



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
DESIGN DIVISION
NASHVILLE, TENNESSEE 37243-0348

INSTRUCTIONAL BULLETIN NO. 07-12

**Regarding Standard Drawings for Handicap Ramps
and Concrete Driveways**

Effective immediately, Right-of-Way plans for new construction or reconstruction projects shall accommodate the appropriate curb ramp, truncated dome surface detail, and concrete driveway drawings listed in and attached to this instructional bulletin

Effective for the October 19, 2007 letting (August 15, 2007 Plans Turn-In Date), for new construction and reconstruction projects, the appropriate curb ramp, truncated dome surface detail, and concrete driveway drawings listed in this instructional bulletin shall be used.

Until the drawings are added to the standard drawings, the drawings are to be printed with the plans. The drawings shall be identified on the lower left side of the index sheet **"To be printed with plans"**.

The new drawings, RP-H 7, RP-H-8, and RP-H-9, detail four (4) types or layouts of handicap ramps that can be used at intersections depending upon the site layout, topography, and right-of-way constraints. Types 1 and 2 are the preferred types to be used. Types 3 and 4 are appropriate for areas with right-of-way constraints. Designers should indicate the type ramp to be used at each intersection on the plans. Designers should use the estimated quantities for a 90 degree intersection on a 0.0% grade when calculating quantities for intersections other than 90 degrees or with grades other than 0.0%. Limits of payments for handicap ramps are shown on the drawings.

The new concrete driveway drawings RP-D-15 and RP-D-16 are modified to provide ADA compliant cross-slope for sidewalks through driveway aprons. The aprons have also been modified to provide for a better turning radius into the drive.

Copies of the English drawings are attached. Metric drawings will be developed at a later date. Design managers should contact Mr. Ali Hangu, C.E. Manager 1, Standards, Guidelines, and Quality Assurance Section prior to holding the construction field review if metric drawings are needed.

Designers shall discontinue using standard drawings RP-D-14 (RPM-D-14), and RP-H-1(PRM-H-1). These drawings will be voided with the next update to the standard drawings.

This bulletin voids Instructional Bulletin 05-11.

ROADWAY AND PAVEMENT APPURTENANCES – ENGLISH

<u>Drawing Number</u>	<u>Current Revision Date</u>	<u>Drawing Title</u>
RP-D-15		DETAILS OF STANDARD CONCRETE DRIVEWAYS
RP-D-16		DETAILS OF LOWERED STANDARD CONCRETE DRIVEWAYS
RP-H-3		HANDICAP RAMP AND TRUNCATED DOME SURFACE DETAIL
RP-H-4		PERPENDICULAR CURB RAMP
RP-H-5		PARALLEL CURB RAMP
RP-H-6		MEDIAN CROSSING
RP-H-7		PERPENDICULAR HANDICAP RAMP FOR 20' THRU 60' RADIUS
RP-H-8		PERPENDICULAR HANDICAP RAMP FOR 20' THRU 60' RADIUS
RP-H-9		PARALLEL HANDICAP RAMP FOR 20' THRU 60' RADIUS

TRAFFIC CONTROL APPURTENANCES – ENGLISH

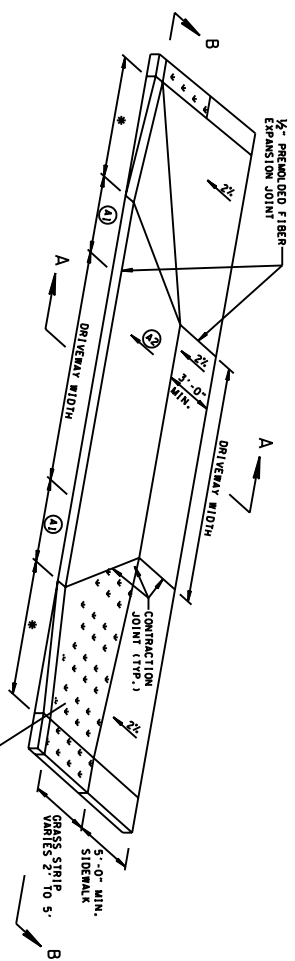
<u>Drawing Number</u>	<u>Current Revision Date</u>	<u>Drawing Title</u>
T-M-4	3-15-07	STANDARD INTERSECTION PAVEMENT MARKINGS

Original signed by Jeff C. Jones
Jeff C. Jones, Civil Engineering Director
Design Division

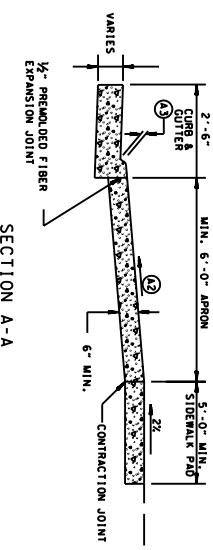
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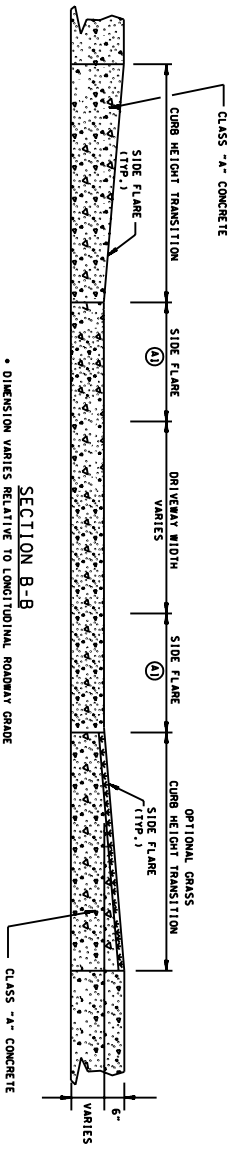
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TYPE "A" DRIVEWAY ACROSS SIDEWALK WITH GRASS STRIP
 * DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE



SECTION A-A



SECTION B-B
* DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE

GENERAL NOTES

- 1 5'-0" MINIMUM SIDEWALK WITH A MAXIMUM CROSS SLOPE OF 2% THROUGH DRIVEWAYS.
- 2 DESIGNER TO CHECK CUTTER FLOW DEPTH AT DRIVEWAY LOCATIONS TO ASSURE THAT THE SIDEWALK IS BUILT TO THE REQUIRED DEPTH. PLACE AN INLET AT THE UPSTREAM SIDE OF THE DRIVEWAY OR PERFORM OTHER DESIGN MITIGATION.
- 3 THE SLOPE OF THE LANDING AREA SHALL NOT EXCEED 2% IN THE SIDEWALK AREA.
- 4 DRIVEWAYS TO BE BUILT COMPLETE OR IN PART AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- 5 ALL DRIVEWAYS TO BE 6" UNIFORM THICKNESS, UNLESS OTHERWISE SHOWN ON PLANS.
- 6 EXPANSION JOINTS TO BE PLACED AS INDICATED ON THE PLANS EXCEPT JOINT AT BACK OF DRIVEWAY WHICH WILL BE PLACED WHEN DRIVEWAY ABUTS A RIGID DRIVEWAY OR BUILDING.
- 7 THE ROADWAY DESIGNER SHALL CONSIDER THE USE OF A CATCH BASIN ON EITHER SIDE OF THE DRIVEWAY. CAREFUL CONSIDERATION TO THE PLACEMENT OF CATCH BASINS SHALL BE TAKEN IF THE DRIVEWAY IS IN A VERTICAL SAG CURVE.

