

Appendix B ***Compendium of Options***

Options Summary

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Temporary Structures
Closure of 1-Direction of Mainline

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CONSTRUCTION STRATEGIES & WORK ZONE TRAFFIC CONTROL OPTIONS

CONSTRUCTION/TRAFFIC MAINTENANCE STRATEGIES

Strategy & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Part Width Construction</u></p>	<p>Easier design</p> <p>Cheaper MOT cost</p> <p>No detour to follow</p> <p>Ramps can remain open</p>	<p>Contractor access interference</p> <p>May sacrifice quality</p> <p>More difficult to construct</p> <p>Narrow lanes and less safe</p> <p>Longer to construct</p> <p>Barrier could still be required for some dropoffs</p>	<p>Min-lane widths sometimes tough to obtain</p> <p>Conflict between width of roadway and width needed for work</p>	<p>When existing two lanes can remain with use of shoulder</p> <p>Minor work with short duration</p> <p>One lane may handle only 20,000 ADT with normal backup</p>	<p>This is the basis of comparison for alternate strategies, the “defacto” standard.</p>
<p><u>Close & Detour</u></p> <p>(Unusual on interstates and expressway routes)</p> <p>3</p>	<p>Safety/speeds up construction with full access</p> <p>Easier and better constr.</p> <p>No distracting traffic</p>	<p>Public can’t get there the “usual” way</p> <p>Access to businesses</p> <p>Cost to motorist (time & fuel)</p> <p>Signing</p> <p>Lost motorists complaints/ damage of local roads</p>	<p>Short distance and ramp access</p> <p>Local agencies must accept detour and public information is emphasized (i.e. by TMP in urban area)</p> <p>Locations of ramps/intersections</p> <p>Detour must be adequately signed and may require capacity improvements</p>	<p>If it produces accelerated construction, alternates are available and drivers are fairly warned</p>	<p>CC↓, MTC↑, RUC↑</p> <p>Cheap if only signs are used; but will cost more if alternate route modifications are required</p> <p>detours- usually signed by ODOT</p>

Legend: Objectives 1 = Reduce Complaints, 2 = Maximize Corridor Capacity, 3 = Minimize duration of motorist inconvenience, 4 = Maximize motorist/work safety

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Strategy & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Crossover Construction</u></p> <p>3, 4</p>	<p>Safety for workers, familiarity of motorist</p> <p>Easier and better construction</p> <p>Wider traveled lanes</p> <p>If left in place useful in emergency</p> <p>Should increase contractor productivity</p> <p>Should increase quality</p> <p>Could reduce traffic interference as a result of increased contractor productivity leading to shorter phase completion dates are mandated</p>	<p>Ramp interference</p> <p>Cost</p> <p>Requires time for X-over construction and removal</p> <p>Long crossovers less acceptable in rolling to hilly terrain</p>	<p>Duration of project</p> <p>Location of x-over depends on ramp/lighting/structure/grade</p> <p>Phasing limits many impact use.</p> <p>Length of work zone may affect acceptability</p>	<p><u>Whenever</u> possible, especially where not many ramps interfere.</p> <p>Long stretches of pavement reconstruction or rehabilitation</p> <p>Bridge work not conducive to keeping one lane open</p> <p>One lane each direction should handle about 30,000 ADT with limited backups</p>	<p>CC↓, MTC↑, RUC↓</p> <p>Min. \$¼ to ½ million per pair</p>
<p><u>Temporary Pavements (Runaround)</u></p> <p>1, 2, 3, 4</p>	<p>Separates work from traffic</p>	<p>Expensive and time consuming while constructing</p> <p>Inefficient use of materials</p>	<p>Must have sufficient right-of-way</p>	<p>No adequate detour is available</p>	<p>MTC↑, RUC↓</p>
<p><u>Temporary Structures</u></p> <p>1, 2</p> <p>Allows closure of structure, but no detour for the public</p>	<p>Traffic remains on routes</p>	<p>Cost</p> <p>Time to design and construct</p> <p>Inefficient use of materials</p>	<p>Right-of-Way</p>	<p>When volumes warrant</p> <p>No detour available</p>	<p>MTC↑, RUC↓</p>

