

Discussion Paper No. 3

VARIANCES

prepared for the

**Oregon Department of Transportation
Salem, Oregon**

by the

**Transportation Research Institute
Oregon State University
Corvallis, Oregon 97331-4304**

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DISCLAIMER

This discussion paper represents the viewpoints of the authors. Although prepared for the Oregon Department of Transportation (ODOT), they do not represent ODOT policies, practices nor procedures.

GENERAL OBJECTIVE

This and other discussion papers were prepared for the purpose of stimulating discussion among interested individuals representing a variety of agencies having an interest in Oregon's highways.

SPECIFIC OBJECTIVE

The specific objective of this discussion paper is to present ideas for initiating discussions leading to the development of a draft procedure for dealing with deviations from ODOT access management standards. The proposed procedure would then be submitted to the Transportation Commission for their consideration and ultimate adoption.

ACKNOWLEDGMENTS AND CREDITS

Mr. Del Huntington is project manager for ODOT. Dr. Robert Layton, Professor of Civil Engineering at OSU is project director for the TRI. This discussion paper was prepared by Dr. Vergil G. Stover, consultant to the TRI. The content of this discussion paper is an elaboration on information which Dr. Stover has published elsewhere.

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OVERVIEW

Definition The terms "exception", "special exception", and "variance" have been used to identify a deviation from a prescribed standard. Webster defines variance as 1) the condition, fact, or state of being variant. 2) a degree of difference or change; divergence, where as exception is. 1) the state of being excepted; omission. 2) an objection. 3) offense taken. 4) an example of something or someone that does not fit into a general rule or category. 5) a formal objection to a decision of a court during trial.

The access management community prefers the term variance in that it indicates both the fact of being different (variant) as well as there being a degree to which the condition is different from a standard.

**Principal
Discussion
Topics**

1. The need for flexibility in the application of access management and design standards.
2. Why have a variance procedure?
3. Potential structure of a variance procedure.
4. Implementation of the adopted procedure.

**Major
Questions
to be
Answered**

Major questions to be addressed and to which a conclusion needs to be reached include the following:

1. How can flexibility be provided in the administration of access design while maintaining a consistent and uniform application of these standards throughout ODOT?
 2. What constitutes a minor deviation as opposed to a major deviation?
 3. Should a variance procedure consist of a single process for all Or, should the procedure provide for a simple process for minor deviations a more thorough process for major deviations?
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OVERVIEW (Continued)

**Questions
to be
Answered
(Continued)**

4. How can uniformity and consistency in the process by which decisions regarding deviations be ensured throughout DOT?
- 5a. Would it be desirable/workable to have a dual access management decision making structure? Under such a dual level structure, decisions regarding deviations from access standards on major highways (e.g., those of statewide importance) might be made at a high administration level within ODOT and decisions regarding roadways of lesser importance be made at a lower administrative level?
- 5b. If an Access Management Committee structure is implemented -- who should be on it?
6. What resources are needed in order to achieve consistency in dealing with access permits and deviations from standards? Any answers, to this question will depend upon the conclusions reached regarding the other

To a great extent the several questions are interrelated. Therefore, it is suggested that an iterative discussion process will be appropriate. That is, reaching a conclusion might begin with a general discussion of each question in sequence. Then, each question might in turn be considered in detail. Moreover, it may be necessary to revisit a previous question during the discussion of a subsequent question.

Dealing with deviations from standards is made more complex by the fact that different portions of Oregon have very different geographical characteristics, divergent traffic characteristics, and very different urban growth potential.

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FLEXIBILITY

**Why is
Flexibility
Needed?**

The adopted standards and access management requirements set minimums which should be met, or exceeded, under conditions which are normally encountered, or expected to be encountered. These standards include such elements as signalized intersection spacing, spacing and design of median openings, driveway spacings, sight distances and geometrics of driveway and public street connections. In practice, various situations arise which make it impractical, or impossible, to comply with the prescribed requirements or standards. In such cases, some process is needed by which deviation can be made in response to the unique, prevailing conditions.

As will be addressed later, it is essential that the process be consistent in its application.

**Multiple
Standards
(Minimum
and
Desirable
Values)**

A common approach has been to have "minimum standards" and "desirable standards". In practice the "minimums" become the norm and "desirables" are not commonly followed. This is the opposite of the intent of having the two different values. This results from the situation that the "burden of proof" is often shifted to demonstrating that the "desirable" value(s) should apply (i.e., that the condition is one in which the "desirable" value(s) can be reasonably met. Or that it is not a situation under which it is technically (not financially) impractical or impossible to meet the "desirable" value(s)).

