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900.01 General

Washington State's Strategic Highway Safety Plan (SHSP) establishes strategies to reduce traffic fatalities and serious injuries along state highways, and identifies utility objects, specifically utility poles, as significant roadside hazards. This chapter addresses the objective of eliminating utility object collisions in accordance with the SHSP and provides guidance on the placement of aboveground utilities within Washington State Department of Transportation (WSDOT) highway rights of way. Further information regarding the SHSP can be found at: <http://targetzero.com/pdf/targetzeroplan.pdf>

900.02 Clear Zone vs. Control Zone

Clear Zone is defined in the WSDOT *Design Manual* as “The total roadside border area, available for use by errant vehicles, starting at the edge of the traveled way and oriented from the outside or inside shoulder (in median applications) as applicable...”

From a technical standpoint, Control Zone and Clear Zone are synonymous in that the criteria and methodology used to calculate the two are identical. The distinction is one of policy in applying measures to achieve compliance. The differing policies are based on the recognition that accommodation of utility facilities within the state highway right of way is in the public interest when such use and occupancy do not adversely affect highway operations or safety. Control Zone Policy recognizes that practicable options for utility accommodation are sometimes limited to the right of way under WSDOT's control and allows for certain measures, including variance approvals of utility objects, with due consideration for the safety of highway users.

It is critical for WSDOT staff to work cooperatively with the utilities in implementing these guidelines during both accommodation and project delivery coordination, including helping utilities to understand the methodologies involved with Control Zone calculation and ensuring any necessary corrective action or other remedies specified in this chapter are implemented.

900.03 Control Zone Objective

The primary objective under WSDOT's Control Zone Policy is for all utility objects to be located outside of the Control Zone.

It is not always possible for utilities to achieve this objective for reasons that include physical/topographic limitations and unjustifiably high costs associated with relocating or undergrounding lines. Because of this, Control Zone Policy allows for authorizing variances for individual utility objects when justification can be demonstrated. These processes and criteria are described in [900.11](#).

900.04 Definitions

See [Appendix A](#), Glossary.

900.05 Application

All new utility objects will be constructed outside the Control Zone unless a variance is authorized. In addition, utilities will be required to relocate or mitigate existing objects within the Control Zone by addressing existing objects during WSDOT highway projects, utility reconstruction, and Franchise Renewal/Consolidation, or if the department determines that any existing objects must be relocated or mitigated for the safety of highway users.

(1) Utility Construction or Reconstruction

During utility construction or reconstruction, the utility will locate or relocate all utility objects to outside the Control Zone unless they are classified as Location III Objects or a variance is granted.

(2) Highway Improvement Projects

During the planning phase of state highway improvement projects, WSDOT will inform the utility that it is required to adjust utility objects that, either prior to or as the result of the project, are located in the Control Zone. For WSDOT highway safety projects (such as I2 projects), additional relocation or mitigation for objects outside the Control Zone may be necessary. In these cases, WSDOT will work with the utilities and adjoining property owners to determine available options and coordinate any necessary corrective action.

WSDOT will notify the utilities of upcoming highway improvement projects as early as possible. During the project development phase, the utility will be advised of the scheduled project advertising date and of those utility objects requiring relocation.

(3) Franchise Renewal and Consolidation

Prior to renewal or consolidation of franchises that include aboveground utility objects, the utility shall identify all Location I and Location II Objects within the proposed Franchise Renewal or Consolidation and submit a Corrective Action Plan and schedule of relocation, reclassification, or countermeasures for WSDOT review and approval. It is expected that a utility company will budget resources to accomplish the work necessary to renew franchise documents, including bringing its facilities in compliance with Control Zone requirements.

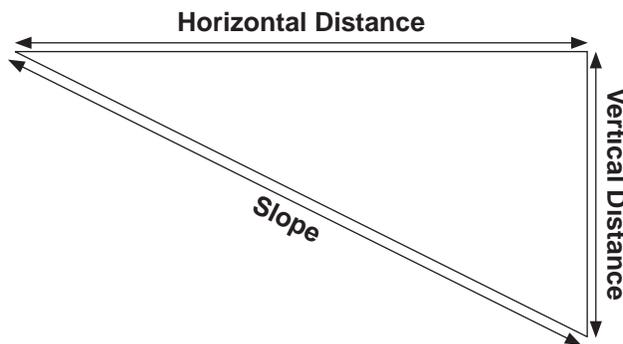
900.06 Control Zone Distance

The Control Zone distance for any particular highway segment varies according to the posted speed, traffic volumes, and sideslopes of the highway. This section contains methods and supporting information on determining the Control Zone distance for a particular location along the highway, including:

- General guidance for determining Control Zone distance.
- Different methods of Control Zone calculation and examples applicable to various highway geometric conditions (Conditions 1 through 6).
- Clear Zone Distance Table (see [Figure 900-9](#)) to be utilized in Control Zone calculation.
- Recovery Area Formula for use with Conditions 4 and 6.

(1) General Guidance for Determining Control Zone Distance

- All distances are measured from the edge of the through lane, extending outward perpendicular to the traveled way.
- Roadside is the distance measured from the edge of the through lane to the beginning of the backslope, as in Conditions 2, 3, and 4, and from the edge of the through lane to the toe of the slope, as in Condition 6.
- The Shoulder in the diagrams provided is understood to be the “Useable Shoulder”
- Slope ratios are expressed, in feet, as 3H:1V, 4H:1V, 5H:1V. The first number represents the horizontal distance and the second represents the vertical distance (see [Figure 900-1](#)).