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Strategy & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Detour of 1-Direction of Mainline</u></p> <p>(Assumes detour for closed direction)</p> <p>3, 4</p>	<p>Work moves faster</p> <p>Only ½ traffic detoured at anytime</p> <p>Improves safety of project personnel</p>	<p>Detour maintenance</p>	<p>Short distance and ramp access</p> <p>Local agencies must accept detour routes and public information is emphasized (i.e. by TMP in urban area)</p> <p>Locations of ramps/intersections</p> <p>Detour must be adequately signed and may require capacity improvements</p>	<p>Often Urban/suburban freeway is amenable to this when suitable detour is available</p>	<p>MTC↑ - Could require detour improvements</p>

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CORRIDOR OPTIONS OUTSIDE WORK ZONE

Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Temporary Signals</u></p> <p>(At ramps and on expressways includes construction vehicle crossing and ramp metering)</p> <p>1, 2, 4</p>	<p>Helps maintain ramp/detour capacity</p>	<p>Change traffic patterns on cross roads</p>	<p>Should be warranted</p>	<p>When additional capacity is needed for the short term</p>	<p>Low</p>
<p><u>Reversible Lanes</u></p> <p>(May use moveable barriers)</p> <p>2</p>	<p>Flexible to accommodate fluctuations in traffic peak flow direction</p>	<p>Confusing to infrequent user.</p> <p>Labor intensive</p>	<p>Need majority commuting traffic</p>	<p>Large variances in directional volumes between AM & PM and # of lanes limited</p>	<p>MTC↑, RUC↓</p>
<p><u>Movable Barrier Systems</u></p> <p>2, 3, 4</p>	<p>Ability to provide for peak flow capacity</p>	<p>More costly than drums and fixed barriers</p>	<p>Shift distance must be a constant</p> <p>Must determine appropriate end treatment</p>	<p>When you have a need for repeated barrier shifts</p>	<p>CC↑, RUC↓</p>
<p><u>Signed Alternate Routes</u></p> <p>(Eligible for Federal Money)</p> <p>1, 2, 4</p>	<p>Reduces congestion</p> <p>Lessen congestion on mainline</p>	<p>Hard to get people to use</p> <p>Signing</p> <p>Not always used by public</p>	<p>Must be just as quick or close</p> <p>Shouldn't go through other construction zones</p> <p>Local officials must approve</p>	<p>With good arterials (parallel)</p> <p>When construction expected to backups</p> <p>Project is of long duration</p>	<p>Low cost unless alternate route improvements are required</p>
<p><u>Unsigned Alternate Routes</u></p> <p>(Not eligible for Federal money)</p> <p>(Logical unsigned alternate may be eligible for State money)</p> <p>1, 2</p>	<p>Reduces congestion</p> <p>Lessen congestion on mainline</p>	<p>Difficult to get people to use</p>	<p>Alternate routes shouldn't go through other construction zones</p>	<p>When construction expected to produce backups and good parallel arterials are available</p>	

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Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<u>Highway Advisory Radio</u> 1	Provides real time information to motorists	Limited ranges Low usage rate by motorists due to difficult to tune in station	Information needs to be current May work best with repeat drivers Should be limited to project specific information	When alternate routes are available Long duration of construction	Low cost
<u>Advanced Signing (Time or Distance)</u> 1, 2, 4	A great tool for information to motorists Gives public advance warning to make decisions	If project is delayed, sign is wrong	Need to keep information up to date	Anytime Advanced warning/PR is great always	Low cost for fixed Addition to MOT unless PCMS is used a \$3000/mo

