

TDOT WORK ZONE SAFETY AND MOBILITY MANUAL

PART 3: Project Significance Assessment

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Part 3 describes the project-level procedures or mechanisms by which TDOT personnel can become aware of and manage the work zone impacts of individual projects. These procedures include the determination of project significance and the completion of the TMP. In accordance with the Final Rule and TDOT's objectives, all projects necessitating work zone establishment under TDOT jurisdiction and oversight shall follow the procedures in this Manual. A project that is deemed "significant" requires a high level of work zone impact mitigation including Temporary Traffic Control Strategies, Transportation Operations Strategies, and Public Information Strategies. A project that is not found to be "significant" requires fewer mitigation strategies. The most basic projects require only a work zone traffic control plan.

The first step in developing a Transportation Management Plan (TMP) for a work zone is to determine the level of TMP to be applied. This is referred to as the Project Significance Determination. This procedure determines whether a project is defined as Significant or Non-Significant. It should be noted that if a project is determined to be Significant, it does not necessarily mean that the development of the TMP will be a time-consuming or exhausting effort. If a project is determined to be Significant, it simply means that additional mitigation strategies should be implemented to reduce congestion and improve safety within the work zone. Often, these strategies are things that TDOT is already doing for many work zones. Excluded projects and types of work for which standing TMP's may be used are discussed in Part 2.

Once the Significance Determination has been completed (and verified with a follow-up review), the next step is to develop the project's TMP. The TMP Workbook, including the Significance Determination Form, is included in Appendix B. In order to complete the TMP, the project is categorized into one of three separate groups:

Significant Project - Requires a high level of work zone impact mitigation. Requires consideration and use of all three TMP strategies to help mitigate the impacts of a significant project:

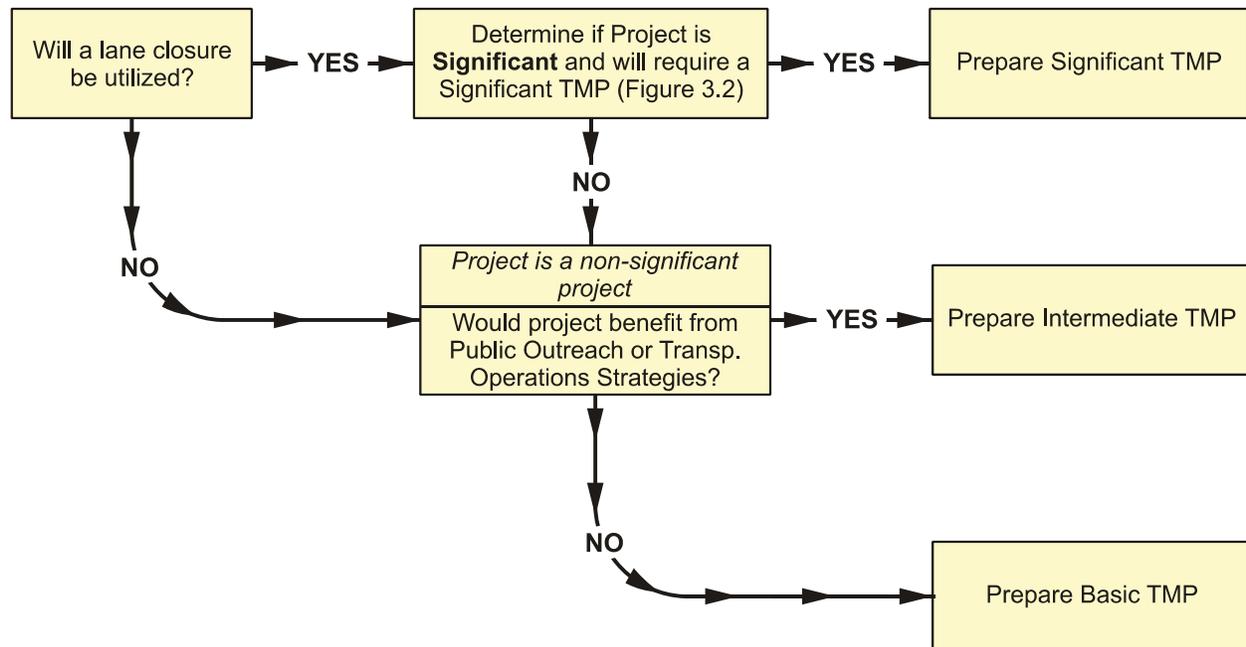
- Temporary Traffic Control Strategies (TTC)
- Transportation Operations Strategies (TO)
- Public Information Strategies (PI)

Intermediate Project - Requires additional planning, coordination, etc, but not required to be at the same level of a Significant TMP. Requires one or more TMP strategies beyond a basic TTC plan.