Slope Ratio

Figure 900-1

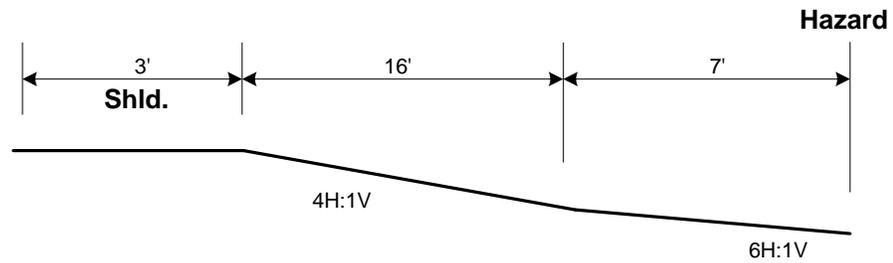
- For fill sections where the sideslope area includes multiple slope ratios of 4H:1V or flatter (Condition 5), the applicable slope ratio should be determined based on averaging the slope ratios according to the following method:

Slope Averaging

1. $A1/A2 + B1/B2 = C$
2. Slope Average = $\frac{A1+B1}{C}$

Where:

- A1 = width of the first slope section, measured from the beginning of the sideslope to the beginning of the next slope section
- A2 = horizontal value in the slope ratio corresponding with A1
- B1 = width of the next slope section, measured from the beginning of the section to the face of utility object
- B2 = horizontal value in the slope ratio corresponding with B1

Example:**Slope Averaging***Figure 900-2*

$$A1 = 16, A2 = 4, B1 = 7, B2 = 6$$

$$1. \quad 16/4 + 7/6 = 4 + 1.17 = 5.17$$

$$2. \quad 23/5.17 = 4.45 \text{ Average slope} = 4:1$$

- The Recovery Area Formula (see [900.07](#)) is normally used when the cut section foreslope (Condition 4) or the fill section sideslope (Condition 6) is steeper than 4H:1V, but not steeper than 3H:1V. When using the Recovery Area Formula to calculate the Clear Zone, if the highway section includes a ditch, slope data for the backslope must also be collected and factored into the formula.
- When auxiliary lanes for parking, vehicle pull-out, turning, or storage are present, the Control Zone begins at the edge of the through lane. When the Recovery Area Formula is used, the shoulder width distance will include these auxiliary lane widths.
- For managed access city streets that are part of state highways, cities may adopt Control Zone standards that vary from the requirements of this chapter (see [RCW 47.24.020](#)).

(2) Determining the Control Zone Distance for Various Highway Geometric Conditions

Control Zone distance at a particular location is determined using the following methods. Choose one of the six Conditions with matching highway section characteristics and follow the listed steps and instructions. The table referred to in this section is the Clear Zone Distance Table (see [Figure 900-9](#)).

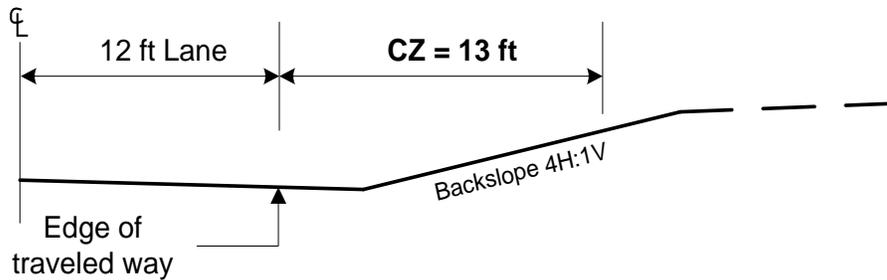
(3) Cut Sections: Conditions 1, 2, 3, and 4

(a) Cut Section: Condition 1

- No ditch
- Backslopes of 3H:1V or flatter

The Control Zone is read directly from the table based on posted speed, average daily traffic (ADT), and backslope.

- Step 1:** Locate posted speed
Step 2: Locate ADT
Step 3: Locate backslope
Step 4: Read CZ directly from table

Example:

- Step 1: Speed is 45 mph
 Step 2: Traffic is 1900 ADT
 Step 3: Backslope is 4H:1V
 Step 4: Read 13 feet directly from table
 Control Zone = 13 feet

Control Zone Cut Section: Condition 1*Figure 900-3***(b) Cut Section: Condition 2**

- Ditch foreslopes of 4H:1V or flatter
- For all backslopes, use 10H:1V cut section in calculations

The Control Zone distance is the greater of:

1. Read directly from the table based on posted speed, average daily traffic (ADT), and a backslope of 10H:1V.

Step 1: Locate posted speed

Step 2: Locate ADT

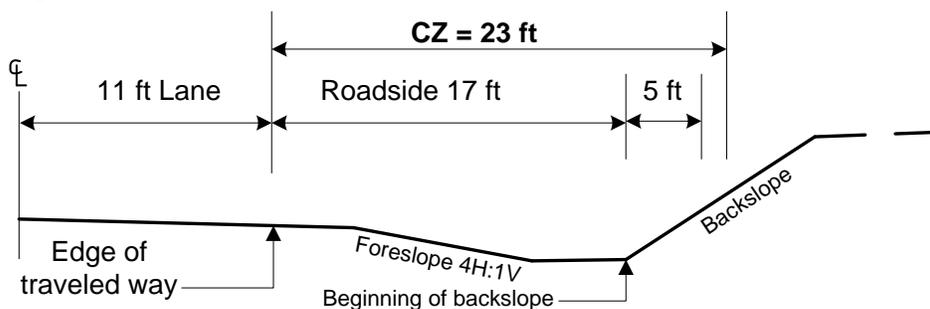
Step 3: Use backslope of 10H:1V

Step 4: Read directly from table

2. Five feet beyond the roadside width.

Step 1: Locate roadside width

Step 2: Add 5 feet to the roadside width

Example:

1. Step 1: Speed is 55 mph
 Step 2: Traffic is 4200 ADT
 Step 3: Foreslope 4H:1V or flatter: use a backslope of 10H:1V (from table)
 Step 4: Read 23 feet directly from table
2. Step 1: Roadside width is 17 feet
 Step 2: 17 feet plus 5 feet = 22 feet

Solution = Greater of: 1. = 23 feet or 2. = 22 feet

Control Zone = 23 feet

Control Zone Cut Section: Condition 2*Figure 900-4*

(c) Cut Section: Condition 3

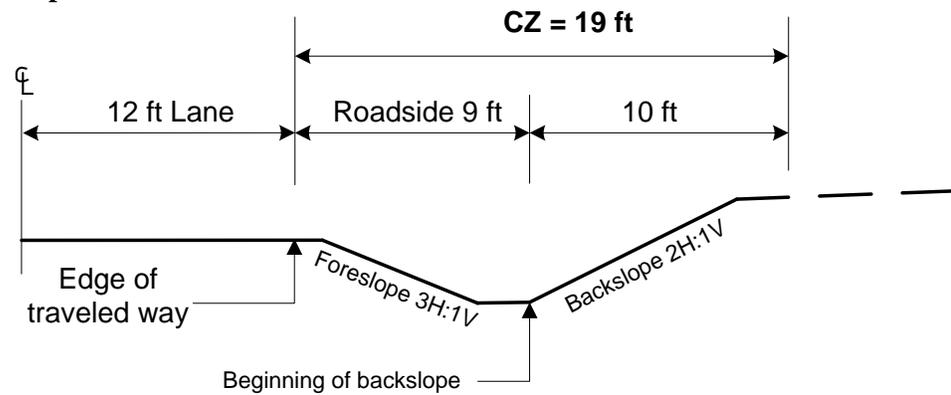
- Ditch foreslope is steeper than 4H:1V
- Ditch backslope is steeper than 3H:1V

The Control Zone distance is established at 10 feet beyond the beginning of backslope (roadside width).

Step 1: Locate roadside width

Step 2: Add 10 feet to the beginning of backslope (roadside width)

Example:



Step 1: Roadside width is 9 feet

Step 2: 9 feet plus 10 feet = 19 feet

Control Zone = 19 feet

Control Zone Cut Section: Condition 3

Figure 900-5

(d) Cut Section: Condition 4

- Ditch foreslope is steeper than 4H:1V, but not steeper than 3H:1V*
- Ditch backslope is 3H:1V or flatter

*Note: For steeper slopes, the Recovery Area Formula may be used as a guide if the difference in elevation between the edge of travelled way and bottom of ditch is 10 feet or less.

The Control Zone distance is the recovery area calculated using the Recovery Area Formula (see 900.07).

Step 1: Locate posted speed

Step 2: Locate ADT

Step 3: Locate backslope

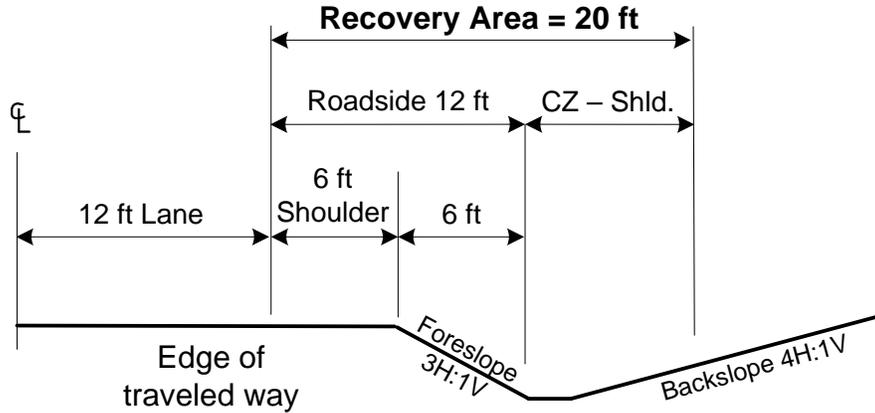
Step 4: Read CZ distance from table

Step 5: Locate roadside width

Step 6: Locate shoulder width

Step 7: Use Recovery Area Formula

Example:



- Step 1: Speed is 40 mph
 - Step 2: Traffic is 3000 ADT
 - Step 3: Backslope is 4H:1V
 - Step 4: Read from table, CZ is 14 feet
 - Step 5: Roadside width is 12 feet (6-foot shoulder + 6-foot horizontal distance)
 - Step 6: Shoulder width is 6 feet
 - Step 7: (12 feet) + (14 feet – 6 feet) = 20 feet
- Control Zone = 20 feet

