



OHIO DEPARTMENT OF TRANSPORTATION

INTER-OFFICE COMMUNICATION

TO: D-1 Distribution

FROM: Cash Misel, Assistant Director, Planning and Production Management
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DATE: April 30, 2002

SUBJECT: Guidelines For Identifying Acceptable Locations For The Disposal of Waste Material And Construction Debris or The Excavation of Borrow Material Within ODOT Right-of-Way

Handwritten signatures of Cash Misel and Mary Ellen Kimberlin in black ink.

Attached for your immediate use, are the above referenced guidelines to be used in evaluating projects for acceptable locations within ODOT Right-of-Way for the disposal of waste material or the excavation of borrow. These guidelines should be used to evaluate sites during design of a project or to evaluate contractor proposed sites after sale of the project. The guidelines use the 2001 AASHTO Design Criteria and the attached figures from the ODOT L&D Manual, Volume 1 have been revised to conform to the 2001 AASHTO Design Manual. The ODOT L&D Manual, Volume 1 will be updated to the 2001 AASHTO Design Criteria in the near future. Please share these guidelines with your staff.

Any questions should be directed to the Office of Roadway Engineering Services.

Attachment

GUIDELINES FOR IDENTIFYING ACCEPTABLE LOCATIONS FOR THE DISPOSAL OF WASTE MATERIAL AND CONSTRUCTION DEBRIS OR THE EXCAVATION OF BORROW MATERIAL WITHIN ODOT RIGHT-OF-WAY

PURPOSE

This guide provides the criteria to be used when evaluating a project for acceptable locations for the disposal of waste material and construction debris or the excavation of borrow material within highway rights-of-way.

REFERENCES

1. Ohio Department of Transportation, "Location & Design Manual (LDM), Volume I & III".
2. Ohio Department of Transportation, "Construction and Materials Specifications (CMS)".
3. American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets, 2001".
4. FHWA Policy, "Recycled Materials Policy", dated February 7, 2002.

SCOPE

All Districts, Divisions and Offices of the Ohio Department of Transportation (OOT) involved in the design, construction and maintenance of roadways and all consultants and contractors who provide similar services to ODOT.

BACKGROUND

The use of ODOT right-of-way for disposal of waste material and construction debris or the excavation of borrow material is now prohibited, unless locations are identified in the plans (see CMS Sections 104.03, 105.16, 105.17 and 107.11). With the increased need to remove and replace the pavements of our Interstate and Freeway System as the pavements approach or exceed their design life, the disposal of the existing pavement, much of it concrete, that cannot be recycled or used as part of the new pavement structure has become a problem. These guidelines have been developed to give designers the criteria that should be used in the evaluation of a project for acceptable waste or borrow areas within the right-of-way of a project.

DEFINITIONS

Clear Zone: The desirable unobstructed area along a roadway, outside the edge of pavement, available for the safe recovery of vehicles that have left the traveled way. (Section 600.2, LDM)

Safety Grading: The shaping of the roadside using 6:1 or flatter slopes within the clear zone area and 3:1 or flatter foreslopes and recoverable ditches extending beyond the clear zone. (Figures 307-1 and 307-2, LDM)

Clear Zone Grading: The shaping of the roadside using 4:1 or flatter foreslopes and traversable ditches within the clear zone area. (Figure 307-3, LDM)

Decision Sight Distance: The distance needed for a driver to detect, recognize and select an appropriate course of action for an unexpected or otherwise difficult-to-perceive condition in the roadway. (Section 201.5 and Figure 201-5, LDM)

PROJECT EVALUATION

Waste Disposal Areas

All projects with large amounts of cut and fill or projects with pavement removal, particularly non-recyclable concrete pavement, should be evaluated for acceptable disposal areas within the right-of-way. Acceptable disposal areas would preferably enhance the safety of the roadway and should not provide a less safe highway than now exists. The total width of existing right-of-way should be considered. Examples of roadway safety enhancements would include the use of safety grading where clear zone grading or less now exists, the use of clear zone grading where something less exists and the elimination of barrier. In accordance with Section 307.21 of the LDM, all interstate and interstate look alike roadways should use safety grading. If safety grading now exists, consider the possibility of extending it to the right-of-way line. If clear zone grading now exists, consider the use of safety grading or consider the possibility of extending clear zone grading to the right-of-way line. Existing barrier locations should be evaluated to see if the application of safety grading, or at a minimum clear zone grading, would eliminate the need for barrier. Adjustments to drainage or drainage structures may also be required. Not all acceptable disposal areas will enhance the safety of the roadway. Areas that do not affect the safety of the roadway (areas outside a safety graded or clear zone graded section) and do not affect wetlands or other environmental regulations but are within the right-of-way of the project should also be considered as acceptable disposal areas.

