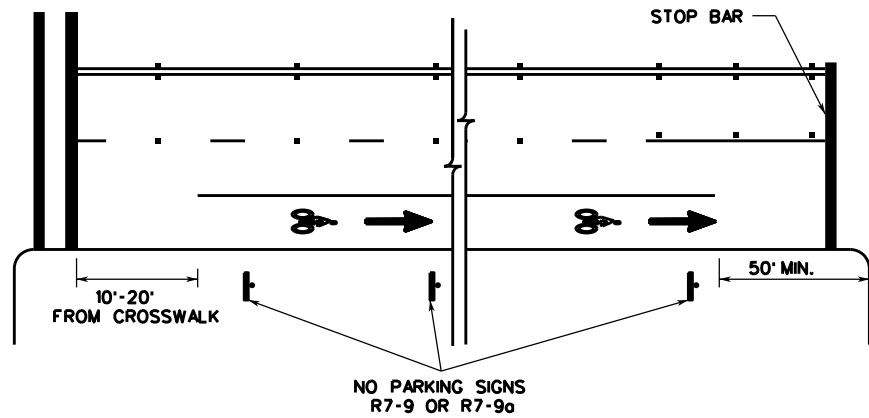
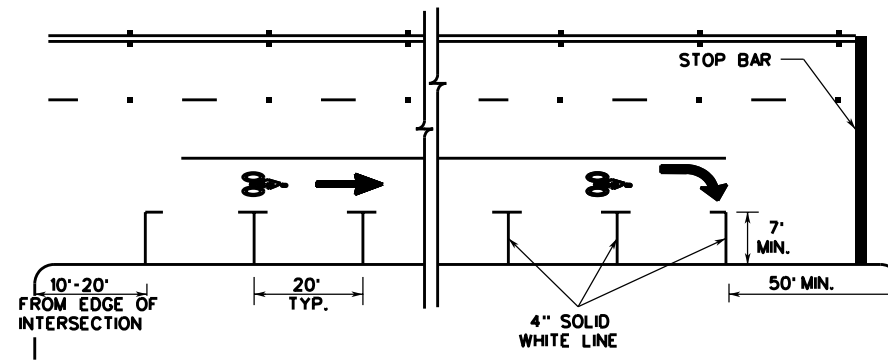


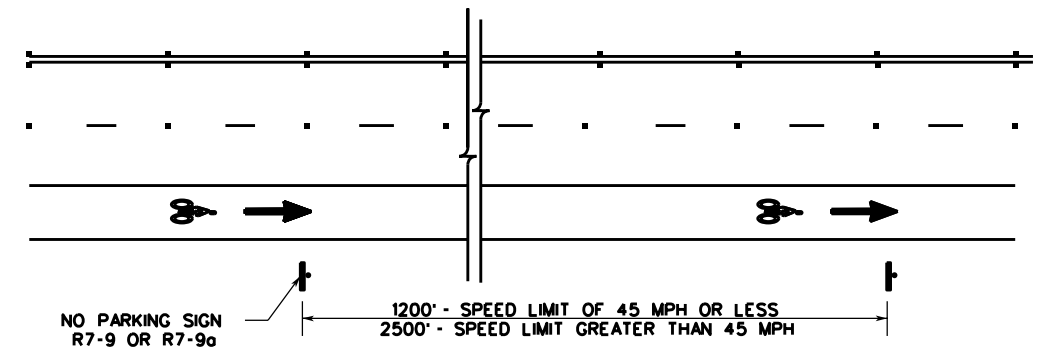
NO PARKING ALONG BICYCLE LANE



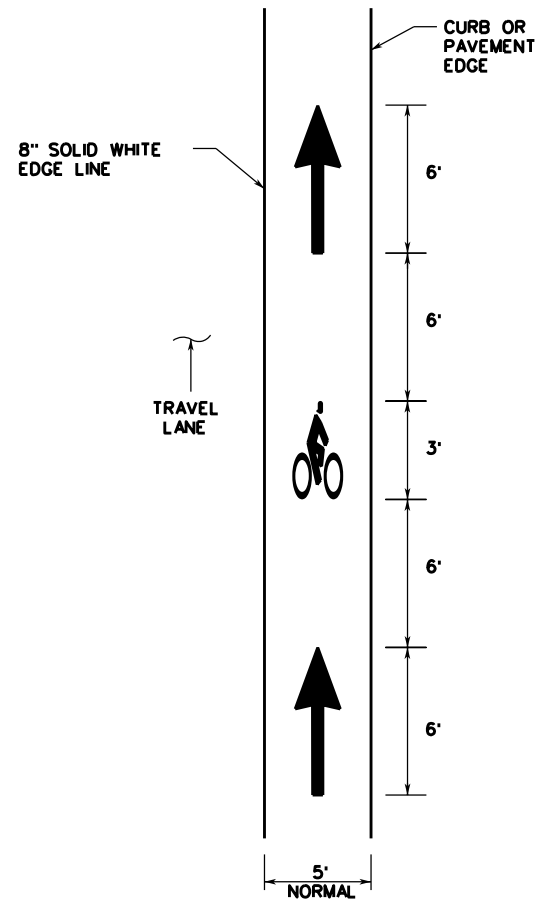
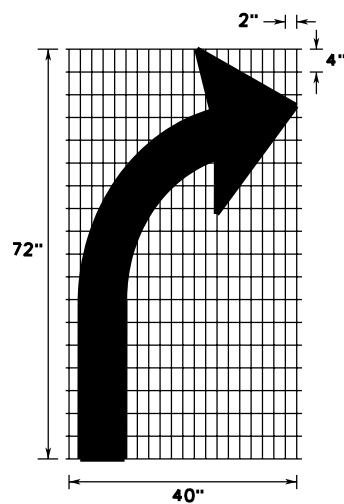
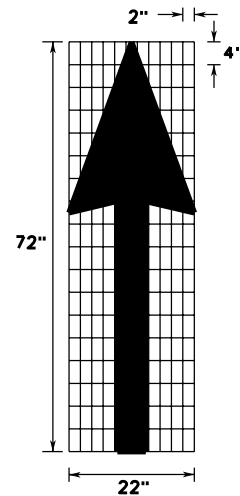
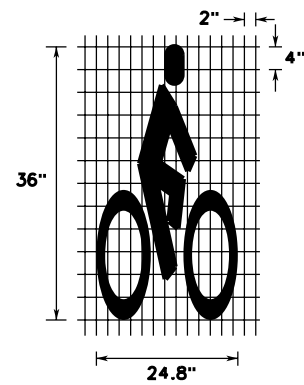
PARKING ALONG BICYCLE LANE



ROADWAYS WITH FEW INTERSECTIONS

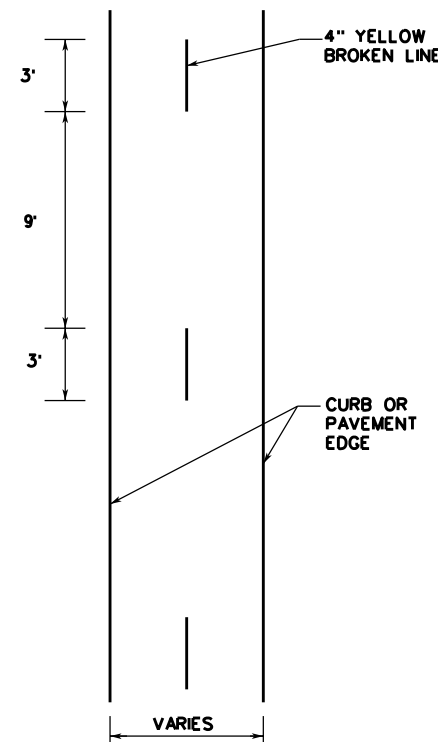


ADJACENT TO TRAVEL LANE

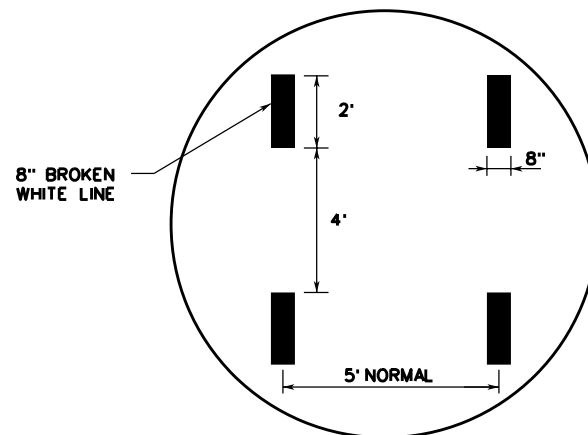


SHARED USE PATH

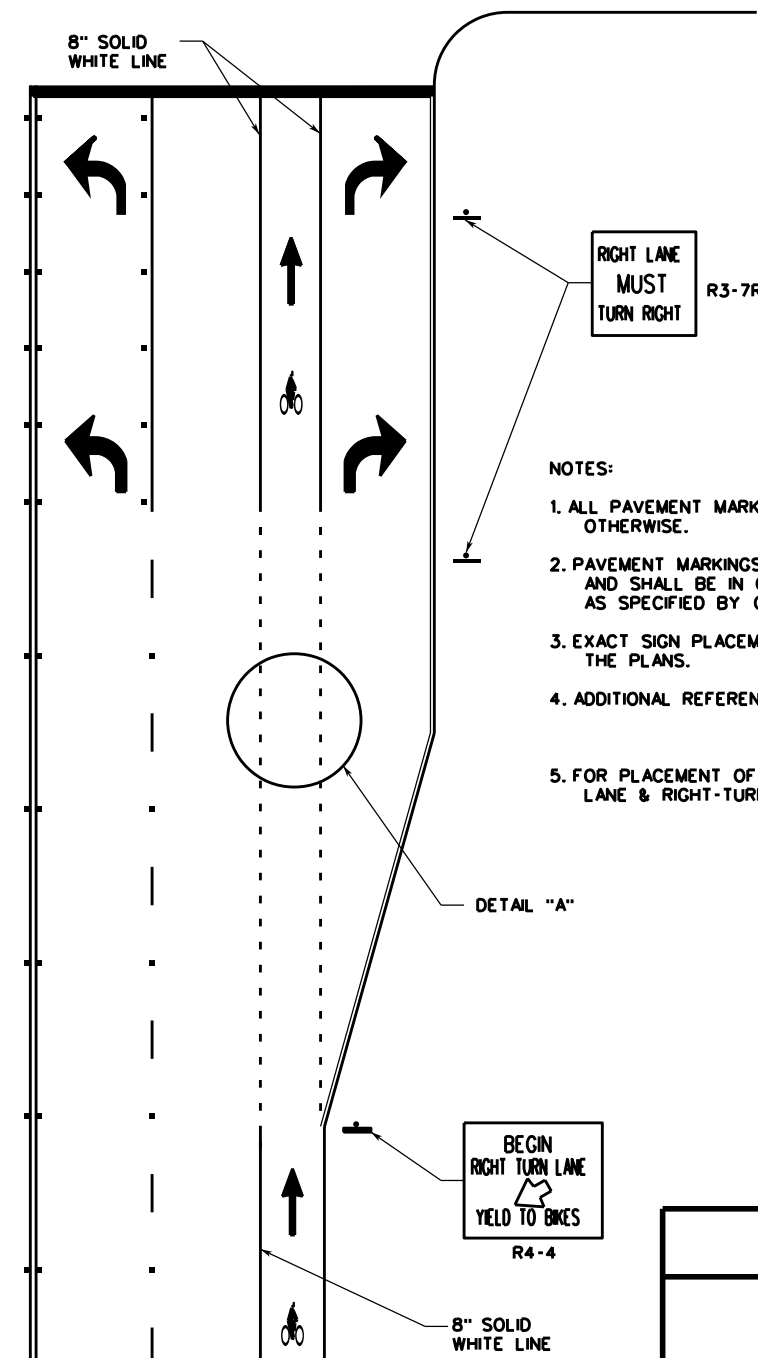
(SEPERATE FROM ROADWAY WITH NO MOTORIZED TRAFFIC)



