Huntington TRAFFIC SOLUTIONS
1665 A Street NE Salem, OR 97301 503-467-1311 huntingtontrafficsolutions.com

Sub Group 3 Meeting, Mitigation

Access Management Committee
Transportation Building
355 Capitol Street NE, Room 119
Salem, OR 97301
10:00 – Noon, September 9, 2010
FINAL

Working Facilitator: Del Huntington.

Participants: Brent Ahrend, Doug Bish, Harold Lasley, Victor Dodier, Michael Rock, Mark Whitlow, and Brian Dunn. (David Boyd, Region 4 Access Management Engineer joined the call to provide perspective from the field operations)

Meeting Purpose
Identify legislative concepts for potential additions and/or revisions to the Oregon Revised Statutes (ORS), potential revisions to the Oregon Administrative Rules (OAR), and the Oregon Highway Plan (OHP) of objective standards related to "mitigation measures", to advance to the Access Management (AM) Committee. Identify mitigation measures that ODOT may require as development occurs along the state highways.

Summary

Harold provided a handout "Analysis of Applications Approved or Denied" and provided a summary on approach application data collected over the past 10 years. (See Attachment I) The main points of the data revealed;

- Approximately 5000 approach applications have been processed that led to a decision.
- 4776 applications were approved and 206 applications denied for an approval rate of 96%.
- Deviations were required on 52% of the applications.
- Mitigation was required on 10% of the approved applications (The mitigation does not include any proposed improvements on–site and/or off-site identified by the developer such as a traffic signal and/or turn lanes on the highway, but rather, specific, additional mitigation measures required by ODOT)
- The data does not include those applications that did not proceed through to a decision or where a prospective applicant did not pursue an application for any number of possible reasons.
- The data does not include decisions that were modified or overturned during the appeal process.

- The data identifies the number of deviations, but does not include what constituted the need for the deviation. Harold believes most deviations are for access spacing although inadequate sight distance is often the major concern in rural areas.
- The data does not distinguish if the applicant requested more than one approach to the state highway because an application must be submitted for each approach. The data does not identify if the application was due to a "change of use"

Discussion

Brian suggested that the high percentage of approved deviations proves that the current system works effectively. However, it was pointed out that the data does not identify and ODOT cannot determine the amount of time or cost to the developer to conduct sufficient analysis to justify a deviation.

Brian proposed that Access Management (AM) strategies could be developed on highways within urban corridors to identify the spacing standards consistent with the roadway environment. A question was asked if ODOT could afford to develop AM strategies on the approximately 700 miles of urban state highways.

David Boyd identified that the majority of requests for deviations on urban highways are due to the inability to meet the access spacing standards as interior lots generally/often do not have any other means of access.

Regarding mitigation measures, Harold identified that the majority of mitigation measures are related to safety improvements. David stated that the majority of mitigation measures in the rural areas are related to achieving acceptable sight distance requirements.

Victor suggested that gaining an understanding the number of applications that were due to a "change of use" would be beneficial to determine the impacts and benefits of the new change of use thresholds established by SB 1024.

Victor also observed that based on the data provided in the handout, the low number of applications on Regional and District highways within urban areas does not justify the concept of jurisdictional transfers as proposed by ODOT in other AM sub groups.

Mark reminded participants that we have to acknowledge higher levels of congestion in the urban areas in the state.

Mobility and Safety Mitigation Measures

Harold provided a background paper "Mobility and Safety Mitigation Measures" (see Attachment II) and explained that while ODOT was asked to develop a matrix of mitigation measures, he thought that the subgroup needed to better understand some of the distinctions and overlaps between safety and mobility mitigation measures.

A question was asked about the use of the words "proportionate share" related to the cost of mitigation in the fourth paragraph of page 1 of Harold's background paper. It was explained that the analysis is based on the critical movement and the percentage of traffic that a developer is contributing to that movement. ODOT may apply the percentage against the total cost of the mitigation measures.

There was a considerable discussion as to whether a non-traversable median was for mobility requirements or safety. David stated that in the case of a development, the mobility failure for the left-turn triggers the need for a non-traversable median, which is safer than allowing the left turn. Mark asked "What is safe and how is this determined?"

Victor and Mark responded that in order to achieve infill and higher levels of densities, we will have to accept higher levels of congestion.

Del added that while the conversation usually leads to the use of a non-traversable median to address a concern, a continuous two way left turn lane also provides significant safety benefits by providing a decel/refuge area for the motorist exiting the highway, and allows a two-stage left turn maneuver for motorist entering the highway, which significantly improves mobility issues.