Although interchange infields seem like obvious or ideal areas to dispose of waste material, great care not to restrict sight distances is required.

Exit Ramps - Decision stopping sight distance, Avoidance Maneuver A or B, as per Figure 201-5 of the LDM should be provided for the design speed of the ramp (Figure 404-1 and Section 404.2 of the LDM). Fills may be placed in the infield areas as long as the decision stopping sight distance is provided and 6:1 or flatter slopes are provided in the gore areas (Section 307.5.3 of the LDM). Fills within the infields of diamond interchanges should not affect the intersection sight distance at the intersection of the crossroad and the exit ramp.

Entrance Ramps - Decision sight distance, Avoidance Maneuver C or E, as per Figure 201-5 of the LDM should be provided for the design speed of the ramp (Figure 404-1 and Section 404.2 of the LDM). The decision sight distance is measured from a point on the ramp where a driver on the ramp has an unobstructed view of vehicles on the mainline to a point on the ramp where the driver no longer has a lane width available on the ramp and must start to merge. This is the distance that the merging ramp driver has to decide where he can safely merge into the mainline traffic. This distance should also be unobstructed for the mainline driver to react to the ramp vehicle by either a lane or speed change.

Loop Ramps - The infields of loop ramps generally should not be filled unless it is to eliminate barrier or provide safety graded slopes. Loop ramps have a higher than average number of run off the road accidents due to the sharp curvature and high speeds. When the infields of these ramps are filled, not only are sight distances decreased but the driver also loses a sense of how sharp the curvature of the ramp is when he cannot see the entire ramp but only a small portion of it. If considered an acceptable fill site, then at a minimum, decision sight distance, Avoidance Maneuver A or B for the exit end of the ramp and Avoidance Maneuver C or E for the entrance end of the ramp, as per Figure 201-5 of the LDM should be provided for the appropriate design speed of the ramp (Figure 404-1 and Section 404.2 of the LDM).

Fill Restrictions - Fill heights greater than 10 feet should be reviewed by the Office of Geotechnical Engineering. Slopes should not exceed 4:1 for ease of maintenance. Fill material and fill construction shall be in accordance with the Construction and Materials Specifications, Item 203.

Borrow Areas

All projects requiring borrow should be evaluated for acceptable borrow areas within the right-of-way. The same criteria used to evaluate the waste disposal areas should be used to evaluate borrow areas within the right-of-way. The safety of the highway should be enhanced, if possible. Consider applying safety grading when something less than safety grading exists or clear zone grading when something less than clear zone grading exists.

The determination as to whether or not to allow the disposal of waste material or the excavation of borrow within the right-of-way of a project should be made as soon as possible in the project development process. Possible waste areas or borrow areas within the project right-of-way should be identified during the field review prior to final scope preparation so that the evaluation of these areas can be included as part of the scope for the project. If during plan development these areas are found to be acceptable as waste areas or borrow areas, then they shall be identified in the construction plan along with their limits. Acceptable locations should be identified on the schematic plan, plan and profile sheets or in a general note (see Location & Design Manual, Volume III, Section 1303.20 and Appendix B, Sample Plan Note G105). If the project has no acceptable waste areas or borrow areas within the project right-of-way, then it shall be stated on the construction plans by plan note, that an evaluation has been completed and no acceptable waste areas or borrow areas exist within the right-of-way of the project. Another consideration should be the impact of the allowed waste area or borrow area on future projects. One should not allow the placement of fill or excavation for borrow in an area that would require its removal or fill in the near future by another project. Environmental regulations, public involvement commitments, erosion control, the effects on utilities and the effects on drainage should also be considered. CMS Section 105.16 addresses erosion control and environmental regulations controlling borrow and waste areas. Coordination with utilities will be required and drainage structures may need extended or adjusted to grade.

DECISION SIGHT DISTANCE**201-5**

REFERENCE SECTION

201.5

HEIGHT OF EYE 3.50'

HEIGHT OF OBJECT 2.00'

DESIGN SPEED (mph)	DECISION SIGHT DISTANCE (FT)				
	AVOIDANCE MANEUVER				
	A	B	C	D	E
30	220	490	450	535	620
35	275	590	525	625	720
40	330	690	600	715	825
45	395	800	675	800	930
50	465	910	750	890	1030
55	535	1030	865	980	1135
60	610	1150	990	1125	1280
65	695	1275	1050	1220	1365
70	780	1410	1105	1275	1445

The Avoidance Maneuvers are as follows:

- A - Rural Stop
- B - Urban Stop
- C - Rural Speed/Path/Direction Change
- D - Suburban Speed/Path/Direction Change
- E - Urban Speed/Path/Direction Change

Decision Sight Distance (DSD) is calculated or measured using the same criteria as Stopping Sight Distance; 3.50 ft eye height and 2.00 ft object height.

