## Contents


| | Page |
|---|---|
| ***I — Introduction*** | 2 |
| ***II — Rules*** | 2 |
| ***III — Control Zone Guidelines-Utilities*** | 2 |
| Introduction | 2 |
| Purpose | 3 |
| Definitions | 3 |
| Applications | 5 |
| Variance | 7 |
| Criteria | 8 |
| Control Zone Distance Table | 9 |
| Examples — Use of Control Zone Table and Criteria | 11 |
| ***Supplement Information — Utility Design Considerations*** | 13 |
| ***Attachment A — Process to Determine if a Location 2 Object is Cost Effectivce to Relocate*** | 16 |

# Control Zone Guidelines — Utilities

# *Appendix 5*

I. **Introduction**

A. Purpose

To provide guidance pertaining to procedures to be used to process requests for utility occupancy of Washington State Department of Transportation (WSDOT) rights of way.

II. **Rules**

A. Utility facilities are to be accommodated in accordance with the guidelines in Part III, below.

B. It is not WSDOT's intent to force utilities off the rights of way, therefore, it is critical for headquarters and districts to work cooperatively with the utilities in implementing these guidelines. It will be necessary for the districts to help the utilities understand WSDOT terminology, traffic data, and sideslope calculations.

C. It will be necessary for the districts to work closely with the utilities in the following ways:

1. Assisting the utilities in determining how their new construction or reconstruction facility can be outside the control zone, covered by a variance or designated as Location III Objects.

2. Assisting the utilities on highway projects to ensure they are not adjusting their facility beyond the scope of the highway work.

3. Assisting the utilities with franchise renewals or consolidations and ensuring that they are adjusting or protecting those facilities where corrective action is necessary.

D. It is expected that a utility company that has a franchise(s) expiring prior to January 1, 1993, as indicated in the previous guidelines, would have budgeted resources to accomplish the work necessary to comply with the guidelines. Therefore, those utilities should be able to begin work in accordance with their mitigation plan on the date they were scheduled to start under the franchise renewal trigger method.

Beginning January 1, 1992, the remaining utility companies will begin the mitigation of Location I and II objects in accordance with their plan.

III. **Control Zone Guidelines — Utilities**

**Introduction**

It has been recognized that it is in the public interest for utility facilities to jointly use the right of way of public roads and streets when such use and occupancy does not interfere with the primary purpose of the highway. As a result, the highways right of way can be used to transmit and distribute utility services for the benefit of the public as well as to serve conventional highway needs.

WSDOT is charged with overall supervision and administration of the state's highway system. This includes planning, operation, design, construction, economics, safety, and accommodation of utility facilities on state public highway right of way. Guidelines which govern where utilities may be placed within the public right of way must be developed.

These guidelines will be reviewed with the utility industry every two years for workability and updated as the need arises.

**Purpose**

It is WSDOT's policy to accommodate utilities within the highway right of way when such use of the right of way is consistent with the provisions of federal, state, or local laws or regulations.

These guidelines are developed to provide direction as to when and how utilities may use WSDOT's public highway right of way. It is not the intention of these guidelines to force utilities to relocate outside the state highway right of way. Safety improvements accomplished as a result of these guidelines will help maintain highway safety in the future.

Utility services are in the public's interest and every effort should be made to accommodate utilities, as cost-effectively as possible, while maintaining public safety.

These guidelines are in accordance with the American Association of State Highway and Transportation Officials (AASHTO), National Research Council, the Federal Highway Administration (FHWA), and WSDOT philosophies.

**Definitions**

*Alternate Countermeasures*

Alternatives to the relocation of nontraversable utility objects to outside the Control Zone, including:

- Putting utility lines underground.
- Increasing the lateral offset of utility objects from the edge of the traveled way.
- Locating to an inaccessible area, such as toward the top or on top of cut slopes.
- Reducing the number of utility objects through joint use, increased span lengths and/or placing utility objects on only one side of the road.
- Installing protective devices, such as berms, guardrail, traffic barriers or impact attenuators.
- Using a breakaway design.

*Annual Mitigation Target*

The number of a utility's existing Control Zone objects to be relocated or mitigated in a given year, to be established by WSDOT and the utility based on the following formula:

$$\frac{[(M \times 5.280 \text{ feet})/N\text{feet}] \times (Z\%)}{Y}$$

Where: M = The number of miles of utility owned above-ground facilities located within highway right of way.

N = The utility's average line span length.

Z = Percent of the object's owned by utility that are estimated to be in Location I or II.

Y = Number of years, 50 maximum, for compliance with the guidelines.

A utility shall make every effort to achieve its Annual Mitigation Target (AMT). If a utility does not achieve its AMT in a particular year, the number of objects that are to be relocated or mitigated in the following year shall be increased so that the average number of objects that are relocated or mitigated over time equals its AMT.

