



**City of Portland, Oregon**  
**Bureau of Development Services**  
**Land Use Services**

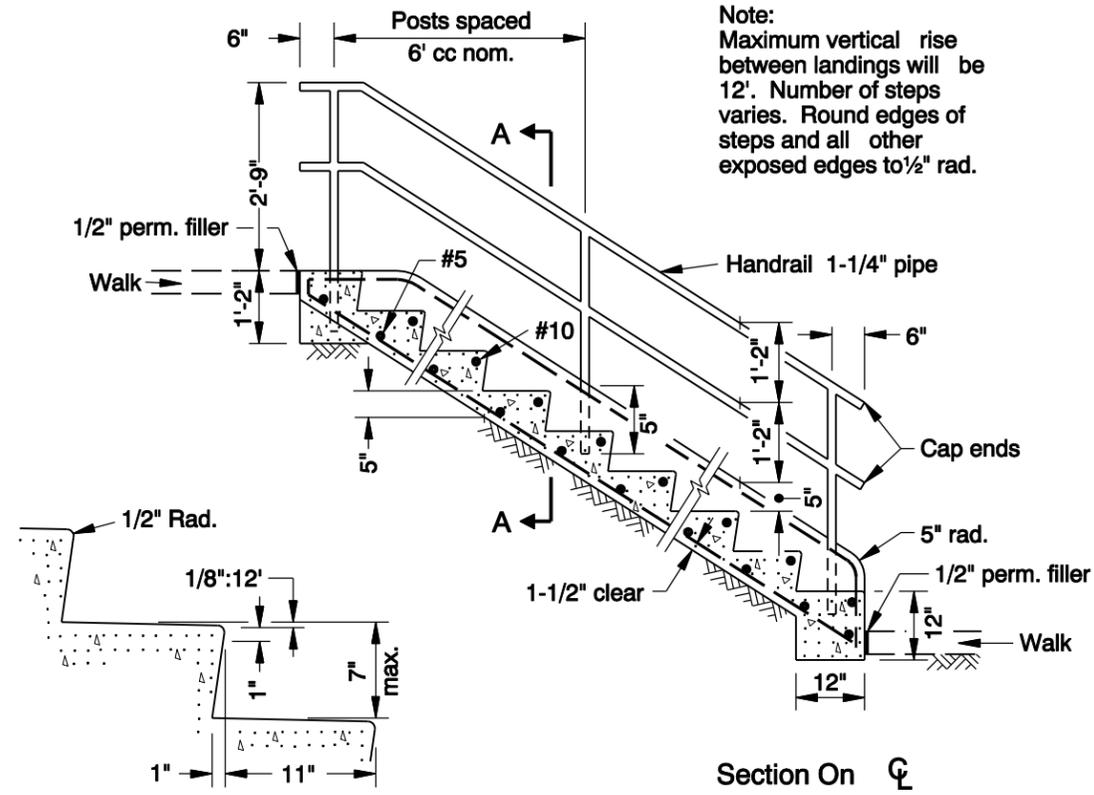
1900 SW 4th Avenue, Suite 5000  
Portland, Oregon 97201  
503-823-7300  
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TTY 503-823-6868  
[www.portlandonline.com/bds](http://www.portlandonline.com/bds)

**PERMANENT RULE**

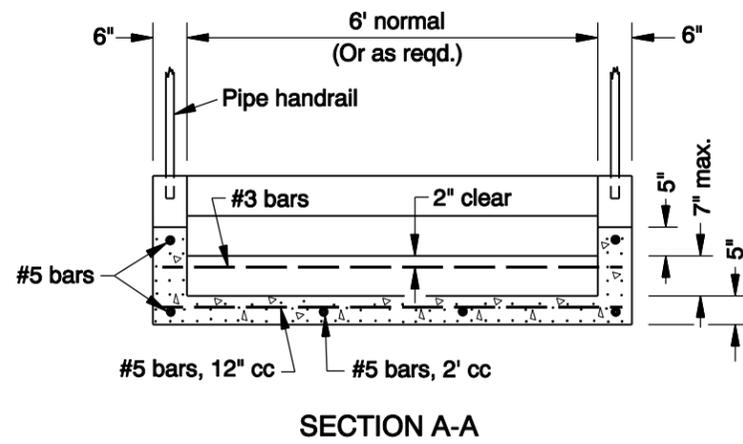
**Private Rights-of-Way - Streets, Alleys, Shared Courts, Common Greens and  
Pedestrian Connections**

**Appendix B – Referenced Oregon Standard Drawings and Details**

<b>Drawing #</b>	<b>Drawing Name</b>
<b>RD120</b>	Concrete Stairs
<b>RD 400</b>	Guardrail and Metal Median Barrier
<b>RD 405</b>	Guardrail and Metal Median Barrier Parts
<b>RD 415</b>	Guardrail and Metal Median Barrier Parts
<b>RD 700</b>	Curbs
<b>RD 720</b>	Sidewalks
<b>RD 715</b>	Approaches and Non-Sidewalk Driveways
<b>RD 725</b>	Separated Sidewalk Driveways or Alleys (Options A, B & C) ODOT Highways
<b>RD 735</b>	Curb Line Sidewalk Driveways or Alleys (Options F & G) ODOT Highways
<b>RD 740</b>	Separated Sidewalk Driveways or Alleys (Options H, I & J) ODOT Highways
<b>RD 750</b>	Curb Line Sidewalk Driveways or Alleys (Options M & N) Local Jurisdictions
<b>RD 760</b>	Sidewalk Ramp Placement
<b>TM 200</b>	Sign Placement
<b>Det 4235</b>	Pipe Sign Support Detail
<b>Det 1710</b>	Bollards



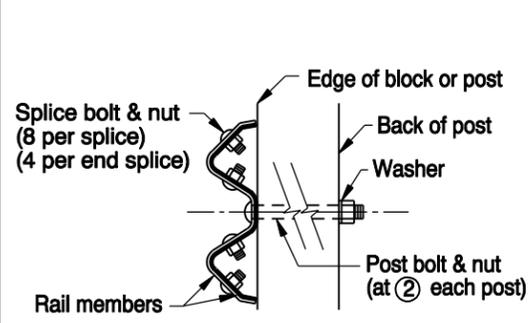
Details Of Treads



The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

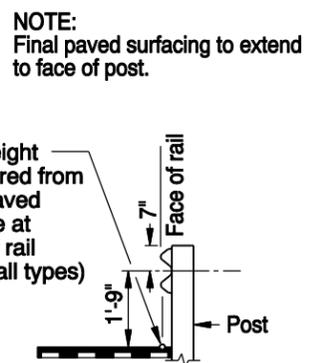
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>CONCRETE STAIRWAY</b>	
<b>2002</b>	
REVISIONS	
DATE	DESCRIPTION

rd400.dgn 12-JAN-2007

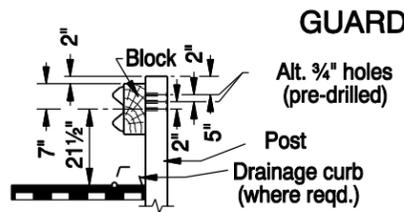


1. When required by the plans, post bolts to extend beyond the tightened nuts within limits of 1/4" to 1/2".
2. When steel posts are used see "POSTS" for modified bolt detail, Std. Drg. RD415.
3. All post bolt threads to be set after assembly for wrench removal only.

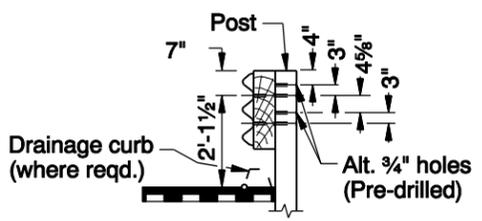
**FITTINGS**



**TYPE 1**  
(Use restricted to non-roadway applications)



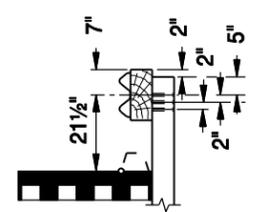
**INITIAL INSTALLATION**



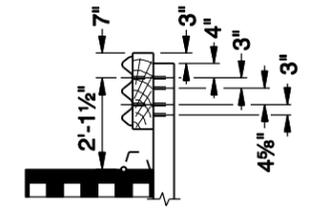
**INITIAL INSTALLATION**

**ALTERNATE INITIAL INSTALLATION OR FUTURE ADJUSTMENT TYPES 2A & 3**  
(See General Note 3)  
(For Type 3 use double thickness (2) rail elements)

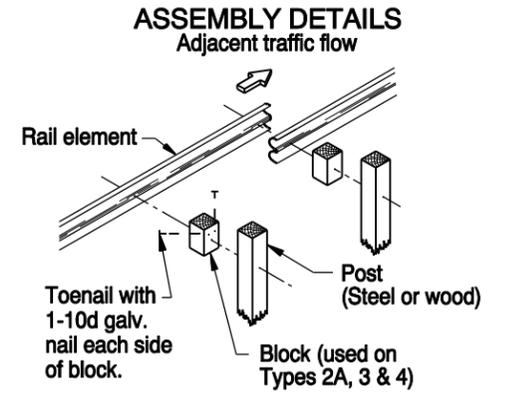
**TYPE 4**



**FUTURE ADJUSTMENT**



**RAIL AFTER OVERLAY**  
(Adjust as shown)



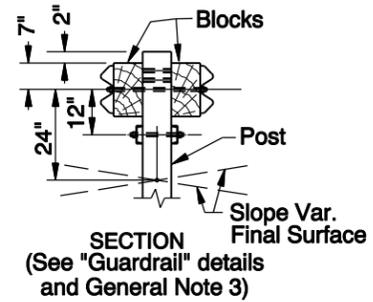
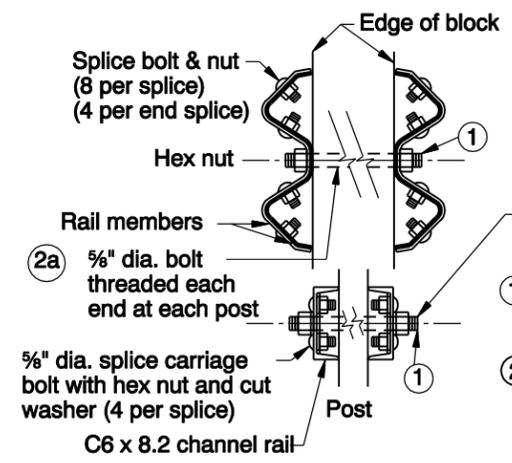
**RELATION OF PARTS**

**TABLE OF POST SPACING**

TYPE	1	2A	3	4
SPACING	12'-6"	6'-3"	3'-11 1/2"	6'-3"

**METAL MEDIAN BARRIER**

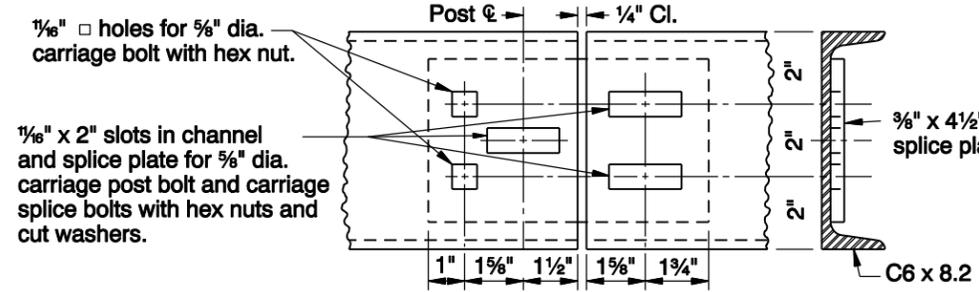
**NOTE:**  
Median barrier post spacing 6'-3".  
See end construction for variations.



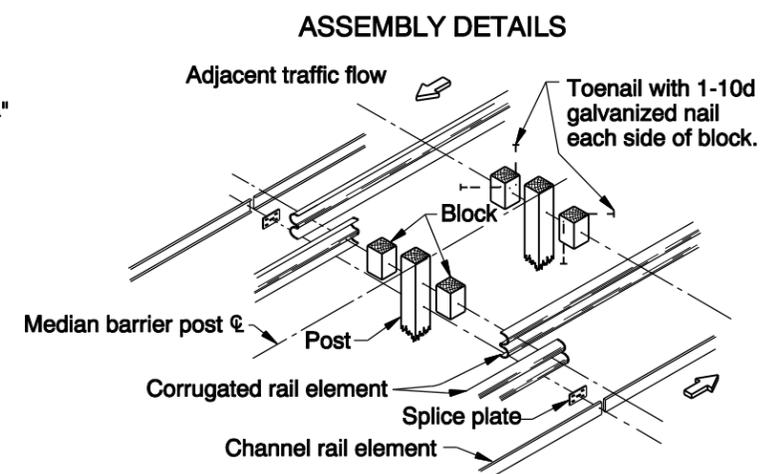
**SECTION**  
(See "Guardrail" details and General Note 3)

- 1 Post bolts to extend beyond the tightened nuts within limits of 1/4" to 1/2".
- 2 When barrier separates to double post mounting:
  - a) use 5/8" dia. button or alternate bolt with washer and hex nut.
  - b) use 5/8" dia. carriage bolt with washer and nut.

**CHANNEL RAIL AND SPLICE PLATE**  
(METAL MEDIAN BARRIER)

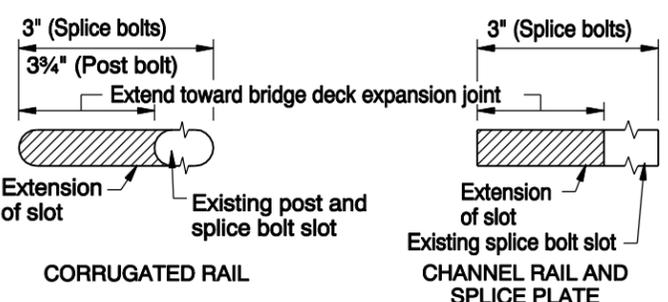
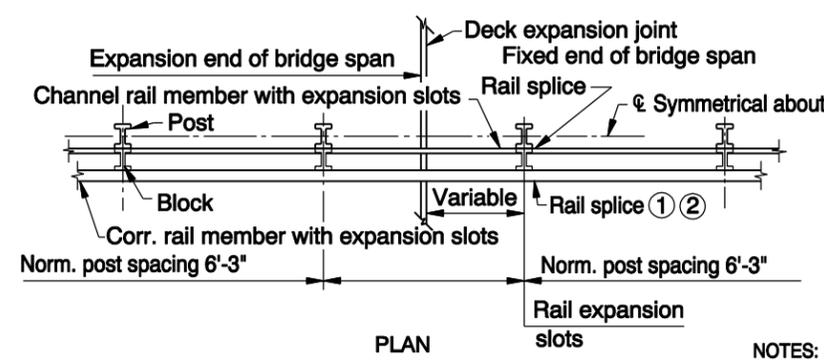


- NOTES:**
- Channel rail elements and splice plates to be of steel conforming to ASTM A36 and to be galvanized after fabrication in accordance with AASHTO M111.
  - Nuts, bolts and other hardware for channel rail assembly shall conform to ODOT Standard Specifications sub-section 2820.30.
  - Clearance to be 1/16" at rail splice for bridge expansion joints.



**RELATION OF PARTS**

**METAL MEDIAN BARRIER/SHOULDER GUARDRAIL INSTALLATION AT BRIDGE DECK EXPANSION JOINT**



- NOTES:**
- 1 Place 2 - 1/2" polytetrafluoroethylene (TFE) sheets between corrugated rail members. The sheets shall be 12 1/2"x1'-7".
  - 2 Adjust nuts to provide a sliding fit and set threads to prevent loosening.

**GENERAL NOTES FOR ALL DETAILS:**

1. For details of parts, see Std. Drgs. RD405, RD410 & RD415.
2. For details of guardrail installation, see Std. Drgs. RD420, RD425, RD430, RD435 & RD440.
3. Use "Alternate Initial Installation", at bridge ends (See Std. Drg. RD440), adjacent to P.C.C. pvmt., for temporary guardrail, for Type 1 rail or as directed.