FOOTNOTES

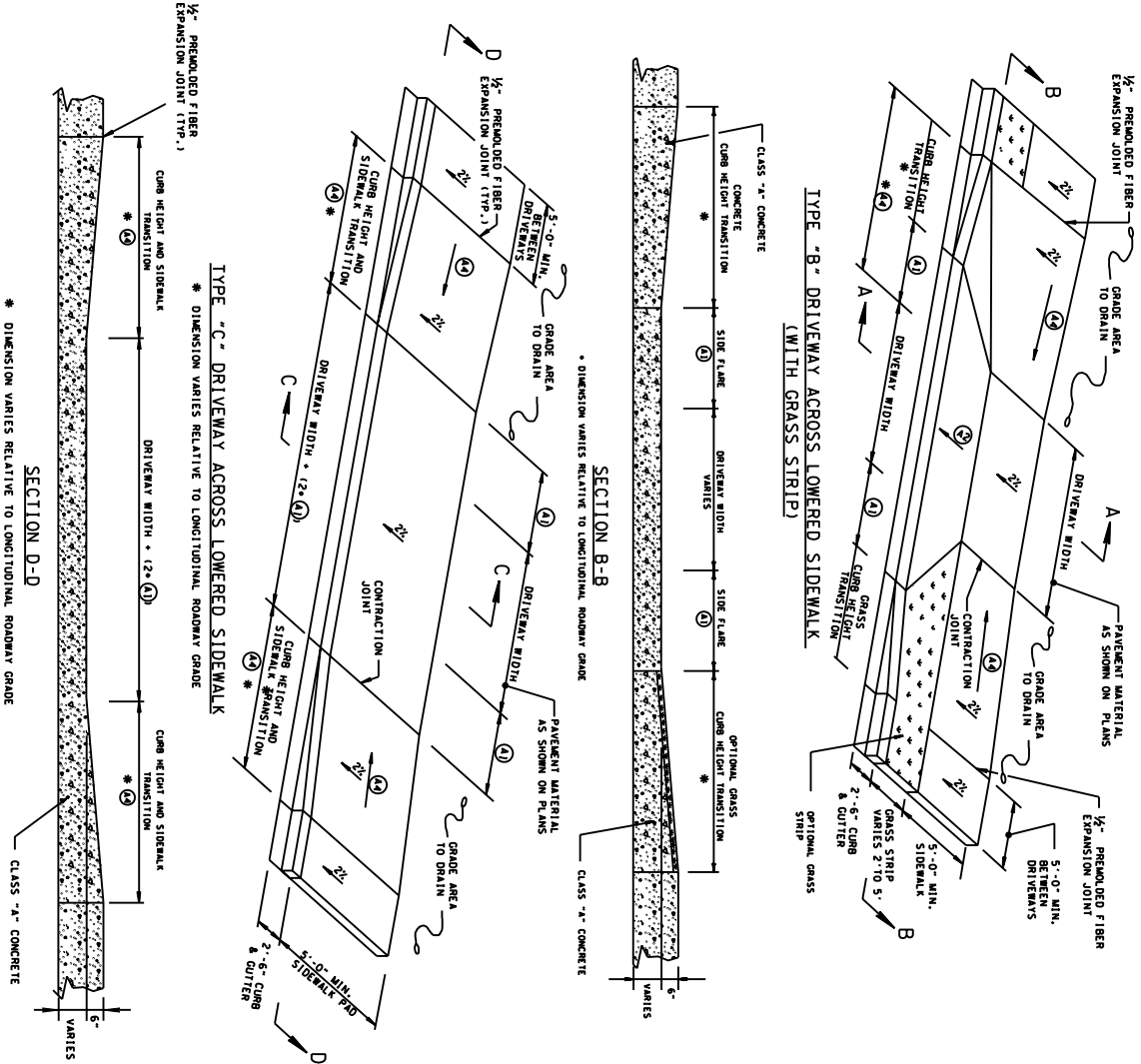
- 1 SIDE FLARE WIDTH SHOULD BE A MINIMUM 7'-0" FOR COMMERCIAL DRIVEWAYS.
- 2 SIDE FLARE WIDTH SHOULD BE A MINIMUM 3'-6" FOR RESIDENTIAL DRIVEWAYS.
- 3 DRIVEWAY RAMP GRADE VARIES. 0.33% MAX APRON GRADE FOR RESIDENTIAL DRIVEWAYS. 6.0% MAX APRON GRADE FOR COMMERCIAL DRIVEWAYS.
- 4 HEIGHT OF LOWERED CURB SHALL BE 2.25 INCHES. SEE STD. DRG. RP-NAC-10.

STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION
 DETAILS OF
 STANDARD
 CONCRETE
 DRIVEWAYS
 2-15-07 RP-D-15



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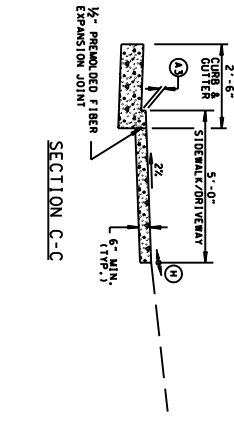
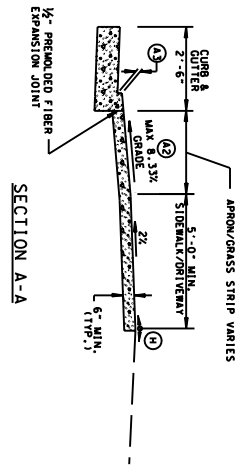
GENERAL NOTES

1. 5'-0" MINIMUM SIDEWALK WITH A MAXIMUM CROSS SLOPE OF 2% THROUGH DRIVEWAYS.
2. DESIGNER TO CHECK GUTTER FLOW DEPTH AT DRIVEWAY LOCATIONS TO ASSURE THAT THE DESIGN FLOW DOES NOT OVERTOP THE SIDEWALK AREA. IF OVERTOPPING OCCURS PLACE AN INLET AT THE UPRHEAM SIDE OF THE DRIVEWAY OR PERFORM OTHER DESIGN MODIFICATION.
3. THE CROSS SLOPE OF THE LANDING AREA SHALL NOT EXCEED 2% IN THE SIDEWALK AREA.
4. DRIVEWAYS TO BE BUILT COMPLETE OR IN PART AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
5. ALL CONCRETE DRIVEWAYS TO BE 6" UNIFORM THICKNESS, UNLESS OTHERWISE SHOWN ON PLANS.
6. EXPANSION JOINTS TO BE PLACED AS INDICATED ON THE PLANS EXCEPT JOINT AT BACK OF DRIVEWAY WHICH WILL BE PLACED WHEN DRIVEWAY ABUTS A RIGID DRIVEWAY OR A BUILDING.
7. THE ROADWAY DESIGNER SHALL CONSIDER THE USE OF A CATCH BASIN ON EITHER SIDE OF THE DRIVEWAY WHEN THE DRIVEWAY IS ADJACENT TO A BUILDING OR CATCH BASIN SHALL BE TAKEN IF THE DRIVEWAY IS IN A VERTICAL SAG CURVE.
8. ALGEBRAIC DIFFERENCE NOT TO EXCEED 10.00%.

