0	0	0	0	400	30	149	579
5/1/2018	4:00 AM	1	718	16	3	0	21	0	0	183	0	0	0	0	0	0	735	24	183	942

Date	Begin Interval Time	(1) Motor Cycle	(2) Car
5/1/2018	12:00 AM	0	42
5/1/2018	1:00 AM	0	26
5/1/2018	2:00 AM	0	21
5/1/2018	3:00 AM	0	16
5/1/2018	4:00 AM	0	26

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes
Select destination and press ENTER or choose Paste
AVERAGE: SUNDAY, DECEMBER 22, 1901 COUNT: 4116 NUMERICAL COUNT: 3414 MIN: 0 MAX: FRIDAY, JANUARY 01, 2168 SUM: SUNDAY, JANUARY 27, 8656
100%

PASTE RAW DATA TO QAT

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel

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INSTRUCTIONS:

See the 'About' tab for instruction on accessing and downloading weekend traffic counts from TCDS, if available.

If there are NO weekend counts in TCDS for this particular count station then skip this tab and continue with the "Weekend Adjustment Factors" tab.

If there are weekend counts, Copy the TCDS Volumes (including header) from the downloaded file for Weekends and Paste into this tab.

Specifically: copy range A2:BM91 from the TCDS file into A2:BM91 of this file.

About | User Input | Raw Weekday Hourly Traffic Vols | **Raw Weekend Hourly Traffic Vols** | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

Select destination and press ENTER or choose Paste

NO RAW WEEKEND DATA

INDOT Weekend Conversion Factors v1.2 2020-01-21.xlsx - Excel

Information About this File

Version: 1.2
Last Updated: 1/21/20

GENERAL INSTRUCTIONS

HOURLY CONVERSION FACTORS TO PREDICT WEEKEND COUNTS

When the schedule for a project includes work on Fridays, Saturdays, and Sundays, weekend hourly traffic volumes will be needed to determine the impact of the work on traffic. Although actual weekend counts are the preferred source, most interstate count stations only include information during a standard weekday during the period from Monday through Thursday.

The Work Zone Safety Section has generated hourly day of the week conversion factors for various interstate types to convert the hourly weekday counts into hourly weekend counts. These factors are based on sample count stations throughout the state, each of which contained weekend data. To use the conversion factors, select the appropriate tab and copy them to the 'Weekend Adjustment Factors' tab of the Queuing Analysis spreadsheet.

The conversion factors in the selected spreadsheet should then be multiplied with the adjusted weekday PCE counts for each hour to create adjusted weekend PCE counts. Methods for adjusting traffic volume counts are described in more detail in the Interstate Highway Congestion Policy.

If the INDOT Traffic Count Database System has weekend counts for the segment of interstate where work is planned, the hourly day of the week conversion factors should not be used and the actual weekend counts should be adjusted and used instead.

These Hourly Day of the Week Factors are not provided by the INDOT Division of Engineering and Asset Management, Office of Asset Planning. They may only be used in analysis for an IHCP exception request.

About | Rural Interstate | Commuter Corridor | Urban Center | Northwest IN

CONVERSION FACTORS

CONVERSION FACTORS

INDOT Weekend Conversion Factors v1.2 2020-01-21.xlsx - Excel

HOURLY CONVERSION FACTORS | COMMUTER CORRIDOR

Instructions:
For interstate routes in a commuter c
these two tables below, one is for lan

For non-2-way data, such as ramp seg
in the direction the ramp is heading.

Factors for Lanes Heading Away fr		
Hour	Weekday	Friday
0	1	1.213
1	1	1.148
2	1	1.341
3	1	1.269
4	1	1.198
5	1	1.068
6	1	1.023
7	1	0.991
8	1	1.052
9	1	1.043
10	1	1.078
11	1	1.098
12	1	1.175
13	1	1.187
14	1	1.191
15	1	1.113
16	1	1.031
17	1	0.990
18	1	1.051
19	1	0.992
20	1	0.973
21	1	1.087
22	1	1.172
23	1	1.230
Average	1	1.113

Factors for Lanes Heading Away from an Urban Center				
Hour	Weekday	Friday	Saturday	Sunday
0	1	1.213	1.404	1.116
1	1	1.148	1.139	0.987
2	1	1.341	1.104	0.854
3	1	1.269	0.886	0.666
4	1	1.198	0.829	0.526
5	1	1.068	0.694	0.405
6	1	1.023	0.537	0.288
7	1	0.991	0.593	0.336
8	1	1.052	0.775	0.439
9	1	1.043	0.860	0.608
10	1	1.078	0.939	0.730
11	1	1.098	0.976	0.840
12	1	1.175	1.033	1.028
13	1	1.187	1.024	1.036
14	1	1.191	1.004	0.925
15	1	1.113	0.859	0.792
16	1	1.031	0.705	0.729
17	1	0.990	0.655	0.737
18	1	1.051	0.708	0.838
19	1	0.992	0.805	0.926
20	1	0.973	0.858	0.916
21	1	1.087	0.938	0.878
22	1	1.172	1.094	0.851
23	1	1.230	1.025	0.817

Factors for Lanes Heading Towards an Urban Center				
Hour	Weekday	Friday	Saturday	Sunday
0	1	1.297	1.192	0.771
1	1	1.333	1.157	0.949
2	1	1.191	1.078	0.845
3	1	1.147	0.869	0.511
4	1	1.121	0.757	0.411
5	1	1.078	0.571	0.302
6	1	0.987	0.434	0.211
7	1	0.971	0.396	0.178
8	1	0.980	0.545	0.293
9	1	1.061	0.781	0.551
10	1	1.071	0.944	0.795
11	1	1.131	1.002	1.011
12	1	1.186	1.120	1.108
13	1	1.174	1.062	1.007
14	1	1.200	1.079	0.929
15	1	1.192	1.015	0.922
16	1	1.098	1.016	0.887
17	1	1.374	0.937	0.926
18	1	1.399	0.998	0.991
19	1	1.226	0.940	0.984
20	1	1.151	0.941	0.992
21	1	1.152	0.972	0.935
22	1	1.057	0.962	0.820
23	1	1.272	0.981	0.798

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INDOT Weekend Conversion Factors v1.2 2020-01-21.xlsx - Excel
Kachler, Mischa

HOURLY CONVERSION FACTORS | COMMUTER CORRIDOR

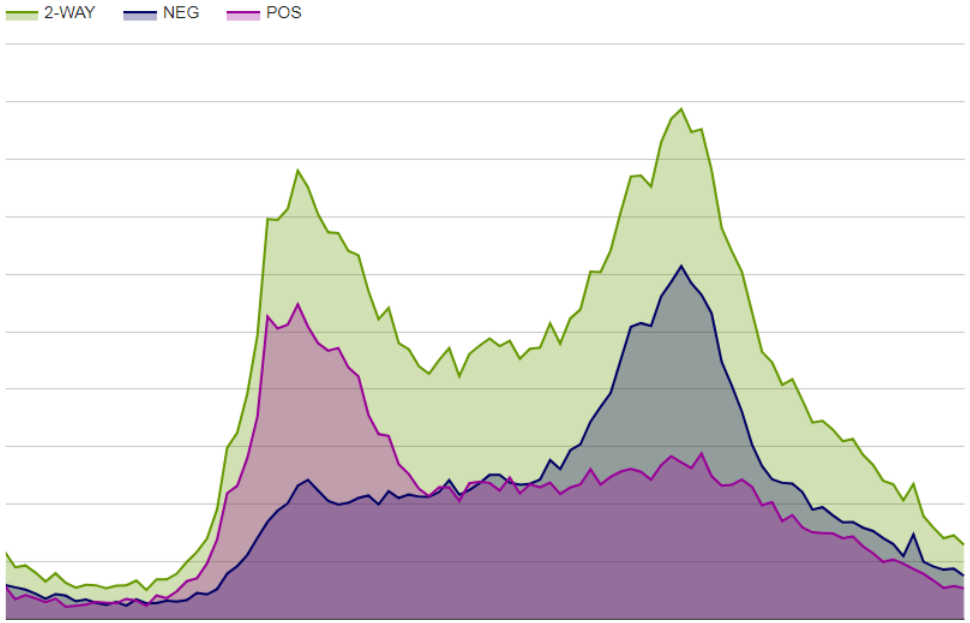
Instructions:
For interstate routes in a commuter corridor where there is a discernable directional AM or PM peak in the traffic data, use these two tables below, one is for lanes towards the urban area and one is for lanes away from the urban area.