CALC. BOOK NO. \_\_\_\_\_

BASELINE REPORT DATE \_\_\_\_\_

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

**OREGON STANDARD DRAWINGS**

**GUARDRAIL AND METAL MEDIAN BARRIER**

2002

DATE	REVISION	DESCRIPTION
01-20-05	REVISED NOTES	
11-14-06	REVISED NOTES	
01-2007	REVISED NOTES	

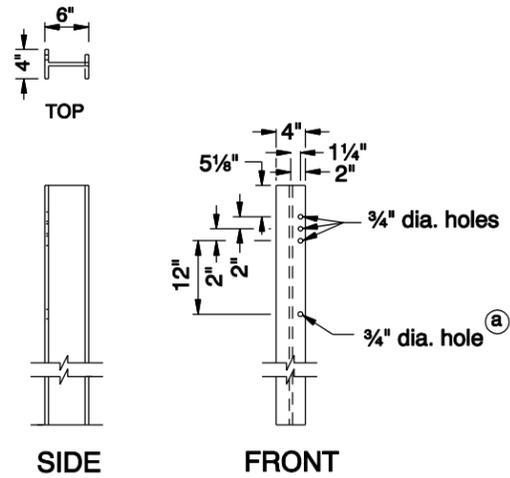
RD400

rd405.dgn 30-JUN-2006

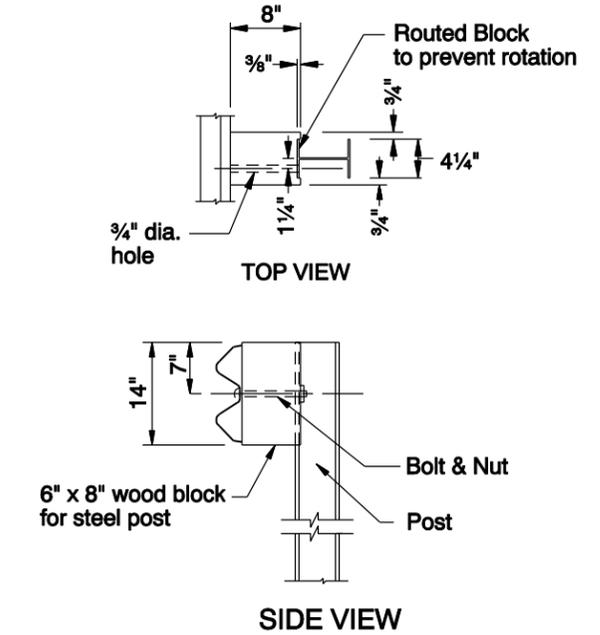
RD405

POSTS

STEEL

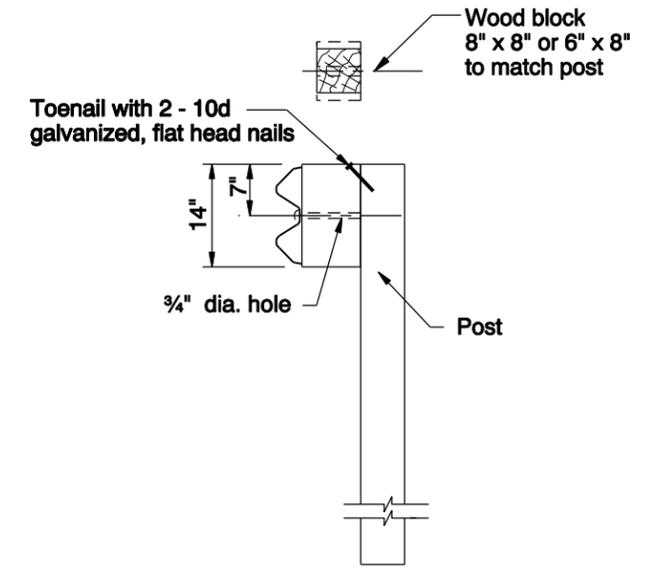


TYPE 2A, 3 OR METAL MEDIAN BARRIER

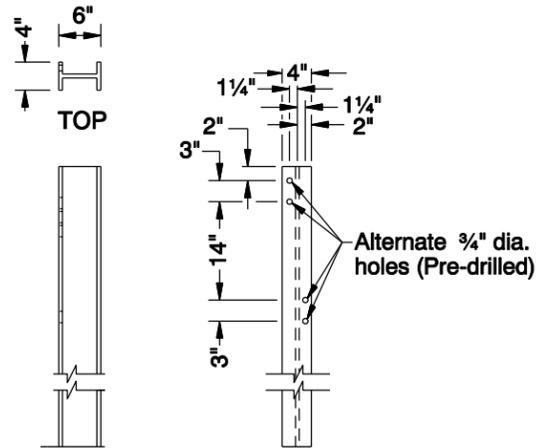


TYPE 2A, 3 OR METAL MEDIAN BARRIER WOOD BLOCK FOR STEEL POST

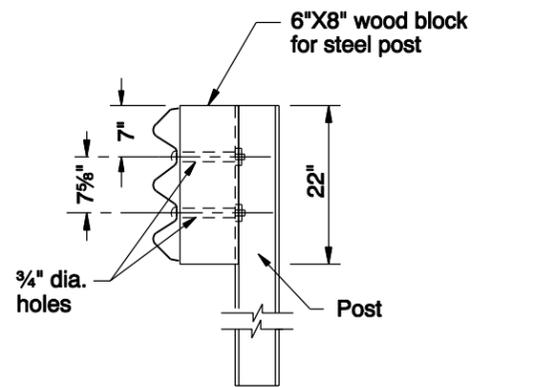
WOOD



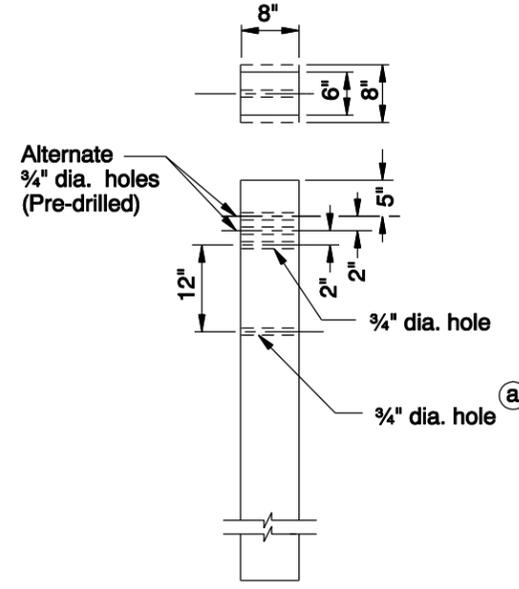
TYPE 2A, 3 OR METAL MEDIAN BARRIER



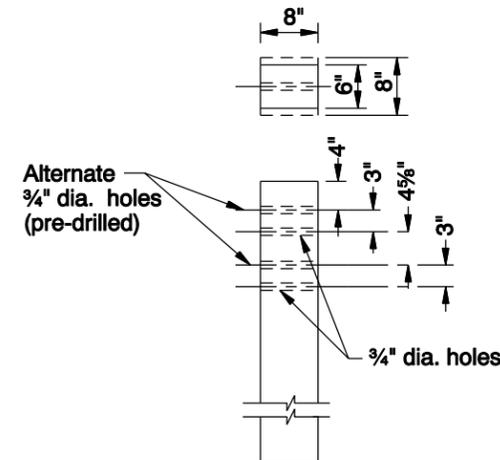
TYPE 4 OR TYPE 4 (TRANSITION) POST



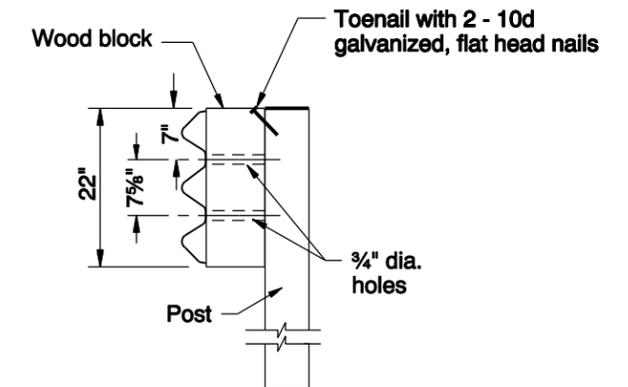
TYPE 4 OR TYPE 4 (TRANSITION) BLOCK (Routing not required)



TYPE 1, 2A, 3 OR METAL MEDIAN BARRIER



TYPE 4 OR TYPE 4 (TRANSITION) POST



TYPE 4 OR TYPE 4 (TRANSITION) BLOCK

GUARDRAIL POST TABLE				
GUARDRAIL TYPE	POST SIZE		POST LENGTH	
	WOOD	STEEL *	WOOD	STEEL
1	6" x 8" or 8" x 8"	—	6'-0"	—
2A	6" x 8" or 8" x 8"	W6 x 8.5	6'-0"	6'-6"
3	8" x 8"	W6 x 8.5	6'-0"	6'-6"
Metal Median Barrier	8" x 8"	W6 x 8.5	6' 6"	6'-6"
4	6" x 8" or 8" x 8"	W6 x 8.5	7'-0"	7'-0"
4 (Transition)	8" x 8"	W6 x 8.5	6'-0"	6'-9"

\* W6 x 9 is an acceptable alternative for W6 x 8.5

(a) Lowest hole(s) required only where channel rail is to be installed. Drill 12" below top 3/4" hole(s) used.

GENERAL NOTES FOR ALL DETAILS:

1. See Std. Drg. RD400 for alternate hole usage requirements.
2. For assembly, installation, and appurtenance details, see Std. Drgs. RD400, RD410, RD415, RD420, RD425, RD430, RD435, RD440.
3. See Bridge Drgs. for bridge transition guardrail post & block requirements. Multiple holes are not required in bridge transition rail posts.
4. Posts and blocks to be pre-drilled.

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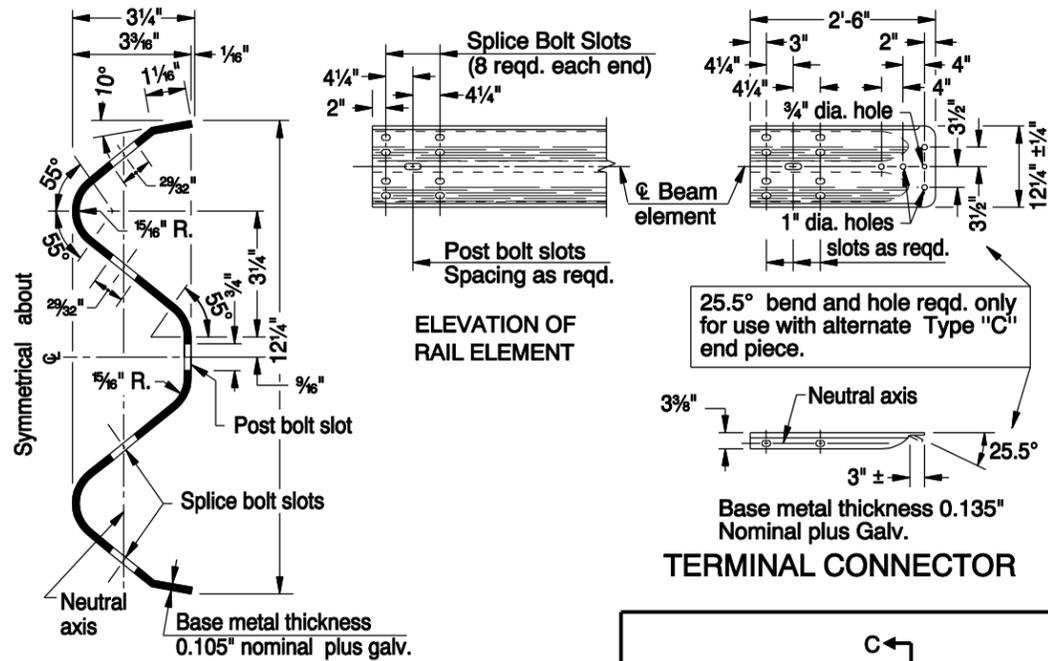
OREGON STANDARD DRAWINGS

GUARDRAIL AND METAL MEDIAN BARRIER PARTS

2002

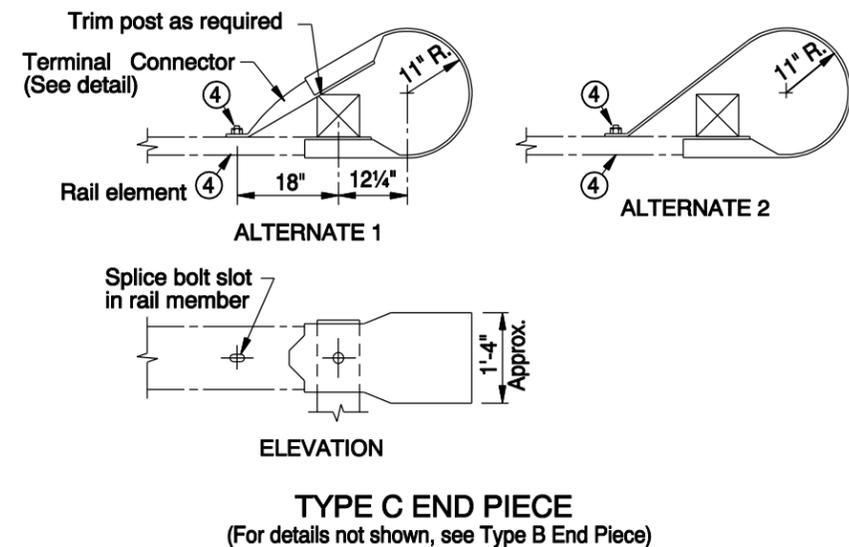
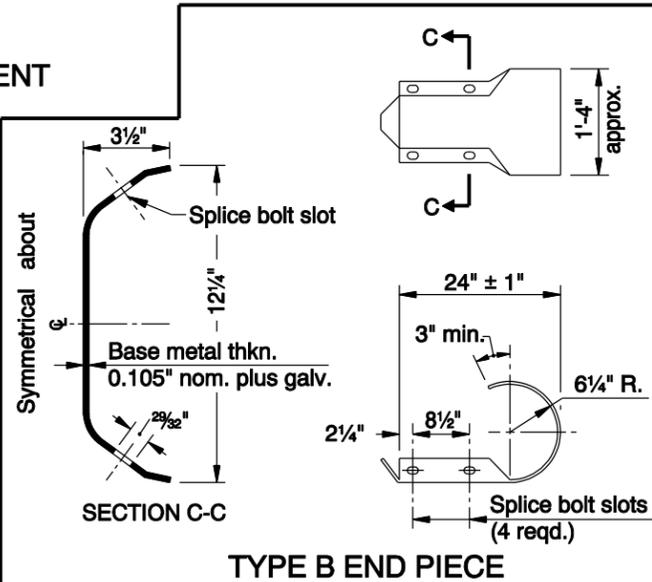
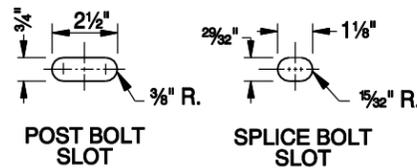
REVISIONS	
DATE	DESCRIPTION
02-04	REVISED NOTES
01-20-05	ADDED DETAILS AND NOTES
06-05	ADDED NOTES
07-2006	REVISED DETAILS AND NOTES

### RAIL MEMBERS

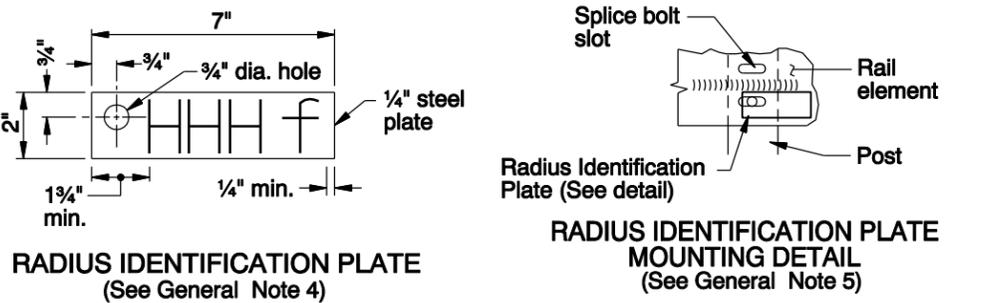
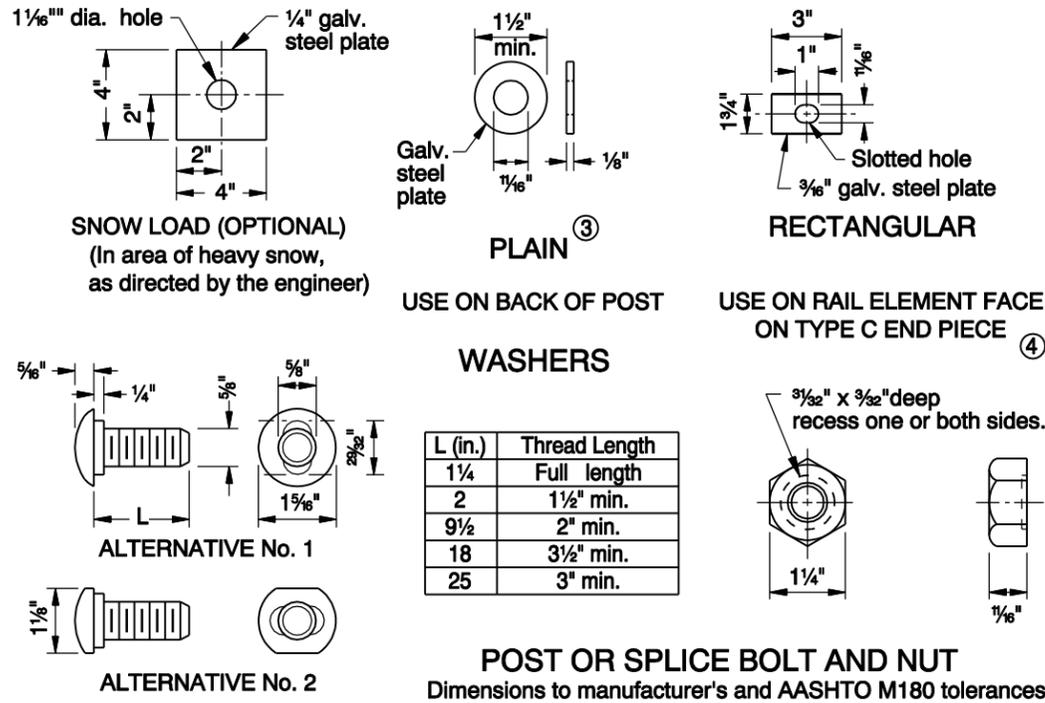


**NOTES:**

1. For guardrail installed on radii of 150' or less (5' min. radius) use rail elements pre-curved to industry standard. Install "Radius Identification Plate" (See Detail right).
2. Effective length of rail sections shall be 12'-6".