Basic Project - Typical work zone TTC plan is implemented alone. Refer to TDOT standard drawings, standard notes, and MUTCD. No additional TMP strategies required.

The basic process of significance determination is outlined in Figure 3.1. The remaining sections in Part 3 are a guide through this determination process.

Figure 3.1 - Transportation Management Plan (TMP) Development Process



3.1 Determination of Project Significance

In order to effectively manage the impacts of the work zones, a project's characteristics are reviewed and judged against minimum criteria to determine if it is to be designated a "significant" project..

If a project's traffic control will not involve a lane closure, the project will not be considered significant. In this case, the project is non-significant and will either be an Intermediate project or a Basic project. If the project is expected to benefit from public information or transportation operation strategies, an Intermediate TMP is to be developed per TDOT procedures. Otherwise, the project will utilize a Basic TMP consisting of only a TTC plan.

A Significant Project is one for which any of the following criteria exist:

- (a) Any project on the interstate system located within a recognized Transportation Management Area (TMA) that occupies a given location for at least three days duration with either continuous or intermittent lane closures.
- (b) Any project of any duration on an interstate route or any route with an AADT of at least 50,000 vehicles per day for which all lanes in one direction will be closed to traffic.

- (c) Any project for which the delay through the limits of the work zone is at least 30 minutes above the normal delay under typical non-work conditions.
- (d) Any project deemed Significant by extraordinary qualitative characteristics. This determination may be made on the basis of conditions such as high levels of public interest, business/community impacts, or long work zone duration. All Significant Projects defined in this manner shall only be done with careful consideration and strategic decision making.

In reference to the definition above, items (a) and (b) are presented as Major Route Criteria, item (c) defines the Delay Criteria, and item (d) defines the Qualitative Criteria.

3.1A Significance Determination Decision Chart

Visual representation of the definition of a Significant Project and how to define a project as such is provided as Figure 3.2

3.1B Defining Significance Using Major Route Criteria

Because certain routes serve major regional, intrastate, or interstate traffic flows, special consideration should be made for work zones established on these routes. Interruptions to normal traffic operations on these routes often present especially critical impacts to a large number of system users. Major routes are covered in parts (a) and (b) of Section 3.1.

In part (a), Tennessee's TMA's are currently identified as the census-defined Urbanized Areas of Memphis, Nashville, Chattanooga, and Knoxville. The TDOT Long-Range Planning Division can provide guidance on specifically defining the limits of the TMA's. However, for the purposes of this Manual, it is assumed that the TMA consists of the following counties: Blount, Bradley, Carter, Davidson, Fayette, Grainger, Hamblen, Hamilton, Hawkins, Jefferson, Knox, Loudon, Madison, Maury, Montgomery, Robertson, Rutherford, Sevier, Shelby, Sullivan, Sumner, Washington, Williamson, Wilson. A lane closure refers to the closure of a mainline through lane open to traffic under normal conditions. This definition may exclude work on ramps or on the shoulder where no lane closures are required.

Part (b) requires the Significance definition to apply when a total directional closure occurs on a major route. Due to the high level of impact this creates, a project which includes a total closure of any duration is considered a Significant Project. Work methods having the same basic methodology as a total closure (such as a "rolling roadblock") should also be considered Significant under this definition.

To determine if the work zone on a major route constitutes a Significant Project:

- (1) Properly identify the major route affected as well as the type and duration of the expected lane closure(s).
- (2) Complete a Work Zone Significance Determination Form to document the conclusion.