**A "Flexible
Standard"**

A "flexible" minimum is another attempt to provide flexibility in the application of regulations and standards. This approach begins with those values which might be otherwise identified as the "desirable" value(s). It then goes on to prescribe a numerical value by which deviation is allowed by the regulation, ordinance or standard. The following are two examples of this approach.

Example #1

Signalized intersections, or those to be considered for signalization, shall be spaced at one-half mile (2640 ft.) intervals plus or minus 400 ft.

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FLEXIBILITY (Continued)

A "Flexible Standard" (Continued)

The intent may be that signals should be at uniform intervals and that a 400 ft. deviation may be permitted. What it actually states is that any spacing between 2240 ft. and 3040 ft. is permissible. A minor intersection might be situated at a location which does not conform to the 2640 ft. requirement because the cross-street volume can be accommodated with a short green time and/or the cross-street approach can be flared to provide more lanes. However, a major arterial-to-major arterial intersection will ultimately experience very high traffic demand and dual left-turn lanes and a right-turn lane, in addition to two or three through lanes is a practical cross-sectional limit. Hence, a "mislocation" will reduce the total volume through the intersection, cause increased delay, increased fuel consumption and increased emissions. This is a serious problem at the intersection of two major streets, or a major street and a high volume traffic generator such as a shopping center, because traffic through the intersection is reduced by two percent for each one percent deviation from the uniform 2640 ft. spacing.

Example #2

Minimum connection spacing is 200 ft. plus or minus 50 ft.

This means that the minimum spacing is between 150 ft. and 250 ft. This can lead to confusion, conflict between permit writers and applicants, and inconsistency in application of the regulations/standards.

A Single Standard

An approach which has been receiving increased attention is the use of a single volume for any given requirement or variable. For example, signalized intersection spacing would be stated as:

Signalized intersections, or those to be considered for signalization in the future, shall be located at uniform intervals of 2640 ft. plus or minus zero.

This eliminates any ambiguity or inconsistency in application. Flexibility is then provided through a variance procedure.

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WHY HAVE A VARIANCE PROCEDURE?

Introduction

A variance procedure is needed for the following two reasons.

1. All possible situations or conditions cannot be anticipated when preparing and adopting standards.
2. Deviations from standards must be addressed in a consistent manner.

All Situations Cannot be Anticipated When Developing Standards

It is not possible to draft a set of standards which will cover all the variations and conditions which will be encountered in their administration. Thus, flexibility must be provided where conditions make literal application of a standard inappropriate. Subdivision regulations adopted and administered by local governments (municipalities, counties and in some states, townships) are an example where deviation from specific standards are commonly approved.

Subdivision regulations specify such standards as maximum length for local streets, minimum radius for various classes of street, minimum lot frontage, building lines, etc. Very often, the size and/or shape of the property, topographical features, existing development, or other constraints specific to the site make it appropriate for a local street to be longer than specified by the regulations or the radius to be shorter. The planning commission has the authority to approve the plat with these deviations from the standards. Also, a plat may be disapproved even though a particular standard is met. For example, the regulations may have a 750 ft. maximum for the length of a cul-de-sac. However, a length of, say, 700 ft. may be determined to be inappropriate in a specific situation and the plat can be disapproved.

Deviations Must be Handled in a Consistent Manner

It is essential that all deviations be handled in a consistent manner. That is the process by which individual cases are addressed must be consistent. The conclusion in two apparently similar cases need not be the same if the conditions are different. For example, two properties may abut a highway where speeds and geometrics result in marginal, or inadequate, sight

distance. A permit might be approved for a development that will generate

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WHY HAVE A VARIANCE PROCEDURE? (Continued)

**Deviations
Must be
Handled in
a Consistent
Manner
(Continued)**

10 vehicles per day whereas an application for one generating 200 vph may be disapproved. What is important is that the two applications, and others, are subject to the same review, analysis and decision process. Failure to do so is likely to result in decisions to be declared "arbitrary and capricious" when challenged in the courts.

Appeals

Due process requires that agreed persons have the right of appeal. This appeal process may include administrative procedures prior to being able to filing for judicial recourse. And, all legal recourse must be exhausted prior to an appeal to the next higher level.

