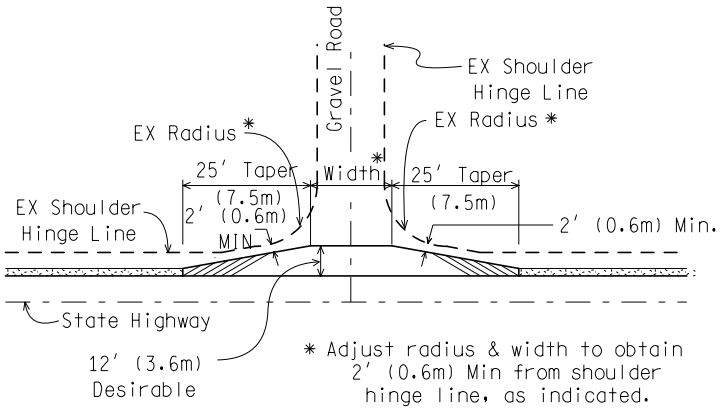
UNCURBED INTERSECTIONS

MINIMUM PAVED APRON

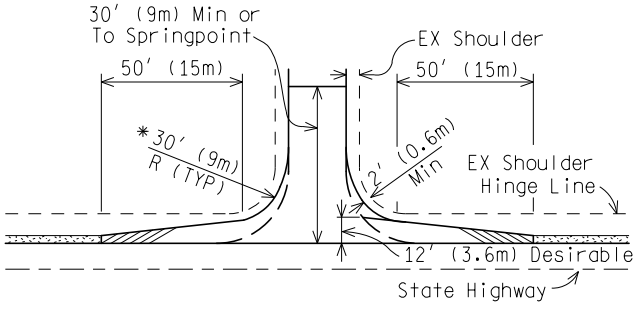
Paved shoulder

Paved as per plans

APPROACH TREATMENT DETAIL I



APPROACH TREATMENT DETAIL II



NOT TO SCALE

MDOT Michigan Department of Transportation TRAFFIC AND SAFETY	BY: John C Friend ENGINEER OF DELIVERY	GEOMETRIC DESIGN GUIDE FOR FLARES AND INTERSECTION DETAILS	
DRAWN BY: ECH CHECKED BY: IRG/JAT	BY: Paul A VanPatten ENGINEER OF DEVELOPMENT	06/03/2010 PLAN DATE:	GEO-650-D
FILE: PW RD TS Geo/mdot traf GEO-650-D.dgn	REV. 05/03/2017		SHEET 1 OF 7

