CITY OF DETROIT
Department of Streets and Traffic

Roadway Geometric Design Standards

December 1970

Ideally, in geometric design of roadways, there are certain values which should be met for best design. Practically, however, because of cost or other considerations, it may at times be necessary to deviate from the desired standards and work within lower limits to obtain some of the flexibility needed to get approval for a given project. The upper value of this range will be referred to in the following as the "minimum recommended" standard. The lower value will be referred to as the "absolute minimum" standard. If the minimum recommended standard cannot be met, then the conditions necessitating the lowering of the standard must be documented and reviewed and approved by the interested departments. Sometimes it may be necessary to go below the absolute minimum standard in order not to hold up or stop a larger or more important program. If, after review, less than absolute minimum standards must be used, the design must be considered substandard and temporary and the conditions upgraded to minimum recommended design standards as soon as possible.

1. Lane width - all lanes 11 feet wide.

2. Major Streets

   A. Divided (See Drawing ZB-19)

      1. 3 or 4 lanes each roadway, as needed

      2. 24-foot median, absolute minimum. This does not apply at grade separations or sections of street where there is no cross traffic

3. Margins

a. 15 feet, recommended minimum; may be paved full width or 6-foot sidewalk, 1 foot from property line

b. 10 feet, absolute minimum - paved full width

4. Provide left turn lane in median in approach to all major and secondary cross streets

5. For blocks more than 660 feet long, provide U-turn channel at beginning of left turn lane. Provide U-turn for opposite direction at approximately mid-point of remaining island (Fig. I)

6. Center island openings (back to back)

a. 400 feet minimum between other island openings or intersection (Fig. II & III)

b. 600 feet maximum between other island openings or intersection (Fig. II & III)

c. Do not construct opposite alleys or driveways

B. Undivided

1. 6 or 8 through lanes

2. Center left turn lane, 11 feet wide - 10 feet absolute minimum

3. Margins

a. 15 feet, recommended minimum; may be paved full width or 6-foot sidewalk, 1 foot from property line

b. 10 feet, absolute minimum - paved full width

3. Secondary Streets

A. 4 lanes minimum

B. Left turn facilities provided at major or secondary cross streets

C. Margins

a. 15 feet, recommended minimum; may be paved full width or 6-foot sidewalk, 1 foot from property line

b. 10 feet, absolute minimum - paved full width

D. If divided, island must be 24 feet wide minimum

4. Collector Streets

A. 36-40 feet pavement width

B. Margins

a. 15 feet, recommended minimum; may be paved full width or 6-foot sidewalk, 1 foot from property line

b. 10 feet, absolute minimum - paved full width

c. If divided, island must be 24 feet wide minimum

5. Local Streets

A. 30-34 feet pavement width

B. 60 feet right-of-way recommended minimum

C. If divided, use standards for collector streets

6. Park Drive Streets

A. Streets designated for park drive treatment in Master Plan of Trafficways must conform to secondary or major street traffic standards, depending on type of use

7. Corner Radii

A. Major Street - Major Street - 25 feet

B. Major Street - Others - 20 feet

C. Secondary, collector streets - secondary, collector streets, 20 feet

D. Secondary, collector streets - residential streets, 20 feet

E. Residential Streets - Residential Streets, 15 feet

F. In no case shall a corner radius fall inside an 8-foot arc struck from the intersection of the corner lot lines

G. All alley radii 10 feet

H. The above radii dimensions apply only to radii around which vehicles may be turning; other radii may be varied to suit design

8. Horizontal alignment curves - major, secondary and collector streets

   A. 1,000 foot radius recommended minimum

   B. 500 foot radius absolute minimum

   C. 100 foot tangent between curves

9. Vertical alignment - major, secondary and collector streets

   A. 5% recommended maximum grade

   B. Minimum recommended length of vertical curve based on speed of 10 miles per hour over posted speed limit. Absolute minimum length of vertical curve based on speed equal to posted speed limit

10. On new concrete pavements, joint lines shall coincide with lane lines

We believe that the above geometric design standards are fair, safe and reasonable with respect to traffic movement and road construction. They also are consistent and amenable with the objectives of the Detroit Master Plan for the improvement and development of the City of Detroit.

G. J. Mades
Director, Dept. of Streets & Traffic

Alfred Brandstatter
Commissioner, Dept. of Public Works

Charles A Blessing
Director, City Planning

TETRA TECH MPS

January 2, 2002

Mr. Ashok Patel, P.E.
Detroit DPW-Engineering Division
2633 W. Michigan Avenue
Detroit, Michigan 48216

Re: City of Detroit Roadway Geometric Design Standards
City of Detroit, Michigan (Task 2 – 2001)

Dear Mr. Patel:

Tetra Tech MPS (TTMPS) is pleased to provide our assessment of the City of Detroit's December, 1970, Roadway Geometric Design Standards. This includes a review and assessment of the City's existing design standards for commercial driveways, residential driveways, median crossovers, and cul-de-sacs. A comparison of the City of Detroit's existing design criteria and *A Policy on Geometric Design of Highways and Streets* (1994 Edition) published by the American Association of State Highway and Transportation Officials (AASHTO) was performed. A comparison was also made to the most recent edition of *The Michigan Department of Transportation (MDOT) Roadway Design Guide, and the Geometric Design Guide.* Recommendations were made based on a comparison of standards and are presented in Tables 1 and 2.

Table 1 represents the comparison between the City of Detroit's December, 1970, Roadway Geometric Design Standards and AASHTO and MDOT standards. Table 2 represents a comparison between the design standards for commercial driveways, residential driveways, median crossover, and cul-de-sacs, and AASHTO and MDOT standards. Attached references follow each table for clarity where necessary.

Current City of Detroit standards were found to be preferable when they exceeded those of AASHTO and/or MDOT. AASHTO and MDOT roadway standards were recommended when Detroit standards were less stringent. However, it should be noted that the City's standards are not necessarily unacceptable. City standards should continue be followed where and when AASHTO and MDOT standards are unreasonable in the city environment.

It is our recommendation to incorporate the Roadway geometric standards of *A Policy on Geometric Design of Highways and Streets* published by the American Association of State Highway and Transportation Officials (AASHTO) and *The Michigan Department of Transportation (MDOT) Roadway Design Manual (RDM), and the Geometric Design Guide(GDG)* into the City of Detroit's geometric standards. This will add a level of standard conformity that is based on nationally accepted practices.

First National Building
660 Woodward Avenue, Ste. 750
Detroit, MI 48226
Tel 313.964.0790 Fax 313.964.6957

We trust that this meets your current transportation needs. If you have any questions or require additional analysis, please feel free to contact our office.