Use the equations on Figures 203-3, 203-6 and 201-2 to determine the DSD at vertical and horizontal curves.

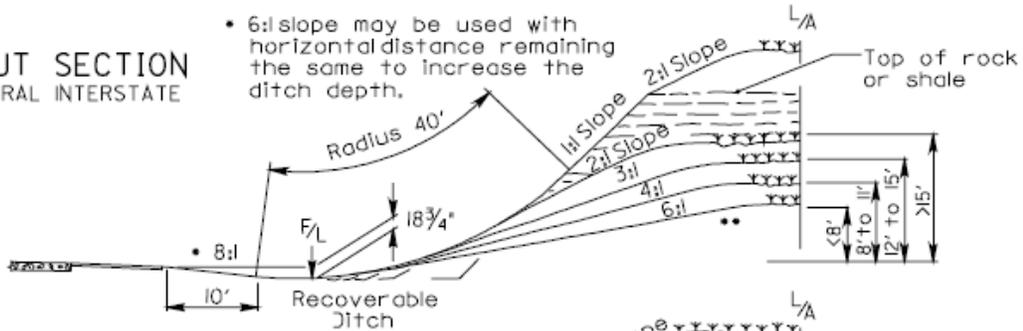
SAFETY GRADING SECTIONS

307-1E

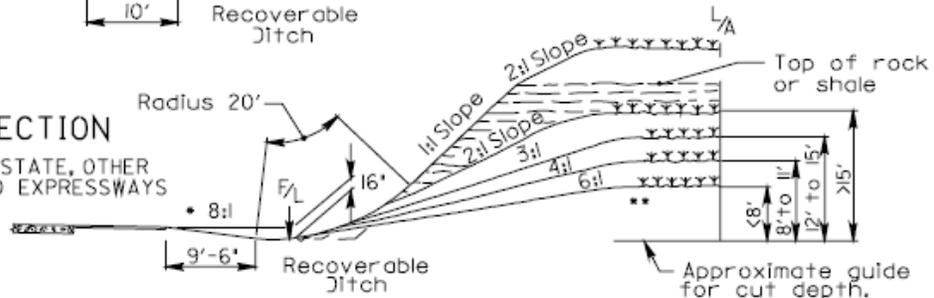
REFERENCE SECTIONS
307.21

**CUT SECTION
RURAL INTERSTATE**

- 6:1 slope may be used with horizontal distance remaining the same to increase the ditch depth.



**CUT SECTION
URBAN INTERSTATE, OTHER
FREEWAYS AND EXPRESSWAYS**

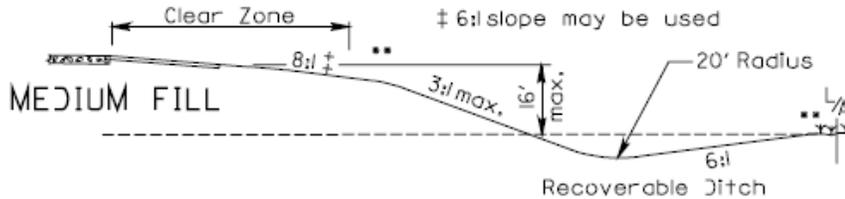


•• 4' Rounding

SHALLOW CUT OR LOW FILL



Slope transition between low fill design and medium fill design shall be such that the flowline of the roadside ditch does not turn toward the roadway.



Application of these sections may vary to avoid frequent slope changes and to maintain reasonably straight ditches.

See Figure 307-2 for Recoverable Ditch details.