For non-2-way data, such as ramp segments, only one of the following two tables will be used. Select the table that heads in the direction the ramp is heading.

Factors for Lanes Heading Away from an Urban Center				
Hour	Weekday	Friday	Saturday	Sunday
0	1	1.213	1.404	1.116
1	1	1.148	1.139	0.987
2	1	1.341	1.104	0.854
3	1	1.269	0.886	0.666
4	1	1.198	0.829	0.526
5	1	1.068	0.694	0.405
6	1	1.023	0.537	0.288
7	1	0.991	0.593	0.336
8	1	1.052	0.775	0.439
9	1	1.043	0.860	0.608
10	1	1.078	0.939	0.730
11	1	1.098	0.976	0.840
12	1	1.175	1.033	1.028
13	1	1.187	1.024	1.036
14	1	1.191	1.004	0.925
15	1	1.113	0.859	0.792
16	1	1.031	0.705	0.729
17	1	0.990	0.655	0.737
18	1	1.051	0.708	0.838
19	1	0.992	0.805	0.926
20	1	0.973	0.858	0.916
21	1	1.087	0.938	0.878
22	1	1.172	1.094	0.851
23	1	1.230	1.025	0.817
Average	1	1.113	0.893	0.761

Factors for Lanes Heading Towards an Urban Center				
Hour	Weekday	Friday	Saturday	Sunday
0	1	1.297	1.192	0.771
1	1	1.333	1.157	0.949
2	1	1.191	1.078	0.845
3	1	1.147	0.869	0.511
4	1	1.121	0.757	0.411
5	1	1.078	0.571	0.302
6	1	0.987	0.434	0.211
7	1	0.971	0.396	0.178
8	1	0.980	0.545	0.293
9	1	1.061	0.781	0.551
10	1	1.071	0.944	0.795
11	1	1.131	1.002	1.011
12	1	1.186	1.120	1.108
13	1	1.174	1.062	1.007
14	1	1.200	1.079	0.929
15	1	1.192	1.015	0.922
16	1	1.098	1.016	0.887
17	1	1.374	0.937	0.926
18	1	1.399	0.998	0.991
19	1	1.226	0.940	0.984
20	1	1.151	0.941	0.992
21	1	1.152	0.972	0.935
22	1	1.057	0.962	0.820
23	1	1.272	0.981	0.798
Average	1	1.160	0.906	0.755

Use the factors on this tab if the plotted data generally resembles this graph:



X-axis: TIME *Y-axis: TRAFFIC VOLUME*

About | Rural Interstate | Commuter Corridor | Urban Center | Northwest IN
READY
100%

COPY WEEKEND FACTORS

PASTE FACTORS IN QAT

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel

Weekend Adjustment Factors

INSTRUCTIONS:

Revisions to this tab are necessary only if weekend counts are not available at the count station of interest. See the 'About' tab for information on contriving factors to be entered in the table below.

If Weekend Counts are available and have been pasted to the 'Raw Weekend Hourly Volumes' tab, then all factors below shall be set equal to 1.

The formula below explains how the factors will be used in subsequent calculations.

Formula: $V_d = f * V_0$

Where:

V_d = *Volume for specific hourly weekend day*

V_0 = *Volume for specific hour from weekday counts*

f = *Factor specified below*

Source: INDOT Weekend Conversion Factors for a Commuter Corridor

There does not appear to be raw weekend data. Provide factors in the table, below.

	Friday		Saturday		Sunday	
Time	Negative/ Southbound Direction	Positive/ Northbound Direction	Negative/ Southbound Direction	Positive/ Northbound Direction	Negative/ Southbound Direction	Positive/ Northbound Direction
12	1.213	1.297	1.404	1.192	1.116	0.771
1	1.148	1.333	1.139	1.157	0.987	0.949
2	1.341	1.191	1.104	1.078	0.854	0.845
3	1.269	1.147	0.886	0.869	0.666	0.511
4	1.198	1.121	0.829	0.757	0.526	0.411
5	1.068	1.078	0.694	0.571	0.405	0.302
6	1.023	0.987	0.537	0.434	0.288	0.211
7	0.991	0.971	0.593	0.396	0.336	0.178
8	1.052	0.980	0.775	0.545	0.439	0.293
9	1.043	1.061	0.860	0.781	0.608	0.551
10	1.078	1.071	0.939	0.944	0.730	0.795
11	1.098	1.131	0.976	1.002	0.840	1.011
12	1.175	1.186	1.033	1.120	1.028	1.108
1	1.187	1.174	1.024	1.062	1.036	1.007
2	1.191	1.200	1.004	1.079	0.925	0.929
3	1.113	1.192	0.859	1.015	0.792	0.922
4	1.031	1.098	0.705	1.016	0.729	0.887
5	0.990	1.374	0.655	0.937	0.737	0.926
6	1.051	1.399	0.708	0.998	0.838	0.991
7	0.992	1.226	0.805	0.940	0.926	0.984
8	0.973	1.151	0.858	0.941	0.916	0.992
9	1.087	1.152	0.938	0.972	0.878	0.935
10	1.172	1.057	1.094	0.962	0.851	0.820
11	1.230	1.272	1.025	0.981	0.817	0.798

There does not appear to be raw weekend data. Provide factors in the table, below.

	Friday		Saturday		Sunday	
Time	Negative/ Southbound Direction	Positive/ Northbound Direction	Negative/ Southbound Direction	Positive/ Northbound Direction	Negative/ Southbound Direction	Positive/ Northbound Direction
12	1.213	1.297	1.404	1.192	1.116	0.771
1	1.148	1.333	1.139	1.157	0.987	0.949
2	1.341	1.191	1.104	1.078	0.854	0.845
3	1.269	1.147	0.886	0.869	0.666	0.511
4	1.198	1.121	0.829	0.757	0.526	0.411
5	1.068	1.078	0.694	0.571	0.405	0.302
6	1.023	0.987	0.537	0.434	0.288	0.211
7	0.991	0.971	0.593	0.396	0.336	0.178
8	1.052	0.980	0.775	0.545	0.439	0.293
9	1.043	1.061	0.860	0.781	0.608	0.551
10	1.078	1.071	0.939	0.944	0.730	0.795
11	1.098	1.131	0.976	1.002	0.840	1.011
12	1.175	1.186	1.033	1.120	1.028	1.108
1	1.187	1.174	1.024	1.062	1.036	1.007
2	1.191	1.200	1.004	1.079	0.925	0.929
3	1.113	1.192	0.859	1.015	0.792	0.922
4	1.031	1.098	0.705	1.016	0.729	0.887
5	0.990	1.374	0.655	0.937	0.737	0.926
6	1.051	1.399	0.708	0.998	0.838	0.991
7	0.992	1.226	0.805	0.940	0.926	0.984
8	0.973	1.151	0.858	0.941	0.916	0.992
9	1.087	1.152	0.938	0.972	0.878	0.935
10	1.172	1.057	1.094	0.962	0.851	0.820
11	1.230	1.272	1.025	0.981	0.817	0.798

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

Select destination and press ENTER or choose Paste

CHECK ADJ. FACTORS

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel

INDOT Adjustment Factors

INSTRUCTIONS:

Update this tab to the most recent factors available (see 'Links' section on the 'About' tab). If they are current, then no additional action is needed in this tab. To update data on this tab, enter the date of the "Latest INDOT Traffic Adjustment Factors." Then enter the appropriate "Urban - Interstate" and "Rural - Interstate" seasonal and annual growth factors into the yellow highlighted cells.