Sincerely,

Lori Swanson

Lori L. Swanson, P.E.
Senior Project Manager

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Table 1

Roadway Geometric Design Standards (December 1970) Comparison

City of Detroit Roadway Geometric Design Standards (December 1970)	*AASHTO/MDOT Standard*	*Reference**	*TTMPS Recommendation*
Lane Widths	**Lane Widths**		
all lanes 11 feet	12' desired. 11' is acceptable. 10' is acceptable on low speed residential facilities.	AASHTO pg. 335	12 feet desired. 1 feet' is acceptable. 10 feet is acceptable on low speed residential facilities.
Major Streets Divided	**Arterials**		
3 or 4 lanes on each roadway as needed	4 to 8 lanes (minimum of 2 lanes in each direction)	AASHTO pgs. 516,496	3 or 4 lanes on each roadway as needed
24 foot median, absolute minimum. This doesn't apply at grade separations of streets where there is no cross traffic.	AASHTO-18 to 50 feet. MDOT- 22 to 82 feet (based on design vehicle)	AASHTO pg. 516-519 MDOT GDG VII-670C	24 foot median, absolute minimum. However, if constrained by the roadway limits, 18 feet minimum.
Margins	**Borders**		
15 feet, recommended minimum; may be paved full width or 6-foot sidewalk, 1 foot from property line.	Borders- 8 feet min, 12 feet preferred. Clearance 1.5 feet minimum, 3 feet preferred. Sidewalks 4 to 8 feet, with 2 foot buffer recommended between curb and sidewalk	AASHTO pgs. 522 and 525	Borders- 8 feet min, 12 feet preferred. Clearance 1.5 feet minimum, 3 feet preferred. Sidewalks 4 to 8 feet, with 2 feet of buffer recommended
10 feet, absolute minimum-paved full width	Borders- 8 feet min, 12 feet preferred. Clearance 1.5 feet minimum, 3 feet preferred. Sidewalks 4 to 8 feet, with 2 foot buffer recommended between curb and sidewalk	AASHTO pgs. 522 and 525	10 feet min , 12 feet preferred.
Provide left turn lane in median in approach to all major and secondary cross streets.	At intersections where left turns are made, a left turn lane is always desirable from a capacity and safety standpoint. The median width to accommodate left turning movements desirably should be at least 12 feet. Desirably, the median should be at least 18 feet wide for a 12 foot median lane and a 6 foot medial separator. At restricted locations, a 10 foot lane with a 2 foot medial separator may be used.	AASHTO pg. 517	Provide left turn lane in median in approach to all major and secondary cross streets.
For blocks more than 600 feet long provide U-turn channel at the beginning of the left turn lane. Provide U-turn for opposite direction at approximately mid-point for remaining island.	AASHTO-Preferably, openings for U-turns should be located in advance of an intersecting road or street, at least 100 feet from the median end, to keep the entrance onto the U-turn free of vehicles stopped by traffic signals. MDOT- 660 feet(+/-100 ft) from major street. Space approx. 660 feet apart.	AASHTO pg. 775-776 MDOT GDG VII-670C	Preferably. openings for U-turns should be located in advance of an intersecting road or street, at least 100 feet from the median end, to keep the entrance onto the U-turn free of vehicles stopped by traffic signals. Provide U-turn for opposite direction at approximately mid-point for remaining
Center Island Openings (back to back)			
400 feet minimum between other island openings or intersections	(See Attached Reference) Locations 1-5 for separate U-turn median openings. - AASHTO 600 (+/- 100) feet from a major intersection. Then spaced every 1/8 mile.-MDOT GDG Approx. 660ft apart, preference to public road over drives, 500ft minimum, and provide at large generators.MDOT-RDM	AASHTO pg. 775 MDOT GDG VII-670C (1of4) MDOT RDM-R.09.03	Locations 1-5 for separate U-turn median openings. - AASHTO (See Attached Reference AASHTO, Page 775)
600 feet maximum between other island openings or intersections	(See Attached Reference) Locations 1-5 for separate U-turn median openings.- AASHTO 600 (+/- 100) feet from a major intersection. Then spaced every 1/8 mile.- MDOT-GDG Approx. 660ft apart, preference to public road over drives, 500ft minimum, and provide at large generators.MDOT-RDM	AASHTO pg. 775 MDOT GDG VII-670C (1of4) MDOT RDM-R.09.03	Locations 1-5 for separate U-turn median openings.- AASHTO (See Attached Reference AASHTO, Page 775)
Do not construct opposite alleys or driveways	N/A	N/A	Do not construct opposite alleys or driveways
Major Streets Undivided	**Arterials**		
6 or 8 through lanes	N/A	N/A	6 or 8 through lanes
Center left turn lane, 11 ft wide-10 ft absolute minimum.	AASHTO- 10 to 16 feet (12 feet preferred). Not recommended when more than 2 thru lanes in each direction. MDOT- 12 feet prefered, 10 foot minimum.	MDOT RDM- R03.07 AASHTO pg. 778,335	10 feet (minimum) to 16 feet (12 feet preferred). Not recommended when more than 2 thru lanes in each direction.
Margins			
15 feet, recommended minimum; may be paved full width or 6-foot sidewalk, 1 foot from property line.	Borders- 8 feet min, 12 feet preferred. Clearance 1.5 feet minimum, 3 feet preferred. Sidewalks 4 to 8 feet, with 2 feet of buffer recommended	AASHTO pgs. 522 and 525	Borders- 10 feet min, 15 feet preferred. Clearance 1.5 feet minimum, 3 feet preferred between curb and any obstruction. Sidewalks 6 to 8 feet wide placed 1 foot from preperty line, 2 foot of buffer recommended between curb and sidewalk

