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Oregon Department of Transportation
Statewide Project Delivery Branch – Engineering & Technical Services Branch Traffic-Roadway Section
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# Traffic-Roadway Section

## Speed Zone Manual

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Preface

The primary reason for establishing speed limits is safety. The posted speed should inform motorists of maximum driving speeds that are considered safe and reasonable for a highway section under favorable weather and visibility conditions.

Safe and reasonable highway speeds are determined through an engineering study. The study is based upon nationally accepted standards that include a review of roadway characteristics and users. These characteristics include traffic volumes, crash history, highway geometry, roadside development and density, etc.

The 85th percentile speed (the speed at or below which 85 percent of the vehicles are traveling) has been a principal factor in setting speeds. The 85th percentile speed was not the only factor used to determine the posted speed. In urban areas most of the time the speed was set lower than the 85th percentile speed because of the desire to improve safety.

Previous studies suggest posting speeds near the 85th percentile speed minimizes crash occurrence and provides favorable driver compliance. More recent studies suggest that posting speeds near the 85th percentile is more applicable to rural areas and that the 50th percentile speed may be more appropriate for areas where there is development (i.e., urban areas).

Oregon procedures take into account the functional class and context (roadside development) of the section in urban areas. This helps to balance what is perceived as reasonable and safe by drivers with what the community perceives as reasonable and safe.

The purpose of this manual is to provide guidance for speed zone investigations in Oregon. The technical data such as travel speeds, traffic volumes, and crash history are used to provide guidance to the decision maker. The primary purpose is to improve safety.
Speed Zone Basics

Speed Zone Laws and Rules

Oregon Revised Statutes (ORS) give road authorities the following statutory speeds that can be posted at the discretion of the road authority if a street or highway meets the definitions described under ORS 801.100 (Definitions) and the criteria as described under ORS 811.105, ORS 811.111 and ORS 810.200:

- 15 mph – alleys; narrow residential roadways
- 20 mph – business districts, school zones (and some residential)
- 25 mph – residential districts, public parks, ocean shores
- 55 mph – most open rural highways, trucks on some interstate highways
- 60 mph – trucks on some open rural highways, (OAR designates trucks on most interstates)
- 65 mph – passenger vehicles, light trucks, motor homes and light duty commercial vehicles on most interstate highways; some open rural highways; trucks on some interstate and open rural highways
- 70 mph - passenger vehicles, light trucks, motor homes and light duty commercial vehicles on some interstates and open rural highways

In addition, any road authority may establish emergency or temporary speeds as per ORS 810.180 and (9). These are most commonly used to establish reduced speeds for work zones, and in the aftermath of a climatological or other major event (i.e. fire, flood, tsunami, or damage to infrastructure after a major crash).

Designated speeds are speeds that are established by a road authority that may be different than statutory speeds, when statutory speeds may not be reasonable or applicable. Statutes give the Department of Transportation the authority to establish most designated speeds, when the statutory speeds may not be applicable. ORS 810.180 allows ODOT primary authority to designate speeds that may be different than the statutory speeds. This authority applies to all public roadways in Oregon. This manual outlines the process of designating speeds through establishing a speed zone. ORS requires that an engineering investigation be conducted to determine the appropriate speed.

Oregon Administrative Rule (OAR) 734-020-0014 covers the speed zoning definitions used within OAR 734-0020-0015 through 734-020-0017. A copy of these OARs can be found on the Secretary of State’s web site at https://sos.oregon.gov/.
OAR 734-020-0015 describe the requirements establishing maximum speeds on public roads by the Department and other road authorities under ORS 810.180, Designation of Maximum Speeds. This rule applies to all public roads except for the establishment of speed limits on interstate highways under OAR 734-020-0010.

OAR 734-020-0016 describes the process for establishing speed zones on paved low volume roads of less than 400 ADT (as outlined in the OAR). The Department may delegate authority to the road authority to conduct speed zone investigations and set speeds on roadways within their jurisdiction that meet the definition of low volume (ORS 810.180 (5)(f)).

OAR 734-020-0017 describes the process for a road authority to request the authority to conduct a speed zone investigation on an unpaved road.

OAR 734-020-0018 describes the process for establishing variable speeds.

**History in Oregon**

The speed laws in Oregon have evolved over time. Speed zone orders established under old statutes are still in effect until superseded by new speed zone orders. Prior to 1993 the State Speed Control Board was authorized to initiate an engineering study to determine speeds on roads other than State Highways. The Highway Commission determined speeds on State Highways. In 1993 the authority for setting speeds was given to ODOT and the Speed Zone Review Panel was created to provide an appeal process.

More recently, in 2016 ORS 811.111 was amended to establish higher speeds on some sections of interstate and state highways in Eastern Oregon. In 2019, the ORS was changed to make all streets, roadways, and highways in Oregon speed limits. The change included allowing all cities the option of lowering their statutory speeds for residence districts that are not arterials by five miles per hour.

**Speed Zoning Principles**

Speed limits are posted to inform motorists of appropriate driving speeds under favorable conditions. Posted speeds also provide the legal basis for adjudication and fines for violations of the law. It is important that there be a consistent and objective method to designate speeds.

Statutes require that speed zones be established on the basis of an engineering study. The engineering study needs to consider factors such as:

- **Context**

  Features such as roadside development (business, residential, rural, etc.) should be properly categorized, including type and density of adjacent land use.
• Federal Functional Class

The federal functional class of the roadway identifies the particular role the roadway plays in moving vehicles through the network of highways (i.e., Urban Arterial, Rural Collector, etc.).

• Speed Characteristics

Spot speed studies are used to determine the speed distributions of traffic at a specific location. The 50th and 85th percentile speeds are determined as well as the pace limits (the ten mile per hour range that contains the most vehicles), percent of total vehicles within the pace limits and maximum speed.

• Crash history

A crash analysis should be conducted as a routine part of speed zone investigations. The analysis should identify high crash characteristics and problem locations.

• Non-motorized users (i.e., pedestrians and bicyclists)

When determining the appropriate speed, pedestrians and bicyclists should be taken into consideration. The type of facilities for non-motor traffic, such as sidewalks and separated cycling paths versus shoulder use, should be considered.

• Geometric features

Geometric features include vertical and horizontal alignments, lane and shoulder widths and available sight distance. The appropriate warning sign with speed advisory plaques should be used rather than lower speed limits to indicate appropriate speeds for curves and hills.

• Enforcement

Signing alone is of little benefit accomplishing a change in travel speeds. Even if most drivers believe the limits are reasonable and comply with them, enforcement is essential to ensure conformity of the remaining drivers. Setting speed zones too low makes enforcement difficult and expensive. The deterrence effects of enforcement are temporary and must be reinforced often.

• Public testimony

The road authority may consider public testimony before establishing a speed zone. Extenuating circumstances or other issues may be revealed beyond the speed zone investigation.

• Traffic Volumes

Traffic volumes are a key factor affecting drivers’ choice of speeds and the determination of appropriate speed limits. On two lane rural highways, which have limited capacity and restricted geometric design features, travel speeds tend to deteriorate more rapidly with increasing traffic volumes.
• **Accesses**

Numerous accesses (i.e., driveways) which are typically found in urban or community settings can increase the potential of vehicle conflicts. The presence and spacing of driveways is known to affect the safety of roadways.

The use of consistent practices and procedures leads to more consistency in how speeds are set in different jurisdictions.

In addition, the speeds drivers select are heavily influenced by roadway design and roadside development. If the objective is lower operating speeds in some urban areas, posting lower speeds alone often does not result in satisfactory outcomes. The posted speed in concert with design elements and enforcement are necessary if desired operating speeds are to be achieved.

Speed zones are not:

• Speed zones are not a tool to warn motorists of risky spot conditions. If a risky condition is found to exist within a road section under study, this condition should be corrected or an appropriate warning sign with an advisory speed rider should be posted according to the MUTCD.

• Speed zones are not an appropriate countermeasure to address high crash locations. The crash history may be relevant to the speed zone if the crashes are spread out along a section. But if concentrated around a single feature, such as a severe curve or intersection, the crashes may be more related to the feature. The road authority should conduct a separate field review to identify possible causes and develop recommendations for improvements for high crash locations.

• Speed zones are not a substitute for enforcement. Efforts should be made to coordinate the implementation of speed zones with the enforcement policies of the governing enforcement agency. The availability of enforcement for traffic speeds is an important consideration in establishing a posted speed. Appropriate speed zones coupled with consistent enforcement increases the safe operation of traffic by discouraging high risk behavior.

• Speed zones are not a substitute for appropriate speed management countermeasures to slow traffic. The jurisdiction should implement physical changes to the roadway or roadside to encourage drivers to slow.

### Urban Speed Zones

Urban areas involve a range of considerations, more conflicts, a wider variety of users and significant distractions. Traditionally urban area roadways were classified as to their ability to move traffic and provide access to adjacent property. There is a higher demand now for including community planning objectives. This includes acknowledging the context which the roadway passes through and other transportation users. The concept is that urban roadways should be designed to provide for a variety of transportation modes within the corridor.
The speed of the roadway is one of the most important elements in the design of the roadway and has significant impact on the safety of users, particularly on vulnerable users such as bicyclists and pedestrians, but also for motorists. A lower speed for pedestrian and bicycles significantly reduce the risk of fatal and serious injury crashes. The same is true for motorists, lower speeds reduce the probability that a motorist is severely injured or killed in a crash, especially for angle crashes.

Current national research supports lower speeds than the 85th percentile in urban areas. The 50th percentile speeds are more appropriate speeds given the types of collisions and the vulnerable users.

**Rural Speed Zones**

Rural areas represent a large percentage of public roadways in Oregon and a wide range of geographical and topographical conditions. Most rural roadways provide a high speed travel network between major urban areas. Some rural roadways are main streets of rural communities and may need to be treated more like urban areas.

Current national research still supports 85th percentile speeds as a major factor in setting speeds in rural areas of sparse development.
Investigations

Speed Zone Requests

Before a speed zone investigation can be performed ODOT must receive a request for investigation with a recommended speed. This request must be from the jurisdiction and include concurrence from any interested jurisdictions (i.e., any jurisdiction involved in maintaining the roadway or a county road within the city limits). This request will initiate an investigation to determine if a change in speed is appropriate. The request for an investigation and any recommended speed should come from the engineering or public works department of the jurisdiction, if possible.

Requests for City Streets and State Highways within City Limits

A request to investigate a roadway within city limits must come from the city. Any citizen wishing to make a request to change the speed on a street within the city must work with the city.

The request by the city may be submitted to the Traffic-Roadway Section via an online request form (https://ecmnet.odot.state.or.us/SpeedZone/Home/RequestForm). If the roadway to be investigated is under the authority of more than one jurisdiction, the agency requesting the investigation needs to provide ODOT with the location of the political (e.g., city limit lines) and maintenance boundaries.

Requests for County Roads

A request to investigate a county road must come from the county. Any citizen wishing to make a request to change a speed on a county road must work with the county. The request must be made by the county.

The request by the county may be submitted to the Traffic-Roadway Section via an online request form (https://ecmnet.odot.state.or.us/SpeedZone/Home/RequestForm). If the roadway to be investigated is under the authority of more than one jurisdiction, the agency requesting the investigation needs to provide ODOT with the location of the political (e.g., city limit lines) and maintenance boundaries.

Requests for State Highways Outside of City Limits

For rural state highways outside city limits, including a rural community the request may be in the form of a letter or email (ODOTSpeedZoning@odot.state.or.us). The request can be made by
a citizen or another road authority. The request should contain at least the section of road to be investigated, the reason for the investigation and a recommended speed.

**Requests to Perform Alternate Investigations Inside of City Limits**

With the approval of the State Traffic-Roadway Engineer, the alternative investigation method may be used instead of the standard method to conduct an engineering study to recommend a speed zone on “Collector” and “Local” functional class streets within city limits. The alternative investigation method may not be used for engineering studies on state highways or any highway in the functional classes of “Arterial,” “Interstate” or “Other Freeways and Expressways.” The alternative Investigation may not be used outside of city limits.

A request from the city to perform alternate investigations on collector and local streets under their jurisdiction may be in the form of a letter or email (ODOTSPEEDZONING@ODOT.STATE.OR.US). The city must agree to perform the study according to the principles and criteria within this manual and the Oregon Administrative Rules.

**Requests for delegation of low volume roads**

The Department may delegate its authority under ORS 810.180 for public paved low volume roads or unpaved roads as per Oregon Administrative Rule 734-020-0016. A road authority may request delegated authority to determine and establish speed zones on a specific public paved low volume road or on all public paved low volume roads under their jurisdiction. The road authority will perform or cause to be performed an engineering study to determine the appropriate speed. If there is an interested jurisdiction on any paved low volume roads within the boundary of the road authority the request shall include a statement that the interested jurisdiction has agreed to the need for the engineering study and, if appropriate, the designated speed.

**Requests for delegation of unpaved roads**

A jurisdiction may request delegated authority to perform an engineering study on a specific gravel road as per Oregon Administrative Rule 734-020-0017. Establishing speed zones on any unpaved roads is generally discouraged because Oregon’s law requires Oregon drivers to adopt a reasonable and safe speed. Since unpaved roadway conditions can change rapidly depending on weather, season and volumes, establishing an appropriate speed zone for all conditions is difficult. Drivers should rely on their visual observation of the roadway conditions rather than a speed zone sign.

Given the above, speed zones will only be established on unpaved roads that are gravel roads that have demonstrated an evidence of crash history, a commitment from law enforcement to enforce and a commitment for the road authority to maintain the gravel road a minimum of
every 6 months. See Oregon Administrative Rule 734-020-0017 for requirements for submitting a request to perform an engineering study on a gravel road.

**When an agency conducts their own Investigation**

When an agency conducts their own investigation, there is no need for a request prior to the investigation. The Investigation along with the agency’s recommendation must be submitted to the appropriate Region Traffic Office for review. Once finalized, Region Traffic will send the investigation and Region’s recommendation to the State Traffic-Roadway Engineer’s office at ODOTSpeedZoning@odot.state.or.us.

**When Requesting a Rescission to go Statutory**

An agency may email a request to ODOT to rescind the current speed order and allow the roadway to go to statutory speed (i.e., residence district). The Road Authority should send the necessary information about the location and name of the roadway to ODOTSpeedZoning@odot.state.or.us.

**When Requesting Cancelation of a Previous Request**

The original requestor or the State Traffic-Roadway Engineer can cancel an investigation request. Send a request with reasoning to ODOTSpeedZoning@odot.state.or.us.

In some cases a Region Office may perform a spot speed check and determine that further investigation is not necessary and the request was unreasonable. A request justifying the reasoning for the cancelation is then submitted to the State Traffic-Roadway Engineer. The State Traffic-Roadway Engineer will send a response to the local jurisdiction or citizen.

**Preliminary Research and Data for Investigations**

Prior to performing a field investigation, research and compile the most current data for the following:

- Established speed zones (existing speed zone orders).
- The most recent investigation.
- Correct mileposts (if on state highway).
- Current map(s) and aerial photo.
- Crash data.
- Average Daily Traffic (ADT).
- Google Street View or similar aids.
Established Speed Zones and Investigations

Obtain the current speed zone orders and previous investigations online at: https://ecmnet.odot.state.or.us/SpeedZone/Search/index (or from ODOT Region or Headquarters Traffic offices).

- Be certain to obtain all current orders that cover part or all the roadway section to be investigated and/or those that are contiguous with the roadway section.
- To ensure that all pertinent orders are discovered, consider former, current or alternative names for the investigated roadway and former and current road authorities.
- It is important to remember that city limits and road names can change along a corridor and the road can change from one jurisdiction to another. Historically, separate orders were written for each road authority so there may be multiple orders covering one roadway.

Determining Federal Functional Class

The Federal Functional Class of Roadway is based on the character of service and the functional use they provide, as defined by the Federal Highway Administration. The three main types are Arterial, Collector and Local. Federal Functional Class can be determined from ODOT’s TransGIS at https://gis.odot.state.or.us/transgis/.

- Arterial – are higher traffic volumes and serve longer trips and typically refers to “Other Principal Arterials” and “Minor Arterials”.
  
  Note: “Other Freeways and Expressways” are also a subcategory of arterials and are specifically called out when applicable in OAR 734-020-0015. (“Interstates” are covered under OAR 734-020-0010).
- Collector – both Major and Minor Collectors serving more residential and commercial and channels trips between locals and arterials.
- Local – provides direct access to abutting land and designed to discourage through traffic and high speeds.

Determining City Limits

The city limits boundary of incorporated cities is a critical factor for determining applicable procedures for setting speeds.

The city limits boundary can be determined from ODOT’s TransGIS at https://gis.odot.state.or.us/transgis/ or from ODOT Mapping at https://www.oregon.gov/odot/Data/Pages/Maps.aspx.
In addition, the Department may determine whether a highway adjacent to a city limit boundary (i.e., the city limit boundary runs mostly along the right of way of the segment of highway) can be considered as being within the city limits for purposes of designating speeds.

**Determining Mileposts on State Highways**

There are different data sources to determine the mileposts for State Highways and the sources can vary.

- State Highway Inventory Reports and Summary Reports (Recommended).
- TransGIS (corrected to scale).
- Virtual Highway Corridor (ODOT’s 3D mobile mapper data).
- MicroStation maps with aerials.

The information obtained from the different sources can vary. The State Highway Inventory Reports provide mileposts of features related to the highway system. The milepost information in the State Highway Inventory Reports is generated from engineering stationing on construction plans. The data is then verified/augmented in the field using a distance measuring instrument. When possible, use State Highway Inventory Summary Reports mileposts for tying field work to State Highway Inventory Reports. These are the most likely to be surveyed mileposts.

The data in TransGIS has often been corrected to be able to scale it with other types of data than linear data. Eventually this information may be the main source, but as of now, it should be used as an alternative to help sort out discrepancies when there is conflicting milepost information.

The MicroStation maps derived from aerial surveys have been corrected for both vertical and horizontal coordinates. However, they do not have all the features mile posted or available to scale off the map. Be aware of the possible discrepancies between the electronic maps and the straight-line data in the State Highway Reports. Reconcile straight-line data, and your field data, to the map by keeping distances proportionately correct per the field logs. Keeping watch for extra or missing mileage (mile point equations) on state highways.

Virtual Highway Corridor is an easy to use tool, it uses data from LIDAR and GIS and is survey grade correct. This is also very useful tool for scoping out the area ahead of the field investigation.

**Map/Aerial Photo**

A current map of the area is helpful to identify connecting roadways and to readily identify the area within the city or county. A pdf of the map is required with the report.

Aerial photos of the area are invaluable tools to document the context and determine the relative density of land uses within the area.
Crash Data

Obtain crash data for the section of roadway being investigated. The data may be obtained from ODOT Crash Analysis and Reporting Unit https://zigzag.odot.state.or.us/ or from TransGIS at https://gis.odot.state.or.us/transgis/ (a map view of crash data is helpful). Typically an investigator will pull crash records using the standard reporting formats at https://zigzag.odot.state.or.us/, most often using the Comprehensive PRC format.

- Crash data for each investigated section must include at least three full consecutive calendar years of recorded crashes. A partial year of data for the current year can be included also.

- Speed zone investigations consider crash rates in the recommended sections including intersections, the exception to this is that intersections which begin/end a section are not included. Request that these crashes be excluded from the listing. Attaching a map to the crash listing request with the begin and end points labeled may help the Crash Analysis and Reporting Unit process the request faster.

- It is helpful to solicit crash records from the road authority or enforcement as well, this can add valuable insight, especially if safety is cited in the request. Supplemental crashes not included in the ODOT crash data cannot be added to the ODOT crash data or included in the crash rate calculation.

- The ODOT crash data is made up of only reportable crashes and the statewide or countywide crash rates are composed of only data from the ODOT official crash data. Adding supplemental data skews the results and possibly adds crashes that are not reportable by statute.

- Typically on local roads (unless the jurisdiction uses mileposts) the investigator will have to pull crash records for the roadway using the PRC report and compare them to the crashes within TransGIS to locate the applicable crashes for the section of interest. A local jurisdiction may have a Decode Access Database or other data extracts from ODOT crash Data Unit for their jurisdiction, these databases may be used to populate geo databases.

For a complete discussion of Crash Data, refer to Appendix B.

Average Daily Traffic

Average Daily Traffic (ADT) is the measure of traffic volume and is an important piece of information for assessing the operations of the facility. The best source of ADT is usually the road authority responsible for the roadway. If an agency has no volume count within two or three years the agency can estimate the ADT or call ODOT Systems Monitoring Unit for an estimate. A two or three year old ADT should be updated with a general rule of thumb of 2-5% growth per year depending on the locale.
Google Street View/ Digital Video Log

Before leaving the office, visit the site using Google Street View or the digital video log (or similar tools). This will allow for familiarizing oneself with the area and what to expect before visiting the site. In addition, it may assist with collecting data for the field visit so there may be less time spent in the field, exposed to traffic. Review the field checklist and you can begin collecting field data from the office.
Standard Engineering Study Method

The Standard Engineering Study Method of speed zoning may be used on any road. It is important to develop repeatable practices to ensure the speed zoning is carried out consistently throughout the state.

Field Investigation

The field Investigation is necessary to ensure speed zoning data collected in the office is correct and to collect additional data. The field investigation is essential to properly understand the data and the issues. Appendix C contains the Speed Zone Field Investigation Checklist. The investigator may want to begin by collecting as much of the field data as possible from a tool such as Google Street View. On State Highways the investigator may want to try using data from Lidar and using the Road Analyzer to measure and obtain data (other agencies may have similar tools).

This does not replace the necessity of a field visit but it may reduce field time and hopefully traffic exposure. The data must be field verified.

Included in the data collection for the field investigation is:

- Roadway data.
- Context.
- Photographs.
- Speed Characteristics.

Roadway Data

For the field investigation milepost the section being investigated to collect information. State Highways should use the established milepost system. Other roads (city streets and county roads) may need to be mile posted starting from the beginning of the section with milepost zero.

Start by driving through the section noting traffic flow, comfortable speed and the general road and traffic conditions. Verify existing speed zone boundaries including any possible needed changes (See Appendix E for practices related to changing boundaries).

Documenting the following roadway data on a milepost log can be useful for completing the investigation report but is not required as part of the investigation submittal. Alternatively, a video of the roadway with a distance measuring device (using a camera such as a GoPro) would serve as a possible alternative.

Alignment – sight ahead on roadway along the fog line and if the roadway does not follow a straight line it is a curve.
• Vertical – number and location of crest and sag vertical curves.
• Horizontal – Number of horizontal curves, any speed advisory signs or the possible need for signs.
• Sight Distance – Note intersections and major driveway locations with possible sight distance issues (less than adequate stopping sight distance).

Roadside Characteristics – collect data for the following:
• Number and type of Intersections
  o Number of legs
  o Milepost
  o Left/right
  o Traffic controls
• Segment is Limited Access Facility (yes/no)
• Number of driveways (right/left) or relative density per distance
• Typical sections of the roadway
  o Width of roadway (shoulder to shoulder or curb to curb)
  o Bike facilities (bike lanes)
  o Width of Travel Lanes
  o Medians (raised, TWLT, painted, etc.)
  o Islands or pedestrian refuges, or channelization
  o Pedestrian facilities or sidewalks (with buffer strip)
  o On-street parking
• Ped/Bike Crossings (marked and enhanced)
• Railroad crossings
• Bus or Transit Stops (including pullouts or stations)

Context

The primary context of roadway section depends on the type and density of land use alongside the roadway. The contexts are general and may not fit every location precisely.

