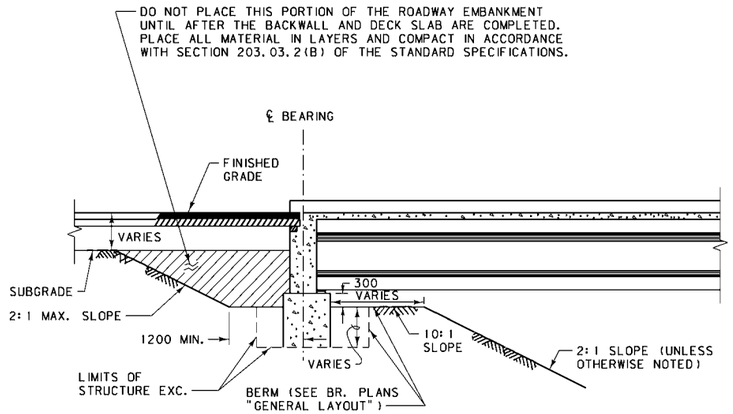
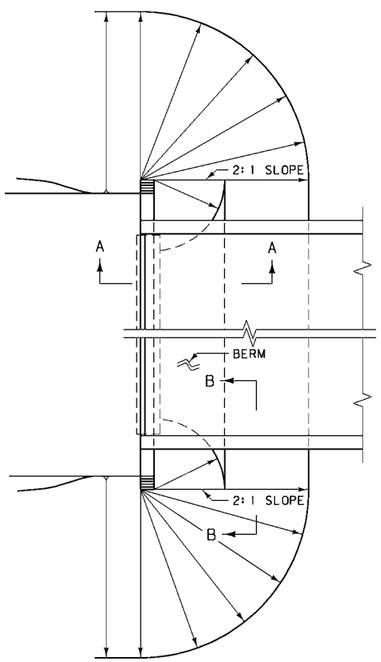
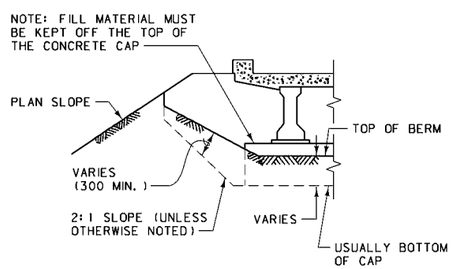


SECTION A-A



PLAN VIEW

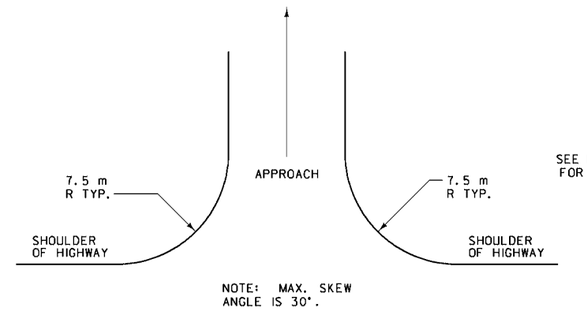


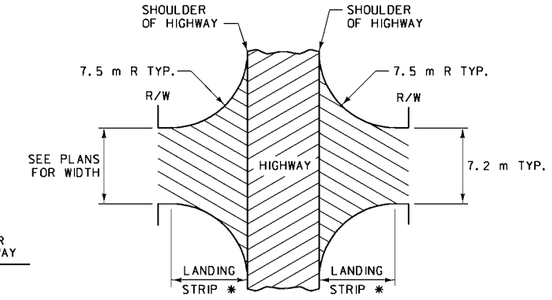
SECTION B-B

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 203	DWG. NO. 203-00
ROADWAY EMBANKMENT AT BRIDGE END	
EFFECTIVE: AUGUST 1999	

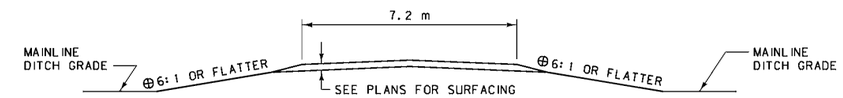
MONTANA DEPARTMENT OF TRANSPORTATION — MONTANA CADD





* 7.5 m MIN. FOR PRIVATE OR FIELD APP.
25.0 m MIN FOR COUNTY AND MAIN ROADS.