Table 1
Roadway Geometric Design Standards (December 1970) Comparison

City of Detroit Roadway Geometric Design Standards (December 1970)	*AASHTO/MDOT Standard*	*Reference**	*TTMPS Recommendation*
10 feet, absolute minimum-paved full width	Borders- 8 feet min, 12 feet preferred. Clearance 1.5 feet minimum, 3 feet preferred. Sidewalks 4 to 8 feet wide, with a 2 foot buffer recommended	AASHTO pgs. 522 and 525	10 feet mill minimum, 12 feet preferred.
Secondary Streets	**As Collector Streets**		
4 lanes minimum	2 to 4 lanes	AASHTO pg. 473	4 lanes minimum
Left turn facilities provided at major or secondary cross streets	Depends on a HCM capacity analysis	AASHTO pg. 479	Left turn facilities provided at major or secondary cross streets
Margins	**Borders**		
15 feet, recommended minimum; may be paved full width or 6-foot sidewalk, 1 foot from property line.	8 - 11 feet with 4-8 feet sidewalk	AASHTO pgs. 476- 479	15 feet, recommended minimum; 6-8 feet sidewalk, 1 foot from property line.
10 feet, absolute minimum-paved full width	10 feet, absolute minimum-paved full width		10 feet, absolute minimum-paved full width
If divided, island must be 24 feet wide minimum	2 to 40 feet depending on median type, 16 -40 feet for curbed median.	AASHTO pg. 474	If divided, island must be 24 feet wide minimum
Collector Streets	**Collector Streets**		
36-40 feet pavement width	Two moving lanes plus additional width for shoulders and parking are sufficient for most urban collector street (38+ feet)	AASHTO pg. 473	Two moving lanes plus additional width for shoulders and parking are sufficient for most urban collector street (36-40 feet pavement width)
Margins	**Borders**		
15 feet, recommended minimum; may be paved full width or 6-foot sidewalk, 1 foot from property line.	8 to 11 feet with 4-8 feet sidewalk	AASHTO pgs. 476- 479	15 feet, recommended minimum; may be paved full width or 6-8 feet sidewalk, 1 foot from property line.
10 feet, absolute minimum-paved full width	8 to 11 feet with 4-8 feet sidewalk	AASHTO pgs. 476- 479	10 feet, absolute minimum-paved full width
If divided, island must be 24 feet wide minimum	2 to 40 feet depending on median type, 16 -40 feet for curbed median.	AASHTO pg. 474	If divided, island must be 24 feet wide minimum
Local Streets	**Local Streets**		
30-34 feet pavement width	Residential streets typically provide parking on both sides and a 12 foot center travel lane.	AASHTO pg. 431	30-34 feet pavement width
60 feet right of way recommended minimum. If divided, use standards for collector streets	The right of way width should be sufficient to accommodate the ultimate planned roadway, including median, shoulder, grass strip, sidewalk, public utility facilities, and width for necessary outer slopes. The right of way for a two lane urban collector street should range from 40 to 60 feet, depending on the conditions listed above.	AASHTO pg. 478	The right of way width should be sufficient to accommodate the ultimate planned roadway, including median, shoulder, grass strip, sidewalk, public utility facilities, and width for necessary outer slopes. 60 feet of right of way is a recommended minimum. The right of way for a two lane urban collector street should range from 40 to 60 feet, depending on the conditions listed above.
Park Drive Streets	**Park Drive Streets**		
Streets designated for park drive treatment in Master Plan of Trafficways must conform to secondary or major street traffic standards, depending on type of use.	N/A	AASHTO pgs. 407-413	Streets designated for park drive treatment in Master Plan of Trafficways must conform to secondary or major street traffic standards, depending on type of use.
Corner Radii	**Corner Radii**		
Major Street- Major Street- 25 Feet	Radii of 40 feet or more, and preferably three-centered compound curves or simple curves with tapers to fit the paths of the appropriate design vehicles, should be provided where large truck combinations and busses turn frequently. Larger radii are also desirable where speed reductions would cause problems.	AASHTO pg. 670	Radii of 40 feet or more, and preferably three-centered compound curves or simple curves with tapers to fit the paths of the appropriate design vehicles, should be provided where large truck combinations and busses turn frequently. Larger radii are also desirable where speed reductions would cause problems.
Major Street- others- 20 Feet	Radii of 30 feet or more at major cross streets should be provided when feasible so that an occasional truck can turn without too much encroachment.	AASHTO pg. 670	Radii of 30 feet or more at major cross streets should be provided when feasible so that an occasional truck can turn without too much encroachment.

Table 1

Roadway Geometric Design Standards (December 1970) Comparison

City of Detroit Roadway Geometric Design Standards (December 1970)	*AASHTO/MDOT Standard*	*Reference**	*TTMPS Recommendation*
Secondary collector streets-secondary, collector streets-20 feet	Radii of 25 feet or more at minor cross streets should be provided on new construction and on reconstruction where space permits.	AASHTO pg. 670	Radii of 25 feet or more at minor cross streets should be provided on new construction and on reconstruction where space permits.
Secondary collector streets-Residential streets-20 feet	Radii of 25 feet or more at minor cross streets should be provided on new construction and on reconstruction where space permits.	AASHTO pg. 670	Radii of 25 feet or more at minor cross streets should be provided on new construction and on reconstruction where space permits.
Residential streets-Residential streets-15 feet	Radii of 15 to 25 feet are adequate for passenger vehicles. These radii may be provided at minor cross streets where there is little occasion for trucks to turn.	AASHTO pg. 670	Radii of 15 to 25 feet are adequate for passenger vehicles. These radii may be provided at minor cross streets where there is little occasion for trucks to turn.
In no case shall a corner radius fall inside an 8 foot arc struck from the intersection of the lot lines.	N/A	N/A	In no case shall a corner radius fall inside an 8 foot arc struck from the intersection of the lot lines.
All alley radii 10 feet.	Curb return radii at street intersections may range from 5 feet in residentially zoned areas to 10 feet in industrial and commercial areas where large number of trucks are expected.	AASHTO pg. 435	All alley radii 10 feet.
Horizontal alignment curves-major, secondary and collector streets.	**Horizontal alignment curves-major, secondary and collector streets.**		
1000 ft radius recommended minimum	Based on a formula in AASHTO book. Incorporates factors like, vehicle speed, friction, and superelevation. MDOT-Urban freeway desired 2600 feet. min=1600 feet *(See attached sheet referenced for formula)*	AASHTO pg. 153 MDOT RDM 3.03.01	(See attached sheet referenced for formula) Based on a formula in AASHTO book. Incorporates factors like, vehicle speed, friction, and superelevation. (See attached sheet referenced for formula) 1600 fett prefered, 500 foot minimum
500 ft radius absolute minimum	Based on a formula in AASHTO book. Incorporates factors like, vehicle speed, friction, and superelevation. MDOT-Urban freeway desired 2600 feet. min=1600 feet *(See attached sheet referenced for fomula)*	AASHTO pg. 153 MDOT RDM 3.03.01	(See attached sheet referenced for formula) Based on a formula in AASHTO book. Incorporates factors like, vehicle speed, friction, and superelevation. 1600 fett prefered, 500 foot minimum
Vertical alignment-Major, secondary and collector streets	**Vertical alignment-Major, secondary and collector streets**		
5% recommended max. grade	5% to 8% for level terrain (Based on Design speed) MDOT generally uses a max. grade of 4% for secondary roads.	AASHTO pg. 514 Table VII-4 MDOT RDM 2.02.01	5% to 8% for level terrain (Based on Design speed) MDOT generally uses a max. grade of 0.4% for secondary roads. Minimum of 0.4% on curbed roads
Minimum recommended length of vertical curve based on speed of 10mph over posted speed limit. Absolute minimum length of vertical curve based on speed equal to posted speed.	Minimum recommended length of vertical curve based on design speed. Design speed should be no less than the expected or posted speed limits. -MDOT Design speed for urban arterials generally range from 35-60 mph. 30 mph and higher for urban collectors.-AASHTO	MDOT RDM- 3.06.02 AASHTO pg. 513,471	Minimum recommended length of vertical curve based on design speed. Design speed should be no less than the expected or posted speed limits. Desired design speed is 10mph over posted speed
Miscellaneous	**Miscellaneous**		
On new concrete pavements, joint lines shall coincide with lane lines.	Longitudinal joints should coincide with the location of the proposed painted lane lines.	MDOT RDM 6.04.04	On new concrete pavements, joint lines shall coincide with lane lines.

