



INDIANA DEPARTMENT OF TRANSPORTATION

Design Memo No. 24-08

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TO: All Design Personnel and Consultants

FROM: /s/ Daniel McCoy
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SUBJECT: MOT on High-Volume Interstate Highways

EFFECTIVE: Immediately

This memo is to notify designers of INDOT's initiative to improve safety and operations during maintenance of traffic (MOT) on high-volume interstate highways and to provide updated requirements and procedures. The criteria described in this memo supersede the Preapproved Interstate Closure and Restriction Times table found Appendix B of the Interstate Highways Congestion Policy (IHCP). For example, where the IHCP allows nighttime closures to a single lane of traffic, but traffic volumes meet the criteria in this memo to maintain two lanes of traffic, two lanes are required.

This memo includes:

- Criteria to determine the minimum number of lanes required during MOT.
- Requirements for the MOT cross section configuration.
- Requirements and procedures for MOT alternatives analysis.
- Procedures and documentation for exceptions.

I. Criteria for Maintaining Two Lanes of Traffic

The need to provide two lanes of traffic in each direction through the interstate work zone should be determined on a project-by-project basis as indicated in Table 1.

If the Peak Hour Volume % is...⁽¹⁾	and Daily Vehicular Volume (total) is at least...	...Or Daily Truck Volume (total) is at least...	Then...
Any	30,000	10,000	Two lanes are required in each direction.⁽²⁾
7%	26,000	8,000	
8%	23,000	7,000	
9%	20,500	6,500	
≥ 10%	18,500	6,000	
⁽¹⁾ Design Hourly Volume (DHV) percentage from the Traffic Forecast Report can be used. ⁽²⁾ A determination for the minimum number of lanes is required when the peak hour volume exceeds 1,800 vph for a short duration, e.g., 1 or 2 hours.			

Table 1 - Minimum Thresholds Requiring Two Lanes

For a determination, designers should submit the following to the District Traffic Engineer (DTE). The DTE will review and submit the recommendation. The entity making the determination will be based on the project duration (Table 2).

Determination Submittal Requirements (submit to DTE)	If Project Duration is...	Determination Made By...
<ul style="list-style-type: none"> • Data on number of hours exceeding volume threshold. • History of queuing for similar projects in the area. • Review of adverse work zone traffic safety performance on the corridor near the project area. 	< 30 days	IHCP Approving Authority
	≥ 30 days	Work Zone Council

Table 2 –Determination of Number of Lanes Required

II. Requirements

A. Alternatives Analysis for MOT

An MOT alternatives analysis should include the following:

1. Traffic analysis with a recent full 7-day traffic count or other approved data as a proxy. The extended traffic data will allow for the proper identification of the controlling time period for peak flow analysis under the MOT conditions.

2. Costs to provide the following:
 - a. Two lanes of traffic in the current direction. Include separate costs for providing the preferred roadway cross section as well as Options 2 and 3 in the cross section elements hierarchy.
 - b. A 3-and-1 contraflow layout.
 - c. An alternate that requires an exception, if applicable.
3. A review of historical safety and mobility performance during similar construction activities on the corridor and documentation of the findings.
4. Recommendation of a preferred alternative.

B. Cross Section Elements

The cross section for MOT should be determined using the following hierarchy:

Option ⁽³⁾	Cross Section Configuration ⁽⁴⁾⁽⁵⁾	Shoulder Width	Comments
1	2 lanes @ 12 ft	2 ft	Preferred option. May require temporary widening.
2	1 lane @ 12 ft ⁽¹⁾ , and 1 lane @ 11 ft	2 ft	Analysis must show physical constraints result in additional construction that is prohibitive due to cost or time. Review of crash history ⁽²⁾ .
3	2 lanes @ 11 ft	2 ft	Savings in time and cost over option 2 must be demonstrated.
<p>Notes</p> <p>(1) The 12 ft lane may be located right or left considering barrier placement, edge of pavement, and zone of intrusion.</p> <p>(2) Include the crash history of prior construction projects on the corridor in the same area, reviewing the work zone queuing and crashes.</p> <p>(3) Options 2 and 3 require supporting justification.</p> <p>(4) At an isolated physical constraint such as a bridge pier, concrete barrier or sign foundation, an 11 ft lane with a 1 ft shoulder may be provided. This reduction is only applicable at the physical restriction. Advanced "ROAD NARROWS" warning signs should be considered.</p> <p>(5) Providing 2 lanes @ 11 ft with 1 ft shoulder for long segment lengths or long duration requires an exception.</p>			