Rural

Areas with lowest density of development, few houses or structures (widely dispersed or no residential, commercial, and industrial uses), and usually large setbacks.
Figure 1: Example of Rural. Mill Creek Road (outside of Turner), via Google Maps

Rural Community

Areas with low-density development but diverse land uses with commercial main street character, potential for on-street parking and sidewalks, and small setbacks.

Figure 2: Example of Rural Community, Chiloquin: Highway 422, via Google Maps
Suburban Fringe

Areas with low-density development or no development, between the suburban, urban or rural community and the rural area, can be inside or outside of the city limits (can be within the urban growth boundary).

Figure 3: Example of Suburban Fringe, Prineville: Highway 380 via US26, via Google Maps

Suburban Commercial and Residential

Areas with medium-density development, mixed land uses within and among structures (including mixed-use town centers, commercial corridors, and residential areas), and varied setbacks.
Figure 4: Example of Suburban Commercial, South Redmond: US97/SW Yew Ave, via Google Maps

Figure 5: Example of Suburban Residential, Tigard/Metzger: Highway 141/SW Knoll DR, via Google Maps

**Urban Mix**

Areas with high-density development, mixed land uses and prominent destinations, potential for some on-street parking and sidewalks, and buildings with varying setbacks from the roadway.
Urban Core/Central Business District

Areas with highest density of development, mixed land uses, predominately higher-rise structures, and small setbacks of buildings from the roadway. Sidewalks are wider and on-street parking is typical.

Figure 7: Example of Urban Core. Baker City: US30/OR7 (HWY 006), via Google Maps
Determining the Context

The investigator (working in collaboration with the Engineer) determines the appropriate context based on the predominant land use, density and type of development. The State Traffic-Roadway Engineer is the final authority for determining the context.

The definitions above give a broad description of the contexts encountered on highways in Oregon. The context should be evaluated through a combination of in-office assessment and field visit. Note sections where roadside development changes or where traffic volumes and movements change significantly.

For speed zoning purposes only existing land use conditions should be used in the determination of the urban context. Planned uses and future development should not be taken into account until the actual development is in place or very nearly in place. Planned developments may or may not take place and timing of developments are often delayed, sometimes for years.

In some cases the urban context may differ on each side of the highway, for speed zoning purposes the predominant context would generally be the denser of the two contexts.

The table below will help provide a more detailed guide to the assessment of the context arranged with the denser context towards the top to the less dense.

Table 1: Assessing Context

<table>
<thead>
<tr>
<th>Context</th>
<th>Building Setback</th>
<th>Building Access</th>
<th>Land Use</th>
<th>Building Density</th>
<th>Parking</th>
<th>Block Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Core</td>
<td>None or little setback</td>
<td>Front door from sidewalk</td>
<td>Mixed (Mostly Commercial may be some residential)</td>
<td>High density and taller buildings</td>
<td>Primarily on-street, maybe some off street</td>
<td>Small consistent blocks</td>
</tr>
<tr>
<td>Urban Mix</td>
<td>Little setback</td>
<td>Some front door from sidewalk</td>
<td>Mixed Commercial with some residential</td>
<td>Med to high density and shorter buildings</td>
<td>Some on street and off street</td>
<td>Small to medium block size</td>
</tr>
<tr>
<td>Suburban Residential</td>
<td>Little setback</td>
<td>Some access from sidewalk</td>
<td>Mostly Residential, Parks or Recreational</td>
<td>Med density single or multi family</td>
<td>Varies</td>
<td>Small to medium block size</td>
</tr>
</tbody>
</table>
### Type and Land Use

The context will be accompanied by a description of the type and density of adjacent land use and noting if the context is inconsistent, otherwise difficult to determine or development along the segment is very sparse.

### Determining Pedestrian and Bicycle Activity

Built land use and roadside culture affects the pedestrian and bicycle activity. The existence of businesses and other draws such as parks and schools indicate more pedestrian activity and bicycling destinations. Also the roadway cross section, including facilities for pedestrians and bicycles and the quality of facilities, influence walking and biking. The completeness and connectivity of sidewalks and bike facilities, more connected streets and higher densities of crossing opportunities all contribute to increased use.
Use qualified descriptions High, Medium or Low to describe the relative use of the segment by pedestrians and bicycles for the roadway. The chosen description should be relative to surrounding and nearby areas. It should not be comparing the conditions in Portland to conditions in Pendleton.

For instance, if land use is relatively high pedestrian generators and good roadside built environment for walking and crossing, the description should indicate pedestrian activity High. If there are no generators or pedestrian facilities then Low. If not either High or Low, indicate Medium.

Factors that might be conducive to pedestrians and bicyclists include:

- On street parking that is utilized.
- Bus stops.
- Regular crossing opportunities.
- Wide sidewalks and furniture for pedestrians.
- Separated or buffered bike lanes.
- High employment density.

Factors that might not be encouraging to pedestrians and bicycles (although the presence of these may not mean low activity, it depends on the surrounding land use)

- High vehicle speeds.
- Multiple lanes in each direction.
- The perception that the street may not be safe for non-motorized users.
- Dis-continuity of route or facilities.

Note any group demographics that are present especially older or younger.

**Photographs**

The photographs are intended to document the descriptions of the roadway and major factors considered in the recommendation for the report. Digital photographs are preferred. If the roadway is high volume or unsafe to take photos, you may use images from either Google Street View or ODOT’s digital video log. If either of these methods are used, make sure to state image capture date and note anything that has changed since those photos were taken.

Alternatively, a video of the roadway may be used (i.e., GoPro) as a way to gather images.

**Photo Locations**

- Choose photo locations to show:
  - Roadway character.
Photographs should represent each section but are not required to overlap (unless an overlap is necessary to show sign messages or other specific details about the roadway).

Space photo locations up to 1/4 mile apart while still showing roadway characteristics important to the report recommendations. Spacing may be greater than 1/4 mile if there is no change in the roadway or the roadside culture, and the section is longer than 1 mile. However, it’s best not to skimp on photos; it’s better to have too many than too few.

Include photos showing both current speed zones and any expected speed zone changes.

Include photos of the beginning and end of the investigated section. For these photos, stand outside the investigated section so that the existing speed signs and intersections are in the photos.

Take photographs from the roadway centerline if possible. Be safe and use a two person crew and/or medians and crosswalk areas when traffic volumes are high, optionally collect images from video.

Take one photograph ahead on line and one photograph back on line from every photo location. If the first photo shows the back of a sign or an intersection, the second photo of the pair should be taken from a point on the other side of the sign or intersection, so that an overlap is created and the message/details can be seen.

If sight distance is restricted where public roadways intersect the investigated roadway, take photos from those intersections to show the sight distance.

Recording the Photographs

Number the photographs consecutively in milepost order. (There will usually be two numbers per milepost.)

If possible, log the photographs consistently, using odd numbers for one of the directions and even numbers for the other direction.

Record the direction of view and milepost or distance from the nearest intersection or permanent landmark for each photograph. The location of the photograph given in the report will be the distance from the nearest intersection.

For intersections, choose a photo location inside the section and far enough away from the intersection to show all approaches and close enough to show roadside features and traffic control detail.
Determining the Speed Characteristics

Individual speeds selected by motorists correspond to the visual driving environment presented to drivers. The roadway alignment, cross section, roadside and other users influence the speed selection of drivers. Spot speed checks at locations throughout the section are used to determine the speed characteristics such as 85th percentile, 50th percentile and pace limits.

A variety of devices are available to measure speeds, the most common are the following:

- Handheld portable devices such as a radar gun or LIDAR gun.
- Road tubes that are installed on top of the roadway surface.
- Radar or video devices that mount to poles or other structures nearby.

Typically, to get accurate speeds only those vehicles that are free flowing or choosing their own speeds are measured. When a line of vehicles moving closely together (within 4 seconds of each other) only the speed of the first vehicle is measured.

Spot Speed Check Requirements

- Typically, every 1/2 mile with a minimum of two spot speed checks per mile. Note: If conditions remain virtually unchanged, the interval can be lengthened to 1 mile, or longer for a very long (>3 miles) investigated section.
- Perform a Spot Speed check when there is a change in roadside context or roadway cross section for more than 1250 feet.
- Perform at least one Spot Speed Check for each different speed zone section. If you are considering splitting an existing zone section into parts, take a spot speed check in each part (this could reduce the need for a return field trip to take another spot speed check).
- An existing designated speed zone may be extended or shortened, at the discretion of the State Traffic-Roadway Engineer, up to 500 feet without obtaining a spot speed check within that section. An abbreviated “housekeeping” type report is required. Current photos of area are encouraged depending on reason for requesting extension or subtraction.

Choosing Spot Speed Locations

- Tangent sections away from controlled intersections are preferable.
  - Do not take spot speeds on curves or near stopped or signalized intersections.
  - If the section is mostly curves, take spot speeds from a representative location.
  - If the section has closely spaced controlled intersections, use a mid-block location, or split the directions into separate locations to obtain suitable free flow data.
Locations should be chosen with the request information in mind. They should be designed to answer the road authority’s concerns. Good judgment in the choice of location may eliminate additional field trips. This may mean checking:

- Close to speed zone changes.
- Near a particular development.
- Taking more checks than the minimum requirement.

## Spot Speed Check Operations

Take checks:

- In normal weather (avoid inclement weather, unusual conditions or work zones).
- During regular daylight hours.
- Preferably on Tuesdays, Wednesdays or Thursdays (avoid holidays and weekends).
- At free flow conditions rather than peak or congested traffic periods.

Remain inconspicuous so as to not influence speeds.

Do not record speeds of vehicles passing other vehicles.

Record trucks and other commercial vehicles speeds separately from passenger vehicles, if possible.

Count at least 75 vehicles in each direction, unless one of the following:

- Limit time to three hours maximum per location, even if less than 75 vehicles per direction; or
- Limit time to one hour, if less than eight total countable vehicles in an hour and less than 400 ADT.

## Recording Spot Speed Checks

Fill out the heading on the Spot Speed Survey form (Figure 17 in Appendix D).

The listing of the city or county name should be the road authority for that section.

- Only use city names listed in the "Oregon Bluebook" for incorporated cities, otherwise use the county name.
- Note the names of unincorporated communities in parentheses if they are within the investigated section.
- On state highways, use the official highway name, route number, and milepost.

Enter the street or road name used by the road authority for a city street or county road.
Traffic-Roadway Section

Speed Zone Manual

- If the road carries two names, as is the case with many state highways, list the name on the street signs with the alternate name in parentheses.
- Label each column with the traffic direction at the top.
- Enter the posted speed for the section investigated. If no speed is posted, enter "None (XX mph Stat.)" and use the appropriate statutory speed (ORS 811.105 or ORS 811.111).
- Send an electronic copy of the speed check data with the report to the State Traffic-Roadway Engineer.
  - Electronic data must be supported with a scanned electronic copy of the raw data (See Note below)
- Record the time in hours and minutes. Note the time the spot speed check began and the time completed. If the count is interrupted for any reason, record each count period.

The STRE may require more speed checks, recollection of certain speed data, use only certain periods of time or exclude certain locations of spot speed checks, based on STRE engineering judgement, because of location, hours of congestion or other factors that may impact the collection of speeds.

NOTE: Electronic traffic counters may be used if they can distinguish and analyze headway to count only free flow vehicles as defined above, and if they can tally speeds in 1 mile per hour increments. If an electronic counter is used, the report from the automated analysis must produce the required data or analysis will have to be completed manually for submittal.

Periods of congestion and peak periods should be excluded completely from data.

NOTE: Electronic data from cloud based services based on private and public data sources (such as RITIS and HERE) are currently not allowed to be used for gathering free flow speeds on most highways. Many streets have traffic controls and other features that may restrict free flow speeds (signals, driveways, curves, etc.) and thus speeds measured from these sources may not be appropriate except on free flow facilities such as freeways during non-congested times.

More work to develop procedures to use such tools is occurring.

**Required Data Statistics**

- 85th percentile speed.
- 50th percentile speed.
- 10 mile per hour pace limits.
- Percent of traffic in the 10 mile per hour pace.
- Percent of traffic exceeding the posted speed.
- Maximum speed, per direction and combined.
- Line or data point chart.
Canceling a Request Prior to Preparing a Report

If a preliminary investigation is performed (spot speed checks and crash history) and it is determined that a more detailed investigation or prepared report is not warranted or can’t be justified, a memo to the State Traffic-Roadway Engineer should be submitted for speed zoning records and all interested parties should be informed.

Standard Speed Zone Report Format

The report provides documentation of the data collected and supports the conclusions reached from the investigation. Each Standard Speed Zone Report must closely adhere to the criteria as described in this manual. The report includes in the order of presentation:

- Transmittal Letter
- Report outline.
- Map.
- Photograph page(s).
- Crash summary(s).
- Spot speed summary(s).

Report Outline

The Report Outline consists of the following nine components:

- Report heading.
- Recommendation.
- Section Descriptions.
- Historical background.
- Data Summaries.
- Investigation Data.
- Roadway Data.
- Crash Data.
- Spot Speed Data.
Factors influencing the recommendation.

The report outline should be complete and accurate and follow the standard format. See Appendix K shows the section descriptions for roadways with multiple names. See Appendix L for the two-page standard report outline template and example.

**Report Heading**

The heading consists of the following six lines:

1. OREGON DEPARTMENT OF TRANSPORTATION
2. Report of Speed Zone Investigation
3. Name of Highway, Street or Road
4. Description of begin and end points of full report
5. City and/or county jurisdiction and/or ODOT
6. Date

**Lines 1 and 2**

Lines 1 and 2 should remain the same for most reports. When the investigation was completed under the direction of a road authority other than ODOT, the road authority or consultant should use their own official designation on line 1.

**Line 3**

This line gives all pertinent names for the road investigated. On state highways, use the official highway name, highway number and the route number if there is one. Abbreviate the route number (US XX) or (OR XX) and milepost (MP) and abbreviate other words only as necessary to fit the report format. The route number can be added in parentheses, for example “Oregon Coast Highway #9 (US101)”.

For county roads or city streets that are not state highways, use the name preferred by the responsible jurisdiction. If a roadway has two names then show both. When the report recommends to "Retain" the present order, use the name of the street or road shown on the order. If the current name is different, add it in parentheses.

**Line 4**

The report includes the investigated section of road along with all orders contiguous along the road including the investigated section. This line lists the beginning and end of the current speed zoning together with the investigation. In most cases one or both endpoints will be outside of the investigated section.

All investigated sections, the orders contiguous with the investigated sections and with each other are included within the end points listed here. These end points are described by distance
and direction from the nearest intersection. (e.g., 450 ft. east of Current Road). If you are changing this description due to road changes and not due to the speed investigation, the change must have been verified in the field. See Appendix E for the full discussion on making description changes.

On state highways, the list begins and end points beginning with the lowest milepost. For local roads the list begins and end points moving from the city center toward city limits into the county.

When to use Mileposts

- If the report begins and/or ends on a state highway, spur or connection, use mileposts in addition to the distance from the nearest cross street.
- State Highways only: Only use ‘Z’ alphanumeric (to indicate overlapping mileage). Alphanumerics for connections and couplets should only be listed in the subtitles.
- Do not use mileposts for city streets or county roads.
- If the report of a city street or a county road begins and/or ends at a state highway, use the highway name and route number, but not the milepost, in the description.

Line 5

This line includes all roadway jurisdictions involved in the investigated sections and the current speed zone orders. Interested jurisdiction (more than one road authority shares responsibility for a single section of road – see glossary) must include active responsibilities such as right of way or maintenance authority. The Oregon Transportation Commission (OTC), through ODOT, has sole speed zoning jurisdiction for rural state highways.

Table 2: Use the following format for line 5, adding the number of road authorities necessary

<table>
<thead>
<tr>
<th>Road Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>City street or state highway in the city</td>
</tr>
<tr>
<td>state highway outside city</td>
</tr>
<tr>
<td>State highway in &amp; out of city</td>
</tr>
<tr>
<td>county road in county</td>
</tr>
<tr>
<td>Road in city and county</td>
</tr>
<tr>
<td>Interested jurisdictions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of XX</td>
</tr>
<tr>
<td>ODOT</td>
</tr>
<tr>
<td>City of XX &amp; ODOT</td>
</tr>
<tr>
<td>XX County</td>
</tr>
<tr>
<td>City of XX &amp; XX County RoadAuthority1/RoadAuthority2</td>
</tr>
</tbody>
</table>

Line 6

This line establishes the reporting date. Line 6 should have the month, day and year the report is completed by the investigator.
Recommendation

This statement gives the recommended disposition of existing orders and any new speed zoning. It must include the disposition of all orders included within the sections investigated within the speed zone report. Recommendations are written in the following formats, combining formats as needed to include all existing orders and changes:

a) "Retain Order¹ No. XXXX dated XXX:"
   
   *This recommendation is used only when the entire order(s) is being retained with no changes, including school zone or boundary name changes.*

b) "Rescind Order¹ No. XXXX dated XXX and establish the following speed zoning:"
   
   *Use this wording when changing the designated speed of a speed zone, adding to or dropping sections of speed zones, or changing school zones or speed zone boundary road names.*

c) “Rescind Order¹ No. XXXX, dated XXX and establish the following speed zoning. Recommendation to establish a new order is for housekeeping purposes.”
   
   *Use this wording when the changes are housekeeping items and the speed zoning is to remain the same. See Appendix E for housekeeping procedures.*

d) "Establish the following speed zoning:"
   
   *Use only when the present speed is statutory or basic rule. An unestablished posted speed is considered to be statutory or basic rule unless covered by an existing order.*

e) “Retain the existing speed:"
   
   *Use when there is no established order and the recommendation is to retain the statutory speed.*

Section Descriptions

This part provides the descriptions to identify both the existing and recommended speed zoning on the road along with any road name and jurisdictional changes. This information is used to write the speed zone orders and to document the current conditions. It is organized as follows and generally in the same order:

- Investigated or not investigated.
- Road name (if more than one).
- Direction of travel (if divided roadway or couplet).
- Recommended speed sections
- Road authority and interested jurisdiction.

¹ Use the same labeling (i.e. Order, Resolution, Speed Zone Rule, etc.) as the original document.
Note that no one of the above factors is exclusive of the others, except that division by road authority and interested jurisdiction is always described within each recommended speed section.

If you are changing a description because of road or roadside changes and not as part of the speed investigation, the new description must be verified in the field. See Appendix E for a full discussion of making description changes.

**Investigated or Not Investigated**

The heading NOT INVESTIGATED, placed at the left margin, covers all the sections or portions of sections excluded from investigated lengths of road. Every investigated/not investigated portion is listed separately in order from begin point of the report to the end point.

For not investigated sections on local roads, list the sections as described on the most current speed zone order. If there is more than one road authority or interested jurisdiction, add the footnote: Jurisdictional boundaries may have changed from what is shown in the not investigated sections.

For not investigated sections on state highways, list the sections and mileposts as described on the most current order. However, if corrections were made in the investigated section(s) that impact the descriptions and mileposts in the not investigated section(s), the not investigated section(s) are to be corrected also. Update the jurisdictional boundaries when there is an annexation notice for that section.

**Road Names and Direction of Travel**

Within the description always completely spell out the roadway’s suffix, for example Street, Avenue, Road, Lane, Way, etc., do not use abbreviations.

For a couplet or other divided road, the main direction by increasing milepost or distance from city center is listed first with the opposing direction next and then any following speed zoning on undivided sections.

**Example for Couplet:**

<table>
<thead>
<tr>
<th>Section</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigated</td>
<td>On 5th Street (One-Way Westbound Only)</td>
<td></td>
</tr>
<tr>
<td>A From: Beginning Road</td>
<td>30 mph</td>
<td>25 mph</td>
</tr>
<tr>
<td>To: Next Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35 mph</td>
<td>30 mph</td>
</tr>
<tr>
<td>To: Next Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>150 ft. E of Main Street</td>
<td></td>
</tr>
</tbody>
</table>

On 4th Street (One-Way Eastbound Only)
Traffic-Roadway Section

B From: Beginning Road 30 mph 25 mph
To: 150 ft. E of Main Street

Example for Frontage Road or State Highway Connection:
On Old Stage Frontage Road/Pacific Hwy. (I-5) (AKA Old Stage Road) Conn. 001CA
From: Gold Hill Spur (OR 99/OR 234) (Pacific Hwy. I-5 SB on & off ramps) MP 40.86
To: Frontage Road Connection (001CB) MP 43.12

Example for Z Mileage:
If a speed zone includes a section of highway that includes ‘Z’ mileage (see Glossary for definition), this is the only time there should be a letter in front of the MP such as 0.22 mile north of Lake Boulevard, MP Z48.94.

Recommended Speed Zone Sections

The roads are divided into sections by the recommended speeds. Sections are defined as one recommended speed zone. Divide the report into more than one section whenever the recommended speed changes.

Consider sign placement when determining the speed zone termini. Questions to consider: Can a sign physically be placed at this location? Should the lower speed encompass a bridge or an intersection? Name the termini so that the sign is placed in the correct spot for the area.

Normally, speed zones should not be changed at an intersection, but on one side or the other of the intersection so that sign placement can match the speed zone order as nearly as possible.

Each different recommended speed zone section should be at least 1/4 mile long. Transition speed zones can be a minimum of 1000 feet long. However, the responsible engineer may exercise engineering judgment and recommend establishment of a speed zone less than one-quarter mile in length. This may be exercised only when the speed zone begins and ends at an intersecting street. Ramps can be speed zoned separate from their associated roadway if the ramp is at least ¼ mile in length. However, most ramps operate under the statutory 55 mph speed limit.

Label each section with a letter (except if there is only one recommended speed, no section letter is used). Place the section letter at the left margin. If there are separate descriptions by road name, direction of travel, or road authority which continue the recommended speed, each section will typically be labeled with the same letter.

Road Authority

Each section is further divided into segments when there is a change in road authority or interested jurisdiction. The segments describe a portion of the section with a unique road authority and/or interested jurisdiction, following in order of increasing milepost or distance from city center. A footnote is added for each section designating the road authority and/or
interested jurisdiction. See Appendix G for examples of jurisdiction footnotes. School speed zone segments are shown only on state highways. It is not necessary to show these on local agency roadways.

Describing Sections/Segments

- Only use distances from the nearest intersection or physical feature such as a river or bridge for referencing the beginning and end points.
  - Do not use jurisdictional boundaries, such as city limits, which are more likely to change. List the county or city limits only as a reference, placing them in parentheses. If the existing order has city limits as a section description, do the research and field verification to establish a current description according to these guidelines.
  - Do not use land divisions such as section or township.
  - Do not reference buildings or other roadside development facilities. In very rural areas, these may be described in the transmittal letter or other notes for description purposes.
  - Do not reference any signing, including mileposts.
  - When there is a milepost equation within the investigated section, do not use reference point that is after the equation. Reference point should be prior to equation for less confusion.