### APPURTENANCES

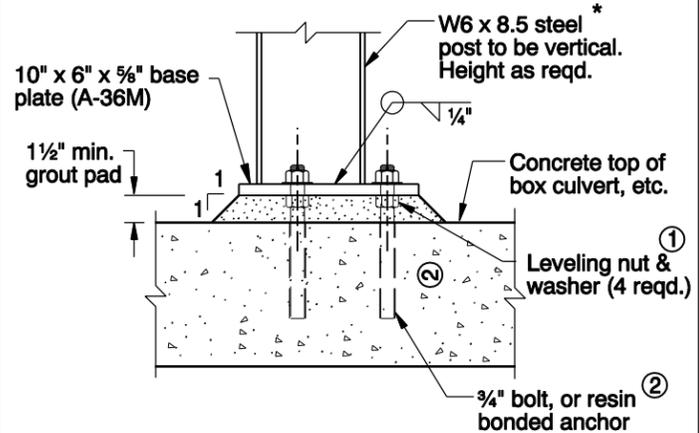
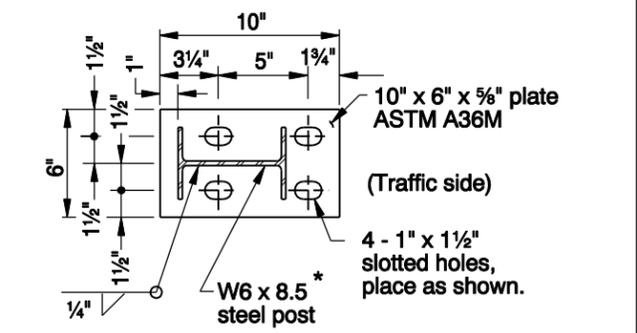


**NOTES:**

- ① Furnished & installed by structure contractor when shown on structure plans.
- ② 5 1/2" min. penetration into concrete slabs other than bridge decks. Cast in place or core and install using approved resin bonding system.
- ③ Not required if "Snow Load" washer option is used.
- ④ Use rectangular washer under bolt head and nut on Type C End Piece as shown.

- GENERAL NOTES FOR ALL DETAILS:**
1. For assembly and installation details, see Std. Drgs. RD400, RD405, RD420, RD425, RD430, RD435 & RD440.
  2. For details of guardrail connections to structural handrails, see special details or Standard Drawings as called for on plans.
  3. All indicated welds shall attain the full strength of the section welded.
  4. Radius dimensions, in feet to the nearest 0.5 foot, shall be placed on the plate with a raised weld bead replacing the letters "HHH", shown on the Radius Identification Plate detail. Digits shall be 1 1/2" min. height and 3/4" max. width. Plate shall be galvanized after placement of digits.
  5. The guardrail radius identification plate is to be mounted on the back side of the rail element with the lowest splice bolt nearest the P.C. of the guardrail radius.

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**BASE PLATE DETAILS**  
(For additional details, See Std. Drg. BR266)

(Use when depth of cover is less than normal for post installation.)

**BACK-UP PLATE FOR STEEL POST INSTALLATIONS**

On Steel Post installations, place 12" long, 12 gauge Back-up Plate between rail element and any post where there is no splice of rail elements.

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

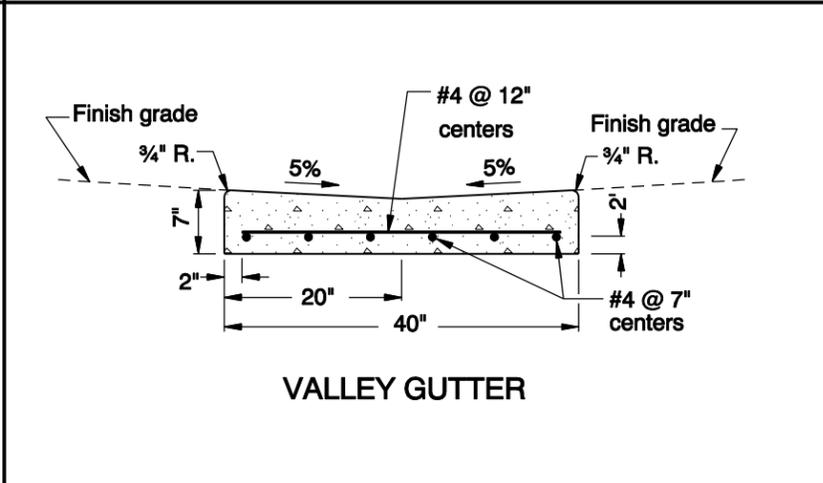
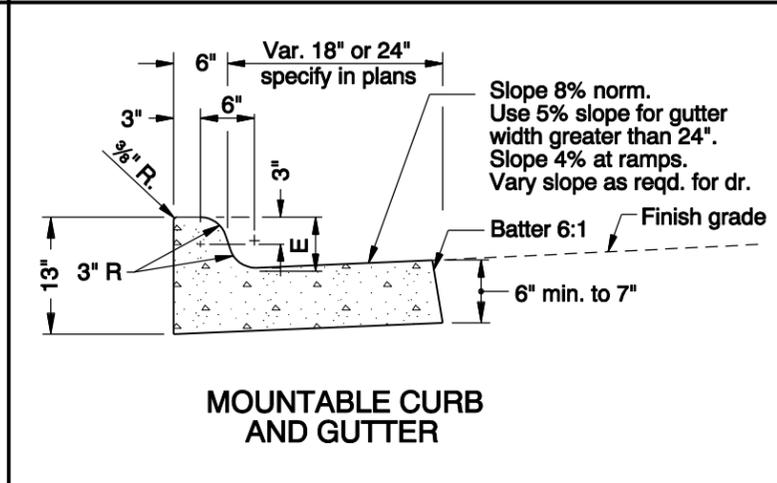
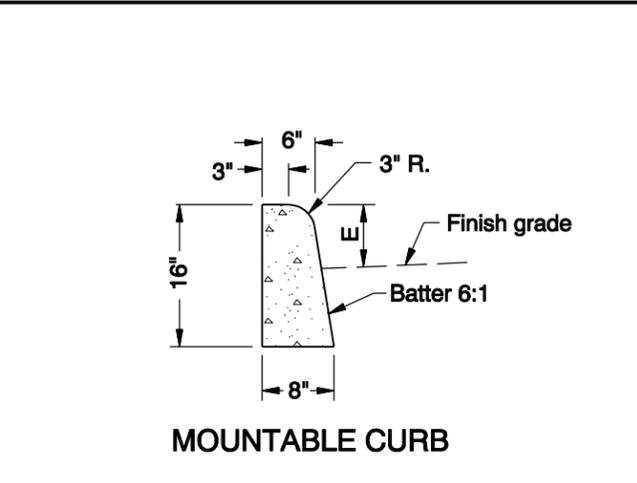
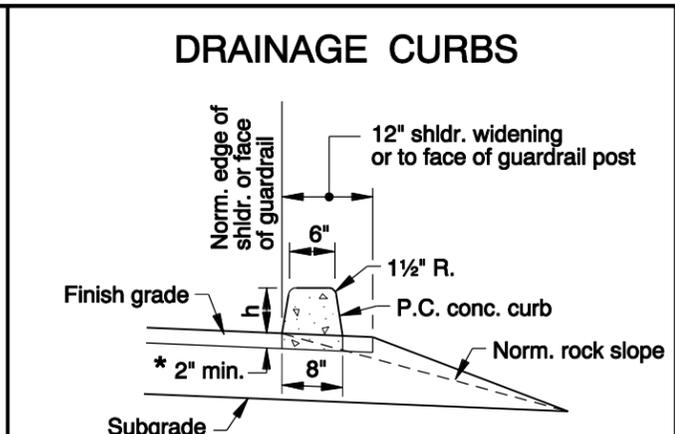
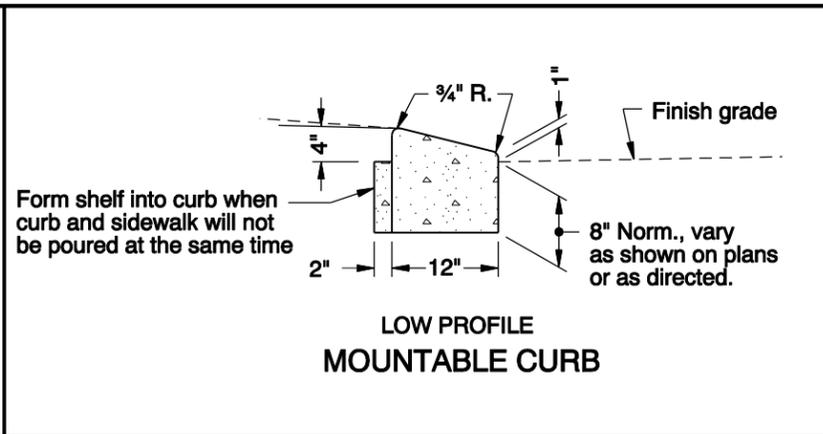
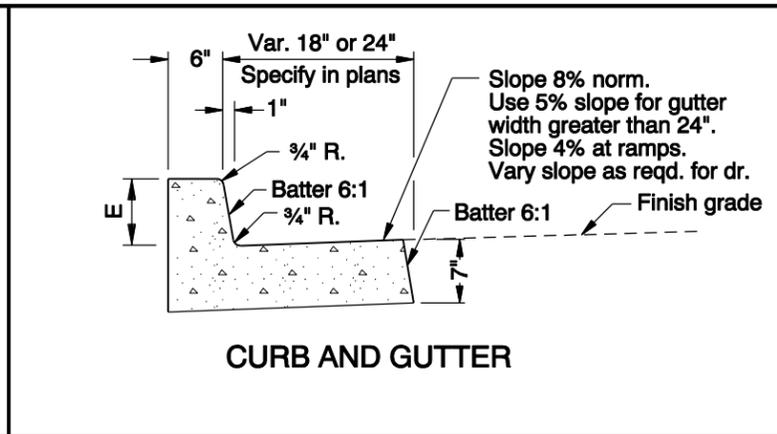
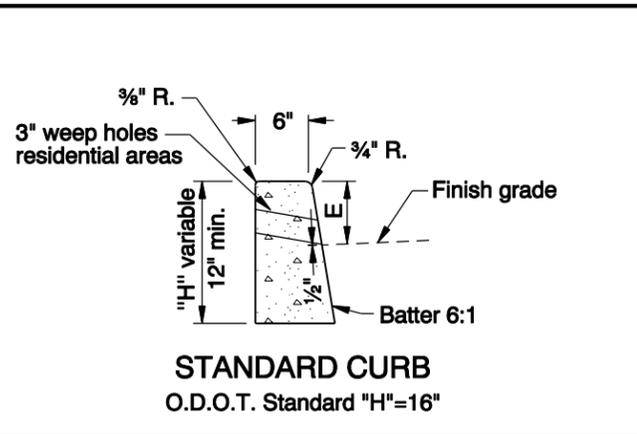
**OREGON STANDARD DRAWINGS**

**GUARDRAIL AND METAL MEDIAN BARRIER PARTS**

2002

REVISIONS	
DATE	DESCRIPTION
03-03	REVISED DRAWING.
01-20-05	REVISED NOTES.
06-05	REVISED RADIUS IDENTIFICATION PLATE NOTES.
07-2006	REVISED DETAILS AND NOTES

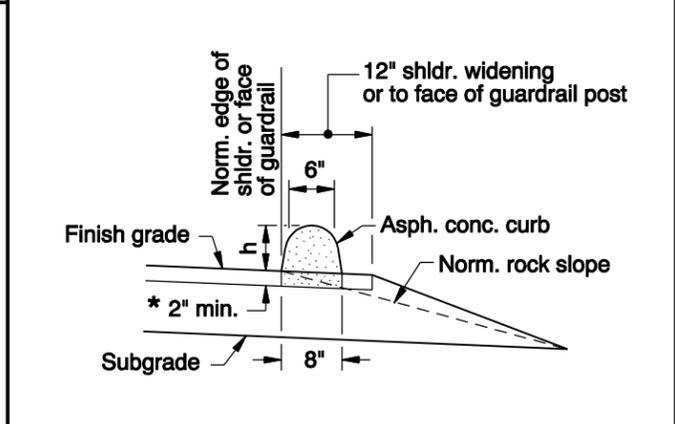
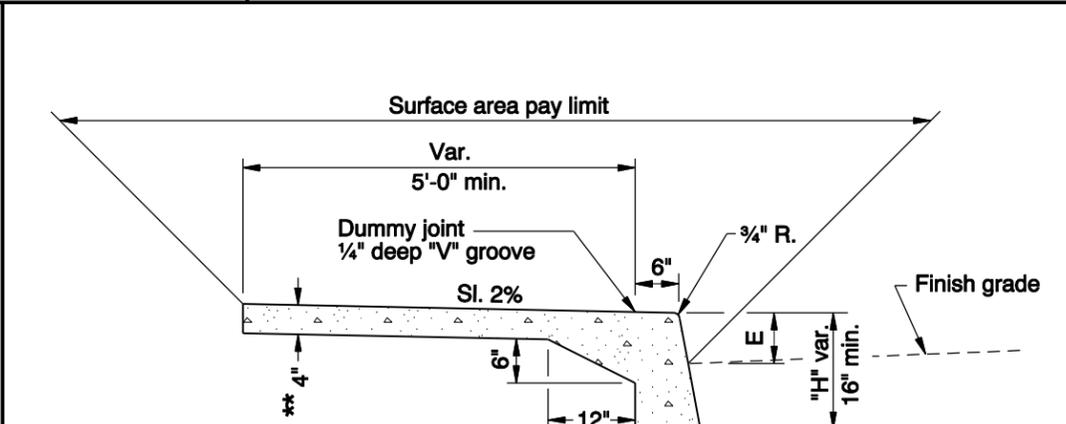
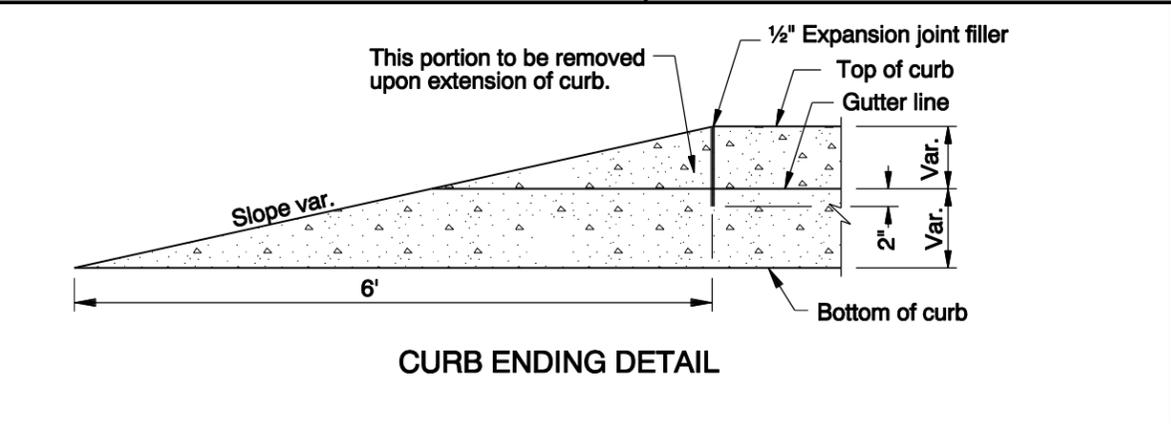
rd700.dgn 12-JAN-2007



**\* The 2" min. curb depth below finish grade is reqd. only when the curb is placed in open-graded A.C. Pvmnt.**

When bonding to dense graded A.C. Pvmnt. apply epoxy cement between surfaces.

h = 6" normal  
4" when run of curb or any part thereof is placed under guardrail



- GENERAL NOTES FOR ALL DETAILS:**
1. Curb exposure "E" = 6" to 9". Vary as shown on plans or as directed. O.D.O.T standard "E"=7".
  2. Const. expansion joints at 200' maximum spacing, and at points of tangency, and at ends of each driveway. For monolithic curb & sidewalk, const. expansion joints at 45' maximum spacing.
  3. Const. contraction joints at 15' maximum spacing, and at ends of each inlet and ramp.
  4. Transitions shall be used to connect curbs of different exposures "E". ("E" is the total vertical dimension of those curb surfaces having a slope of 1:1 or steeper). Minimum desirable transition length shall be 20' for each 1" difference in "E".
  5. Tops of all curbs shall slope toward the roadway at 2% normal unless otherwise shown or as directed.
  6. Dimensions are nominal, vary to conform with curb machine approved by the engineer.

**MONOLITHIC CURB & SIDEWALK**

\*\* As specified in plans. Min. 4". If sidewalk is intended as portion of a dwy. or mountable curb is used min. thkn. 6".