Control Zone Cut Section: Condition 4
Figure 900-6

(4) Fill Section: Conditions 5 and 6

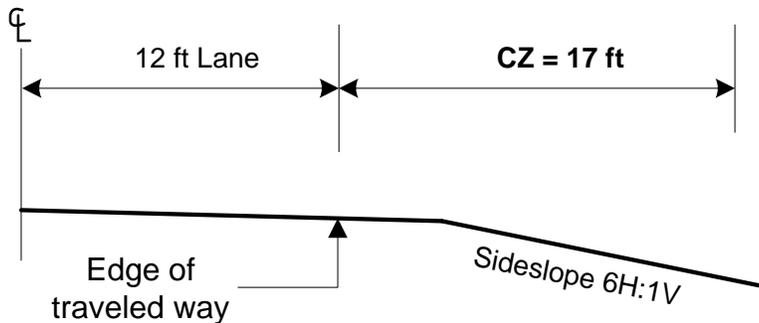
(a) Fill Section: Condition 5

- Sideslope is 4H:1V or flatter

The Control Zone distance is read directly from the table based on posted speed, sideslope, and average daily traffic (ADT).

- Step 1:** Locate posted speed
- Step 2:** Locate ADT
- Step 3:** Locate sideslope (use slope averaging formula; see [900.06\(1\)](#) when sideslope ratio varies)
- Step 4:** Read CZ directly from table

Example:



- Step 1: Speed is 50 mph
 - Step 2: Traffic is 320 ADT
 - Step 3: Sideslope is 6H:1V
 - Step 4: Read 17 feet directly from table
- Control Zone = 17 feet

Control Zone Fill Section: Condition 5
Figure 900-7

(b) Fill Section: Condition 6

- Sideslope is 3H:1V or steeper*

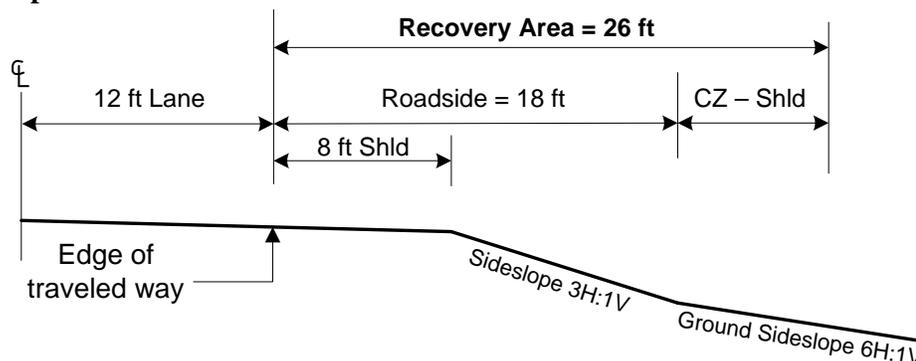
The Control Zone distance is the recovery area, calculated using the Recovery Area Formula (see 900.07).

*Note: Recovery Area Formula normally applies to slopes steeper than 4H:1V, but not steeper than 3H:1V. For steeper slopes, the Recovery Area Formula may be used as a guide if the embankment height is 10 feet or less.

For installations where the sideslope is steeper than 3H:1V and the fill height is greater than 10 feet, consult Figure 900-16, Guidelines for Embankment Barrier. If embankment barrier is not recommended, Control Zone is the Recovery Area.

Recovery Area = shoulder width + horizontal nonrecoverable sideslope distance (roadside width) + (Control Zone distance from table – shoulder width)

- Step 1:** Locate posted speed
Step 2: Locate ADT
Step 3: Locate existing ground sideslope
Step 4: Read CZ distance from table
Step 5: Locate roadside width
Step 6: Locate shoulder width
Step 7: Use Recovery Area Formula

Example:

- Step 1: Speed is 40 mph
 Step 2: Traffic is 3000 ADT
 Step 3: Existing ground sideslope is 6H:1V
 Step 4: Read from table, CZ is 16 feet
 Step 5: Roadside width is 18 feet
 Step 6: Shoulder width is 8 feet
 Step 7: (18 feet) + (16 feet – 8 feet shld) = 26 feet
 Control Zone = 26 feet

Note: For positive (+) ground sideslopes, use Condition 3 or 4.

Control Zone Fill Section: Condition 6*Figure 900-8*

Clear Zone Distances for State Highways Outside Incorporated Cities*
(In feet, from edge of traveled way**)