If a utility exceeds its AMT in a particular year, the utility may reduce the number of objects that are to be relocated or mitigated in the following year so that the average number of objects that are relocated or mitigated over time equals its AMT.

The utility will report the number of objects that are relocated or mitigated to WSDOT for the purpose of tracking the utility's progress in meeting its AMT.

The AMT may be recalculated if the utility can demonstrate that there are fewer objects to be moved or mitigated because of Location II objects being reclassified and/or conditions change.

*Auxiliary Lane*

An auxiliary lane is that portion of the roadway adjoining the traveled way for parking, speed change, turning, storage for turning, weaving, truck climbing, or for other purposes supplementary to the traveled way.

*Control Zone*

That roadside area as defined by the "Control Zone Distance Table" within the highway right of way in which placement of utility objects is controlled.

*Cost-Effectiveness Selection Procedure*

A rational methodology developed by AASHTO for comparing roadside improvement alternatives. AASHTO's methodology, published as Appendix A to its 1989 Roadside Design Guide, can be used manually or through a computer program that is available. It allows its user to predict the total costs associated with specific traffic and roadway conditions and to select the most appropriate alternative. See Attachment A.

*Location I Objects*

Utility objects located within the Control Zone in the following areas are normally considered Location I Objects unless classified as a Location III Object:

- Outside of horizontal curves where advisory signed speeds for the curve are 15 or more MPH below the posted speed limit of that section of highway. The Control Zone distance is established using the posted speed limit of the highway, not the advisory speed limit.
- Within the turn radius area of public grade intersections. See item 2, "Supplemental Information Utility Design Consideration."
- Where a barrier, embankment, rock outcropping, ditch or other roadside feature is likely to direct a vehicle into a utility object.
- Closer than five feet horizontal beyond the edge of the usable shoulder.

*Location II Objects*

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

*Location III Objects*

Utility objects located outside the Control Zone, objects within the Control Zone that are mitigated by an Alternate Countermeasure, or Location II objects that have been classified as Location III Objects using the Cost Effectiveness Selection Procedure. See Attachment A.

*Slope: Back*

The slope extending from the bottom of a ditch away from the highway.

*Slope: Fore*

The slope extending from the highway shoulder into the ditch.

*Traveled Way*

That portion of the roadway intended for the movement of vehicles, exclusive of shoulders, auxiliary lanes, and detour routes.

*Usable Shoulder*

That portion of the roadway extending beyond the edge of the traveled way, or auxiliary lanes when provided, that can be used when a driver makes an emergency or parking stop. The usable shoulder is the average width being used as a shoulder along a section of highway, exclusive of intermittent widened areas but not to exceed ten feet in width.

*Utility Object*

Utility objects are defined for the purpose of these guidelines as utility facilities that exist above ground and are located within state highway right of way.

*Utility Reconstruction*

Where more than 50 percent of the poles or towers within any mile are replaced. Does not include periodic pole or tower replacement.

**Application**

Under the Control Zone Guidelines, all new utility objects will be constructed outside the Control Zone unless they are covered by a variance (discussed below) or are Location III Objects. In addition, utilities will be responsible for the systematic treatment of existing utility objects that are located in the Con-

trol Zone. Each utility will be required to relocate or mitigate a certain number of existing objects each year equal to its AMT.

A utility can meet its AMT by addressing existing objects during WSDOT highway projects, Utility Reconstruction, and through a program of systematic studies of its objects.

1. Utility Reconstruction

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

   The number of objects counted toward the AMT will be determined by counting the number of Location I and II Objects that are relocated or mitigated to qualify as Location III Objects.

2. State Highway Improvement Projects

   During the planning phase of state highway improvement projects, WSDOT will inform the utility that they may have to or must adjust utility objects that, either prior to or as the result of the project, are located in the Control Zone.

   a. For projects where the state does not address safety items, and the utility is currently meeting its AMT, the utility has the option to either adjust the utility object before or during the project or in accordance with its systematic studies.

      Any individual Location I Objects which demonstrate a need for adjustment will be adjusted before or during the project.

   b. For projects where the state addresses safety item(s), the utility shall adjust Location I Objects and may be required to adjust Location II Objects to qualify as Location III Objects. Objects requiring relocation to Location III Objects in order for the project to be completed (e.g., because the highway is to be widened), should be adjusted before or during the project.

      If it is determined, through an engineering analysis, that a Location I Object cannot be moved to Location III or mitigated, a variance may be granted.

   Through an engineering analysis and the "Cost Effective Selection Procedure" it will be determined whether a Location II Object will be moved to Location III, or mitigated or reclassified.