CURBED INTERSECTIONS

APPROACH TREATMENT DETAIL III

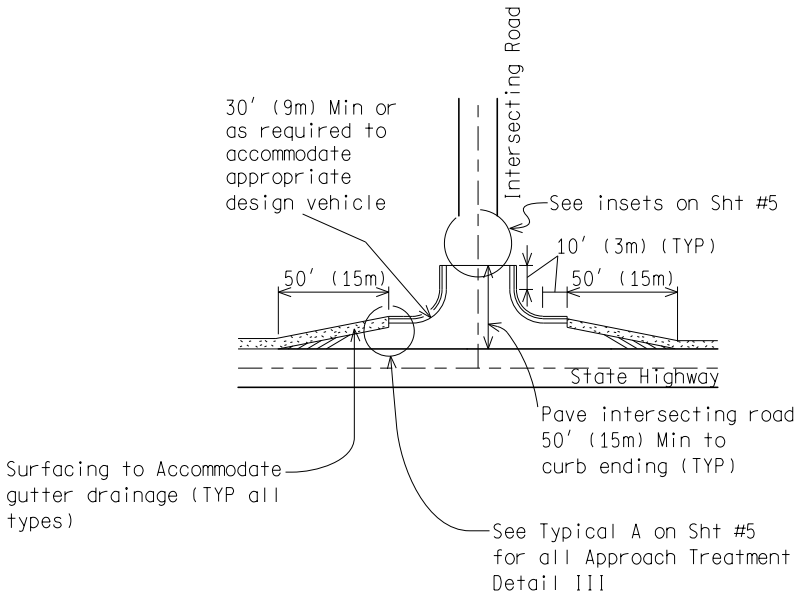
MINIMUM PAVED APRON

Paved shoulder

Paved as per plans

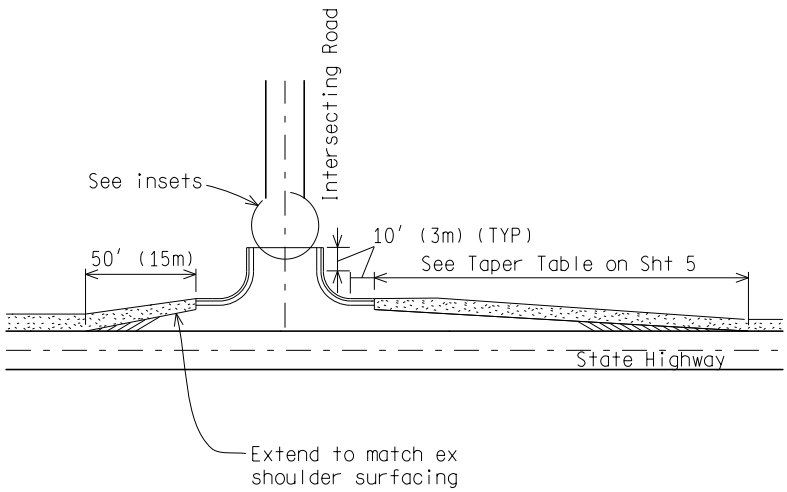
TYPE 1: MINIMUM CURBED CONNECTION

Curbed radii should be used on major collector roads, when gravel accumulation and/or vehicle encroachment is a problem, or when roadside control is desirable.



TYPE 2: RIGHT TURN TAPER

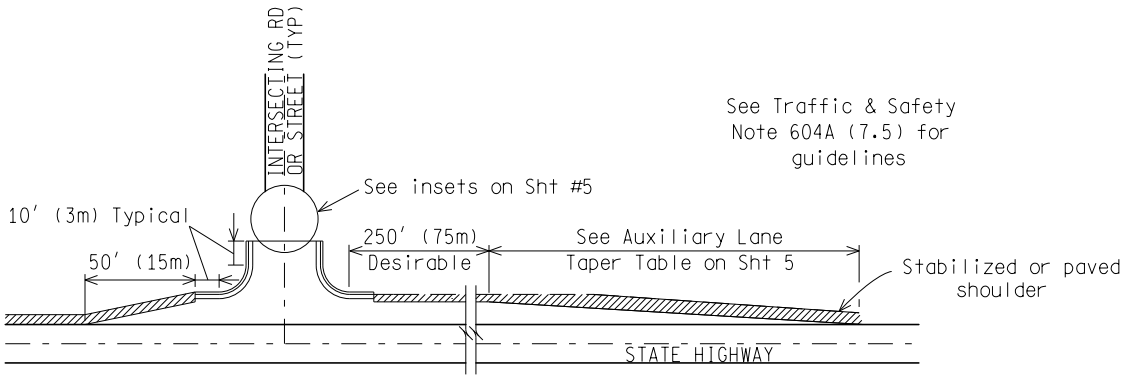
See Traffic & Safety Note 604A (7.5) for Guidelines