The handouts identify approach application data results and address possible mitigation measures, however, Del reminded the sub group that ODOT acknowledged that they would consider revising or eliminating the v/c standards for private approaches. The sub group has yet to see any proposal on this issue.

David acknowledged that if you exceed the mobility standard for the left-turn, ODOT will restrict the movement, though the agency has to consider the trade-offs. Brent recommended that the v/c should apply to the throughput on the highway, not for the private approach.

Harold stated that the concepts are still on the table, though if either of the concepts were advanced to the AM Committee for approval, it would require a revision to the Oregon Highway Plan.

Summary and issues that need to be resolved

What is the appropriate mobility standard for private approaches?

If we generally agree with the handout, Mobility and Safety Mitigation Measures, what mitigation measures are acceptable? (The handout identifies that many of the safety and mobility mitigation measures are the same).

Action Items

Del will ask Jim Hanks to determine if he is willing to run some analysis scenarios to identify when turning traffic to and from the major roadway exceeds the mobility standards.

The sub group would like to have a better understanding of the mitigation measures that were required as shown in "Analysis of Applications Approved or Denied"

As the sub group participants did not have an opportunity to review the handout prior to the meeting, it is requested that each participant review the document and provide comments and recommendations to the text.

Meeting adjourned at noon.

Attachment I
Analysis of Applications Approved or Denied

8-19-2010

Analysis of Applications Approved or Denied

2000 - 2010

STATEWIDE HIGHWAYS						
	Rural EXP	Rural	Urban EXP	Urban	U/R???	
Applications Total = 1665	Total = 135 Appr=129/11* Denied=6	Total = 902 Appr=863/61* Denied=39	Total = 56 Appr=55/6* Denied=1	Total = 565 Appr=526/99* Denied=39	Total = 7 Appr = 6/0* Denied = 1	
Posted Speed						
≥ 55	106	597	9	54	1	
50	3	32	1	11		
40 & 45	9	148	25	206	1	
30 & 35	4	82	6	235	2	
≤ 25	9	23	14	48		
No Speed Recorded	4	20	1	11	3	
TOTAL	135	902	56	565	7	
						Total
Deviations	56	497	32	431	0	1016
No Deviations	79	405	24	134	7	649
TOTAL	135	902	56	565	7	1665
Alternate Access	16	89	9	172	0	286
Highest % of deviations on statewide hwys occurs on rural highways: 497/1665 = 30%						
Deviations on urban highways (excl. EXP) = 76% (431/565)						
60% of alternate access was on urban highways, excl. EXP (172/286)						
*Approved with mitigation						

REGION HIGHWAYS						
	Rural EXP	Rural	Urban EXP	Urban		
Applications Total = 625	Total = 1 Appr = 1/0* Denied = 0	Total = 370 Appr = 360/31* Denied = 10	Total = 1 Appr = 1/1* Denied = 0	Total = 253 Appr=240/73* Denied = 13		
Posted Speed						
≥ 55		309		23		
50		9		16		
40 & 45	1	29	1	66		
30 & 35		15		102		
≤ 25		3		46		
No Speed Recorded		5		0		
TOTAL	1	370	1	253		
						Total
Deviations	0	158	1	186		345
No Deviations	1	212	0	67		280
TOTAL	1	370	1	253		625
Alternate Access	0	38	1	65		104
Highest % of deviations on region hwys occurs on urban highways (excl. EXP): 186/625 = 30%						
Deviations on urban highways (excl. EXP) = 74% (186/253)						
63% of alternate access was on urban highways, excl. EXP (65/104)						
*Approved with mitigation						

8-19-2010

Analysis of Applications Approved or Denied

2000 - 2010

DISTRICT HIGHWAYS						
	Rural EXP	Rural	Urban EXP	Urban	U/R???	
Applications Total = 1764	None	Total = 1096 Appr= 1060/104* Denied = 36	Total = 1 Appr = 1/1* Denied = 0	Total = 666 App=642/111* Denied = 24	Total = 1 Appr = 1/0* Denied = 0	
Posted Speed						
≥ 55		698		29		
50		8		4		
40 & 45		242	1	284		
30 & 35		91		271	1	
≤ 25		38		65		
No Speed Recorded		19		13		
TOTAL		1096	1	666	1	
						Total
Deviations		638	1	541		1180
No Deviations		458	0	125	1	584
TOTAL		1096	1	666	1	1764
Alternate Access		95	0	159	0	254
Highest % of deviations on district hwys occurs on rural highways: 638/1764 = 36%						
Deviations on urban highways = 81% (541/666)						
63% of alternate access was on urban highways (159/254)						