DETAIL "A"



RIGHT-TURN LANE AT INTERSECTION



NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE WHITE EXCEPT WHEN NOTED OTHERWISE.
2. PAVEMENT MARKINGS SHALL BE OF THE MATERIALS SPECIFIED AND SHALL BE IN CONFORMANCE WITH MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF SAN ANTONIO STANDARD SPECIFICATIONS.
3. EXACT SIGN PLACEMENT AND DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.
4. ADDITIONAL REFERENCES: TMUTCD GUIDE FOR THE DEVELOPMENT OF BICYCLES FACILITIES, AASHTO, 1991.
5. FOR PLACEMENT OF PAVEMENT ARROWS AND WORDS SEE LEFT-TURN LANE & RIGHT-TURN LANE DESIGN WORKSHEET.

SEPTEMBER 2009

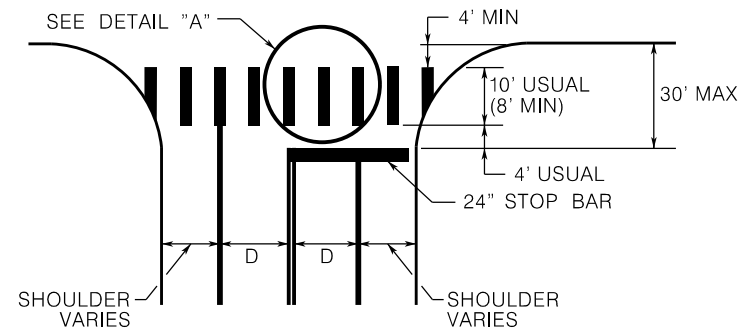
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC ENGINEERING STANDARDS

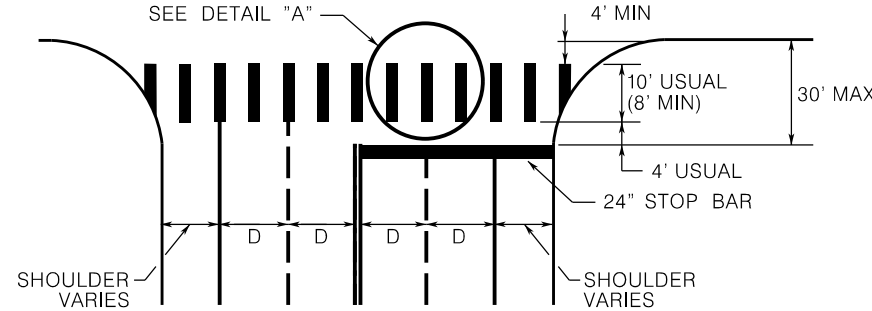
BICYCLE LANE
PAVEMENT MARKINGS
SHEET 8 OF 16

DATE:	PROJECT NO.:	DATE:
DRWN. BY: LAN	DSGN. BY: C.B.W.	CHKD. BY: M.E.
SHEET NO.:		OF

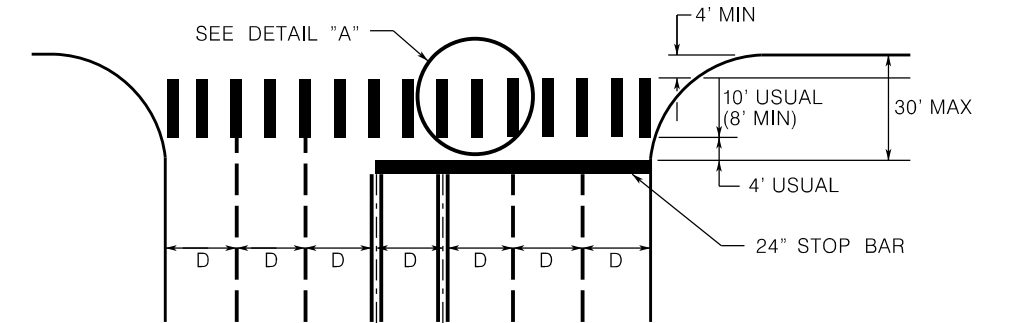
TWO LANES WITH SHOULDERS



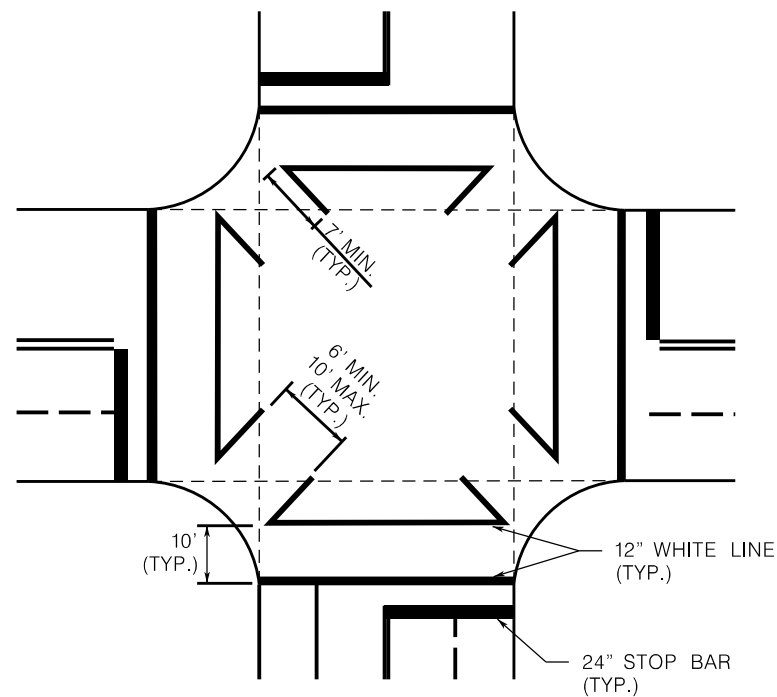
FOUR LANES WITH SHOULDERS



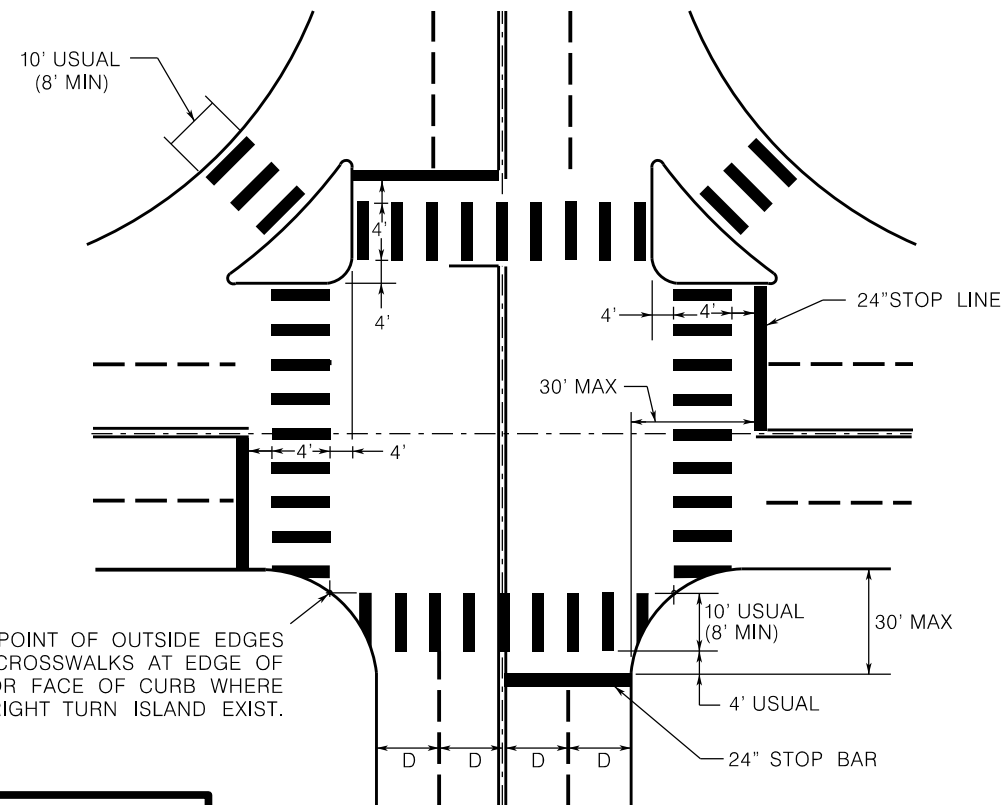
MULTI - LANES



EXCLUSIVE PEDESTRIAN PHASE

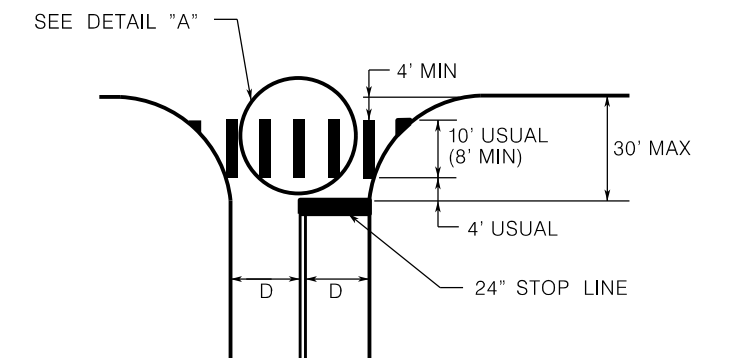


INTERSECTION WITH RIGHT-TURN ISLANDS

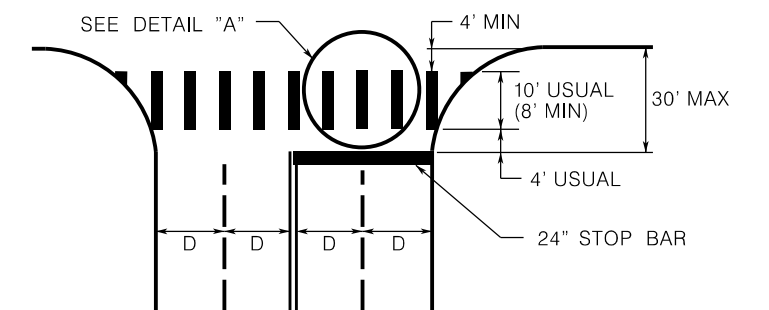


COMMON POINT OF OUTSIDE EDGES OF CROSSWALKS AT EDGE OF PAVEMENT OR FACE OF CURB WHERE NO RIGHT TURN ISLAND EXIST.