NOT TO SCALE

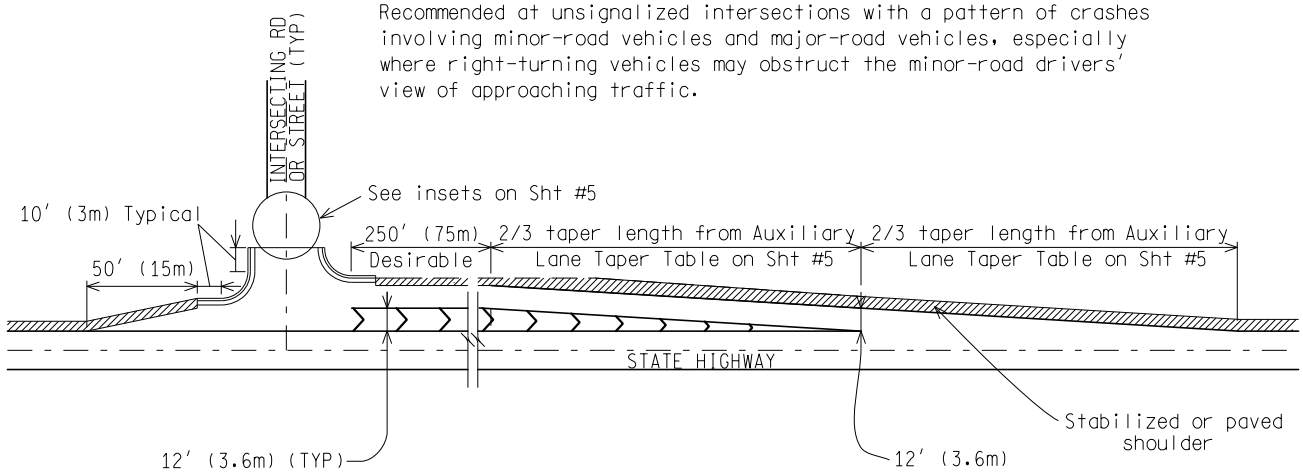
CURBED INTERSECTIONS
APPROACH TREATMENT DETAIL III

TYPE 3: RIGHT TURN LANE

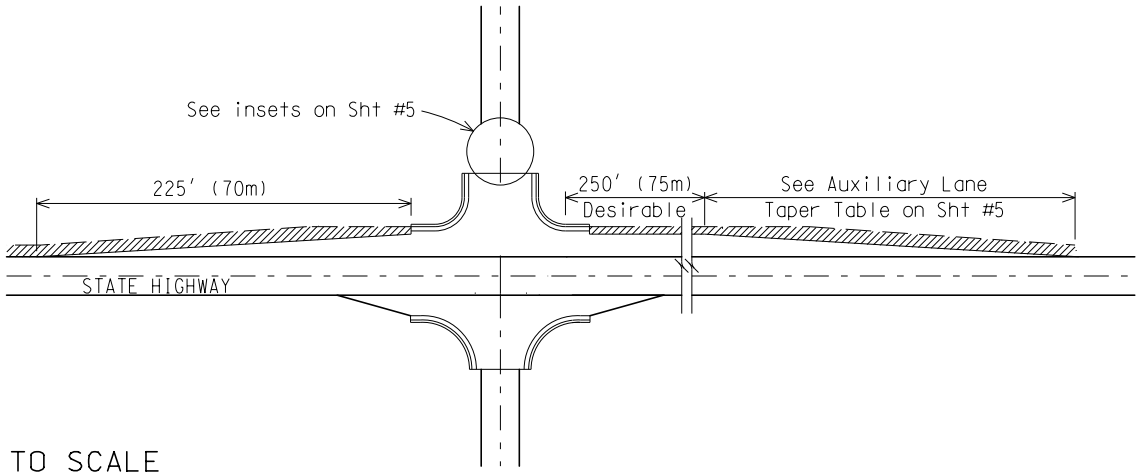


TYPE 3 MODIFIED: OFFSET RIGHT TURN LANE

Recommended at unsignalized intersections with a pattern of crashes involving minor-road vehicles and major-road vehicles, especially where right-turning vehicles may obstruct the minor-road drivers' view of approaching traffic.