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TRAFFIC FLOW OPTIONS INSIDE WORK ZONE

Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Temporary Pavements (Widen)</u></p> <p>1, 2, 4</p>	<p>Allows for more lanes to stay open</p> <p>Creates greater capacity thru constr. Zone - less back-ups</p>	<p>Expensive and time consuming while constructing</p>	<p>Bridges and other roadway items</p>	<p>When volumes warrant, keeping all lanes open</p> <p>When construction is expected to produce backups</p> <p>When Project is of long duration</p>	<p>MTC↑, RUC↓</p>
<p><u>Use Existing Shoulders</u></p> <p>1, 2</p>	<p>Keeps flow normal</p> <p>Allows wider work area or increases capacity</p> <p>Low cost</p> <p>Quick</p>	<p>Requires more maintenance</p> <p>Trucks may damage weak shoulders</p> <p>No room for breakdowns/ emergency stops unless parking lots created</p> <p>Closer to guardrail/ embankment/piers</p>	<p>Must have full shoulder widths level bridges</p> <p>Bridges must be able to accommodate</p> <p>Put trucks in left lane if possible</p> <p>Must evaluate shoulders during design</p> <p>Should have full width approach slabs</p>	<p>High volume</p> <p>When backups expected</p> <p>Moving projects</p>	
<p><u>Temporary Signals</u></p> <p>(At ramps and on expressways includes construction vehicle crossing and ramp metering)</p> <p>1, 2, 4</p>	<p>Helps maintain ramp/detour capacity</p>	<p>Change traffic patterns on cross roads</p>	<p>Should be warranted</p>	<p>When additional capacity is needed for the short term</p>	<p>Low</p>
<p><u>Reversible Lanes</u></p> <p>(May use moveable barriers)</p> <p>2</p>	<p>Flexible to accommodate fluctuations in traffic peak flow direction</p>	<p>Confusing to infrequent user.</p> <p>Labor intensive</p>	<p>Need majority commuting traffic</p>	<p>Large variances in directional volumes between AM & PM and # of lanes limited</p>	<p>MTC↑, RUC↓</p>

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Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<u>Movable Barrier Systems</u> 2, 3, 4	Ability to provide for peak flow capacity	More costly than drums and fixed barriers	Shift distance must be a constant Must determine appropriate end treatment	When you have a need for repeated barrier shifts	MTC↑, RUC↓
<u>Ramp Closures</u> 2, 3, 4	Can pave/repair ramp full width Better, faster construction See “Close & Detour” Reduces mainline congestion Reduces cross road congestion Easy to sign in rural area	Blocks traffic pattern See “Close& Detour” Forces new traffic pattern Moves congestion elsewhere In urban area, may have negative impact on next intersection	Should give definite time limit See “Close & Detour” Best if only two ramps at a time (to/from directional pairs)	When other ramps are close by or when bridges on mainline are too close to utilize exit ramps/entrance ramps See “Close & Detour” Use when you have high traffic volumes In areas where alternate routes exists	Relatively cheap See “Close & Detour”
<u>Glare/Gawk Screens</u> 2, 4	Effective way to separate work and keep traffic moving Safer for work Reduce rubbernecking	Longer to set up than drums Higher cost than 32" Maintenance of glare screen, if used If present on both sides, may reduce drive speed Barrier can interfere with wideloads	Widths in certain areas Sight restrictions at intersections and ramps	When view of intense construction is likely to reduce capacity with all part width construction at restricted areas to control headlight glare	MTC↑
<u>Highway Advisory Radio</u> 1	Provides real time information to motorists	Limited ranges Low usage rate by motorists due to difficult to tune in station	Information needs to be current May work best with repeat drivers Should be limited to project specific information	When alternate routes are available Long duration of construction	RUC

