OREGON DEPARTMENT OF TRANSPORTATION TECHNICAL SERVICES

Access Management BULLETIN

SUBJECT	FINAL NUMBER	EFFECTIVE DATE	VALIDATION DATE	SUPERSEDES or RESCINDS
Queuing Evaluation for Approach Permitting	AM 13-08(B)	05/15/2013	10/02/2014	
	WEB LINK(S) http://www.oregon.gov/ODOT/HWY/TECHSERV/Pages/technicalguidance.aspx			
TOPIC/PROGRAM	APPROVED SIGNATURE			
Access Management – OAR 734-051 Safety and Operations Concerns	Original signed by: Larry McKinley, Access Management Program Manager			

PURPOSE

This Technical Services Bulletin provides guidance for understanding and applying OAR 734-051-4020 (3)(a) to existing connections and applications for new highway approaches. This guidance will help achieve greater statewide consistency in evaluating connections and approach applications for safety and operations concerns related to queuing.

DEFINITIONS

"95th percentile queue" means the maximum back of queue with 95th percentile traffic volumes, or as estimated by ODOT staff with field observations. This is the queue length used by ODOT to determine recommended storage lengths.

"Back of Queue" refers to the last vehicle in a line of vehicles waiting to proceed through an intersection of the highway with a public or private approach.

"OAR" refers to Oregon Administrative Rules.
"ORS" refers to Oregon Revised Statues.

"Peak Hour" means the highest one-hour volume observed on an urban roadway during a typical or average week, or the thirtieth (30th) highest hourly traffic volume on a rural roadway typically observed during a year.

"Queue" means a line of vehicles waiting to proceed through an intersection of the highway with a public or private approach. Slow-moving vehicles joining the back of the queue are usually considered part of the queue.

BACKGROUND/REFERENCE

In earlier versions of OAR 734-051, safety factors for highway approaches were generally described as:

- Roadway Character
- Traffic Character
- Geometric Character
- Environmental Character
- Operational Character

The previous Division 051 did not quantify or set standards for these safety factors. This was problematic for customers who had no way of knowing how ODOT would make its determination. Senate Bill (SB) 264, which became law in June 2011, amended ORS 374 to establish six explicit criteria for safety and operations criteria that ODOT can consider in its permitting decisions. This bulletin covers one of those set forth in OAR 734-051-4020(3)(a):

> ***(3) Safety and Operations Concerns****. The department has the burden of proving safety and highway operations concerns that it relies upon in requiring mitigation or in denying an application based on those concerns. The department may deny an application where the applicant is unable to provide adequate improvements to mitigate documented safety or highway operations concerns; safety and highway operations concerns that the department may consider are limited to (a) through (f), below:*
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> > *(a) Regular queuing on the highway that impedes turning movements associated with the proposed approach. Regular queuing will be evaluated based on the ninety-fifth (95th) percentile queue on the highway during the highway peak hour, as determined by field observation or traffic analysis in accordance with ODOT's Analysis Procedures Manual;*

GUIDANCE

The guidance is for use as a screening assessment to identify potential queuing concerns. No traffic analysis is required for this review. Permit Specialists should coordinate with qualified access management staff to confirm their evaluation is consistent with this guidance.

Regular queuing is to be evaluated based on the 95th percentile queue on the highway during the peak hour at the affected approach. The 95th percentile queue may be determined as part of a Traffic Impact Analysis, a Transportation Planning Analysis Unit (TPAU) study, other engineering analysis using methods consistent with ODOT's Analysis Procedures Manual, or as estimated by ODOT staff with field observations.

The 95th percentile queue is a starting point for the evaluation. Where signal queues build and dissipate each cycle, allowing for vehicles to maneuver when queues are discharged, it may be appropriate to use less than the 95th percentile queue.

The method for estimating the queue length in the field shall be:

1. Observe the traffic for a period of 30 minutes during the peak hour.
2. Identify the maximum observed back of queue.
3. Measure the distance along the state highway from the back of queue to the stop line at the front of the queue.

The purpose of this step is to assess site-specific conditions to determine if there is a queuing safety or operational issue.