- Follow these rules when listing distances:
  - List distances from 50 feet (0.01 mile) up to and including 500 feet (0.09 mile) in increments of 50 feet.
  - List distances of more than 500 feet (0.10 mile) as miles and hundredths of a mile.
  - Listing School Speed Zones on state highways – use the same boundary description conventions for describing school zone boundaries as for section and segment boundaries. List directly under segment where school speed zone is located (see Appendix K). It is not necessary to show school speed zones on non-state roadways.

- Place footnote numbers at the right margin of the "Recommended" column across from the recommended speed to refer to road authority and interested jurisdictions applicable to the section.
  - Use footnotes to list the road authority and interested jurisdiction (if any) for each section.
  - Use footnotes to include milepost equations on state highways.
Footnotes are listed at the bottom of the section descriptions.

If the recommendation is to rescind an existing order and establish a new order for housekeeping reasons (no changes to the speed zoning), use a footnote to explain the purpose of the new order.

### Listing Existing & Recommended Speeds

- Existing speeds shown on a current order are the legal speeds.
- If there is no order the applicable statutory speed is the legal speed.
- List the legal speed “XX MPH” under existing.
- When an established speed from an order is not posted, place “XX MPH order # (not posted)” under existing.
- When a statutory speed is not posted list “XX mph stat (not posted)” under existing.
- If there is a current posted speed, but the speed is not established by order or by applicable statute list the posted speed in parentheses beside the legal current speed and note as “(XX MPH unestablished)”.
- There can be more than one existing speed for each recommended speed zone. List all the existing speeds in a section side by side separated by “/”, e.g., 45/55 MPH.
- Include “MPH” with all speeds listed.
- Check to be sure there is at least one spot speed check in each existing speed portion of each section. There does not have to be a separate spot speed check for each section.
- Each section has one recommended speed. If a section has multiple segments (e.g., multiple jurisdictions), the same speed is listed for each segment within that section.

### Historical Background

The historical background follows the section descriptions and describes who made the request, the requested speed and any previous actions.

### Investigation Requests

Include the source of each request, the requestor’s name, title and agency. This includes the agency making the original request and any concurrence from an interested agency. When a citizen is the requestor, include his/her name and address (or email) on the report. If there is a petition, include only the name(s) of the person(s) submitting the petition.

Requests must be submitted from applicable road authority as follows:

- City, for city streets and state highways within the city.
- County, for county roads.
For rural state highways private citizens may submit a request to ODOT.

**Requested Speed**

A requested speed is required. List the requested speed(s) by section(s), as necessary.

**Previous Action**

There are three ways to note a previous action:

- "None" indicates that no order exists on the entire length of road described in the report.
- “Established…” indicates that a current order exists. Include the order number and date of the order.
- “Rescinded…” indicates that an order was previously rescinded on this portion of road and no new order was issued.

**Investigation Data Summary**

A separate column is created for each investigated section. Sections that were not investigated can be grouped together, as there will be no data in that column. Columns for investigated sections cannot be grouped.

For example, if Sections A, B and C were not investigated and Sections D and E were investigated then you might have three columns, the first column combining Sections A, B and C (with no data) and a separate column for D and E, each with data for the section. See Appendix L for an example.

**Investigation**

The investigation component summarizes information from Roadway Data, Crash Data and Spot Speed Data along with basic information for each section. This information gives an overview of traffic conditions, putting together the traffic volumes, road alignment, crash history and prevailing speeds.

**Section Length**

Give the section length in miles and hundredths of miles. A section less than 1/4 mile is footnoted with an explanation in the reference note of the reason for the short section.

Valid reasons for speed zone recommendations of less than 1/4 mile are:

- An extension of an existing speed zone which will then total more than 1/4 mile.
- A transition zone at least 1,000 feet long with at least a 10 mile per hour difference at each end.
- A unique situation, which must have been approved by the ODOT Region Traffic Engineer.
Note that if speed zone changes will result in an existing speed zone reduced to less than ¼ mile, a decision must be made to either include it, keep as a transition speed if practical and 1,000 feet minimum length, or to add it onto an adjacent speed zone that is not changing. The last option will require a spot speed check in the orphan short section. A spot speed check will also be needed for the first option if the roadside culture or roadway characteristics are different than the area proposed for a new speed zone. An existing designated speed zone may, at the discretion of the State Traffic-Roadway Engineer, be extended or shortened up to 500 feet without obtaining a spot speed check within that section. A “housekeeping” type report will be required (1st page of report and a map, see Appendix E). If the last investigation in the area was more than a decade ago, the STE may require a full investigation.

85% Speed and 50% Speed

Use the 85% Speed and 50% Speed from the Spot Speed Data component. If less than 8 total vehicles in one hour or 25 total vehicles in three hours were counted, enter a footnote stating "Insufficient ADT for a valid speed check" rather than the 85% speed or 50% speed.

On roads with less than 400 ADT, ODOT encourages local jurisdictions to take responsibility for these roads. ODOT can delegate authority for speed zoning of low volume roads to the local road authority. (For more information, see the section on Speed Zoning Low Volume Roads in this manual.)

(year-year) Section Crash Rate

Use three most current years and calculated rates from the Crash Data component.

(year) Average Daily Traffic (ADT)

Fill in the leading blank using the year used for the crash rate. Use the middle year ADT from the year-year crash rate (or the most recent year ADT estimated or grown to be the middle year). You may take the average of the three years (if you have three years of ADT values), in which case use “(year-year)”.

The ADT for state highways will be supplied by the ODOT region office. If additional data is needed, it is available from the Systems Monitoring Unit, Transportation Data Section.

For city streets and county roads, this should be provided on the request for investigation form, but if not or if it appears to be incorrect, call the local jurisdiction for traffic volumes. If the agency has no volume count within two or three years of the desired year, ask the agency to give an estimated ADT or call the Systems Monitoring Unit. If the last volume count is over 5 years old, the department has the option to require the jurisdiction to perform a traffic count. If very little has changed since the last count, the department may accept their current estimate of ADT.

Note an estimated ADT as "XXX (estimated)". A two or three year old ADT may be "updated" using a rule-of-thumb of 2-5% growth per year. The rate of growth should be supplied by the
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road authority or, alternately, by ODOT’s Traffic Planning & Analysis Unit (TPAU). The rate of growth can be applied to bring an ADT forward in time or to take it back in time. Use the latest measured ADT and adjust to your crash year.

**Context**

This is to provide information on the extent and character of roadside development as it currently exists. Use the following terms:

- **Rural**- Areas with lowest density of development, few houses or structures (widely dispersed or no residential, commercial, and industrial uses), and usually large setbacks.

- **Rural Community**- Areas with low-density development but diverse land uses with commercial main street character, potential for on-street parking and sidewalks, and small setbacks.

- **Suburban Fringe**- Areas with low-density development or no development, typically between the suburban commercial and residential and the boundary of the city limits.

- **Suburban Commercial and Residential**- Areas with medium-density development, mixed land uses within and among structures (including mixed-use town centers, commercial corridors, and residential areas), and varied setbacks. Can be either Suburban Residential or Suburban Commercial.

- **Urban Mix**- Areas with high-density development, mixed land uses and prominent destinations, potential for some on-street parking and sidewalks, and buildings with varying setbacks from the roadway.

- **Urban Core/Central Business District**- Areas with highest density of development, mixed land uses, predominately higher-rise structures, and small setbacks of buildings from the roadway. Sidewalks are wider and on-street parking is typical.

- **Undeterminable** - If the context type does not fit the definitions above use “Undeterminable.”

- **Inconsistent** – If the context does not fit any above contexts consistently “Inconsistent.”

- **Sparse** – If the context is so sparse that it does not fit any above contexts “Sparse.”

Changes in speed zoning should generally fit with a definite change in context, development or if the road characteristics change. See the Glossary, ORS 801.170 (Business District) and ORS 801.430 (Residence District) for further definitions and descriptions of context type.

Rural Communities do not have established jurisdictional boundaries like incorporated cities. Typically the boundary should be defined by the presence of residences and businesses set apart by not more than 150 to 200 feet. The community boundary may be extended by 500 to 1000 feet to cover sparse development along the highway or connecting streets with development off the highway. The boundary should not be extended unless the engineering study supports lengthening the boundary.
**Culture Type and Land Use**

A description of the density and predominant type of land use. It is acceptable to use more than one land use. Use the following terms, listing density first and then culture type:

Density:
- Sparse,
- Light,
- Moderate, or
- Heavy.

Culture type:
- Residential - mainly land used for dwellings, parks, etc.
- Business - mainly buildings used for commercial or professional business.
- Industrial - industry and heavy truck traffic.
- Expressway – access controlled in urban area.
- Rural - mostly agricultural or open undeveloped land (density not required when listing rural).

**Horizontal Alignment**

The horizontal alignment is for the entire section including the end intersections. Record as either “Tangent” or report the number of curves. Turns or sharp curves are called curves for the purposes of the report.

**Vertical Alignment**

The vertical alignment is also for the entire section including the end intersections. It is a description of the general vertical alignment. Enter either “Level”, “Mostly level”, “Mildly undulating”, ”Undulating”, or ”Steady grade”. Alternatively, an undulating alignment can be described with the numbers of sag and crest curves.

**Curve Signs and Speed Riders**

Curve Signs and Advisory speed plaques are used to advise motorists of a change of roadway alignment. The need for curve signs or a change to an advisory speed should be evaluated as per the MUTCD when conditions change. ODOT is responsible for evaluating curves on state highways. On local roadways, evaluation of curves is the responsibility of the local agency. The speed zone investigator should review the signing and comment if curve or advisory signs need to be reevaluated.

For state highways, designate the curve signing as one of the following:
• "In Place"
  o Use if there are curves and the curve warning sign and speed rider signing is appropriate.

• “Partially Posted”
  o Use if there are curves and one or more is not signed.
  o Note safe speeds, extent of posting and needed action by using a footnote.

• "None"
  o Use if there are no curves.
  o Use if there are curves (described in the horizontal alignment) but no required curve signing.
  o Note any needed actions and the safe speeds by using a footnote.

For local roadways, designate the curve signing as one of the following:

• "In Place"
  o Use if there are curves and curve warning signs in place.

• “Partially Posted”
  o Use if there are curves and one or more is not signed.
  o Note any recommended action by using a footnote.

• "None"
  o Use if there are no curves.
  o Use if there are curves (described in the horizontal alignment) but no curve signing.
  o Note any recommended actions by using a footnote.

**Existing Posted Speed**

Enter the posted speed from the Spot Speed Data component. If the posted speed cannot be found on a current speed zone order, show the posted speed as XX mph (unestablished). If there is no posted speed, enter “None (XX mph Stat.)”.

**Recommended Speed**

Enter the recommended speed from the Spot Speed Data component section.

**Roadway Data**

This section describes the traffic and physical driving conditions.
Surface

This refers to the surfacing material. Most cases will be either AC (asphalt) or PCC (concrete). If a bridge surface is different than the roadway surface, enter the bridge surfaces separately from the roadway surface: e.g., AC (PCC on bridge).

If there is a non-hard surface portion (i.e., gravel), this portion will not be investigated by the state. The road authority would have to request delegated authority to conduct the speed zone investigation.

Width

This is an indication of any travel lane restrictions. Enter the width in feet across all travel lanes and enter the basis of the width measurement. Travel lanes are the portions of road normally used for travel, excluding shoulders or parking areas. The width does include bike lanes, channelization, median and continuous left-turn lanes. The width limits are determined by one of the following, depending on what’s there:

- Fog line to fog line.
- Curb to curb.
- If none of the above exist, pavement edge to pavement edge.

When the width varies over a substantial portion of the section, show the widths as a range from narrowest to widest (e.g., 24-36 ft.).

Lanes

This gives more detail to understand the travel environment by section. This portion should contain all the information about the uses of the traveled width.

Enter the number of through travel lanes. Note the existence and widths of a painted or curbed median, channelization, continuous left turn lane or other features between travel lanes. Also note the existence, width and location of bicycle lanes. When adequate space is lacking for a full description, use footnotes.

Note bicycle lanes when the pavement is marked with a wide white edge stripe and a bicycle legend or black and white Bike Lane sign. Green and white “Bike Route” signs denote a bicycle route, not a bicycle lane.

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2 If it is a curbed section and has a paved parking area within the curbs, include the parking area in the width measurement. Put an explanation of what is included in the width under “Lanes” (bike lanes, parking area, channelization, etc.). If it is not a curbed section, include any parking area width under “Shoulders.”
Parking

This section gives information about the possible interference with travel by parking maneuvers and parked vehicles.

Wording should follow the guidelines below:

- "Prohibited"
  - Use when there are red and white regulatory signs throughout the entire section on both sides of the road stating “NO PARKING”.

- "None"
  - Use when parking is prohibited by statute (ORS 811.550) in a signed and striped bicycle lane or when the shoulder has insufficient width to park out of the travel lane.
  - Use this designation when the conditions prohibiting parking exist throughout the entire section on both sides.

- "Partially Prohibited"
  - Use when there are “NO PARKING” signs for a portion of the road or for one side of the road. The sign(s) must be red and white regulatory signs rather than green and white restrictive signs.
  - Use when there are part time restrictions, i.e., No Parking 8:00 AM to 5:00 PM. The sign(s) must be red and white regulatory.
  - Use if the roadway conditions prohibit parking for part of the section or for part of the time.

- "Not Prohibited"
  - Use when no signs or conditions prohibit parking anywhere in the section.

- "No Truck Parking"
  - Use when truck parking and/or oversized vehicle parking is fully or partly prohibited by regulatory signing.

Shoulders

Shoulders refer to the part of the road outside the travel lanes. The shoulder is measured from the edge of travel lane to the break-over for the ditch, cut bank, or other obstruction such as barrier or sidewalk.

Enter each shoulder width and type(s) in that order. There can be more than one type of surfacing for a section of road, either side by side or along the road. List all relevant types with
widths for that type in the section. State if any type is only partial for the length of the section. If widths vary for a type, enter a range from least to greatest width. Enter shoulder types as:

- "None"
  - This means there is less than 1 foot of shoulder.
  - Footnote to describe roadside, e.g., curb and gutter, guardrail, cut bank, tree line.
- “Paved”
  - Paved refers only to a traversable hard surface such as AC or PCC.
- “Unpaved improved”
  - Gravel.
  - Oil treated and compacted dirt.
- "Unimproved"
  - Grass or other small vegetation.
  - Untreated, loose dirt.

**Intersecting Public Streets**

Enter the total number of public road intersections (including roundabouts and signalized driveways that resemble intersections). This data informs of the frequency of cross traffic movements within the section. Count ramp terminals to freeways as one intersection, but do not count slip lanes or separated turn lanes as additional intersections.

Do not count the intersections that begin or end a section. Do not include driveways to private developments (unless signalized), alleys or separated turn lanes (slip lanes). Footnote Railroad crossings.

The intersecting streets data will be accompanied by a note in parentheses, if the facility is “limited access”. A limited access facility is a roadway with widely spaced public road intersections and no or few private driveways. Limited access facilities are typically only accessed by public road intersections. The intersections may be stop controlled or signals or separated grade.

**Paved Streets**

Count all paved intersecting streets. Most will have a STOP sign installed on the cross street, but some may not. Count only those public road intersections that intersect the roadway section being investigated.

Do not include driveways to private developments, alleys or separated turn lanes (slip lanes). Do not count intersections which have signals, roundabouts, all-way stop control or for which the investigated road section has a stop (see Signalized section).
Stopped Streets

Count all paved stop controlled intersecting streets. There must be a STOP sign installed on the cross street to be counted as stop controlled. Do not include driveways to private developments, alleys or separated turn lanes (slip lanes). Do not count intersections which have signals, roundabouts, all-way stop control or for which the investigated road section has a stop (see Signalized section).

Signalized and Other Controlled Intersections

List the number of signalized intersections, roundabouts, and all-way stop controlled or stop control intersections along the investigated segment. Do not count flashing beacons or emergency signals (note these, but do not count). Do not count pedestrian or bicycle signals or flashers (these should be included under enhanced pedestrian and bicycle crossings).

Note each of the following (use a footnote if inadequate space):

- Roundabouts.
- All-way stop control.
- A stop control along the investigated street (where the cross street is the through road).
- Red or yellow flashing beacons along the investigated street (note them, but do not count).
- Emergency Signals (Fire Stations, etc.) (note them, but do not count).

Pedestrian Activity

This information informs of the extent and character of non-motorized road users. Use descriptions High, Medium or Low from the field investigation to describe the relative use of the segment by pedestrians for the roadway. See Determining Pedestrian and Bicycle Activity.

Bicycle Activity

This information informs of the extent and character of non-motorized road users. Use descriptions High, Medium or Low from the field investigation to describe the relative use of the segment by bicycles for the roadway. See Determining Pedestrian and Bicycle Activity.

Sidewalk

Estimate the percentage of section with sidewalk. For example count as 100% if both sides have sidewalks for the entire section. If only one side of a facility has a complete sidewalk count as 50%.
**Bicycle Lanes**

Estimate the percentage of section with bike lane. A bicycle lane may be a standard bike lane, a buffered bike lane (narrow buffer area between bike lane and vehicle travel lanes), separated bike lane (separated from motor vehicle traffic by a vertical element in a buffer between the bike lane and motor vehicle lanes), or a separated path (can be combination bike path and walking path). It is also possible that the segment may be a shared roadway, with a symbol reminding drivers that the roadway should be shared with bicycles.

For example count as 100% if both sides have bike lanes (or if one side has bike lanes on a one-way roadway). If only one side of a two way facility has a bike lane count as 50%.

Footnote if the section has other than a standard bike lane, such as buffered bike lane, separated bike lane, shared roadway or separated path (include the separated path if it provides alternate for riding within roadway segment).

**Marked Crosswalks**

Count all marked crosswalks for Pedestrians or Bicycles across the segment being investigated. Include all marked crosswalks at signalized or stop controlled intersections and any midblock or uncontrolled intersection locations. Note if any are school crosswalks.

Do not count unmarked crosswalks without pavement marking. Do not count marked crosswalks across the intersecting streets (along the investigated section), only count marked crosswalks across the investigated segment.

**Enhanced Pedestrian/Bicycle Marked Crosswalks**

Count only enhanced crosswalks for Pedestrians or Bicycles. Enhanced crosswalks are those marked crosswalks that have been enhanced with special features to draw attention to crossing pedestrians or bicycles, such as flashers, beacons, median refuges, a pedestrian or bicycle only signal or raised crosswalk.

Do not count marked crosswalks at signalized or stop controlled intersections. Do not count marked crosswalks with standard features such as striping and signing.

Footnote enhanced pedestrian bicycle crossings such as:

- Raised crosswalks.
- Median refuges.
- RRFBs.
- Pedestrian hybrid beacons.
- Pedestrian or bicycle signal.
Transit Stops

Indicate whether or not there are public mass transit stops along the segment being investigated. Indicate Yes if there is bus or transit stops within and along the investigated section. Indicate No if there are no known public mass transit or bus stops within and along the segment. Indicate No if there are no stops even though transit vehicles traveling over or through the segment.

Crash Data

The crash data used here is from the ODOT crash data system, even though it may differ from locally recorded crashes. The reason for this is statewide consistency in the data, the Oregon crash data is the official record of reportable crashes. If there is a difference between state and local information, this should be discussed in the transmittal letter.

Do not include crash data not reported in ODOT Crash data, such as incident reporting or local sources since these may or may not be reportable crashes. Use of other data (besides ODOT crash data) also biases the crash rates since the average crash rates are developed only from the ODOT official crash data.

Study Period

The study period includes the three most recent complete calendar years of crash data available (if desired it may include partial data available for the current year).

Use of the crash data may need to be modified if the road has been recently physically altered through reconstruction, realignment or new construction, the crash data before the construction may be invalid depending on how much the roadway was changed. Crash data from the period during construction should be consider invalid because of construction on the roadway and should not be used. If the roadway had changed significantly due to the construction improvement, the study period will be the available data beginning one month after the road was back under normal traffic. If this is less than three years, it should be footnoted.

(year-year) Total Crashes

Use only data from ODOT’s Crash Analysis and Reporting Unit as these are the official reportable crashes for Oregon. This will become important when comparing to average crash rates that are derived from ODOT’s official reportable crashes. Use data from the "Motor Vehicle Crash Listing Summary" (Figure 16 in Appendix C). This is the total of reportable crashes and not the total vehicles involved, for the full study period, typically this should be the most recent three complete years of data available.

Enter the range “(year-year)” of most recent year(s) for which three complete years of crash data and volume data is available. The most desirable range of years is the most recent three years that includes the latest completed calendar year of crash data. If the volume data or state rate
isn't provided for the most recent year of crash data, it may be available from the ODOT Systems Monitoring Unit Transportation Data Section.

Use only calendar years in the “year-year” range, if a partial year is used, footnote the years and note the months included (i.e., 1/ includes January 2017-March 2019).

**(year-year) Total Fatal (K) Crashes**

Use data from ”Motor Vehicle Crash Listing Summary”. Include total number of fatal injury crashes (K) where at least one person was killed in the crash for the study period. A **Fatal Injury** is any injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.

**(year-year) Total Serious Injury (A) Crashes**

Use data from ”Motor Vehicle Crash Listing Summary.” Include the total number of crashes where the most severe injury was suspected serious injury A. A **Suspected Serious Injury (A)** is any injury other than fatal which results in broken bones, unconsciousness, suspected major injuries, or prevents the person from continuing in normal activities they were capable of before the injury.

**(year-year) Total Injury (B) and (C) Crashes**

Use data from ”Motor Vehicle Crash Listing Summary.” This is the total number of crashes where the most severe injury was suspected minor injury B or possible injury C. A **Suspected Minor Injury (B)** is any injury that is evident at the scene of the crash, other than fatal or serious injuries. A **Possible Injury (C)** is any injury reported or claimed which is not a fatal, suspected serious, or suspected minor injury.

**(year-year) No Injury (O) Crashes**

Use data from ”Motor Vehicle Crash Listing Summary.” This is the total number of crashes where No Apparent Injury (O) occurred. **No Apparent Injury (O)** is a situation where there is no reason to believe that the person sustained any bodily harm from the motor vehicle crash.

**(year-year) Section Crash Rate (r)**

Fill in the (year) blank with the same year as for Crashes above. Calculate the crash rate to two decimal places using the formula below. When the section crash rate is zero, enter a single 0.

\[
\text{Section Crash Rate (CR)} = \frac{\text{(# crashes for 3 years)}(1,000,000)}{(\text{Length})(3 \text{ years})(365 \text{ days})(\text{ADT})}
\]

Note: Using the most recent three years is preferable, but using part of a year is also acceptable. If only part of a year is available, change the “3 years” in the denominator to the applicable decimal of years (if 2 years 6 months, divide by 2.5).
Length = length of section in miles, to the nearest hundredth of a mile.
ADT = Average Daily Traffic (ADT) count (average of three years ADT or middle year ADT).
CR = Section Crash Rate in crashes per million vehicles.

(year) Comparable Rate (r)

These comparable crash rates are representative of the average of all crashes over identical functional classes by jurisdiction. This data is for comparing the section crash rate to comparable rate for the same functional class.