TWO LANES

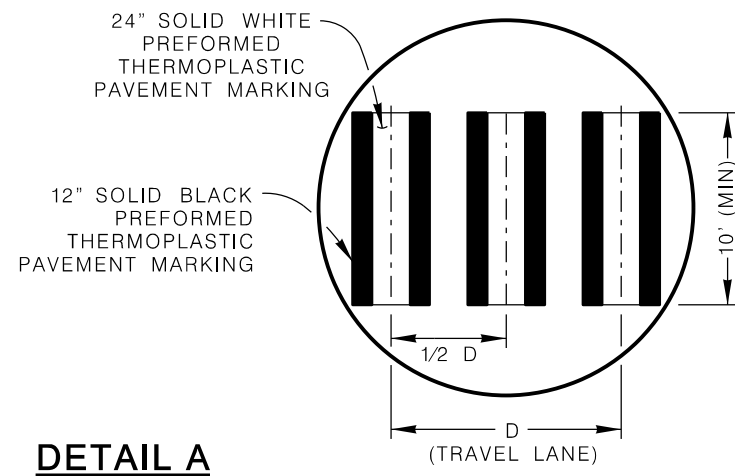


FOUR LANES



HIGH CONTRAST CROSSWALK

- NOTES:
- CROSSWALKS AND STOP BARS SHALL BE WHITE.
 - "D" IS EQUAL TO THE WIDTH OF TRAVEL LANE.
 - PREFORMED THERMOPLASTIC SHALL BE USED FOR ALL CROSSWALK PAVEMENT MARKINGS.
 - PREFORMED THERMOPLASTIC MATERIAL SHALL BE SUPPLIED BY A MANUFACTURER LISTED ON TxDOT'S MATERIAL PRODUCER LIST (MPL).



DETAIL A

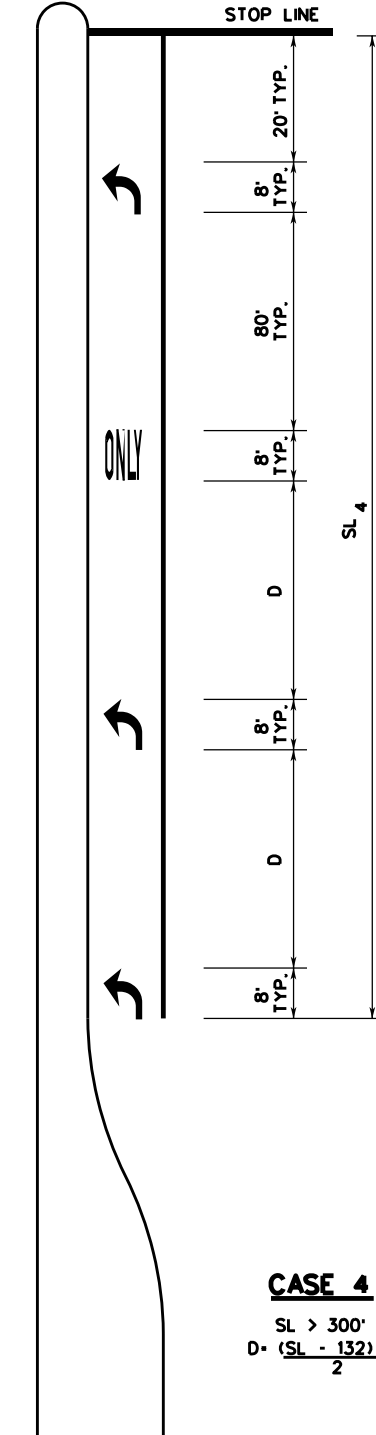
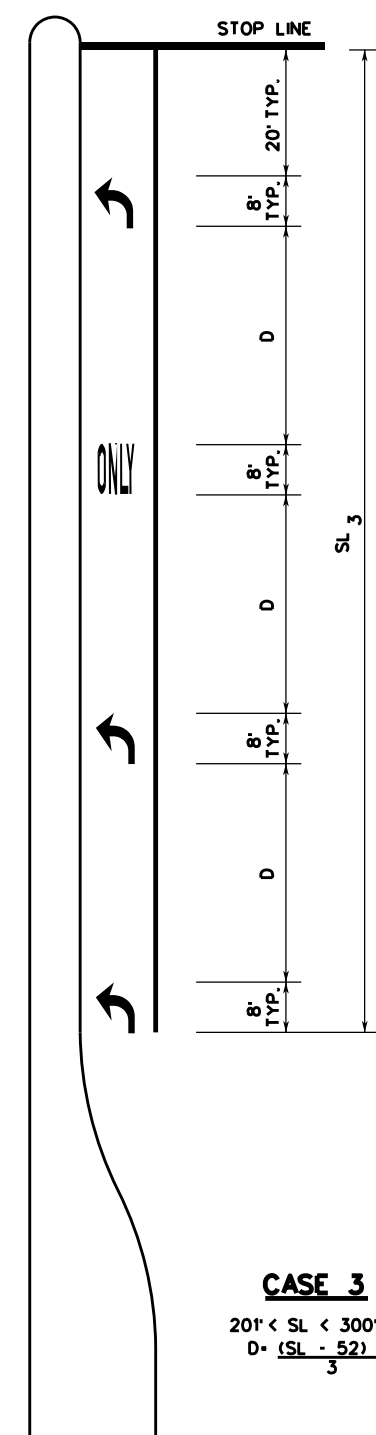
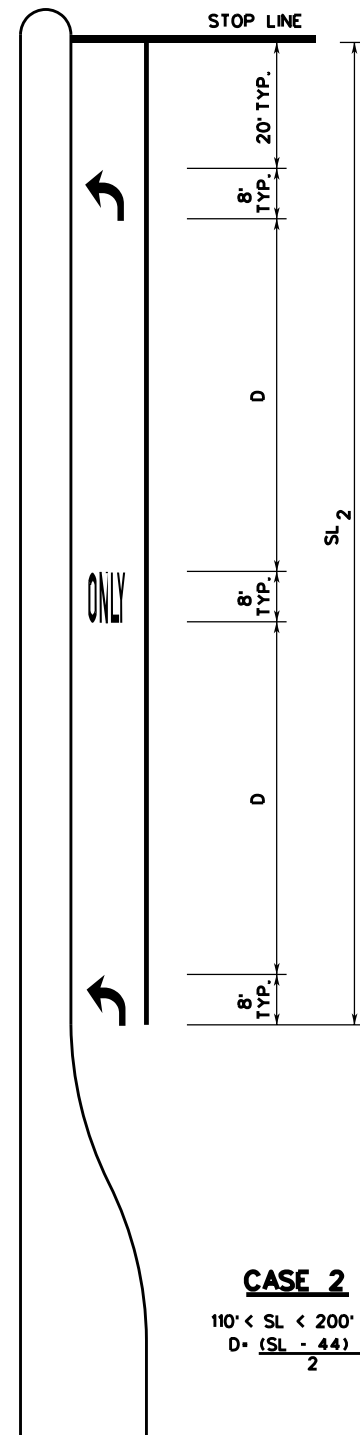
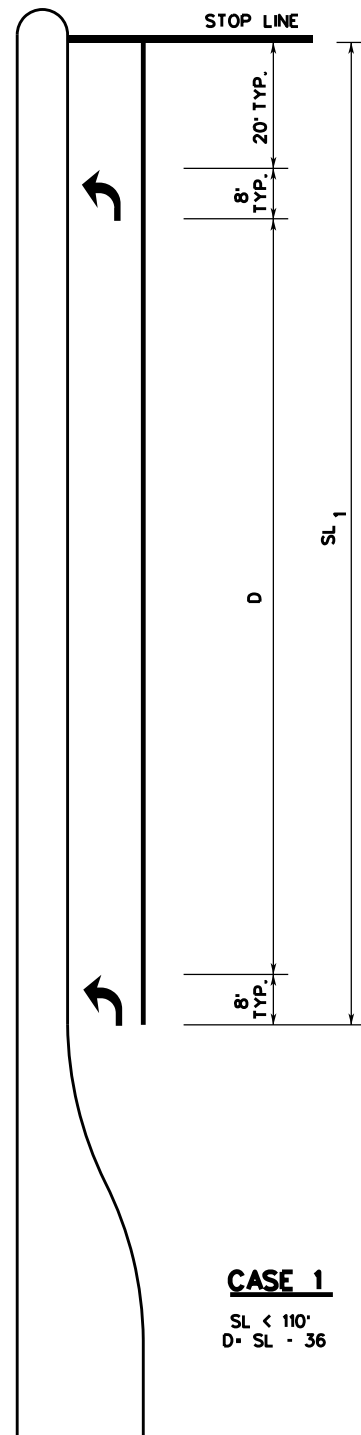
GENERAL NOTES:

- CROSSWALKS AND STOP BARS SHALL BE WHITE.
- "D" IS EQUAL TO THE WIDTH OF TRAVEL LANE.
- PREFORMED THERMOPLASTIC SHALL BE USED FOR ALL CROSSWALK PAVEMENT MARKINGS.
- PREFORMED THERMOPLASTIC MATERIAL SHALL BE SUPPLIED BY A MANUFACTURER LISTED ON TxDOT'S MATERIAL PRODUCER LIST (MPL).