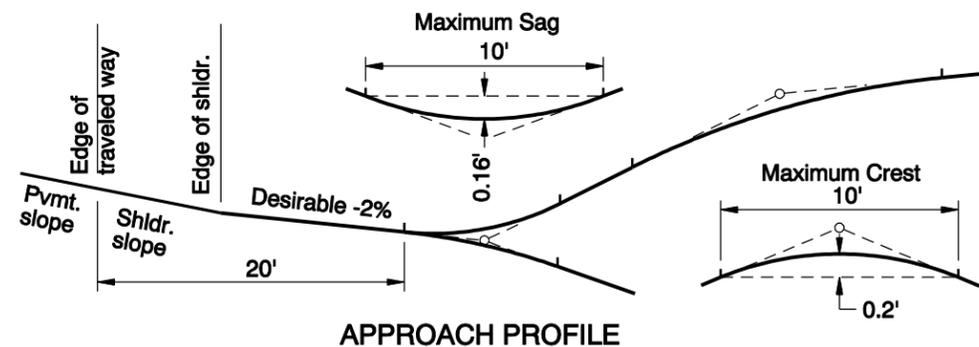
CALC. BOOK NO. \_\_\_\_\_

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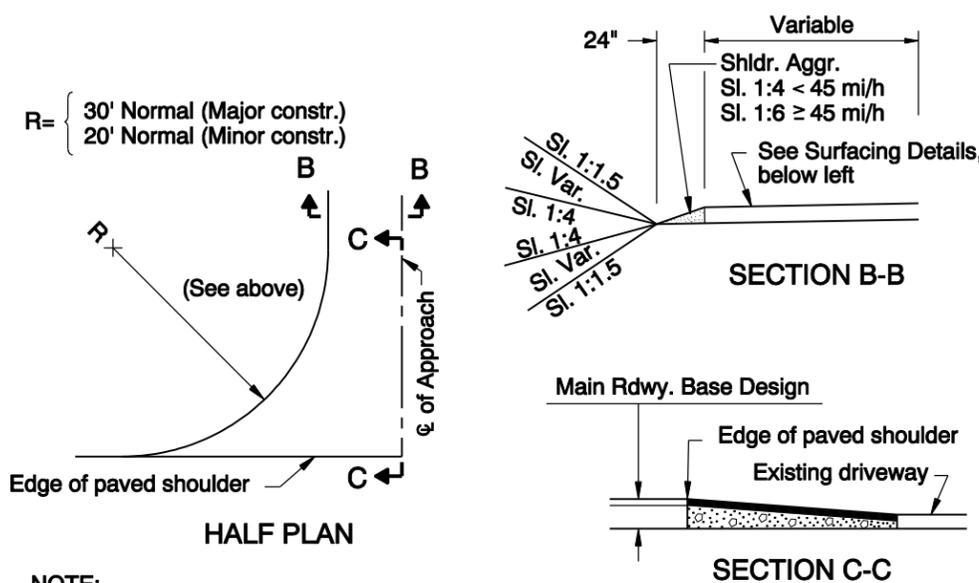
BASELINE REPORT DATE _____	
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>CURBS</b>	
2002	
DATE	REVISION DESCRIPTION
06-05	REVISED NOTES
01-06	REVISED DETAILS AND NOTES
07-2006	REVISED DETAILS AND NOTES
01-2007	ADDED & REVISED NOTES

RD700

rd715.dgn 12-JAN-2007



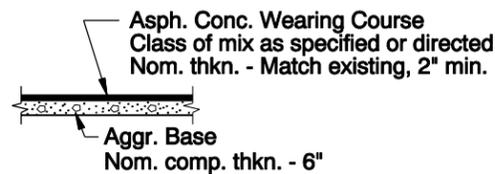
**NOTE:**  
When grades on approaches meet without vertical curves the maximum algebraic difference on crests should be 8% and on sags 12%. Grades steeper than 15% should not be used without prior approval of the engineer of record. Any driveways with slopes exceeding 12% shall be paved.



**NOTE:**  
Normal paving limits to extend 20' from the edge of pavement or to the right of way line, whichever is less. Approach surfacing and width to then match existing approach.

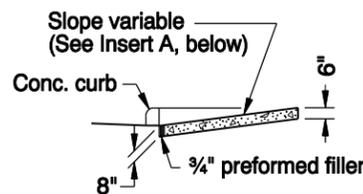
30' for public road connections.

**APPROACH**

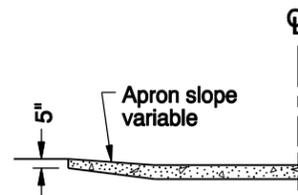


**APPROACH AND DRIVEWAY CONNECTION SURFACING DETAILS**

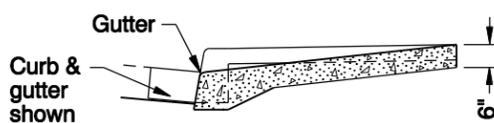
**TYPE A  
PORTLAND CEMENT CONCRETE**



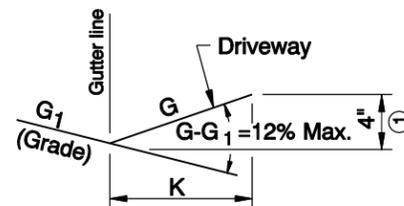
**SECTION D-D**



**SECTION E-E**

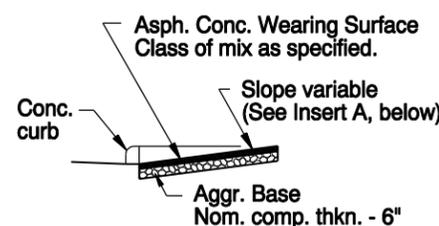


**SECTION A-A  
MONOLITHIC DRIVEWAYS**

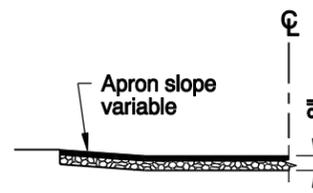


① Minimum allowable for drainage control on negatively sloped driveways.

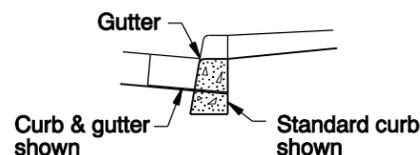
**TYPE A-1  
ASPHALT CONCRETE**



**SECTION D-D**



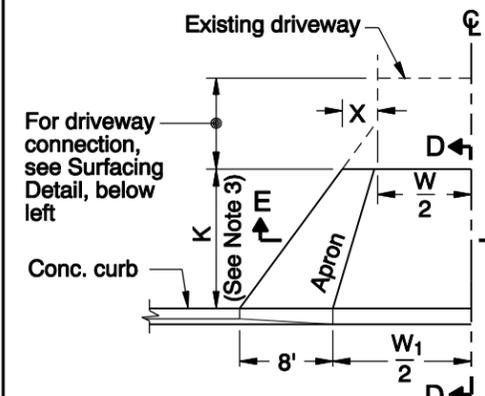
**SECTION E-E**



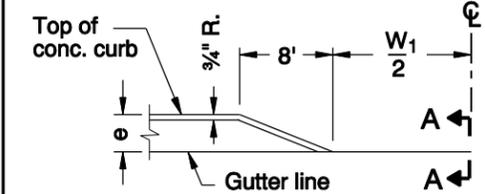
**SECTION A-A  
FOR DRIVEWAYS**

**NON-SIDEWALK DRIVEWAYS**

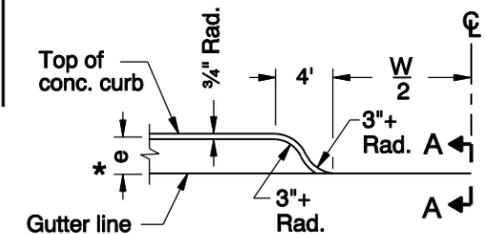
**NOTE:** See "Table A" for dimensions not shown.



**HALF PLAN**



**HALF ELEVATION**



**HALF ELEVATION  
(ALTERNATE APRON SLOPE)  
(See General Note 5)**

\* Curb exposure "e" = 7" normal. Vary as shown on plans or as directed.

**TABLE A**

W (ft)	X (ft)	K (ft)			
		5	6	8	10
		W <sub>1</sub> (ft)			
12	3	15	15	15	15
14		17	17	17	17
16		19	19	19	19
18	4	21	21	21	21
20		23	23	23	23
22		27	28	29	30
24		29	30	31	32
26		31	32	33	34
28	5	33	34	35	36
30		35	36	37	38
32		41	42	44	46
34	6	43	44	46	48
36		45	46	48	50

Where a travel lane is constructed adjacent to the curb line, use 16' W min. for residence and 30' W min. for light commercial, add 5' to W<sub>1</sub> for both. Do not add the 5' to W<sub>1</sub> when 4' min. shldr. or bikeway is included in the typical.

**GENERAL NOTES FOR ALL DETAILS:**

1. Driveway details shown on this drawing are to be used on roadways where there are no existing or planned sidewalks in driveway vicinity. For driveways located in a sidewalk see Std. Drgs. RD720, RD725 and/or RD730, RD735, RD740, RD745, RD750.
2. Width of driveway (W) as shown on plans or as directed.
3. K is the distance from back of curb to back of driveway (10' max.).
4. Where existing driveway is in good condition, construct only as much as required for satisfactory connection with new work.
5. "Alternate Apron Slope" used only where plans designate. Alternate Apron Slope may also be used at local jurisdiction's request when approved by the Project Manager.
6. Increase thickness of asphalt concrete and stone base where shown on plans.
7. For curb details, see Std. Drg. RD700.
8. For expansion and contraction joint requirements, see applicable curb and sidewalk standard drawings.

CALC. BOOK NO. \_\_\_\_\_

BASELINE REPORT DATE \_\_\_\_\_

**NOTE:** All material and workmanship shall be in accordance with the current Oregon Standard Specifications

**OREGON STANDARD DRAWINGS  
APPROACHES AND  
NON-SIDEWALK DRIVEWAYS**

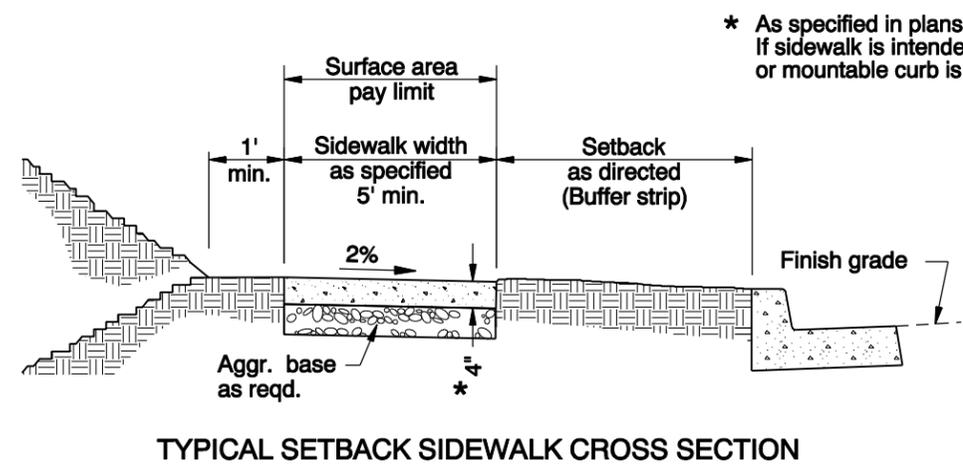
2002

DATE	REVISION DESCRIPTION
4-04	REVISED NOTE
01-06	REVISED DETAILS AND NOTES
07-2006	REVISED DETAILS AND NOTES
01-2007	ADDED NOTES & DIMENSIONS

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

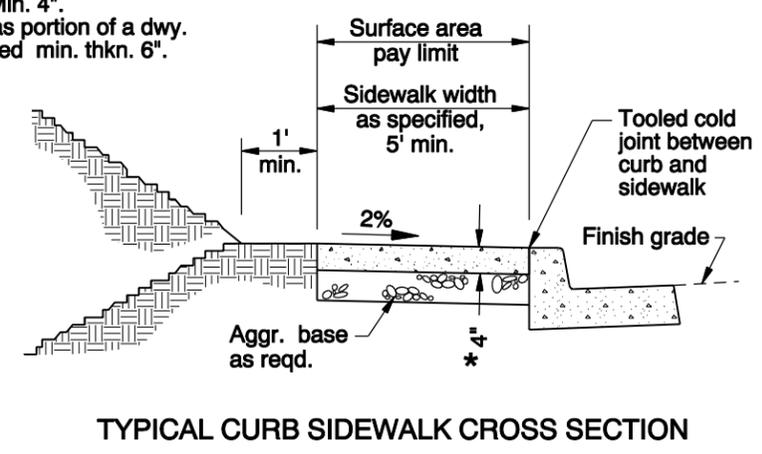
RD715

rd720.dgn 30-JUN-2006

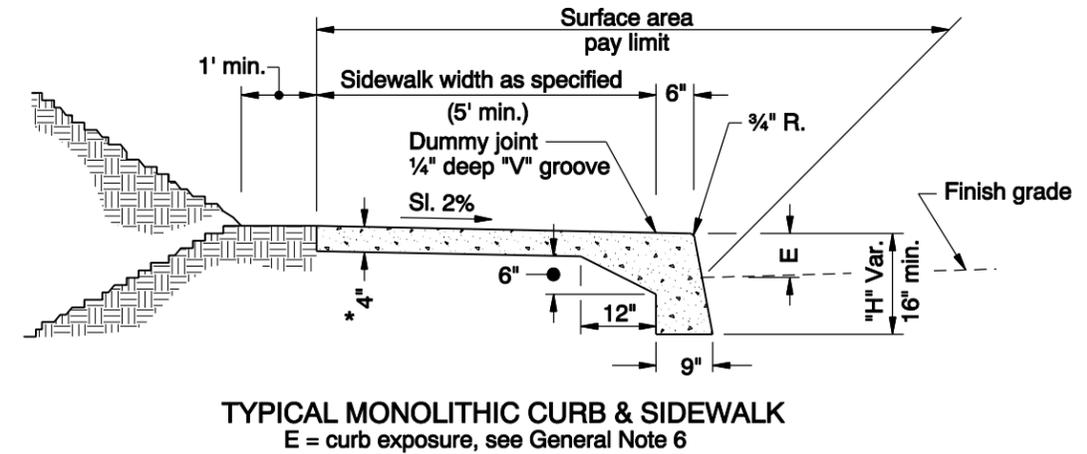


TYPICAL SETBACK SIDEWALK CROSS SECTION

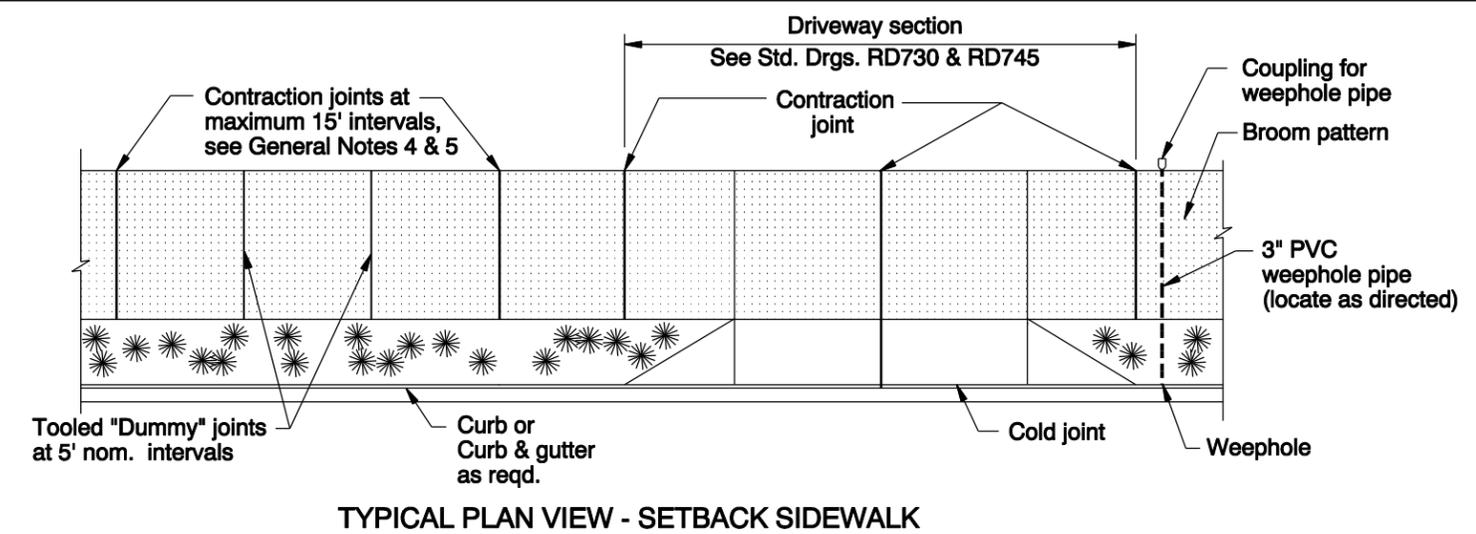
\* As specified in plans. Min. 4".  
If sidewalk is intended as portion of a dwy. or mountable curb is used min. thkn. 6".