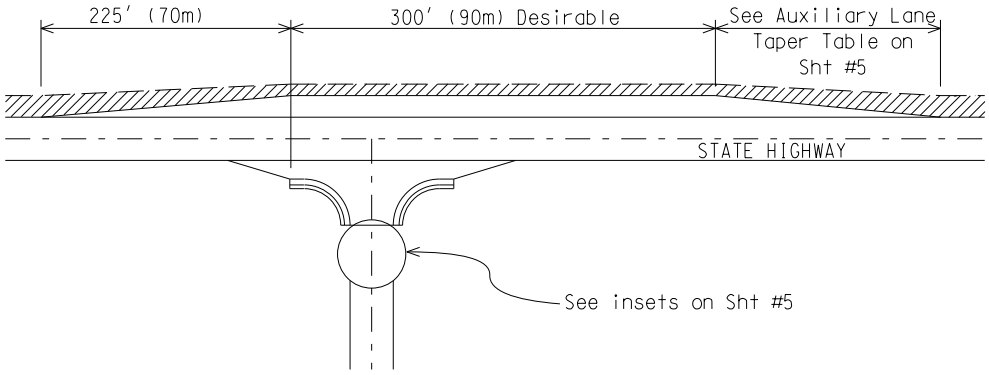


TYPE 4: DIRECTIONAL PASSING FLARE
(2 LANE HIGHWAYS)



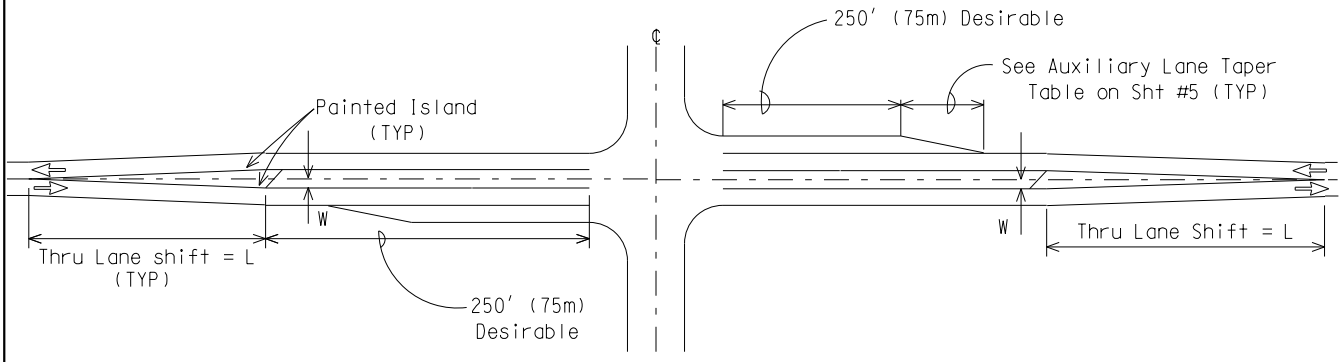
NOT TO SCALE

TYPE 4 MODIFIED: PASSING FLARE, FOR T-INTERSECTIONS



TYPE 5: TWO TO THREE LANE TRANSITION FOR CENTER LANE FOR LEFT TURNS

(RIGHT TURN LANE OPTIONAL)



THRU LANE SHIFT L (TYP)

For Posted Speeds 45 mph (70 kph) or more:

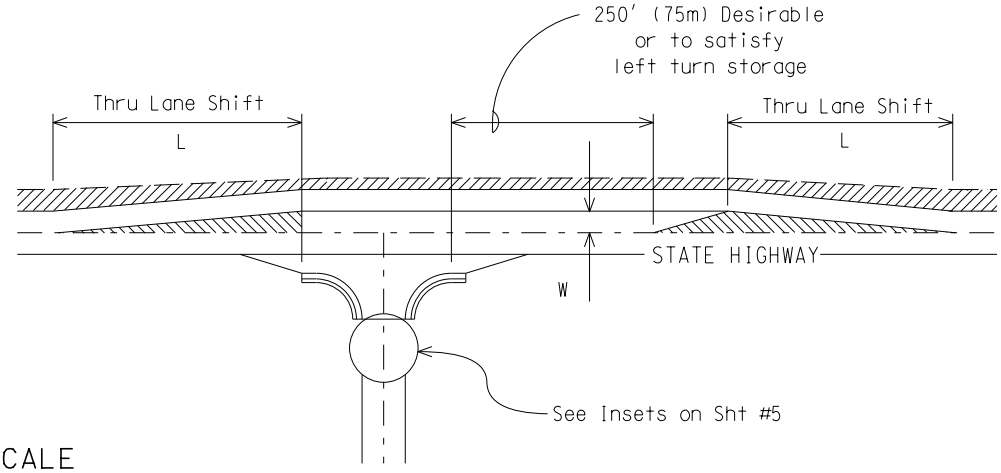
$L = WS$ ($L = 0.62WS$)