Use the most current year available or average the three years of comparable crash rates. If an average of three years is used change the (year) to (year-year).

A state highway comparable rate (state highways) and a county comparable rate (non-state highways) exists only for highways with estimates of daily travel available. This includes all state highways and any higher function classes of non-state roadways within each county (it excludes non-state rural minor collectors and local function classes). State comparable rates are developed yearly and are available from the Region Traffic office. The comparable rates by County are updated routinely by the Speed Zoning office for this process (use the latest available data).

Fill in the leading blank with the same year or year to year range depending on whether or not the most recent year was used or the three years were averaged.

For Rural Minor Collectors or Local Functional Class (or other roads with no average rates) use a dash through the column (rather than show “0” or ”N/A”).

- For roads with an average crash rate, list the highway type-functional class under Footnote 1/. Use the functional class from which the state or county rate was taken.
- For roads with no average crash rate, use the following standard wording in footnote 1/: “No comparable rate available.”

Crash Rate Deviation:

This is the comparison between the crash rate specific to the investigated section and comparable rate. It applies only on highways where comparison data is available.

\[
\text{Crash Rate Deviation} = R - r
\]

where: \( R \) = Section Crash Rate \( r \) = Average Rate from above

When the Section Crash Rate (R) exceeds the Comparable Rate (r), list the Deviation (R-r) to two decimal places. When the deviation equals zero or a negative number, show the deviation as a single “0”.

For non-state roads with no comparable rate, dash through the column rather than show “0” or ”N/A”.

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Spot Speed Data

The information from analysis of the spot speed data is reported here. Figure 6 in Appendix D shows a complete Spot Speed Summary with all of the analysis results.

If the traffic volume for a section is insufficient to measure spot speed data, use a footnote and the comment “Insufficient ADT for a valid speed check.”

Note: Averaging speed statistics may be as simple as taking the average of the combined spot speed checks or may use the method of merging the speeds of all vehicles and determining the speed statistic, either method is acceptable.

85th Percentile Speed (85% Speed)

If there is a single speed check for an investigated section, list the 85th percentile speed of the combined total vehicles in both travel directions.

Note: Combining the 85th percentile may be as simple as averaging the two directions or may merge speeds from both directions and determine a single 85th percentile.

If there are several speed checks in an investigated section, average the “Combined” 85th percentile speeds and round to the nearest whole number.

50th Percentile Speed (50% Speed)

If there is a single speed check for an investigated section, list the 50th percentile speed of the combined total vehicles in both travel directions.

If there are several speed checks in an investigated section, average the “Combined” 50th percentile speeds and round to the nearest whole number.

Pace Limits

This always includes a standard footnote (see standard footnotes below) explaining what a pace limit is.

If there is a single speed check for a section, take the pace limits directly from the analysis.

If there are several speed checks for a section, average by averaging the lower limits for combined total vehicles, rounding to the nearest whole number for the lower limit or by merging all the speeds and then finding the lower limit of the pace. Add nine mph to the lower limit to obtain the upper limit.

Percent in Pace

When there is only one speed check in a section, take the percent in pace directly from the analysis.
When there is more than one speed check in a single existing speed zone, average percent in pace and round to the nearest whole number.

**Maximum Speed**

List the highest recorded speed in each section.

**Posted Speed**

List all the posted speeds for each section. If no speed is posted enter “None” and the appropriate statutory speed in parentheses.

**Percent Exceeding Posted Speed**

If there is a single posted speed for a section, use the percent exceeding from the results of the combined total vehicles analysis.

If there are several posted speeds in a section, give the percent exceeding for each posted speed. There should be at least one spot speed check in each existing speed portion.

If there is more than one spot speed check per posted speed, average the percent exceeding per posted speed and round to the nearest whole number or merge all vehicles for the section and average the percent exceeding.

If no speed is posted, enter percent exceeding statutory speed with the statutory speed listed.

**Computed 85th Percentile Speed**

On highways with an average crash rates for the functional class, calculate the computed speed by subtracting the Crash Rate Deviation (R-r) from the 85% speed listed above. If the Crash rate deviation is zero or negative, or there is no Average crash rate, use the 85% speed listed above as the computed speed (do not leave blank).

**Recommended Speed**

Recommended speed is dependent on whether or not the roadway section is inside of incorporated city limits or outside of incorporated city limits.

**Inside Incorporated City Limits**

The recommended speed inside of city limits is generally selected from within the range of allowable speeds from the following table, based on functional class and context:

<table>
<thead>
<tr>
<th>Context</th>
<th>Arterial</th>
<th>Collector</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Core</td>
<td>20-25 mph</td>
<td>20-25 mph</td>
<td>20-25 mph</td>
</tr>
</tbody>
</table>
There are various circumstances that occur that allow for a recommended speed outside of the ranges in the table A above. OAR 734-020-0015 contains exceptions as shown below. Note: If the roadway is classed as “Other Freeway or Expressway” it must be treated as if the roadway section is outside of city limits (see table B).

First the investigator must check to see if the 50th percentile speed is 35 mph or greater. If the 50th percentile is 35 or greater the investigator cannot use the table A above. The recommended speed must be between 5 mph below and 10 mph above the 50th percentile speed. If exclusion 2 below applies, then the recommended speed may be up to 10 mph below the 50th percentile speed.

If the 50th percentile speed is less than 35 mph then the following exclusions (exclusion 1 and 2 below) should be checked. If any of the following exclusions apply they may be used as a recommended speed range in addition to the speed range from table A that is applicable for functional class and context. The final recommended speed is up to the Engineer’s judgement and the findings of the engineering study.

Exclusion 1: The recommended speed may be between 5 mph below or above the 50th percentile speed if any of the following circumstances are found to exist:

- If the context is inconsistent, difficult to determine, or very sparse development.
- The 50th percentile speed is 5 mph or more greater than the range maximum.
- The highway has widely spaced public road intersections and few private driveways (limited access).

Exclusion 2: The recommended speed may be between 10 mph below or above the 50th percentile speed if any of the following circumstances are found to exist:

- The crash rate for the section exceeds 150% of the average crash rate.
- There have been more than one fatal or serious injury crash in the last three years.
- The segment is within a residence district.

The Engineer should select a recommended speed based on authorized ranges within the Oregon Administrative Rule. Otherwise if it is outside the authority given within the Oregon Administrative Rule, the recommendation must go to the Speed Zone Review Panel, the State Traffic-Roadway Engineer does not have authority to establish the speed zone order.

The recommended speed (in 5 mph increments) should be based on the allowable speed ranges determined above, taking into consideration the information in the engineering study such as...
context, the users, the roadway characteristics and the crash history. The Engineer should note the factors influencing their choice of recommended speed.

A recommended speed within 5 mph of the 50\textsuperscript{th} percentile speed is considered the speed at which there will be the least crashes due to speed variances within the developed bounds of a city on roadways with full access (NCHRP 17-76).

**Outside Incorporated City Limits**

The recommended speed for rural highways outside of city limits (and for the “Other Freeways and Expressways” within city limits) may vary depending on the road authority and the functional class of the highway.

For highways outside of city limits (and highways that are functionally classed as “Other Freeway and Expressway” inside city limits) the recommended speed ranges from OAR 734-020-0015 are as follows:

Table 4: Allowable Speed Ranges by Highway Type and Functional Class

<table>
<thead>
<tr>
<th>Road Authority</th>
<th>Functional Class</th>
<th>Location</th>
<th>Speed Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Highway</td>
<td>Any</td>
<td>Outside City limits</td>
<td>5 mph below the computed 85\textsuperscript{th} to 5 mph above the computed 85\textsuperscript{th}</td>
</tr>
<tr>
<td>Any Highway</td>
<td>Other Freeway or Expressway</td>
<td>Inside or Outside City limits</td>
<td></td>
</tr>
<tr>
<td>Non-State Highway*</td>
<td>Arterial</td>
<td>Outside City limits</td>
<td>5 mph below the 50\textsuperscript{th} to 5 mph above the computed 85\textsuperscript{th}</td>
</tr>
<tr>
<td>Non-State Highway*</td>
<td>Collector or Local</td>
<td>Outside City limits</td>
<td></td>
</tr>
</tbody>
</table>

*Non-State Highway outside of city limits would typically be a county road, but may be another road authority such as Forest Service.

OAR 734-020-0015 contains exceptions to the rules noted in the table above.

**Exclusion 3:** The recommended speed may be up to 10 mph below the computed 85\textsuperscript{th} percentile speed if any of the following circumstances are found to exist:

- The crash rate for the section exceeds 150\% of the average crash rate.
- There have been more than one fatal or serious injury crash in the last three years.
- There is limited sight distance which has contributed to crashes.

**Exclusion 4:** The recommended speed may be up to 10 mph above or below the 50\textsuperscript{th} percentile speed if any of the following circumstances are found to exist:

- The section is contiguous to a business or residence district.
The section is located within an area identified by DLCD as an unincorporated community.

The section has residences, businesses or other public places fronting the highway.

The Engineer should select a recommended speed based on authorized ranges within the Oregon Administrative Rule. Otherwise if it is outside the authority given within the Oregon Administrative Rule, the recommendation must go to the Speed Zone Review Panel, the State Traffic-Roadway Engineer does not have authority to establish the speed zone order.

The recommended speed (in 5 mph increments) should be based on the allowable speed ranges determined above, taking into consideration the information in the engineering study such as the roadway characteristics and the crash history. The Engineer should note the factors influencing their choice of recommended speed.

A recommended speed within 5 mph of the 85th percentile speed is considered the speed at which there will be the least crashes due to speed variances outside the bounds of development on rural type roadways (NCHRP 17-76). Within the bounds of developed areas consideration should be given to recommending speeds within 5 mph of the 50th.

Factors Influencing Recommended Speed

This is a summary of the major factors taken into consideration in the recommended speed decision. List factors by name from the Speed Data, Roadway Data, and Crash Data. List any other factors not listed in the report succinctly. This does not have to be a complete listing of all factors, a further explanation of the influences on the recommended speed can be put in the transmittal letter.

If there is more than one section, list factors by section letter. For example:

- Section A: 85% speed, pace limits, roadside culture.
- Section B: 50% speed, crash rate, context.

Standard Footnotes for Roadway Data, Crash Data, Spot Speed Data

1. On state highways, list the functional class used to get the state crash rate from Table IV of the State Highway Crash Rate Tables. List each highway type separately by section letter. On city streets and county roads, if there is a comparable county rate list the functional class used to get the county crash rate from the county crash rate table. If there is no county crash rate such as for rural minor collectors and local, this should read "No comparable average rate available."

2. Ten mile per hour range containing the largest number of sampled vehicles (This footnote remains the same for all reports.).
3 Computed Speed is 85% speed minus Crash Rate Deviation (R-r) (This footnote remains the same for all reports).

4 Additional footnotes may be used when describing roadway data such as medians and bicycle lanes or when crash data is limited by roadway construction. For sections that have a crash rate and are less than ¼ mile in length, footnote the length to highlight that the crash rate may be misleadingly high.

5 Add a Footnote to “Culture Type and Density” for whether or not the context is consistent or inconsistent or sparse development.

6 Add A footnote to “Intersecting Streets” for limited access or not limited access.

**Map**

The map graphically represents the speed zone report and is included with each report. The map should clearly show:

- Location.
- Highway or Street name (route number if appropriate).
- Jurisdictional boundaries.
- Begin and end points.
- Investigated and not investigated sections.
- Existing and recommended speeds.
- Photo directions and locations by number.
- Spot speed check locations with 85% and 50% speeds.

All street names and names of other features such as bridges or creeks referenced in the report and correspondence must be shown on the map. Maps should be developed from the newest county or city base maps available at the time of the investigation.

Figure 1 is a completed map showing the following elements:

- Scale.
- Title.
- Legend and Color Chart.
- North Arrow.
- Brackets.
- Labels.
- Colors.
- Date.
Scale and Accuracy

Since these may be printed, use standard sizes. Letter size sheets are preferred, although up to 11” x 17” sheets may be used if necessary for a legible map. For very long speed zones, more than one map sheet may be used.

Make the map large enough to show clearly all necessary detail including street and highway names. The scale should be accurate enough to measure off distances and maintain less than a 200 foot electronic placement error. This accuracy will be somewhat dependent on the length of the segment and the map, in most cases 200 feet will be adequate. In some urban areas or much shorter defined segments it may be closer to 50 to 100 foot accuracy.

Map corrections will be requested when placement errors exceed the 200 foot tolerance or when the location placement is incorrect in relation to the physical location for the following elements:

- Jurisdictional boundaries.
- Lines separating investigated speed zone sections.
- Photo locations.
- Spot speed locations.

Locations and lines should be shown in the correct relation to existing physical features. Map corrections will also be requested when photo locations, spot speed locations or section boundary lines are shown on the wrong side of an intersecting street, bridge or other described physical feature.

In uninvestigated sections, jurisdictional boundaries, streets, bridges or other features do not need to be corrected or verified for location or accuracy on the map.

Title

The title shows the locality, road name and date. If the street is entirely a city street, only the city is named in the title. If there is an interested jurisdiction, or the speed zones continue in both city and county, or more jurisdictions, then all jurisdictions are named in the title. On rural state highways, show the county name(s) in the title.

Legend and Color Chart

Show the full range of speeds in the speed color chart but color only the existing and recommended speeds from the Speed Zone Report.

North Arrow

Provide a North Arrow.
Brackets

The brackets indicate begin and end points given in the Speed Zone Report. There will be a set of brackets both above and below the roadway to delineate the Recommended and Existing illustrations.

Brackets further divide the recommended length into sections corresponding to the recommended speeds in the report. The Sections may be further divided by half brackets into "Investigated" and "Not Investigated" portions.

Place begin and end milepost on the Recommended and Section end brackets if the roadway has mileposts.

Labels

The many labels must be designed so each set is distinct, level of importance is maintained, and they are readily understood.

Labeling the Speed Sections

Label the Recommended and Existing total lengths as "Recommended" and "Existing" in a font at least 4 points larger than other labeling. If more than one section, label the Recommended speed sections as "Section A", "Section B", and so on to correspond to the sections in the report. The font size should be the next in importance to the Recommended/Existing labels.

Label the uninvestigated sections and parts of sections with "Not Investigated" in a bold font large enough to distinguish from original map names.

Place a "No Change" label in a normal font (the same size or 2 points smaller) underneath the "Not Investigated" labels. The same "No Change" tag is placed in portions of a Section which were investigated and the recommendation is no change.

Labeling Photograph Locations

Indicate photograph locations using a circled number with an arrow showing direction of sight. Use a normal or bold font a little smaller than the "No Change" label as necessary to clearly stand out from the map.

Place the labels as close to perpendicular to the photo location on the road as possible where they don't obscure street or other important feature names. Leave space between the road and the photo labels for clearing the color bar showing the recommended or existing speeds.

Draw a single solid line from the photograph label to the roadway photo location. If both of the photos in a pair were not taken from the same location, and the photos were taken more than 200 feet apart, then two lines are to be placed on the map, showing both locations. If the
distance was less than 200 feet, then just one line can be placed on the map indicating the location where the first photo was taken.

Photo labels can be placed on either side of the road as necessary to avoid conflicting with other labeling. It is easier for the reader if the photo labels are all on one side.

**Labeling the Spot Speed Checks**

The Spot Speed Check locations are labeled with the circled 50% speed and 85% speed results. Inside of city limits generally only the 50th is needed, outside of city limits both can be necessary. The labels are large with a font similar to the "No Change" label fonts. Place the labels away from the roadway, above the photo labels. Draw a single solid line to the spot speed location on the roadway.

**Colors**

Using the colors shown below, indicate **Existing** and **Recommended** speed zones with a color bar following the horizontal alignment of the road and with a width of about 1/4 inch (4-6 mm).

On the **Existing** side, color the existing ordered speed sections and statutory speed zones. Do not color the zones as posted if different from the order or unestablished.

Color only the Speed Sections or parts of Sections with changes on the **Recommended** side.

Indicate school zones by adding a color bar the length of the school zone to the outside of the **Existing** or **Recommended** color bar. Indicating school zones are required for all state highways, because they must be listed on the order. School speed zones are optional but desired on the map for non-state highways, but not listed on the order.

Color the roadway outside the beginning and end of the reported section on the **Existing** side showing the entering and exiting speeds.

**Table 5: Map Colors Indicating Existing and Recommended Speeds**

<table>
<thead>
<tr>
<th>MPH</th>
<th>Color</th>
<th>MicroStation Color Number(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Green</td>
<td>2 or 35</td>
</tr>
<tr>
<td>25</td>
<td>Sky Blue</td>
<td>7 or 242</td>
</tr>
<tr>
<td>30</td>
<td>Sienna Brown</td>
<td>6 or 92</td>
</tr>
<tr>
<td>35</td>
<td>Carmine Red</td>
<td>3 or 155</td>
</tr>
<tr>
<td>40</td>
<td>Violet</td>
<td>5 or 197</td>
</tr>
</tbody>
</table>

\(^3\) Suggested color numbers from Bentley MicroStation software (using the color chart version that is attached to ODOT’s GIS system maps).
### Traffic-Roadway Section

#### Speed Zone Manual

<table>
<thead>
<tr>
<th>MPH</th>
<th>Color</th>
<th>MicroStation Color Number&lt;sup&gt;3&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>Olive Green</td>
<td>39 or 81</td>
</tr>
<tr>
<td>50</td>
<td>Indigo Blue</td>
<td>14 or 52</td>
</tr>
<tr>
<td>55</td>
<td>Orange</td>
<td>24</td>
</tr>
<tr>
<td>60</td>
<td>Yellow</td>
<td>43</td>
</tr>
<tr>
<td>65</td>
<td>Bright Pink</td>
<td>59</td>
</tr>
<tr>
<td>70</td>
<td>Dark Grey</td>
<td>134</td>
</tr>
</tbody>
</table>

Figure 8: Example Map

---

**Photograph Pages**

The photograph pages show:

- Highway or roadway name.
- Jurisdiction.
Traffic-Roadway Section

Speed Zone Manual

- Date (either date of photo taken or capture date if obtained from DVL or other).
- Individual photographs with:
  - Numbers.
  - Direction.
  - Location.

Title for Photo Page

If the road changes names, list all relevant names in the title and add "on xxx Street" to the photograph description. Place the following legend at the top of the page on each photo page:

Name of the highway, route number (if applicable), street or road name
City of XX and/or XX County and/or ODOT
Date

Individual Photos

List below the photo the photograph number, the direction the photograph looks and photograph location. Number the photographs consecutively beginning with number 1 at the beginning of the first investigated section.

Use the following notation:

Example: #1. Looking (direction) North from (location) 150 South of Main St.

Use the nearest cross street, creek, or other unmovable landmark to describe photograph locations.

Use directions matching the general direction of the roadway unless long sections change direction. Appendix M shows completed Photograph Page for digital photographs.

Crash Summary

There is a Crash Summary for each portion of the road which was investigated. One Crash Summary is required for each Speed Section. If two non-contiguous portions of a Speed Section were investigated, the portions will be separated on the same Crash Summary form and listed by end point descriptions as described in the Sections part of the Recommendation Report.

The crash summary clearly shows the following for the three most recent years of data:

- Highway or roadway name.
- Investigated section description.
- Crash summary dates.
- Number of crashes by collision type.
• Number of fatal crashes.
• Number of serious injury A crashes.
• Number of injury B and C crashes (or total injury crashes)
• Number of PDO crashes.
• Number of bicycle crashes.

Include at least one “Motor Vehicle Crash Listing” with each report. See Figure 16 in Appendix C for a complete crash summary.

Fill out the heading on "Crash Listing & Summary” according to the information listed in the Recommendation Report Outline heading.

List the route number of state highways using “US” or “OR”. If there are two routes on the same highway, use the “US” designation rather than the “OR” designation (or indicate both). On state highways, fill in the milepost blanks with begin and end milepost.

The study period includes the three most recent complete calendar years. The study periods must be the same for all sections in one investigation report.

If the most recent year of crash data is still not complete, do not include in crash listing, but if there has been a severe crash in the section, but data is preliminary, the crash could be mentioned in the cover letter.

More than one investigated section may be summarized on one form if there is room to do so neatly. Label each section summary with the section letter and begin and end descriptions.

If there are no crashes recorded for a Section, only the Total box needs to be filled out (with '0').

**Spot Speed Summary**

The Spot Speed Summary shows the roadway information, summary of the collected data and statistical analysis of one spot speed check. It includes a graph of Speed (MPH) vs. Percentile of Total Vehicles.

If the investigated length is divided into sections, label each Spot Speed Summary with the appropriate section letter in the space above the graph itself.

The graph can be a line graph, or preferably a point by point graph. It needs to be scaled so that information other than that labeled can accurately be measured off of it.

Figure 17 in Appendix D shows a completed Spot Speed Summary.

There is a software program available from ODOT which accepts the raw speed check data and produces the analysis and graph. Instructions for the Spot Speed Summary computer program are included in Appendix D.
Preparing the Submittal – Standard Engineering Study Method

The following is submitted to ODOT to complete the investigation:

- Transmittal letter.
- Speed Zone Report.

If an ODOT Region completes the report submit the package to the State Traffic-Roadway Engineer. If the report is completed by a road authority the package would be submitted to their local ODOT Region office.

Transmittal Letter

For each investigated section, the transmittal letter presents results and reasons for recommendation along with any other considerations. See Appendix J for an example.

The transmittal letter may also include:

- Information from conversations or correspondence pertinent to the investigation or recommendations.
- Information on safety concerns or any planned projects within the vicinity.
- Any needed changes, both those that were investigated and those that were not.

The transmittal letter containing the recommendation must be signed by the engineer in responsible charge of the investigation.

If the original transmittal letter is prepared by another agency other than ODOT, the letter is submitted to the ODOT Region office responsible for the area. The ODOT Region Traffic Engineer then also prepares a recommendation for the State Traffic-Roadway Engineer based on their review of the engineering study.

Speed Zone Report

The Speed Zone Report includes the investigation data summary and resulting recommendation(s) in the transmittal letter(s). The completed speed zone report is submitted to the State Traffic-Roadway Engineer.

The State Traffic-Roadway Engineer has the authority to determine the final recommendation, within the authority given by the Oregon Administrative Rules and given the recommendation(s) from the study. The State Traffic-Roadway Engineer after review of the Speed Zone Report may offer their recommendation to the road authority and interested jurisdiction.
If the final recommendation by the State Traffic-Roadway Engineer is accepted by both the road authority and any interested jurisdiction a speed zone order will be issued.

If the final recommendation is different than the ODOT Region recommendation (and accepted by the jurisdiction), the State Traffic Engineer will document their reasoning for the recommendation and include it as part of the final study documentation.

If the recommendation is not acceptable to the requesting road authority and any interested jurisdiction the matter may be appealed to the Speed Zone Review Panel.

**Supporting Data**

Supporting data from the field investigation should remain in the Region or other road authority’s electronic files, whoever performed the investigation, accessible to the ODOT Speed Zone Coordinator during review and completion of the request. These data files should remain available for at least one year after conclusion of the speed zone request. This includes any road/sign log, spot speed survey sheets, etc.
Speed Zone Review Panel

The Speed Zone Review Panel’s purpose is to conduct hearings for contested speed zones and determine the speed to be designated. The Panel also serves as an advisory body to the Department on speed zoning issues and practices.