FOOTNOTES

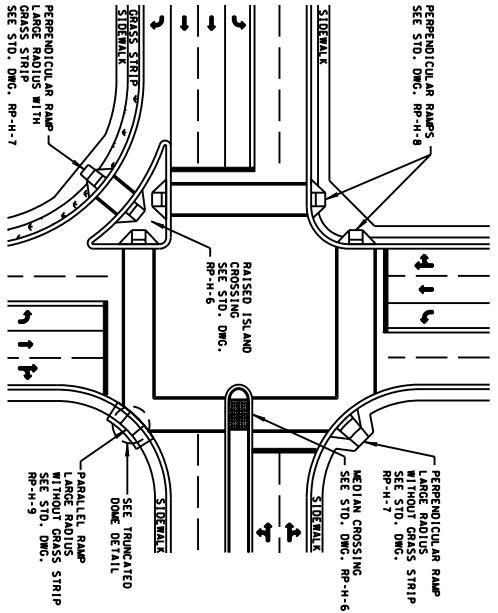
11. SIDE FLARE WIDTH SHOULD BE A MINIMUM 7'-0" FOR COMMERCIAL DRIVEWAYS.
12. SIDE FLARE WIDTH SHOULD BE A MINIMUM 3'-6" FOR RESIDENTIAL DRIVEWAYS.
13. DRIVEWAY RAMP GRADE VARIES, 8.33% MAX ARRON GRADE FOR RESIDENTIAL DRIVEWAYS, 6.0% MAX ARRON GRADE FOR COMMERCIAL DRIVEWAYS.
14. HEIGHT OF LOWERED CURB SHALL BE 2.25 INCHES. SEE STD. Dwg. RP-INC-10.
15. THE SLOPE OF THE SIDEWALK AND/OR CURB HEIGHT TRANSITION VARIES TO A MAXIMUM OF 8.33% LENGTH OF TRANSITION IS RELATIVE TO THE LONGITUDINAL ROADWAY GRADE.

DETAILS OF LOWERED STATE CONCRETE DRIVEWAYS
 STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION
 2-15-07 RP-D-16

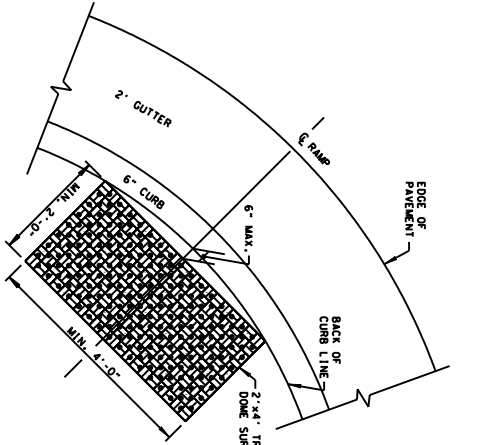




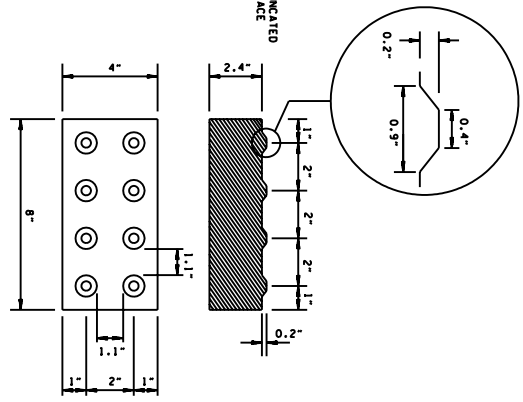
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PLAN VIEW
 T-WAY INTERSECTION



DETAIL OF
 TRUNCATED DOME
 SURFACE IN RADIUS



CONCRETE PAVEMENT WITH
 TRUNCATED DOME SURFACE
 SEE SPECIAL PAYER NOTE 5

- SPECIAL PAYER NOTES**
- 1 CONCRETE PAYER UNITS SHALL MEET ALL REQUIREMENTS OF STD. C-335 AND SHALL BE Laid IN THE BID UNIT'S BASKET WEAVE PATTERN, UNLESS SHOWN OTHERWISE IN THE PLANS.
 - 2 CONCRETE PAYER UNITS SHALL HAVE A TRUNCATED DOME TOP SURFACE FOR DETECTABLE WARNING TO PEDESTRIANS.
 - 3 CONCRETE PAYER UNITS SHALL BE A TRADITIONAL BRICK RED COLOR UNLESS SHOWN OTHERWISE IN THE PLANS.
 - 4 CONCRETE PAYER UNITS SHALL BE SAW CUT ONLY AND CUT UNITS SHALL NOT BE LESS THAN 25 PERCENT OF A FULL UNIT.
 - 5 ANY APPROVED ALTERNATE, IS ALSO ACCEPTABLE.
 - 6 TOOT APPROVED ONE HALF INCH TILES UP TO 24" X 48" WITH DOME SPACING AS SHOWN ABOVE MAY BE USED IN LIEU OF CONCRETE PAVERS.
 - 7 THE TRUNCATED DOMES ARE TO BE ALIGNED IN A SQUARE GRID PATTERN.
 - 8 PLACE A MINIMUM TOTAL PAYER WIDTH OF 2'-0" ADJACENT TO CURB LINE.

- GENERAL NOTES**
- 1 DETAILS SHOWN ON THIS PLAN APPLY TO THE CONSTRUCTION OR RECONSTRUCTION OF STREETS, CURBS, OR SIDEWALKS.
 - 2 CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS.
 - 3 RAMPS SHALL BE PROVIDED AT ALL CORNERS OF STREET INTERSECTIONS WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB RAMPS SHALL ALSO BE PROVIDED AT WALK LOCATIONS IN MID BLOCK AND ACROSS FROM CORNER RAMPS AT T-INTERSECTIONS.
 - 4 THE FIRST TWO FEET OF RAMP MUST CONSIST OF A TRUNCATED DOME PROVIDE A DETECTABLE WARNING FOR VISUALLY IMPAIRED PEDESTRIANS.
 - 5 THE DETECTABLE WARNING SURFACES SHALL PROVIDE A TO PERCENT CONTRAST IN LIGHT REFLECTANCE WITH THE ADJOINING SURFACE.
 - 6 CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. THE GRADE SHALL BE FREE OF SLOES AND SHARP CHANGES.
 - 7 DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH RAMPS.
 - 8 THE NORMAL CUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
 - 9 CROSSWALK MARKINGS, IF USED, SHALL BE LOCATED AS SHOWN ON THE APPLICABLE HANDICAP RAMP STD. DWG. SEE STD. DWG. T-3-4 MARKING.
 - 10 THE APPLICABLE SIDE LINE PLACEMENT AND STANDARD CROSS WALK MARKING.
 - 11 COST OF THE LAMBER CURB AND CUTTER TO BE INCLUDED IN THE PRICE OF THE TRUNCATED DOME SURFACE ON ITEM NO. 100-03, CONCRETE COMBINED CURB & CUTTER.