For Posted Speeds less than 45 mph (70 kph):

$L = \frac{WS^2}{60}$ ($L = \frac{WS^2}{155}$)

L= length in feet (meters)
S= posted speed in mph (kph)
W= offset in feet (meters)

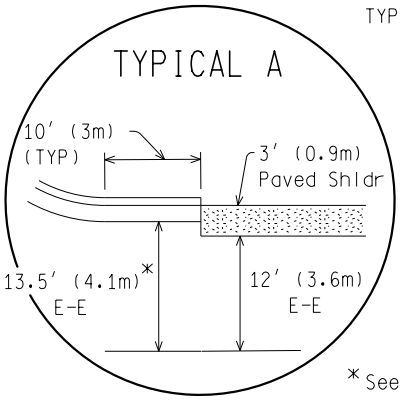
TYPE 5: MODIFIED (LEFT TURN LANE), FOR T-INTERSECTIONS

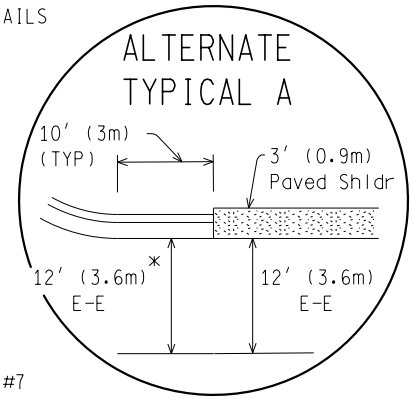


NOT TO SCALE

CURB RETURN OFFSET DETAILS

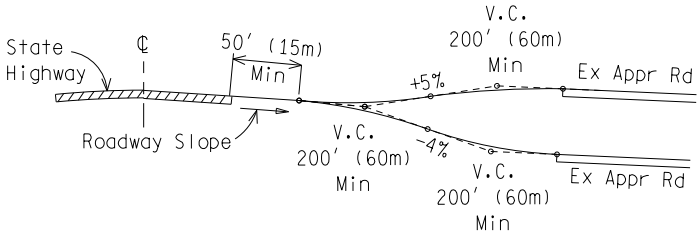
TYPICAL FOR ALL DETAILS





*See Note #6 on Sht #7

ALLOWABLE APPROACH ROAD GRADES



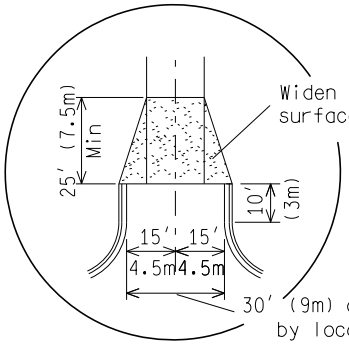
AUXILIARY LANE TAPER TABLE

Not to be used for transitioning through traffic. The taper rate is the same for both curbed and uncurbed roadways.

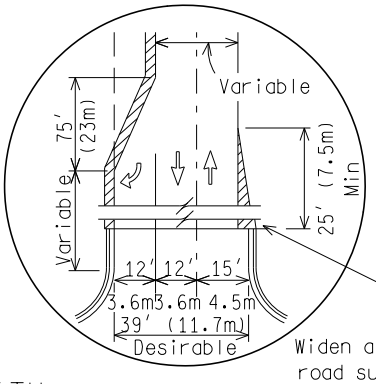
Posted Speed MPH (kph)	Taper Ft (m)
≤ 35 (≤ 60)	75 (23)
40 (60)	100 (30)
45 (70)	130 (40)
50 (80)	180 (55)
55 (90)	225 (70)