The panel must consist of the five following persons:

- The Chair of the Governor’s Transportation Safety Committee or a representative designated by the Chair;
- The Superintendent of State Police or a representative designated by the superintendent;
- The Chief Engineer of the Department of Transportation or a representative designated by the Engineer; and
- Two additional members, one representative of the interests of cities and one representative of the interests of counties. The League of Oregon Cities and the Association of Oregon Counties must appoint a member representing the interest of cities and counties respectively.

Typically when a road authority disagrees with ODOT’s recommendation on a speed zone report, the road authority can take the matter to the Speed Zone Review Panel as a contested speed zone.

The hearing process is a public meeting. The State Traffic Engineer will summarize the staff report. The State Traffic Engineer may read any letters received from those not in attendance, including the local jurisdiction and their reasoning for objecting to the speed recommended.

Typically a video of roadway may be shown if available. The road authority representative may state their case and present any studies or pictures in support of their case. The road authority or local agency does not have to attend, but it typically helps their case. Anyone else who attends from the public may give testimony.

The panel will begin to deliberate on a decision until a majority agrees. During the discussion the panel may, at their discretion, ask clarifying questions of the public, road authority or ODOT staff. The panel’s decision is final, there are no conditions on the panel, they have authority via the Oregon Administrative Rules to approve any final designated speed.
Alternative Investigation Method

With approval of the State Traffic-Roadway Engineer the alternative investigation method may be used on non-ODOT roadways within city limits with functional class of collector or local.

The alternative investigation method may not be used on state highways or any functionally classed Arterial, Other Freeway and Expressway or Interstate.

The Alternative Investigation Method differs from the Standard Method in that although it requires much of the same field investigation and data collection, the report is abbreviated and some data is not necessary to include in the report.

Preliminary Research and Data for Investigations

Prior to performing a field investigation, research and compile the most current data as outlined in the standard method.

Field Investigation – Alternative Investigation Method

The differences between the field investigation for the alternative investigation and the standard method are minor. Follow the direction for the field investigation in the Standard Method. Appendix C contains the Speed Zone Field Investigation Checklist.

Alternative Speed Zone Report Format

The report provides documentation of the data collected and supports the conclusions reached from the alternative investigation. Each report must adhere to the criteria below as a minimum.

The report for the alternative investigation method form consists of the following nine components:

- Report heading (date, contact name).
- Sections/Segments (from/to, length).
- Roadway Data (classification, context, ADT).
- Speed Data Summary.
- Crash Data.
- Recommended Speed.
- Factors influencing the recommendation.
- Signatures.
The report should include all the elements on the alternative investigation method form (following the OAR). The report may include more information or data as desired by the agency performing the investigation. See Appendix H for example report format for alternative investigation method minimum requirements.

Note: The crash summary and the spot speed check should be retained for three years with the data from the field investigation but does not need to be submitted.

**Report Heading**

The report heading consists of information about the date of the report and the agency performing the investigation:

- Date.
- Contact name and title.
- Phone number or email address of contact.
- Agency.
- “Alternative Investigation Method”

**Sections/Segments (from/to, length)**

Refer to “Describing Sections and Segments” under Standard Method. The “From” and “To” should adhere to the same guidelines as the standard method for determining begin and end of segments. These segment descriptions are used to develop the Speed Zone Order.

**Roadway Data**

The roadway data includes:

- Federal Function Class.
- Context.
- Typical Roadway Cross Section.
- Average Daily Traffic (ADT).
- Pedestrians and Bicyclists.

**Speed Data**

The speed data includes:
Traffic-Roadway Section

Speed Zone Manual

• Date, time of day and location(s).
• Free flow 85th percentile.
• 50th percentile.
• Pace limits.
• Percentage within pace limits.
• Max speed observed.
• Percentage exceeding posted speed.

Crash Data

The crash data from the most recent three years includes:
• Number of total crashes.
• Number of fatal crashes.
• Number of serious injury A crashes.
• Number of injury B and C crashes.
• Number of PDO crashes.
• Crash rate for investigated segment.
• Average crash rate (if available).

Recommendations

The recommendations includes:
• Current posted speed.
• Existing Speed zone order number (if applicable).
• Recommended speed.
• Factors/notes considered for recommendations.
• Name/Signature/Date of investigator (if different than the engineer).
• Name/Signature/Date of engineer.

Basic Map

The map includes enough information to readily locate the segment of roadway including the beginning and end points of the proposed speed zone.
Typical Photos

The photos page should contain representative photos from the section. A minimum of two photos is required. If more than one mile in length there should be at least two per mile.

Interested Jurisdiction Concurrence

Attach Documentation showing concurrence from an interested jurisdiction if any.

Other Information

As a minimum the alternative report must include the above factors, but may include more factors than listed above, as the jurisdiction and engineer deem appropriate or that influence the recommended speed.
Other Speed Zones and Investigations

Statutory Speeds

Statutory speeds are based on the concept that uniform categories of highways can operate safely at certain preset maximum speeds under ideal conditions. Whether the speed is posted or not, when encountering potentially hazardous conditions such as poor weather or heavy traffic, drivers should adjust their speed in accordance with the basic speed rule.

Definitions for statutory speeds, i.e., residence districts, business districts, school zones, etc. can be found in the Oregon Vehicle Code in ORS 801 and in the Glossary of this Manual. In most cases, statutory speeds may be posted by the road authority when they meet the applicable criteria or statutory description without an engineering study.

Oregon law gives motorists the following typical statutory speed standards:

- 15 mph – alleys; narrow residential roadways.
- 20 mph – business districts, school zones (and some residential).
- 25 mph – residential districts, public parks, ocean shores.
- 55 mph – on most rural highways (not interstates).
- 55 mph - trucks on most interstates.
- 65 mph - passenger vehicles, light trucks, motor homes and light duty commercial vehicles on most interstates.

Although most interstates have a statutory speed of 55 mph for trucks, many of those interstates have designated speeds of 60 mph for trucks by Oregon Administrative Rule, see OAR 734-020-0011 for all designated speeds on interstates.

In addition, within ORS 811.111 (subsections 2 through 12) some specific sections of rural highways and interstates (in Eastern Oregon) have different statutory speeds than shown above. Although these highways and interstates may have some segments with designated speeds they generally have posted speed limits as follows:

- On some rural highways - 60 mph for trucks and 65 mph for passenger vehicles, light trucks, motor homes and light duty commercial vehicles
- On some interstates and one specific rural highways - 65 mph for trucks and 70 mph for passenger vehicles, light trucks, motor homes and light duty commercial vehicles.

Residence Districts

A road authority must be careful when posting residence districts. Residence district statutory speeds do not apply to roads that are federally functionally classed as arterials. (Note: Some
Residence district statutory speeds were established on Arterials prior to the exclusion of Arterials in statute, these are still enforceable if they were posted prior to the statutory change in 1997). Most postings of residence districts are straight forward and no question, but a section of roadway that meets the legal definition and may be somewhat higher speeds or some mixture of contexts may indicate that the roadway may need to be given special considerations. It may be prudent to consider conducting an engineering study to determine the recommended speed. The determination of whether a statutory speed is applicable or if an engineering study is necessary should be determined by the Engineer after consideration of the character of the roadway.

Postings of statutory speeds for residence districts should follow the following criteria:

- The section of highway must be contiguous to a residence district as defined in ORS 801.430.
- The highway may be posted a statutory 25 mph if it is a collector or local federal functional class (arterials require an engineering study and may not be defined as a statutory 25 mph).
- If there is an existing speed zone order designating a different speed on the section of roadway, the speed zone order must be rescinded prior to posting a statutory speed. If ODOT has issued an order the road authority must send an email requesting that ODOT rescind the order so the roadway can operate under the new statutory speed.
- Most State Highways are arterials and require an engineering study.

Additionally, a city or county may pass an ordinance that establishes a speed limit 5 mph below the statutory speed limit in a residence district after they have determined the roadways meet specific criteria as detailed in ORS 810.180 (10) or (11).

ORS 810.180 (10) requires a city or county to determine that the roadway meets the following:

- The roadway is located within a residence district.
- The roadway is not classed an arterial.
- Has an average volume of fewer than 2,000 motor vehicles per day.
- More than 85 percent of which are traveling less than 30 miles per hour.
- There is a traffic control device on the roadway that indicates the presence of pedestrians or bicyclists.
- The speed limit shall be posted along the roadway.

ORS 810.180 (11) is specific to only cities and requires a city to determine that the roadway meets the following:

- The roadway is located within a residence district.
- The roadway is not classed an arterial.
• The speed limit shall be posted along the roadway.

**Business Districts**

The roadside development must meet the definition of a business district found in ORS 801.170. Business districts can be problematic since there are numerous sections that technically meet the qualifications for a business district. There are many sections of roadway where establishing a business 20 mph speed zone is inappropriate given the roadway character and context. For instance a five lane facility near major shopping centers and commercial areas with large parking areas fronting the street may technically meet the definition of a business district but would be entirely inappropriate to set a business 20 mph. The only appropriate context in which to establish a business 20 is in an urban core context.

When the context is other than an urban core it will be necessary to perform an engineering study to determine the recommended speed. The determination of whether a statutory speed is applicable or if an engineering study is necessary should be determined by the Engineer after consideration of the character of the roadway.

The following factors should be taken into consideration when determining if a statutory speed is appropriate:

• Context (should be an urban core).
• Composition of roadside development in the area.
• Number of lanes in each direction.
• Traffic volumes and congestion.
• Lane width.
• Parking.
• Pedestrian and bicycle movements.
• Marked crosswalks.
• Proximity of business to the highway.
• Operating speeds.

To establish a statutory speed an investigation should be performed and consist of some or all of the previous characteristics along with an engineer’s recommendation. A map and photos should also be provided if the roadway has an existing speed zone order with a designated speed. Send a request to rescind the designated speed, along with the study, to the State Traffic-Roadway Engineer.
School Speed Zones

School speed zones are special case of statutory speed limits. Although they are statutory speeds, they require the signs to be posted to be enforceable as a speed limit. There are two categories of school zones in statute (ORS 801.462), (1) those zones which are adjacent to school grounds and (2) crosswalks not adjacent to school grounds.

For school speed zones adjacent to school grounds, the speed may be in effect from 7 am to 5 pm or when lights flash. For those crosswalks away from school grounds, the speed zone may be in effect when children are present or when lights flash.


School Zones on Local Roadways

Establishing school speed zones on local roadways is the responsibility of the road authority. ODOT no longer shows school speed zones on the speed zone orders for local roadways. ODOT has developed a Guide to School Area Safety (link above) to assist the road authority in making school speed zone decisions.

School Zones on State Highways (Within Designated Speed zones)

Establishing or removing school speed zones on state highways within city limits requires concurrence from the State (as the Road Authority). The investigator shall obtain the city and school district views and include that input in the letter of recommendation that is sent to the State Traffic-Roadway Engineer. This same process is followed when requesting to extend or shorten an existing school speed zone listed on an existing speed zone order. Input can be sought from city engineering staff, public works or the police department. Communicating a description of the new school speed zone termini via email is acceptable to ODOT. The requests are typically made by the school district, law enforcement or city engineering staff.

On state highways outside city limits, the request usually comes from the school district through the District Manager. Include a copy of the school’s Safe Route to School Plan if it is available (see the Guide to School Area Safety).

The complete report consists of:

- The original correspondence requesting the establishment or removal of a school speed zone.
The investigator’s letter of recommendation stating the reason for establishing or removing the school speed zone and the input received from the city or school district.

Report outline that includes the report heading, recommendation, section and historical background.

Map showing the existing speed zoning and the proposed or existing school speed zone boundaries.

Photographs in each direction at the beginning and end of the proposed or existing school speed zone.

Safe Route to School Plan (if available from the school).

Once the investigation has been completed, a copy of the report is submitted to the Traffic-Roadway Section for review and approval. For state highways covered by speed zone orders, it is necessary to include any school speed zone in the speed zone order. If the recommendation in the report is approved, the Traffic-Roadway Section will produce an updated speed zone order that includes a new school speed zone or reflects the removal of an unnecessary school speed zone.

School Zones on State Highways (Within Statutory Speed Areas)

In statutory speed areas, it is not necessary to obtain the State Traffic-Roadway Engineer’s approval for a school speed zone. The signs can be posted with approval by the Region Traffic Engineer. However, it still requires an engineering study to determine the limits of the school speed zone boundary. On roadways where the speed is posted 45 mph or above, school speed zones should be implemented only after all other options for transporting children to school safely has been tried (see the Guide to School Area Safety).

The complete report consists of:

- The original correspondence requesting the school speed zone.
- Investigator’s letter of recommendation stating the reason for establishing the school speed zone.
- Map showing the location of the school speed zone.

A copy of the investigation shall be retained at the region traffic office. A record of the school speed zone can be kept on record in the Traffic-Roadway Section files. See Appendix N for a template.

Construction/Maintenance Speed Zones

Construction speed zones are established in long term construction, maintenance projects, and some short term construction. Often times in road construction zones the lanes may be narrowed or
diverted, there may be pavement drop offs or other features such as construction equipment or workers close to live traffic. The construction speed zone is established for the safety of the public and road workers.

Local Roadways

Any road authority may establish construction speed zones per provisions of ORS 810.180 (8). Any limitations or restriction imposed under this section shall be imposed by a speed zone order. To provide consistency for all construction speed zone signing, the local road authority should follow the criteria below when establishing construction speed zones.

State Highways

The Traffic Control Plan Designer, Region Project Manager or Region Traffic Manager/Engineer usually initiates requests for construction speed zones. A completed Work Zone Speed Reduction Request Form which can be found on the Traffic-Roadway Section website at https://www.oregon.gov/ODOT/Forms/2ODOT/7342874.pdf along with a copy of the Traffic Control Plan should be submitted with the request.

Criteria

In general, construction speed zone reductions are not warranted under the following conditions.

- Activities which are more than 10 feet from the edge of the traveled way.
- Activities which require an intermittent or moving operation on the shoulder.

A National Cooperative Highway Research Program (NCHRP) study provides conditions under which temporary speed zones may be warranted. Below are a combination of ODOT and NCHRP conditions which are considered when evaluating requests for temporary reduced speed zones.

- A high crash rate within the work zone.
- Workers present for extended periods within 10 feet of the traveled way unprotected by barriers.
- Traffic control devices encroaching on a lane open to traffic or within a closed lane but within 2 feet of the edge of the open lane that can’t be moved to a safer location.
- Barrier or pavement edge drop-off within 2 feet of the traveled way.
- Horizontal curvature with a safe speed of 10 or more mph lower than the posted speed.
- Reduced design speed for detour or transitions (radius of curvature, super-elevation and sight distance) when the distance between restrictions is less than ¼ mile.
• Lane width reductions of 1 foot or more with a resulting lane width less than 10 feet on most roads or 11 feet on freeways.
• Lane closures with barrier and less than 2 feet of shoulder on each side.
• Unusual conditions which are hard to sign or otherwise communicate to travelers effectively.

If above or similar factors do not exist, a speed zone reduction should not be requested. Reducing speed zones under lesser conditions promotes disregard for future speed reductions. Additionally, temporary speed zone reductions may be covered at night and on weekends, or when the work zone is not active. The speed zone reduction may remain in place until all work is complete in cases when there are traffic diversions, detours, edge drop offs or other changes to the roadway that justify the need for a speed zone reduction while the work is not active.

Exceptions to any of the above statements may apply under special circumstances. On a divided highway, a construction speed may be established in one direction only if work is not being done in other direction.

**Temporary Speed Zones**

Any road authority may establish temporary speed zones per provisions of ORS 810.180 (8). Any limitations or restriction imposed under this section shall be imposed by a speed zone order.

Temporary speed zones may be established on state highways if existent conditions constitute a temporary hazard to the public traveling over such sections of highway or if it is considered necessary to protect any portion of the highway from being unduly damaged. Temporary speed zones must be approved by the State Traffic-Roadway Engineer. Examples are bridge deck issues, road slide areas, high crash area with impending safety project such as a roundabout scheduled.

An abbreviated report with historical background (similar to a housekeeping report) should be submitted including the following:

- Recommendation with an explanation of how the recommendation was determined.
- Requested date of expiration for the order (emergency speed zone orders can only be established for 120 days). This must be specified time that corresponds with the hazard, damage or other condition specified.
- Map showing the location.
- Any additional information such as photos/aerials of area.

For both local jurisdiction roadways and state highways, all temporary speed zones, including construction speed zones, temporarily supersede any permanent designated speed zone or statutory speed for the specified time that the order states or until the temporary or construction
speed is no longer necessary and the posted temporary speed signs are removed from the project.

**Temporary Speed Zones on New or Rebuilt Roadways**

When a new or rebuilt road nears completion, the road authority under ORS 810.180(8) can issue a temporary designated speed. If a newly rebuilt section has been significantly altered with a different design that changes the characteristics of the roadway it may require a temporary speed until such time as a permanent speed may be established. The outcome of a study to establish a permanent speed may be different than the temporary speed.

A temporary speed will be based on a modified investigation until such time as a complete engineering study can be completed. Once the new or rebuilt road is open and under traffic a new permanent speed will have to be established by completing a speed zone engineering study as per OAR 734-20-0015.

For new or rebuilt roadways, the temporary order should be established citing the new or revised road conditions that make the speed changes necessary. The temporary order must have a specified end date, and an engineering study for establishing a permanent speed completed before that period ends. This should take place within six months after the road is opened to traffic.

The road authority should provide ODOT with a copy of any temporary speed zone order if ODOT is maintaining a speed zone order with a designated speed. If ODOT will be completing an engineering study, the road authority shall notify ODOT about the timing of the project completion so the engineering study can be scheduled quickly for permanent speed zoning.

To provide consistency for all temporary speed zone signing, the road authority should follow the criteria below when establishing temporary speed zones on new or rebuilt roadways. *This section does not apply to construction speed zones.*

Temporary speed zones on new or rebuilt state highways may be established after a modified investigation has been conducted. This investigation should take place after the road nears completion. The modified investigation is based on the following criteria:

- Discuss the proposed roadway with the local agency and enforcement personnel to obtain their recommendation.
- Review the roadside culture.
- Determine how the roadway will be used and what classification it will have.
- Review adjacent roadways use and speed zoning to ensure consistency with similar roadways in the area.
- Consider estimated pedestrian and bicycle use.
- Consider design speed.
• Use engineering judgment.

Based upon the above criteria, a complete explanation of how the recommendation was determined should be submitted to the State Traffic-Roadway Engineer for temporary speed zoning. An abbreviated report with Historical Background, similar to a Housekeeping type report, should be included.

After the road has been opened for a period of time, a standard speed zone investigation shall be conducted to determine the permanent speed zone. This should take place within six months after the road has been opened to traffic.

Temporary speed zones temporarily supersede any permanent designated speed zone or statutory speed for the specified time that the order states or until the temporary speed is no longer necessary and the posted permanent speed signs are posted.

Emergency Speed Zones

Emergency speed zones may be established by the road authority, typically due to emergency due to natural or other disasters (see ORS 810.180(9)). Emergency speed zones may be designated for a specific period of time but cannot exceed 120 days. All emergency speed zones temporarily supersede any permanent designated speed zone or statutory speed for the specified time that the order states.

To extend beyond 120 days an engineering study must be completed to determine if a permanent designated speed is necessary. The findings of the study will be used to provide basis for termination of the emergency speed zone or to establish a permanent speed zone order. In the event that a study is not completed by the end of the 120 day period, the temporary speed zone shall terminate and the previously posted speed shall be reestablished by the appropriate agency.

The emergency speed zone shall be removed when the condition necessitating the designation has been removed or corrected.

Local Roadways

An emergency speed zone may be established by a local public agency having road authority as the agency determines is appropriate.

State Highways

Emergency speed zones on state highways shall be approved by the State Traffic-Roadway Engineer. To provide consistency and to determine reasonable and prudent emergency speed zones on state highways, the Department has adopted the criteria listed below:

• Traffic volumes.
• Condition of the roadway.
• Weather.
• Any other considerations to insure that traffic passes through the area safely.

Low Volume Paved Roads

A city, county or other agency (such as the Bureau of Land Management) may request delegated authority from the Oregon Department of Transportation to conduct speed zone investigations and establish speed zones on low volume public paved roads (less than 400 average daily traffic).

On paved low volume roads, any road authority can make application to the State Traffic-Roadway Engineer requesting delegated authority to determine and establish speed zones. Authority can be granted for all low volume roads or just for an individual road under their road authority. See Figure 2: Sample letter requesting delegated authority low volume paved roads.

Procedures for Low Volume Paved Roads

Step 1: Delegated Authority

The agency with road authority will request delegated authority as outlined.

Step 2: Investigation

A Report of Speed Zone Investigation will be made for determining the recommended speed(s) for the proposed speed zones(s). The report for Low Volume Roads shall include the following information and procedures in the standard method or abbreviated method. Most likely a low volume paved roadway will be eligible for an abbreviated method unless it is classified an arterial.

• A standard spot speed sample is 75 vehicles in each direction. Spend no longer than three hours on a speed check even if less than 75 vehicles are counted in that time.
• The minimum acceptable spot speed sample is a total of 25 vehicles in both directions when the standard sample cannot be achieved.
• If the minimum sample is unattainable, no speed zone will be established.
• Recommended speed is dependent on whether or not the roadway section is inside of incorporated city limits or outside of incorporated city limits. See Section on Recommended speeds in Standard method to determine allowable ranges.

Step 3: Recommendation

The factors are further explained in the standard speed zoning method and should be considered when determining a reasonable and prudent recommended speed.
Step 4: Speed Zone Order

Speed zones other than statutory speeds shall be established by order stating the designated speed and boundaries for that speed zone. If there is an interested jurisdiction, both that agency and the road authority must agree to the speed zone.

- For a public paved low volume road, submit a copy of the report and written order to the State Traffic-Roadway Engineer. The report and order will not be reviewed for content or accuracy; this responsibility falls to the road authority.
- See OAR 734-20-0016 for further information regarding establishment of speed zones on Public Paved Low Volume Roads.

Example: Sample Request for Low Volume Road April 30, 2012

State Traffic-Roadway Engineer
Oregon Department of Transportation
Traffic-Roadway Section
4040 Fairview Industrial Drive SE
Salem, OR 97302-1142

The XXX County Department of Public Works is requesting delegated authority to conduct speed zone investigations and establish speed zones on public paved low volume roads (less than 400 ADT).

It is understood XXX County will conduct the investigations in accordance with OAR 734-020-0016 and the Oregon Department of Transportation Speed Zone Manual. It is also understood XXX County will submit a copy of the completed investigation and a copy of the written order to Department once the speed zone is established.

If you have any further questions, please call me at (541) 000-0000.