Posted Speed mph	Average Daily Traffic	Cut Section (Backslope) (H:V)						Fill Section (H:V)					
		3:1	4:1	5:1	6:1	8:1	10:1	3:1	4:1	5:1	6:1	8:1	10:1
35 or Less		The Control Zone distance is 10 feet											
40	Under 250	10	10	10	10	10	10	***	13	12	11	11	10
	251-800	11	11	11	11	11	11	***	14	14	13	12	11
	801-2000	12	12	12	12	12	12	***	16	15	14	13	12
	2001-6000	14	14	14	14	14	14	***	17	17	16	15	14
	Over 6000	15	15	15	15	15	15	***	19	18	17	16	15
45	Under 250	11	11	11	11	11	11	***	16	14	13	12	11
	251-800	12	12	13	13	13	13	***	18	16	14	14	13
	801-2000	13	13	14	14	14	14	***	20	17	16	15	14
	2001-6000	15	15	16	16	16	16	***	22	19	17	17	16
	Over 6000	16	16	17	17	17	17	***	24	21	19	18	17
50	Under 250	11	12	13	13	13	13	***	19	16	15	13	13
	251-800	13	14	14	15	15	15	***	22	18	17	15	15
	801-2000	14	15	16	17	17	17	***	24	20	18	17	17
	2001-6000	16	17	17	18	18	18	***	27	22	20	18	18
	Over 6000	17	18	19	20	20	20	***	29	24	22	20	20
55	Under 250	12	14	15	16	16	17	***	25	21	19	17	17
	251-800	14	16	17	18	18	19	***	28	23	21	20	19
	801-2000	15	17	19	20	20	21	***	31	26	23	22	21
	2001-6000	17	19	21	22	22	23	***	34	29	26	24	23
	Over 6000	18	21	23	24	24	25	***	37	31	28	26	25
60	Under 250	13	16	17	18	19	19	***	30	25	23	21	20
	251-800	15	18	20	20	21	22	***	34	28	26	23	23
	801-2000	17	20	22	22	23	24	***	37	31	28	26	25
	2001-6000	18	22	24	25	26	27	***	41	34	31	29	28
	Over 6000	20	24	26	27	28	29	***	45	37	34	31	30
65	Under 250	15	18	19	20	21	21	***	33	27	25	23	22
	251-800	17	20	22	22	24	24	***	38	31	29	26	25
	801-2000	19	22	24	25	26	27	***	41	34	31	29	28
	2001-6000	20	25	27	27	29	30	***	46	37	35	32	31
	Over 6000	22	27	29	30	31	32	***	50	41	38	34	33
70	Under 250	16	19	21	21	23	23	***	36	29	27	25	24
	251-800	18	22	23	24	26	26	***	41	33	31	28	27
	801-2000	20	24	26	27	28	29	***	45	37	34	31	30
	2001-6000	22	27	29	29	31	32	***	50	40	38	34	33
	Over 6000	24	29	31	32	34	35	***	54	44	41	37	36

*This figure also applies to limited access state highways in cities and median areas on managed access state highways in cities. (See the [Design Manual](#) for guidance on managed access state highways within incorporated cities.)

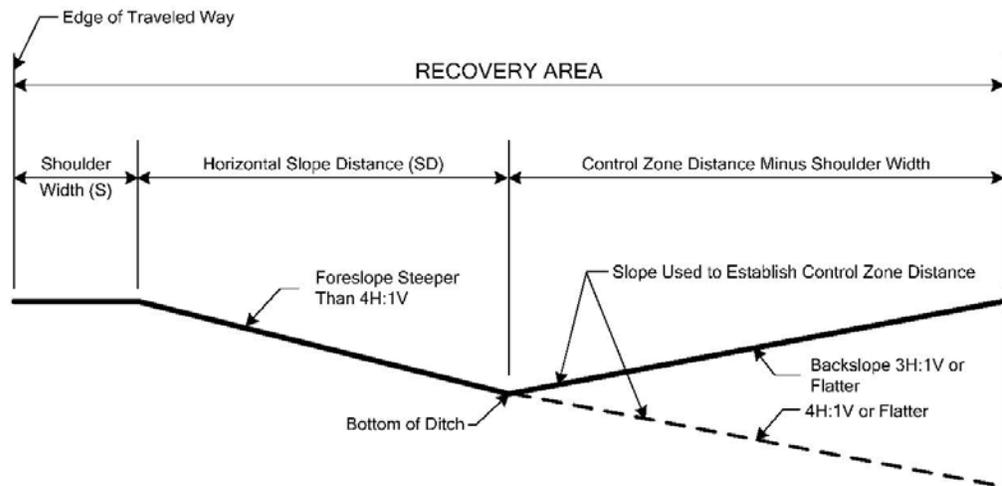
**Traveled way: The portion of the roadway intended for the movement of vehicles, exclusive of shoulders and lanes for parking, turning, and storage for turning.

***When the fill section slope is steeper than 4H:1V, but not steeper than 3H:1V, the Control Zone distance is modified by the Recovery Area Formula and is referred to as the recovery area. The basic philosophy behind the Recovery Area Formula is that a vehicle can traverse these slopes but cannot recover (control steering); therefore, the horizontal distance of these slopes is added to the Control Zone distance to form the recovery area.

Clear Zone Distance Table
Figure 900-9

900.07 Recovery Area

Note: [Figure 900-10](#) clarifies the Recovery Area Formula.



Formula:
 Recovery Area =
 (shoulder width) + (horizontal distance) + (Control Zone distance – shoulder width)

Recovery Area
 Figure 900-10

Example

Fill Section (Slope 3H:1V or Steeper)			
Conditions	Speed – 45 mph Traffic – 3000 ADT Slope – 3H:1V		
Criteria	Slope 3H:1V – Use Recovery Area Formula		
RECOVERY AREA = 29 ft			
Recovery Area = (shoulder width) + (horizontal distance) + (Control Zone distance – shoulder width)			
29 feet =	8 +	12 +	(17 – 8)

Recovery Area Calculation
 Figure 900-11

900.08 Supplemental Utility Design Information

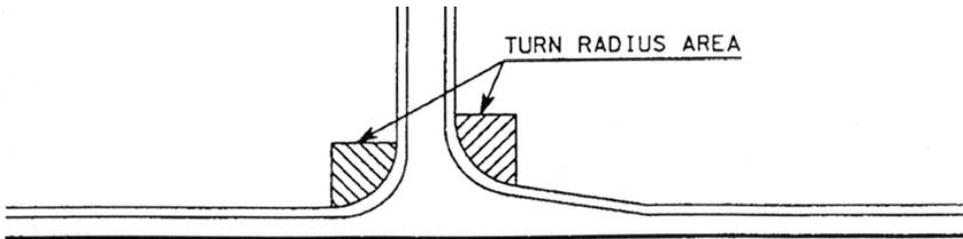
The following items are provided as a guide to the utility industry for consideration during design and maintenance of its facilities.