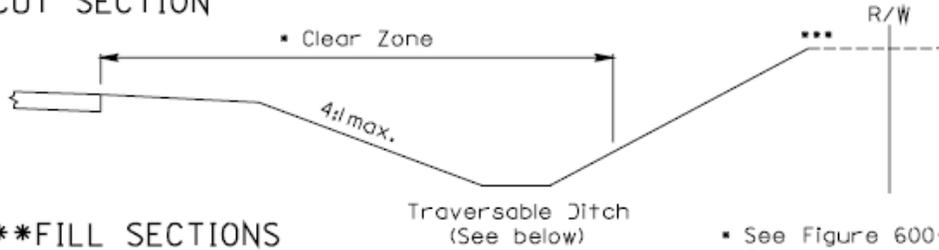
APRIL, 2002

**CLEAR ZONE
GRADING SECTIONS
(TRAVERSABLE DITCH SECTIONS)**

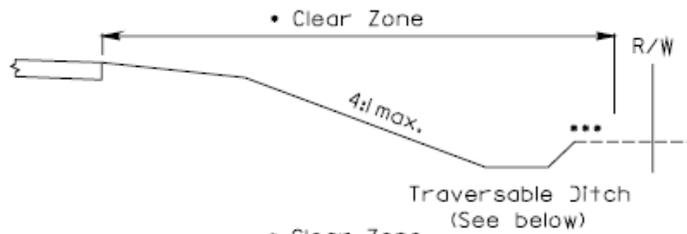
307-3E

REFERENCE SECTIONS
307.21, 601.1

CUT SECTION

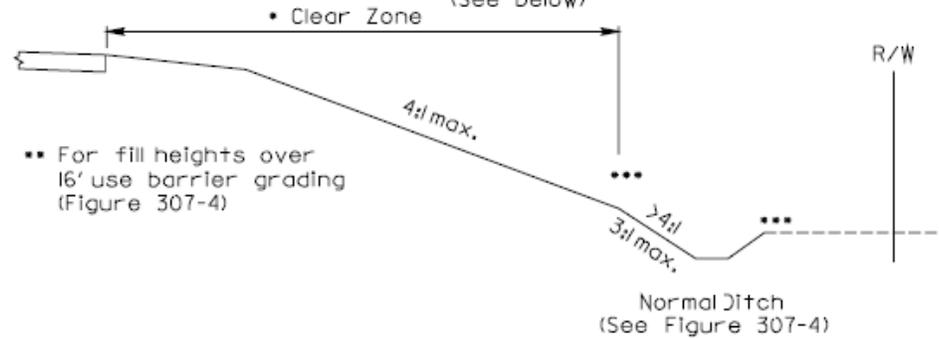


****FILL SECTIONS**



• See Figure 600-1
for clear zone
distance.

*** 4' Rounding



** For fill heights over
16' use barrier grading
(Figure 307-4)

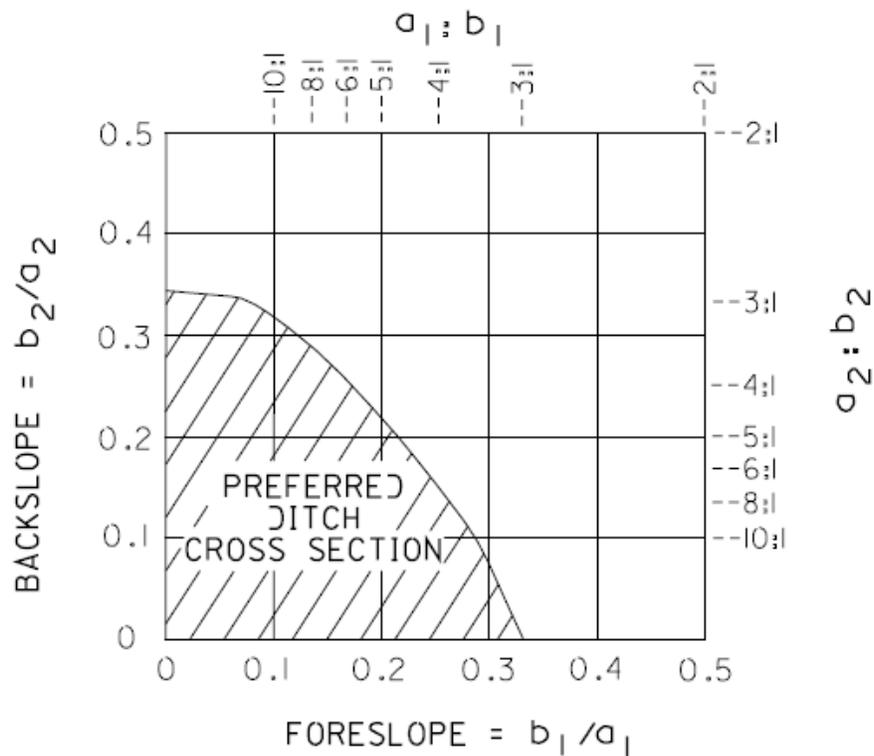
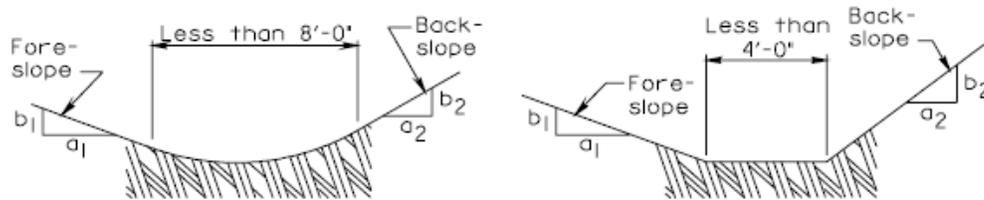
FOR ACCEPTABLE COMBINATIONS OF FORESLOPE AND
BACKSLOPE FOR TRAVERSABLE DITCHES SEE FIGURES
307-10 AND 307-11.