   WSDOT will notify the utilities of upcoming highway improvement projects as early as possible. As the project is planned, the utility will be advised of the tentative scheduled project advertising date and of those utility objects requiring relocation. When available, a copy of the Roadside Clear Zone Inventory sheet will be provided.

   The number of adjusted utility objects counted toward the AMT will be determined by counting the number of Location I and II Objects that are relocated or mitigated.

3. Systematic Studies

   To meet that portion of the Annual Mitigation Target that will not be addressed through highway improvements or utility reconstruction, each utility will establish a program for systematically studying its Control Zone objects. Under this program, the utility will estabish a yearly plan for achieving the balance of the Annual Mitigation Target. In addition to trying to schedule object mitigation or relocation to coincide with regular utility system improvements and highway improvements, the utility shall give special consideration to one or more of the following factors to accomplish a systematic approach in the overall best public interest:

   a. ADT

      WSDOT will furnish data to the utility regarding ADT on the roads in its service area. Starting with the roads with highest ADT, the utility will organize its Location I and II Objects along those roads into groups that can be addressed as part of the utility's program to meet its Annual Mitigation Target.

   b. Accident Data

      WSDOT will provide the utility with all of its data about accidents involving the utility's objects. The utility will include those objects in its yearly schedules for achieving the AMT.

      By giving this information to the utility, WSDOT will not be advising the utility of a hazardous condition, nor will it be requiring action on the part of the utility. The information will be provided to assist the utility in its study of Control Zone objects.

**Variance**

WSDOT recognizes that conditions may arise which make it impractical to comply with the maximum Control Zone. Variances from such compliance may be allowed when justified by suitable utility engineering studies considering traffic safety.

Examples of conditions rendering compliance impractical include:

- WSDOT right of way that is not adequate to accommodate utility objects outside the Control Zone; and
- Segments of utility facilities that, due to terrain or other features, do not warrant being located in full compliance with the maximum Control Zone.

In these situations, a variance, if adequately supported, may be granted by WSDOT to allow utility objects to remain or to be installed within the Control Zone.

Any variance request must include, as a minimum, the following support data:

- Reason object should not be located as Location III.
- Evidence that installation in an alternate location outside the Control Zone or right of way is extremely difficult because of installation problems and/ or is unreasonably costly (show detailed cost comparison). Describe alternatives that were considered.

- Pictures and typical cross sections. Cross-sections to include location of proposed and existing utility objects with reference to the edge of the traveled way.
- Address use of the Alternate Countermeasures.

**Criteria**

The Control Zone distance varies according to the posted speed, traffic volumes, and side slopes of the highway. This Control Zone distance is measured in feet normal to the highway, beginning at the edge of the traveled way and extending outward perpendicular to the traveled way.

The Control Zone distance can be determined using the Control Zone Distance Table and the following criteria:

1. Cut Sections with no ditch and fill sections.

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

   The "Recovery Area" formula, in lieu of the table, is used ONLY when the fill section slope is 3:1 or steeper. If the fill height is also greater than 10 feet, consult the Guidelines for Embankment Barrier Chart. If embankment barrier is not recommended, the Control Zone is the Shoulder Width plus the Horizontal Distance.

2. Ditch Sections with fore slopes 4:1 or flatter.

   The Control Zone distance is the greater of:

   a. The Control Zone distance for a 10:1 cut section based on speed and ADT, or

   b. Five feet horizontal beyond the beginning of the back slope.

3. Ditch Sections with fore slopes 3:1 or steeper, and back slopes steeper than 3:1.

   The Control Zone distance is established at 10 feet horizontal beyond the beginning of the back slope.

4. Ditch sections with fore slopes 3:1 or steeper, and back slopes not steeper than 3:1. The Control Zone distance is the distance established using the recovery area formula.