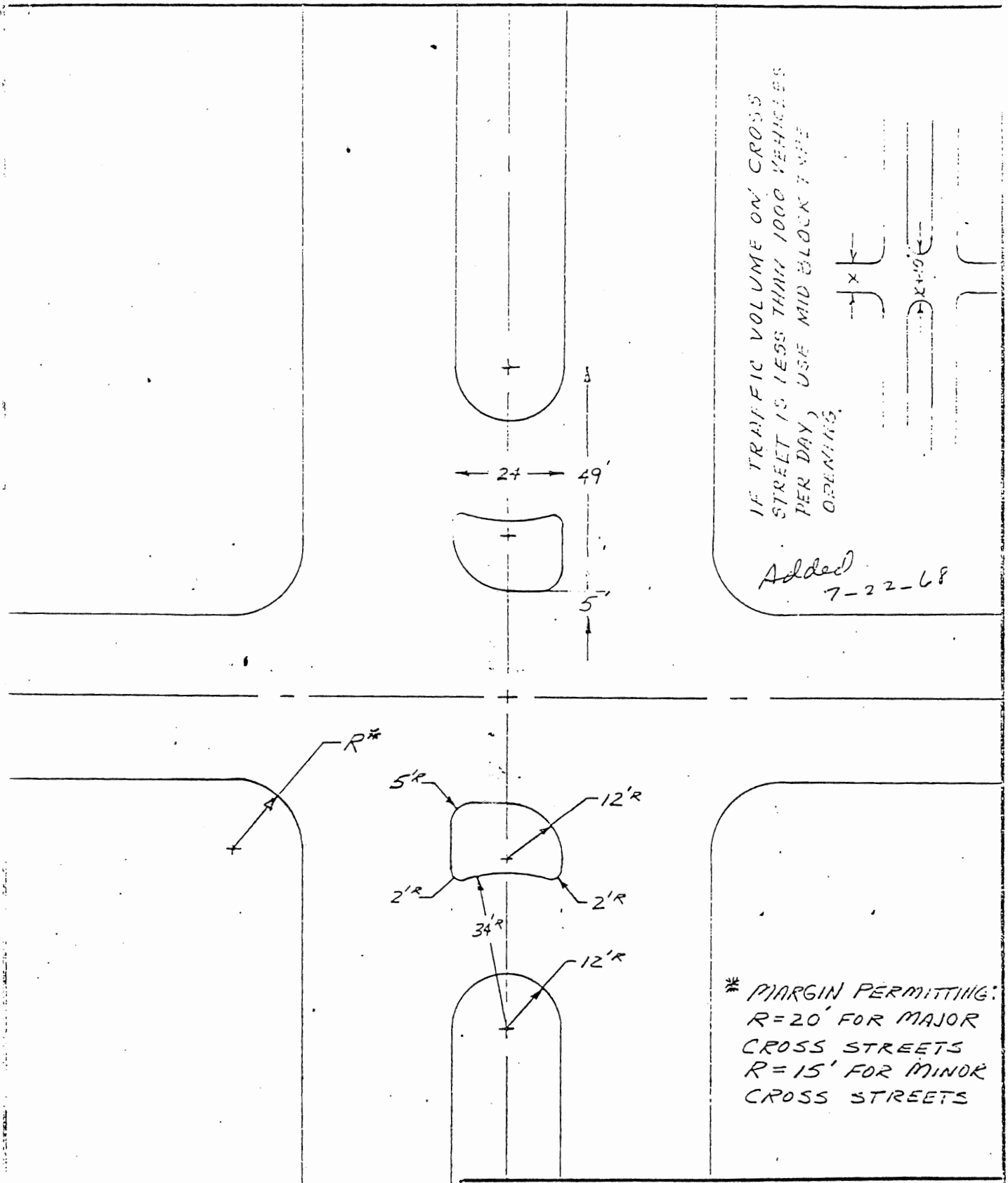
MDOT RDM= Michigan Department of Transportation, Roadway Design Manual
MDOT GDG= Michigan Department of Transportation, Geometric Design Guide
MDOT Std. Plan= Michigan Department of Transportation, Standard Plans
AASHTO= American Association of State Highway and Transportation Officials (1994 Edition), A Policy on Geometric Design of Highways and Streets

Table 2

Roadway Geometric Design Standards Comparison
for Commercial Driveways, Residential Driveways, Median Crossovers and Cul-de-sacs

	City of Detroit Standards Commercial Driveways, Residential Driveways, Median Crossovers, and Cul-de Sacs	*AASHTO/MDOT Standard*	*Reference**	*TTMPS Recommendation*
A	**COMMERCIAL DRIVEWAYS-** Minimum and maximum dimension regulating the design of commercial driveways	Figure 1 and Table 5-Dual service driveways. MDOT- Adm. Rules Detail "M" Opening - MDOT Std. Plan Directional and Bi-directional openings. -MDOT-GDG *(See attached sheets referenced)*	MDOT-Adm. Rules Regulating Drwys, Banners and Parades, On and over Highways, pgs. 12 and 18; MDOT Std. Plan R-29-C; MDOT GDG VII-680	City of Detroit's criteria for commercial driveways partially follows MDOT criteria. However, it should be updated to include all of MDOT's criteria.*(See attached sheets for details)*
B	**RESIDENTIAL DRIVEWAY-** Sketch Showing Curb Opening for Residential Driveway	Flared uncurbed driveway based on existing driveway width. Detail L style opening. *(See attached sheets referenced)*	MDOT Metric Standard Plans R-29-C Wayne County Dept. of Public Svc. Eng. Division Standard Plans MP6-97	MDOT/Wayne County Std. is recommended for use. *(See attached sheets for details).*
C	**CROSSOVERS**	There are more MDOT standard scenarios than Detroit. Detroit follows MDOT standards. *(See attached sheets referenced)*	MDOT GDG VII-670C	City of Detroit's criteria for crossovers partially corresponds with MDOT criteria. However, it should be updated to include all of MDOT's criteria. *(see attached sheets for details)*
D	**CUL-DE-SAC** - Modified Large Cul-De-Sac	If outside radius is less than 50 ft, the island should be bordered by mountable curbs to permit maneuvering of an occasional oversized vehicle. See table in AASHTO. 100 ft wide will permit so vehicle can turn without leaving roadway. A curbed island in the center with 27ft wife roadways would discourage use of the cul-de-sac as a playground in urban areas.-MDOT *(See attached sheets referenced)*	AASHTO pg. 433-434; MDOT RDM 12.07.03	AASHTO/ MDOT is recommended for use of cul-de-sacs. *(See attched sheets for details)*