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Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<u>Owner Imposed Design Restrictions</u> 1, 3	Can reduce actual construction duration	Requires advance planning during design; could increase cost		For certain time critical phases	
<u>Use of Owner Supplied or Stockpiled Materials</u> 1, 3	Can reduce actual construction duration	Requires advance planning		For time critical phases to shorten duration	Inexpensive
<u>Control of Contractor's Access to the Work</u> (By location or time of day.) 2, 4	Eliminates potential conflicts between construction traffic and motorist Improves through put of motorists	May reduce contractor productivity	Must provide reasonable access for contractor	Where capacity is critical, where conflicts between contractor's equipment and motorists is expected to impact capacity and safety possibly on grades or locations with poor sight distances	CC↑, RUC↓

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TIME LIMITATIONS WITH LIQUIDATED DAMAGES OPTIONS

Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Temporary Lane Closures or Restrictions</u></p> <p>1, 2</p>	<p>Prevents contractor from keeping lanes closed longer than necessary</p> <p>Prevents work during specified hour</p>	<p>May surprise repeat drivers</p> <p>May be more expensive</p> <p>More setups and take downs which can reduce construction time</p>	<p>Rush hour considerations</p> <p>Use only if work will allow</p> <p>Give public notices</p>	<p>Mainline paving on basic freeway lanes</p> <p>When desired to prohibit closures during specified times</p>	<p>CC↑, MTC↑, RUC↓</p> <p>Cheap (Cone - Day) (Drums - Night)</p> <p>Possibly higher cost than permanent closure</p>
<p><u>Night Work</u></p> <p>(Hours of day a specific phase of work is or required to be performed)</p> <p>2, 3</p>	<p>Good PR</p> <p>Lower cost to motorist</p> <p>May shorten project duration</p>	<p>Costly for labor</p> <p>Lower efficiency</p> <p>Personnel are isolated</p> <p>Possible poorer quality work and inspection difficulty</p> <p>Difficult to get some materials at night</p> <p>Increased hazard potential</p> <p>Difficult access to management/supervision for problem solution</p>	<p>Residential areas</p> <p>Work must be able to be accomplished in this time</p> <p>Urban noise ordinances</p>	<p>High volume areas</p> <p>When extensive backups expected to be created</p>	<p>CC↑, MTC↑, RUC↓</p>
<p><u>Weekend Work (Only)</u></p> <p>2, 3, 4</p>	<p>Lower cost to motorist</p>	<p>Costly/needs inspection on overtime also</p> <p>Impacts traveler who is less familiar with alternate routes</p> <p>Difficult to get some materials on weekends</p>	<p>Work must be able to be accomplished in this time</p>	<p>More amenable in urban areas</p> <p>High volume of commuter traffic expected to be delayed</p>	<p>CC↑, RUC↓</p>

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Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Lane Rental</u></p> <p>(Many variations)</p> <p>(Contractor loses money for duration of specific lane closures)</p> <p>1, 2, 3</p>	<p>Work done in the most cost effective and timely manner</p> <p>Should minimize construction time</p> <p>Provides incentive to minimize use of road space</p>	<p>Expect disagreements</p> <p>New application in Ohio</p>	<p>Requires careful timekeeping</p> <p>Too many variables</p>	<p>Paving freeways</p>	<p>CC↑, RUC↓</p>
<p><u>Interim Completion Dates, By Phase</u></p> <p>3 (possibly 4)</p>	<p>A good tool for timeliness</p> <p>Prevents contractor from having lanes closed or restricted when not desired</p>	<p>Only works if enforced by increased liquidated damages</p>	<p>Schools, weather, plowing, etc.</p> <p>Must require early consideration <u>and</u> follow-up</p> <p>Must be updated when a sale date is established or revised</p>	<p>To open roads before winter, specified events</p>	<p>Cheap</p>

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CONTRACTING PROCEDURE OPTIONS

Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Incentive/Disincentives</u></p> <p>(Usually applies to a phase of a project.)</p> <p>1, 3</p>	<p>Timeliness</p> <p>Quicker construction</p>	<p>More arguments on time extension</p> <p>Our people must resolve issues quickly</p> <p>Requires CPM schedule</p>	<p>None known</p> <p>Need good plans and a project with the work well defined in advance</p> <p>Work must be able to be accomplished in allotted time - must follow I-D policy</p>	<p>High volume that truly impacts motorists without good detour or alternate route</p>	<p>CC↑, RUC↓</p> <p>Must budget for maximum incentive</p>
<p><u>A + B Bidding</u></p> <p>(Construction cost plus construction time.)</p> <p>1, 3</p>	<p>Work done in the most cost effective and timely manner</p> <p>Should minimize construction time</p>	<p>May pay more for the work</p> <p>Expect disagreements</p>	<p>Limit to high impact projects currently limited to test projects</p> <p>Need very good plans and no expected changes</p> <p>Need reasonable completion times</p>	<p>High volume that truly impacts motorists without good detour or alternate route</p>	<p>CC↑, RUC↓</p>
<p><u>Lane Rental</u></p> <p>(Many variations)</p> <p>(May be combined with A&B Bidding)</p> <p>(Contractor loses money for duration of specific lane closures)</p> <p>1, 2, 3</p>	<p>Work done in the most cost effective and timely manner</p> <p>Should minimize construction time</p> <p>Provides incentive to minimize use of road space</p>	<p>Expect disagreements</p> <p>New application in Ohio</p>	<p>Requires careful timekeeping</p>	<p>Paving freeways</p>	<p>CC↑, RUC↓</p>

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ADMINISTRATIVE OPTIONS

Option & Objectives	Pros	Cons	Restrictions	When to Use	Cost
<p><u>Traffic Management Program</u></p> <p>(Area, corridor or project)</p> <p>(May include enforcement, demand management, public info., public perception adjustment)</p> <p>1, 2, 4</p>	<p>Keeps checks on conflicts Helps with consistency</p> <p>Coordinates all projects develops a forum for discussion of construction problems</p>	<p>Not welcomed by some</p> <p>Takes extra time and planning</p> <p>Tend to be expensive</p> <p>Additional funding required from Districts and Locals</p> <p>Project outside area boundaries may cause public relation problems/ requires more staff time</p>	<p>Takes extra time and planning</p> <p>Area must be large enough to make worthwhile</p>	<p>Anytime</p> <p>Most often used in larger urban areas and particularly (8 MPO's) with large projects</p>	<p>CC↑, MTC↑, RUC↓ Personnel only (Mainly)</p> <p>Typical program is \$500,000 to \$1 million/year</p>
<p><u>Enforcement</u></p> <p>1, 2, 4</p>	<p>Expedited, orderly traffic flow, incident support</p>	<p>Cost</p>		<p>When incident support is required or enforcement presence is desired</p>	<p>Medium high</p>
<p><u>Incident Management</u></p> <p>1, 2, 3, 4</p>	<p>Minimizes effect incidents have on traffic flow</p>	<p>Cost of standby incident response personnel and vehicles administrative cost</p>		<p>Freeway sections with high v/c ratio and high likelihood of incidents</p>	<p>High</p>
<p><u>Demand Management</u></p> <p>1, 2, 3, 4</p>	<p>Shifts some demand from highway under construction</p> <p>Good PR</p>	<p>Requires advance planning and coordination</p> <p>Cost</p>	<p>Alternative routes and modes must be available</p>	<p>Large urban/suburban projects in congested corridor</p>	<p>High</p>
<p><u>Contractor Proposed Options</u></p> <p>3</p>	<p>May result in shorter construction duration</p>	<p>Contractor may not be as familiar with recommended procedure as claimed</p> <p>Usually requires rush reviews by ODOT</p>	<p>Requires adequate lead time for PR and permits</p>		<p>CC↓</p>

Definitions

A + B BIDDING - the contractor bids the cost of work (“A”) and the number of days that will be required to complete the project. The time cost (“B”) is established by multiplying the time by a set rate based on roadway user costs. These two “costs” are then added together to determine the lowest total bid for the project.