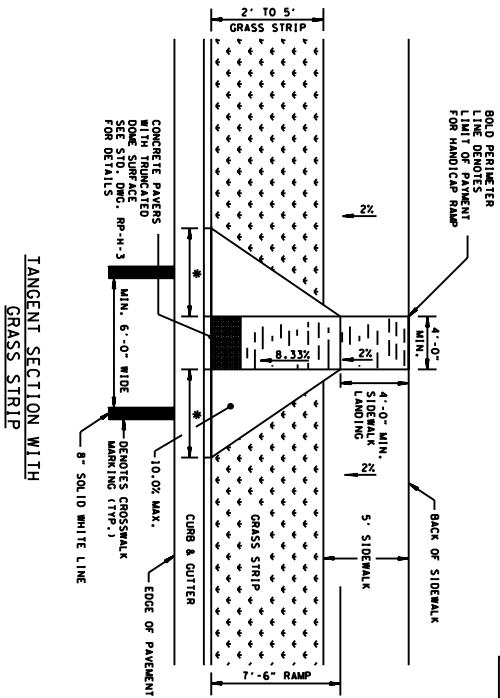
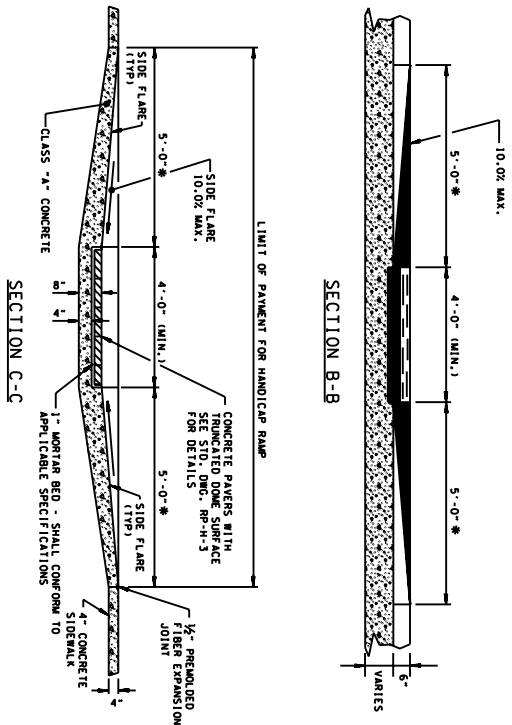
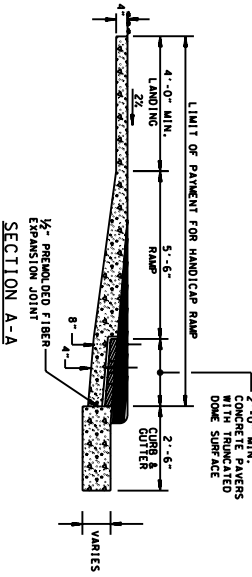
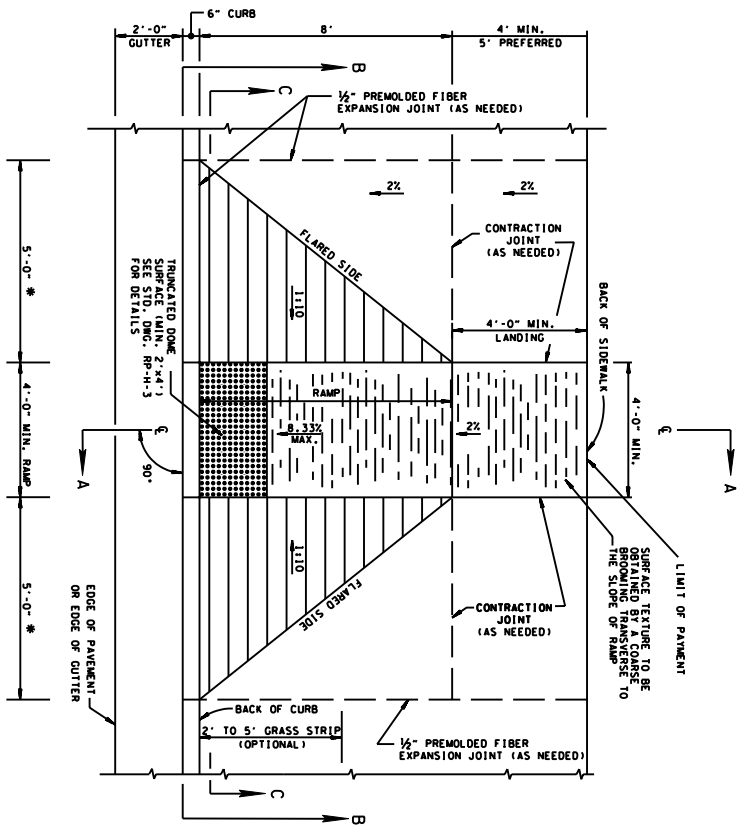
- 12 ENGINEER SHOULD BE NOTIFIED FOR ASSESSMENT IF THE HANDICAP RAMP SIDEWALK IS TO BE INSTALLED IN DISTANCE PER TO THE INDIVIDUAL ROADWAY GRADE.
- 13 ALL COST OF INSTALLING HANDICAP RAMPS, INCLUDING TRUNCATED DOME IN EXISTING SIDEWALK AREAS INCLUDING REMOVAL OF THE EXISTING SIDEWALK SHALL BE BID FOR UNDER THE FOLLOWING PAY ITEM:
 701-02-01, CONCRETE HANDICAP RAMP (RETRFIT) PER SQUARE FOOT.
 PAYMENT SHALL INCLUDE ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY FOR CONSTRUCTION OF THE HANDICAP RAMP(S).
 ALL COST OF INSTALLING HANDICAP RAMPS INCLUDING TRUNCATED DOME IN NEWLY CONSTRUCTED SIDEWALK AREAS SHALL BE BID FOR UNDER THE FOLLOWING PAY ITEM:
 701-02-03, CONCRETE HANDICAP RAMP PER SQUARE FOOT.
 PAYMENT SHALL INCLUDE ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY FOR CONSTRUCTION OF THE HANDICAP RAMP(S).
 SURFACE TEXTURE TO BE OBTAINED BY A COARSE BROOMING TRANSVERSE TO THE SLOPE OF RAMP.
 FOR SIGNALIZED INTERSECTIONS THAT REQUIRE PEDESTRIAN SIGNAL MARKINGS, SEE TOOT TRAFFIC DESIGN MANUAL FOR PLACEMENT AND DETAILS.

STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION
 HANDICAP RAMP
 AND TRUNCATED
 DOME SURFACE
 DETAIL
 RP-H-3



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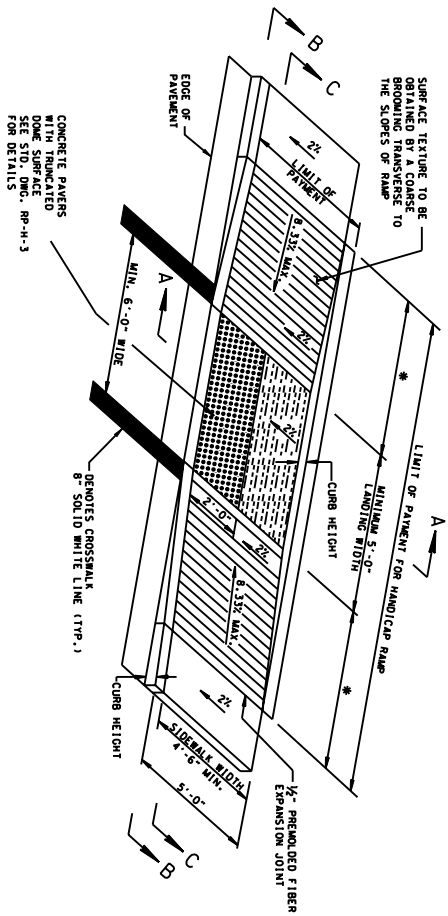
* DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE
SEE GENERAL NOTE (C) ON RP-H-3

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
1-15-07
RP-H-4

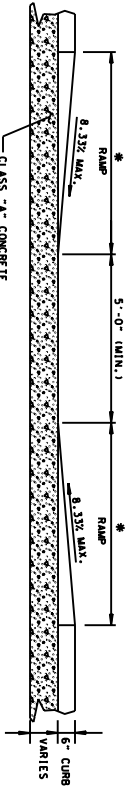


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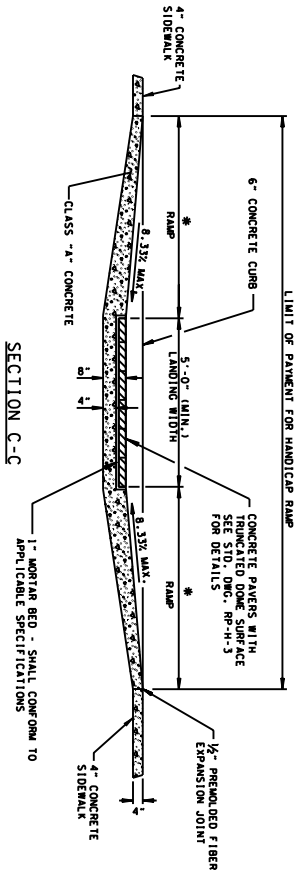
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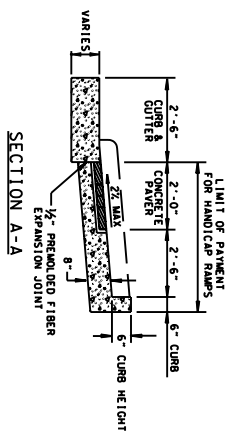
PARALLEL CURB RAMP DETAIL