Table 3 – Cross Section Elements for Two Lane MOT Schemes.

III. Procedures

A. Alternatives Analysis for MOT

i. For Projects in Scoping Phase

For projects that meet the traffic criteria, an MOT alternatives analysis should be included as part of the Engineer's Report. The budget and construction schedule should account for any shoulder strengthening or temporary widening and adjustments to infrastructure needed to maintain two lanes in each direction through the work zone. Any exceptions should be approved prior to beginning the design phase.

ii. For Projects in Design Phase

For a project currently in design that meets the traffic criteria and does not provide at least two lanes in each direction, an MOT alternatives analysis should be completed. The analysis and the recommended MOT scheme should be coordinated with the appropriate DTE, who will submit it to the Work Zone Council for a determination. The Engineer's Report should be amended with the analysis and approved alternative.

For a project currently in design that has traffic approaching the criteria thresholds, data should be compiled and coordinated with the appropriate DTE for a determination as described previously.

B. Exceptions

Exceptions to maintain fewer than two lanes will be considered. Requests should be submitted in the planning or early design phase (Stage 1). The full evaluation of MOT alternatives and their associated costs should include an option that completely adheres to the policy. Reasonable cost-effective alternatives that provide necessary mitigating measures to provide safe traffic flow will be considered. Alternatives should be presented such that a reasonable correlation or comparison can be made among them.

Exceptions should be coordinated with the appropriate DTE, who will submit with supporting justification to the Work Zone Council. Approval is at the discretion of the Work Zone Council with the final approval issued as an approved IHCP exception.

i. Shoulder Strengthening and Temporary Widening

Shoulder strengthening or temporary widening that requires geotechnical work may warrant special consideration. Short-term, one-lane cross sections to complete shoulder strengthening or temporary widening will be considered. The remaining MOT phases will require the two-lane cross section. This exception will be at the discretion of the Work Zone Council and the IHCP Approving Authority.

ii. Phase Duration

The longer the exception duration, the stronger the justification that is needed to accompany the request. Repeated short-term closures should not be utilized when a longer restriction is more appropriate to complete the work.

Ensure the duration of the exception is included in the exception request. The exception request should be submitted to the District Traffic Engineer (DTE) who will then forward the request to the approving authority. Consideration and justification for duration ranges are as follows:

Duration	Description	Exception Submittal Requirements	Determination Made By...
Short Term	During lower volume periods, maintaining a single lane may not produce queuing.	Queue Analysis demonstrating no queue during restriction.	IHCP Approving Authority
1 - 14 days	Continuous restriction up to 14 days.	Request should include justification for why the restriction is reasonable and prudent, an MOT alternatives analysis, and a user cost analysis.	IHCP Approving Authority (Possible escalation to Work Zone Council)
15 - 30 days	Continuous restriction from 15 to 30 days. (Greater justification needed)	Request should include the same as 1 - 14 days duration with mitigation strategies for the proposed MOT alternative.	Work Zone Council
> 30 days	Continuous restriction greater than 30 days. (This duration is discouraged and will be considered only in rare circumstances.)	Request should include the same as ≤ 30 days duration with a full description of the unique circumstances warranting a longer duration.	Work Zone Review Board & INDOT Chief Engineer of Construction

Table 4 – Exceptions by Phase Duration.

For general questions related to this design memo, please contact the Traffic Engineering Division, Dan McCoy, dmccoy@indot.in.gov.