5. Auxiliary Lanes.

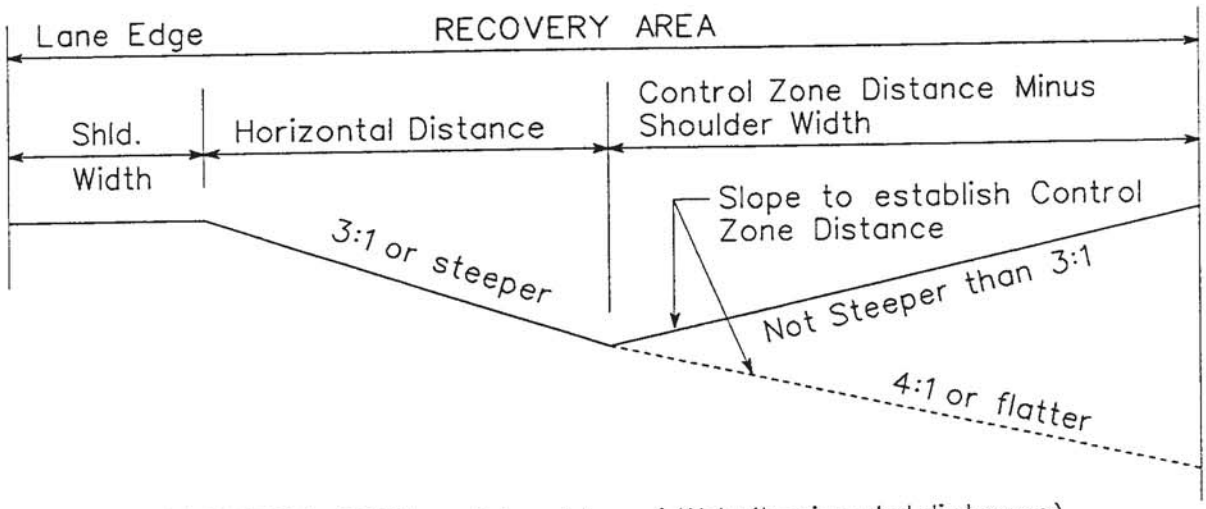
   The Control Zone is either the distance from the traveled way obtained from the table based on posted speed, ADT, and slope, or ten feet from the edge of the auxiliary lane, whichever is furthest. Where curb exists, the Control Zone is two feet beyond the face of curb for speed zones of 35 mph or less.

*5:M:UM3*

## Control Zone Distance Table

| Posted Speed MPH | Average Daily Traffic | Cut Section (+Slope) 3:1 | 4:1 | 5:1 | 6:1 | 8:1 | 10:1 | Fill Section (- Slope) 3:1 | 4:1 | 5:1 | 6:1 | 8:1 | 10:1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 or Less | The Control Zone distance is established at 10 feet or 2 feet beyond face of curb in urban areas. | | | | | | | | | | | | |
| 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 |
| 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 |

*When the Fill Section slope is 3:1 or steeper, the Control Zone distance is called a recovery area and is calculated using the Recovery Area formula. The basic philosophy behind the Recovery Area formula is that a vehicle can transverse a 3:1 slope but cannot recover (control steering) and therefore, the formula does not allow a credit toward the recovery area for the horizontal distance. The following diagram is intended to clarify the use of the Recovery Area formula.




RECOVERY AREA = (shoulder width)+(horizontal distance)
+(control zone distance - shoulder width)

EXAMPLES

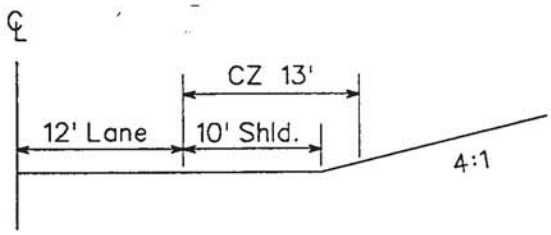
USE OF CONTROL ZONE TABLE AND CRITERIA

1. CUT SECTION - NO DITCH

Conditions: Speed 45 MPH
Traffic 1900 ADT
Slope 4:1

Criteria: Item 1, Read directly from Table

Control zone: 13 feet

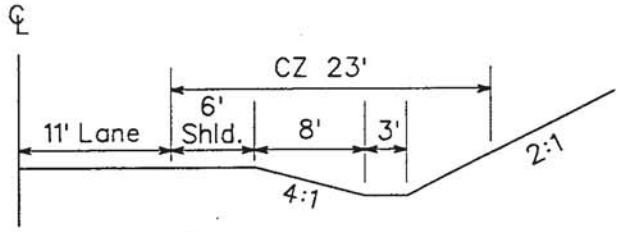



2. CUT SECTION WITH DITCH (fore slope 4:1 or flatter )

Conditions: Speed 55 MPH
Traffic 4200 ADT
Fore Slope 4:1

Criteria: Item 2, Greater of
(1) CZ 10:1 Cut Section, 23 feet
(2) 5' Horz. beyond begin. of back slope, 22 feet