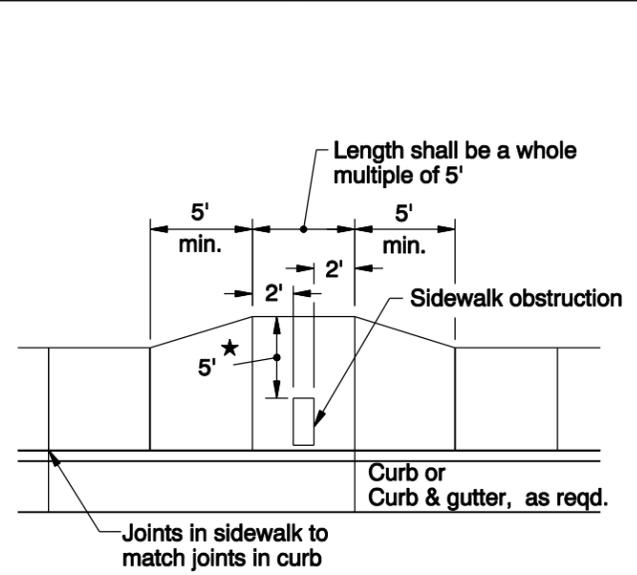
TYPICAL CURB SIDEWALK CROSS SECTION



TYPICAL MONOLITHIC CURB & SIDEWALK  
E = curb exposure, see General Note 6

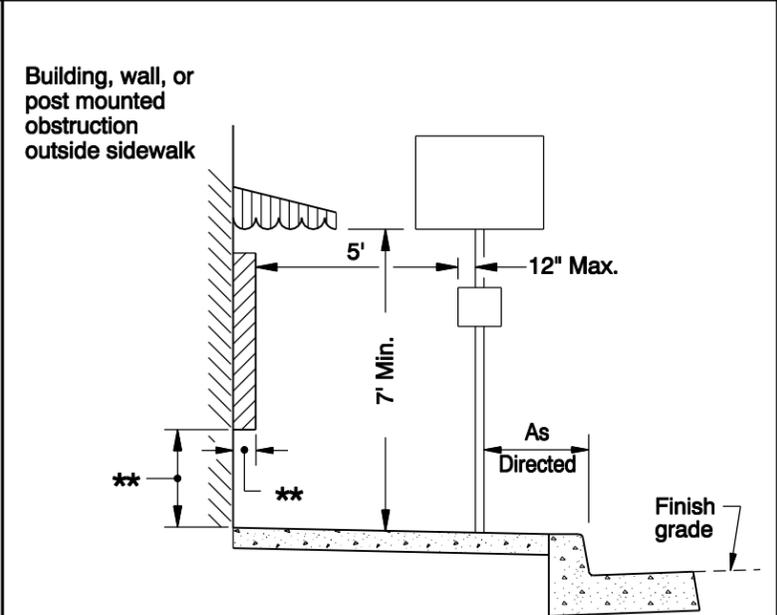


TYPICAL PLAN VIEW - SETBACK SIDEWALK



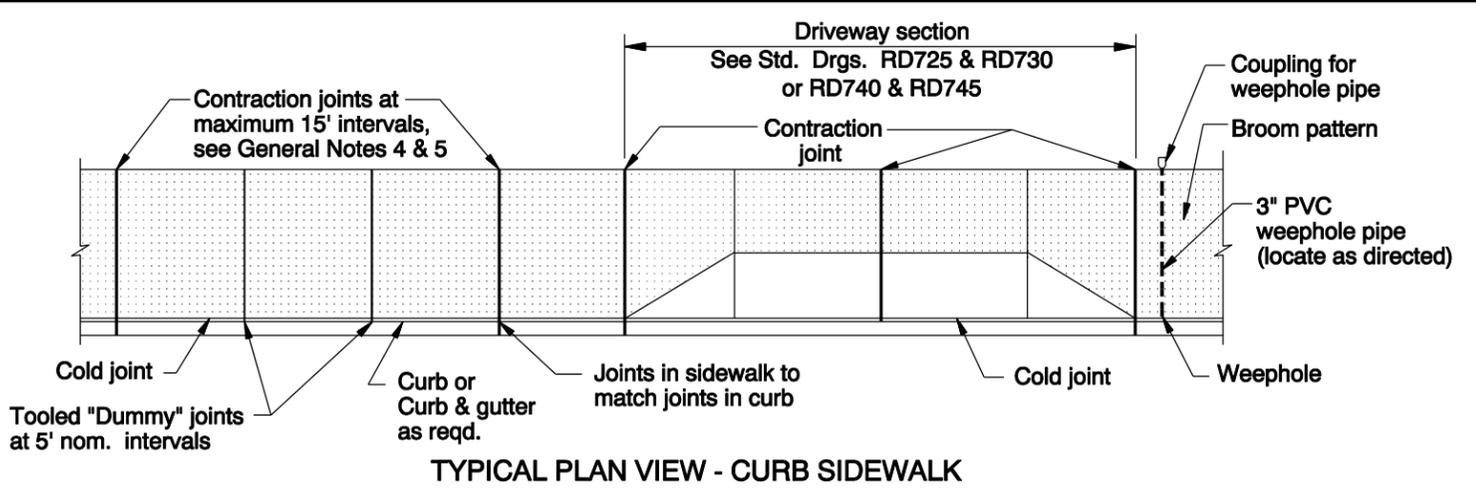
REQUIRED SIDEWALK WIDENING AROUND OBSTRUCTIONS

\* When site constraints prohibit a 5' passage, the Engineer may direct this to be reduced, but no less than 3'.



CLEAR CIRCULATION PATH

\*\* Objects with base below 2' 4" may protrude any distance as long as the 5' circulation path is maintained. When an object with a base higher than 2' 4" protrudes further than 4" provide a curb below protrusion to delineate edge.



TYPICAL PLAN VIEW - CURB SIDEWALK

GENERAL NOTES FOR ALL DETAILS:

1. Include additional paved or unpaved 2' clearance to vertical faces higher than 5' such as retaining walls, sound walls, fences and buildings.
2. On sidewalks 8' and wider, provide a longitudinal joint at the midpoint.
3. Install 3" pvc weephole pipes in sidewalks in locations as directed by the engineer. Place contraction joint over top of pipe.

4. Const. expansion joints at 200' maximum spacing, and at points of tangency, and at ends of each driveway. For monolithic curb & sidewalk, const. expansion joints at 45' maximum spacing.
5. Const. contraction joints at 15' maximum spacing, and at ends of each driveway and ramp.
6. Curb exposure "E"=6" to 9". Vary as shown on plans or as directed. O.D.O.T. standard "E"=7".
7. For curb details, see Std. Drg. RD700.

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OREGON STANDARD DRAWINGS

SIDEWALKS

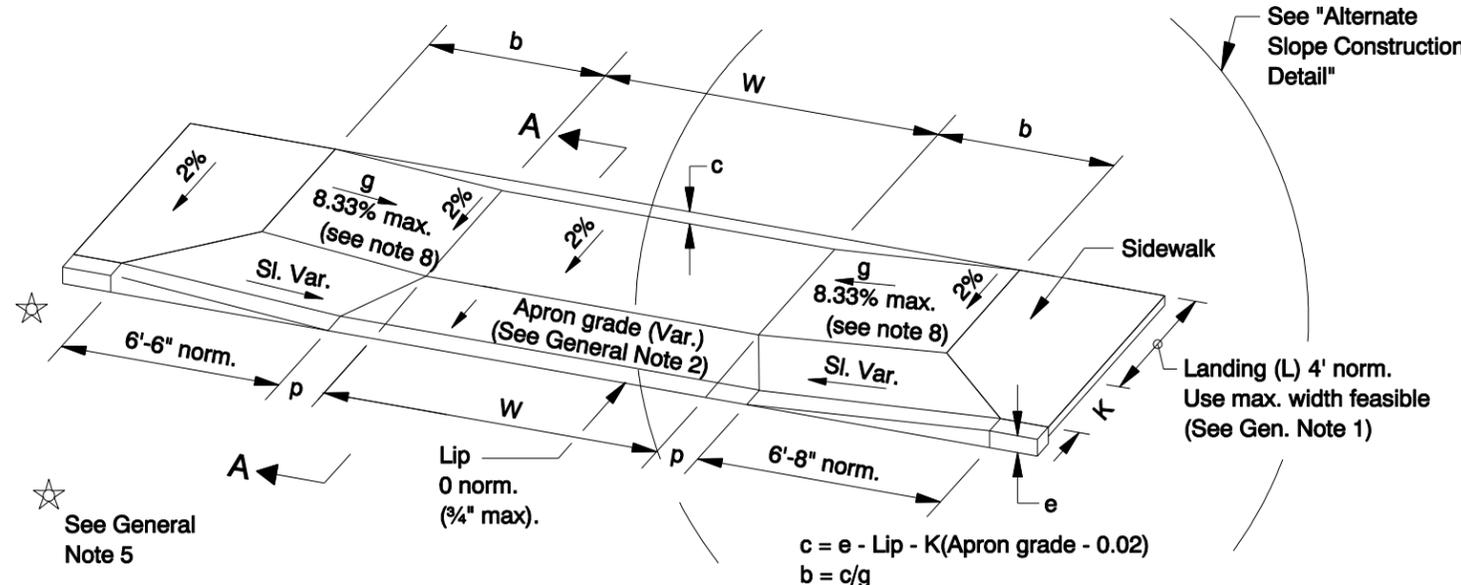
2002

REVISIONS	
DATE	DESCRIPTION
01-20-05	ADDED SURFACE AREA PAY LIMIT AND REVISED NOTES
07-2006	REVISED DETAILS AND NOTES

RD720

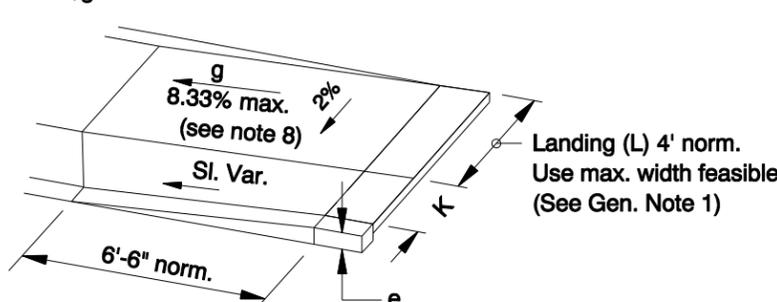


erd735.dgn 6-10-03

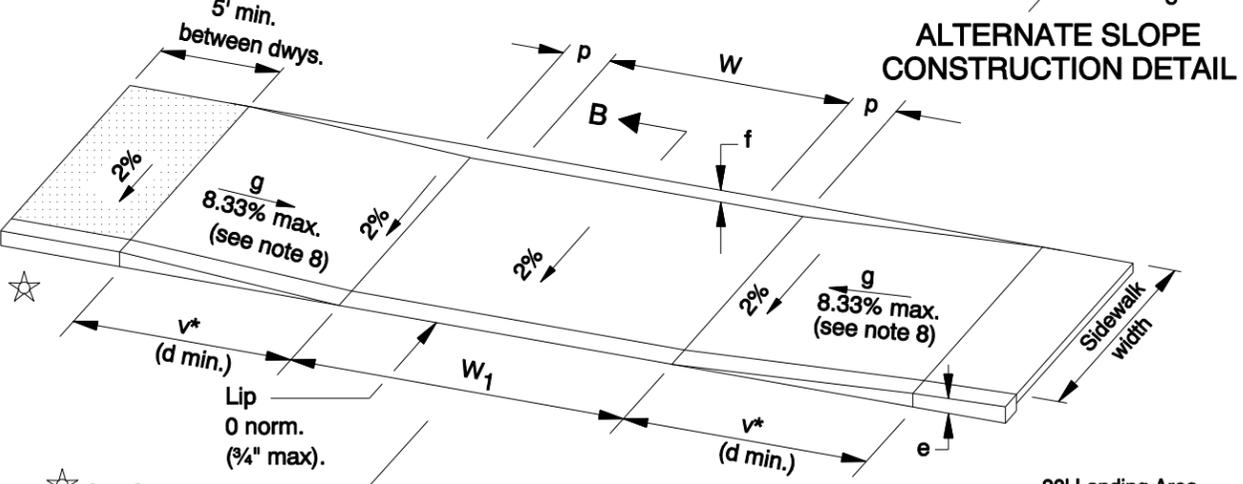


See General Note 5  
 $p = 6'-6"$  in commercial land use types  
 $3'-3"$  in residential land use types

**OPTION F  
PARTIALLY LOWERED SIDEWALK**



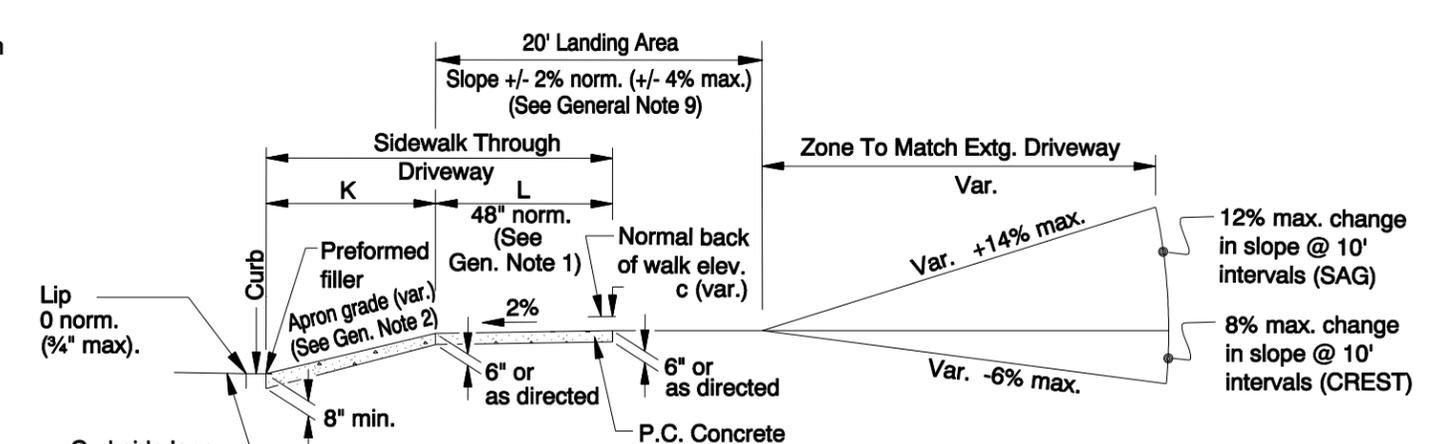
**ALTERNATE SLOPE  
CONSTRUCTION DETAIL**



See General Note 5  
 $p = 6'-6"$  in commercial land use types  
 $3'-3"$  in residential land use types

**OPTION G  
FULLY LOWERED SIDEWALK**

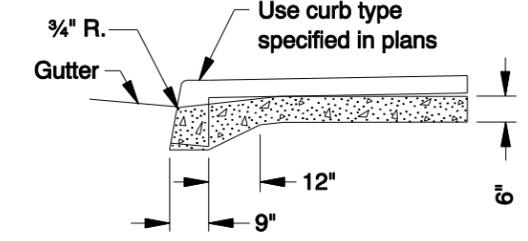
$f = e - \text{Lip}$   
 $d = f/g$   
 \* May be lengthened to obtain flatter slopes on hills.



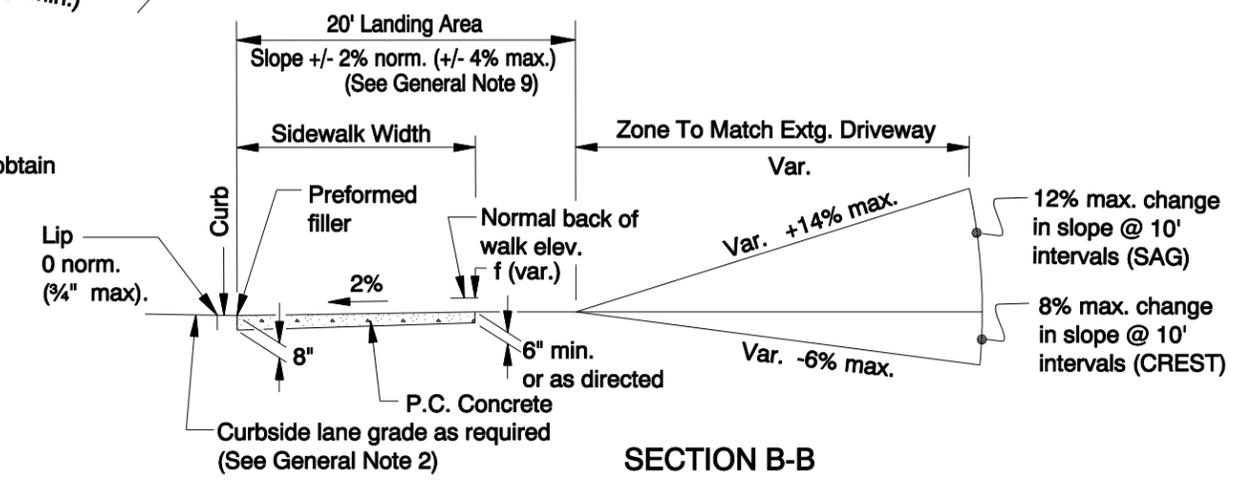
**SECTION A-A**

**NOTES:**  
 See Std. Drg. RD725 for Options C & D.  
 See Std. Drg. RD730 for Options E, F & G

- GENERAL NOTES:**
- 4' norm. width with slope of 2% is required through driveways. 40" width is acceptable where full sidewalk width is less than 66"
  - Grade break at gutter line ("s") = 8% max. in sag and crest. Curbside lane grade is measured from edge of gutter pan.
  - Width of driveway ( $W_1$ ) as shown on plans or as directed. Width of driveway ( $W$ ) as exists behind sidewalk
  - Where existing driveway is in good condition and meets slope requirements, construct only as much as required for satisfactory connection with new work.
  - Check the gutter flow depth at driveway locations to assure that the design flood does not overtop the back of sidewalk at driveway. If overtopping occurs place an inlet at upstream side of driveway or perform other approved design mitigation.
  - Equations may be calculated using either feet or inches. Use same unit throughout equation.
  - Tooled joints are required at all driveway slope break lines.
  - Longitudinal slopes shown are relative to the roadway grade.
  - Landing area slope will not exceed 2% in the sidewalk area.
  - At least 10' of the driveway behind the sidewalk should be surfaced to prevent tracking of gravel onto the sidewalk.