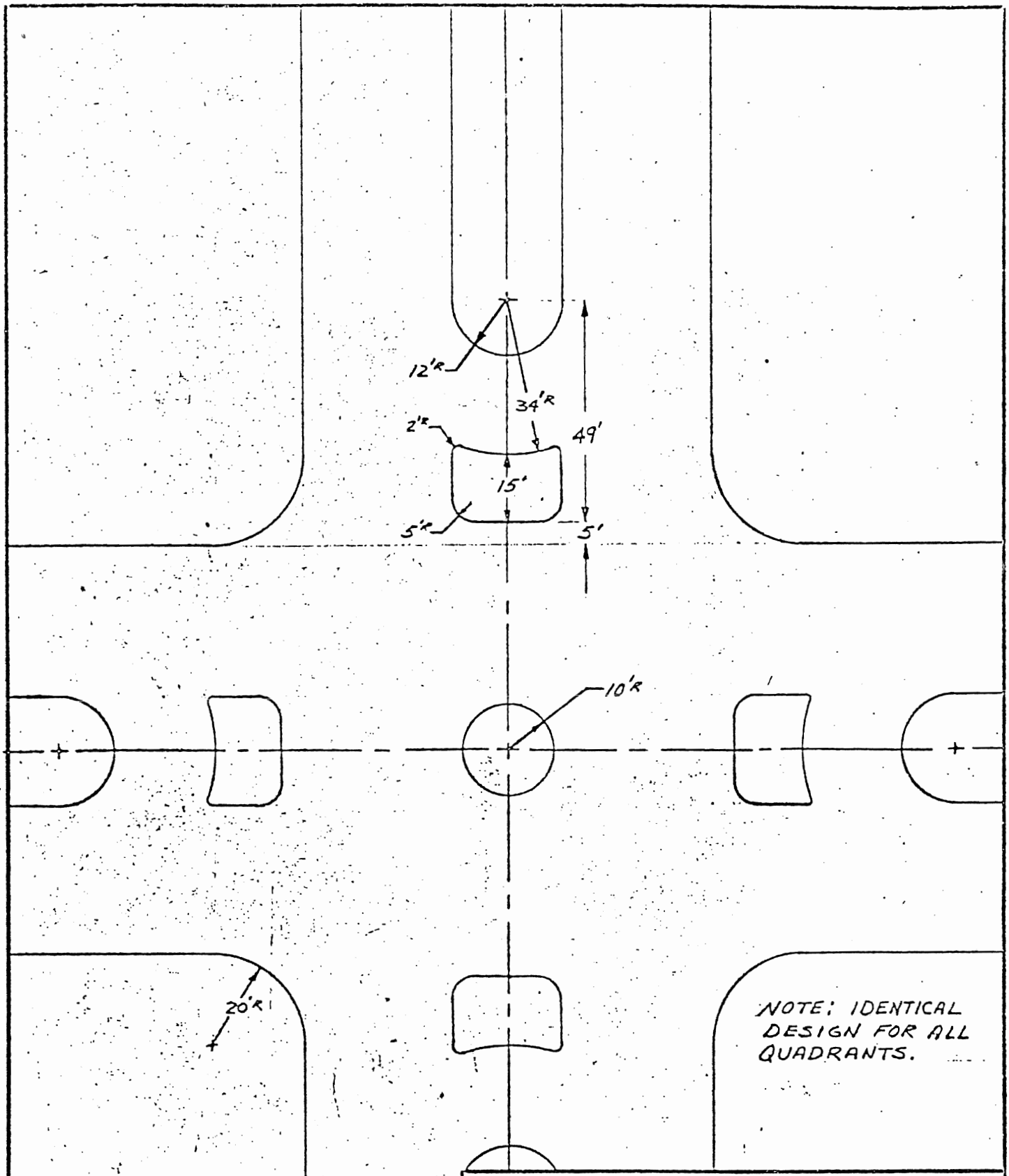
* **MDOT RDM**= Michigan Department of Transportation, Roadway Design Manual
MDOT GDG= Michigan Department of Transportation, Geometric Design Guide
MDOT Std. Plan= Michigan Department of Transportation, Standard Plans
AASHTO= American Association of State Highway and Transportation Officials (1994 Edition), A Policy on Geometric Design of Highways and Streets



CITY OF DETROIT
DEPARTMENT OF STREETS AND TRAFFIC

CURRENT STANDARD DESIGN FOR INTERSECTION OF DUAL ROADWAY AND CROSS STREET LESS THAN 40 FT. WIDE.

DRAWN / APPROVED W.S	CHECKED / SCALE 1"=30' / DATE 12-22-67	NO. ZG-22

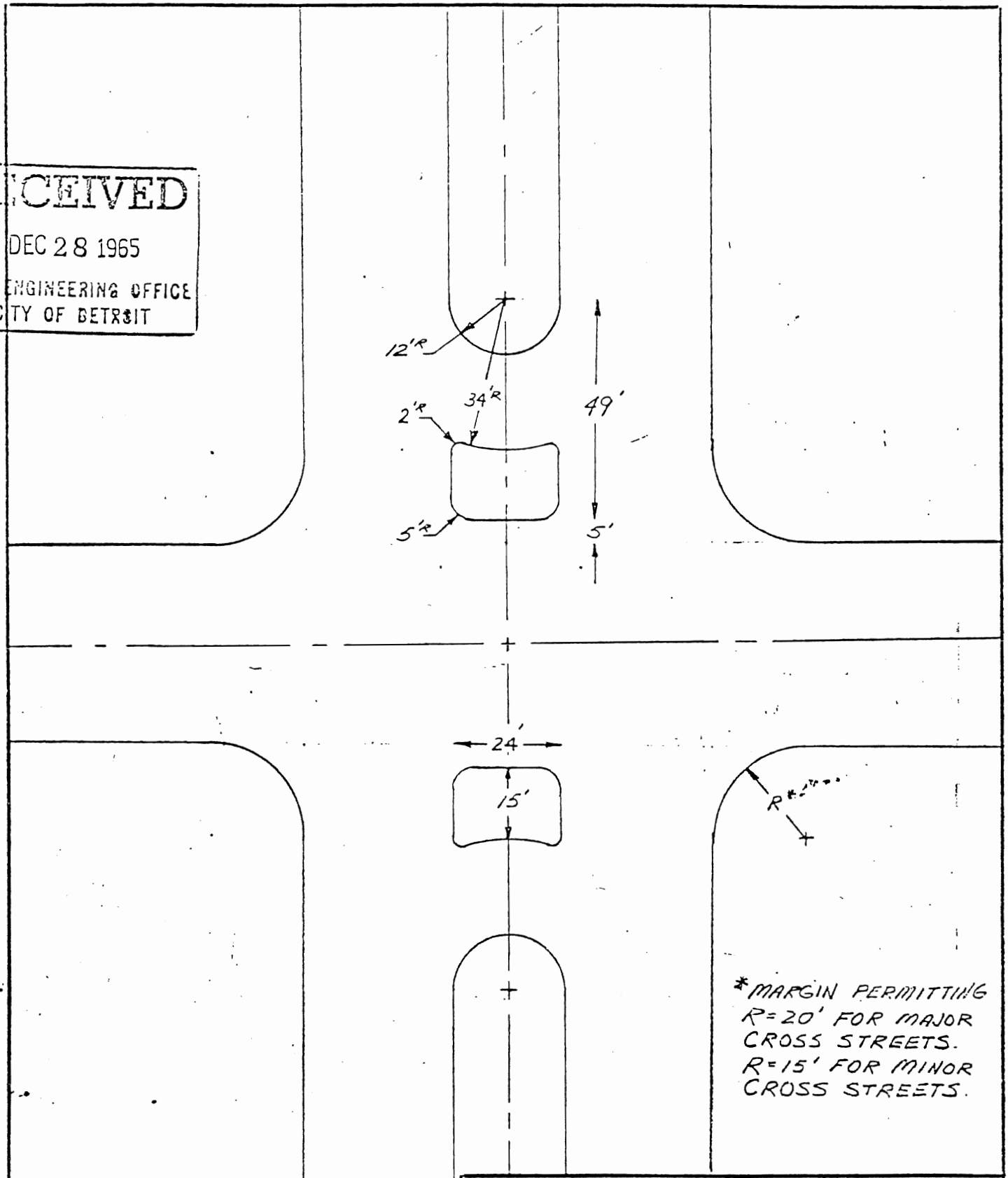


NOTE: IDENTICAL DESIGN FOR ALL QUADRANTS.