Adjustment Factor Year: 2018

Current Year: 2020

Seasonal Adjustment Factors (5 yr Average)

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Urban	1.176	1.080	1.008	0.991	0.974	0.940	0.950	0.953	0.984	0.969	0.999	1.045
Rural	1.249	1.164	1.040	1.005	0.955	0.905	0.894	0.919	0.969	0.964	1.012	1.078

Denotes most conservative month for given category

Most Cons. Month
JUN
JUL

Annual Growth Factors

Year From	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Urban:													
2018 Factor	1.115	1.094	1.090	1.074	1.065	1.077	1.055	1.009	1.006	1.014	1.000	n/a	n/a
2020 Factor	1.137	1.116	1.112	1.096	1.086	1.099	1.076	1.029	1.026	1.034	1.020	1.010	1.000
Rural:													
2018 Factor	1.070	1.079	1.083	1.081	1.060	1.062	1.046	1.004	0.991	0.999	1.000	n/a	n/a
2020 Factor	1.092	1.101	1.105	1.103	1.081	1.083	1.067	1.024	1.011	1.019	1.020	1.010	1.000

About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

REVIEW HRLY VOLUMES

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel

Hourly Volumes

INSTRUCTIONS:

Inspect this tab for reasonable hourly volume results.

Count Information:

Count Station	971290
Rural/Urban:	Urban
Year of Count:	2018
Month of Count:	APR
Annual Adj.	1.020
Monthly Adj.	0.991

Planned Work Information:

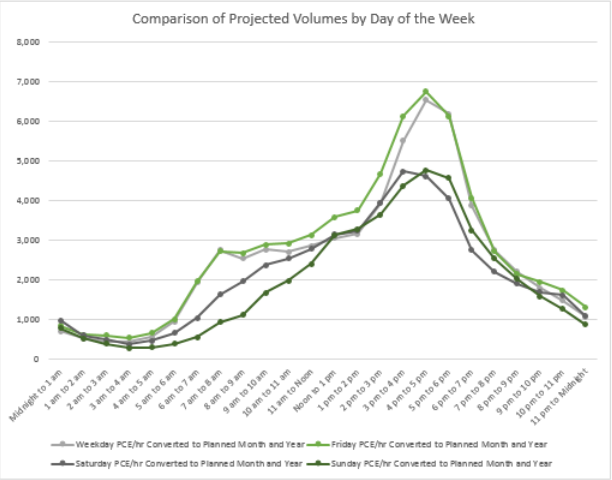
Planned Year:	2024
Planned Month:	JUN
Annual Adj. Factor:	1.041
Monthly Adj. Factor:	0.94

% Reduction due to Detouring Traffic:

Southbound Monday-Thursday:	0%
Southbound Friday:	0%
Southbound Saturday-Sunday:	0%
Northbound Monday-Thursday:	0%
Northbound Friday:	0%
Northbound Saturday-Sunday:	0%

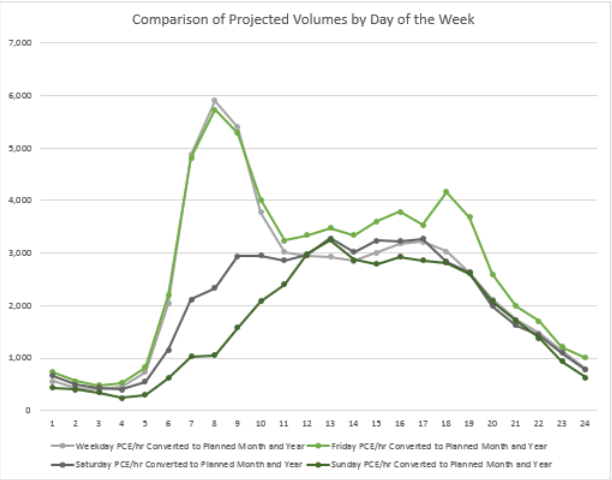
Southbound Volumes

	Weekday			Friday			Saturday			Sunday		
Time	Raw PCE/hr	Annualized to Current	Converted to Planned Month and	Raw PCE/hr	Annualized to Current	Converted to Planned Month and	Raw PCE/hr	Annualized to Current	Converted to Planned Month and	Raw PCE/hr	Annualized to Current	Converted to Planned Month and
am	##	626	693		759	840		879	973		698	773
1 am to 2 am	##	474	525		544	602		540	598		468	518
2 am to 3 am	##	405	448		543	601		447	495		346	383
3 am to 4 am	##	379	420		481	532		336	372		252	279
4 am to 5 am	##	491	544		588	651		407	450		258	286
5 am to 6 am	##	846	937		903	1,000		587	650		343	379
6 am to 7 am	1,718	1,736	1,922		1,775	1,965		932	1,032		499	553
7 am to 8 am	####	2,483	2,749		2,462	2,725		1,471	1,629		834	923
8 am to 9 am	####	2,292	2,537		2,411	2,669		1,776	1,966		1,006	1,114
9 am to 10 am	####	2,494	2,761		2,601	2,879		2,145	2,375		1,517	1,679
10 am to 11 am	####	2,447	2,709		2,637	2,920		2,298	2,543		1,787	1,978
11 am to Noon	####	2,573	2,848		2,825	3,127		2,511	2,780		2,162	2,393
Noon to 1 pm	####	2,753	3,048		3,236	3,582		2,845	3,149		2,831	3,133
1 pm to 2 pm	####	2,859	3,165		3,392	3,755		2,928	3,241		2,963	3,280
2 pm to 3 pm	####	3,551	3,931		4,230	4,682		3,565	3,947		3,285	3,637
3 pm to 4 pm	####	4,977	5,510		5,541	6,134		4,274	4,732		3,944	4,366
4 pm to 5 pm	####	5,914	6,547		6,097	6,750		4,169	4,615		4,310	4,771
5 pm to 6 pm	####	5,600	6,199		5,542	6,135		3,668	4,061		4,125	4,566
6 pm to 7 pm	####	3,500	3,875		3,679	4,073		2,480	2,745		2,933	3,247
7 pm to 8 pm	####	2,478	2,743		2,458	2,721		1,996	2,209		2,294	2,540
8 pm to 9 pm	1,971	1,993	2,206		1,940	2,148		1,709	1,892		1,825	2,021
9 pm to 10 pm	####	1,622	1,796		1,763	1,952		1,522	1,685		1,424	1,576
10 pm to 11 pm	1,321	1,335	1,478		1,565	1,733		1,461	1,617		1,137	1,258
Midnight	##	957	1,059		1,177	1,303		981	1,086		782	866