ADVANCE SIGNING - signing is displayed well in advance (either distance or time) in order to clearly communicate what to expect in the work zone and to offer options to the motorist. When displaying distance, these signs are placed in addition to those signs specified in MT series of Standard Drawings. They are placed far enough in advance of the project to warn approaching motorists of the work zone and to permit the selection of an alternate route.

CLOSE & DETOUR - all through traffic is completely banned from the roadway under construction. Through traffic is rerouted on other designated routes. Closures can range from 24 hours a day, seven days a week for a phase or the entire duration of the project to limited times such as nights, weekends, specified hours during the day, etc.

CLOSURE OF ONE DIRECTION OF THE MAINLINE - the complete closure of one direction of the roadway with that traffic being diverted to other detour routes.

CONTRACTOR-PROVIDED OPTIONS - allows the contractor to propose changes in construction strategy and maintenance of traffic. This method takes advantage of the contractor’s construction knowledge and special capabilities and can result in shortened contract time.

CONTROL OF CONTRACTOR’S ACCESS TO THE WORK - project documents clearly spell out where and when the contractor can and cannot enter and/or exit the work site from the lanes that are available for through traffic. Examples of such control are: specified ingress/egress from adjacent routes, limits on timing such as during non-peak hours, limiting the

number of breaks in temporary concrete barriers, etc.

CONSTRUCTION CROSSOVERS - involves the routing of one direction of traffic across the median to the opposite lanes. If the shoulder/temporary pavement is not used for through lanes, the number of travel lanes in each direction is reduced.

DEMAND MANAGEMENT - through traffic is reduced through establishment of HOV lanes, mass transit, ride-sharing programs, and/or employer cooperation. Park-and-ride lots are created or expanded. Mass transit service is either modified or established within the corridor via the use of schedule changes and/or additional local or express service. Ride-sharing is promoted through the creation of van-and/or car-pools. HOV lanes are established to move mass transit vehicles, van- and car-pools through the corridor. Employers (usually, but not limited to, large) are contacted for support via adjustments to employees work schedules (staggered starting times, compressed work schedules, telecommuting, etc.) and for support of the mass transit and ride-sharing programs.

ENFORCEMENT - law enforcement officers (LEO’s) paid to specifically patrol the work zone to ensure speed compliance and provide emergency response support with the zone. The LEO’s can be used on alternate routes during peak hours.

GLARE/GAWK SCREEN - the use of vertical panels or screening on the top of 32" or 50" high portable or permanent median barriers. This practice prevents the blinding of most motorists by headlights from opposing traffic (glare), and restricts the ability of motorists on one side from viewing construction activity on the other side (gawk).

HIGHWAY ADVISORY RADIO - a limited range transmitter to broadcast real time traffic information reports that are too long or complex for either static or portable changeable message signs.

INCIDENT MANAGEMENT - a mechanism by which the non-contract related traffic disruptions are minimized through contracting agency foresight. An example is the use of to have standby tow trucks or vehicles equipped with push bumpers on site or close at hand to minimize response time and reduce the effect which accidents or breakdowns could have on traffic flow.

INCENTIVE/DISINCENTIVE - rewards (incentive) the contractor for completing the work ahead of schedule and assesses deductions (disincentive) to the contractor for not meeting the completion date.

INTERIM COMPLETION DATES - a specified date or duration of time by which a phase of the project must be completed.

LANE RENTAL - a charge to the contractor which is assessed whenever the contractor has a portion of the roadway obstructed. The rental charge is usually based upon road user costs for the number/configuration/length of lanes closed, the time of day the closure occurs, and the duration of the closure. The rental charge can vary within a project (i.e., one lane closed for ½ hour at rush hour could cost more than one lane closed for four hours at night). The contractor includes an estimate for the total lane rental charge for the project in the bid.