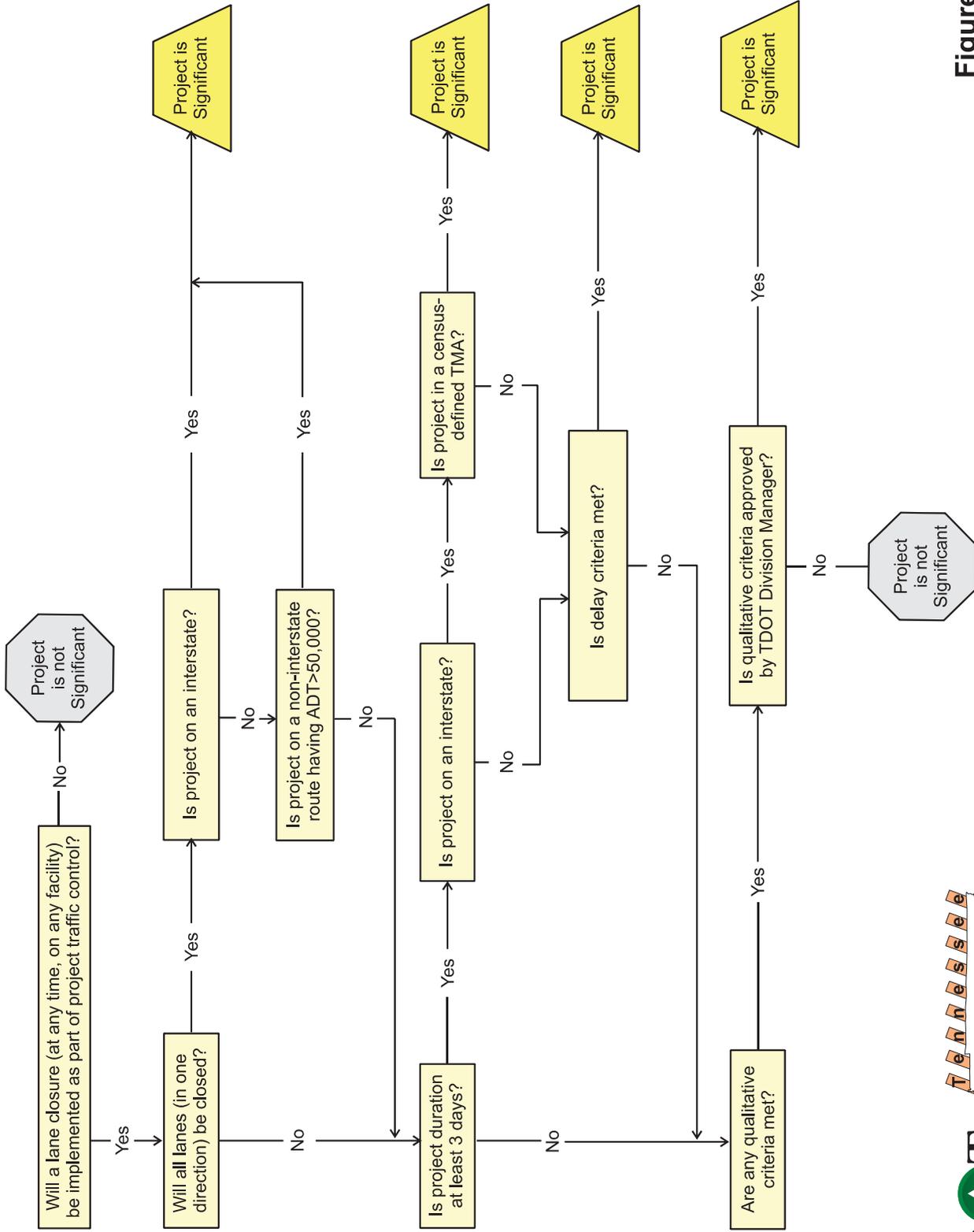


Figure 3.2
Significance Determination Diagram

3.1C Defining Significance by Work Zone Delay

In order to determine if a project's work zone delay characteristics classify it as a Significant Project, an estimate of the expected work zone delay must be made. In order to make this delay estimate, the analyst must know the following information concerning the work zone:

- Project setting (roadway classification and urban/rural characteristics),
- Two-way, 24-hour average daily traffic,
- Minimum number of lanes to remain open through and in the direction of travel within the work zone, and
- Signalized intersections that will be affected.

Using this information and the Delay Criteria Reference Table provided in Table 3.1, the project significance can be determined based on the maximum AADT listed. The maximum AADT's in this table are based on a theoretical delay of 30 minutes.

The presence of a signalized intersection within the area affected by the work zone will generally increase the delay impacts of the work zone. Therefore, the maximum allowable AADT should be decreased by 30-70%, depending on the type of intersection, when a signalized intersection affects the operation of the work zone. The appropriate factor from the Delay Criteria Reference Table shall be used.