Northbound Volumes

	Weekday			Friday			Saturday			Sunday		
Time	Raw PCE/hr	Annualized to Current	Converted to Planned Month and	Raw PCE/hr	Annualized to Current	Converted to Planned Month and	Raw PCE/hr	Annualized to Current	Converted to Planned Month and	Raw PCE/hr	Annualized to Current	Converted to Planned Month and
am	##	507	561		658	728		604	669		391	433
1 am to 2 am	##	380	421		507	561		440	487		361	399
2 am to 3 am	##	362	401		431	477		390	432		306	339
3 am to 4 am	411	415	459		476	527		360	399		212	235
4 am to 5 am	##	663	734		743	823		502	555		273	302
5 am to 6 am	1,816	1,835	2,031		1,979	2,190		1,047	1,159		554	613
6 am to 7 am	####	4,405	4,876		4,347	4,812		1,911	2,115		929	1,028
7 am to 8 am	####	5,334	5,905		5,179	5,733		2,110	2,336		951	1,052
8 am to 9 am	####	4,873	5,395		4,775	5,286		2,657	2,942		1,427	1,579
9 am to 10 am	####	3,414	3,779		3,623	4,010		2,665	2,951		1,882	2,083
10 am to 11 am	####	2,731	3,023		2,924	3,236		2,577	2,853		2,173	2,405
11 am to Noon	####	2,666	2,951		3,015	3,338		2,672	2,958		2,696	2,984
Noon to 1 pm	####	2,646	2,929		3,137	3,473		2,962	3,280		2,932	3,246
1 pm to 2 pm	####	2,571	2,846		3,018	3,341		2,730	3,022		2,590	2,867
2 pm to 3 pm	####	2,712	3,002		3,253	3,601		2,928	3,241		2,519	2,789
3 pm to 4 pm	####	2,870	3,177		3,422	3,788		2,913	3,225		2,646	2,930
4 pm to 5 pm	####	2,906	3,217		3,192	3,534		2,953	3,269		2,577	2,853
5 pm to 6 pm	2,711	2,740	3,033		3,764	4,167		2,567	2,841		2,536	2,808
6 pm to 7 pm	####	2,380	2,635		3,330	3,686		2,374	2,628		2,358	2,611
7 pm to 8 pm	####	1,916	2,121		2,349	2,601		1,801	1,993		1,885	2,087
8 pm to 9 pm	####	1,562	1,729		1,798	1,990		1,469	1,626		1,549	1,715
9 pm to 10 pm	####	1,336	1,479		1,539	1,704		1,298	1,437		1,249	1,383
10 pm to 11 pm	####	1,031	1,141		1,090	1,207		992	1,098		845	936
Midnight	##	712	788		906	1,003		698	773		568	629



About | User Input | Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes

FILL IN NON-WZ CAP.

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel

Work Information

INSTRUCTIONS:

Enter the expected hou

Capacities must be conv

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are based on Appendix

which can be deviated f

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Permanent

Permanent

Capacities for Alternative 1 for Southbound (Double lane closure, 9 PM to 6 AM)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	7425	7425	7425	7425	7425	7425	7425
1 am to 2 am	7425	7425	7425	7425	7425	7425	7425
2 am to 3 am	7425	7425	7425	7425	7425	7425	7425
3 am to 4 am	7425	7425	7425	7425	7425	7425	7425
4 am to 5 am	7425	7425	7425	7425	7425	7425	7425
5 am to 6 am	7425	7425	7425	7425	7425	7425	7425
6 am to 7 am	7425	7425	7425	7425	7425	7425	7425
7 am to 8 am	7425	7425	7425	7425	7425	7425	7425
8 am to 9 am	7425	7425	7425	7425	7425	7425	7425
9 am to 10 am	7425	7425	7425	7425	7425	7425	7425
10 am to 11 am	7425	7425	7425	7425	7425	7425	7425
11 am to Noon	7425	7425	7425	7425	7425	7425	7425
Noon to 1 pm	7425	7425	7425	7425	7425	7425	7425
1 pm to 2 pm	7425	7425	7425	7425	7425	7425	7425
2 pm to 3 pm	7425	7425	7425	7425	7425	7425	7425
3 pm to 4 pm	7425	7425	7425	7425	7425	7425	7425
4 pm to 5 pm	7425	7425	7425	7425	7425	7425	7425
5 pm to 6 pm	7425	7425	7425	7425	7425	7425	7425
6 pm to 7 pm	7425	7425	7425	7425	7425	7425	7425
7 pm to 8 pm	7425	7425	7425	7425	7425	7425	7425
8 pm to 9 pm	7425	7425	7425	7425	7425	7425	7425
9 pm to 10 pm	7425	7425	7425	7425	7425	7425	7425
10 pm to 11 pm	7425	7425	7425	7425	7425	7425	7425
11 pm to Midnight	7425	7425	7425	7425	7425	7425	7425

Work Zone Capacities (PCE/hr/ln)

/hr/ln)	
ane Width	
0.9'-10.0'	9.9'-9.0'
1400	1325
1450	1375
1350	1275
1500	1425
1400	1325
1325	1250

Capacities for Alternative 2 for Southbo

Time	Monday	Tuesday
Midnight to 1 am	7425	7425
1 am to 2 am	7425	7425
2 am to 3 am	7425	7425
3 am to 4 am	7425	7425
4 am to 5 am	7425	7425
5 am to 6 am	7425	7425
6 am to 7 am	7425	7425
7 am to 8 am	7425	7425
8 am to 9 am	7425	7425
9 am to 10 am	7425	7425
10 am to 11 am	7425	7425
11 am to Noon	7425	7425
Noon to 1 pm	7425	7425
1 pm to 2 pm	7425	7425
2 pm to 3 pm	7425	7425
3 pm to 4 pm	7425	7425
4 pm to 5 pm	7425	7425
5 pm to 6 pm	7425	7425
6 pm to 7 pm	7425	7425
7 pm to 8 pm	7425	7425
8 pm to 9 pm	7425	7425
9 pm to 10 pm	7425	7425
10 pm to 11 pm	7425	7425
11 pm to Midnight	7425	7425

Raw Weekday Hourly Traffic Vols | Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information

CHECK: BASELINE QUEUE

INDOT Queuing Analysis v1_29 (BLANK TEMPLATE).xlsx - Excel

Queuing Calculations

INSTRUCTIONS:

Review the results in the table(s) for whether they appear reasonable and within acceptable policy limits (See Appendix C of the IHCP). If there are queues outside policy limits, reconsider if there are any steps that can be taken to mitigate queuing.