SECTION B-B



SECTION C-C



SECTION A-A

* DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE
SEE GENERAL NOTE (C) ON RP-H-3

GENERAL NOTES

- (A) THE FIRST TWO FEET OF RAMP MUST CONSIST OF A TRUNCATED DOME SURFACE. THE REMAINDER OF THE RAMP SHALL BE CONSTRUCTED WITH CONCRETE PAVERS WITH FRANGIBLE DOME SURFACE PROVIDE A DETECTABLE WARNING FOR VISUALLY IMPAIRED PEDESTRIANS.
- (B) THE COST OF THE LOWERED CURB AND CUTTER TO BE INCLUDED IN THE PRICE OF ITEM NO. 702-01. CONCRETE CURB OR ITEM NO. 702-03. CONCRETE COMBINED CURB & CUTTER.
- (C) ALL COST OF INSTALLING HANDICAP RAMPS IN HEAVY CONSTRUCTED SIDEWALK AREAS SHALL BE BID FOR UNDER THE FOLLOWING PAY ITEM:
701-02.03 CONCRETE HANDICAP RAMP PER SQUARE FOOT.
- (D) PAVEMENT SHALL INCLUDE ALL MATERIALS (INCLUDING TRUNCATED DOME SURFACE) AND LABOR NECESSARY FOR CONSTRUCTION OF THE HANDICAP RAMPS.
- (E) CONCRETE PAVERS SHALL MEET THE REQUIREMENTS OF ASTM C-935 UNLESS OTHERWISE SHOWN ON THE PLANS. 3' SHOWN MEANS PAVEMENT, UNLESS OTHERWISE SHOWN ON THE PLANS.
- (F) SEE SPECIAL PAVEMENT NOTES ON STD. DWG. RP-H-3.
- (G) BEST PRACTICE CONSTRUCTION MODIFICATIONS MAY BE REQUIRED FOR HANDICAP RAMPS TO BE INSTALLED ALONG A ROADWAY WITH LONGITUDINAL GRADES EXCEEDING FIVE PERCENT.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

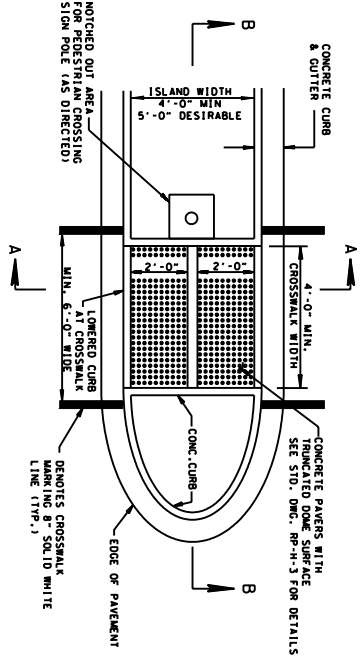
PARALLEL
CURB RAMP

1-15-07 RP-H-5

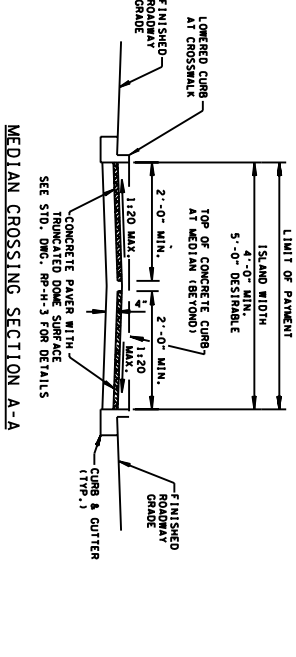


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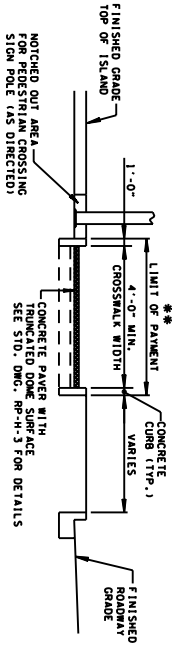
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MEDIAN CROSSING PLAN VIEW

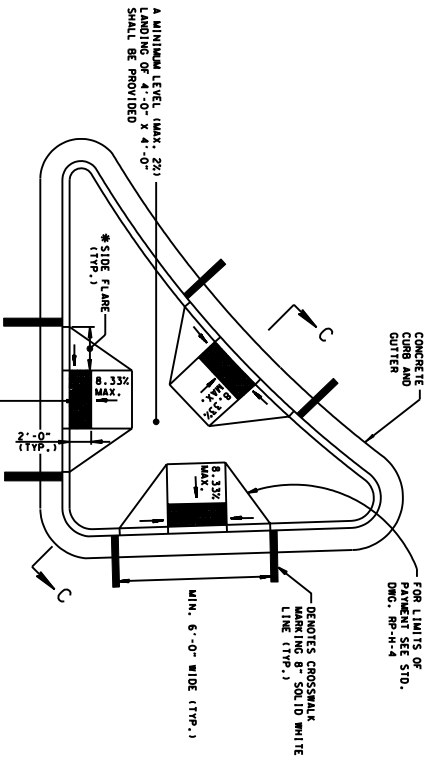


MEDIAN CROSSING SECTION A-A



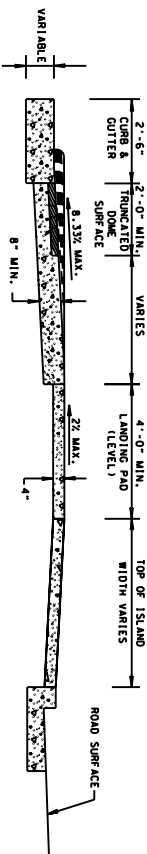
MEDIAN CROSSING SECTION B-B

** SEE NOTE @ ON RP-H-5



RAISED RIGHT TURN CHANNELIZATION ISLAND PLAN VIEW

* DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE 10.0% MIN. (0.25% DESIRABLE)



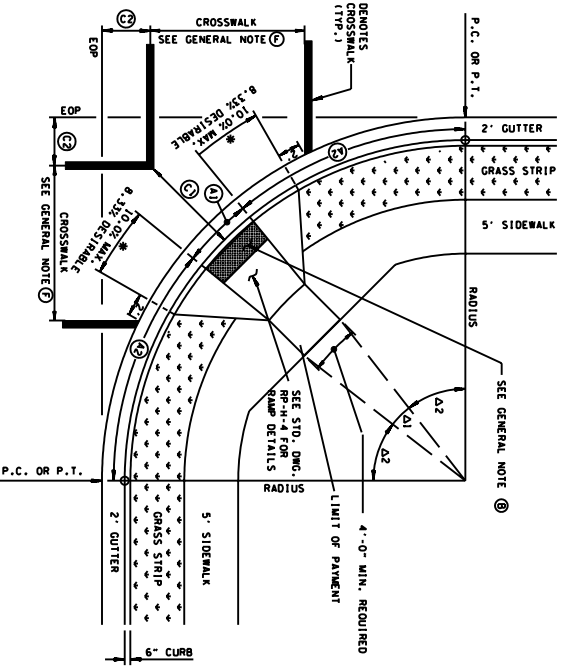
SECTION C-C

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION
MEDIAN CROSSING
1-15-07 RP-H-6