Minimum Ditch Depth
Cut: 1.5', Fill: 1.0'

PREFERRED CROSS SECTIONS FOR DITCHES WITH ABRUPT SLOPE CHANGES

307-10E

April 1999



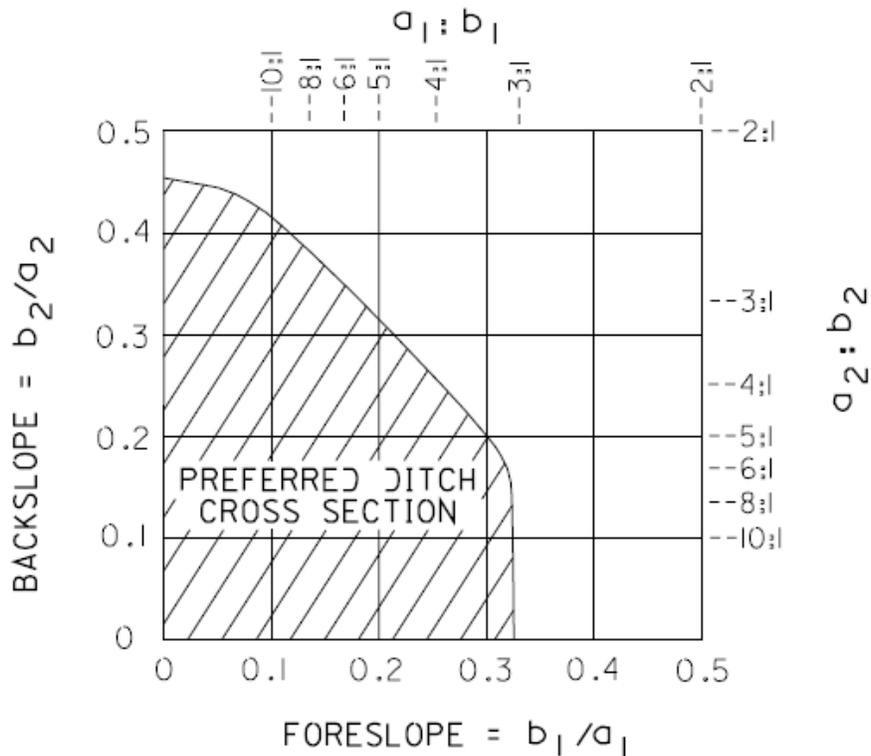
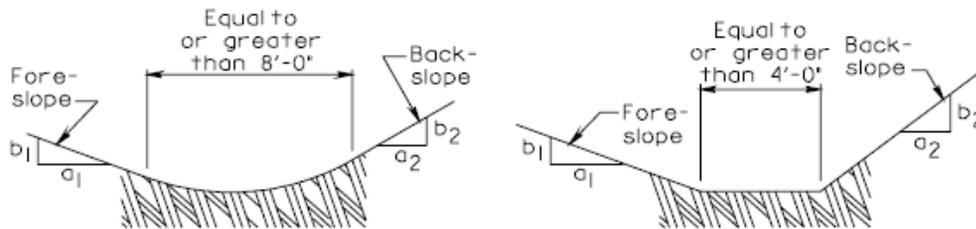
This chart is applicable to vee ditches, rounded ditches with bottom widths less than 8'-0", and trapezoidal ditches with bottom widths less than 4'-0".

Ditches that fall within the shaded areas are considered traversable and are preferred for use within the clear zone.

PREFERRED CROSS SECTIONS FOR DITCHES WITH GRADUAL SLOPE CHANGES

307-11E

April 1999



This chart is applicable to rounded ditches with bottom widths of 8'-0" or more, and to trapezoidal ditches with bottom widths equal to or greater than 4'-0".

Ditches that fall within the shaded areas are considered traversable and are preferred for use within the clear zone.