"OTHER[1]" OR UNKNOWN HIGHWAY CLASS						
	Rural EXP	Rural	Urban EXP	Urban	U/R???	
Applications Total = 928	Total = 21 Appr = 14/0* Denied = 7	Total = 636 Appr = 622/2* Denied = 14	Total = 3 Appr = 3/0* Denied = 0	Total = 21 Appr = 18/0* Denied = 3	Total = 247 Appr=234/0* Denied = 13	
Posted Speed						
≥ 55	16	33	1	1	1	
50		1		0	0	
40 & 45	4	11	1	4	0	
30 & 35		10	1	2	2	
≤ 25		8		0	0	
No Speed Recorded	1	573		14	244	
TOTAL	21	636	3	21	247	
						Total
Deviations	13	12	3	3	0	31
No Deviations	8	624	0	18	247	897
TOTAL	21	636	3	21	247	928
Alternate Access	0	0	0	0	0	0
Low deviation rate on these highways						

8-19-2010

Analysis of Applications Approved or Denied

2000 - 2010

NOTES

[1] Frontage roads, local access roads, or classification not indicated

"Deviations" are total of sight distance, approach spacing, and interchange spacing needing engineer approval; it does not mean that the deviation was approved.

"Alternate Access" indicates the availability of alternate access; it does not mean that ODOT decided the alternate access was reasonable.

U/R??? means that urban/rural was not indicated

COMMENTS

Total Applications Approved = 4776; Denied = 206; Approval Rate = 96%

Total Deviations = 2572; Deviation % = 2572/4982 = 52%

District highway deviations = 46% of total deviations (1180/2572)

Statewide highway deviations = 40% of total deviations (1016/2572)

On urban statewide highways, 76% of application required deviations

The highest % of applications requiring deviation are on District highways: 67% (1180/1764)

Applications by Land Use

Land_Use	Approved	Denied
Agriculture	276	21
Commercial	851	69
Industrial	145	5
Institutional	146	2
Null	456	12
Other	352	10
Public Approach	360	1
Residential	1937	80
Services	247	6
Total	4770	206

NOTES

Application totals in this table differ slightly from totals by highway class due to run date of report.

8-19-2010

Analysis of Applications Approved or Denied

2000 - 2010

Approved with Mitigation						
	Rural EXP S-R-D-O	Rural S-R-D-O	Urban EXP S-S-R-D-O	Urban S-R-D-O	**TOTAL**	
Posted Speed						
≥ 55	11 - 0 - 0 - 0	43 - 28 - 74 - 2	2 - 0 - 0 - 0	7 - 1 - 3 - 0	173	
50	0 - 0 - 0 - 0	4 - 2 - 0 - 0	0 - 0 - 0 - 0	1 - 3 - 0 - 0	10	
40 & 45	0 - 0 - 0 - 0	10 - 0 - 20 - 0	4 - 0 - 0 - 0	51- 19 - 40 - 0	144	
30 & 35	0 - 0 - 0 - 0	3 - 1 - 8 - 0	0 - 0 - 0 - 0	34- 44 - 55 - 0	145	
≤ 25	0 - 0 - 0 - 0	0 - 0 - 2 - 0	0 - 0 - 0 - 0	6 - 6 - 13 - 0	27	
No Speed Recorded	0 - 0 - 0 - 0	1 - 0 - 0 - 0	0 - 0 - 0 - 0	0 - 0 - 0 - 0	1	
TOTAL	11	198	6	283	498	
NOTES						
Mitigation is required on 10% of approved applications (498 / 4770)						
65% of mitigation occurs on highway speeds ≥ 40 mph (173+144+10) / 498						
37% of mitigation occurs on highway speeds ≥ 50 mph (173+10) / 498						
22% of mitigation occurs on District urban highways (3+40+55+13) / 498						
57% of mitigation occurs on urban highways (283 / 498)						

Attachment II
Mobility and Safety Mitigation Measures

Mobility and Safety Mitigation Measures
Background Paper

Oregon Highway Plan Policy Action 1F.1

At unsignalized intersections and road approaches, the volume to capacity ratios in Tables 6 and 7 shall not be exceeded for either of the state highway approaches that are not stopped. Approaches at which traffic must stop, or otherwise yield the right of way, shall be operated to maintain safe operation of the intersection and all of its approaches and shall not exceed the volume to capacity ratios for District/Local Interest Roads in Table 6 and Table 7 within urban growth boundaries or 0.80 outside of urban growth boundaries.