JULY 2017

CITY OF SAN ANTONIO
 TRANSPORTATION & CAPITAL IMPROVEMENTS DEPARTMENT
 TRANSPORTATION SERVICES CONSTRUCTION STANDARDS
TYPICAL CROSSWALK DETAILS

% SUBMITTAL	PROJECT NO.:	DATE: 7.25.17
DRWN. BY: LAN	RVSD. BY: AF	CHKD. BY: GE, PE
		SHEET NO.: 1 OF 1



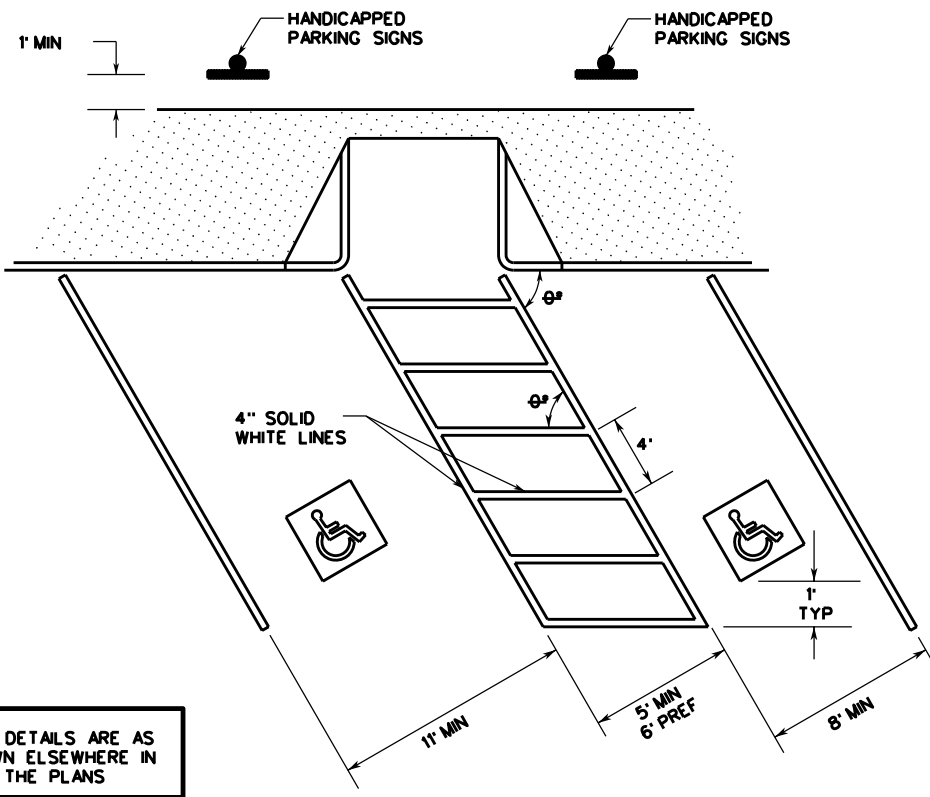
KEY:
 SL - STORAGE LENGTH (FEET)
 D - DISTANCE BETWEEN ARROWS AND LEGENDS (FEET)

- GENERAL NOTES:**
1. THESE DETAILS ALSO APPLY TO RIGHT-TURN LANES.
 2. FOR DUAL-TURN LANES, DIMENSIONS SHALL BE THE SAME FOR EACH LANE.
 3. SL DIMENSION IS FROM STOP LINE TO END OF TURN LANE, WHICH DOES NOT INCLUDE TAPER LENGTH.
 4. PAVEMENT ARROWS AND "ONLY" LEGEND MARKINGS ARE TYPICALLY USED AT SIGNALIZED INTERSECTIONS AND AT UNSIGNALIZED INTERSECTIONS WHERE A DEMONSTRATED NEED EXISTS.
 5. MINIMUM SL = 110'. SL MAY BE LESS THAN 110 FEET AS DIRECTED BY THE CITY TRAFFIC ENGINEER.

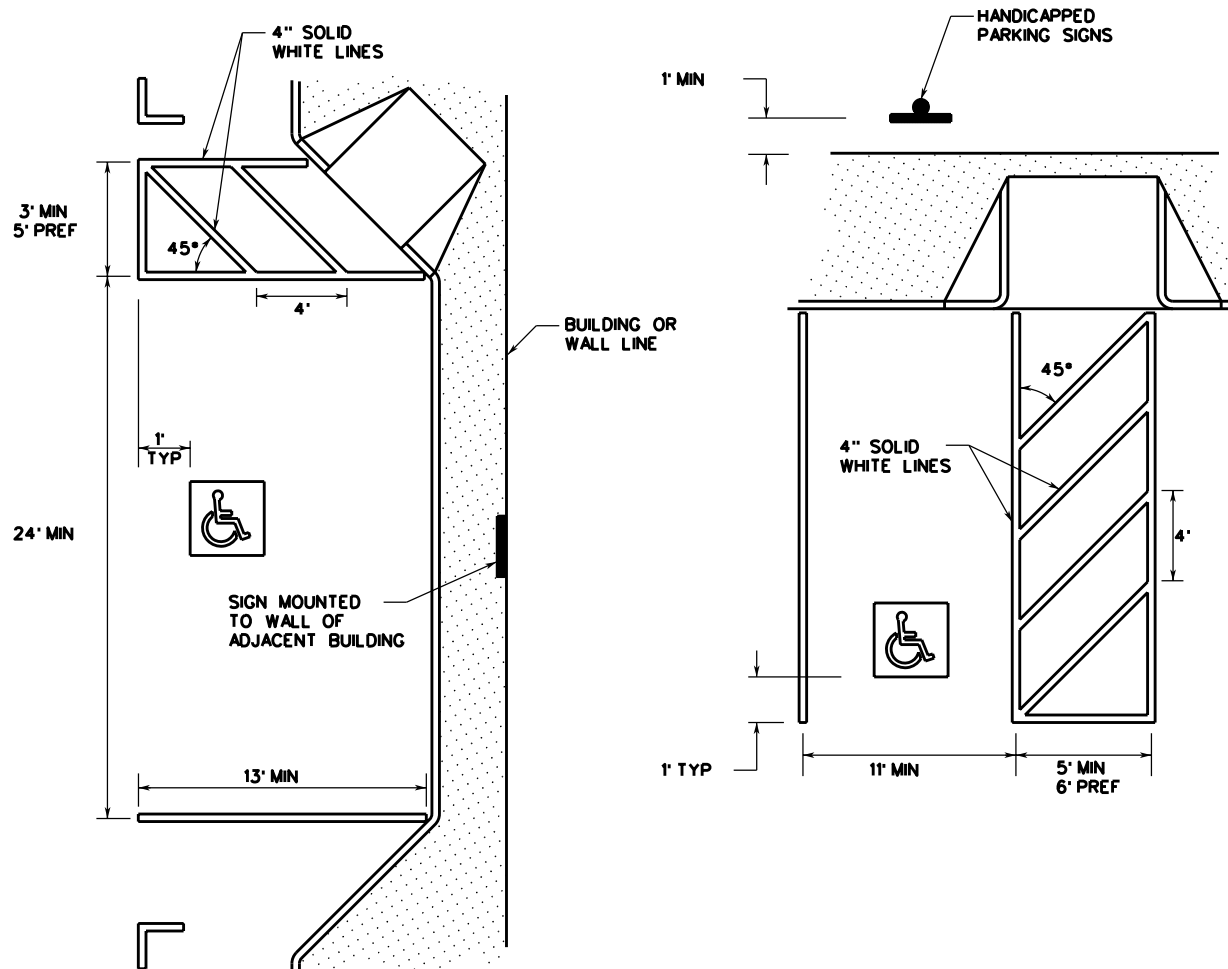
SEPTEMBER 2009
 CITY OF SAN ANTONIO
 DEPARTMENT OF PUBLIC WORKS
 TRAFFIC ENGINEERING STANDARDS
 LEFT-TURN "ONLY" AND ARROW
 SPACING WORKSHEET
 SHEET 1 OF 16

SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: LAN	DSGN. BY: C.B.W.	CHKD. BY: M.E.
SHEET NO.:		OF

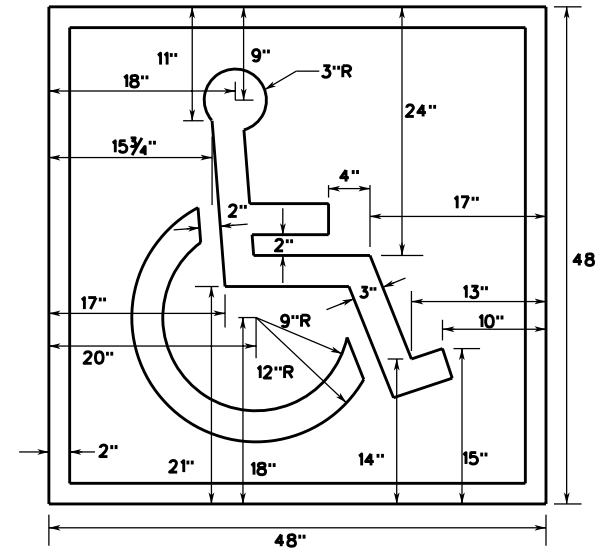
TYPICAL ACCESSIBLE PARKING SPACE DIMENSIONS



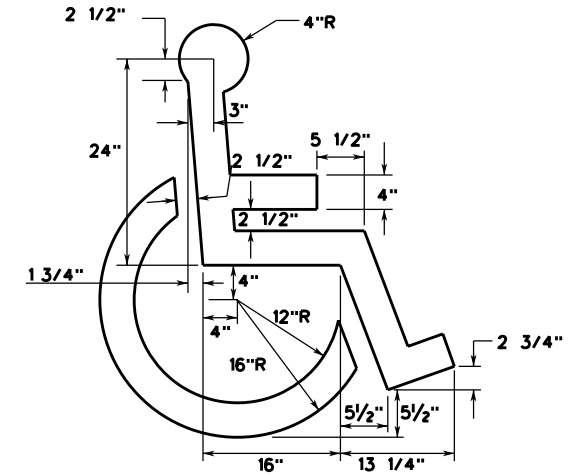
RAMP DETAILS ARE AS SHOWN ELSEWHERE IN THE PLANS



PAVEMENT MARKINGS



WITH BACKGROUND
SYMBOL & BORDER: WHITE
BACKGROUND: BLUE



SYMBOL ONLY
SYMBOL: BLUE OR WHITE

NOTES:

1. ALL PARKING SPACE LIMIT LINES SHALL BE 4" SOLID WHITE LINES.
2. AISLE MARKINGS SHOWN ARE EXAMPLES ONLY. OTHER METHODS TO INDICATE A NO PARKING AREA ARE ACCEPTABLE. AISLE MARKINGS SHALL BE WHITE.
3. DIMENSIONS OF LIMIT LINES, AISLE MARKINGS, AND SYMBOL (WITH OR WITHOUT BACKGROUND) MAY VARY ± 10%.
4. PAVEMENT MARKING SYMBOLS (WITH BACKGROUND):
 - A) ARE REQUIRED UNLESS STATED ELSEWHERE IN THE PLANS.
 - B) SHOULD BE PLACED TOWARD THE FAR END OF THE PARKING SPACES SO AS TO BE VISIBLE TO MOTORISTS IN THE TRAVEL LANE.
 - C) MAY BE PAINTED OR PREFABRICATED MATERIAL, AND
 - D) SHALL BE 30"x30" MINIMUM.
5. WITH APPROVAL OF THE CITY TRAFFIC ENGINEER, PREFABRICATED PAVEMENT MARKING SYMBOLS WITH BACKGROUND OF OTHER DIMENSIONS EXCEEDING THE 30"x30" MINIMUM MAY BE USED. ALTERNATIVE DESIGNS SHALL INCLUDE A PROPORTION SIZED SYMBOL OF ACCESSIBILITY, AND SHALL CONFORM TO THE ILLUSTRATED COLORS FOR BACKGROUND, SYMBOL AND BORDER.
6. ALL SLOPE IN AND AROUND EXPECTED WHEEL CHAIR PATH SHALL NOT EXCEED 2% X-SLOPES.