MOVABLE BARRIER SYSTEMS - a mechanical system by which temporary, portable, concrete barriers can be moved quickly to provide additional work space for the contractor during off-peak hours or to provide an increase in the number of lanes to accommodate peak traffic flow periods.

OWNER IMPOSED DESIGN RESTRICTION - construction contractors can be structured to require the contractor to perform specific activities or operations in a manner which minimizes disruption to traffic.

NIGHT WORK - certain phases, or perhaps the entire project, are required to be performed at night to reduce interference with normal daytime traffic volumes. Night is usually defined as beginning at the end of the evening rush hours and ending at the beginning of the following morning rush hours.

PART WIDTH CONSTRUCTION - one or more normal traffic lanes are closed for the work zone. The remaining lane(s) may or may not have width restrictions. This is considered ODOT's "de facto" options against which all other options are measured.

RAMP CLOSURES - complete closure of either, or both, entrance and exit ramps to provide smoother flow on the mainline, to encourage local traffic to use alternate routes, and/or expedite work on the ramp.

REVERSIBLE LANES - an existing lane or lanes that may be assigned a reversible role to accommodate the predominant flow of traffic within the corridor.

SIGNED ALTERNATE ROUTE - an attempt to give the public a possibly less congested routing through the corridor while maintaining traffic on the mainline through the work zone. As with a detour route, this usually involves a cost to the contracting agency for maintenance of the route.

TEMPORARY LANE CLOSURES/RESTRICTIONS - the contractor may utilize a traveled lane only during specified times. The contractor must complete the necessary work in the lane and re-open the lane by the specified time.

TEMPORARY PAVEMENTS (RUNAROUND) - a temporary roadway that is constructed parallel to the work zone within the right-of-way. The temporary roadway is used as a detour within the corridor when the mainline is closed.

TEMPORARY PAVEMENTS (WIDENING) - pavement is added adjacent to the existing roadway in order to maximize the number of lanes available during construction.

TEMPORARY SIGNALS - traffic signals are installed on entrance and exit ramps, and along detour routes to provide priority travel for through traffic.

TEMPORARY STRUCTURES - an appropriately sized adjacent structure is erected for the duration of the construction project only. All traffic is shifted to this

new structure to permit complete closure of the existing structure without detouring traffic to another route. This additional structure is removed once construction on the existing structure is complete.

TRAFFIC MANAGEMENT PROGRAM (TMP)

- the use of a multi-faceted and multi-jurisdictional program of operational, communications, and demand management strategies to maintain acceptable levels of traffic flow during periods of construction activities. Typically, TMP's consist of elements from each of the following areas: Public Information, Motorist Information, Incident Management, Construction Strategies, Demand Management Strategies, and Alternate Route Strategies. A TMP can be used for either single projects or for coordination of multiple projects within a given area.

UNSIGNED ALTERNATE ROUTES - the use of transportation system management-type improvements on streets, highways, and freeways in and adjacent to the construction corridor to augment the overall corridor capacity. Unsigned alternate routes may benefit from such improvements as signal re-timing and coordination as well as operational changes including parking and turning restrictions.

USE OF OWNER-SUPPLIED OR STOCKPILED MATERIALS - the shortening of actual construction time by having the project owner provide critical, hard-to-get materials with unpredictable delivery schedules. Such material can be obtained and stockpiled for ready use either by the owner, or through preceding projects.

USING EXISTING SHOULDERS - this involves using the existing shoulder(s) as a part of the traveled portion of the roadway, with or without upgrading the shoulder pavement to the anticipated traffic loads.

WEEKEND WORK - a method of restricting certain phases or all work to weekends (off peak hours). This is usually defined as beginning at the end of evening rush hours on a Friday and ending at the beginning of morning rush hours on the following Monday.