(1) Horizontal Curves

If it is not necessary, do not place utility objects on the outside of horizontal curves.

(2) Public Grade Intersections

When possible, design the facility placing utility objects outside the turn radius area of public grade intersections (see [Figure 900-12](#)). If this is not possible, the facility should, at a minimum, be placed outside the Control Zone in relation to the state highway. If the intersecting road is a local agency roadway with a stop condition at the state highway intersection, the facility must be placed at least 10 feet from the edge of the travelled way for the portion of the local agency roadway leg within WSDOT ownership. If WSDOT ownership of the local agency roadway leg exceeds more than 250 feet back from the stop bar at the highway intersection, contact the HQ Utilities Unit for additional guidance. Applicable local agency standards shall apply outside of WSDOT-owned right of way.



Intersection Radius Area

Figure 900-12

(3) Placement of Utility Objects Behind Barriers

Do not place objects within the deflection distance of any barrier used.

(4) Service Poles

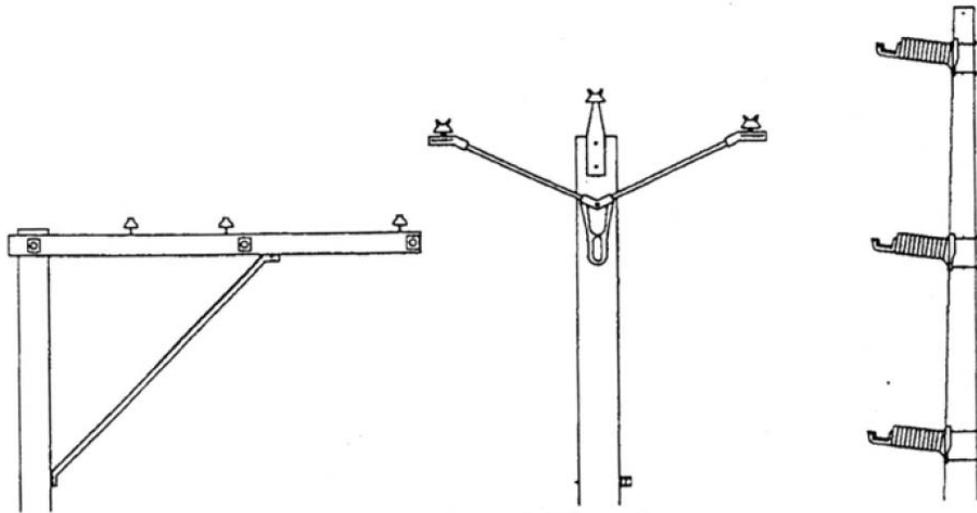
Place service poles on owners' property, not state right of way. Consideration should be given to placing the service pole as far as possible from the highway right of way—at a minimum, outside the Control Zone.

(5) Pole Design

When Control Zone requirements within the highway right of way are tight, consideration should be given to alternative pole designs that may allow construction at or close to the right of way line (see [Figure 900-13](#)).

(6) Guy Poles/Wires

Guy poles and/or wires are not to be installed between the pole line and highway lanes unless the guy pole/wire is outside the Control Zone. Guy and anchor wires are considered hazard objects.

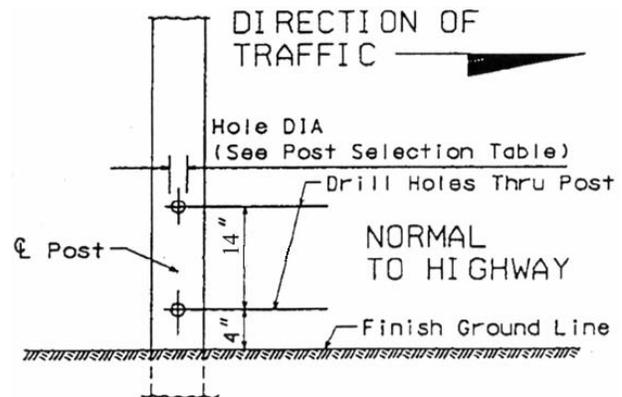


Alternative Pole Designs
Figure 900-13

(7) Utility Location Markers

Markers used to identify or protect utility facilities, such as a telephone pedestal, may not be larger than a 4 x 4 (16 sq. inches) wood post unless drilled to accommodate breakaway. Solid markers, such as concrete, may not be used. Telephone pedestals that meet the breakaway criteria are acceptable within the Control Zone.

Post Size	Hole DIA
4 x 4	—
4 x 6	1½ inch
6 x 6	2 inch
6 x 8	3 inch



Note: Posts that are larger than 6 x 8 require barrier protection when located within the Control Zone.
(See the [Standard Plans](#) for further guidance.)