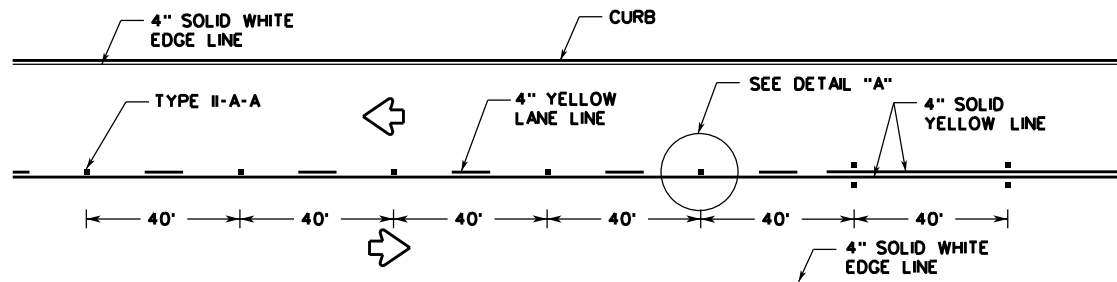
SEPTEMBER 2009

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

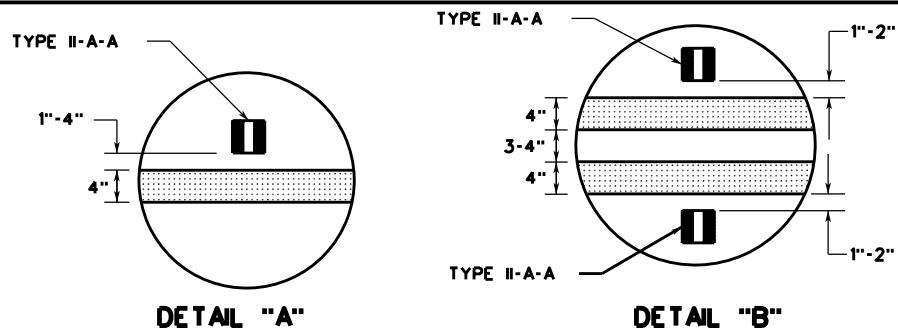
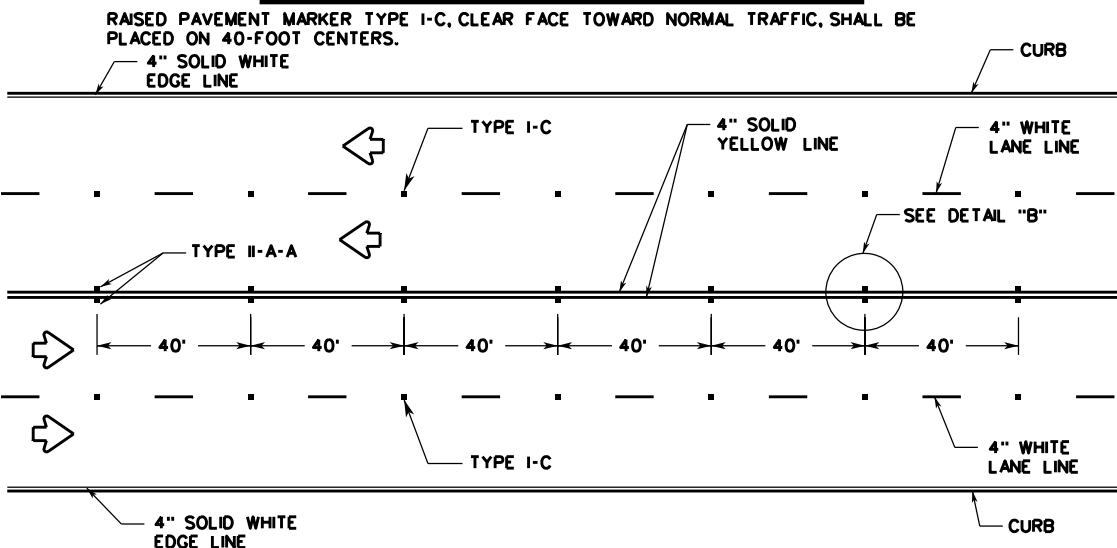
TRAFFIC ENGINEERING STANDARDS
PAVEMENT MARKINGS FOR ACCESSIBLE PARKING
SHEET 6 OF 16

DATE: _____	PROJECT NO.: _____	SUBMITTAL: _____
CHKD. BY: _____	DSGN. BY: _____	DRWN. BY: _____

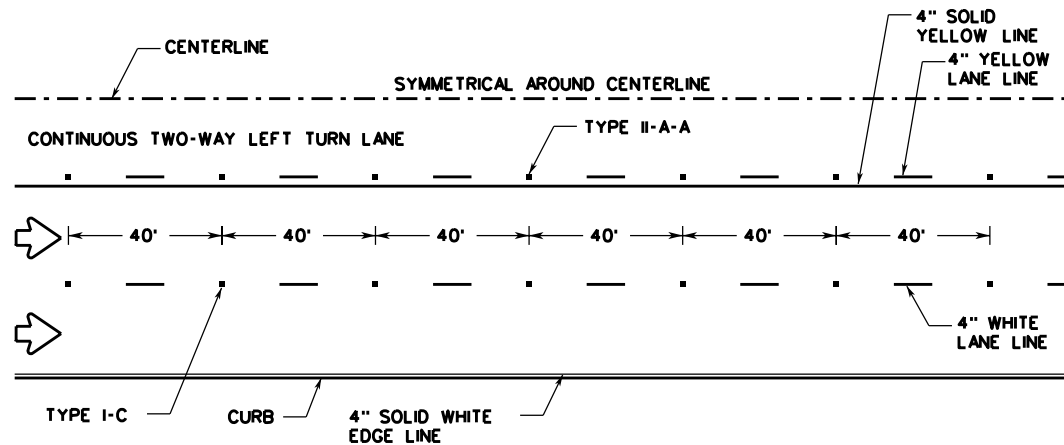
CENTERLINE & EDGE FOR ALL TWO LANE STREETS WITH PASSING ZONE



CENTERLINE, LANE LINES & EDGE LINES FOR FOUR LANE TWO-WAY STREETS



CENTERLINE, LANE LINES, & EDGE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES & EDGE LINES FOR ONE-WAY MULTILANE STREET

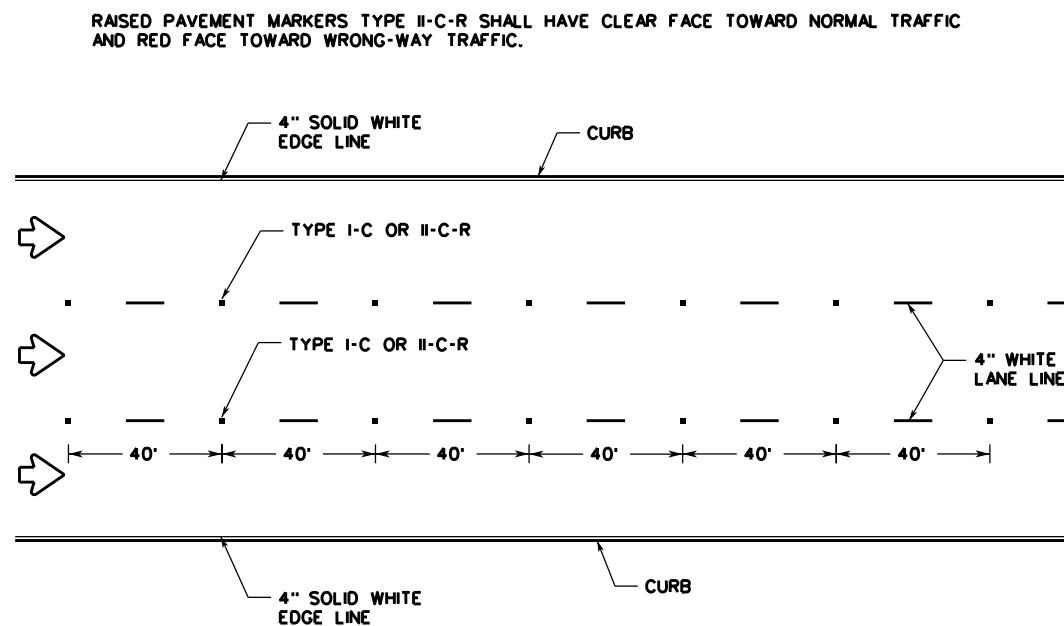


TABLE 1 - TYPICAL LENGTH (L)

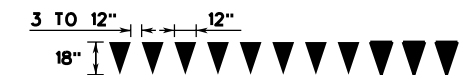
POSTED SPEED	FORMULA
45 >	$L = \frac{WS^2}{60}$
≥ 45	$L = WS$

* 85TH PERCENTILE SPEED MAY BE USED ON ROADS WHERE TRAFFIC SPEEDS NORMALLY EXCEED THE POSTED SPEED LIMIT. CROSSHATCHING LENGTH SHOULD BE ROUNDED UP TO NEAREST 5 FOOT INCREMENT.