Jam Density (k) [Default = 190]	190
# Pre-work Lanes for SB Direction (N)	3
# Pre-work Lanes for NB Direction (N)	3

Anticipated Queuing (mi) for Alternative 1 for Southbound Traffic (Double lane closure, 9 PM to 6 AM)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	0	0	0	0	0	0	0
1 am to 2 am	0	0	0	0	0	0	0
2 am to 3 am	0	0	0	0	0	0	0
3 am to 4 am	0	0	0	0	0	0	0
4 am to 5 am	0	0	0	0	0	0	0
5 am to 6 am	0	0	0	0	0	0	0
6 am to 7 am	0	0	0	0	0	0	0
7 am to 8 am	0	0	0	0	0	0	0
8 am to 9 am	0	0	0	0	0	0	0
9 am to 10 am	0	0	0	0	0	0	0
10 am to 11 am	0	0	0	0	0	0	0
11 am to Noon	0	0	0	0	0	0	0
Noon to 1 pm	0	0	0	0	0	0	0
1 pm to 2 pm	0	0	0	0	0	0	0
2 pm to 3 pm	0	0	0	0	0	0	0
3 pm to 4 pm	0	0	0	0	0	0	0
4 pm to 5 pm	0	0	0	0	0	0	0
5 pm to 6 pm	0	0	0	0	0	0	0
6 pm to 7 pm	0	0	0	0	0	0	0
7 pm to 8 pm	0	0	0	0	0	0	0
8 pm to 9 pm	0	0	0	0	0	0	0
9 pm to 10 pm	0	0	0	0	0	0	0
10 pm to 11 pm	0	0	0	0	0	0	0
11 pm to Midnight	0	0	0	0	0	0	0

Anticipated Queuing (mi) for Alternative 1 for Northbound Traffic (Enter a brief, distinguishing description.)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	0	0	0	0	0	0	0
1 am to 2 am	0	0	0	0	0	0	0
2 am to 3 am	0	0	0	0	0	0	0
3 am to 4 am	0	0	0	0	0	0	0
4 am to 5 am	0	0	0	0	0	0	0
5 am to 6 am	0	0	0	0	0	0	0
6 am to 7 am	0	0	0	0	0	0	0
7 am to 8 am	0	0	0	0	0	0	0
8 am to 9 am	0	0	0	0	0	0	0
9 am to 10 am	0	0	0	0	0	0	0
10 am to 11 am	0	0	0	0	0	0	0
11 am to Noon	0	0	0	0	0	0	0
Noon to 1 pm	0	0	0	0	0	0	0
1 pm to 2 pm	0	0	0	0	0	0	0
2 pm to 3 pm	0	0	0	0	0	0	0
3 pm to 4 pm	0	0	0	0	0	0	0
4 pm to 5 pm	0	0	0	0	0	0	0
5 pm to 6 pm	0	0	0	0	0	0	0
6 pm to 7 pm	0	0	0	0	0	0	0
7 pm to 8 pm	0	0	0	0	0	0	0
8 pm to 9 pm	0	0	0	0	0	0	0
9 pm to 10 pm	0	0	0	0	0	0	0
10 pm to 11 pm	0	0	0	0	0	0	0
11 pm to Midnight	0	0	0	0	0	0	0

Anticipated Queuing (mi) for Alternative 2 for Southbound Traffic (Double lane closure, Adjusted Nighttime Hrs (1))

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	0	0	0	0	0	0	0
1 am to 2 am	0	0	0	0	0	0	0
2 am to 3 am	0	0	0	0	0	0	0
3 am to 4 am	0	0	0	0	0	0	0
4 am to 5 am	0	0	0	0	0	0	0
5 am to 6 am	0	0	0	0	0	0	0
6 am to 7 am	0	0	0	0	0	0	0
7 am to 8 am	0	0	0	0	0	0	0
8 am to 9 am	0	0	0	0	0	0	0
9 am to 10 am	0	0	0	0	0	0	0

Anticipated Queuing (mi) for Alternative 2 for Northbound Traffic (Enter a brief, distinguishing description.)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	0	0	0	0	0	0	0
1 am to 2 am	0	0	0	0	0	0	0
2 am to 3 am	0	0	0	0	0	0	0
3 am to 4 am	0	0	0	0	0	0	0
4 am to 5 am	0	0	0	0	0	0	0
5 am to 6 am	0	0	0	0	0	0	0
6 am to 7 am	0	0	0	0	0	0	0
7 am to 8 am	0	0	0	0	0	0	0
8 am to 9 am	0	0	0	0	0	0	0
9 am to 10 am	0	0	0	0	0	0	0

Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced

READY CALCULATE 100%

INDOT Queuing Analysis v1_29 (EXAMPLE).xlsx - Excel
FILE Main Macros MK Edit HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW DEVELOPER ACROBAT POWERPIVOT
Kachler, Mischa

Work Information

INSTRUCTIONS:
Enter the expected hourly capacities for the work zone for each segment/direction/alternative. Capacities must be converted from PCE/hr/ln to PCE/hr by multiplying by number of available lanes for a given alternative on a particular day and time. For capacities, refer to the tables at the right, which are based on Appendix C of the IHCP. The recommended non-work capacities have been derived below which can be deviated from, but justification will be necessary.

Permanent Speed:	55 mph	Recommended SB	
10% Urban Increase:	Yes	Non-work Capacity:	7425 PCE/hr
# Permanent Lanes SB:	3	Recommended NB	
# Permanent Lanes NB:	3	Non-work Capacity:	7425 PCE/hr

Non-Work Zone Capacities (PCE/hr/ln)	
Permanent Speed (mph)	Capacity
45	1900
50	2075
55	2250
60	2300
65	2350
70	2400
75	2400

Work Zone Capacities (PCE/hr/ln)				
# Pre-work Open Lanes	# Work Zone Open Lanes	Lane Width		
		12'-11'	10.9'-10.0'	9.9'-9.0'
2	1	1550	1400	1325
3	2	1600	1450	1375
3	1	1475	1350	1275
4	3	1650	1500	1425
4	2	1550	1400	1325
4	1	1425	1325	1250

Capacities for Alternative 1 for Southbound (Double lane closure, Nighttime and Weekends)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	1623	1623	1623	1623	1623	1623	1623
1 am to 2 am	1623	1623	1623	1623	1623	1623	1623
2 am to 3 am	1623	1623	1623	1623	1623	1623	1623
3 am to 4 am	1623	1623	1623	1623	1623	1623	1623
4 am to 5 am	1623	1623	1623	1623	1623	1623	1623
5 am to 6 am	1623	1623	1623	1623	1623	1623	1623
6 am to 7 am	7425	7425	7425	7425	7425	1623	1623
7 am to 8 am	7425	7425	7425	7425	7425	1623	1623
8 am to 9 am	7425	7425	7425	7425	7425	1623	1623
9 am to 10 am	7425	7425	7425	7425	7425	1623	1623
10 am to 11 am	7425	7425	7425	7425	7425	1623	1623
11 am to Noon	7425	7425	7425	7425	7425	1623	1623
Noon to 1 pm	7425	7425	7425	7425	7425	1623	1623
1 pm to 2 pm	7425	7425	7425	7425	7425	1623	1623
2 pm to 3 pm	7425	7425	7425	7425	7425	1623	1623
3 pm to 4 pm	7425	7425	7425	7425	7425	1623	1623
4 pm to 5 pm	7425	7425	7425	7425	7425	1623	1623
5 pm to 6 pm	7425	7425	7425	7425	7425	1623	1623
6 pm to 7 pm	7425	7425	7425	7425	7425	1623	1623
7 pm to 8 pm	7425	7425	7425	7425	7425	1623	1623
8 pm to 9 pm	7425	7425	7425	7425	7425	1623	1623
9 pm to 10 pm	1623	1623	1623	1623	1623	1623	1623
10 pm to 11 pm	1623	1623	1623	1623	1623	1623	1623
11 pm to Midnight	1623	1623	1623	1623	1623	1623	1623