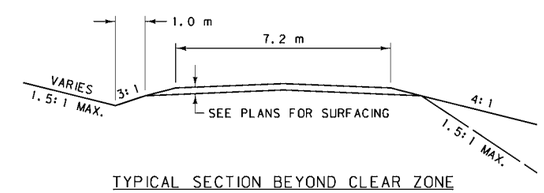
SLOPE FOR DRAINAGE (-3% DESIRABLE, +3% ALLOWABLE).



TYPICAL SECTION WITHIN CLEAR ZONE

USE A PIPE AS NECESSARY FOR DRAINAGE. INSTALL CULVERTS OUTSIDE THE CLEAR ZONE OR PROVIDE END TREATMENT.

⊕10:1 SLOPES ARE DESIRABLE ON HIGH SPEED FACILITIES WHERE PRACTICAL



TYPICAL SECTION BEYOND CLEAR ZONE

BACK SLOPES **	
0 - 1.5 m	4:1
1.5 m - 3.0 m	2:1
OVER 3.0 m	1.5:1

FILL SLOPES **	
0 - 3.0 m	4:1
3.0 m - 6.0 m	2:1
OVER 6.0 m	1.5:1

NOTES:

APPROACH GRADE BEYOND LANDING IS NOT TO EXCEED 10% UNLESS TRAFFIC VOLUMES AND COST INDICATE SUCH TO BE JUSTIFIABLE.

CONSTRUCT APPROACHES TO FIT LOCAL CONDITIONS, MINIMIZE TRAFFIC HAZARDS, AND AFFORD ENTRY AND EXIT OF TRAFFIC TO AND FROM THE MAIN ROAD.

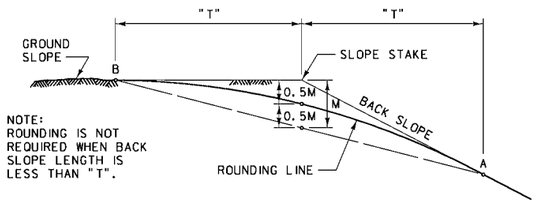
SECURE WRITTEN PERMISSION FROM LANDOWNER FOR WORK BEYOND THE RIGHT-OF-WAY.

** CRITERIA SHOWN ARE FOR PRIVATE AND FARM FIELD APPROACHES. FOR COUNTY AND MAIN ROADS USE ESTABLISHED STANDARDS FOR APPLICABLE FUNCTIONAL CLASS.

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 203	DWG. NO. 203-05
APPROACHES	
EFFECTIVE: DECEMBER 2002	