Control Zone: 23 feet

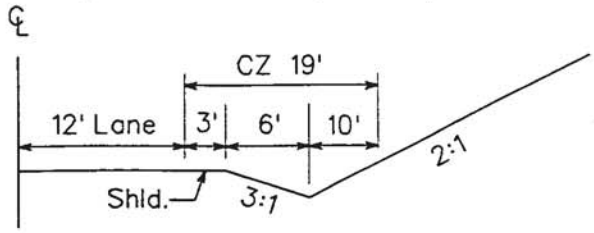



3. CUT SECTION WITH DITCH (fore slope 3:1 or steeper and back slope steeper than 3:1)

Conditions: N/A

Criteria: Item 3, CZ 10' beyond begin. of back slope

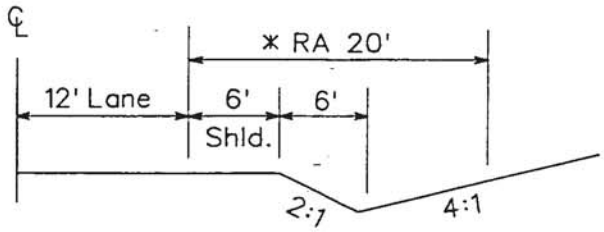
Control Zone: 19 feet



4. CUT SECTION WITH DITCH (fore slope 3:1 or steeper, and back slope not steeper than 3:1)

Conditions: Speed 40 MPH
Traffic 3000 ADT
Fore Slope 2:1
Back Slope 4:1

Criteria: Item 4, Use Recovery Area Formula



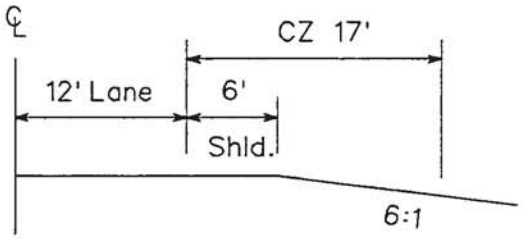

* Recovery Area: (Shld. width)+(2:1 slope distance)+(Control Zone distance - Shld. width) = (6)+(6)+(14-6)= 20 feet

5. FILL SECTION

Conditions: Speed 50 MPH
Traffic 320 ADT
Slope 6:1

Criteria: Item 1, Read directly from Table

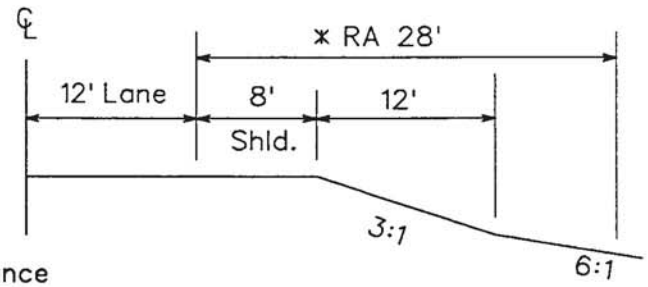
Control Zone: 17 feet




6. FILL SECTION (slope 3:1 or steeper)

Conditions: Speed 40 MPH
Traffic 3000 ADT
Slope 3:1

Criteria: Item 1, Slope 3:1 - use Recovery Area Formula




* Recovery Area: (Shld. width)+(3:1 slope distance)+(Control Zone distance - Shld. width) = (8)+(12)+(16-8)= 28 feet

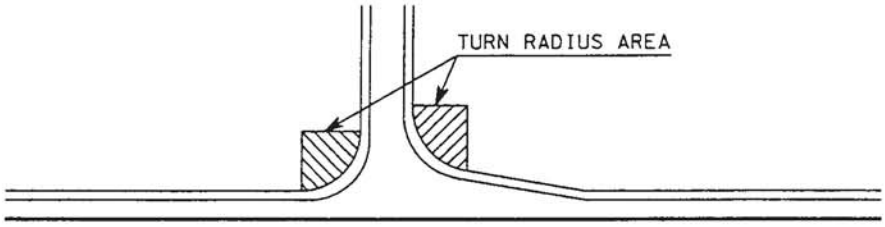
# SUPPLEMENTAL INFORMATION

## UTILITY DESIGN CONSIDERATIONS

The following items are provided as a guide to the Utility Industry for consideration during design and maintenance of their facilities:

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

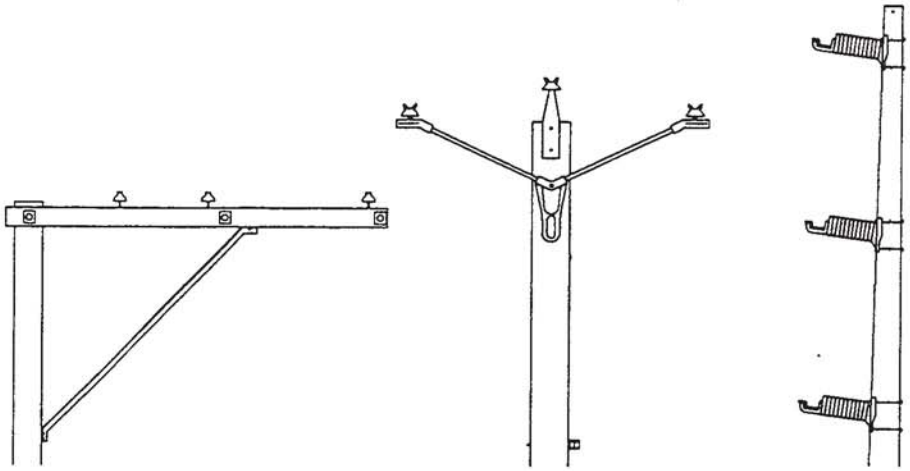
2. Public Grade Intersections. If possible, design the facility to place utility objects outside the turn radius area of Public Grade Intersections, if this is not possible the facility should be placed outside of the control zone.