County Roadmaster

Unpaved Roads

On unpaved roads, the road authority can make application to the State Traffic-Roadway Engineer requesting delegated authority to perform a speed zone investigation on an unpaved gravel road under their jurisdiction. ODOT will not grant permission to designate speeds on any unpaved road that is not gravel. ODOT will only grant permission for each gravel road individually and not grant blanket authority. The road authority must make the request on a case by case basis. See Figure 3: Sample letter requesting delegated authority unpaved road.
Establishment of speed zones on unpaved roads is subject to approval by ODOT and ODOT issuing a speed zone order.

Establishing speed zones on unpaved roads is generally discouraged. The danger with establishing a specific speed zone is that a “Speed Zone” sign creates an expectation by the driver that the roadway is safe to drive at the posted speed.

Unpaved roadway conditions can change rapidly depending on weather, season, traffic volumes and amount of road maintenance. Establishing the appropriate speed limit for all conditions is difficult, if not impossible, especially when the roadway condition may change rapidly. Oregon’s basic rule speed law requires drivers to adopt a reasonable and prudent speed. The driver should be using their visual observation of the roadway conditions, rather than a speed zone sign to determine the safe speed to drive a road.

There are other factors that reduce the effectiveness or necessity for setting speeds on unpaved gravel roads. Enforcement is usually minimal on unpaved roads so there would be poor compliance with speed zoning without enforcement commitment. Risks of vehicle conflict are very low on these roads because most are used by travelers who are familiar with the roads and their condition.

**Procedures for Unpaved Roads**

**Step 1: Delegated Authority**

The agency with road authority will request delegated authority to perform an engineering study as below:

- State the reason for the requested change.
- Specify that an engineering study will be performed.
- Commit to grading the roadway every 6 months when open to traffic.
- Submit written commitment from law enforcement that the roadway will be subject to regular patrols.

**Step 2: Investigation**

A Report of Speed Zone Investigation will be made for determining the recommended speed(s) for the proposed speed zones(s). The Report shall include the following information:

- Map showing location of speed zone.
- Photographs (optional).
- Submit evidence of crash history related to excessive speed.
- A primary factor in determining the recommended speed for the roadway will be the operating speeds of the roadway.
• Speeds may be varied a maximum of 10 mph above or below the 85th percentile speed.
• The spot speed sample taken at a location which is representative of normal, unrestricted traffic flow on the roadway.
• The vehicle used by the investigator to take the spot speed sample should be unmarked and kept as inconspicuous as possible so as not to bias the sample.
• A standard spot speed sample is 75 vehicles in each direction. Spend no longer than three hours on a speed check even if less than 75 vehicles are counted in that time.
• The minimum acceptable spot speed sample is a total of 25 vehicles in both directions when the standard sample cannot be achieved.
• If the minimum sample is unattainable, no speed zone will be established.
• Spot speed samples should be taken within one week after the roadway has been graded.

**Step 3: Recommendation**

The optional factors below may be listed in the report. These factors should be considered when determining a reasonable and prudent recommended speed such as:

• Geometric features.
• Enforcement.
• Crash history.
• Public testimony.
• Accesses.
• Traffic Volumes.
• Pedestrian and Bicycle movements.
• Type and density of land use.

**Step 4: Speed Zone Order**

If there is an interested jurisdiction, both that agency and the road authority must agree to the speed zone.

• For a public unpaved road, submit a copy of the transmittal letter and report to the State Traffic-Roadway Engineer for review and approval.
• ODOT will issue a speed zone order if approved.
• See OAR 734-20-0017 for further information regarding establishment of speed zones on Public Unpaved Roads.

**Example: Sample Request for Unpaved Road April 30, 2012**
The XXX County Department of Public Works is requesting delegated authority to conduct a speed zone investigation on XXX road, which is an unpaved road. The reason for this request is XXX.

It is understood XXX County will:

- Conduct the investigation in accordance with OAR 734-020-0017 and the Oregon Department of Transportation Speed Zone Manual.
- Submit a copy of the completed investigation to the Department for review and approval.
- Grade the subject roadway a minimum of every six months when open to normal traffic.

Enclosed is the evidence of crash history that supports this speed zone request and written commitment from law enforcement that the subject roadway will be part of routine patrols.

If you have any further questions, please call me at (541) 000-0000.

County Roadmaster
Sample Speed Zone Report for Unpaved Road

MALHEUR COUNTY PUBLIC WORKS
Report of Speed Zone Investigation Hyline Road
Douglas Road to Grove Road Malheur County
September 23, 2012

Recommendation: Establish the following speed zoning:

<table>
<thead>
<tr>
<th>Section Investigated</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>A From: Douglas Road</td>
<td>55 mph</td>
<td>45 mph</td>
</tr>
<tr>
<td>To: Grove Road</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Investigation:
Findings:
50% Speed 42 MPH
85% Speed 47 MPH
Section Length 0.31 mile

Roadside characteristics
Findings:
Horizontal Alignment 0 curves
Vertical Alignment Level
Curve Signs & Speed Riders None
Surface Bituminous
Width 22 feet
Lanes 2
Shoulders 1-2’ gravel
Intersecting Streets 6

Pace speed: 38-47 MPH

Roadside development and use:
Findings:
Culture type and density Sparse/residential
Parking practices and pedestrian activity:  

<table>
<thead>
<tr>
<th>Parking</th>
<th>Pedestrian/Bicycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0/2</td>
</tr>
</tbody>
</table>

Reported crash experience:  

<table>
<thead>
<tr>
<th>Study Period</th>
<th>Total Crashes</th>
<th>Injuries</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/01/2016 - 12/31/2018</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Variable Speed Zones

Variable speed zones can be established by the road authority in order to reduce congestion and enhance the safety of the motoring public by slowing traffic for congestion management, construction and maintenance work, incident management, emergencies, adverse weather conditions, and other unusual situations.

A variable speed zoning system typically includes detectors to identify current volumes and speeds; software that uses an algorithm to determine the optimal speed zones during a variety of traffic conditions; variable speed signs; and advance warning signs to alert drivers to the variable speed zone location. A variable speed zone system will reduce speeds as needed based on current traffic volumes and speeds, but may be based on other safety and operational conditions, such as incidents or adverse weather conditions.

A variable speed system may be a regulatory system or an advisory speed system. The regulatory speed system is enforceable and the advisory speed system is only advisory and not enforceable. A regulatory speed system requires an engineering study and the establishment of a speed zone by legal order or by Oregon Administrative Rule (for Interstates) to be enforceable. An advisory system does not require an order, but should be established by an engineering study and use the same algorithms for posting of speeds as the regulatory systems. Both an advisory system and a regulatory system should be established by an engineering study considering the same types of criteria, and operate based on the same algorithms.

The Department may establish variable speed zones on a section of interstate highway, rural state highway or state highways inside city limits, city streets, county roads and any other rural public roads except unpaved public roads. This must be based on an engineering study of the characteristics such as congestion, road conditions, reduced visibility or weather conditions. For city streets, county roads or any other rural public road, the road authority must make a recommendation to the State Traffic-Roadway Engineer, which would include all that is listed below for listed types of roadways.
For each section of interstate highway, rural state highway or state highway inside city limits under consideration, the Department will prepare an engineering study that will include all of the following:

- The maximum speed.
- Crash patterns in the section of highway under consideration by time of day, day of week, season of year or other period exhibiting recurring crash patterns.
- Law enforcement consultation and input.
- Traffic characteristics by time of day, day of week, season of year or other periods where recurring congestion levels and reduced average speeds occur, such as hourly congestion levels and speed characteristics.
- Type and frequency of adverse road conditions, including weather, environment, and visibility.
- Locations of each sign and the boundaries of each variable speed segment listed by description and mile post.

The Department (or other road authority) will prepare an engineering study detailing out the problems and a recommendation of the boundaries for the variable speed zone. A concept of operations detailing out the algorithms and operating standards of the system will be prepared. The Oregon Statewide Variable Speed System Concept of Operations meets the requirement for detailing the algorithms and operations on all state highways. If a different system is to be used, the concept of operations will include:

- Set of algorithms.
- The speed change intervals.
- The means, responsibilities and procedures for changing posted speed.
- The means, responsibilities and procedures for keeping the speed change records.

**Variable Speed Zone System Criteria and Process**

The following criteria and process will be used to establish a variable speed zone:

- An engineering study will examine the safety and operational problems that prompt the need for a variable speed zone system.
- The system employed to enact the regulatory variable speeds must be fully described and approved by the State Traffic-Roadway Engineer prior to the design and implementation of the regulatory variable speed zone.
- An advisory speed zone system may be approved by the road authority.
- The system that will trigger the change in posted speed may be based on current traffic volumes, speeds, incident detection, or adverse condition detection.
• The traffic volumes and speed data will be obtained from detectors in real-time and will be based on small time intervals.

• The variable speed control software and algorithms, will be configured to comply with:
  o Any requirements for the individual location identified.
  o The statewide Concept of Operations or a specific concept of operations for the location.

• Additional requirements for Regulatory Variable Systems may be imposed by the State Traffic-Roadway Engineer.

• Speed signs shall display speeds only in increments of 5 mph.

• Unless the highway has more than two lanes in each direction and is separated by a wide median or positive barrier, variable speed signs shall display the same speed for all lanes of traffic at the same location.

• The variable speed will not exceed the maximum speed determined by the standard speed zoning investigation criteria described in OAR 734-020-0015 or, for interstate highways, OARs 734-020-0010 and 734-020-0011.

• If appropriate, the Department will institute rulemaking to make changes to the interstate speed designations which are included in OAR 734-020-0019.

• The regulatory variable speed zone becomes enforceable when appropriate signs are posted and operational on the portion of the highway where the variable speed zone is imposed.

• See OAR 734-020-0018 for further information regarding establishment of variable speed zones on all Public Roads.
Appendix A – Glossary

1) **Ahead on line** means following the road centerline, the direction of increasing milepoints.

2) **Average crash rate** means the average of the crash rates for a group of similar highway segments within the same functional class and the same geographical area (either countywide or statewide).

3) **Average daily traffic (ADT)** means the total number of vehicles to operate over a designated segment of highway during a given time period greater than one day and less than one year, divided by the number of whole days in that time period.

4) **Back on line** means following the road centerline in the direction of decreasing milepoints.

5) **Basic Rule** means when a person drives a vehicle upon a highway at a speed greater than is reasonable and prudent, having due regard to all of the following: traffic, surface and width of the highway, the hazard at intersections, weather, visibility and any other conditions then existing that person can be cited for violation of basic rule. Any highway in Oregon can be enforced as Basic Rule, see ORS 811.100.

6) **Business district** has the meaning defined in ORS 801.170. The territory contiguous to a highway when 50 percent or more of the frontage thereon for a distance of 600 feet or more on one side or 300 feet or more on both sides, is occupied by buildings used for business.

7) **City limits** means the limits of an incorporated city.

8) **Computed eighty-fifth percentile speed** means the eighty-fifth percentile speed minus the difference between the crash rate and the average crash rate (if the crash rate is above the average crash rate for the same functional classification highways within the road authority’s jurisdiction), with maximum possible deduction of 5 mph. If there is no average crash rate available for the highway, then the computed eighty-fifth percentile speed is the eighty-fifth percentile speed.

9) **Context** means the State Traffic-Roadway Engineer’s designation of a highway within the limits of an incorporated city, based on the existing land use types, building density, set back of buildings, and numbers and types of users of the transportation system. In descending order of density, the four types of context are:
a) **Urban Core**, which generally includes downtown areas with the highest development densities and building heights in the urban area, minimal setbacks (building in back of sidewalk), parking on the street within a well-connected roadway system and typically smaller consistent block sizes.

b) **Urban Mix**, which generally includes mixed-use (commercial, retail, restaurant, office and residential) high density areas on small lots with buildings typically adjacent to the sidewalk and parking on the streets, where buildings are typically not as tall as urban core and may have parking in front or behind the buildings within a well-connected roadway system and typically small to medium block sizes.

c) **Suburban Commercial or Residential**, which generally includes areas of land uses that have residential, offices, restaurants or retail spaces with setbacks from the roadway usually meant to be more accessible by car and may include large parking lots, or which may be characterized by big box stores, commercial strip centers, auto dealers, office parks or gas stations, or which may be large residential neighborhoods that have their access from widely spaced roadway connections with few driveways to the roadway, and are have disconnected or sparse roadway connections and typically large blocks.

d) **Suburban Fringe**, which generally includes transition areas between urban and rural areas where there may be few homes and structures, sparsely developed land, lower density of businesses and fewer driveways, intermittent commercial or industrial uses and typically have fewer street connections and larger lot sizes.

e) **Rural Community**, which means it meets one of the three conditions under OAR 734-020-0015: The segment is contiguous to a business district or a residence district; The segment is located within an area that has been identified by the Oregon Department of Land Conservation and Development as an Unincorporated Community and is listed in the Survey of Oregon Unincorporated Communities; Or the specific segment has residences, businesses, or other public service facilities fronting it or has pedestrian attractions such as businesses, schools, parks or other facilities.

f) **Rural**, generally means it is not a rural community and it is outside of city limits.
10) **Crash Severity** means the most significant level of injury sustained in the crash. There are five levels of injury:

(a) **Fatal injury (K)** is any injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.

(b) **Suspected Serious Injury (A)** is any injury other than fatal which results in severe laceration, broken extremity (arm or leg), suspected severe skull, chest or abdominal injury, unconsciousness when taken from the crash scene, paralysis or that prevents the injured person from normally continuing the activities the person was capable of performing before the injury occurred.

(c) **Suspected Minor Injury (B)** is any injury that is evident at the scene of the crash, other than fatal or serious injuries, including lump on the head, abrasions, bruises, minor lacerations.

(d) **Possible Injury (C)** is any injury reported or claimed which is not a fatal, suspected serious, or suspected minor injury. Examples include momentary loss of consciousness, claim of injury, limping, complaint of pain or nausea. Possible injuries are those that are reported by the person or are indicated by his/her behavior, but no wounds or injuries are readily evident.

(e) **No Apparent Injury (O)** is a situation where there is no reason to believe that the person sustained any bodily harm from the motor vehicle crash. There is no physical evidence of injury, and the person does not report any change in normal function.

11) **Crash rate** means the number of crashes per million vehicle-miles (MVM) traveled on a segment of road.

12) **Crash Rates by Functional Class** means the crash rate for each group of functional class highways. The crash rate by functional class is calculated by dividing the total number of crashes by the total vehicle miles traveled for the group of highways within the functional class.

13) **Designated speed** means the speed that is designated under ORS 810.180 as the maximum permissible speed for a highway. The designated speed is established through a speed zone order or rule. Designated speeds shall be in multiples of 5 mph. The designated speed supersedes the statutory speed that would be in effect if no designated speed was established except for school speed zones.
14) **Eighty-fifth percentile speed (85% Speed)** means the speed at or below which 85 percent of the motorists drive on a segment of road for which speeds were measured.

15) **Established speed zone** means a posted speed zone established by Order.

16) **Fiftieth percentile speed (50% Speed)** means the speed at or below which 50 percent of the motorists drive on a segment of road for which speeds were measured.

17) **Free flowing** means the circumstances under which drivers tend to drive at their chosen speed unrestricted by conditions such as congestion, inclement weather, road work, law enforcement activity, traffic control such as traffic signals, stop or yield signs, or by road geometry such as infrequent curves or hills.

18) **Functional class** means a type or class of highway as defined by the Federal Highway Administration (FHWA) in 23 CR 470.105 and the FHWA Functional Classification Guidelines. The Functional Class of all highways in Oregon are shown on maps maintained by the Department. The Functional class are divided into the classifications based on type of service and traffic volumes. The five classifications are as shown below are also divided by rural and urban. The classifications used in speed zoning are shown below and urban and rural are added as applicable:

   a) Arterial includes “Other Principal Arterials” and “Minor Arterials”
   b) Collector includes “Major Collectors” and “Minor Collector”
   c) Interstate
   d) Local
   e) Other Freeways and Expressways (a sub-category of arterials but treated as separate for speed zoning)

19) **Highway** means every public way, road, street, thoroughfare and place as described in ORS 801.305. In this manual highway, road, roadway, and street may be synonymous.

20) **Industrial uses** means an area contiguous to the road segment with mainly warehouse, distribution and manufacturing development.

21) **Interested jurisdiction** means any governing agencies, other than the road authority, which may have interest in the speed on a highway by virtue of being within the city limits, or having responsibility for maintaining the highway.

22) **Limited Access** means a roadway with widely spaced public road intersections and no or few private driveways. Limited access facilities are typically only accessed by public
road intersections with few, if any, private driveways. The public road intersections may be stop controlled, signals or separated grade.

23) **Low volume roadway** means a roadway with average daily traffic volume of less than 400 vehicles.

24) **Maximum speed** means the highest speed recorded in a spot speed check.

25) **Mean speed** means the average of the speed of all vehicles included in a given speed check.

26) **Median speed** means the speed at or below which 50% of the vehicles in a spot speed check were observed to travel. Median speed and 50th percentile speed are synonymous.

27) **Milepoint equation** means a location on the state highway where a change in the milepoint occurs at a point (the mile point ahead equals another milepoint behind). This occurs where shortening or lengthening a highway alignment was necessary to keep milepoints in sequence and the whole highway does not need to be remileposted.

28) **Milepost log** means a log of text and graphics representing road features, traffic controls, accesses and construction details of a road by milepost along the road alignment. For state highways, there is a milepost log on each highway, frontage road, or connection, published by Road Inventory & Classification Services Unit, ODOT. The state milepoint log doesn’t include traffic controls or all road features. The current version is available through the State Highway Inventory Reports.

29) **Mode speed** means the most frequently occurring speed for a spot speed check.

30) **Narrow residential roadways** means a two-way roadway that is (1) located in a residence district; and (2) not more than 18 feet wide at any point between two intersections or between an intersection and the end of the roadway (see ORS 801.368).

31) **ODOT** means the Oregon Department of Transportation.

32) **Order** means the official document prepared and issued by the Department or the Road Authority as per ORS 810.180 that delineates the highway segment(s) and establishes the speed in a speed zone(s). This is commonly known as a **speed zone order**.

33) **OTC** means the Oregon Transportation Commission. The Oregon Department of Transportation governing body. The State Traffic-Roadway Engineer has delegated authority from the OTC to set speed zones within established guidelines designated in Oregon Administrative Rules (OARs) 734-020-0010 thru 0019.
34) **Pace or Pace limits** means a 10-mph increment that includes the greatest percentage of vehicles observed in a spot speed check.

35) **Paved road** means a regularly maintained solidified hard surfaced road typically solid bituminous (asphalt concrete), oil mat or Portland cement concrete.

36) **Prima facie evidence** means information or material that would, if uncontested, establish a fact or raise a presumption of a fact. In the case of speed zoning, some posted speeds may be enforced as a basic rule violation, in which case speeds in excess of the posted speed would be considered prima facie evidence of violation. (See ORS 811.105).

37) **Recommended speed** means the speed that has been determined from an engineering study. Recommended speeds shall be in multiples of 5 mph.

38) **Rescission** means a cancellation or repeal of a previously valid speed zone order. This can occur when a road authority wants to rescind the order and allow the roadway to operate under statutory speed or when a new designated speed zone order is issued and the old order is rescinded (the new order supersedes all previous orders).

39) **Residence district** has the meaning defined in ORS 801.430. Note that a statutory residence speed does not apply to arterials.

40) **Road authority** means the governing body authorized to exercise authority over a road, highway, street or alley under ORS 810.010. Sometimes referred to as a road jurisdiction.

41) **Rural** means an area outside of incorporated city limits for purposes of speed zoning. This may differ from functional class urban and rural designations, federal functional class takes into account communities of 5000 or more population rather than city limits or outside of the urban growth boundary.

42) **Rural community** means an area outside of incorporated city limits where there is a small concentration of development, which may: contain residential development, commercial development, or public service facilities or pedestrian generators such as businesses, schools, parks or other facilities; be a Residence or Business District; or be listed in the Department of Land Conservation and Development’s listing of Oregon unincorporated communities.

43) **School zone exception** means that portion of a speed zone which is signed as a school zone or school crossing, where the statutory speed shall be 20 mph per provisions of ORS 811.111.
44) **Speed limit** means the maximum speed that is authorized by statute or designated by the ODOT or the Road Authority. All posted speeds in Oregon are speed limits, see ORS 811.111.

45) **Speed zone** means a specific segment of highway where a designated speed is posted.

46) **Speed Zone Review Panel** means the Speed Zone Review Panel that is formed by ODOT to act as a hearing body to decide contested speed zoning decisions in OAR 734-020-0015. Members include representatives from League of Oregon Cities (LOC), Association of Oregon Counties (AOC), Oregon State Police (OSP), Oregon Transportation Safety Committee and ODOT.

47) **State Speed Control Board (SSCB)** means the former established board with the authority to set speed zones on all city streets and county roads. The SSCB was replaced in 1994 by delegation to the State Traffic-Roadway Engineer, with contested cases being heard by the Speed Zone Review Panel.

48) **Statutory speed** means the speed maximum permissible speed allowed by statute for roadways with certain characteristics, such as residential, school, business, interstate. The statutory speed is the legal speed, whether posted or not, on any section of road if there is no written speed zone order establishing a different designated speed (see designated speeds). Examples of a statutory speed would be a residential speed of 25 mph, a business district speed of 20 mph, school speed 20 mph, etc. See ORS 811.105 and 811.111.

49) **Straight line chart** means a graphical representation of the mile post log.

50) **Transit stops** means any stops for public mass transit (bus, light rail or trolley) that operate with fixed schedules and routes open to the general public along the segment being investigated. For speed zoning it does not include stops for paratransit, special transit for medical needs or any door to door services.

51) **Transition speed zone** means a speed zone or speed zones established to make a change in posted speed less abrupt for drivers. For example, instead of going directly from a 55 mph section to a 25 mph, it may be necessary to establish one or more transition speed zones in between, such as 45 mph and 35 mph. Transition speed zones must be a minimum of 1000 feet in length.

52) **Unestablished speed zone** means a posted speed zone not designated by Order or established as per statute.
53) **Urban Area** means areas inside an incorporated city limits for purposes of speed zoning. This may differ from functional class urban and rural designations, federal functional class takes into account communities of 5000 or more population rather than city limits and usually includes area within the urban growth boundary.

54) **Urban growth boundary** means an area outside of city limits that designates the area set aside for urban development in the future. It may have somewhat dense development or be very sparse development.

55) **Unpaved road** means a road which has a surface that does not meet the definition of a paved road. The road surface may be dirt, rock, gravel, or other non-solidified material and may have a dust palliative applied.

56) **Variable Speed Zone** means posted speeds that change via changeable message signs. The speed changes based on congestion, road conditions, reduced visibility or weather conditions.

57) **Z mileage** means a segment of state highway where a project has lengthened the road in the middle due to realignment, Z mileage is created. At each end of the Z mileage segment are milepoint equations.
Appendix B – Speed Zone Requests

Requests for speed zone Investigations may be submitted by a city or county with jurisdiction for the roadway (ORS 810.010). These requests may be submitted by authorized representatives of the road authority at the following link:

https://ecmnet.odot.state.or.us/SpeedZone/Home/RequestForm

A concerned citizen should contact their local jurisdiction (city or county) if the speed zone investigation is being requested within city limits. Outside of city limits, a citizen should contact the county for county roads and ODOT for state highways. The online form looks like the following:

Figure 9: Example entry screen for requesting a speed investigation by Road Authority
Appendix C – Crash Data

Crash Data is available online or by contacting:

Crash Analysis and Reporting (CAR) Unit ODOT Mill Creek Office
555 13th Street NE Salem, Oregon 97301

Email request to the ODOT CAR Unit at ODOTTDSCrashRequestGroup@odot.state.or.us

Crash data and statistics are available online at https://www.oregon.gov/odot/Data/Pages/Crash.aspx.