**FOR DRIVEWAYS  
WITH MONOLITHIC CURB & SIDEWALK**  
 (For details not shown, see Drg. No. RD700 & Section A-A or B-B, as appropriate.)



**SECTION B-B**

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

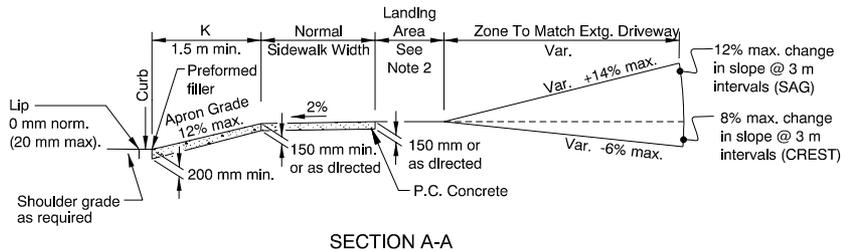
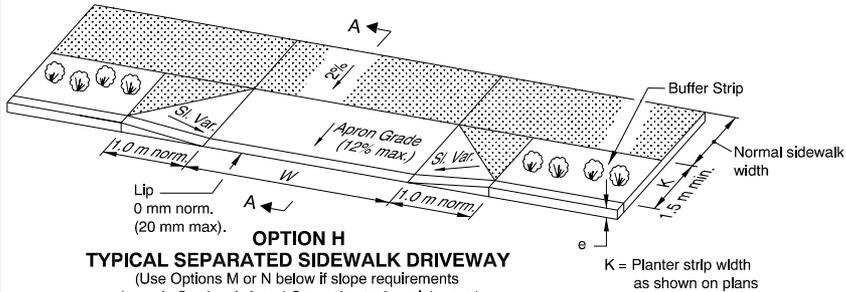
**OREGON STANDARD DRAWINGS**  
**CURB LINE SIDEWALK DRIVEWAYS OR ALLEYS (OPTIONS F & G)**  
**ODOT HIGHWAYS**  
 2002

REVISIONS	
DATE	DESCRIPTION
6-03	REVISE NOTES

**Effective Date: May 1, 2007 - October 31, 2007**

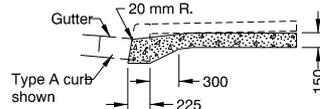
RD735

RD735



**GENERAL NOTES:**

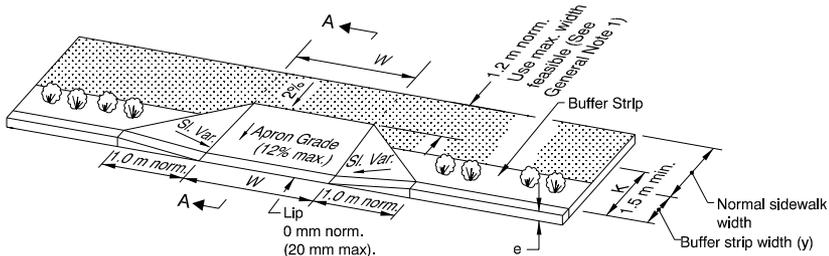
- 1.2 m sidewalk width with slope of 2% is required through driveways. 1.0 m min. width is acceptable where full sidewalk width is less than 1.7 m
- Width of driveway (W) and length of landing area shall be as shown on plans or as directed.
- Where existing driveway is in good condition and meets slope requirements, construct only as much as required for satisfactory connection with new work.
- Check the gutter flow depth at driveway locations to assure that the design flood does not overtop the back of sidewalk at driveway. If overtopping occurs place an inlet at upstream side of driveway or perform other approved design mitigation.
- Equations may be calculated using either meters or millimeters. Use same unit throughout equation.
- Tooled joints are required at all driveway slope break lines.
- Longitudinal slopes shown are relative to the running slope of the sidewalk.
- Any dimensions except those of General Note 1 may be amended by local agencies for their use.
- At least 3.0 m of the driveway behind the sidewalk should be surfaced to prevent tracking of gravel onto the sidewalk.



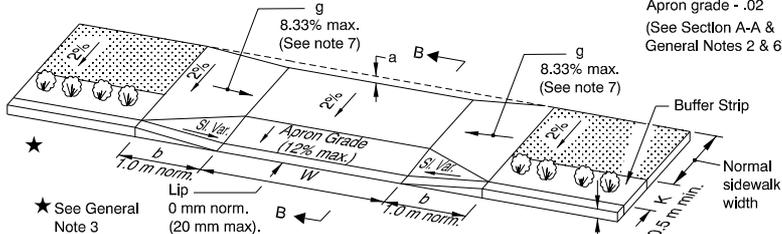
**FOR DRIVEWAYS WITH MONOLITHIC CURB & SIDEWALK**  
 (For details not shown, see Drg. No. RD700 & Section A-A or B-B, as appropriate.)

**NOTE:**  
 This drawing is to be used by local agencies to assist them in the design of driveways on their facilities.

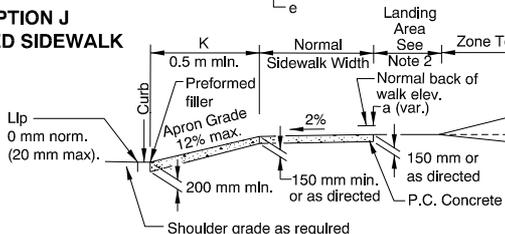
**NOTE:**  
 Dimensions a & b are nominal. Construct driveways to meet required slopes.



$$K = \frac{(e - \text{Lip}) \cdot .02y}{\text{Apron grade} - .02}$$
 (See Section A-A & General Notes 2 & 6)



K = Planter strip width as shown on plans  
 $a = e - \text{Lip} - K(\text{Apron Grade} - 0.02)$   
 $b = a/g$



● All dimensions are in mm unless otherwise noted.

**NOTE:** All material and workmanship shall be in accordance with the current Oregon Standard Specifications

**OREGON STANDARD DRAWINGS**  
**SEPARATED SIDEWALK DRIVEWAYS OR ALLEYS (OPTIONS H, I & J)**

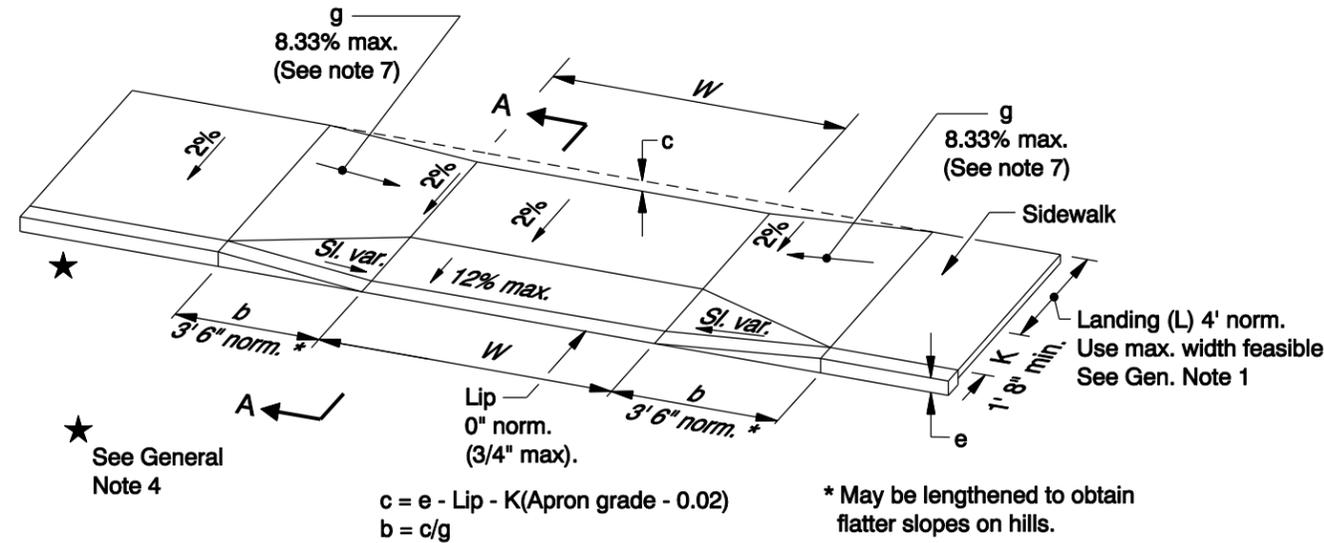
**LOCAL JURISDICTIONS**

2002

REVISIONS

DATE DESCRIPTION

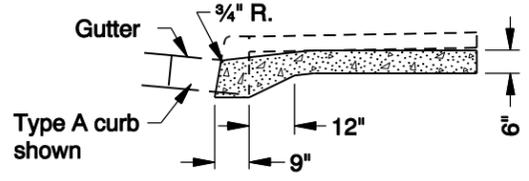
*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*



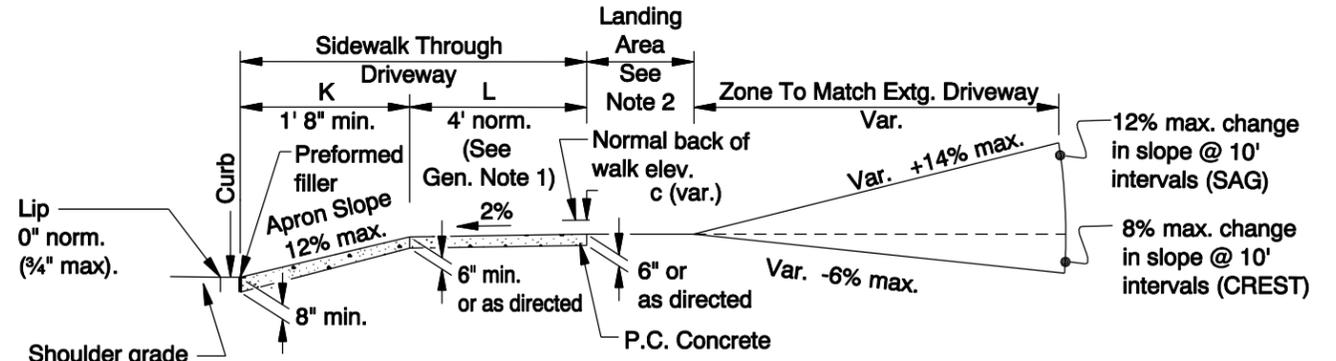
**OPTION M  
PARTIALLY LOWERED SIDEWALK**

$c = e - \text{Lip} - K(\text{Apron grade} - 0.02)$   
 $b = c/g$

\* May be lengthened to obtain flatter slopes on hills.



**FOR DRIVEWAYS  
WITH MONOLITHIC CURB & SIDEWALK**  
 (For details not shown, see Drg. No. RD700 & Section A-A or B-B, as appropriate.)



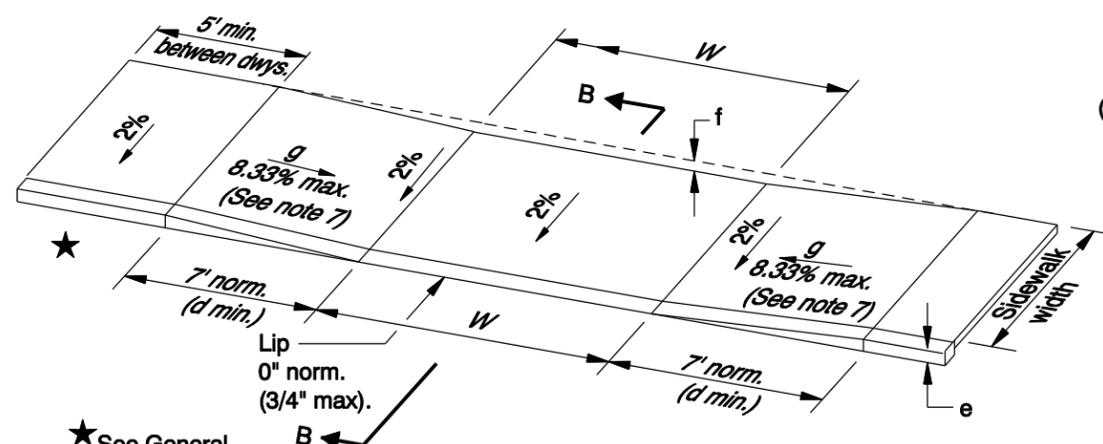
**SECTION A-A**

**GENERAL NOTES:**

- 4' norm. width with slope of 2% is required through driveways. 3' 6" min. width is acceptable where full sidewalk width is less than 6'
- Width of driveway (W) and length of landing area shall be as shown on plans or as directed.
- Where existing driveway is in good condition and meets slope requirements, construct only as much as required for satisfactory connection with new work.
- Check the gutter flow depth at driveway locations to assure that the design flood does not overtop the back of sidewalk at driveway. If overtopping occurs place an inlet at upstream side of driveway or perform other approved design mitigation.
- Equations may be calculated using either feet or inches. Use same unit throughout equation.
- Tooled joints are required at all driveway slope break lines.
- Longitudinal slopes shown are relative to the running slope of the sidewalk.
- Any dimensions except those of General Note 1 may be amended by local agencies for their use.
- At least 10' of the driveway behind the sidewalk should be surfaced to prevent tracking of gravel onto the sidewalk.

**NOTE:**

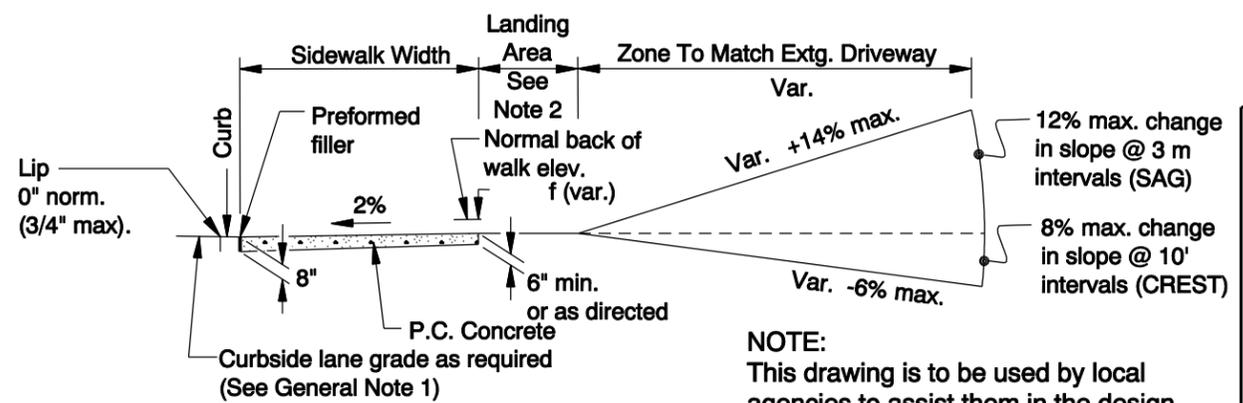
Dimensions b, c, d & f are nominal. Construct driveways to meet required slopes.



**OPTION N  
FULLY LOWERED SIDEWALK**

$f = e - \text{Lip}$   
 $d = f/g$

\* May be lengthened to obtain flatter slopes on hills.