Wood Post Breakaway Details
Figure 900-14

900.09 Project Applications

(1) New Utility Facility Construction

- (a) The utility constructs a new line or extends an existing line within highway right of way.
1. New utility objects will be constructed outside of the Control Zone unless a variance is approved.
 2. The utility will submit to WSDOT the following data if applicable:
 - Franchise/Franchise Amendment/Permit applications.
 - Mitigation proposals for existing objects, if applicable, including plans.
 - Submittals supporting variance, if applicable, as specified in [900.11](#).
 - A completed copy of the Utility Object Relocation Record listing new utility objects.

(2) Existing Utility Reconstruction

- (a) The utility replaces twenty-five percent (25%) or more of the existing poles or towers within any mile. Periodic pole or tower replacement is not included.
1. Utility objects will be relocated outside of the Control Zone unless a variance is approved.
 2. The utility will submit to WSDOT the following data if applicable:
 - Franchise Amendment/Permit applications.
 - Mitigation proposals for existing objects, including plans.
 - Submittals supporting variance, as specified in [900.11](#).
 - A copy of the completed Utility Object Relocation Record.

(3) Utility Relocation Required by WSDOT Improvement Projects

- (a) Conditions: WSDOT may address individual safety items.
1. WSDOT will conduct an accident analysis to determine spot safety improvement needs.
 2. Any individual Location I or Location II Objects that demonstrate a need for adjustment will be relocated outside of the Control Zone or mitigated (see [900.03](#)) in conjunction with the project.
 3. No consideration for variance will be given until all alternative measures have been investigated and determined not feasible.
 4. At the time the project preliminary estimate is prepared, WSDOT will notify the utility of the project and request that the utility commit to a course of action.
 5. The utility will submit to WSDOT the following data if applicable:
 - Franchise/Franchise Amendment/Permit applications.
 - Mitigation proposals for existing objects, if applicable, including plans.
 - Submittals supporting variance, if applicable (see [900.11](#)).
 - A copy of the completed Utility Object Relocation Record.

- (b) Conditions: WSDOT addresses safety items.
1. The utility will adjust all identified Objects to comply with Control Zone requirements.
 2. No consideration of variance will be given until all alternative measures have been investigated and determined not feasible.
 3. At the time the project preliminary estimate is approved, WSDOT will notify the utility of the project scope and the Location I Object and Location II Object responsibility.
 4. When the project Design Summary is completed, WSDOT will request that the utility adjust all Location I Objects and selected Location II Objects.
 5. The utility will submit to WSDOT the following data if applicable:
 - Franchise Amendment/Permit applications.
 - Mitigation proposals for existing objects, if applicable, including plans.
 - Submittals supporting variance, if applicable (see [900.11](#)).
 - A copy of the completed Utility Object Relocation Record.

900.10 Completing the Utility Object Relocation Record

A completed Utility Object Relocation Record (see [Appendix B](#)) form shall accompany any utility submittals to WSDOT as part of a Franchise or Permit Amendment, Franchise Renewal/Consolidation, or highway project-related relocation coordination when objects exist or are proposed to be in Location I or II. Following is the information needed on the form.

(1) Form Headings

Enter the utility owner and location and other identification information on the top left side of the form.

Enter the milepost limits beside the proper type of construction on the top right side of the form.

(2) Existing Object Information

Identify the utility object by entering the milepost, pole or object number, location left or right of highway centerline (left or right is determined facing the increasing highway milepost), type of object (i.e., transmission, guy), and whether it is owned, jointly owned, or leased.

(3) Roadway Data

The speed, average daily traffic (ADT), and the right of way width from centerline can be obtained from the Region Utilities Office. Also, ADTs can be found in the Annual Traffic Report and highway speed in the State Highway Log. These can be obtained at the [Transportation Data and GIS](#) Office website:

www.wsdot.wa.gov/mapsdata/tdgo_home.htm

(4) Field Measurements

Enter the slope and distance measurements required to calculate the Control Zone distances (see [900.06](#)).

(5) Control Zone Calculations

From the Control Zone Distance section (see [900.06](#)):

- Enter the Condition number that was used to calculate the Control Zone distance.
- Enter the calculated Control Zone distance.
- Enter whether the object is Location I or Location II.

Notice that the Location III Objects do not need to be entered on the form.

(6) Planned Object Correction

This section is used by the utility to record, on the Utility Object Relocation Record form (see [Appendix B](#)), its decision on how the utility object will be corrected.

- For utility objects that will be relocated outside the Control Zone, (see [900.03](#)), mark the relocated distance in the Reloc. Dist column.
- For utility objects that will be corrected with the use of an alternative measure, mark the Alternate Measure column.
- If mitigation is the alternative measure chosen, justification for the use of mitigation and a plan showing proposed mitigation are required for WSDOT review and approval.
- For individual utility Location I Objects that cannot be relocated outside the Control Zone or corrected with the use of an alternative measure, and for which a variance will be requested, mark the LOC I VAR. column.
- To be considered for a variance, the utility must submit to WSDOT a request for a variance together with the required justification (see [120.14](#)).

For individual utility Location II Objects that cannot be relocated outside the Control Zone or corrected with the use of an alternative measure and for which a variance will be requested, mark the “LOC II Variance” column.

900.11 Variance

WSDOT recognizes that conditions may arise that make it impracticable to comply with Control Zone requirements. Variances from such compliance may be allowed on a case-by-case basis when clearly justified, as specified in the following sections.

Examples of conditions rendering compliance impracticable include:

- Inadequate right of way to accommodate utility objects outside the Control Zone.
- Physical limitations due to terrain or topography.
- Unjustifiably high costs to relocate or underground the utility facility.