The following crash data products are available on-line from the link above (see link to the “Crash Data System” on the above page). Here are descriptions of a few of the more popular reports:

- Comprehensive PRC (CDS380): This is the original crash listing, but now as many type of reports exist it is called the Comprehensive PRC (CDS380) as it gives all the crash information. You will receive information on crash location, including lat-long, date, type of crash, event, cause, errors, road characteristic’s, vehicle type, vehicle direction of travel, alcohol or drug involvement: also participant types, ages, gender, license and injury severity.

- 3R or Crash Characteristics Summary: This is a summary report on crash characteristics. It reports on several characteristics of each crash within the designated year range and highway and milepoint ranges requested.

- Summary by Year (CDS 150): This report gives a crash count by year and collision type. It includes crash severity, number injured or killed, truck involved, road surface, day, dark, intersection or intersection-related, and off road.

- VDL Vehicle Direction: Report lists crashes by highway and milepoint. Date, time, road character, off road, collision type, injury severities, vehicle types, and direction of travel for up to three vehicles.

Other reports and data extracts are available by request to the CAR Unit. Contact the CAR Unit for assistance. Spatial Crash Data is available online in TransGIS - https://gis.odot.state.or.us/transgis

Note: Bicycle and Pedestrian crashes are only counted in crashes in which a pedestrian or bicycle was struck by a motor vehicle, not where they might have been involved but not struck.
## Traffic-Roadway Section

### Speed Zone Manual

Figure 10: Example Crash Listing

| Roadway | Route No. | City | County | From | To | Years to | Year | Angle | Head-on | Rear-end | Side-impact | Overlapping | Turning Movements | Parked Maneuver | Non-Collision | Fixed-Other-Object | Pedestrian | Backing | Other | Bicycle Crashes | All Crashes* | Total K | Serious Injury A | Injury B and C | No Injury O |
|---------|-----------|------|--------|------|----|----------|------|-------|---------|----------|-------------|--------------|----------------|------------------|-----------------|-------------|-----------------|-------------|-----------|-------|----------------|--------------|--------|-----------------|--------------|-----------|
| Section A |
| From | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| To | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Section B |
| From | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| To | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

*Bicycle Crashes are included in other collision types, do not count twice

Compiled By: | Date:
Appendix D – Spot Speed Checks

Spot speed checks are used to determine the speed characteristics of a roadway. It is important to take spot speed checks that are representative of the segment, under normal conditions (during daylight and in dry weather), away from conditions that may impact speeds such as curves or intersections.

1) At least 75 vehicles each way are necessary for a statistically valid speed check. However, 3 hours is the maximum time you should spend in one location. Lower counts can be used on some low volume roads. For approval to do this, call the Traffic-Roadway Sections’ Traffic Engineering Services unit. Low volume cutoff is 25 vehicles in three hours or 8 total vehicles in one hour.

2) Speed checks are to be taken every 1/2 mile through the investigated section(s). Speed checks may be spaced up to 1 mile or further if there is no change in the roadway or roadside culture.

3) Trucks/Commercial vehicle speeds are not included in the report unless those vehicles constitute a significant traffic source (>=20% of traffic), are specifically named in the request for investigation, or are disproportionately represented in the crash data.
Figure 11: Spot Speed Check

OREGON STATE DEPARTMENT OF TRANSPORTATION
Traffic-Roadway Section
SPOT SPEED CHECK

City: ___________________________ Route: __________ Hwy #: ________ MP: ________
Date: __________ Day: __________ Time: __________
Weather: ___________ Sign Speed: ________ Observer: ___________
Location Description: ____________________________________________
Remarks: _______________________________________________________

<table>
<thead>
<tr>
<th>Pavement Width</th>
<th>ft.</th>
<th>Shoulder Width</th>
<th>ft.</th>
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Bicycles: ___________________________
Pedestrians: ________________________

<table>
<thead>
<tr>
<th>MPH</th>
<th>Passenger Cars</th>
<th>Trucks</th>
<th>Bus</th>
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Appendix E – Footnoting Jurisdictional Boundaries on Speed Zone Orders

On the investigation report, use footnotes to designate the road authority and the interested jurisdiction. If just one agency is involved, no footnotes are necessary. The footnotes and jurisdictional breaks are shown on all engineering studies and speed zone orders for state highways.

“Road Authority” and “Interested Jurisdiction” are defined in OAR 734-020-0014 (Speed Zone Definitions) as:

“Road authority” means the governing agency which has the jurisdiction to place, maintain and operate traffic control devices as defined in Oregon Revised Statute 810.010.

“Interested jurisdiction” means any governing agencies, other than the Road Authority, which may have interest in the speed on a highway by virtue of being within the city limits, or having responsibility for maintaining the highway.

Below is ORS 810.010 that describes road authority designations:

810.010 Jurisdiction over highways; exception. This section designates the bodies responsible for exercising jurisdiction over certain highways when the vehicle code requires the exercise of jurisdiction by the road authority. This section does not control where a specific section of the vehicle code specifically provides for exercising jurisdiction in a manner different than provided by this section. Except as otherwise specifically provided under the code, the responsibilities designated under this section do not include responsibility for maintenance. Responsibility for maintenance is as otherwise provided by law. The following are the road authorities for the described roads:

(1) The Department of Transportation is the road authority for all state highways in this state including interstate highways.

(2) The county governing body is the road authority for all county roads outside the boundaries of an incorporated city.

(3) The governing body of an incorporated city is the road authority for all highways, roads, streets and alleys, other than state highways, within the boundaries of the incorporated city.
(4) Any other municipal body, local board or local body is the road authority for highways, other than state highways, within its boundaries if the body or board has authority to adopt and administer local police regulations over the highway under the Constitution and laws of this state.

(5) Any federal authority granted jurisdiction over federal lands within this state under federal law or rule is the road authority for highways on those lands as provided by the federal law or rule. [1983 c.338 §145; 1985 c.16 §45]

The following examples show the format to use when footnoting different jurisdictional boundary situations on the report. For the purpose of the definitions, the words highway, road and street are synonymous.

**Example 1**

You have conducted a speed zone investigation on a local road in the City of Cove and Union County. Both jurisdictions are responsible for maintenance within their jurisdictional boundaries. You would footnote the following way:

<table>
<thead>
<tr>
<th>Existing</th>
<th>Recommended</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>From: Cove Highway</td>
<td>35 mph</td>
<td>30 mph 1/</td>
</tr>
<tr>
<td>To: Antler Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From: Antler Road</td>
<td>45 mph</td>
<td>30 mph 2/</td>
</tr>
<tr>
<td>To: 100 feet west of Tick Creek</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/ City of Cove – Road Authority
2/ Union County – Road Authority
Example 2

You have conducted a speed zone investigation on a local road in the City of Cove and Union County. Union County is responsible for maintenance within both jurisdictional boundaries. You would footnote the following way:

<table>
<thead>
<tr>
<th>From:</th>
<th>Cove Highway</th>
<th>35 mph</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>To:</td>
<td>Antler Road</td>
<td></td>
<td>30 mph 1/ 2/</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From:</th>
<th>Antler Road</th>
<th>45 mph</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>To:</td>
<td>100 feet west of Tick Creek</td>
<td></td>
<td>30 mph 3/</td>
</tr>
</tbody>
</table>

1/ City of Cove – Road Authority  
2/ Union County – Interested Jurisdiction  
3/ Union County – Road Authority  

Note: The “interested jurisdiction” footnote would indicate the section within the city limits where the county is responsible for maintenance.

Example 3

You have conducted a speed zone investigation on a local road in the City of Cove and Union County. The city limits line follows the center line of the roadway for a portion of the investigated section. Union County is responsible for maintenance of all the segments. You would footnote the following way:

<table>
<thead>
<tr>
<th>From:</th>
<th>Cove Highway</th>
<th>35 mph</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>To:</td>
<td>Antler Road</td>
<td></td>
<td>30 mph 1/ 2/</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From:</th>
<th>Antler Road</th>
<th>35 mph</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>To:</td>
<td>Coleman Road</td>
<td></td>
<td>30 mph 3/ 2/</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From:</th>
<th>Coleman Road</th>
<th>45 mph</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>To:</td>
<td>100 feet west of Tick Creek</td>
<td></td>
<td>30 mph 4/</td>
</tr>
</tbody>
</table>

1/ City of Cove – Road Authority  
2/ Union County – Interested Jurisdiction  
3/ City of Cove and Union County – Road Authorities; City limits coincident with centerline  
4/ Union County – Road Authority
**Example 4**

You have conducted a speed zone investigation on a **state highway** within the City of Cove. You would footnote the following way:

<table>
<thead>
<tr>
<th></th>
<th>From:</th>
<th>To:</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Arlene Avenue</td>
<td>100 feet east of Hunter Avenue</td>
<td>35 mph</td>
<td>30 mph 1/</td>
</tr>
<tr>
<td>B</td>
<td>100 feet east of Hunter Avenue</td>
<td>Brewster Avenue</td>
<td>45 mph</td>
<td>40 mph 1/</td>
</tr>
</tbody>
</table>

1/ City of Cove – Interested Jurisdiction

The interested jurisdiction footnote would indicate that the section is within the city limits. If you wish, you could add a footnote showing that ODOT is the road authority.

**Example 5**

You have conducted a speed zone investigation on a **rural state highway** that extends through the City of Cove. You would footnote the following way:

<table>
<thead>
<tr>
<th></th>
<th>From:</th>
<th>To:</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Blizzard Creek Road</td>
<td>100 feet west of Arlene Avenue</td>
<td>55 mph</td>
<td>50 mph 1/</td>
</tr>
<tr>
<td>B</td>
<td>100 feet west of Arlene Avenue</td>
<td>100 feet east of Hunter Avenue</td>
<td>35 mph</td>
<td>30 mph 2/</td>
</tr>
<tr>
<td>C</td>
<td>100 feet east of Hunter Avenue</td>
<td>Brewster Avenue</td>
<td>45 mph</td>
<td>40 mph 2/</td>
</tr>
</tbody>
</table>

1/ ODOT – Road Authority
2/ City of Cove – Interested Jurisdiction

When a section has both a road authority and an interested jurisdiction, you can combine both agencies into one footnote number, if you wish. If there is just one road authority and no interested jurisdiction, no jurisdiction footnotes are required.
Appendix F – Housekeeping Changes

Existing speed zone orders may need to have the information on the order, other than the designated speed, updated. These updates are called “housekeeping” changes. The reasons for these include:

- Speed zone boundary description corrections. If the current description only refers to a milepoint, city or other jurisdictional limit, or a building or other structure, that description will need to be rewritten to reference a distance from a fixed feature such as a street or bridge.
- Street name changes.
- New streets such that the existing reference street is no longer the closest street.
- Realignment of the existing road or an existing intersection such that the position of the described boundary point is no longer at the same place in the main road.
- Jurisdictional transfer.
- Minor adjustment – An existing designated speed zone may, at the discretion of the State Traffic-Roadway Engineer, be extended or shortened up to 500 feet without obtaining a spot speed check within that section (OAR 734-020-0015(2)(f)).

When housekeeping corrections are made, an abbreviated report (completed through “Previous Action”) and a map and a cover memo are required. The cover memo should explain the housekeeping nature of the change, how the updated information was determined, and that the criteria for a full investigation was not met (see below). As a courtesy, Region should contact the local agency so there is no confusion when they receive the new order. The cover letter sent to the local agency with the new order will explain the housekeeping nature of the changes made.

Procedures for Changing a Boundary or Street Name

To update the speed zone boundary reference (for instance, finding a description to fit an old city limit), research the position on the roadway of that old boundary by the closest side street existing at the time of the old speed zone order and distance from that side street. You may need to contact the local agency to find the historical information and/or interpret from right-of-way descriptions. The new description will have to be verified in the field by measuring the location and then determining the current closest side street and distance. Write the new description in the speed zone report.

For street name changes, note the change on the speed zone report and on the map as New Street (Old Street). The old street name will not show up on the new order.
New development that has changed the intersections and/or alignment of the road in a way to require a new boundary description will require field work to establish the best description.

Measure where the boundary is on the roadway using the old information, then determine the nearest cross street and distance from that cross street. The new description and both the new and old street names are to be in the report and on the map. Again, the old description will not show up in the new order.

Housekeeping Change or Full Investigation?

In some situations, a full speed zone investigation should be done, even though the initial changes were thought to be only housekeeping corrections. The criteria listed below are used to determine when a full investigation (that investigates the designated speed) is to be done. In each of the following, the region traffic office determines what constitutes a significant change.

- There has been a significant change to the roadway (alignment change or modernization-type project) and/or
- Development around the roadway has changed significantly and/or
- Traffic volumes for the roadway have changed significantly.

If these criteria are not met and the road authority or interested jurisdiction is not proposing a change to the speed zoning, then the Region office should send to the Traffic-Roadway Section an abbreviated report and a cover memo as described above.

Noting the Need for Future Updates

If a housekeeping change needs to be made but resources are not available to do the required field work and/or prepare the housekeeping report, note that the correction is required on the office copy of the speed zone order. Additionally, submit a memo to the State Traffic-Roadway Engineer on the needed changes, recommending they be field verified the next time there is a speed zone review of any portion of that order.
Example of First Page of Report for Housekeeping Purposes

OREGON DEPARTMENT OF
TRANSPORTATION REPORT OF
SPEED ZONE INVESTIGATION

Coker Butte Road
Crater Lake Avenue to
Foothill Road City of
Medford / Jackson
County May 30, 2012

Recommendation: Rescind SSRP Order #1199D, dated May 8, 1996 and establish the following speed zoning as listed below. Recommendation to establish a new order is for housekeeping purposes.

Investigated

<table>
<thead>
<tr>
<th>From:</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crater Lake Avenue (Crater Lake Hwy No. 22)</td>
<td>45 mph</td>
<td>45 mph 1/2/</td>
</tr>
<tr>
<td>300 feet west of Springbrook Road</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From:</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 feet west of Springbrook Road</td>
<td>45 mph</td>
<td>45 mph 3/4/</td>
</tr>
<tr>
<td>To:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foothills Road</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/ City of Medford – Road Authority
2/ Jackson County – Interested Jurisdiction
3/ Jackson County – Road Authority
4/ Housekeeping – Retain existing speeds in new order due to recent project changed starting point of 45 mph speed zoning.

Historical Background:
Investigation requested by: James Philp, Traffic & Development Engineer, Jackson County Requested Speed: None (Housekeeping)
Previous Action: Established SSRP Order #1199D, dated May 8, 1996
Appendix G – Survey of Oregon Unincorporated Communities

In OAR 734-020-0015, the rules around the establishment of speed zones on rural state highways describe how the speed may be varied a maximum of ten miles per hour above or below the computed speed if certain conditions are met. One of the criteria [in Section (2)(c)(C)] requires that the section of highway be located within an area that has been identified by the Oregon Department of Land Conservation and Development (DLCD) as an “Unincorporated Community” and is listed in the Survey of Oregon Unincorporated Communities. The information below describes how the list of unincorporated communities was developed, and the following pages list those communities.

Background

In 1993, DLCD conducted a statewide survey of unincorporated communities (these areas were called "rural communities" at that time). The purpose of the survey was to gather information about such areas in order to assist in writing land use planning rules for such communities. The survey included a list of community names for each county, and also provided information about land uses and public facilities in these areas.

The Land Conservation and Development Commission (LCDC) adopted administrative rules for unincorporated communities in 1994 (OAR 660, Division 22). Because the survey had been conducted prior to the drafting of the related rules, counties had listed some areas in the survey that do not meet the formal definition of “unincorporated community.” As such, not all the areas listed in the survey are subject to LCDC’s rural communities rules.

In 1997, LCDC revised the “unincorporated community” rules. The revised rules refer to the survey of unincorporated communities. During the public review process for these amendments several counties requested that LCDC add certain communities to the DLCD survey. These communities had not been listed in the original (1993) survey, but are similar to the other community areas listed on that survey. LCDC agreed to amend the survey so as to include these additional areas.

The survey is on file at DLCD as the official document referenced by the amended unincorporated communities rules. The attached document is a list of the communities named by each county. As with the 1993 survey, not all the areas listed in this, the amended (1997) survey, will qualify as an “unincorporated community” using the definition in Division 22. The 1993 survey, which is also available from DLCD, includes additional land use and public facilities information for each of the communities surveyed at that time.
## Unincorporated Communities

### Baker County

<table>
<thead>
<tr>
<th>Bourne</th>
<th>Durkee</th>
<th>Langrell</th>
<th>Pine</th>
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</thead>
<tbody>
<tr>
<td>Bridgeport</td>
<td>Hereford</td>
<td>McEwen</td>
<td>Pleasant Valley</td>
</tr>
<tr>
<td>Carson</td>
<td>Homestead</td>
<td>New Bridge</td>
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</tr>
<tr>
<td>Cornucopia</td>
<td>Keating</td>
<td>Oxbow</td>
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### Benton County

<table>
<thead>
<tr>
<th>Alpine</th>
<th>Blodgett</th>
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<th>Wren</th>
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<tr>
<td>Alsea</td>
<td>Bruce</td>
<td>Kings Valley</td>
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</tr>
<tr>
<td>Bellfountain</td>
<td>Greenberry</td>
<td>Summit</td>
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### Clackamas County

<table>
<thead>
<tr>
<th>Beavercreek</th>
<th>Colton</th>
<th>Mulino</th>
<th>Welches/Wemme</th>
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<tbody>
<tr>
<td>Boring</td>
<td>Damascus</td>
<td>Redland</td>
<td>Zig Zag</td>
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<tr>
<td>Brightwood</td>
<td>Government Camp</td>
<td>Rhododendron</td>
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### Clatsop County

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<thead>
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<th>Elsie</th>
<th>Miles xing/Jeffers</th>
<th>Svensen</th>
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<td>Burnside</td>
<td>Fish Hawk</td>
<td>Necanicum/Hwy 53</td>
<td>Sunset Beach</td>
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<td>Cannon Beach</td>
<td>Highway 26</td>
<td>Old Naval Hospital</td>
<td>Westport</td>
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<td>Junction</td>
<td>Jewel</td>
<td>Olney</td>
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### Columbia County

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<th>Mist</th>
<th>Quincy</th>
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<td>Goble</td>
<td>Warren</td>
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### Coos County

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<th>Charleston/Barview</th>
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<td>Bunker Hill/Mill</td>
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<td>Rainier</td>
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<td>LaPine</td>
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<td>Quines Creek</td>
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<td>Rice Hill</td>
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<td>Lookingglass</td>
<td>Riversdale</td>
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<td>Melrose</td>
<td>Scottsburg/Wells</td>
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<td>Milo</td>
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<td>Tenmile/Porter creen</td>
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<td>Tiller</td>
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<td>Fortune Branch</td>
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<td>Fox</td>
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<td>非列出城市</td>
<td>Izee</td>
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<td>Harney County</td>
<td>Logdel, Ritter, Susanville</td>
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<td>Andrews, Diamond, Frenchglen, Riley</td>
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<td>Buchanan, Drewsey, Lawen, Wagontire</td>
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<td>Crane, Fields, Princeton</td>
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<td>Hood River County</td>
<td>Mt. Hood, Odell, Pine Grove, Windmaster Corner</td>
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<td>Oak Grove, Parkdale, Rockford, Van Horn</td>
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<tr>
<td>Jackson County</td>
<td>Applegate, Lincoln/Pinehurst, Ruch</td>
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<tr>
<td></td>
<td>Brownsboro, McKee Bridge, Trail, Wimer</td>
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<tr>
<td></td>
<td>Lake creek, Prospect, Union Creek</td>
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<td>Jefferson County</td>
<td>Ashwood, Camp Sherman, Crooked River Ranch</td>
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<td></td>
<td>Chinook Airport, Gateway, High Chaparral</td>
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<td>Josephine County</td>
<td>Kerby, O’Brien, Sunny Valley, Wonder</td>
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<td>Murphy, Shan Creek, Selma, Wolf Creek</td>
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<td>Klamath County</td>
<td>Beatty, Crescent Lake, Gilchrist, Rocky Point</td>
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<td>Beaver Marsh, Dairy, Henley, Sprague River</td>
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<tr>
<td></td>
<td>Bly, Diamond Lake Junction, Keno, Midland</td>
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<td>Chemult, Fort Klamath, Olene</td>
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<td>Crescent</td>
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## Lake County

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<thead>
<tr>
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<th>Five Corners</th>
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<th>Valley Falls</th>
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<tbody>
<tr>
<td>Alkalai Lake</td>
<td>Fort Rock</td>
<td>Silver Lake</td>
<td>Westside</td>
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<tr>
<td>Christmas Valley</td>
<td>New Pine Creek</td>
<td>Summer Lake</td>
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## Lane County

<table>
<thead>
<tr>
<th>Alvadore</th>
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<th>Rainbow</th>
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<tbody>
<tr>
<td>Blachly</td>
<td>Elmira</td>
<td>London</td>
<td>Saginaw</td>
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<td>Crow</td>
<td>Glenada</td>
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<td>Triangle Lake</td>
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<td>Culp Creek</td>
<td>Goshen</td>
<td>McKenzie Bridge</td>
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<td>Walterville</td>
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<td>Jasper</td>
<td>Noti</td>
<td>Walton</td>
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<td>Lancaster</td>
<td>Pleasant Hill</td>
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## Lincoln County

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<thead>
<tr>
<th>Beverly Beach</th>
<th>Harlan</th>
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<tbody>
<tr>
<td>Burnt Woods</td>
<td>Kernville</td>
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<td>Eddyville</td>
<td>Lincoln-Gleneden</td>
<td>Otter Rock</td>
<td>Star Creek</td>
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<tr>
<td>Elk City</td>
<td>Logsden</td>
<td>Rose Lodge</td>
<td>Tidewater</td>
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## Linn County

<table>
<thead>
<tr>
<th>Cascadia</th>
<th>Crawfordsville</th>
<th>Lacobm</th>
<th>Shedd</th>
</tr>
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<tbody>
<tr>
<td>Crabtree</td>
<td>Holley</td>
<td>Peoria</td>
<td>West Scio</td>
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## Malheur County

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<tr>
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<th>Cairo Junction</th>
<th>Jamieson</th>
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<tr>
<td>Arock</td>
<td>Farewell Bend</td>
<td>Johnson Brothers</td>
<td>Owyhee Corner</td>
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<tr>
<td>Brogan</td>
<td>Harper</td>
<td>Juntura</td>
<td>Rome</td>
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<td>McDermitt</td>
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### Marion County