**SECTION B-B**

**NOTE:**  
 This drawing is to be used by local agencies to assist them in the design of driveways on their facilities.

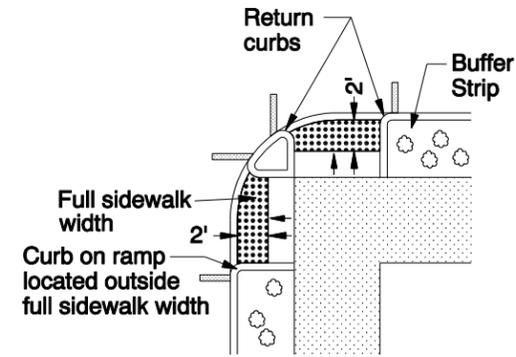
*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

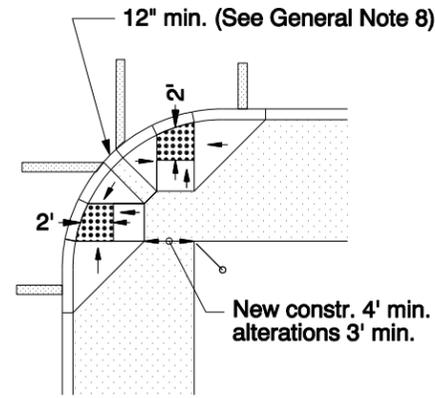
**OREGON STANDARD DRAWINGS**  
**CURB LINE SIDEWALK DRIVEWAYS OR ALLEYS (OPTIONS M & N)**  
**LOCAL JURISDICTIONS**

2002

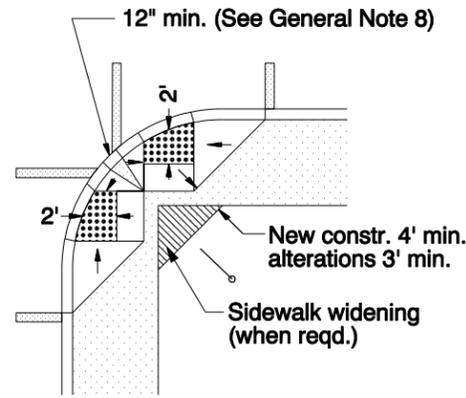
REVISIONS	
DATE	DESCRIPTION



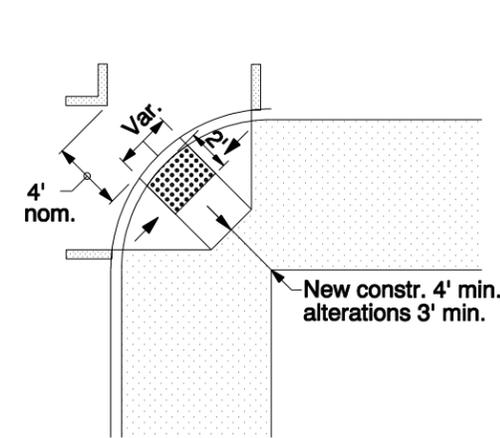
**OPTION A  
RAMPS WITH BUFFER STRIP**



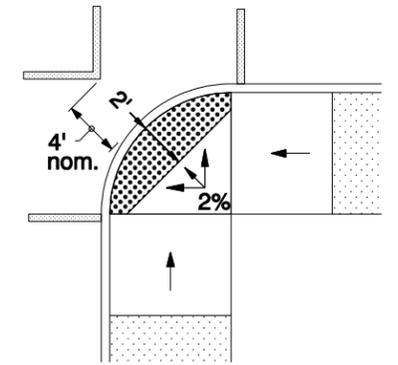
**OPTION B  
PERPENDICULAR RAMPS**



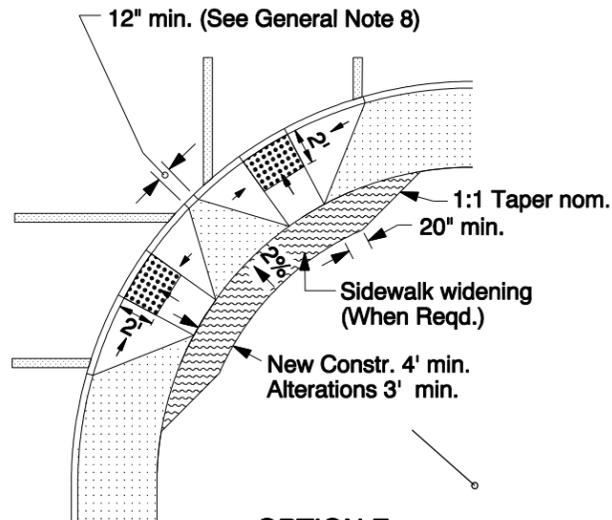
**OPTION C  
PERPENDICULAR RAMPS**



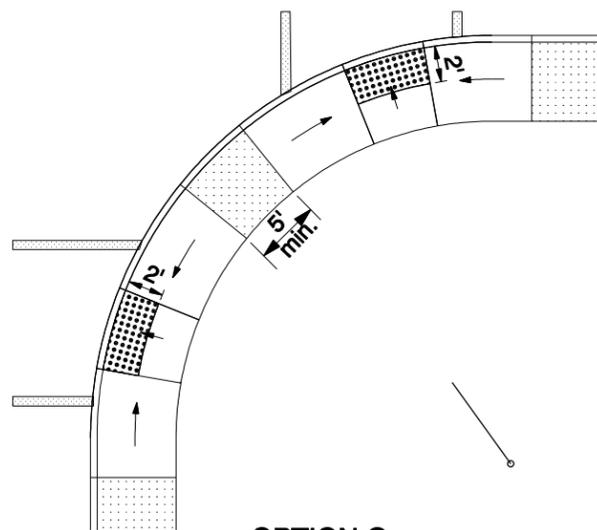
**OPTION D  
SINGLE DIAGONAL RAMP**  
Use in alterations only and when site constraints prohibit installing two ramps



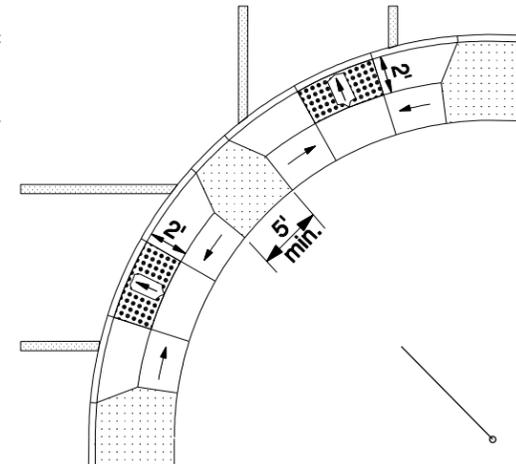
**OPTION E  
SINGLE PARALLEL RAMP**  
Use in alterations only and when site constraints prohibit installing two ramps



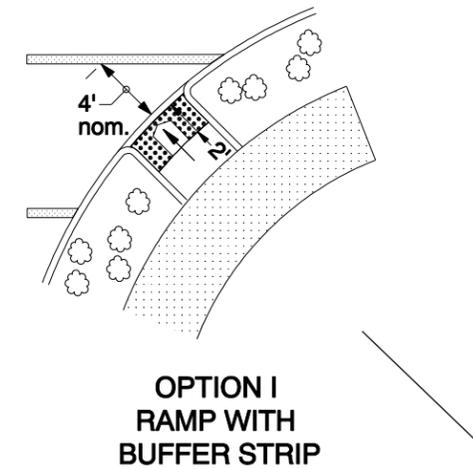
**OPTION F  
PERPENDICULAR RAMPS**



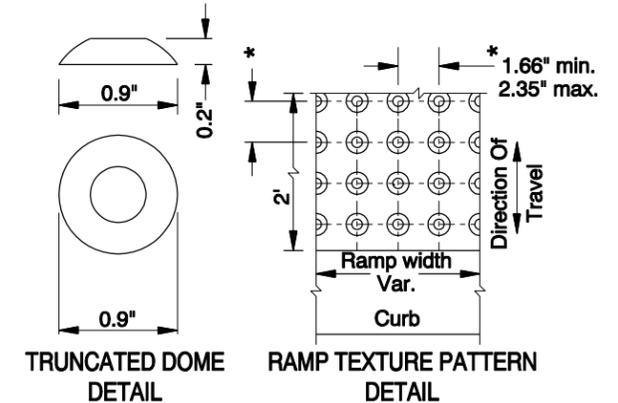
**OPTION G  
PARALLEL RAMPS**



**OPTION H  
COMBINATION RAMPS**



**OPTION I  
RAMP WITH  
BUFFER STRIP**



**TRUNCATED DOME  
DETAIL**      **RAMP TEXTURE PATTERN  
DETAIL**

Marked or intended crossing location

**GENERAL NOTES FOR ALL DETAILS:**

- Place truncated dome detectable warning texture in the lower 2' of throat of ramp only. Arrange domes using square in-line pattern only as shown in detail right. Color of texture to be safety yellow. For construction of sidewalk ramps outside of public right-of-way, check with State Building Codes for requirements regarding texturing of flares.
- Sidewalk curb ramp slopes shown are relative to the true level horizon (zero bubble)
- In alterations curb ramp slope(s) may be 10% for a max. rise of 6" or 12.5% for a max. rise of 4". Curb ramps, in alterations, need not exceed 6' in length.
- Side flares, if used in Option A and I, that are not part of the path of travel may be of any slope.
- Do not slope landing more than 2% in any direction.

- Ramps for paths intersecting a roadway should be full width of path. When a ramp is used to provide bicycle access from a roadway to a sidewalk, the ramp should be 8' wide, with no texturing.
- Sidewalk ramp details are based on ORS 447.310 and the PROWAAC Final Report.
- When 2 curb ramps are immediately adjacent, as in Options A, B, C and F, the curb exposure (e) between the adjacent side flares may range between 3" and full design exposure.
- For the purpose of this drawing, a curb ramp is considered "perpendicular" if the angle between the longitudinal axis of the ramp and a line tangent to the curb at the ramp center is 75° or greater.

See RD755 for additional requirements and details not shown.

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

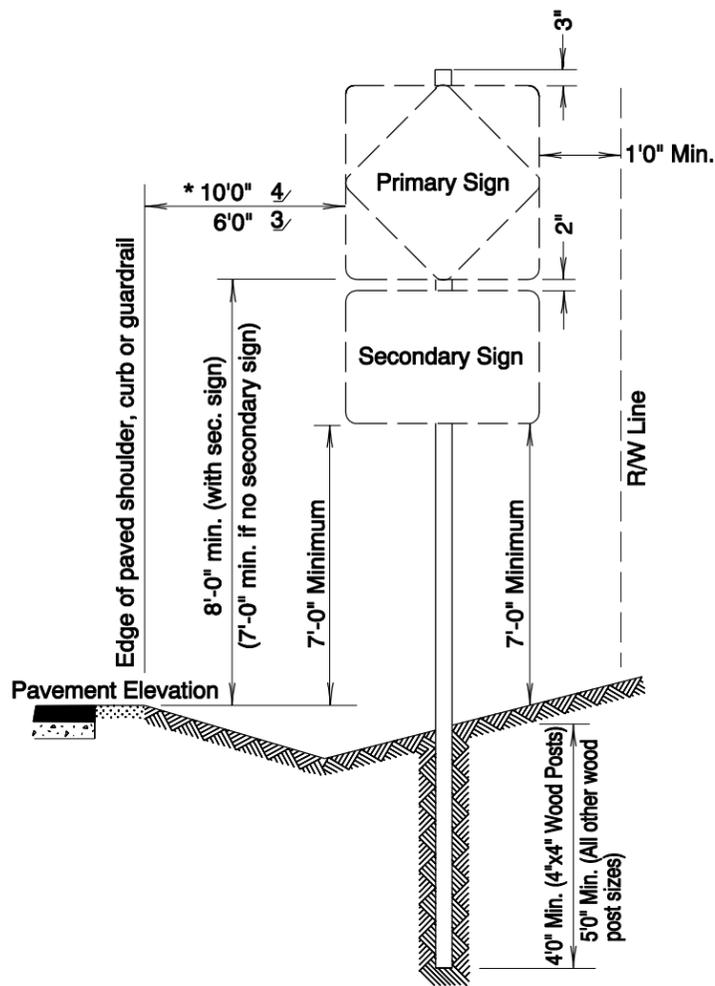
**OREGON STANDARD DRAWINGS**

**SIDEWALK RAMP PLACEMENT**

2002

REVISIONS	
DATE	DESCRIPTION
10-02	REVISE DETAIL
06-03	REVISE DETAIL
04-04	UPDATE DETAIL
01-20-05	REVISED AND ADDED NOTES

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

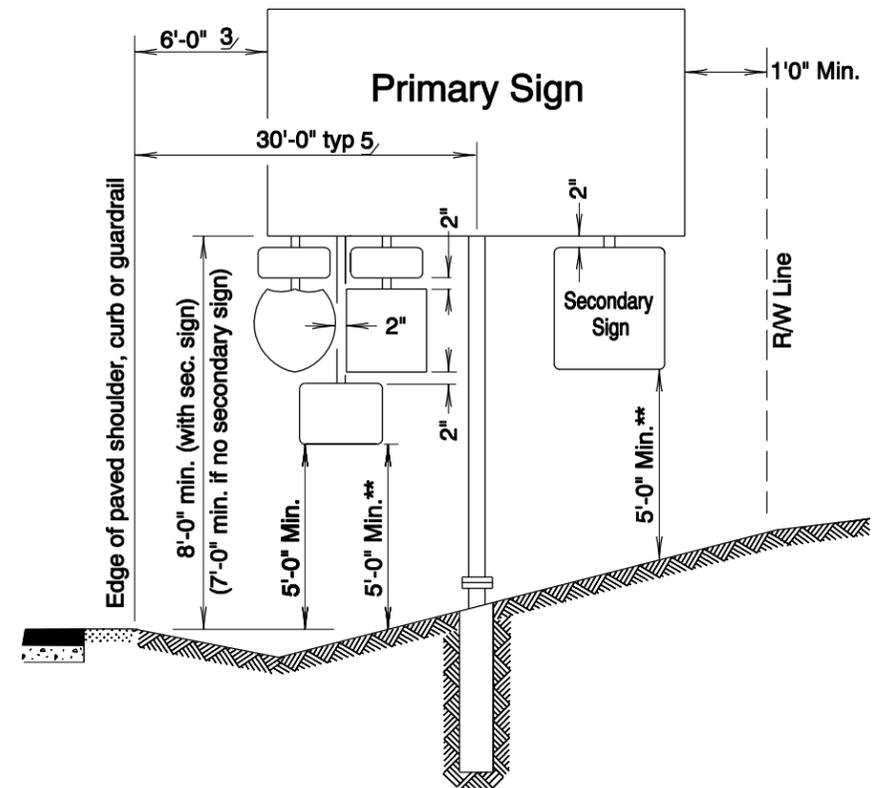


**General Installation Notes:**

1. Signing details shown on this sheet are intended to convey "typical" conditions only. Individual locations may require installation different from those shown. For guidance regarding unique installations or exceptions call the Project Sign Designer or Region Traffic Section.
2. Locate breakaway supports away from ditches to avoid problems with erosion, corrosion, debris, maintenance and breakaway performance. See Dwg. No. TM635 for more information.
3. In order to develop the maximum moment resistance of the 4" x 6" and the 6" x 8" wood post, the longer post dimension should be at right angles to the sign face. If signs are installed on more than one side of the post, the longer post dimension should be at right angle to the side with the largest area of sign face.

**Vertical Clearance Notes:**

1. In rural areas the secondary sign may be installed at 5'-0" minimum provided the sign is located outside the clear zone and away from pedestrian conflicts.
2. Where any sign is located over a bike route, the minimum mounting height is 8'-0" from ground line.

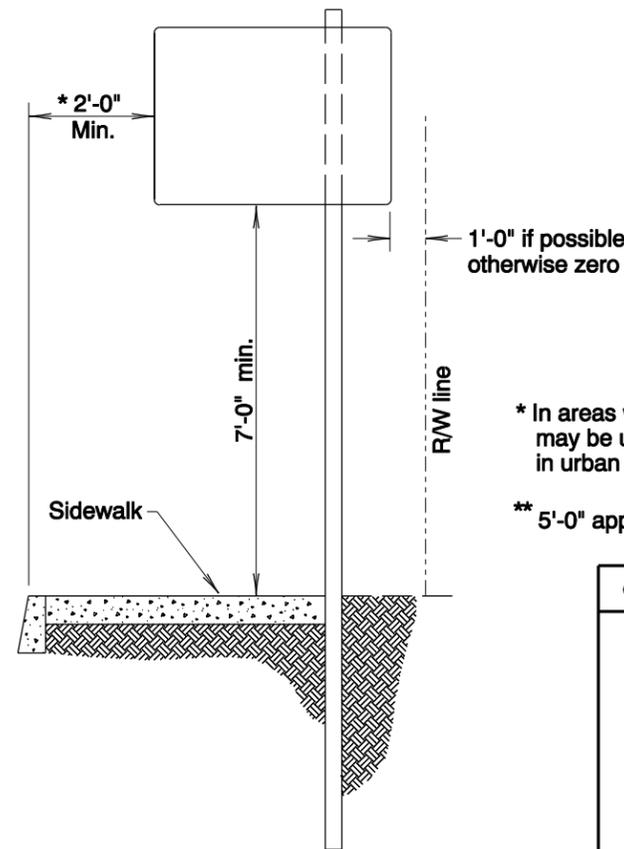


**STANDARD LATERAL SIGN CLEARANCES TO BE USED IF NO CLEARANCE IS INDICATED IN POST DATA**

TYPE SIGN	BEHIND BARRIER	NOT BEHIND BARRIER
Route Signs	6'-0" 3	10'-0" 4
Control Signs	6'-0" 3	10'-0" 4
Guide Signs 1	6'-0" 3	30'-0" 5
Guide Signs 2	6'-0" 3	20'-0" 5

- 1 Signs on main highway.
- 2 Signs at ramp terminal.
- 3 Distance from edge of sign to face of barrier.
- 4 Distance from edge of sign to curb or edge of paved shoulder.
- 5 Distance from center of nearest post to edge of travel lane.

Note: Disregard clearance if sign would extend beyond right of way.