CITY OF DETROIT
DEPARTMENT OF STREETS AND TRAFFIC

STANDARD DESIGN FOR INTERSECTING BOULEVARDS

DRAWN W.S. CHECKED	SCALE 1"=30'	NO. ZG-20
APPROVED	DATE 12-7-65	



*MARGIN PERMITTING R=20' FOR MAJOR CROSS STREETS. R=15' FOR MINOR CROSS STREETS.

CITY OF DETROIT
DEPARTMENT OF STREETS AND TRAFFIC

STANDARD DESIGN FOR INTERSECTION OF BOULEVARD AND CROSS STREET OF WIDTH 40 FT OR MORE.

DRAWN	W.S.	CHECKED	
APPROVED		SCALE	1"=30'
		DATE	12-20-65

NO. ZG-21

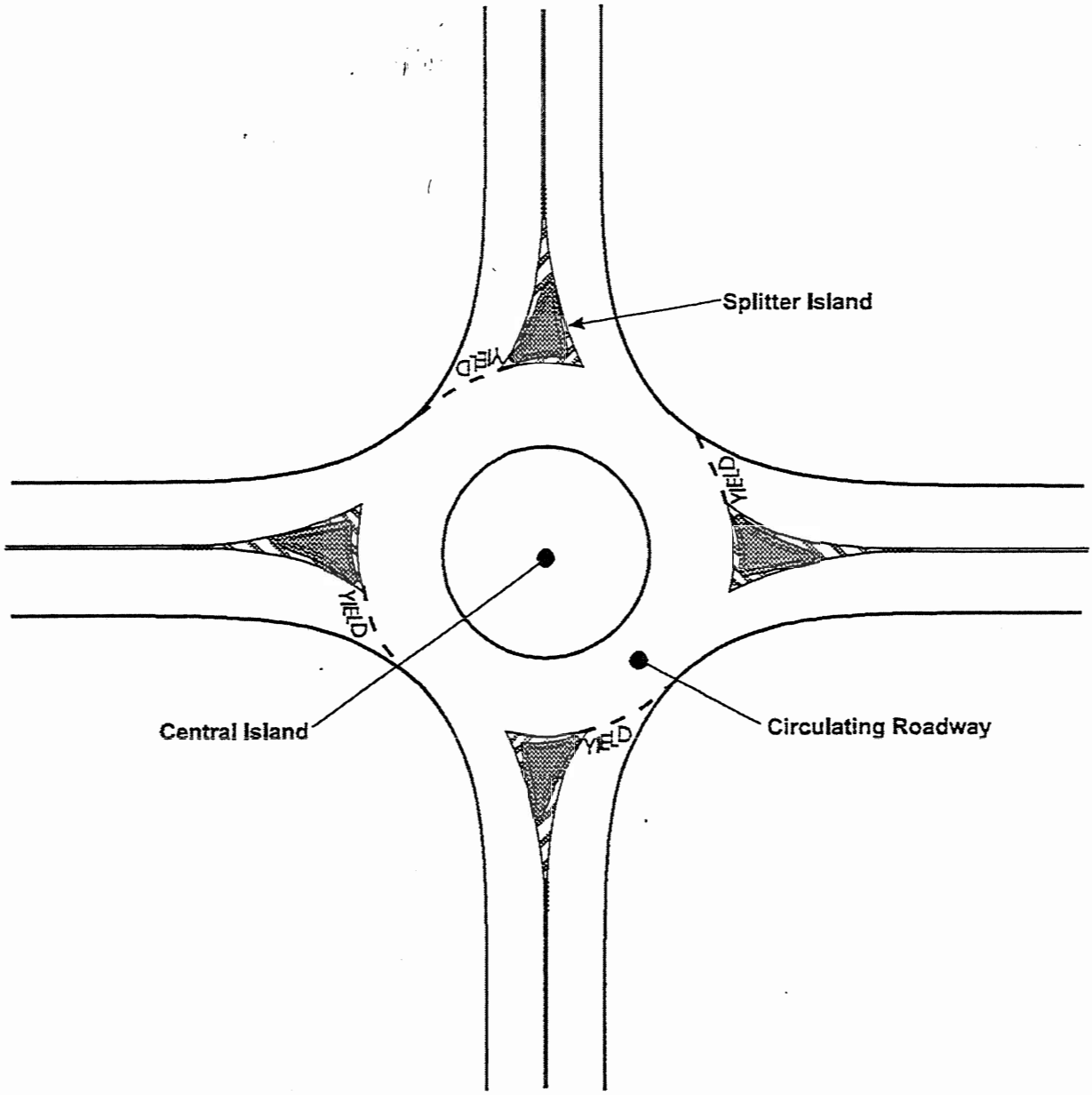
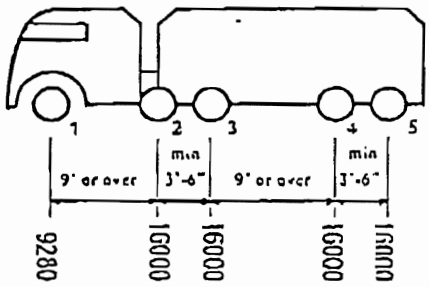


Figure 1-1. Basic roundabout configuration.

COMMERCIAL VEHICLE LOAD LIMITS
DETROIT CODE SECTION 55-8-27
COMPILED ORDINANCES 1984

	Permit & Bond Not Required	Class A Permit	Class B Permit
Bond	None	$1500	$2500
Permit	None	$10	$15
Vehicle Inspection Fee	None	None	(Included)
Length	65 Feet	80 Feet	*IN EXCESS OF CLASS A LIMITS*
Width	8 Feet	12 Feet	
Height	13' 6"	15 Feet	
Projection-Front	3 Feet	5 Feet	
-Rear	13 Feet	20 Feet	
Weight -1 Axle (Spacing 9 feet or more)	18,000 Lbs *	15 Ton Gross	
-2 Axle (In Tandem)	16,000 Lbs @ Axle	23 Ton Gross	
Inspection and Route Required on each Move	No	No	Yes