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<th>Location</th>
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<tbody>
<tr>
<td>Brooks</td>
<td>Hopmere</td>
<td>Monitor</td>
<td>Shaw</td>
</tr>
<tr>
<td>Brooks Interchange</td>
<td>Labish Village</td>
<td>North Howell</td>
<td>St. Louis</td>
</tr>
<tr>
<td>Butteville</td>
<td>Lone Pine</td>
<td>North Santiam</td>
<td>Talbot</td>
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<tr>
<td>Central Howell</td>
<td>Macleay</td>
<td>Norton’s Corner</td>
<td>Waconda</td>
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<td>Drakes Crossing</td>
<td>Marion</td>
<td>Pratum</td>
<td>West Stayton</td>
</tr>
<tr>
<td>Fargo Interchange</td>
<td>Mehama</td>
<td>Quinaby</td>
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### Morrow County

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<thead>
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<tbody>
<tr>
<td>Ruggs</td>
<td>Hardman</td>
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### Multnomah County

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</thead>
<tbody>
<tr>
<td>Bridal Veil</td>
<td>Corbett (NSA)</td>
<td>Orient</td>
<td>Warrendale (NSA)</td>
</tr>
<tr>
<td>Burlington</td>
<td>Dodson (NSA)</td>
<td>Springdale</td>
<td></td>
</tr>
</tbody>
</table>

### Polk County

<table>
<thead>
<tr>
<th>Location</th>
<th>Location</th>
<th>Location</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airlie</td>
<td>Derry</td>
<td>Lincoln</td>
<td>Rickreall</td>
</tr>
<tr>
<td>Ballston</td>
<td>Eola</td>
<td>McCoy</td>
<td>Suver</td>
</tr>
<tr>
<td>Buell</td>
<td>Fort Hill</td>
<td>Pedee</td>
<td>Suver Junction</td>
</tr>
<tr>
<td>Buena Vista</td>
<td>Grand Ronde</td>
<td>Perrydale</td>
<td>Valley Junction</td>
</tr>
</tbody>
</table>

### Sherman County

<table>
<thead>
<tr>
<th>Location</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biggs Junction</td>
<td>Kent</td>
</tr>
</tbody>
</table>

### Tillamook County

<table>
<thead>
<tr>
<th>Location</th>
<th>Location</th>
<th>Location</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barview</td>
<td>Falcon Cove</td>
<td>Neahkahnie</td>
<td>Pacific City/Woods</td>
</tr>
<tr>
<td>Beaver</td>
<td>Hebo</td>
<td>Neskowin</td>
<td>Syskeyville</td>
</tr>
<tr>
<td>Cape Meares</td>
<td>Idaville</td>
<td>Netarts</td>
<td>Tierra Del Mar</td>
</tr>
<tr>
<td>Cloverdale</td>
<td>Mohler</td>
<td>Oceanside</td>
<td>Twin Rocks</td>
</tr>
</tbody>
</table>

### Umatilla County

| Location | Location     |
|----------|--------------|--------------|

May 2020
<table>
<thead>
<tr>
<th><strong>Union County</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice</td>
<td>Hotlake</td>
<td>Spout Springs</td>
</tr>
<tr>
<td>Anthony Lakes</td>
<td>Medical Springs</td>
<td>Starkey</td>
</tr>
<tr>
<td>Camp Elkanah</td>
<td>Perry</td>
<td>Telocaset</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Wallowa County</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flora</td>
<td>Minam</td>
<td>Wallowa Lake</td>
</tr>
<tr>
<td>Imnaha</td>
<td>Troy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Wasco County</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pine Grove</td>
<td>Tygh Valley</td>
<td>Wamic</td>
</tr>
<tr>
<td>Pine Hollow</td>
<td>Walter’s Corner</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Washington County</strong></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Buxton</td>
<td>Laurelwood</td>
<td>Timber</td>
</tr>
<tr>
<td>Cherry Grove</td>
<td>Manning</td>
<td>Verboort</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Wheeler County</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarno</td>
<td>Kinzua</td>
<td>Service Creek</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Twickenham</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Yamhill County</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bellevue</td>
<td>Grand Island</td>
<td>Grande Ronde</td>
</tr>
<tr>
<td>Cove Orchard</td>
<td>Junction</td>
<td>Agency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hopewell</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unionvale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Whiteson</td>
</tr>
</tbody>
</table>
Appendix H – Alternative Investigation
Minimum Requirements

The Alternative Investigation can only be used within the limits of an incorporated city on Collector or Local Functional Class streets. The Alternative Investigation may not be used on any Arterials, Other Freeway or Expressway or outside of city limits.

The investigation can have more data than shown below and be formatted differently but these fields are required to be reported by OAR 734-020-0015:

Report Heading

Date
Contact Name & Title
Phone #/Email address of Contact
Agency
“Alternative Investigation Method”

Sections/Segments
Highway and/or street name
From: To:
  • List the beginning and end of the investigated section using the distance and direction from the nearest intersection

Segment length:
  • Total segment length.

Roadway Data

Federal Functional Classification:
  • List federal Functional class (may not be arterial, interstate or other freeway/expressway)
  • If applicable, a statement of whether the highway has widely spaced public road intersections and with few private driveways leading to businesses or residences

Context:
  • Context as determined by Engineer
• Accompanied by a description of the type and density of adjacent lane use typical roadway cross section:
  • i.e., EOP or curb; Shoulder width; travel lane 1 width; travel lane 2 width; shoulder width; EOP or Curb

ADT:
• Average Daily Traffic and year

Pedestrian Activity
• Use descriptions High, Medium or Low from the field investigation to describe the relative use of the segment by pedestrians for the roadway.

Bicycle Activity
• Use descriptions High, Medium or Low from the field investigation to describe the relative use of the segment by bicycles for the roadway.

**Speed Data**

Date, time of day & location(s)
Free flow 85th percentile
50th percentile
Pace limits
% within pace limits
Max speed observed
% exceeding posted speed

**Crash Data (Most recent three years)**

# Total Crashes
# Fatal K crashes
# Serious injury A crashes
# Injury B and C crashes
# No Injury O crashes
Crash rate for investigated segment
Average crash rate (if available)
**Recommended Speed**

Current posted speed: Speed Zone Order:
- List current posted speed and speed zone order number, if applicable.

Recommended Speed:
- Recommended speed must fall within range of recommended speeds listed by context/functional classification under OAR 734-020-0015

Factors/Notes:
- Any other information, which, in the professional judgement of the engineer preparing the study, are relevant to the designation of the speed zone or the investigation.

Signature and date of Investigator (if different than the Engineer)

Signature and date of Engineer

**Basic Map**

- From Google is acceptable, showing location of speed zone and speed checks

**Typical Photos**

- Typical photos representative of typical lanes, shoulders, land use with labeled location (minimum of two per mile)

**Provide interested jurisdiction concurrence (if applicable)**

- Attach Documentation

**Other Information**

The above information must be included in the Alternative Investigation as a minimum, but other relevant information may also be included. When including relevant “other information” it can be included above in a relevant section or at the end of the report.

Following somewhat the same format as above will make it easier for anyone checking the report to assure the minimum requirements are met.
Appendix J – Transmittal Letter Example

INTER OFFICE MEMO
TECHNICAL SERVICES
Traffic-Roadway Section
Office Phone: (503) 986-3609

DATE: June 20, 2018

TO: Bob Pappe, PE, PLS, State Traffic Roadway Engineer

FROM: John Doe, PE, Region Traffic Engineer
      Jane Smith, Senior Traffic Investigator

SUBJECT: Speed Zone Recommendation
          Powerline Road
          Columbia River Hwy (US 730) to Radar Road
          City of Umatilla / Umatilla County

A speed zone investigation had been conducted at the subject location and report attached for your review and approval. The investigation was conducted in response to a request from Larry Clucas, City Administrator for the City of Umatilla with concurrence from Hal Phillips, Roadmaster for Umatilla County. The City has requested ODOT establish a 25 mph speed zone from the Columbia River Hwy (US 730) to Pine Tree Avenue and a 35 mph speed zone from Pine Tree Avenue to Radar Road.

Section A, from the Columbia River Highway to 0.14 mile south of Pine Street is of residential culture with moderate density. The roadway is typically 20 feet wide with single 10 foot travel lanes. There were no reported crashes in the three-year crash study period. The spot speed data yields an average 85% speed of 39 mph. Pace limits were from 31-40 mph with 78% of the vehicles in pace. After consideration of the 85th percentile speed and crash history, I recommend retaining existing 35 mph speed zoning.

Section B, from 0.14 mile south of Pine Street to Radar Road is of rural culture with sparse density. This section has two intersecting streets that will eventually be used to serve residential areas. The roadway is typically 20 feet wide with single 10 foot travel lanes. There was one reported crash in the three-year crash study period. The spot speed data yields an average 85% speed of 53 mph. Pace limits were from 44-53 mph with 62% of the vehicles in pace. After consideration of the 85th percentile speed, crash history and need for a transition speed zone, I recommend establishing a 45 mph speed zone.

If you concur with this recommendation, please note your concurrence on the attached report.
### Appendix K – Outline of Section Description

#### Format

<table>
<thead>
<tr>
<th>Section</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**On 5th Street**

A  
- From: Beginning Road  
  - XX mph
- To: Next Road  
  - YY mph 1/
- From: Next Road  
  - XX mph / YY mph
- To: 150 ft. E of Third Street  
  - YY mph 2/

**Not Investigated**

B  
- From: 150 ft. E of Third Street  
  - AA mph
- To: New 4th Avenue  
  - AA mph 1/

**On New 4th Avenue**

- From: 5th Street  
  - AA mph
- To: 500 ft. N of Throughway Avenue  
  - AA mph 1/
- From: 5th Street  
  - AA mph
- To: 500 ft. N of Throughway Avenue  
  - AA mph 1/
- From: 500 ft. N of Throughway Avenue  
  - AA mph
- To: 150 ft. N of Industrial Road  
  - AA mph 1/

C  
- From: 150 ft. N of Industrial Road  
  - BB mph
- To: 100 ft. S of Transition Street  
  - BB mph 3/

Per provisions of ORS 811.111 Subsection 1(e) and ORS 810.200 the following segment(s) within the section above shall be 20 mph. (State Highways Only, School Zone)

- From: 50 feet south of Industrial Road MP XX.XX
- To: 300 feet north of Transition Street MP XX.XX

**Investigated**

D  
- From: 100 ft. S of Transition Street  
  - XX mph (stat)
- To: End Road  
  - YY mph 3/
1/ Except that in the following sections, the designated speed shall be 20 mph as per provisions of ORS 811.111: (state highways only)
2/ City One – Road Authority
3/ City One – Road Authority and County - Interested Jurisdiction
4/ County – Road Authority
Appendix L – Standard Report Outline

Report Outline Template

Report of Speed Zone Investigation Road name

Begin Point of Speed Zoning/Investigation to End Point of Speed Zoning/Investigation

Roadway Authority and Interested Jurisdiction Name(s)

Report date

Recommendation: (Retain, Revise or Establish speed zone orders) as shown below:

<table>
<thead>
<tr>
<th>Section</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigated (or Not Investigated)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>From: Begin point* MP (state hwy) Posted speed (MPH)</td>
<td>Speed (mph)</td>
</tr>
<tr>
<td></td>
<td>To: End point*</td>
<td></td>
</tr>
</tbody>
</table>

* By road or feature name with distance and direction.

Include below Section, if School Zone on State Highway within Section above:

Per provisions of ORS 811.111 Subsection 1(e) and ORS 810.200 the following segment(s) within the section above shall be 20 mph.

From: Begin point by road or feature name MP XX.XX

To: End Point by Road or feature name MP XX.XX

Historical Background:

Investigation Requested by: Name, title, Jurisdiction

Requested Speed: (MPH) (If more than one section investigated, list by section)

Previous Action: Existing Speed Zone Orders

Investigation: Section/Part of Sec.
Section Length 0.00 miles/ #feet if <550'
85% Speed MPH
50% Speed MPH
Crash Rate Crashes per Million Vehicle Miles (MVM)
(Latest year) Average Daily Traffic Nearest 50 veh/day
Context (See description)
<table>
<thead>
<tr>
<th>Investigation:</th>
<th>Section/Part of Sec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture Type and Density</td>
<td>(See description)</td>
</tr>
<tr>
<td>Horizontal Alignment</td>
<td>(See description)</td>
</tr>
<tr>
<td>Vertical Alignment</td>
<td>(See description)</td>
</tr>
<tr>
<td>Curve Signs &amp; Speed Riders</td>
<td>(See description)</td>
</tr>
<tr>
<td>Existing Posted Speed</td>
<td>MPH</td>
</tr>
<tr>
<td>Recommended Speed</td>
<td>MPH</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roadway Data:</th>
<th>Section/Part of Sec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>type</td>
</tr>
<tr>
<td>Lanes</td>
<td># travel, note median</td>
</tr>
<tr>
<td>Width</td>
<td>Nearest ft.</td>
</tr>
<tr>
<td>Parking</td>
<td>(See description)</td>
</tr>
<tr>
<td>Shoulders</td>
<td>(See description)</td>
</tr>
<tr>
<td>Intersecting Streets</td>
<td># side streets - exclude ends (see note)</td>
</tr>
<tr>
<td>Paved</td>
<td># side streets</td>
</tr>
<tr>
<td>Stopped</td>
<td># side streets</td>
</tr>
<tr>
<td>Signalized and Other</td>
<td># streets</td>
</tr>
<tr>
<td>Pedestrian Activity</td>
<td>High, Med, Low</td>
</tr>
<tr>
<td>Bicycle Activity</td>
<td>High, Med, Low</td>
</tr>
<tr>
<td>Bicycle Lanes</td>
<td>%</td>
</tr>
<tr>
<td>Sidewalks</td>
<td>%</td>
</tr>
<tr>
<td>Marked Crosswalks</td>
<td>#</td>
</tr>
<tr>
<td>Enhanced Crosswalks</td>
<td>#</td>
</tr>
<tr>
<td>Transit</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crash Data:</th>
<th>Section/Part of Sec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Period</td>
<td>Last 3 full yrs min.</td>
</tr>
<tr>
<td>yr-yr Total Crashes</td>
<td># for study period</td>
</tr>
<tr>
<td>yr-yr Fatal K Crashes</td>
<td># for study period</td>
</tr>
<tr>
<td>yr-yr Serious Injury A Crashes</td>
<td># for study period</td>
</tr>
<tr>
<td>yr-yr Injury B and C Crashes</td>
<td># for study period</td>
</tr>
</tbody>
</table>
### Crash Data:

<table>
<thead>
<tr>
<th>yr-yr No Injury O Crashes</th>
<th>?</th>
</tr>
</thead>
<tbody>
<tr>
<td>yr-yr Section Crash Rate (R)</td>
<td>Crashes/MVM</td>
</tr>
<tr>
<td>yr Comparable Crash Rate (r) 1/</td>
<td>From Rate Table</td>
</tr>
<tr>
<td>Deviation (R-r)</td>
<td>R-r, if &lt;0, =0</td>
</tr>
</tbody>
</table>

### Spot Speed Data:

<table>
<thead>
<tr>
<th>?</th>
<th>Avg. for Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>85% Speed</td>
<td>Avg. for Section</td>
</tr>
<tr>
<td>50% Speed</td>
<td>Avg. for Section</td>
</tr>
<tr>
<td>Pace Limits 2/</td>
<td>Avg. for Section</td>
</tr>
<tr>
<td>% in Pace</td>
<td>Avg. for Section</td>
</tr>
<tr>
<td>Maximum Speed</td>
<td>High for Section</td>
</tr>
<tr>
<td>Posted Speed</td>
<td>List all for Section</td>
</tr>
<tr>
<td>% Exceeding Posted Speed</td>
<td>List Avg%/Each posted speed</td>
</tr>
<tr>
<td>Computed 85% Speed 3/</td>
<td>85%-(Deviation) (or 85%)</td>
</tr>
<tr>
<td>Recommended Speed</td>
<td>MPH</td>
</tr>
</tbody>
</table>

---

Use footnotes for the following in all cases (use more footnotes as needed).

1/ Urban/Rural Functional Class/No comparable rate

2/ Ten mile-per-hour range containing the largest number of sample vehicles.

3/ 85% speed minus deviation/85% speed (if Deviation is zero or negative)

**Factors Influencing Recommendation:**

List all deciding factors from above lists.
REPORT ON SPEED ZONE INVESTIGATION

OREGON DEPARTMENT OF TRANSPORTATION

Report of Speed Zone Investigation

AIRPORT ROAD

Miley Road to 0.19 mile south of Arndt Road Clackamas County / Marion County

October 17, 2019

Recommendation: Retain existing speed zone order J9253 dated August 01, 2018.

<table>
<thead>
<tr>
<th></th>
<th>Investigated</th>
<th>Existing</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>From: Miley Road</td>
<td>55mph (Stat.)</td>
<td>55 mph (Stat.) 1/</td>
</tr>
<tr>
<td></td>
<td>To: 0.19 mile north of Arndt Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>From: 0.19 mile north of Arndt Road</td>
<td>50mph</td>
<td>50 mph 1/</td>
</tr>
<tr>
<td></td>
<td>To: Arndt Road</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/ Clackamas County

2/ Marion County

Historical Background:

Investigation requested by: Troy Johnson, Engineering Technician, Clackamas County and concurred by David Jensen, Engineering Technician, Marion County.

Requested Speed: To create a 45 mph zone thru this section.

Previous Action: Existing speed zone order J9253 dated August 01, 2018.

<table>
<thead>
<tr>
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<th>Section A</th>
<th>Section B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section Length</td>
<td>1.44 mile</td>
<td>0.38 mile</td>
</tr>
<tr>
<td>85% Speed</td>
<td>59 mph</td>
<td>56 mph</td>
</tr>
<tr>
<td>50% Speed</td>
<td>54 mph</td>
<td>50 mph</td>
</tr>
<tr>
<td>2015-2017 Crash Rate*</td>
<td>0.54</td>
<td>7.21</td>
</tr>
<tr>
<td>2017 Average Daily Traffic</td>
<td>7000</td>
<td>7000</td>
</tr>
<tr>
<td>Context</td>
<td>Rural</td>
<td>Rural</td>
</tr>
<tr>
<td>Culture Type &amp; Density</td>
<td>Rural</td>
<td>Moderate Industrial</td>
</tr>
<tr>
<td>Roadway Classification</td>
<td>Rural Minor Arterial</td>
<td>See footnote 4/</td>
</tr>
</tbody>
</table>
### Traffic-Roadway Section

**Investigation:**

<table>
<thead>
<tr>
<th></th>
<th>Section A</th>
<th>Section B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal Alignment</td>
<td>0 curves</td>
<td>0 curves</td>
</tr>
<tr>
<td>Vertical Alignment</td>
<td>Level</td>
<td>Level</td>
</tr>
<tr>
<td>Curve Signs &amp; Speed Rider</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Existing Posted Speed</td>
<td>55 mph (Stat.)</td>
<td>50 mph</td>
</tr>
<tr>
<td>Recommended Speed</td>
<td>55 mph (Stat.)</td>
<td>50 mph</td>
</tr>
</tbody>
</table>

* Crashes per Million Vehicle Miles

**Roadway Data**

<table>
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<th></th>
<th>Section A</th>
<th>Section B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>Bituminous</td>
<td>Bituminous</td>
</tr>
<tr>
<td>Width</td>
<td>21’ – 22’ (BL to BL)</td>
<td>21’ – 25’ (FL to FL)</td>
</tr>
<tr>
<td>Lanes</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Parking</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Shoulders</td>
<td>4’ – 6’ Paved BL</td>
<td>0’ – 6’ Paved 6/</td>
</tr>
<tr>
<td>Intersecting Streets</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Paved</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Stopped</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Signalized and Other</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pedestrian Activity</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Bike Activity</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Bicycle Lanes</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Sidewalks</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Marked Crosswalks</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Enhanced Crosswalks</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Transit</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

**Crash Data:**

<table>
<thead>
<tr>
<th></th>
<th>Section A</th>
<th>Section B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-2017 Total Crashes</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>2015-2017 Fatal K Crashes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015-2017 Serious Injury A Crashes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2015-2017 Injury B and C Crashes</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
### Crash Data:

<table>
<thead>
<tr>
<th></th>
<th>Section A</th>
<th>Section B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-2017 No Injury O Crashes</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>2015-2017 Section Crash Rate (R)*</td>
<td>0.54</td>
<td>7.21</td>
</tr>
<tr>
<td>2017 Comparable Rate (r) 1/</td>
<td>0.76</td>
<td>-</td>
</tr>
<tr>
<td>Deviation (R-r)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Spot Speed Data:

<table>
<thead>
<tr>
<th></th>
<th>Section A</th>
<th>Section B</th>
</tr>
</thead>
<tbody>
<tr>
<td>85% Speed</td>
<td>59 mph</td>
<td>56 mph</td>
</tr>
<tr>
<td>50% Speed</td>
<td>54 mph</td>
<td>50 mph</td>
</tr>
<tr>
<td>Pace Limits 2/</td>
<td>49 – 58 mph</td>
<td>46 – 55 mph</td>
</tr>
<tr>
<td>% in Pace</td>
<td>70%</td>
<td>72%</td>
</tr>
<tr>
<td>Maximum Speed</td>
<td>82 mph</td>
<td>83 mph</td>
</tr>
<tr>
<td>Posted Speed</td>
<td>55 mph (Stat.)</td>
<td>50 mph</td>
</tr>
<tr>
<td>% Exceeding Posted Speed</td>
<td>31%</td>
<td>48%</td>
</tr>
<tr>
<td>Computed 85th Speed 3/</td>
<td>59 mph</td>
<td>56 mph</td>
</tr>
<tr>
<td>Recommended Speed</td>
<td>55 mph (Stat.)</td>
<td>50 mph</td>
</tr>
</tbody>
</table>

1/ No comparable rate available
2/ Ten mile-per-hour range containing the largest number of sampled vehicles
3/ 85% Speed minus deviation
4/ Rural Minor Arterial – Clackamas Co. / Rural Major Collector – Marion Co.
5/ LTL for NB and SB at Arndt Rd
6/ 5' – 6' Bike Lane north of Arndt Rd, 0' – 2' paved shoulder south of Arndt Rd

**Factors Influencing Recommendation:** roadside culture, 85% speed and pace limits.
Appendix M – Photograph Page(s)

Typical Views

Umatilla-Stanfield Hwy (US 395) City of Stanfield/ODOT

June 11, 2001

1. Looking north from 150 feet north of Rosalynn Drive.

2. Looking south from 150 feet north of Rosalynn Drive.
Appendix N – School Speed Zone Record

The Region Traffic Engineer under delegated authority from the State Traffic-Roadway Engineer, has determined that a school speed limit of 20 MPH is appropriate on certain section(s) of the highway named below:

Highway Name: ____________________________________________

Highway Number: __________________________________________

Route Number: _____________________________________________

More specifically, school speed zoning, with the appropriate traffic control devices, shall be placed on the following roadway segment(s) of said highway in compliance with provisions of Subsection 1e of ORS 811.111:

<table>
<thead>
<tr>
<th>From (Description)</th>
<th>MP</th>
<th>To (Description)</th>
<th>MP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Region Traffic Engineer

Date
ODOT provides a safe and reliable multimodal transportation system that connects people and helps Oregon’s communities and economy thrive.

www.oregon.gov/ODOT