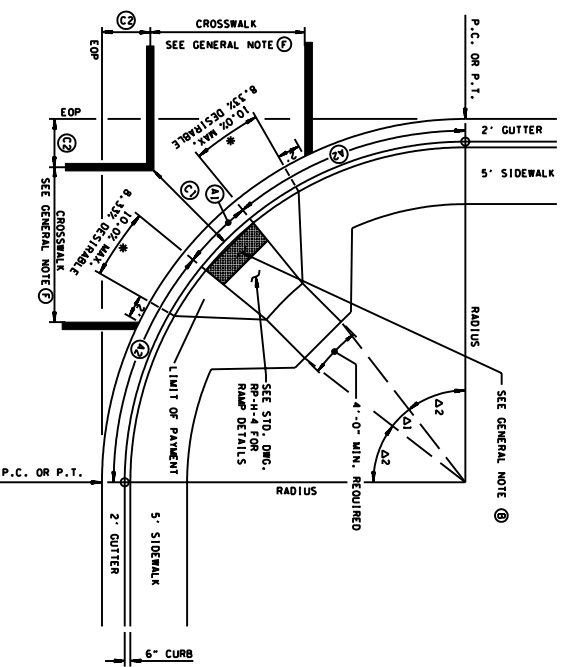


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TYPE 1
RAMP IN RADIUS (WITH GRASS STRIP)
 * DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE



TYPE 1 ALTERNATE
RAMP IN RADIUS (SIDEWALK ADJACENT CURB & GUTTER)
 * DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE

TABLE OF DIMENSIONS ①

HANDICAP RAMPS - RADIUS OF 20' TO 60'

RADIUS (FEET)	(A)	(B)	(C)	(D)	A1	A2	ESTIMATED QUANTITY (SQUARE FEET)
20	6.70	12.36	7.54	2.53	19'11.18"	35'24.21"	120
25	5.90	16.69	7.54	3.99	13'30.46"	38'14.37"	99
30	5.46	20.83	7.54	5.46	10'25.55"	39'47.03"	97
35	5.19	24.89	7.54	6.92	8'29.46"	40'45.07"	97
40	5.00	28.91	7.54	8.39	7'10.00"	41'29.00"	96
45	4.87	32.91	7.54	9.85	6'11.50"	41'54.05"	96
50	4.76	36.89	7.54	11.31	5'27.32"	42'18.14"	95
55	4.68	40.86	7.54	12.78	4'52.40"	42'33.40"	95
60	4.62	44.82	7.54	14.24	4'24.31"	42'47.43"	95

① VALUES SHOWN IN TABLE ARE BASED ON A 50° INTERSECTION ON 0.0% ROADWAY GRADE AND ARE APPROXIMATE ONLY.

TABLE OF DIMENSIONS - TYPE 1 ALTERNATE ①

HANDICAP RAMPS - RADIUS OF 20' TO 60'

RADIUS (FEET)	(A)	(B)	(C)	(D)	A1	A2
20	7.500	11.998	4.37	3.35	21'29.09"	34'15.25"
25	5.699	16.750	5.21	4.23	13'13.19"	38'23.20"
30	5.000	21.062	6.04	5.17	9'32.97"	40'13.31"
35	4.565	25.206	6.80	6.17	7'28.24"	41'15.47"
40	4.286	29.273	7.22	7.19	6'08.19"	41'55.50"
45	4.091	33.297	7.82	8.24	5'12.31"	42'23.44"
50	3.947	37.296	8.39	9.30	4'31.24"	42'44.17"
55	3.837	41.278	8.94	10.37	3'59.50"	43'00.04"
60	3.750	45.249	9.48	11.45	3'24.91"	43'12.34"

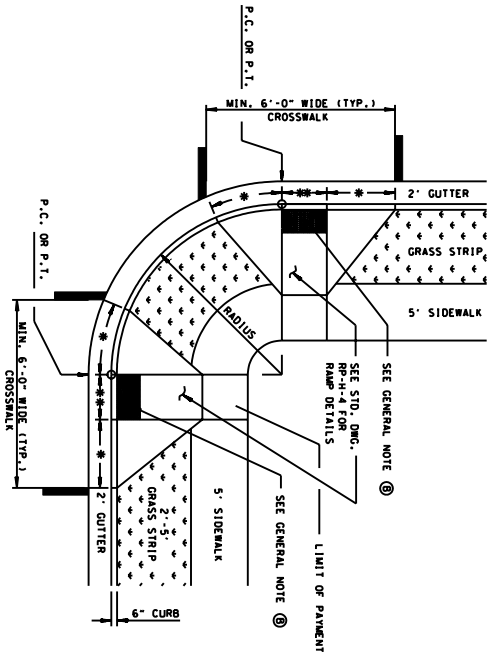
① VALUES SHOWN IN TABLE ARE BASED ON A 50° INTERSECTION ON 0.0% ROADWAY GRADE AND ARE APPROXIMATE ONLY.

- GENERAL NOTES**
- ① FOR SIGNALIZED INTERSECTIONS THAT REQUIRE PEDESTRIAN SIGNAL PUSH BUTTONS, SEE T007 TRAFFIC DESIGN MANUAL.
 - ② SEE STANDARD DRAWING RP-H-3 FOR INDICATED DOWED SURFACE DETAILS.
 - ③ 5'-0" SIDEWALK WIDTH INCLUDES 6" CONCRETE CURB, ACCESSIBLE RAMP.
 - ④ GRATES FOR STORM DRAINS SHALL NOT BE PLACED IN THE SIDEWALK.
 - ⑤ CI DIMENSIONS SHALL NOT BE CALCULATED BY USING CROSS WALK MARKINGS SHALL BE CALCULATED BY USING THE DIMENSIONS FROM THE TABLES ON A CASE BY CASE BASIS, UNLESS SPECIFIED.

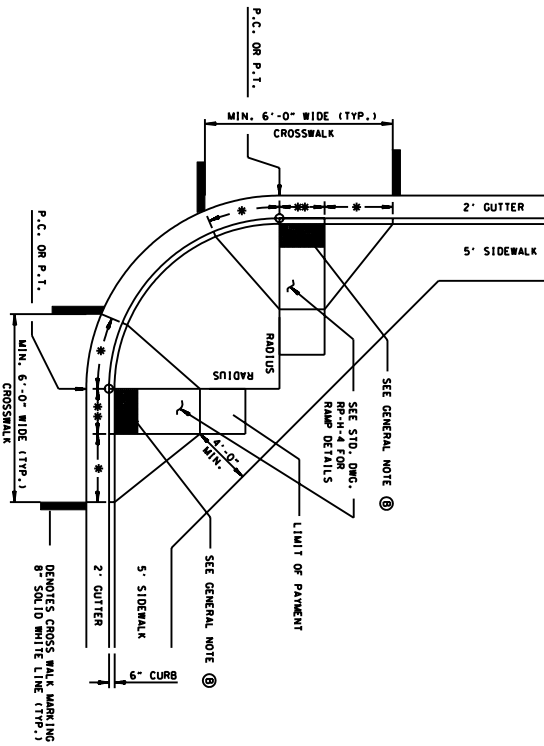
STATE OF TEXAS
 DEPARTMENT OF TRANSPORTATION
 PERPENDICULAR
 HANDICAP RAMP
 FOR 20' THRU 60'
 RADIUS
 1-15-07
 RP-H-7