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ELEMENTS OF A VARIANCE PROCEDURE

Introduction

This section identifies various topics basic to a variance procedure; these include:

- Purpose
- Guiding principles
- Guidelines for review of deviations
- A possible variance process

Purpose

The purpose of a variance procedure is to provide consistent application of engineering decisions involving deviations from adopted access spacing standards.

Guiding Principles

The following statements are examples of the statements which should be considered as guiding principles when considering deviations from adopted access management standards. Specific wording for each principle which is to guide application of ODOT's variance decisions needs to be developed.

1. Safety of the highway and street system is of paramount importance. Traffic efficiency (delay, fuel consumption, and emissions) re also of vital importance -- especially on higher functionally classified deviations from standards should show that traffic safety and operational efficiency will benefit; at the very least it should be shown that the following will not be degraded:

- Safety;
- Traffic efficiency; and
- Functional integrity of the roadway.

2. The higher the classification of the roadway, the less the deviation that should be allowed..

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ELEMENTS OF A VARIANCE PROCEDURE (Continued)

Guiding Principles (Continued)

3. All deviations from the standards need to be approved by a professional engineer knowledgeable in traffic operations and access management
4. The "burden of proof" rests with the person requesting the deviation.
5. The same requirements and procedures for approval/denial of deviations shall apply to all-including ODOT, municipalities, counties, businesses, developers, and private individuals.
6. Median openings are not to be automatically provided where existing, or proposed, public streets intersect an Oregon State Highway.
7. Less deviation from standards should be permitted when greater effort and investment is being made to upgrade a roadway or to bring it into conformance to standards.

Guidelines for Deviations from Standards

Consideration of individual requests from a specific access management standard should be guided by guidelines such as the following:

1. Approval of deviations shall be in harmony with the purpose and intent of the protecting public safety, providing mobility, and preserving the functional integrity of the Oregon State Highway System.
 2. Deviations shall not be considered until the feasible options for meeting access management standards are explored.
 3. Requests for deviation from median opening standards must:
 - a) provide documentation of unique or special conditions based
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ELEMENTS OF A VARIANCE PROCEDURE (Continued)

**Guidelines
for Deviations
from Standards
(Continued)**

upon established engineering principles that make strict application of spacing impractical or unsafe; and

b) provide documentation as to how the deviation would affect the traffic efficiency and safety of the transportation facility.

4. A deviation shall not be considered under any of the following conditions:

a) the geometrics preclude design as stated in the Oregon State Highway Design Standards.

b) sight distances for the proposed traffic movements would jeopardize safety;

c) where the provision of the median opening would cause any safety hazard, such as queuing on railroad tracks, school pedestrian crossings, freeway ramps or the functional area of the intersection;

d) the hardship is self-created by the landowner or business;

e) any other deviation that would negatively impact safety; and

f) the deviation would degrade the efficiency of the system.

5. A complete analysis of the proposed deviation should include the following:

a) alternatives to safely reroute traffic including "U" turns;

b) adequacy of maneuvering distances;

c) gap availability in the opposing traffic stream

d) adopted plans to change the roadway design including adopted long range plans or classification;

e) ability to accommodate future growth and increasing traffic volumes;

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ELEMENTS OF A VARIANCE PROCEDURE (Continued)

Guidelines for Deviations from Standards (Continued)

f) the potential for relieving neighborhood "cut through" traffic or the potential for increasing traffic through established residential areas; and

g) ability to maintain traffic progression during peak and off-peak periods (cycle length, speed, and band width).

6. Conditions that may be viewed favorably in evaluating a proposed median opening deviation include:

a) opportunities to alleviate significant traffic congestion at existing or planned signalized intersections;

b) opportunities to accommodate a joint access serving two or more traffic generators;

c) existence of un-relocatable control points such as bridges, waterways, parks, historic or archaeological areas, cemeteries, and unique natural features; and

d) where strict application of the standards would result in a safety, maneuvering or traffic operational problem.