Capacities for Alternative 1 for Northbound (Double lane closure, Nighttime and Weekends)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	1623	1623	1623	1623	1623	1623	1623
1 am to 2 am	1623	1623	1623	1623	1623	1623	1623
2 am to 3 am	1623	1623	1623	1623	1623	1623	1623
3 am to 4 am	1623	1623	1623	1623	1623	1623	1623
4 am to 5 am	1623	1623	1623	1623	1623	1623	1623
5 am to 6 am	1623	1623	1623	1623	1623	1623	1623
6 am to 7 am	7425	7425	7425	7425	7425	1623	1623
7 am to 8 am	7425	7425	7425	7425	7425	1623	1623
8 am to 9 am	7425	7425	7425	7425	7425	1623	1623
9 am to 10 am	7425	7425	7425	7425	7425	1623	1623
10 am to 11 am	7425	7425	7425	7425	7425	1623	1623
11 am to Noon	7425	7425	7425	7425	7425	1623	1623
Noon to 1 pm	7425	7425	7425	7425	7425	1623	1623
1 pm to 2 pm	7425	7425	7425	7425	7425	1623	1623
2 pm to 3 pm	7425	7425	7425	7425	7425	1623	1623
3 pm to 4 pm	7425	7425	7425	7425	7425	1623	1623
4 pm to 5 pm	7425	7425	7425	7425	7425	1623	1623
5 pm to 6 pm	7425	7425	7425	7425	7425	1623	1623
6 pm to 7 pm	7425	7425	7425	7425	7425	1623	1623
7 pm to 8 pm	7425	7425	7425	7425	7425	1623	1623
8 pm to 9 pm	7425	7425	7425	7425	7425	1623	1623
9 pm to 10 pm	1623	1623	1623	1623	1623	1623	1623
10 pm to 11 pm	1623	1623	1623	1623	1623	1623	1623
11 pm to Midnight	1623	1623	1623	1623	1623	1623	1623

ALTERNATIVE 1

FILL IN WORK HR. CAP.

Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced
READY 100%

REVIEW QUEUING

INDOT Queuing Analysis v1_29 (EXAMPLE).xlsx - Excel

Queuing Calculations

INSTRUCTIONS:

Review the results in the table(s) for whether they appear reasonable and within acceptable policy limits (See Appendix C of the IHCP). If there are queues outside policy limits, reconsider if there are any steps that can be taken to mitigate queuing.

Jam Density (k) [Default = 190]	190
# Pre-work Lanes for SB Direction (N)	3
# Pre-work Lanes for NB Direction (N)	3

Anticipated Queuing (mi) for Alternative 1 for Southbound Traffic (Double lane closure, Nighttime and Weekends)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	44.42	0	0	0	0	0	31.28
1 am to 2 am	42.49	0	0	0	0	0	29.34
2 am to 3 am	40.43	0	0	0	0	0	27.17
3 am to 4 am	38.32	0	0	0	0	0	24.81
4 am to 5 am	36.43	0	0	0	0	0	22.46
5 am to 6 am	35.22	0	0	0	0	0	20.28
6 am to 7 am	25.57	0	0	0	0	0	18.41
7 am to 8 am	17.36	0	0	0	0	0.01	17.18
8 am to 9 am	8.79	0	0	0	0	0.61	16.28
9 am to 10 am	0.61	0	0	0	0	1.93	16.38
10 am to 11 am	0	0	0	0	0	3.55	17.01
11 am to Noon	0	0	0	0	0	5.58	18.36
Noon to 1 pm	0	0	0	0	0	8.25	21.01
1 pm to 2 pm	0	0	0	0	0	11.09	23.91
2 pm to 3 pm	0	0	0	0	0	15.17	27.45
3 pm to 4 pm	0	0	0	0	0	20.62	32.26
4 pm to 5 pm	0	0	0	0	0	25.87	37.78
5 pm to 6 pm	0	0	0	0	0	30.15	42.94
6 pm to 7 pm	0	0	0	0	0	32.12	45.79
7 pm to 8 pm	0	0	0	0	0	33.15	47.40
8 pm to 9 pm	0	0	0	0	0	33.62	48.10
9 pm to 10 pm	0.30	0.30	0.30	0.30	0.58	33.73	48.02
10 pm to 11 pm	0.05	0.05	0.05	0.05	0.77	33.72	47.38
11 pm to Midnight	0	0	0	0	0.21	32.77	46.05

Anticipated Queuing (mi) for Alternative 1 for Northbound Traffic (Double lane closure, Nighttime and Weekends)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	27.48	0	0	0	0	0	24.88
1 am to 2 am	25.38	0	0	0	0	0	22.74
2 am to 3 am	23.23	0	0	0	0	0	20.48
3 am to 4 am	21.19	0	0	0	0	0	18.05
4 am to 5 am	19.63	0	0	0	0	0	15.73
5 am to 6 am	20.35	0.72	0.72	0.72	0.99	0	13.96
6 am to 7 am	15.87	0	0	0	0	0.86	12.92
7 am to 8 am	13.21	0	0	0	0	2.11	11.91
8 am to 9 am	9.65	0	0	0	0	4.43	11.84
9 am to 10 am	3.25	0	0	0	0	6.76	12.64
10 am to 11 am	0	0	0	0	0	8.92	14.02
11 am to Noon	0	0	0	0	0	11.26	16.40
Noon to 1 pm	0	0	0	0	0	14.16	19.25
1 pm to 2 pm	0	0	0	0	0	16.62	21.43
2 pm to 3 pm	0	0	0	0	0	19.46	23.48
3 pm to 4 pm	0	0	0	0	0	22.27	25.77
4 pm to 5 pm	0	0	0	0	0	25.16	27.93
5 pm to 6 pm	0	0	0	0	0	27.29	30.01
6 pm to 7 pm	0	0	0	0	0	29.06	31.74
7 pm to 8 pm	0	0	0	0	0	29.71	32.56
8 pm to 9 pm	0	0	0	0	0	29.71	32.72
9 pm to 10 pm	0	0	0	0	0.14	29.38	32.30
10 pm to 11 pm	0	0	0	0	0	28.46	31.09
11 pm to Midnight	0	0	0	0	0	26.97	29.35

ALTERNATIVE 1

Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced

READY

INDOT Queuing Analysis v1_29 (EXAMPLE).xlsx - Excel

Capacities for Alternative 2 for Southbound (Double lane closure, Nighttime Only)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	1623	1623	1623	1623	1623	1623	1623
1 am to 2 am	1623	1623	1623	1623	1623	1623	1623
2 am to 3 am	1623	1623	1623	1623	1623	1623	1623
3 am to 4 am	1623	1623	1623	1623	1623	1623	1623
4 am to 5 am	1623	1623	1623	1623	1623	1623	1623
5 am to 6 am	1623	1623	1623	1623	1623	1623	1623
6 am to 7 am	7425	7425	7425	7425	7425	7425	7425
7 am to 8 am	7425	7425	7425	7425	7425	7425	7425
8 am to 9 am	7425	7425	7425	7425	7425	7425	7425
9 am to 10 am	7425	7425	7425	7425	7425	7425	7425
10 am to 11 am	7425	7425	7425	7425	7425	7425	7425
11 am to Noon	7425	7425	7425	7425	7425	7425	7425
Noon to 1 pm	7425	7425	7425	7425	7425	7425	7425
1 pm to 2 pm	7425	7425	7425	7425	7425	7425	7425
2 pm to 3 pm	7425	7425	7425	7425	7425	7425	7425
3 pm to 4 pm	7425	7425	7425	7425	7425	7425	7425
4 pm to 5 pm	7425	7425	7425	7425	7425	7425	7425
5 pm to 6 pm	7425	7425	7425	7425	7425	7425	7425
6 pm to 7 pm	7425	7425	7425	7425	7425	7425	7425
7 pm to 8 pm	7425	7425	7425	7425	7425	7425	7425
8 pm to 9 pm	7425	7425	7425	7425	7425	7425	7425
9 pm to 10 pm	1623	1623	1623	1623	1623	1623	1623
10 pm to 11 pm	1623	1623	1623	1623	1623	1623	1623
11 pm to Midnight	1623	1623	1623	1623	1623	1623	1623