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TYPE 2
RAMP OUTSIDE RADIUS (WITH GRASS STRIP)
* DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE
10.0% MAX. (8.33% DESIRABLE)
** 4'-0" MINIMUM REQUIRED



TYPE 2 ALTERNATE
RAMP OUTSIDE RADIUS (SIDEWALK ADJACENT TO CURB & GUTTER)
* DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE
10.0% MAX. (8.33% DESIRABLE)
** 4'-0" MINIMUM REQUIRED

GENERAL NOTES

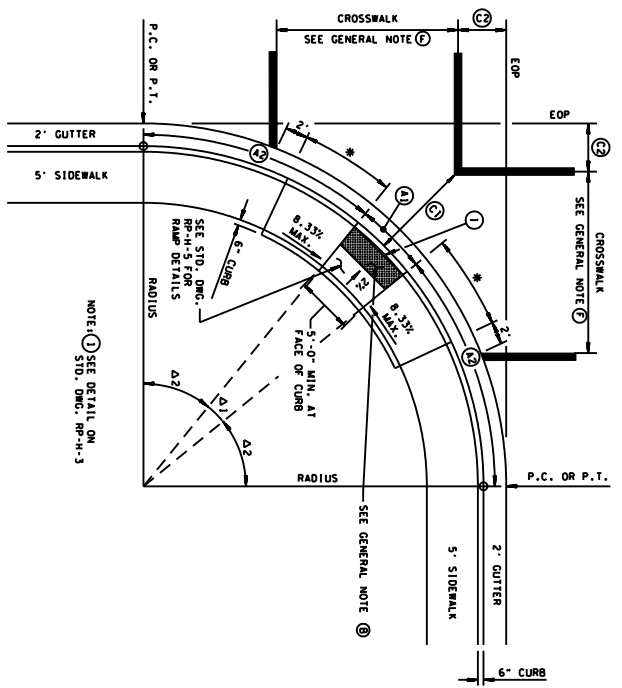
- ① FOR SIGNALIZED INTERSECTIONS THAT REQUIRE PEDESTRIAN SIGNAL PUSH BUTTONS, SEE T001 TRAFFIC DESIGN MANUAL FOR PLACEMENT DETAILS.
- ② SEE STANDARD DRAWING RP-H-3 FOR TRUNCATED DOME SURFACE DETAILS.
- ③ 5'-0" SIDEWALK WIDTH INCLUDES 6" CONCRETE CURB.
- ④ GRATES FOR STORM DRAINS SHALL NOT BE PLACED IN THE CROSSWALK OR IN FRONT OF THE HANDICAP RAMP.
- ⑤ DESIRABLE DIMENSIONS SHALL BE USED UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

DATE OF TERMINATION
REVISIONARY OR TRANSFORMATION
PERPENDICULAR
HANDICAP RAMP
FOR 20' THRU 60'
RADIUS
1-15-07 RP-H-8



\$FILES
 \$TIME\$
 \$DATE\$
 4/24/2007 9:38:16 AM
 D:\New Standard Drawing\RP-H-0507.dgn

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TYPE 3
 (RAMP IN RADIUS)
 (CONSTRUCTION IN RADIUS)

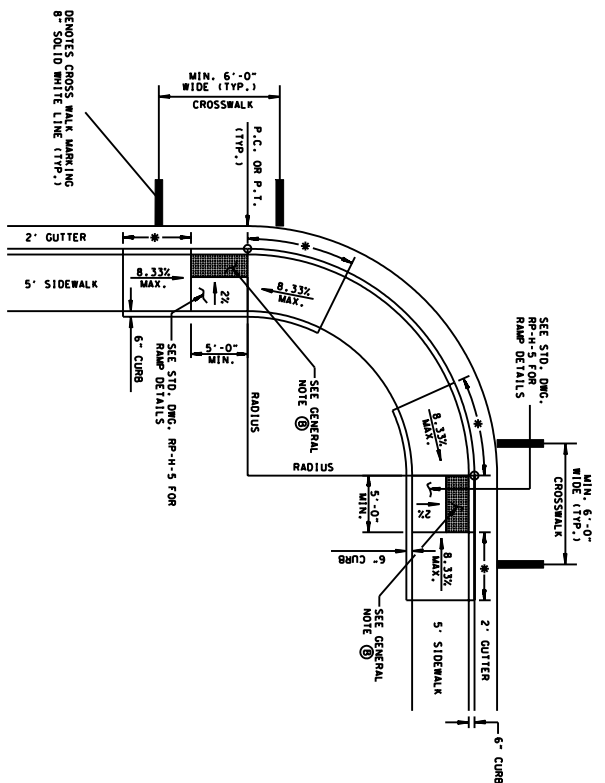
* DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE

TABLE OF DIMENSIONS ①

HANDICAP RAMPS - RADIUS OF 20' TO 60'

R RADIUS (FEET)	② (FEET)	③ (FEET)	④ (FEET)	⑤ Δ1	⑥ Δ2	ESTIMATED QUANTITY (SQ. FEET)	
20	6.70	12.36	7.54	2.53	19'11"-18"	35'24'-21"	97
25	6.27	16.50	7.54	3.99	14'21"-42"	37'49'-09"	94
30	6.01	20.56	7.54	5.46	11'28"-42"	39'15'-39"	92
35	5.84	24.57	7.54	6.92	9'33'-38"	40'13'-11"	91
40	5.72	28.56	7.54	8.39	8'11'-32"	40'54'-14"	90
45	5.63	32.53	7.54	9.85	7'10'-00"	41'25'-01"	90
50	5.56	36.49	7.54	11.31	6'22'-10"	41'48'-55"	89
55	5.50	40.45	7.54	12.78	5'43'-55"	42'08'-03"	89
60	5.46	44.40	7.54	14.24	5'12'-38"	42'23'-41"	88

① VALUES SHOWN IN TABLE ARE BASED ON A 90° INTERSECTION ON 0.02% ROADWAY GRADE AND ARE APPROXIMATE ONLY.