3. Placement of Utility Objects behind Guardrail. Allow a minimum of 3.5 feet from face of guardrail to face of utility object. This allows the guardrail to function properly if struck (acts as a tension ribbon).

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 practical from the highway right of way--at least outside the control zone.

5. Pole Design. Where control zone requirements within the highway right of way are tight, consideration should be given to alternate pole designs. The purpose of the alternate designs is to allow construction at/or close to the right of way line.



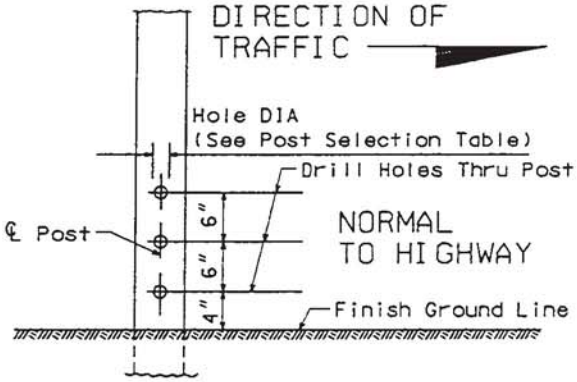
# SUPPLEMENTAL INFORMATION

## UTILITY DESIGN CONSIDERATIONS

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. Consideration should be given to utilizing breakaway designs on guy poles within control zone.

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 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 to be placed within the control zone.

| POST SIZE | NO. OF POSTS | HOLE DIA |
|---|---|---|
| | 4 x 4 | — |
| | 4 x 6 | $1\frac{3}{4}''$ |
| | 6 x 6 | $1\frac{3}{4}''$ |
| | 6 x 8 | $2\frac{1}{2}''$ |
| | | |
| | | |
| | | |




POST DETAIL
Typical for 4" x 6" to 6" x 8" Posts

Note: Posts that are larger than 6" x 8" require barrier protection when located within the Control Zone.

8. Cutting/Trimming Trees and Brush.

Mutual benefits can be achieved through clearing trees and brush to the state's right of way line:

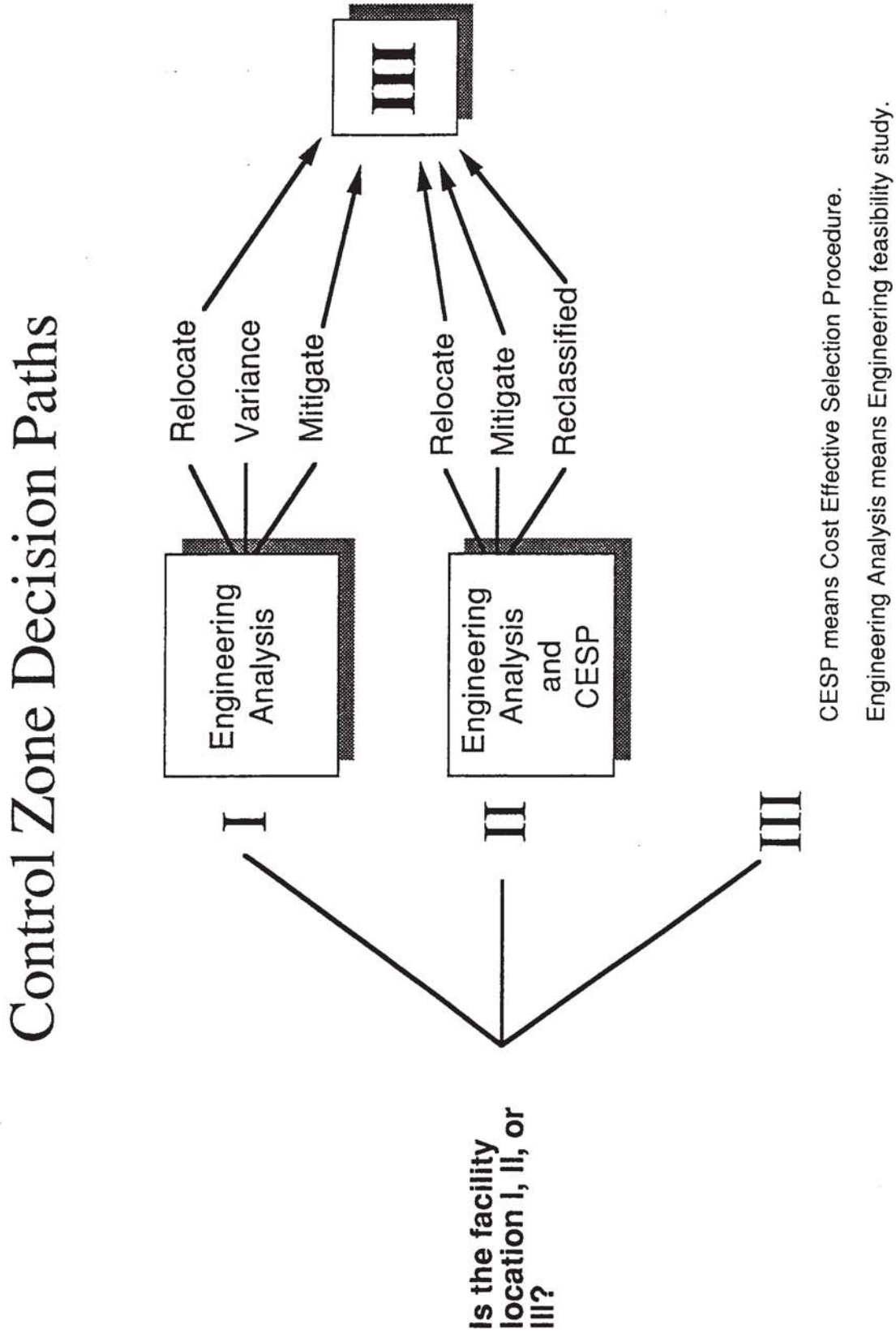
a. Allows installation of the utility facility at/or close to the right of way line.