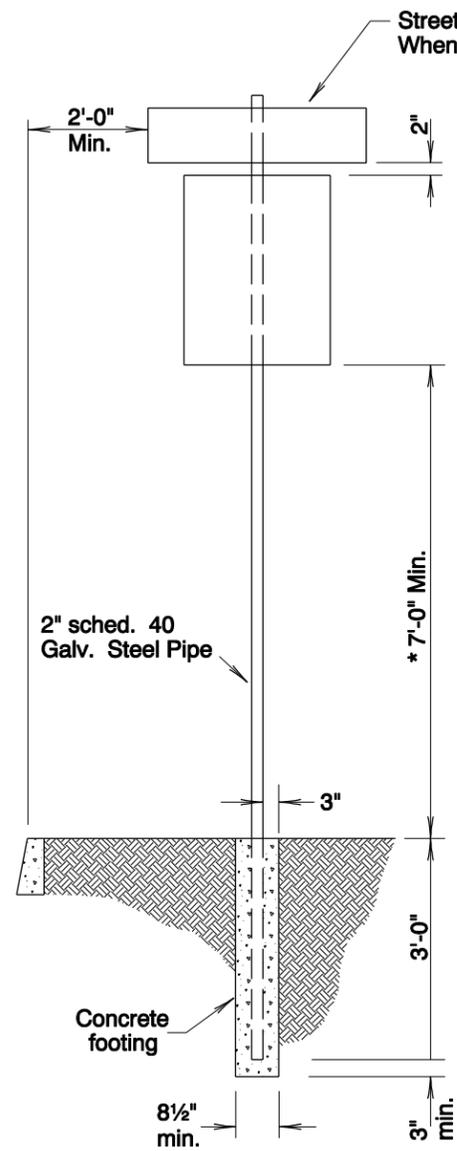


**RESTRICTED R/W INSTALLATION**

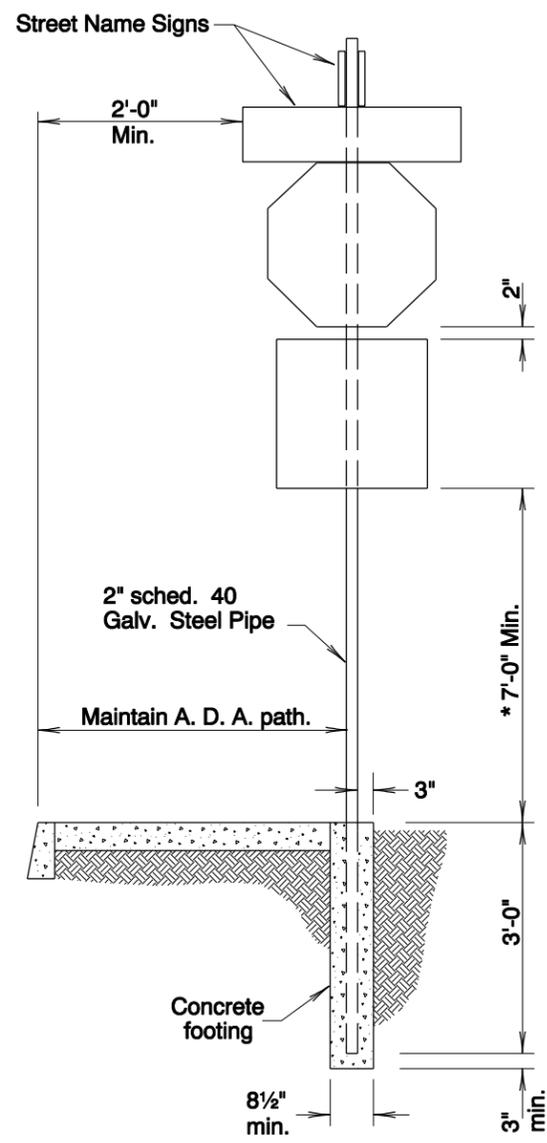
- \* In areas with limited right-of-way, a minimum lateral offset of 2 ft. may be used. A 1 ft. minimum offset from face of curb may be used in urban areas where sidewalk width is limited or existing poles are close to curb.
- \*\* 5'-0" applies only when the sign is located outside the clear zone

CALC. BOOK NO. _____	BASELINE REPORT DATE _____
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>SIGN INSTALLATION DETAILS</b>	
DATE	REVISION DESCRIPTION
12-2003	Reorganized dwgs. TM200 thru TM203; Updated reference to TM635
7-2005	Revise notes and dimensions
1-2007	Redefine 5' minimum vertical clearance; clarify rural note

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

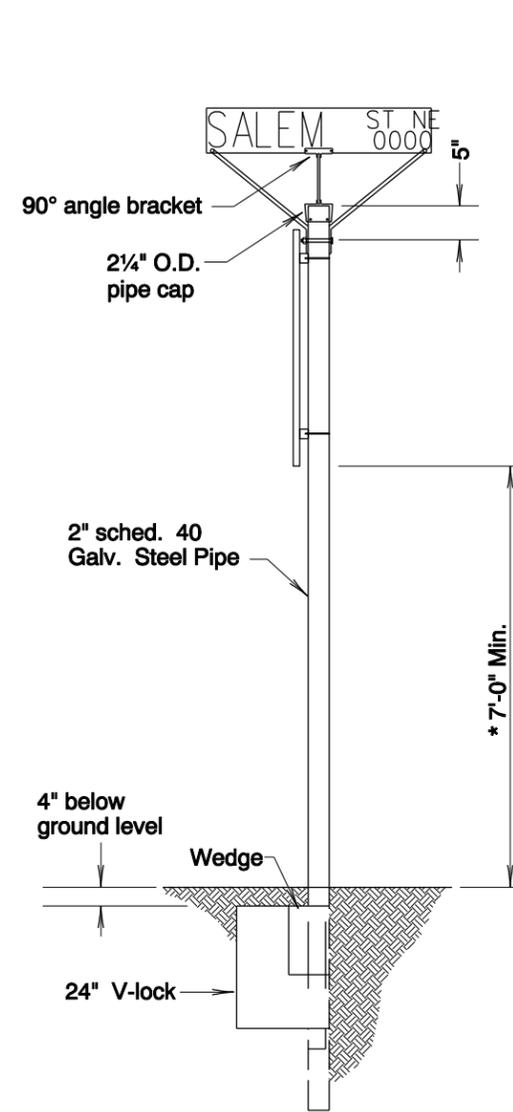


PIPE SIGN SUPPORT DETAIL  
ONE SIGN

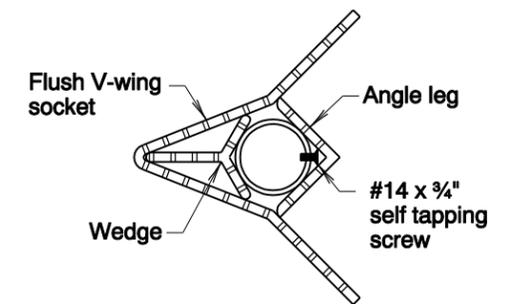


PIPE SIGN SUPPORT DETAIL  
TWO OR MORE SIGNS

DETAILS FOR PLACEMENT



PIPE SIGN SUPPORT DETAIL  
WITH POST MOUNTING SOCKET



POST MOUNTING  
SOCKET

GENERAL NOTES

1. Hot dip galvanize after fabrication Standard 2" welded steel pipe conform to the ASTM 'Specifications for Welded Steel Pipe' A120 and A123 for galvanizing.
  2. All pipe shall be capped as approved by engineer when street name signs are not required.
  3. These pipe supports are not breakaway and are to be used only in urban areas behind a vertical curb.
- \* 7'-0" is minimum height to bottom of lower sign in urban areas.  
8'-0" is minimum height when signs are placed above a bike path

NOT FOR USE ON STATE HIGHWAY SYSTEM

*The selection and use of this detail, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

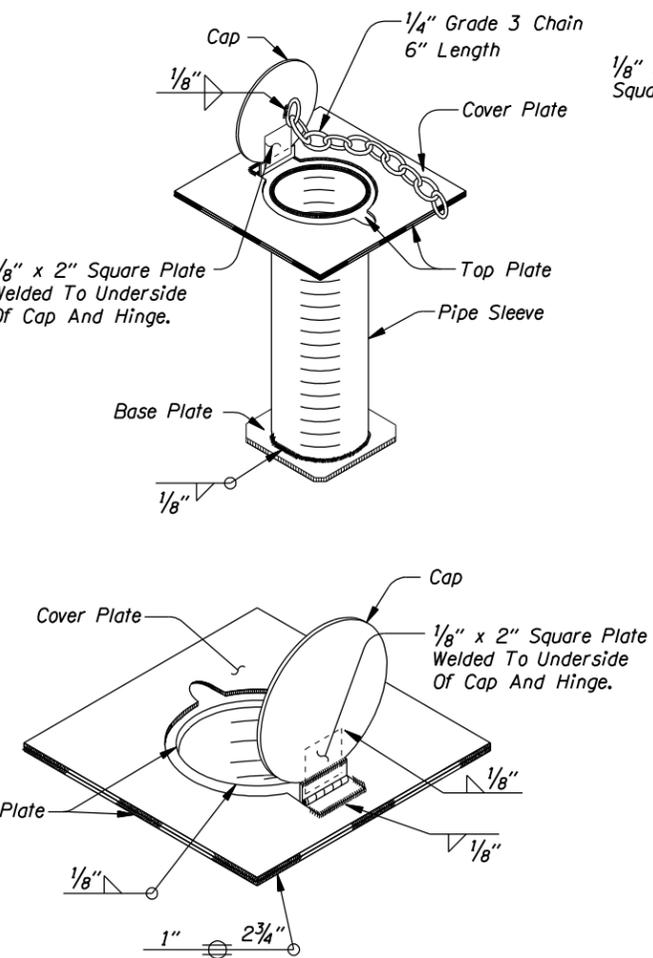
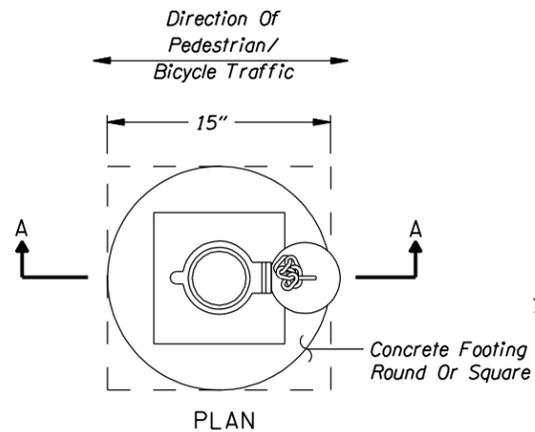
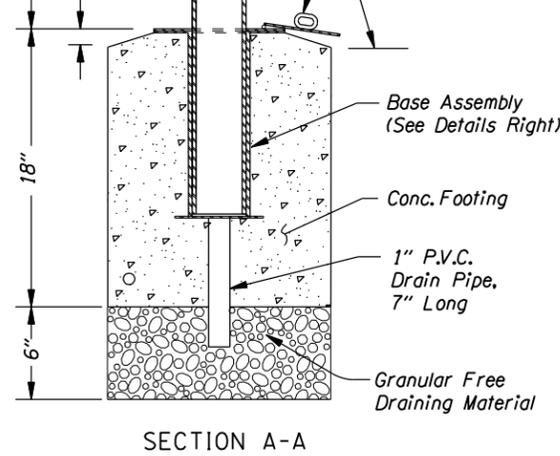
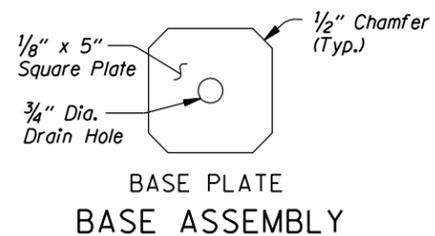
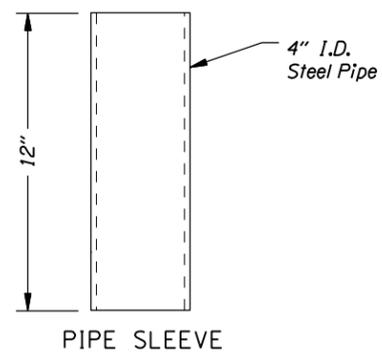
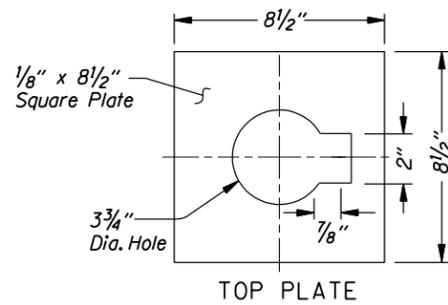
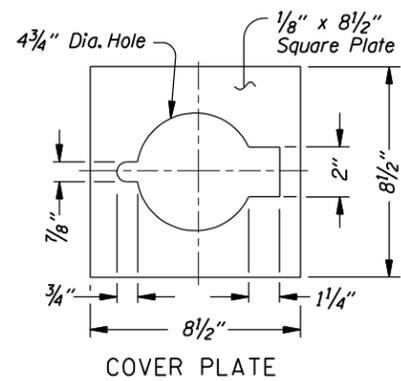
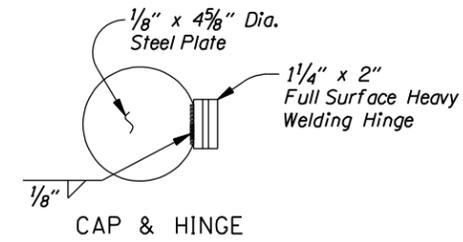
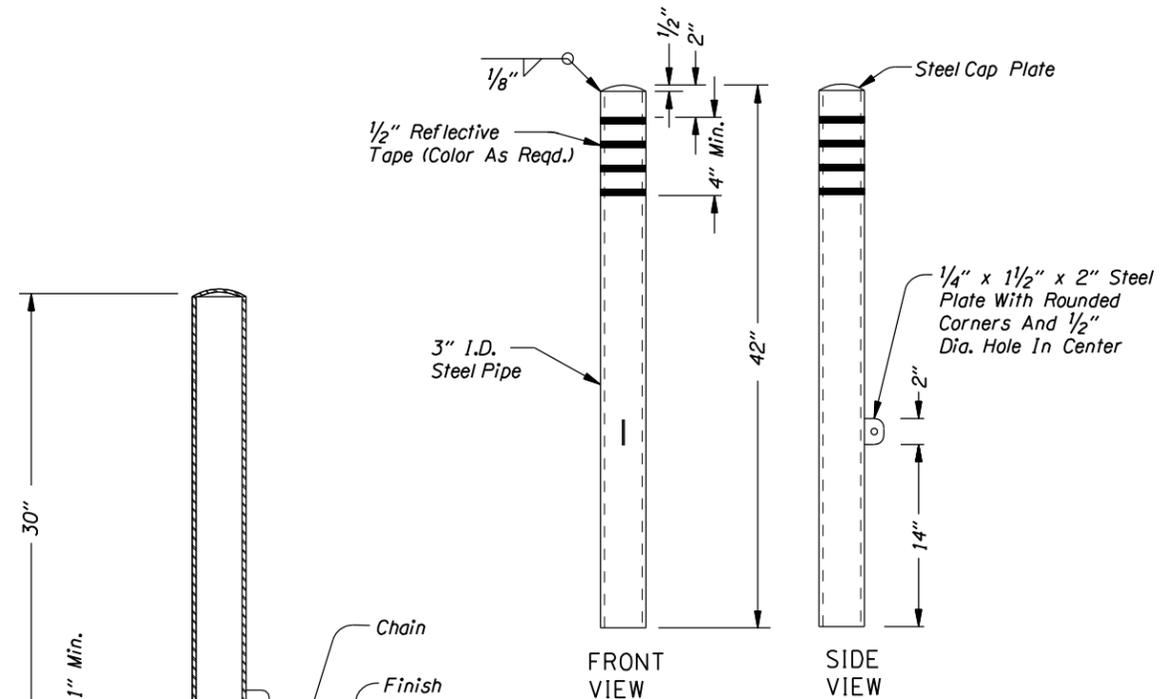
**OREGON DEPARTMENT OF TRANSPORTATION**  
TECHNICAL SERVICES  
DETAILS

PIPE SIGN SUPPORT DETAIL

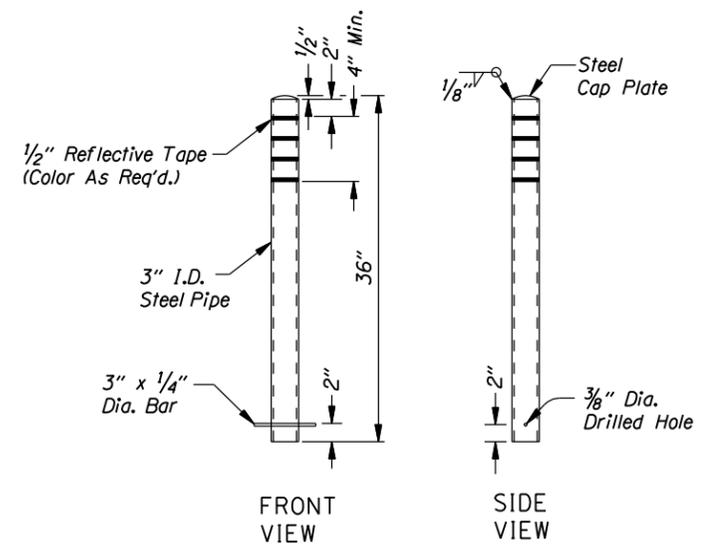
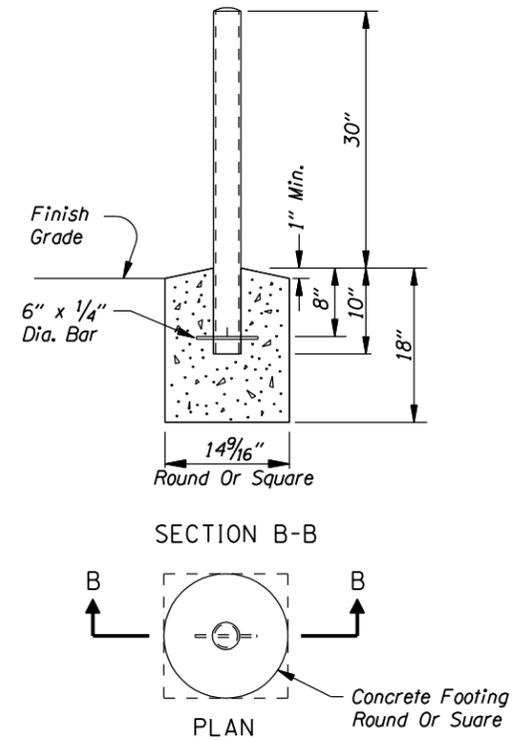
DETAIL NO.

DET4235

REMOVABLE



NON-REMOVABLE



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**OREGON DEPARTMENT OF TRANSPORTATION**  
TECHNICAL SERVICES  
DETAILS

**BOLLARDS**

DETAIL NO.

DET1710