L = LENGTH OF CROSSHATCHING (FT)
 W = WIDTH OF OFFSET (FT)
 S = POSTED SPEED (MPH)

EXAMPLES:
 AN 8 FOOT SHOULDER IN ADVANCE OF A BRIDGE REDUCES TO 4 FEET ON A 70 MPH ROADWAY. THE LENGTH OF THE CROSSHATCHING SHOULD BE:
 $L = 8 \times 70 = 560$ FT
 A 4 FOOT SHOULDER IN ADVANCE OF A BRIDGE REDUCES TO 2 FEET ON A 40 MPH ROADWAY. THE LENGTH OF THE CROSSHATCHING SHOULD BE:
 $L = 4(40)^2 / 60 = 106.67$ FT ROUNDED TO 110 FT

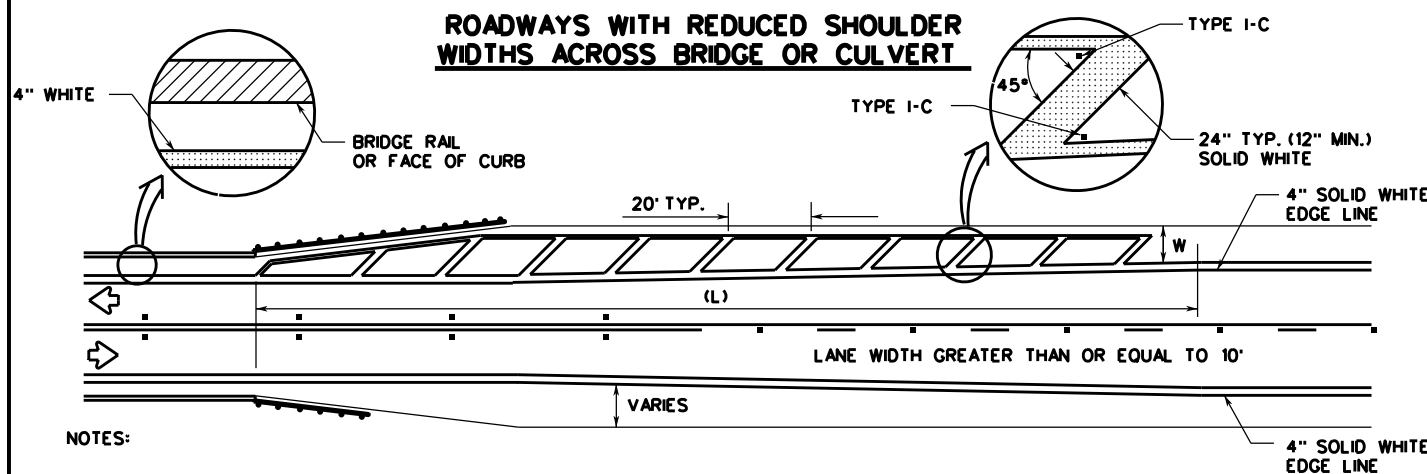
YIELD LINES



GENERAL NOTES:

1. EDGELINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED IN ALL CASES, HOWEVER SHALL BE PLACED AS DIRECTED BY CITY TRAFFIC ENGINEER.
2. THE TRAVELED WAY INCLUDES ONLY THAT PORTION OF THE ROADWAY USED FOR VEHICULAR TRAVEL AND NOT THE PARKING LANES, SIDEWALKS, BERMS AND SHOULDERS. THE TRAVELED WAYS SHALL BE MEASURED FROM THE INSIDE OF EDGELINE TO INSIDE OF EDGELINE OF A TWO LANE ROADWAY.
3. ALL RAISED PAVEMENT MARKERS PLACED IN BROKEN LINES SHALL BE PLACED IN LINE WITH AND MIDWAY BETWEEN THE STRIPES.
4. ON CONCRETE PAVEMENTS THE RAISED PAVEMENT MARKERS SHOULD BE PLACED TO ONE SIDE OF THE LONGITUDINAL JOINTS.
5. ALL PAVEMENT MARKING MATERIAL SHALL MEET THE REQUIRED MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF SAN ANTONIO STANDARD SPECIFICATIONS.
6. 4" SOLID WHITE EDGE LINES ARE OPTIONAL AS DIRECTED BY THE CITY TRAFFIC ENGINEER.

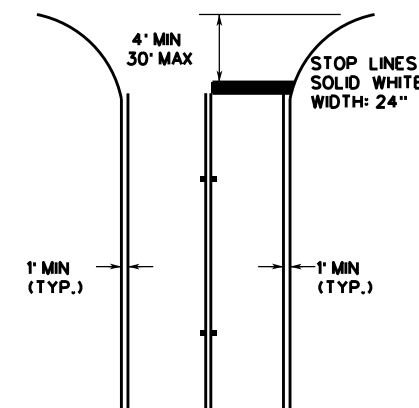
ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT



NOTES:

1. NO-PASSING ZONE ON BRIDGE APPROACH IS OPTIONAL BUT IF USED, IT SHALL BE A MINIMUM 500 FEET LONG.
2. FOR CROSSHATCHING LENGTH (L) SEE TABLE 1.
3. THE WIDTH OF THE OFFSET (W) AND THE REQUIRED CROSSHATCHING WIDTH IS THE FULL SHOULDER WIDTH IN ADVANCE OF THE BRIDGE.
4. THE CROSSHATCHING SHOULD BE REQUIRED IF THE SHOULDER WIDTH IN ADVANCE OF THE BRIDGE IS 4 FOOT OR WIDER AND ANY REDUCTION IN SHOULDER WIDTH ACROSS THE BRIDGE OCCURS.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE



SEPTEMBER 2009

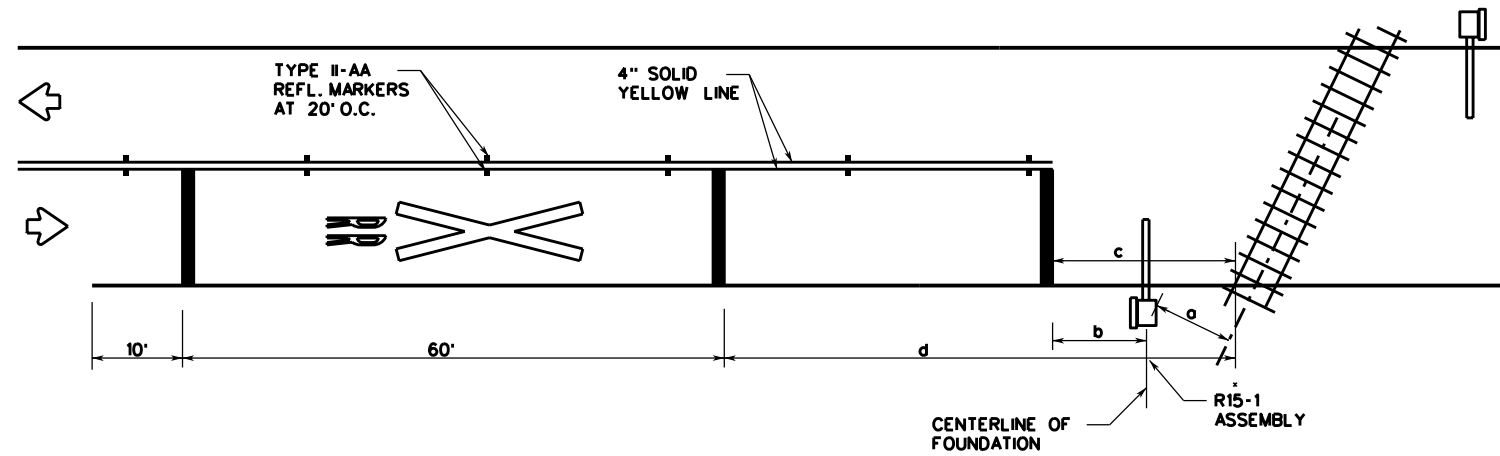
CITY OF SAN ANTONIO

DEPARTMENT OF PUBLIC WORKS

TRAFFIC ENGINEERING STANDARDS
 STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE 1
 SHEET 4 OF 16

DATE: _____	PROJECT NO.: _____	DATE: _____
DRWN. BY: LAN	DSGN. BY: C.B.W.	CHKD. BY: M.E.
SHEET NO.: _____	OF _____	

TWO LANE, TWO-WAY

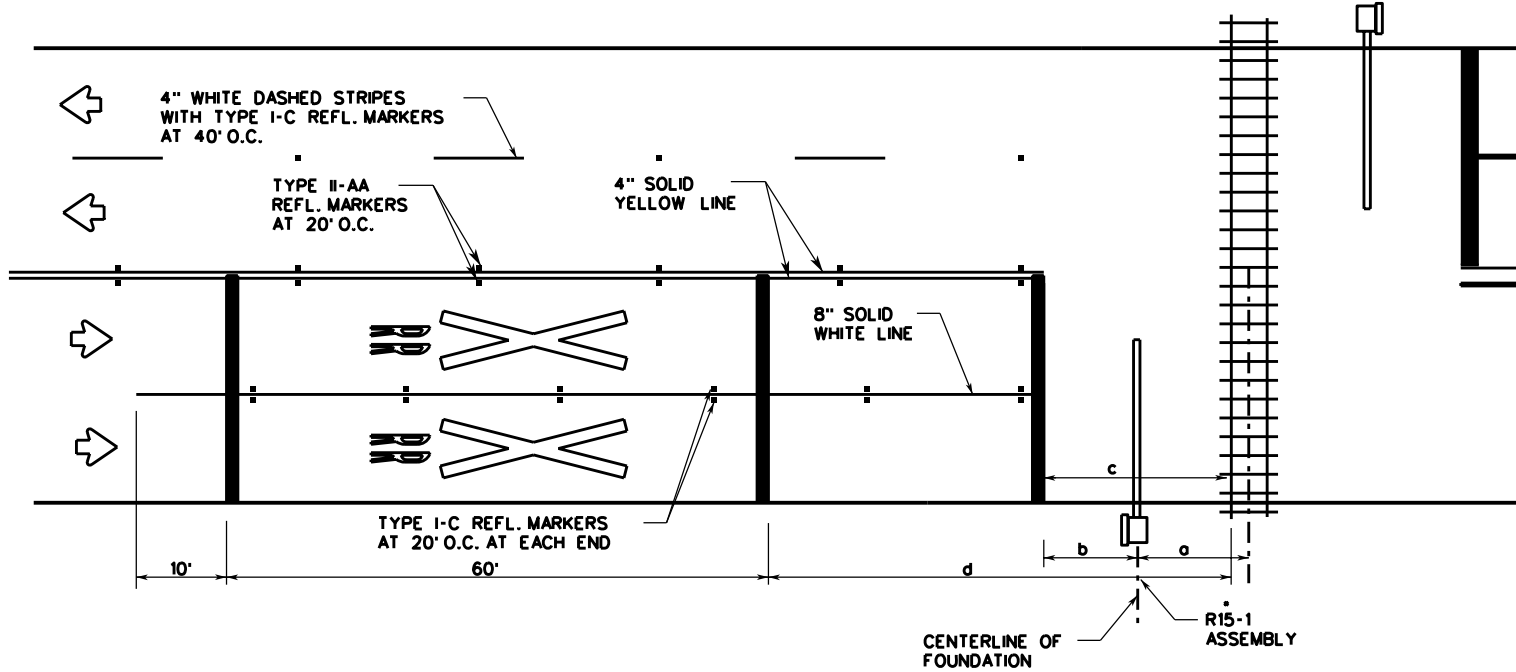


- a • 12 FEET MINIMUM, 15 FEET USUAL, IF ACTIVE WARNING DEVICES ARE PRESENT. DISTANCE "a" SHOULD BE MEASURED FROM THE CENTERLINE OF R15-1 ASSEMBLY TO THE CENTERLINE OF NEAREST TRACK.
- b• STOP LINES SHOULD BE APPROXIMATELY 8 FEET IN ADVANCE OF ACTIVE WARNING DEVICES (TYPE A, E OR F). STOP LINE SHOULD BE APPROXIMATELY 15 FEET FROM NEAR RAIL IF ONLY PASSIVE DEVICES (R15-1, PLUS R15-2 WHEN APPLICABLE) ARE PRESENT.
- c• 15 FEET DESIRABLE MINIMUM IF NO GATE OR SIGNAL IS PRESENT. R15-1 SHOULD BE PLACED BETWEEN STOP LINE AND RAILS WITH ADEQUATE DISTANCE PROVIDED FOR "a".