INSETS

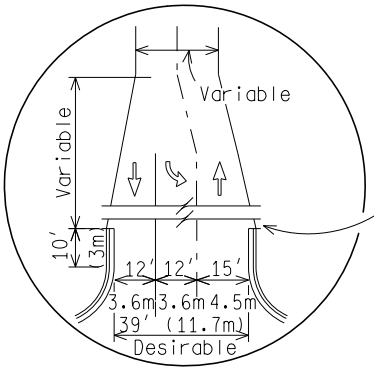
INTERSECTING ROAD WITH OR WITHOUT SHOULDERS



INTERSECTING ROAD WITH ADDED RIGHT TURN LANE



INTERSECTING ROAD WITH ADDED LEFT TURN LANE



NOT TO SCALE

TABLE OF RADII FOR DESIGN VEHICLES

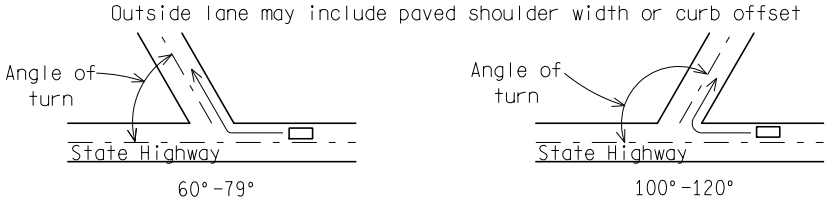
SEE NOTE 4

TABLE 1 (R*)

TURN FROM 12′ (3.6m) OUTSIDE LANE TO 12′ (3.6m) OUTSIDE LANE			
DESIGN VEHICLES	ANGLES OF TURN		
	60°-79°	80°-99°	100°-120°
P	30′ (9m)R	30′ (9m)R	30′ (9m)R
SU	50′ (15m)R	50′ (15m)R	40′ (12m)R
WB-50	90′ (27m)R	80′ (24m)R	60′ (18m)R
WB-65	170′ (51m)R	110′ (33m)R	80′ (24m)R

TABLE 2 (R**)

TURN FROM 12′ (3.6m) OUTSIDE LANE TO 20′ (6m) OUTSIDE LANE			
DESIGN VEHICLES	ANGLES OF TURN		
	60°-79°	80°-99°	100°-120°
P	30′ (9m)R	30′ (9m)R	30′ (9m)R
SU	30′ (9m)R	30′ (9m)R	30′ (9m)R
WB-50	50′ (15m)R	50′ (15m)R	40′ (12m)R
WB-65	70′ (21m)R	60′ (18m)R	50′ (15m)R



1. Design vehicles; P=Passenger Car, SU=Single Unit Truck (30′ (9m) overall), WB-50=Tractor-Trailer Combination (50′ (15m) wheelbase), WB-65=Interstate Semi-Trailer (65′ (19.8m) wheelbase).

2. The angle of intersection between the approach road and the trunkline should not be less than 60° or more than 120°, with desirable values between 75° and 105°.