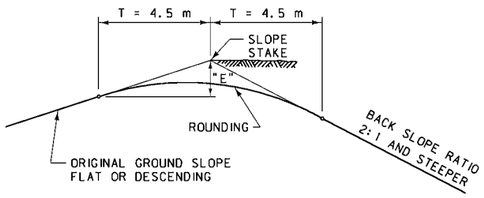
MONTANA DEPARTMENT OF TRANSPORTATION — MONTANA CADD

VERTICAL OFFSETS FROM ROADWAY AND GROUND SLOPES TO ROUNDING LINES FOR CUTS

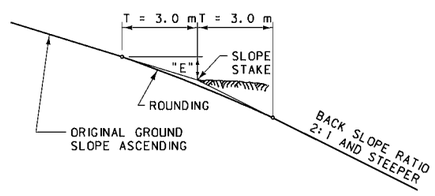


BACK SLOPES 2:1 AND STEEPER (T = 4.5 m)						
VERT. DIST. "E" (m)	DESCENDING GROUND CUTS 0.5M (m)					
	0.75:1	1:1	1.25:1	1.5:1	1.75:1	2:1
FLAT	1.50	1.15	0.90	0.75	0.65	0.55
0.6	1.65	1.30	1.05	0.90	0.80	0.70
1.2	1.80	1.45	1.20	1.05	0.95	0.85
1.8	1.95	1.60	1.35	1.20	1.10	1.00
2.4	2.10	1.75	1.50	1.35	1.25	1.15
3.0	2.25	1.90	1.65	1.50	1.40	1.30
3.6	2.40	2.05	1.80	1.65	1.55	1.45
4.2	2.55	2.20	1.95	1.80	1.70	1.60
4.8	2.70	2.35	2.10	1.95	1.85	1.75

BACK SLOPES 2:1 AND STEEPER

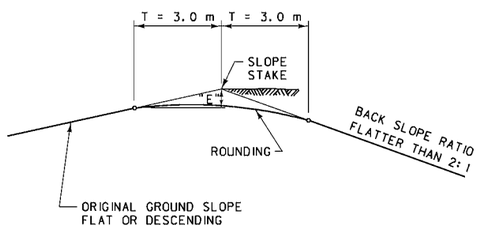


BACK SLOPES 2:1 AND STEEPER (T = 3.0 m)						
VERT. DIST. "E" (m)	ASCENDING GROUND CUTS 0.5M (m)					
	0.75:1	1:1	1.25:1	1.5:1	1.75:1	2:1
FLAT	1.00	0.75	0.60	0.50	0.45	0.40
0.6	0.85	0.60	0.45	0.35	0.30	0.25
1.2	0.70	0.45	0.30	0.20	0.15	0.10
1.8	0.55	0.30	0.15	0.05	0.00	0.00
2.4	0.40	0.15	0.00	0.00	~	~
3.0	0.25	0.00	~	~	~	~
3.6	0.10	~	~	~	~	~
4.2	0.00	~	~	~	~	~

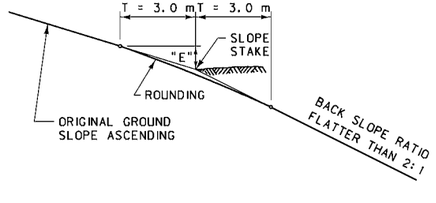


BACK SLOPES FLATTER THAN 2:1 (T = 3.0 m)						
VERT. DIST. "E" (m)	DESCENDING GROUND CUTS 0.5M (m)					
	2.5:1	3:1	3.5:1	4:1	5:1	6:1
FLAT	0.30	0.25	0.20	0.20	0.15	0.15
0.3	0.40	0.35	0.30	0.25	0.25	0.20
0.6	0.45	0.40	0.35	0.35	0.30	0.30
0.9	0.55	0.50	0.45	0.40	0.40	0.35
1.2	0.60	0.55	0.50	0.50	0.45	0.45
1.5	0.70	0.65	0.60	0.55	0.55	0.50
1.8	0.75	0.70	0.65	0.65	0.60	0.60
2.1	0.85	0.80	0.75	0.70	0.70	0.65
2.4	0.90	0.85	0.80	0.80	0.75	0.75
2.7	1.00	0.95	0.90	0.85	0.85	0.80
3.0	1.05	1.00	0.95	0.95	0.90	0.90

BACK SLOPES FLATTER THAN 2:1



BACK SLOPES FLATTER THAN 2:1 (T = 3.0 m)						
VERT. DIST. "E" (m)	ASCENDING GROUND CUTS 0.5M (m)					
	2.5:1	3:1	3.5:1	4:1	5:1	6:1
FLAT	0.30	0.25	0.20	0.20	0.15	0.15
0.3	0.25	0.20	0.15	0.10	0.10	0.05
0.6	0.15	0.10	0.05	0.05	0.00	0.00
0.9	0.10	0.05	0.00	0.00	~	~
1.2	0.00	0.00	~	~	~	~
1.5	~	~	~	~	~	~
1.8	~	~	~	~	~	~
2.1	~	~	~	~	~	~
2.4	~	~	~	~	~	~
2.7	~	~	~	~	~	~
3.0	~	~	~	~	~	~