Mobility & Safety Mitigation

Measures to mitigate the traffic impact of an approach generally fall into two major categories: 1) mitigation measures to improve safety and 2) mitigation measures to improve mobility. Most mitigation required as a condition of approval for an approach are aimed at solved existing or anticipated safety problems. A common safety problem for simpler approaches is inadequate sight distance. Mitigation for sight distance includes work such as changing approach grade and brush removal. Widening and/or paving an approach may also be required as mitigation to address safety problems. In more complex cases, a left turn refuge, right turn deceleration lane, removal of approach, or restriction of left turns entering or exiting the approach may required to solve a safety problem. For example, left turn lanes can reduce rear-end crashes and RI/RO can improve safety by eliminating multiple conflicts with highway traffic.

Mobility mitigation comes into play most often when high approach and highway volumes coincide. Mitigation to solve mobility problems typically includes left/right turn lanes, restrictions on left turns entering or exiting an approach, channelization for turning movements at driveways or intersections, acceleration lane and additional through lanes. For some high volume approaches, mobility problems may require a traffic signal.

ODOT access management engineers currently evaluate mobility (v/c) of critical turning movements in the as part of the approach permitting process to determine compliance with the Oregon Highway Plan Policy Action 1F.1. This evaluation is generally only performed when there is a large enough increase in traffic related to the approach to raise mobility concerns, or the approach is in an area where a known mobility problem already exists. The evaluation looks at traffic operations at the approach as well as the impact of increased traffic or turning movements at intersections resulting from the approach. If there are feasible mitigation measures to achieve the mobility standard, or to reduce the impact to mobility, such measures may be a condition of approval. If mitigation is not feasible (which is often the case in urban areas with high levels of congestion), the approach may be approved without mitigation. In some cases, the proportionate share that can be attributed to the applicant is not enough to pay for the mitigation needed to improve mobility.

It is not unusual for mitigation measures that improve mobility to be the same or very similar to mitigation required to improve safety. A few examples:

- A non-traversable median can improve mobility for through traffic and reduce crashes related to turning movements.
- Channelizing a driveway can improve the mobility of the critical turning movement but can also address safety by reducing queue length, especially where the driveway has a short throat length.
- Removing an approach located in the functional area of a signalized intersection can alleviate a safety concern, and may also improve signal capacity.

It is not easy to separate mitigation measures into measures that are used solely for the purpose of safety or solely for the purpose of mobility because the same measures may accomplish one or both objectives, depending on the circumstances.

Mitigation Subgroup Objective

The Mitigation Subgroup has asked ODOT to look at developing a matrix or other methodology that would establish thresholds for mobility mitigation measures. The first step in developing this methodology is to establish a common understanding of the types of mitigation measures that are used predominantly for safety purposes and the types used predominantly for mobility purposes, recognizing that there is some overlap between the two. To this end, it is proposed that the following mitigation measures be established as those most commonly used to improve mobility:

- Channelizing the driveway to separate right and left turn lanes (and thru lane when appropriate)
- Construction of right turn lanes on the highway
- Construction of additional thru lanes or left turn lanes on the highway
- Installation of a traffic signal or roundabout
- Non-traversable medians

Less common types of mobility-related mitigation that ODOT may apply to unique situations or that may be required by local government ordinances or regulations include:

- Additional circulation/access routes (such as to a side street) to better disperse site trips
- Non-traversable medians
- Right turn acceleration lanes
- Land use restrictions, trip caps
- Local street network improvements
- Signal improvements such as phasing, timing, interconnect/progression, and adaptive control
- Multimodal mobility improvements such as sidewalks, pedestrian crossings, bulb-outs, ped/bike circulation, and bus pullouts

It is proposed that the following mitigation measures be established as those most commonly used to improve safety:

- Sight distance improvements
- Left turn lanes on the highway
- Restriction of turning movements
- Installation of traffic control devices meeting warrants in the Manual on Uniform Traffic Control Devices as adopted under OAR 734-020-0005
- Approach design modifications including widening, increasing throat length, improving turning radii, and/or signage
- Measures to address a specific crash pattern, including closure of approaches when reasonable alternate access is available.

Mobility Related Decision-Making Process

This process will establish thresholds and criteria for the most commonly used measures to improve mobility as listed above. A degree of flexibility needs to be maintained in the process in order to employ the measures that best suit the specific circumstances, which may include some of the less common types of measures. The decision-making process will not address local government requirements, which may exceed ODOT requirements. It will also not address multi-modal requirements such as sidewalks, pedestrian and bicycle circulation, and bus pullouts.