Capacities for Alternative 2 for Northbound (Double lane closure, Nighttime Only)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	1623	1623	1623	1623	1623	1623	1623
1 am to 2 am	1623	1623	1623	1623	1623	1623	1623
2 am to 3 am	1623	1623	1623	1623	1623	1623	1623
3 am to 4 am	1623	1623	1623	1623	1623	1623	1623
4 am to 5 am	1623	1623	1623	1623	1623	1623	1623
5 am to 6 am	1623	1623	1623	1623	1623	1623	1623
6 am to 7 am	7425	7425	7425	7425	7425	7425	7425
7 am to 8 am	7425	7425	7425	7425	7425	7425	7425
8 am to 9 am	7425	7425	7425	7425	7425	7425	7425
9 am to 10 am	7425	7425	7425	7425	7425	7425	7425
10 am to 11 am	7425	7425	7425	7425	7425	7425	7425
11 am to Noon	7425	7425	7425	7425	7425	7425	7425
Noon to 1 pm	7425	7425	7425	7425	7425	7425	7425
1 pm to 2 pm	7425	7425	7425	7425	7425	7425	7425
2 pm to 3 pm	7425	7425	7425	7425	7425	7425	7425
3 pm to 4 pm	7425	7425	7425	7425	7425	7425	7425
4 pm to 5 pm	7425	7425	7425	7425	7425	7425	7425
5 pm to 6 pm	7425	7425	7425	7425	7425	7425	7425
6 pm to 7 pm	7425	7425	7425	7425	7425	7425	7425
7 pm to 8 pm	7425	7425	7425	7425	7425	7425	7425
8 pm to 9 pm	7425	7425	7425	7425	7425	7425	7425
9 pm to 10 pm	1623	1623	1623	1623	1623	1623	1623
10 pm to 11 pm	1623	1623	1623	1623	1623	1623	1623
11 pm to Midnight	1623	1623	1623	1623	1623	1623	1623

ALTERNATIVE 2

FILL IN WORK HR. CAP.

Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced

REVIEW QUEUING

INDOT Queuing Analysis v1_29 (EXAMPLE).xlsx - Excel

Anticipated Queuing (mi) for Alternative 2 for Southbound Traffic (Double lane closure, Nighttime Only)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	0	0	0	0	0	0	0
1 am to 2 am	0	0	0	0	0	0	0
2 am to 3 am	0	0	0	0	0	0	0
3 am to 4 am	0	0	0	0	0	0	0
4 am to 5 am	0	0	0	0	0	0	0
5 am to 6 am	0	0	0	0	0	0	0
6 am to 7 am	0	0	0	0	0	0	0
7 am to 8 am	0	0	0	0	0	0	0
8 am to 9 am	0	0	0	0	0	0	0
9 am to 10 am	0	0	0	0	0	0	0
10 am to 11 am	0	0	0	0	0	0	0
11 am to Noon	0	0	0	0	0	0	0
Noon to 1 pm	0	0	0	0	0	0	0
1 pm to 2 pm	0	0	0	0	0	0	0
2 pm to 3 pm	0	0	0	0	0	0	0
3 pm to 4 pm	0	0	0	0	0	0	0
4 pm to 5 pm	0	0	0	0	0	0	0
5 pm to 6 pm	0	0	0	0	0	0	0
6 pm to 7 pm	0	0	0	0	0	0	0
7 pm to 8 pm	0	0	0	0	0	0	0
8 pm to 9 pm	0	0	0	0	0	0	0
9 pm to 10 pm	0.30	0.30	0.30	0.30	0.58	0.11	0
10 pm to 11 pm	0.05	0.05	0.05	0.05	0.77	0.10	0
11 pm to Midnight	0	0	0	0	0.21	0	0

Anticipated Queuing (mi) for Alternative 2 for Northbound Traffic (Double lane closure, Nighttime Only)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	0	0	0	0	0	0	0
1 am to 2 am	0	0	0	0	0	0	0
2 am to 3 am	0	0	0	0	0	0	0
3 am to 4 am	0	0	0	0	0	0	0
4 am to 5 am	0	0	0	0	0	0	0
5 am to 6 am	0.72	0.72	0.72	0.72	0.99	0	0
6 am to 7 am	0	0	0	0	0	0	0
7 am to 8 am	0	0	0	0	0	0	0
8 am to 9 am	0	0	0	0	0	0	0
9 am to 10 am	0	0	0	0	0	0	0
10 am to 11 am	0	0	0	0	0	0	0
11 am to Noon	0	0	0	0	0	0	0
Noon to 1 pm	0	0	0	0	0	0	0
1 pm to 2 pm	0	0	0	0	0	0	0
2 pm to 3 pm	0	0	0	0	0	0	0
3 pm to 4 pm	0	0	0	0	0	0	0
4 pm to 5 pm	0	0	0	0	0	0	0
5 pm to 6 pm	0	0	0	0	0	0	0
6 pm to 7 pm	0	0	0	0	0	0	0
7 pm to 8 pm	0	0	0	0	0	0	0
8 pm to 9 pm	0	0	0	0	0	0	0
9 pm to 10 pm	0	0	0	0	0.14	0	0
10 pm to 11 pm	0	0	0	0	0	0	0
11 pm to Midnight	0	0	0	0	0	0	0

ALTERNATIVE 2

Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced

INDOT Queuing Analysis v1_29 (EXAMPLE).xlsx - Excel

Capacities for Alternative 3 for Southbound (Double lane closure, Adjusted Nighttime Only)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	1623	1623	1623	1623	1623	1623	1623
1 am to 2 am	1623	1623	1623	1623	1623	1623	1623
2 am to 3 am	1623	1623	1623	1623	1623	1623	1623
3 am to 4 am	1623	1623	1623	1623	1623	1623	1623
4 am to 5 am	1623	1623	1623	1623	1623	1623	1623
5 am to 6 am	1623	1623	1623	1623	1623	1623	1623
6 am to 7 am	1623	1623	1623	1623	1623	1623	1623
7 am to 8 am	7425	7425	7425	7425	7425	7425	7425
8 am to 9 am	7425	7425	7425	7425	7425	7425	7425
9 am to 10 am	7425	7425	7425	7425	7425	7425	7425
10 am to 11 am	7425	7425	7425	7425	7425	7425	7425
11 am to Noon	7425	7425	7425	7425	7425	7425	7425
Noon to 1 pm	7425	7425	7425	7425	7425	7425	7425
1 pm to 2 pm	7425	7425	7425	7425	7425	7425	7425
2 pm to 3 pm	7425	7425	7425	7425	7425	7425	7425
3 pm to 4 pm	7425	7425	7425	7425	7425	7425	7425
4 pm to 5 pm	7425	7425	7425	7425	7425	7425	7425
5 pm to 6 pm	7425	7425	7425	7425	7425	7425	7425
6 pm to 7 pm	7425	7425	7425	7425	7425	7425	7425
7 pm to 8 pm	7425	7425	7425	7425	7425	7425	7425
8 pm to 9 pm	7425	7425	7425	7425	7425	7425	7425
9 pm to 10 pm	7425	7425	7425	7425	7425	7425	7425
10 pm to 11 pm	1623	1623	1623	1623	1623	1623	1623
11 pm to Midnight	1623	1623	1623	1623	1623	1623	1623