3. The above tables are to be used as a guide, turning vehicle templates or AutoTurn should be used for verification.

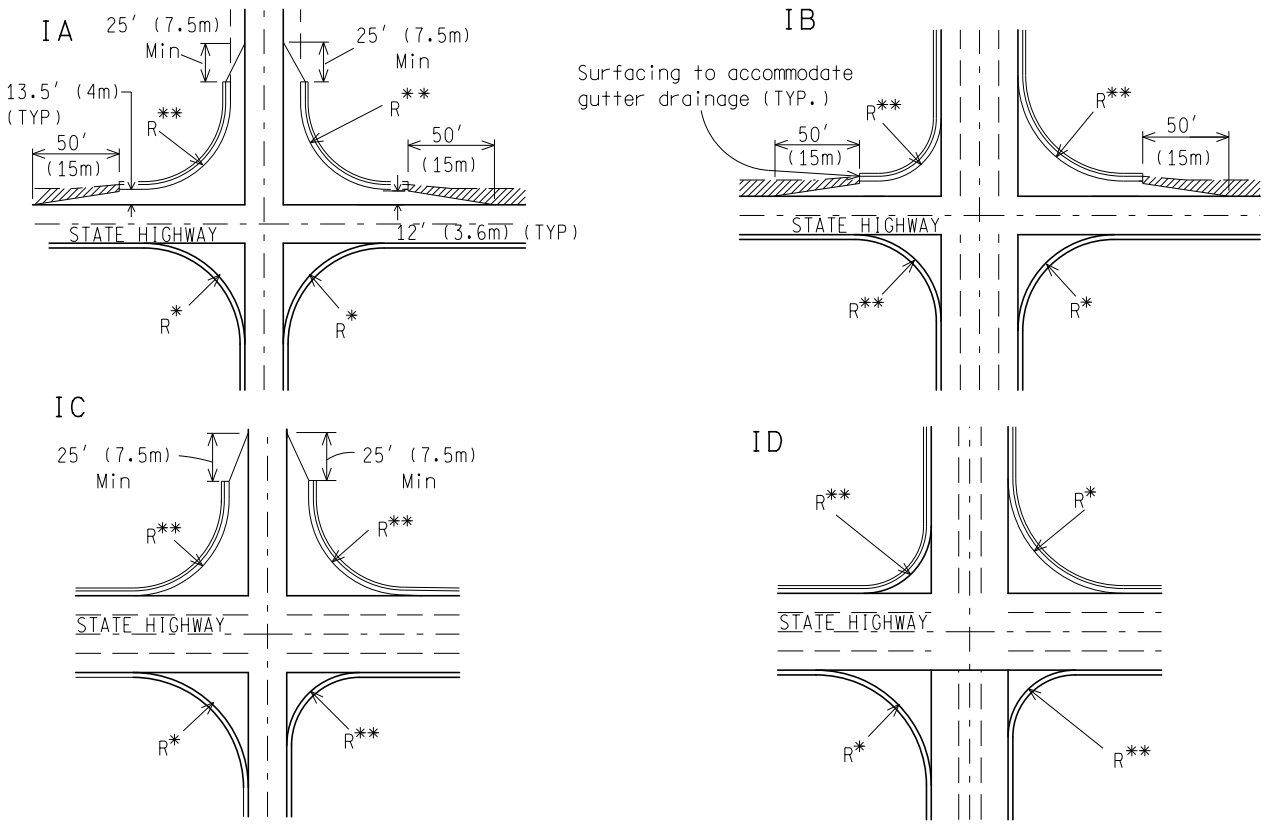
4. When a state highway intersects a one way approach, in non-turning quadrants the radius shall be a maximum of 10′ (3m).

5. On the National Truck Network and Green Route intersections where trucks turn, a WB-65 Interstate Semi-Trailer is the design vehicle.

6. For dual turns - consult the Geometric Review and Congestion Analysis Unit, Division of Operations.

NOT TO SCALE

INTERSECTION LAYOUTS



NOTES:

1. An intersecting road as herein defined may be a city street, county road or state highway.

2. 12' (3.6m) wide lanes are to be used unless conditions require narrower lanes.

3. On horizontal curves, the cross slope on turn lanes should be the same as the through pavement. Where physical constraints do not make this practical the maximum allowable algebraic difference in cross-slope between the turn lane and mainline is 5%, with a desirable maximum of 4%.

4. See Standard Plan R-30-Series for curb and gutter details.

5. Clear vision areas should be considered at all intersections.

6. Alternate Typical A may be used when construction and maintenance make the 13.5' (4.1m) curb setback undesirable or the crossroad is curbed.

7. Current AASHTO "A Policy on Geometric Design of Highways and Streets" and MDOT Guidelines should be used for sight distance requirements.

8. See Traffic & Safety Note 614A for guidance on nearside and farside lane drops at intersections.

9. These design concepts are for new construction. Where modification may be needed for retrofitting to existing road features, consult the Geometric Review and Congestion Analysis Unit, Division of Operations.

NOT TO SCALE