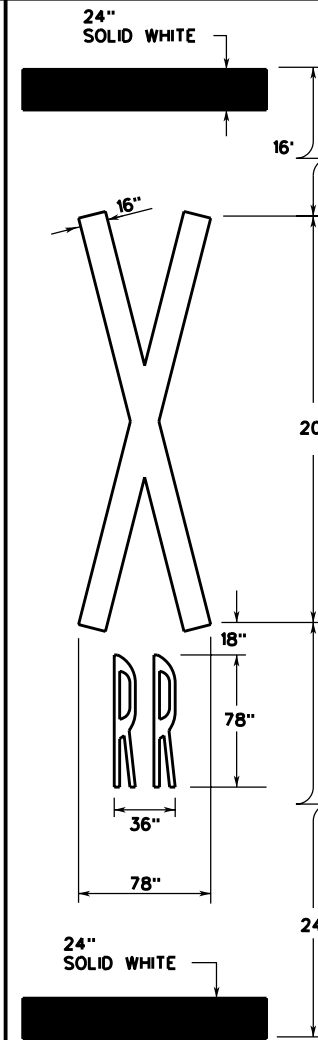
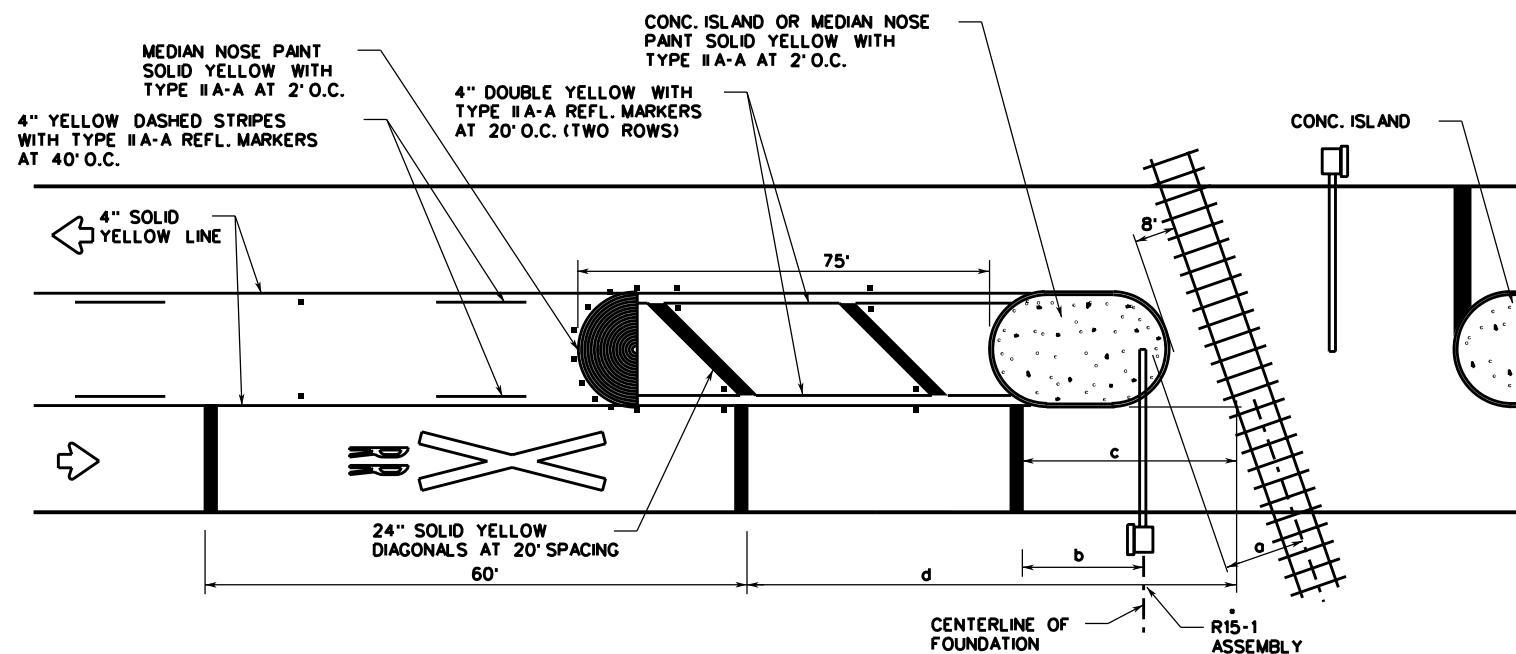
d** APPROACH SPEED (MPH)	DESIRABLE PLACEMENT (FEET)
20	145
25	220
30	295
35	370
40	445
45	520
50	595
55	670
60	745
65	820
70	900

* LOCAL CONDITIONS MAY REQUIRE ALTERNATE PLACEMENT LOCATIONS.

UNDIVIDED MULTILANE ROADWAY

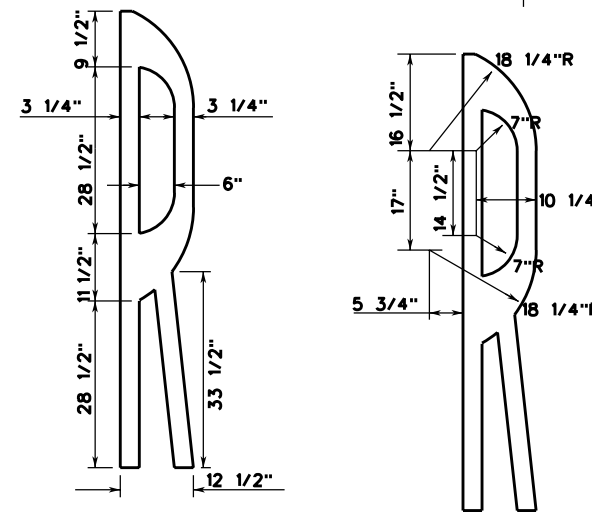


TWO-WAY LEFT-TURN LANE (TWLTL)



NOTES:

1. THE PAVEMENT MARKINGS ON AN APPROACH TO A RAILROAD GRADE CROSSING SHALL CONSIST OF:
 - A) THE RR X-ING SYMBOL.
 - B) THREE TRANSVERSE 24" LINES, AND
 - C) LANE LINES: A SOLID NO PASSING LINE FOR TWO-WAY TRAFFIC APPROACHES, OR SOLID LAND LINES FOR MULTILANE APPROACHES.
2. FOR BIDDING PURPOSES, THE RR X-ING SYMBOL WILL BE MEASURED AND PAID FOR AS FOR EACH LANE IN PLACE. THE TRANSVERSE MARKINGS AND LANE LINES WILL BE MEASURED AND PAID FOR BY THE LINEAL FOOT.
3. CENTERLINES SHALL BE YELLOW, OTHER MARKINGS SHALL BE WHITE.
4. APPROACH LANES LESS THAN 8 FOOT WIDTH SHALL NOT HAVE MARKINGS.
5. MARKINGS SHOULD NOT BE PLACED WHERE LESS THAN 110 FEET OF APPROACH ROADWAY IS AVAILABLE FOR PLACEMENT UNLESS DIRECTED BY CITY TRAFFIC ENGINEER.
6. RR X-ING SYMBOLS SHOULD BE PLACED APPROXIMATELY IN THE CENTER OF THE APPROACH LANE.
7. ALL TRANSVERSE MARKINGS, INCLUDING STOP LINES, SHALL BE PLACED AT RIGHT ANGLES TO THE CENTERLINE AND ACROSS ALL APPROACH LANES.
8. EXISTING NON-STANDARD MARKINGS SHALL BE REMOVED TO THE FULLEST EXTENT POSSIBLE SO AS NOT TO LEAVE A DISCERNABLE MARKING, BY ANY METHOD APPROVED BY THE CITY TRAFFIC ENGINEER. OVERPAINTING WILL NOT BE ALLOWED.
9. ADDITIONAL MARKINGS AND PLACEMENT DETAILS MAY BE FOUND IN THE TMUTCD, APPENDIX H.
10. THE CITY TRAFFIC ENGINEER MAY REQUIRE ADDITIONAL LONGITUDINAL MARKINGS IF THE DISTANCE BETWEEN THE STOP LINES IS GREATER THAN 80 FEET. MARKINGS ARE NOT REQUIRED ACROSS OR BETWEEN THE RAILS UNLESS SPECIFIED ELSEWHERE IN THE PLANS.



R15-1 ASSEMBLY

MAY CONSIST OF ONE OR MORE OF THE FOLLOWING:

- R15-1 CROSSBUCK SIGN
- R15-2 MULTIPLE TRACK SIGN
- TYPE A MAST FLASHERS
- TYPE E CANTILEVERS
- TYPE F GATES

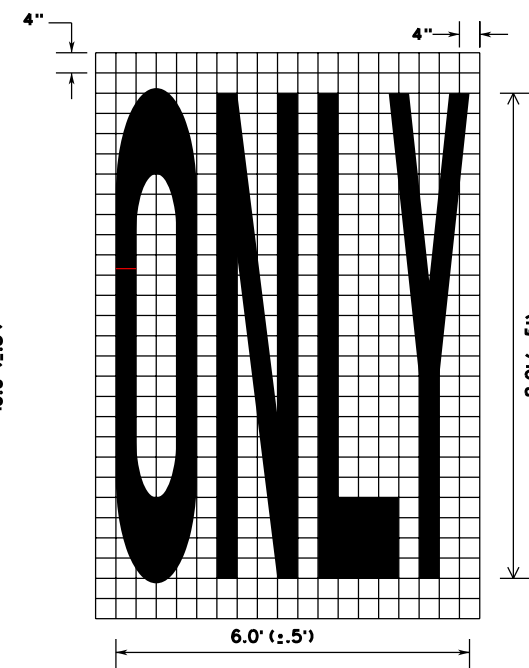
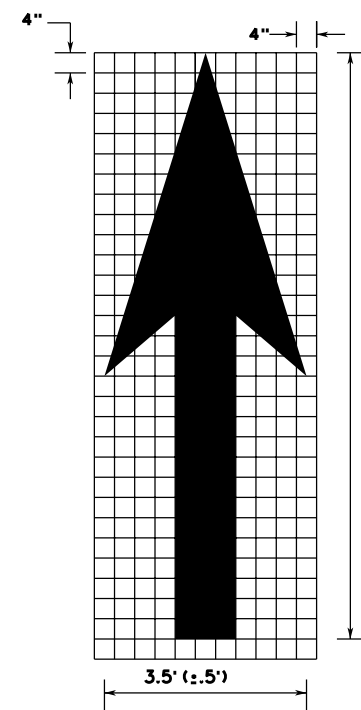
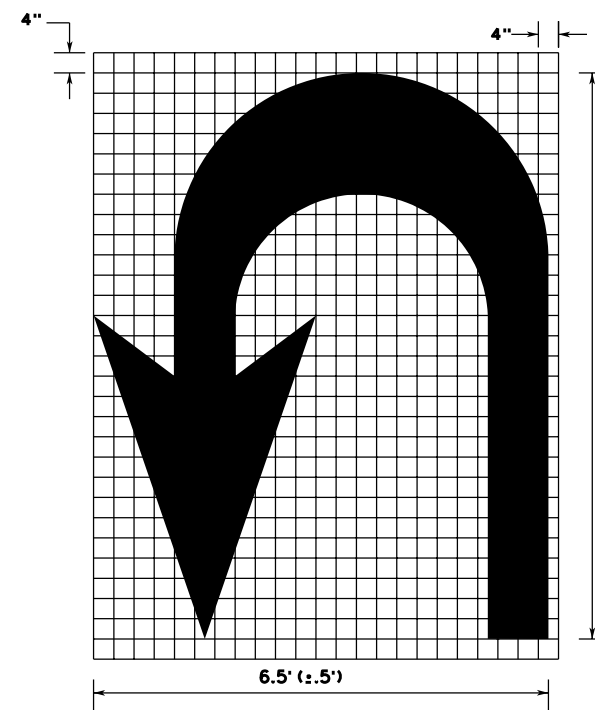
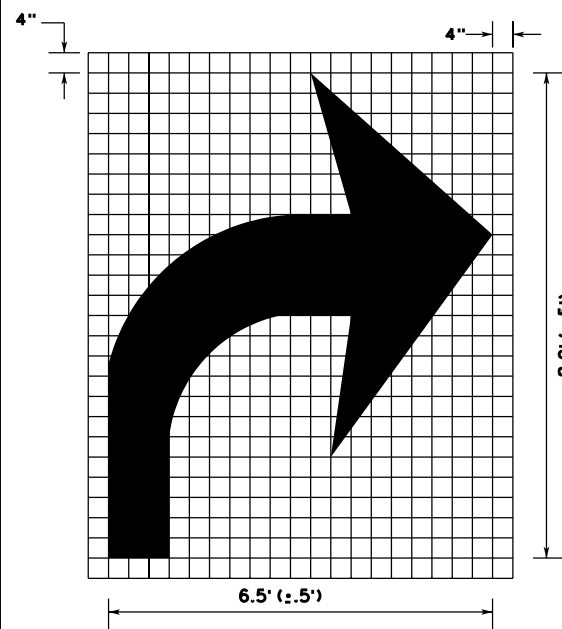
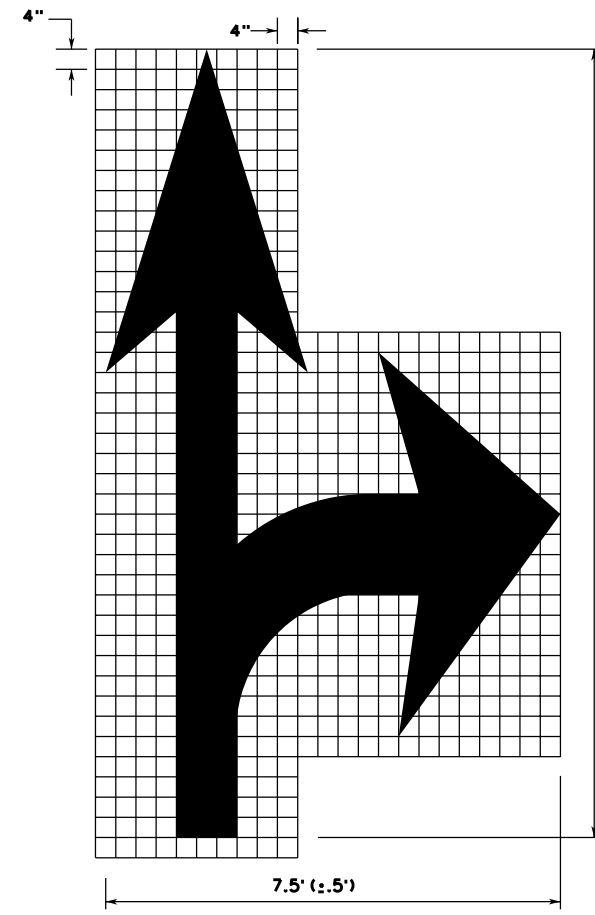
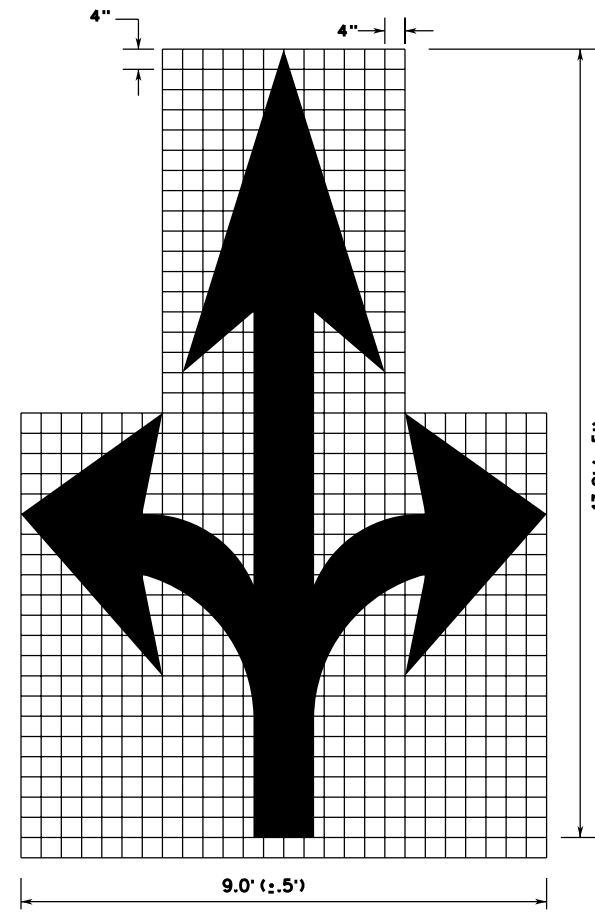
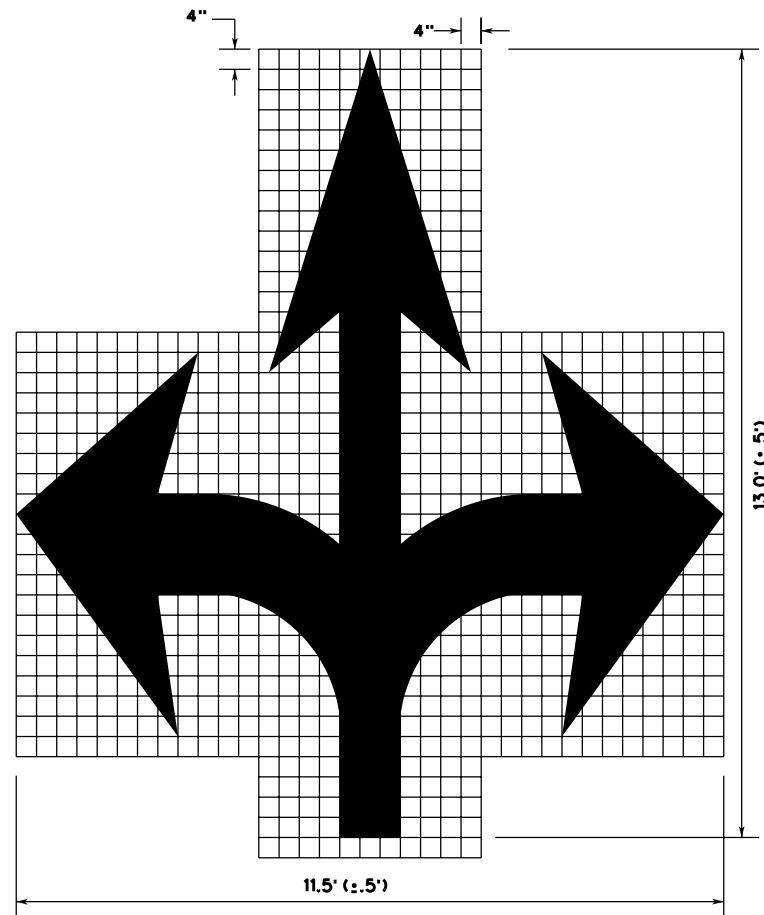
SEPTEMBER 2009

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC ENGINEERING STANDARDS
RAILROAD CROSSING PAVEMENT
MARKING (RCPM) DETAILS
SHEET 7 OF 16

NOTES:

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:
 - A. REGULATORY
 - STOP
 - RIGHT (LEFT) TURN ONLY
 - 25 MPH
 - SYMBOL ARROWS
 - B. WARNING
 - STOP AHEAD
 - SIGNAL AHEAD
 - SCHOOL
 - SCHOOL X-ING
 - PED X-ING
 - R X R (SEE RCPM DETAIL)
5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES.
7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VII OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN LETTERS SHOULD BE APPROXIMATELY 4 INCHES. THE WIDTH OF LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES.
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED BY STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED ELSEWHERE IN THE PLANS.



SEPTEMBER 2009

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC ENGINEERING STANDARDS
STANDARD PAVEMENT MARKINGS
(ARROWS)

SHEET 3 OF 16

DATE:	PROJECT NO.:	% SUBMITTAL:
DRWN. BY: LAN	DSGN. BY: C.B.W.	CHKD. BY: M.E.
SHEET NO.:	OF	

TRUCKS NEXT YIELD MERGE EXIT STOP ONLY

9.5' (±.5) 4" 7.5' (±.5) 4" 7.0' (±.5) 4" 8.0' (±.5) 4" 6.5' (±.5) 4" 6.5' (±.5) 4" 6.0' (±.5) 4"

SCHOOL SIGNAL TURN LANE ENDS PED

9.5' (±.5) 4" 8.5' (±.5) 4" 6.5' (±.5) 4" 6.5' (±.5) 4" 7.5' (±.5) 4" 5.5' (±.5) 4"

ZONE AHEAD RIGHT LEFT ROUTE X-ING

6.5' (±.5) 4" 8.0' (±.5) 4" 8.5' (±.5) 4" 6.5' (±.5) 4" 8.0' (±.5) 4" 8.0' (±.5) 4"

1234567890 MPH BUS

6.0' (±.5) 4" 6.0' (±.5) 4"

SEPTEMBER 2009
 CITY OF SAN ANTONIO
 DEPARTMENT OF PUBLIC WORKS
 TRAFFIC ENGINEERING STANDARDS
 STANDARD PAVEMENT MARKINGS
 (WORDS)
 SHEET 2 OF 16

DATE: _____	PROJECT NO.: _____	DATE: _____
DRWN. BY: LAN	DSGN. BY: C.B.W.	CHKD. BY: M.E.
SHEET NO. _____		OF _____