b. Provides better access to the utility for construction and maintenance of their facility.

c. Improves safety. Removes trees, which in themselves may be a hazard, and also opens up the roadway to increased sunlight.

For aesthetics and other reasons listed above, it is often preferred that the trees be removed flush with the ground rather than topped or trimmed. Prior to cutting or trimming trees and brush the utility should coordinate and receive approval from the appropriate District Utilities Engineer.

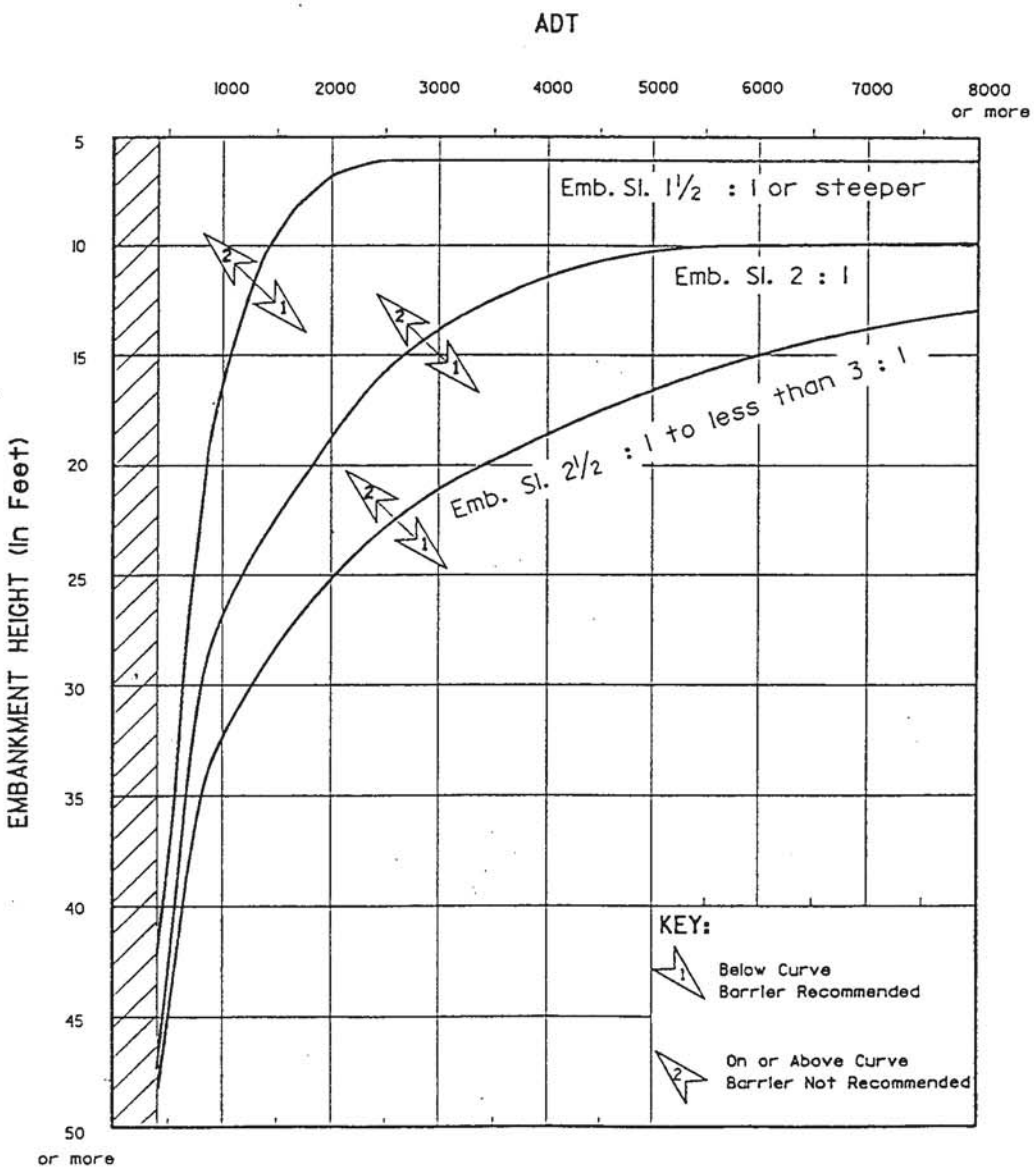
U:cozosupp


Control Zone Decision Paths
Is the facility location I, II, or III?
I
II
III
Engineering Analysis
Relocate
Variance
Mitigate
Engineering Analysis and CESP
Relocate
Mitigate
Reclassified
III
CESP means Cost Effective Selection Procedure.
Engineering Analysis means Engineering feasibility study.

# ATTACHMENT A

## PROCESS TO DETERMINE IF A LOCATION 2 OBJECT IS COST EFFECTIVE TO RELOCATE

1. In a fill-area check the chart below, if guard rail is warranted the object may be considered not cost effective to relocate.




NOTE: Routes with ADTs under 400 may be evaluated on a case by case basis.

GUIDELINES FOR EMBANKMENT BARRIER

# ATTACHMENT A

2. Complete the Cost-Effective Selection Procedure for objects not in an area recommended for guardrail using the AASHTO formula. The lateral placement from the traveled way to the objects (for both the existing object and the relocated object) should be adjusted as follows for the side slopes:

| Cut Slope | | | | Fill Slope | | |
|---|---|---|---|---|---|---|
| 3:1 | 4:1 | 5:1 | Flat | 5:1 | 4:1 | 3:1 |
| 1.5 | 1.2 | 1.1 | 1.0 | 0.8 | 0.7 | 0 |