To determine if the work zone constitutes a Significant Project on the basis of delay:

- (1) Use the Delay Criteria Reference Table (Table 3.1) to determine the maximum AADT based on the area type, roadway classification, and minimum number of lanes in one direction to be open continuously throughout the entire length of the work zone. If applicable, consider impacts created by signalized intersections.
- (2) Compare the two-way bi-directional project AADT. If greater than the maximum provided in the table, the project is considered Significant.
- (3) A Work Zone Significance Determination Form shall be completed.

The delay tool described above is a simplified method for determining if the expected delay will exceed 30 minutes. This method can be used for all types of routes. Any delay estimation tool deemed appropriate by the Department may be alternatively substituted to determine if the delay on the work zone route will exceed 30 minutes.

It should be noted that Table 3.1 is presented as a qualitative estimating tool for predicting the "significance" of a project as it relates to TDOT's TMP process. It is not intended for other purposes and/or as a direct measure of travel delay based on travel volumes. Table 3.1 was developed using guidance and principles from ITE and the Highway Capacity Manual.

Table 3.1 - Delay Criteria Reference Table
(Based on 30 minute additional delay)

Number of Lanes in one direction ^A			Maximum Allowable 2-Way AADT ^B					
Total	Open	Closed ^C	Urban Freeway	Rural Freeway	Urban Arterial	Rural Arterial	Urban Other	Rural Other
1	1	0			31,000	17,000	33,000	24,000
	0	1 ^D			20,000	14,000	16,000	11,000
2	2	0	89,000	87,000	83,000	59,000	67,000	45,000
	1	1	45,000	43,000	41,000	29,000	34,000	21,000
3	3	0	131,000	130,000	124,000	88,000	101,000	64,000
	2	1	87,000	87,000	83,000	59,000	67,000	40,000
	1	2	44,000	43,000	41,000	29,000	34,000	40,000
4	4	0	174,000	173,000				
	3	1	131,000	130,000				
	2	2	87,000	87,000				
	1	3	44,000	43,000				
5	5	0	218,000					
	4	1	174,000					
	3	2	131,000					
	2	3+	87,000					
≥6	6	0	254,000					
	5	1	212,000					
	4	2	169,000					
	3	3	127,000					
	2	4+	85,000					

Intersection Factors		
Work zone on...	Affects a signalized intersection with...	Multiply max AADT by...
Urban arterial	Another arterial	0.5
Urban arterial	A non-arterial	0.65
Rural arterial	Another arterial	0.5
Rural arterial	A non-arterial	0.7
Urban other	An arterial	0.45
Urban other	Another non-arterial	0.5
Rural other	An arterial	0.3
Rural other	Another non-arterial	0.5

^A Lane configuration is presented for one direction of travel (that direction being affected by the work zone).

^B AADTs are presented as typical 2-way, 24-hour volumes.

^C Zero lanes closed designates shoulder or roadside work where all travel lanes remain open.

^D Represents configuration of a 2-lane roadway with one lane closed and flagger/temp. signal in operation.

Note: Table 3.1 is presented as a qualitative estimating tool for predicting the “significance” of a project as it relates to TDOT’s TMP process. It is not intended for other purposes and/or as a direct measure of travel delay based on travel volumes.

3.1D Determining Significance by Qualitative Characteristics

A project that presents extraordinary work zone impacts but does not meet the established Major Route Criteria or the Delay Criteria may still be considered a Significant Project. In this situation, the TDOT Project Manager (or assigned project analyst) must carefully consider the project's qualitative impacts, complete the qualitative criteria portion of the Significance Determination Form, and forward a recommendation to the responsible TDOT Division Director for final consideration.

NOTE: Careful consideration should be given when defining a project as Significant based solely on qualitative criteria. Intangible impacts of any work zone not meeting the delay criteria must be extraordinary to be considered Significant.

3.2 Role of the Significance Definition

Following the guidelines of Section 3.1, all projects requiring work zones will be classified as either Significant or Non-Significant. These two broad classifications provide the basis upon which the project's work zone requirements are to be based. Having defined a project as either Significant or Non-Significant will help determine what mitigation of work zone impacts should be considered.

The TDOT Work Zone Safety and Mobility Manual uses a TMP to define the strategies to be used in the mitigation of work zone impacts. Whether defined as Significant or Non-Significant, a TMP must be completed for all projects having a work zone, unless classified as exempt (see Part 2). The Significance determination helps to ensure the appropriate level of TMP strategies to be applied to each work zone.