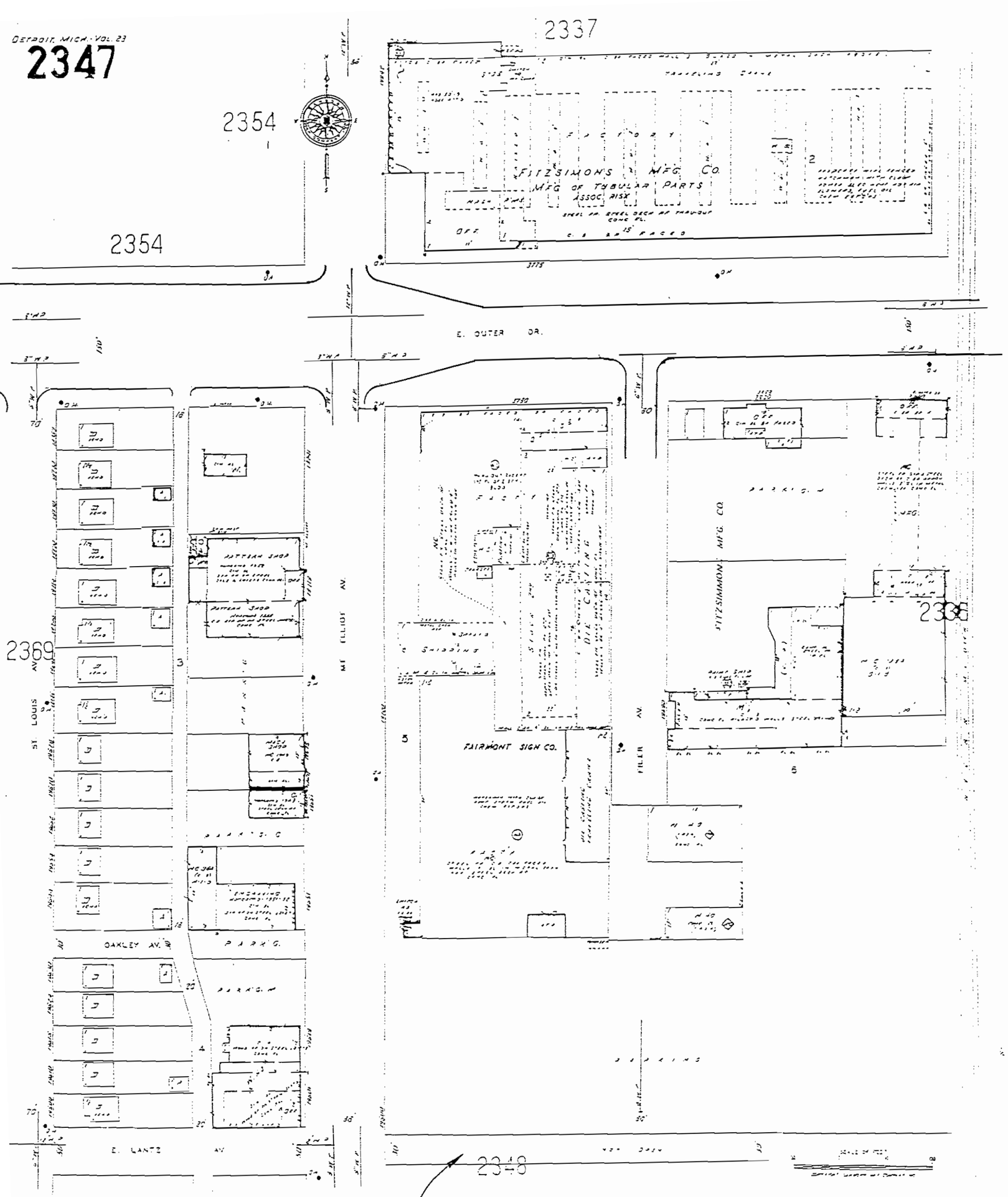
* Normal loading maximum (axle spacing variations = lower axle loads) - Detroit Code Sec. 55-8-24 (b):
Special designated highways - Detroit Code Sec. 55-8-24 (c, d)
Maximum wheel load [700 pounds per inch of width of tire] - Detroit Code Sec. 55-8-24 (e)
Seasonal load restrictions - Detroit Code Sec. 55-8-24 (f)
[At any time] Imposing restricted loading requirements or waivers - Detroit Code Sec 55-8-24 (g)
Determination of gross vehicle weight - Detroit Code Sec. 55-8-24 (h)
Determination of gross vehicle weight on *special designated highways* - Detroit Code Sec. 55-8-24 (i)
Flammable liquid transport restrictions - Detroit Code Sec. 55-8-24 (j through m)



When the maximum gross weight of a combination of vehicles with load does not exceed 73,280 pounds, 2 tandem axle assemblies shall be permitted at a gross permissible weight of 16,000 pounds for any such individual axle. - Detroit Code Sec. 55-8-24 (d).

FOR DPW PERMIT INFORMATION CALL 313-224-3935 or 313-224-3936

NOTE: You can move *both* "A" and "B" loads under a Class B permit.
However, you cannot move "B" loads under a Class A permit.



PETITION No. 2455
THE SPECTOR COMPANIES, INC.
TEMP. STREET CLOSING
Lantz, E. of Mt. Elliott
ATM 12/3/96

GRADE ONLY	
CATCH BASINS	
PAVING-CLASS-	
DEPT. OF WATER SUPPLY	
GAS CO.	

STRAIGHT CURB NEW	
OLD CURB RESET	
CIRCULAR CURB	
PAVING	
CONCRETE BASE	

CHECKED		GRADE	CHECKED
LOTS 2L		LENGTH	
CITY 2L		LENGTH	
TOTAL 2L		LENGTH	
		LOTS	CITY
COST ADVERTISING BLANKS			
COST INSPECTION			

TRACED BY	
CHECKED BY	
APPROVED	
	ENGINEER OF STREETS
	CITY ENGINEER

INDEX NO.	TOPO. NO.
	92

RECORD NO.