Adjusted lateral distance = (lateral distance - shoulder width) x the slope factor + shoulder width.

(Each slope between the shoulder and the existing object or relocated object should be adjusted by its factor.)

Variables for the Cost Effective Selection Procedure:

The following AASHTO cost factors will be used in the CESP formula until notified by WSDOT.

| | |
|---|---|
| 1. Fatality cost | $500,000 |
| 2. Severe injury cost | 110,000 |
| 3. Moderate injury cost | 10,000 |
| 4. Slight injury cost | 3,000 |
| 5. PDO level 2 cost | 2,500 |
| 6. PDO level 1 cost | 500 |

Traffic Growth Rate: Use 5% unless otherwise indicated by WSDOT.

Severity Index: 3.6 for 40 mph, 4.2 for 50 mph, 5.0 for 60 mph and 6.0 for 70 mph.

Project Life: Life of the existing or new pole.

Discount Rate: The rate shall be equal to the weighted rate average cost of capital for each utility.

Cost of Installation: Determined by the utility for the installation being evaluated.

Cost of Repair: Determined by the utility for the installation being evaluated.

# ATTACHMENT A

Maintenance Cost per Year: Determined by the utility for the installation being evaluated.

Salvage Value: Determined by the utility for the installation being evaluated.

The initial encroachment frequencies should be as follows:

| Highway Type | Initial Encroachment Frequency (encroachments/mile/year) |
|---|---|
| Rural Interstate | 0.0009 ADT |
| Rural Multilane Divided Highway | 0.00059 ADT |
| Wide Rural Two-lane Highway (Roadbed ≥ 36ft.) | 0.000742 ADT |
| Narrow Rural Two-lane Highway (Roadbed < 36ft.) | 0.00121 ADT |
| Urban Interstate | 0.0009 ADT |
| Urban Multilane Divided Highway | 0.0009 ADT |
| Urban Street | 0.00133 ADT |

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