Minor deviations might be defined as **those which are of such inconsequential nature that the proposed access placement substantially complies with the purpose and intent of the access management and design standards.** A minor deviation might be measurably defined in either of the following ways:

A Possible Variance Process

1. A deviation of a specified percentage, such as 5% or 10%.

2. A deviation of a specified magnitude, such as \pm 200 ft.

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ELEMENTS OF A VARIANCE PROCEDURE (Continued)

**A Possible
Variance
Process
(Continued)**

The flow chart on the following page is offered as a departure point in the discussion of a variance procedure. Questions to be addressed include the following:

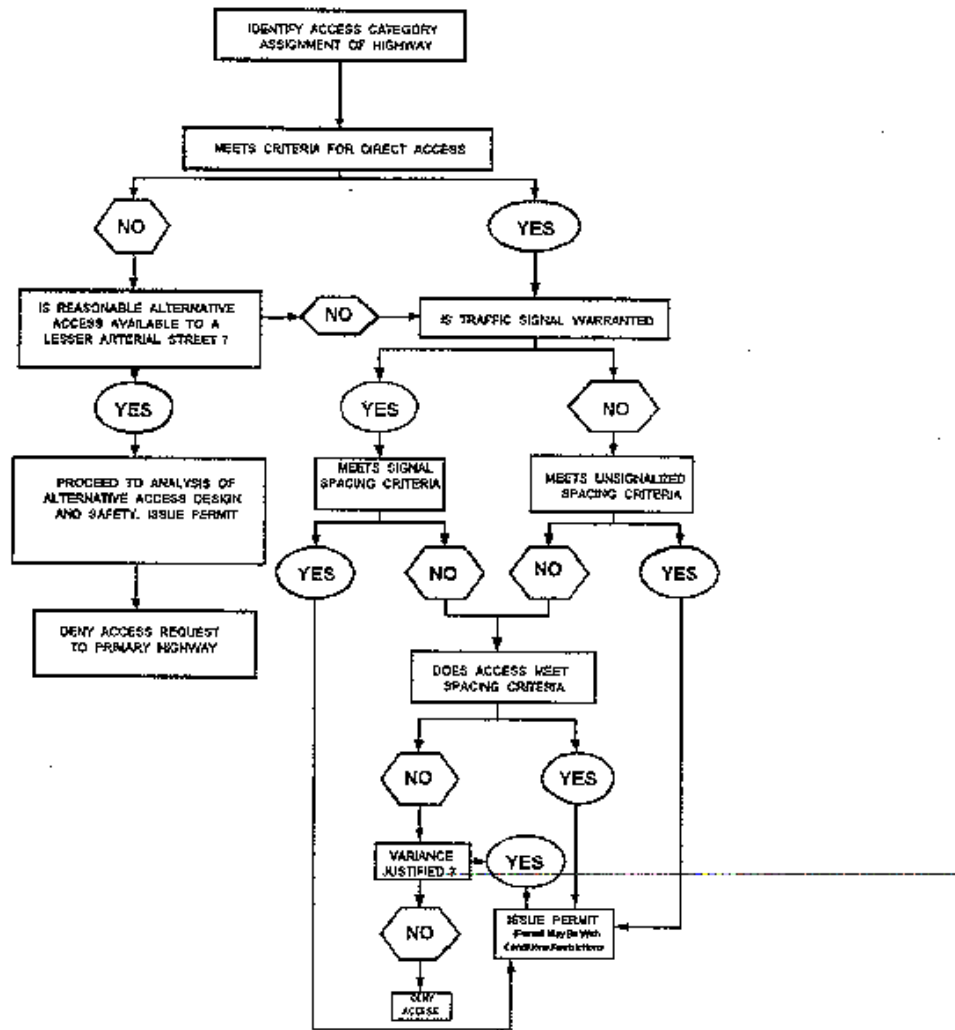
1. Should a single level or two level variance procedure be adopted?
 2. What is a minor deviation? A major deviation?
 3. What documentation is needed for a minor variance? A major variance?
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ELEMENTS OF A VARIANCE PROCEDURE (Continued)

**A Possible
Variance
Process
(Continued)**



A Generalized Two-Stage Variance Procedure

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RESOURCES

Introduction

In order to effectively deal with the various issues involved in access management, responsible personnel need a strong technical background in planning, design and traffic operations of streets and highways. They also need the interpersonal skills which will enable them to successfully deal with members of the public. Those having the responsibility in making decisions regarding a proposal deviation from standards must also have technical skills with which to make the appropriate evaluation.

Responsible Charge

There are many engineers and non engineers who have become very knowledgeable in access management, or who have the potential to do so. Individuals with an engineering degree have no inherent advantage in developing these skills by virtue of their undergraduate or graduate education. However, statute requires that a person having responsible charge in an engineering decision be a professional engineer.

Approval of a deviation from engineering standards is an engineering decision. A person having the authority to approve such a deviation is engaging in engineering practice and therefore should be a registered professional engineer in the state of Oregon.

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