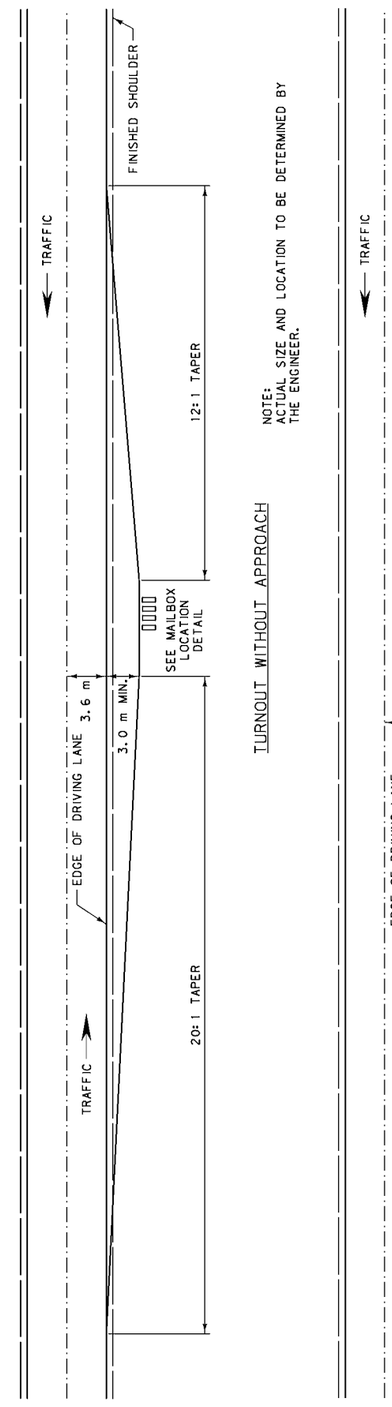
DETAILED DRAWING

REFERENCE	DWG. NO.
STANDARD SPEC. SECTION 203	203-10

SLOPE ROUNDING

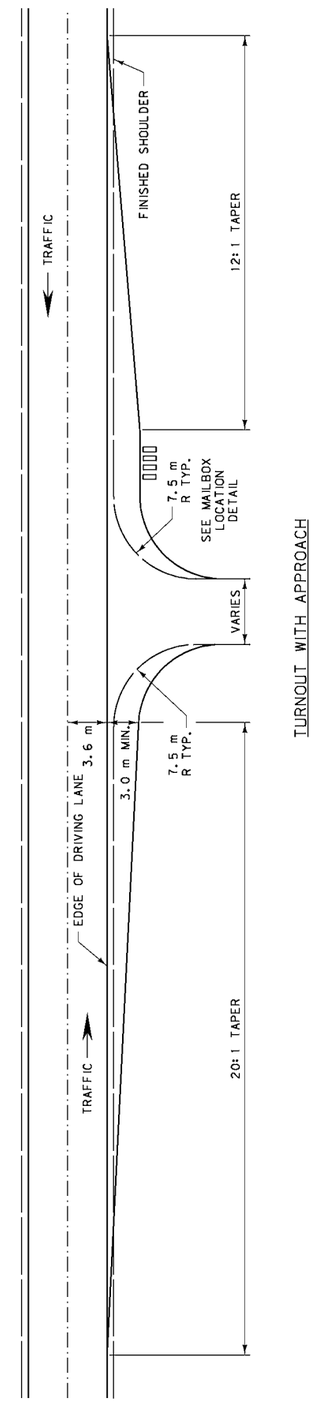
EFFECTIVE: AUGUST 1999

MDT MONTANA DEPARTMENT OF TRANSPORTATION — MONTANA CADD



TURNOUT WITHOUT APPROACH

NOTE:
ACTUAL SIZE AND LOCATION TO BE DETERMINED BY THE ENGINEER.