3.2A Meaning of Significant Project

Classification as a Significant Project distinguishes a project as one requiring a high degree of work zone impact mitigation. Having met the criteria given in Section 3.1, the project is anticipated to affect large numbers of roadway users, cause excessive delays, and/or present at least one of several qualitative impacts to the transportation system or affected community. Due to the impacts introduced by a Significant Project, special consideration must be made to minimize its negative effects.

This special consideration translates into specific efforts that must be made in a Significant Project's TMP. Identified as a Significant TMP, designers are required to establish and plan for the safe temporary control of traffic, methods for promoting efficient traffic operations, and ways to best inform the public of the work. Guidance for the development of a project TMP can be found in Part 4 of this manual.

3.2B Projects not Assigned a Significant Designation

When a project fails to meet the criteria of Section 3.1, the project will not be categorized as being a Significant project. This designation does not mean that its work zone impacts are unimportant or should be disregarded. Rather, the TMP of a Non-

Significant project will generally not provide mitigation strategies at the same level as the Significant TMP. Additionally, some components of a Non-Significant project's TMP may be pre-defined or standardized to simplify the TMP development for common small-scale work zones.

For a Non-Significant Project, either a Basic TMP or Intermediate TMP will be developed. A **Basic TMP** is to be used when only a TTC plan is needed to successfully implement a safe and efficient work zone. An **Intermediate TMP** adds some additional measures to address improved mobility and/or public information when called for. Guidance for the development of the Basic and Intermediate TMP's can be found in Part 4 of this manual.

3.2C Exclusion of Projects from TMP Development Process

The FHWA's Final Rule allows a project defined as a Significant Project to be excluded from the requirements of a Significant TMP. If a project meets the definition of a Significant Project, but careful consideration of either qualitative or quantitative work zone characteristics predicts minor impacts, completion of a TMP may not be required. A TMP exclusion may be initiated by the Project Manager and corroborated by the Division Manager.

FHWA approval is required for all Federal Aid Highway projects classified as Significant and proposed to be exempt. For a Significant Project to be exempt from TMP completion, a written request must be submitted to FHWA's Tennessee Division office. This request should come from the appropriate TDOT Division Manager and detail the expected impacts of the work zone and an explanation of why the project will not have sustained work zone impacts. The justification should include specific and quantifiable measures of effectiveness documenting how the project would not be expected to create sustained work zone impacts.

For multiple projects of the same type that are not expected to exhibit considerable safety or mobility impacts, a blanket exemption request may be submitted. A blanket exemption should be filed in the same manner as an individual project request.

See Part 2 for a list of exemptions and blanket TMP's.

3.3 Project-Level Procedures Sequencing

3.3A Project-Level Procedures Diagram

Visual representation of the project-level procedure sequencing is provided in Figure 3.3.

3.3B Initial Determination

One intent of the TDOT Work Zone Safety and Mobility Manual is to recognize and plan for various aspects of work zone implementation early in the development of a project. For this reason, project developers should make an initial determination of the project's significance as early as possible. In most cases, this initial determination can be made soon after identifying the location and type of work to be done. However, because of the varying means of development, the point at which this determination is made will vary. Project leaders in the TDOT Division in which the project originates should make this significance determination when appropriate.