The peak hour usually occurs between 4 p.m. and 7 p.m. on Tuesday through Thursday during a typical week. Check with the local traffic analyst to confirm the peak hour and the most likely 30-minute peak period within the peak hour before conducting the measurement.

If the proposed approach is located 100 feet or more from the back of the maximum observed queue, then queuing is not a safety or operational concern.
If the proposed approach is less than 100 feet from the back of the maximum observed queue, then further analysis will be required by or under the supervision of the Region Access Management Engineer or other qualified staff. A more formal intersection engineering evaluation may be required if the department's decision is disputed by the applicant.

ODOT staff performing a more detailed review for the approach application should be familiar with the Analysis Procedures Manual (APM) for the procedure to determine the factors impacting the approach location, in particular the section on Functional Area of an Intersection. The manual is available at:
http://www.oregon.gov/ODOT/TD/TP/pages/apm.aspx

EXPLANATION

The primary purpose of the safety and operations concerns listed in OAR 734-051-4020(3) is to ensure that key safety and operational elements of a proposed approach are evaluated during the decision to approve, approve with mitigation, or deny an approach application. The evaluation of these concerns typically determines the location and mitigation requirements associated with approval of an approach application. Evaluation of the factors may identify a significant safety problem that the applicant cannot or is unwilling to mitigate, resulting in ODOT's denial of the approach application.

ODOT staff is expected to work with the applicant to the extent possible to solve problems identified during the evaluation of safety factors, recognizing that the problems and solutions must be viewed in the context of practical design and balanced against other important considerations, including local community or government aspirations and economic development.

As indicated in OAR 734-051-4020(3), it is the department's responsibility to prove that one or more of the safety and highway operations concerns exist at, or near the location for a proposed approach. This can be accomplished by observation, evaluation, and review of existing records for the location of concern. Where potential issues are identified, data and analysis may also be needed. If a Traffic Impact Analysis (TIA) is required pursuant with OAR 734-051- 3030(4), the TIA shall be scoped to include a safety and operations analysis per OAR 734-051- 3030(5)(d) and the analysis must be sufficient to allow the department to assess safety and operational impacts.

Queuing on the highway may result from a variety of sources, such as traffic signals, stop signs and yielding situations. Approaches that are located where queuing impedes turning movements can contribute to high speed differentials between vehicles, violation of traffic laws, abrupt stops and other conditions that lead to increased crash potential and degraded intersection operations.

Assuming measurements indicate the potential for concerns with queuing, the Permit Specialist or individual taking measurements should involve a staff member experienced in engineering analysis to determine if the concern is significant. This evaluation is site specific and could include traffic counts and other information necessary to confirm the issues associated with the location.

It is important to distinguish between how 734-051-4020(3) factors and design standards are used in the permitting process. Generally, the factors identified in 4020(3) are used in the process to identify where a problem exists or is expected to develop in association with an approach or where the approach could possibly exacerbate conditions.

Design standards are applied after approval of the approach application and during the development of the construction plans and specifications. Design standards are contained in various manuals and technical publications, such as the Highway Design Manual. Design standards are used to prepare construction plans and details (i.e. approach width, length of turn lanes, surfacing, etc.) It should be recognized that there is a correlation between the approval criteria and design standards. They are not totally distinct from one another. For example, sight distance must be considered during the design of an approach or if the approach is approved only for right-in/right-out turns, then the design must incorporate an effective method of restricting left turns. In some cases, it may be necessary to do some level of design prior to approval of an approach so as to understand how the approach will impact highway features or operations, site circulation, or other important considerations. Generally speaking, 734-051-4020(3) factors are applied prior to approval of an application to determine if an approach can be approved at a specific location.

RESPONSIBILITIES

Department staff members in the following positions are responsible for carrying out the guidance in this Bulletin as it relates to their assigned duties and authority

- Region Managers
- District Managers
- Region Access Management Engineers
- Development Review Coordinators
- Access Management Coordinators
- Permit Specialists

ACTION REQUIRED

Implement this Bulletin upon the effective date.

SPECIAL INSTRUCTIONS

If problems develop whie implementing this guidance or further clarification is needed, contact the Access Management Program Manager.

CONTACT INFORMATION

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