Capacities for Alternative 3 for Northbound (Double lane closure, Adjusted Nighttime Only)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	1623	1623	1623	1623	1623	1623	1623
1 am to 2 am	1623	1623	1623	1623	1623	1623	1623
2 am to 3 am	1623	1623	1623	1623	1623	1623	1623
3 am to 4 am	1623	1623	1623	1623	1623	1623	1623
4 am to 5 am	1623	1623	1623	1623	1623	1623	1623
5 am to 6 am	7425	7425	7425	7425	7425	7425	7425
6 am to 7 am	7425	7425	7425	7425	7425	7425	7425
7 am to 8 am	7425	7425	7425	7425	7425	7425	7425
8 am to 9 am	7425	7425	7425	7425	7425	7425	7425
9 am to 10 am	7425	7425	7425	7425	7425	7425	7425
10 am to 11 am	7425	7425	7425	7425	7425	7425	7425
11 am to Noon	7425	7425	7425	7425	7425	7425	7425
Noon to 1 pm	7425	7425	7425	7425	7425	7425	7425
1 pm to 2 pm	7425	7425	7425	7425	7425	7425	7425
2 pm to 3 pm	7425	7425	7425	7425	7425	7425	7425
3 pm to 4 pm	7425	7425	7425	7425	7425	7425	7425
4 pm to 5 pm	7425	7425	7425	7425	7425	7425	7425
5 pm to 6 pm	7425	7425	7425	7425	7425	7425	7425
6 pm to 7 pm	7425	7425	7425	7425	7425	7425	7425
7 pm to 8 pm	7425	7425	7425	7425	7425	7425	7425
8 pm to 9 pm	1623	1623	1623	1623	7425	1623	1623
9 pm to 10 pm	1623	1623	1623	1623	1623	1623	1623
10 pm to 11 pm	1623	1623	1623	1623	1623	1623	1623
11 pm to Midnight	1623	1623	1623	1623	1623	1623	1623

ALTERNATIVE 3

FILL IN WORK HR. CAP.

Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced

REVIEW QUEUING

INDOT Queuing Analysis v1_29 (EXAMPLE).xlsx - Excel

Anticipated Queuing (mi) for Alternative 3 for Southbound Traffic (Double lane closure, Adjusted Nighttime Only)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	0	0	0	0	0	0	0
1 am to 2 am	0	0	0	0	0	0	0
2 am to 3 am	0	0	0	0	0	0	0
3 am to 4 am	0	0	0	0	0	0	0
4 am to 5 am	0	0	0	0	0	0	0
5 am to 6 am	0	0	0	0	0	0	0
6 am to 7 am	0.52	0.52	0.52	0.52	0.60	0	0
7 am to 8 am	0	0	0	0	0	0	0
8 am to 9 am	0	0	0	0	0	0	0
9 am to 10 am	0	0	0	0	0	0	0
10 am to 11 am	0	0	0	0	0	0	0
11 am to Noon	0	0	0	0	0	0	0
Noon to 1 pm	0	0	0	0	0	0	0
1 pm to 2 pm	0	0	0	0	0	0	0
2 pm to 3 pm	0	0	0	0	0	0	0
3 pm to 4 pm	0	0	0	0	0	0	0
4 pm to 5 pm	0	0	0	0	0	0	0
5 pm to 6 pm	0	0	0	0	0	0	0
6 pm to 7 pm	0	0	0	0	0	0	0
7 pm to 8 pm	0	0	0	0	0	0	0
8 pm to 9 pm	0	0	0	0	0	0	0
9 pm to 10 pm	0	0	0	0	0	0	0
10 pm to 11 pm	0	0	0	0	0.19	0	0
11 pm to Midnight	0	0	0	0	0	0	0

Anticipated Queuing (mi) for Alternative 3 for Northbound Traffic (Double lane closure, Adjusted Nighttime Only)

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Midnight to 1 am	0	0	0	0	0	0	0
1 am to 2 am	0	0	0	0	0	0	0
2 am to 3 am	0	0	0	0	0	0	0
3 am to 4 am	0	0	0	0	0	0	0
4 am to 5 am	0	0	0	0	0	0	0
5 am to 6 am	0	0	0	0	0	0	0
6 am to 7 am	0	0	0	0	0	0	0
7 am to 8 am	0	0	0	0	0	0	0
8 am to 9 am	0	0	0	0	0	0	0
9 am to 10 am	0	0	0	0	0	0	0
10 am to 11 am	0	0	0	0	0	0	0
11 am to Noon	0	0	0	0	0	0	0
Noon to 1 pm	0	0	0	0	0	0	0
1 pm to 2 pm	0	0	0	0	0	0	0
2 pm to 3 pm	0	0	0	0	0	0	0
3 pm to 4 pm	0	0	0	0	0	0	0
4 pm to 5 pm	0	0	0	0	0	0	0
5 pm to 6 pm	0	0	0	0	0	0	0
6 pm to 7 pm	0	0	0	0	0	0	0
7 pm to 8 pm	0	0	0	0	0	0	0
8 pm to 9 pm	0.19	0.19	0.19	0.19	0	0.01	0.16
9 pm to 10 pm	0	0	0	0	0.14	0	0
10 pm to 11 pm	0	0	0	0	0	0	0
11 pm to Midnight	0	0	0	0	0	0	0

ALTERNATIVE 3

Raw Weekend Hourly Traffic Vols | Weekend Adjustment Factors | INDOT Adjustment Factors | Hourly Volumes | Work Information | Queuing Calcs | Chart Info (Advanced

Prepared by:
Prepared for:

Work Zone Info

Route:
Mile marke
Positive Di

Contract:
Work Year:
Work Mon
Work Type
Work Desc

Permanent
Work Zone
Workzone

Channelizir

Additional

Queuing Formu

$L = L_0 +$

Count Infor

Weekend A

Factors to A

Factors to I

Assumed P

Time
Midnight to 1
1 am to 2 an
2 am to 3 an
3 am to 4 an
4 am to 5 an
5 am to 6 an
6 am to 7 an
7 am to 8 an
8 am to 9 an
9 am to 10 a
10 am to 11 a
11 am to Noc
Noon to 1 pr
1 pm to 2 pn
2 pm to 3 pn
3 pm to 4 pn
4 pm to 5 pn
5 pm to 6 pn
6 pm to 7 pn
7 pm to 8 pn
8 pm to 9 pn
9 pm to 10 p
10 pm to 11 p
11 pm to Midn

Note: All Traffic V

Southbound Volu

Northbound Volu

INDIANA DEPARTMENT OF TRANSPORTATION

Summary of Alternatives

Southbound
- Alternative 1 (Double lane closure, Nighttime and Weekends): Fails Criteria i, ii, iii, iv
- Alternative 2 (Double lane closure, Nighttime Only): Within Policy Limits
- Alternative 3 (Double lane closure, Adjusted Nighttime Only): Within Policy Limits

Northbound
- Alternative 1 (Double lane closure, Nighttime and Weekends): Fails Criteria i, ii, iii, iv
- Alternative 2 (Double lane closure, Nighttime Only): Within Policy Limits
- Alternative 3 (Double lane closure, Adjusted Nighttime Only): Within Policy Limits

Policy Limits Criteria:
- i) No queues of any length for > 6 continuous hours or 12 hours in a calendar day
- ii) No queues >0.5 mi for > 4 continuous hours
- iii) No queues >1.0 mi for > 2 continuous hours
- iv) No queues >1.5 mi

extLevel DIANA

Remember to…

- Model a realistic typical cross section.
- Incorporate any required queue mitigation strategies as part of an approved IHCP Exception into the plans and contract documents.

Conclusion

Summary

In this session, we discussed:

- Work Zone Type Selection…
- Innovative Countermeasures in Work Zones…
- MOT Practice Pointers…
- INDOT's Queue Analysis Tool…

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Questions

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