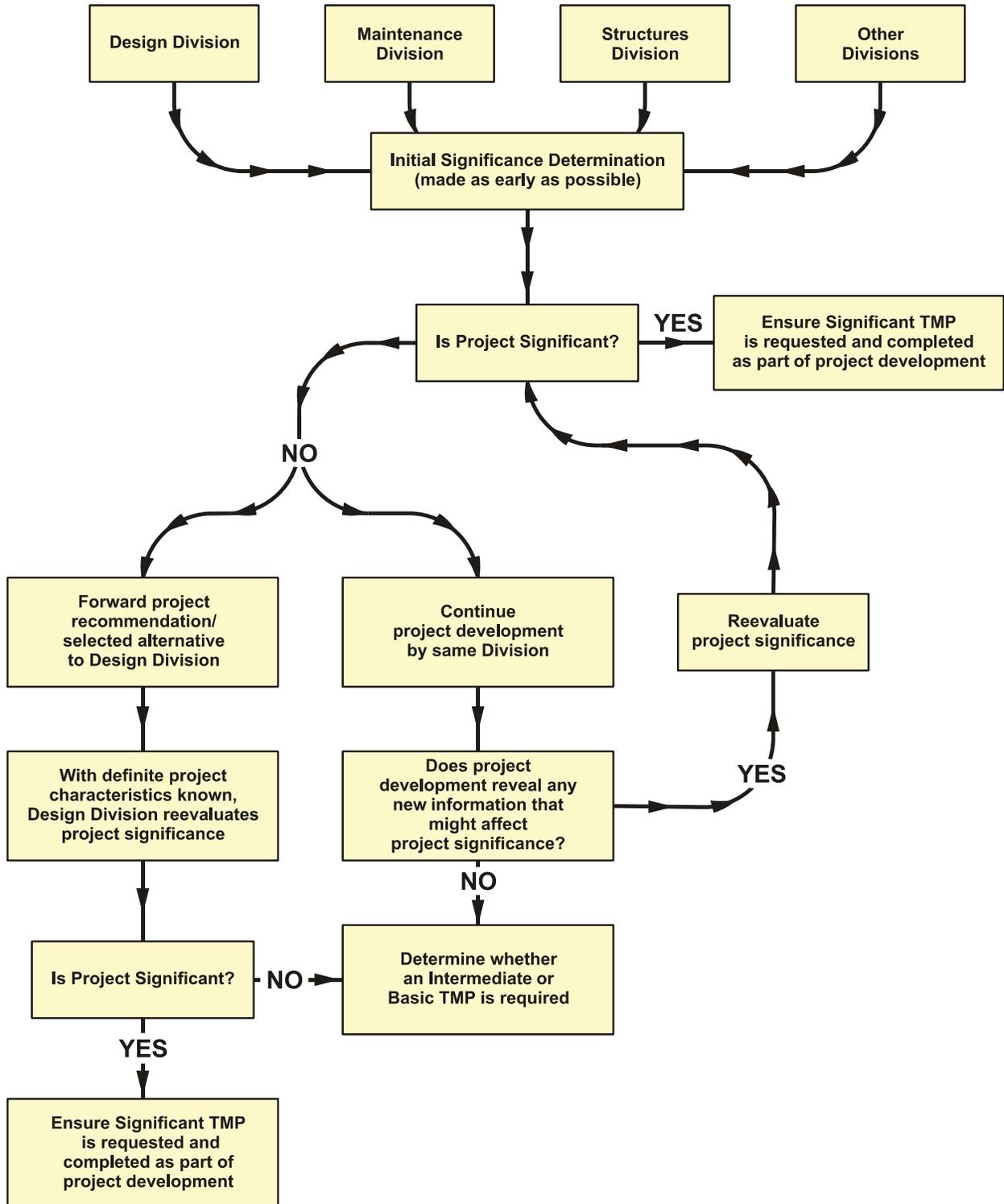


Figure 3.3
Project-Level Procedures Diagram

For projects following the standard TDOT project development process, initial significance determination and general work zone considerations should be made as part of any early, formal planning. This may mean that a recommendation that a project be defined as Significant or Non-significant may be made as part of a Road Safety Audit Report (RSAR), NEPA documentation, or Transportation Planning Report (TPR). Also, projects of this type often are assigned to a Project Manager. If this is the case, work zone considerations should be part of project team meeting discussions during the planning and environmental process. However, formal significance determination will be made according to the process outlined in section 2.2.

For projects not originating in the Project Planning Division, initial significance determination must be incorporated into the early stages of the existing project development process. For some common types of projects, likely points for the significance determination are given as examples.

Project Type	TDOT Division	Initial Significance Determination
Bridge rehabilitation	Structures	Made after bridge is identified
Utility work	Maintenance	Made once notification of work is received by TDOT
Roadside maintenance	Maintenance	Made after work location is identified
Resurfacing	Maintenance	Made after paving limits are set

Once the initial significance determination is made, development of the project should continue with consideration of the requirements for an appropriate TMP. For many projects, this initial determination of project significance will remain unchanged. For some projects, however, a second consideration of project significance will allow consideration of changes in a project's scope and allow for more effective TMP strategies.

3.3C Secondary (Follow-Up) Determination

Particularly for large-scale projects originating in TDOT's Project Planning Division, an early determination of significance, while essential, may also mean an initial determination based upon incomplete or preliminary information. For this reason, a secondary determination of the project's significance should be made. Again, depending on the project type, this analysis should be made in the design phase or at the earliest point at which all pertinent data used in the significance determination is known. This secondary determination of a project's Significance or Non-Significance should rarely differ from the initial determination; when it does, redevelopment and/or revision of a TMP already undertaken shall commence.