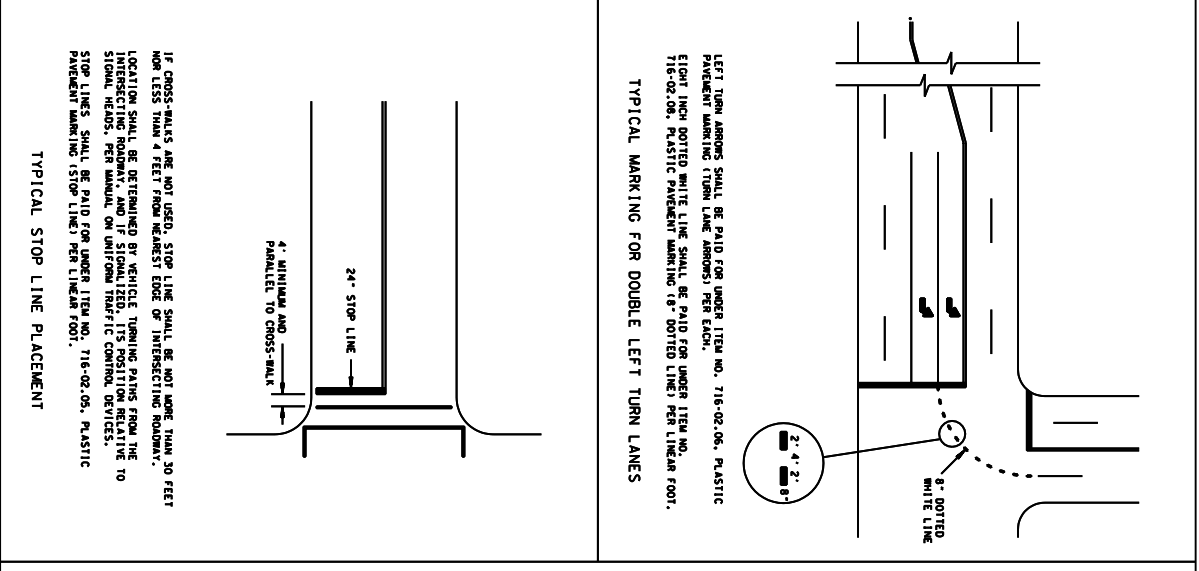
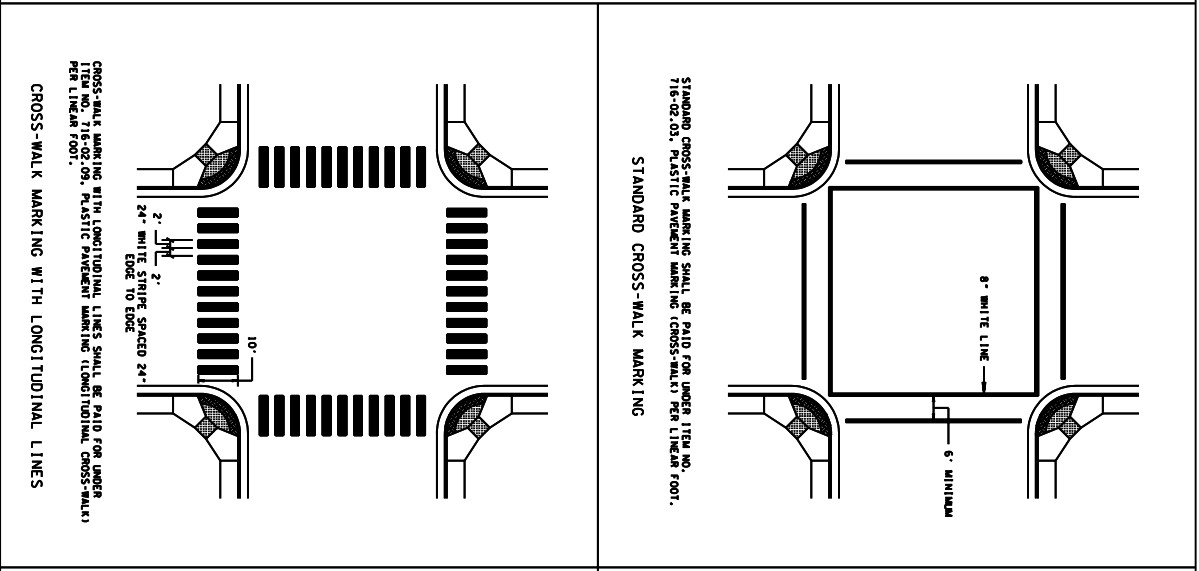
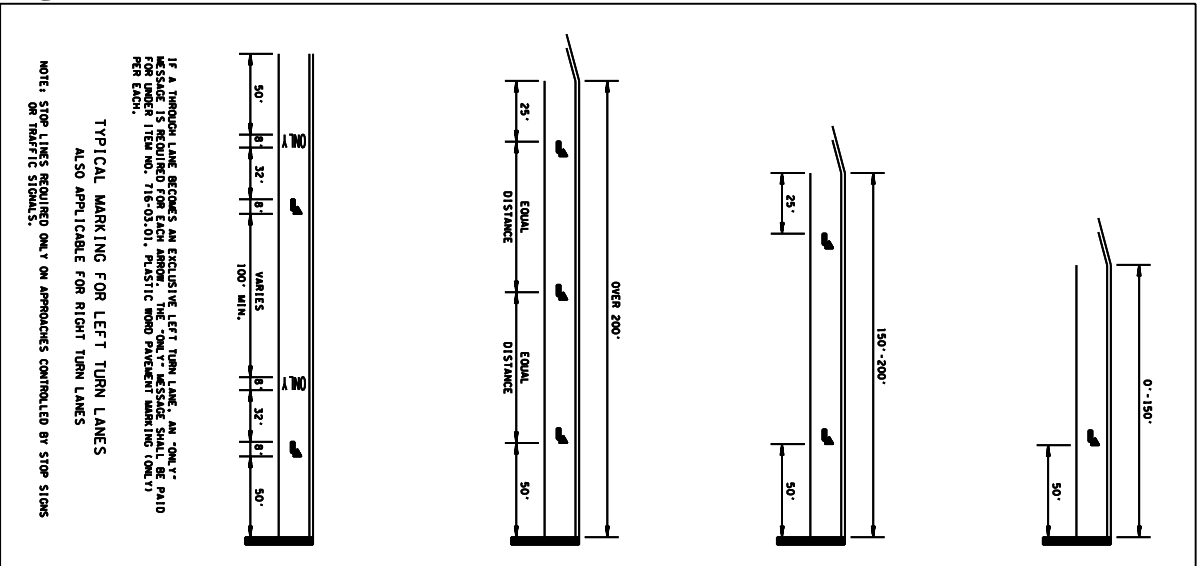


TYPE 4
 (RAMP OUTSIDE RADIUS)

* DIMENSION VARIES RELATIVE TO LONGITUDINAL ROADWAY GRADE

- GENERAL NOTES
- ① FOR SIGNALIZED INTERSECTIONS THAT REQUIRE PROSTRATION SIGNAL PUSH BUTTONS, SEE T007 TRAFFIC DESIGN MANUAL FOR PLACEMENT DETAILS.
 - ② SEE STANDARD DRAWING RP-H-3 FOR TRUNCATED DOME SURFACE DETAILS.
 - ③ 5'-0" SIDEWALK WIDTH INCLUDES 6" CONCRETE CURB.
 - ④ GRATES FOR STORM DRAINS SHALL NOT BE PLACED IN THE CROSSWALK OR IN FRONT OF THE HANDICAP RAMP.
 - ⑤ DESIRED DIMENSIONS SHALL BE CALCULATED BY USING THE DIMENSIONS FROM THE TABLE ON A CASE BY CASE BASIS, UNLESS SPECIFIED OTHERWISE BY THE ENGINEER.
 - ⑥ CROSS WALK MARKINGS SHALL BE CALCULATED BY USING THE DIMENSIONS FROM THE TABLE ON A CASE BY CASE BASIS, UNLESS SPECIFIED OTHERWISE BY THE ENGINEER.

STATE OF TEXAS
 DEPARTMENT OF TRANSPORTATION
 PARALLEL HANDICAP
 RAMP
 FOR 20' THRU 60'
 RADIUS
 RP-H-9
 1-15-07



REV. 3-22-09, REVISED DETAIL LEFT TURN LANE MARKING. REVISED DETAIL FOR CROSS-WALK TO HORIZONTAL (LONGITUDINAL) CROSS-WALK PER: NO. FROM 1-24-11 TO 2-24-4, ADDS DETAIL FOR DOUBLE LEFT TURN LANE.

REV. 5-2-01, ADDED AND REDESIGNED SPLIT AND PAY ITEMS AND THEIR DESCRIPTIONS.

REV. 5-27-01, CHANGED DESCRIPTION IN ITEM NO. 716-02-09.

REV. 5-5-01, CHANGED DESCRIPTION IN ITEM NO. 716-02-05.

REV. 11-10-09, CHANGED MESSAGE MAP DETAIL, SHOWN ON CROSSWALK MARKING DETAILS.

STATUS OF TRANSMISSION
DEPARTMENT OF TRANSPORTATION
STANDARD INTERSECTION PAVEMENT MARKINGS
T-M-4