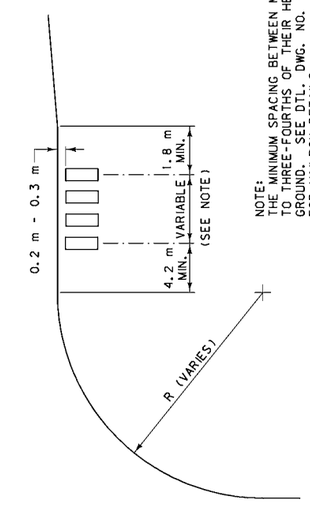
TURNOUT WITH APPROACH

NOTES:

LOCATE NEW INSTALLATIONS, IF POSSIBLE, ON THE FAR RIGHT SIDE OF AN INTERSECTION WITH A PUBLIC ROAD OR PRIVATE DRIVEWAY.

APPROACH QUANTITIES ARE NOT INCLUDED IN TURNOUT QUANTITIES.

USE THIS DETAIL FOR ALL ROADS AND ADT. FOR ADT LESS THAN 400, STEEPER TAPERS ARE ALLOWED IF NEEDED DUE TO LIMITATIONS. SEE THE "AASHTO GUIDE FOR ERECTING MAILBOXES ON HIGHWAYS."



NOTE:
THE MINIMUM SPACING BETWEEN MAILBOXES IS EQUAL TO THREE-FOURTHS OF THEIR HEIGHT ABOVE THE GROUND. SEE DTL. DWG. NO. 900-05 AND 900-10 FOR MAILBOX DETAILS.

MAILBOX LOCATION DETAIL

DETAILED DRAWING

REFERENCE	DWG. NO.
STANDARD SPEC. SECTION 203	203-15

MAILBOX TURNOUT

EFFECTIVE: AUGUST 1999

MDT MONTANA DEPARTMENT OF TRANSPORTATION — MONTANA CADD

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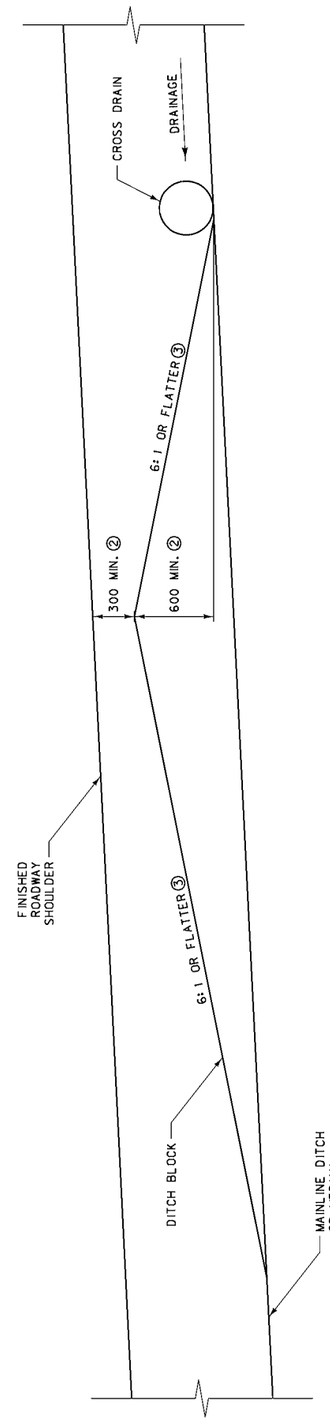

NOTES:

① CONSTRUCT DITCH BLOCKS TO FIT LOCAL CONDITIONS.

② HEIGHTS SHOWN ARE MINIMUMS. SET HEIGHT OF DITCH BLOCKS BASED ON AMOUNT OF ANTICIPATED DRAINAGE.

③ 10:1 SLOPES ARE DESIRABLE ON HIGH SPEED FACILITIES WHERE PRACTICAL.

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 203	DWG. NO. 203-20

DITCH BLOCKS

EFFECTIVE: DECEMBER 2002

MONTANA DEPARTMENT OF TRANSPORTATION — MONTANA CADD