(1) Utility Object Location Category Reference

(a) Location I Utility Objects

Fixed utility objects located within the Control Zone in the following areas:

- The outside of horizontal curves where advisory speeds for the curve are 15 mph or more below the posted speed limit of that section of highway.
- Within the turn radius area of public road grade intersections.

- Where a barrier, embankment, rock outcropping, ditch, or other roadside feature is likely to direct a vehicle into a utility object.
- Closer than 5 feet horizontal beyond the edge of the usable shoulder.

(b) Location II Utility Objects

Fixed utility objects located within the Control Zone that are not classified as Location I or Location III Objects.

(c) Location III Utility Objects

Fixed utility objects that are:

- Located outside the Control Zone.
- Within the Control Zone and mitigated by an alternate countermeasure consistent with the state's *Utilities Accommodation Policy*.

900.12 Variance Request for Location I Objects

Compliance with the WSDOT Control Zone Policy requires adjustment of all Location I Objects outside of the Control Zone. Exceptions may be granted only after an independent analysis and recommendation is completed by a WSDOT review team, including the Region and HQ Utilities Engineers, in consultation with WSDOT subject matter experts as appropriate for the location. Reviews for this purpose will consider relevant highway operational and geometric factors, accident history, and assessment of possible mitigation strategies. Exceptions will be allowed only if it is determined, at the department's discretion, that no reasonable alternative measures are available, with safety being the primary consideration. These requests will be assessed on a case-by-case basis, and will require specific information and documentation from the utility as determined by the review team. Documentation for the review team's investigation and recommendations should be included in the franchise or permit file.

The Utility will be required to complete a Control Zone Variance Request – Justification Questionnaire to initiate any requests for Location 1 variances. The Region Utilities Engineer will determine any additional information necessary to complete Location I variance requests after review of the Questionnaire.

900.13 Variance Request for Location II Objects

The primary objective for Location II Objects is to relocate them outside of the Control Zone. If achieving this objective is not possible or practicable, the Region Utilities Engineer may authorize variance requests for Location II Objects based on the justification criteria described below.

There are two categories of Location II Objects addressed in this section:

- Location II Objects that have no recorded accident history and are not located within an area of concentrated utility object crashes; and
- Location II Objects that do have recorded accident history, are located within an area of concentrated utility object crashes, or are otherwise determined by WSDOT to be appropriate for additional justification, as specified for this category of objects.

(1) Location II Objects With No Accident History

The following covers Location II Objects that have no accident history and are not located within an area of concentrated utility object crashes.

The Utility will be required to complete a Control Zone Variance Request – Justification Questionnaire to initiate any requests for Location II variances, or to use the Roadside Safety Analysis Program (RSAP) to support the justification.

For this category of Location II Objects, Control Zone Variance Request Justification may be substituted with an analysis of alternative mitigation strategies using the RSAP, described below, to support selection of the most effective mitigation strategy.

Alternative mitigation strategies include:

1. Placing the utility line underground.
2. Reducing the number of utility objects through joint use, increasing span lengths, and/or placing utility objects on only one side of the road.
3. Increasing the lateral offset of utility objects from the edge of the traveled way to the extent possible.
4. Locating the object within an inaccessible area such as toward the top or on the top of cut slopes.
5. Installing protective devices such as guardrail, berms, traffic barriers, or impact attenuators. (Refer to [Design Manual Chapter 1600](#) for Guidelines for Embankment Barrier).
6. Using a breakaway design.
7. Other location-specific measures that may be evident or identified by WSDOT.

RSAP analysis can support justification for a particular alternative; however, it is not necessarily the deciding factor in WSDOT's review. Objects subject to RSAP analysis will be independently reviewed by the Region Utilities Engineer to identify (1) any unique location characteristics that should be more closely considered beyond the minimum required justification, and/or (2) opportunities for mitigation measures not considered in the application.

(2) Location II Objects With Accident History

The following covers Location II Objects with accident history, that are located within an area of concentrated utility object crashes, or that are determined by WSDOT to be appropriate for additional justification.

A completed Control Zone Variance Request – Justification Questionnaire should be submitted to initiate any requests for Location II variances.

(3) Roadside Safety Analysis Program

The Roadside Safety Analysis Program (RSAP) is a benefit/cost analysis program developed under NCHRP Project 22-27, and endorsed in the AASHTO *Roadside Design Guide*, as a tool for comparative analysis of alternative site-specific treatments to enhance roadside safety. The intent of the program is to identify the most cost-effective engineering treatments to address roadside safety, and compare the benefits and costs of implementing multiple alternatives.

RSAP analyzes alternatives based on certain factors and location characteristics such as highway operation; installation and maintenance costs; traffic growth; project life; probable collision frequency and severity; and the expected reduction in the future cost of crashes associated with each alternative.

The default values provided by the RSAP system should be used, except for the following factors:

- **Traffic Growth Rate:** Obtain percentage of annual growth from the Region Traffic Office or Transportation Data and GIS Office.
- **Cost of installation, repair, maintenance, salvage value, and life of object:** RSAP provides default values, but actual values should be used if known.

Note: Additional guidance specifying required RSAP submittals will be added to Chapter 9. HQ Utilities is currently coordinating training by the program developer and will establish this additional guidance once training is complete.

The RSAP program and information regarding its use may be accessed at the following website: <http://rsap.roadsafellc.com>