NAME OF STREET

FROM DE

TO MA

TYPE OF P

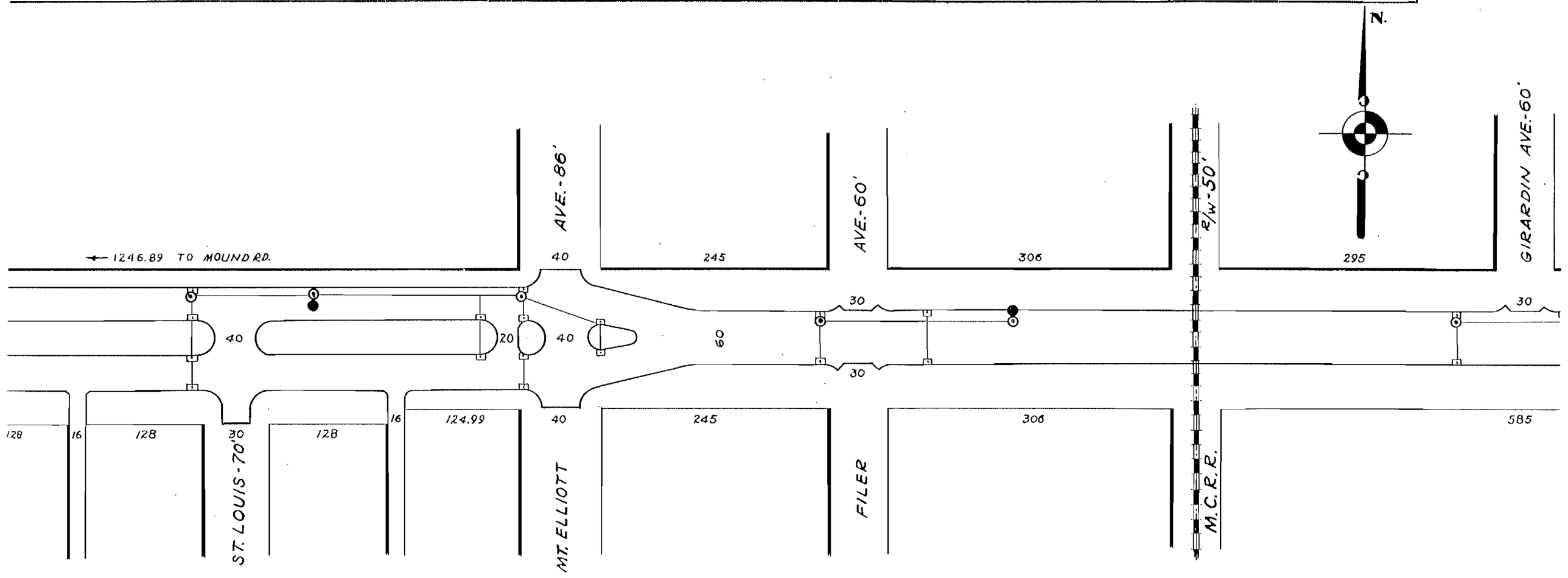
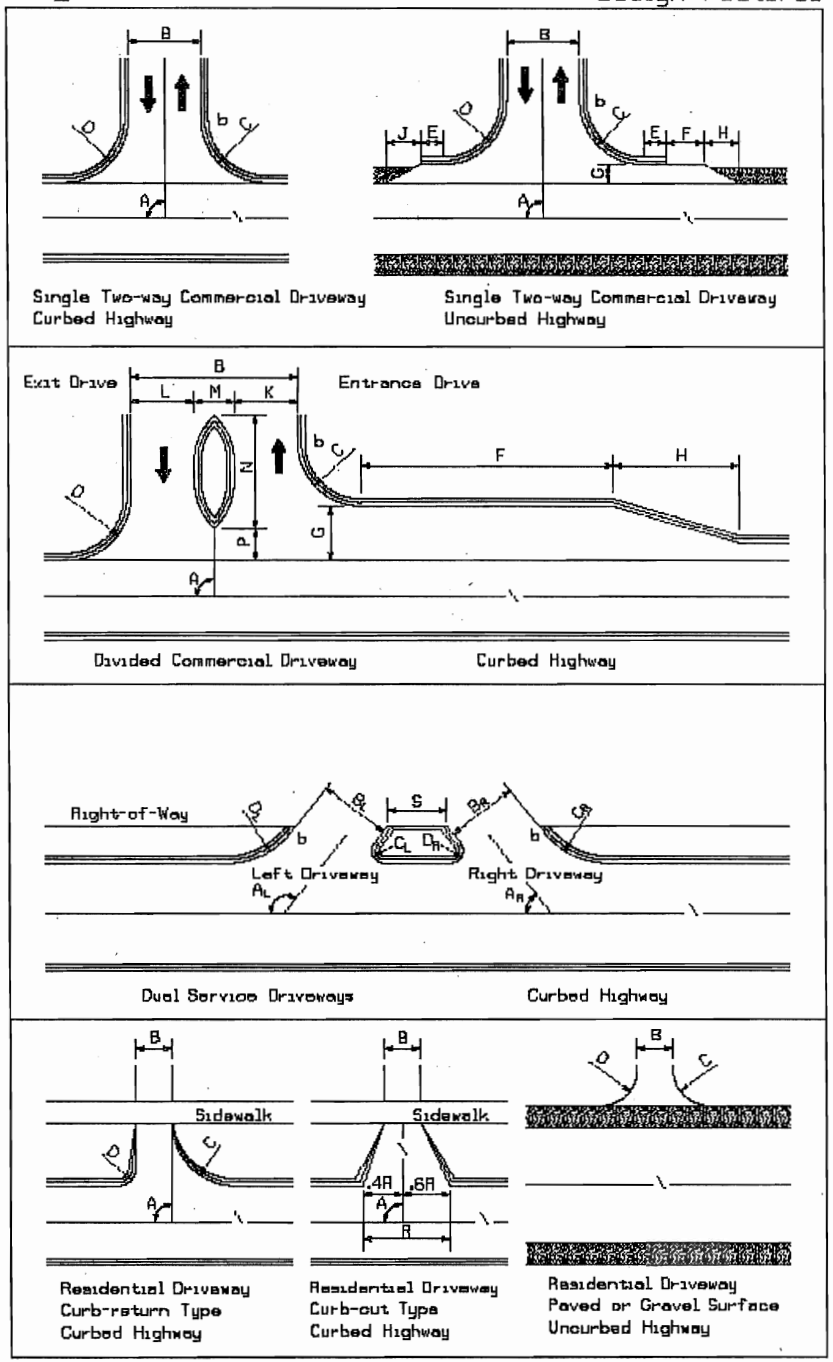


Figure 1

Design Features



SKETCHES ARE NOT DRAWN TO SCALE

R 247.234. Commercial driveways, permits.

Rule 34. A permit application for a commercial driveway shall specify the driveway system requested, including the number and type: two-way, one-way, divided, dual service or directional. The department may approve the requested system or may require changes in it to insure safe conditions and necessary spacing between driveways, based on anticipated traffic volumes on the driveways and on the highway, type of traffic to use the driveways, type of roadside development and other operational considerations.

R 247.235. Commercial driveways, consolidation.

Rule 35. Adjacent property owners may consolidate their commercial driveways by using either a frontage road or a joint driveway system. If the department approves such a system, a driveway permit shall be issued to all property owners concerned and shall state that there is an agreement that all properties shall have access to the highway via the frontage road and the joint driveway system.

R 247.236. Commercial driveways, alteration of dimensions.

Rule 36. If the highway carries one-way traffic, the dimensions given in rules 41 and 42 may be altered so that the prohibited movements are discouraged. If the driveway system is on the left-hand side of a one-way highway, the dimensions used shall be based on the same principles as used on right-hand side driveways.

R 247.244. Dual service driveways.

Rule 44. To facilitate vehicle movements between a highway and private property when the major vehicle movement at a commercial establishment is approximately parallel to the highway, such as at a service station or drive-in bank, the department may permit dual service driveways. The design feature dimensions of dual service driveways shall conform to those given in table 5.

TABLE 5

DUAL SERVICE DRIVEWAYS						
Design Features			Curbed Highway		Uncurbed Highway	
			Standard	Range	Standard	Range
Right Driveway	Intersecting Angle	A_R	60°	45 to 90°	60°	45 to 90°
	Entering Radius	C_R	15 ft	5 to 50 ft	20 ft	5 to 50 ft
	Exiting Radius	D_R	10 ft	5 to 25 ft	5 ft	5 to 25 ft
Left Driveway	Intersecting Angle	A_L	120°	90 to 135°	120°	90 to 135°
	Entering Radius	C_L	10 ft	5 to 25 ft	5 ft	5 to 25 ft
	Exiting Radius	D_L	15 ft	5 to 50 ft	20 ft	5 to 50 ft
Driveway Width		B	30 ft	12 to 50 ft	30 ft	15 to 50 ft
Distance Between Driveways		S	20 ft	10 to 150 ft	20 ft	10 to 150 ft
The standard shall be used unless engineering judgment determines that another dimension within the range is more suitable for a particular site or a special condition is approved by the department.						

R 247.245. Directional commercial driveways.

Rule 45. A directional commercial driveway is a special case and the driveway shall be designed individually to facilitate the desired turning movements and to discourage prohibited movements. Radii shall be as approved by the department, based on the driveway intersecting angle and on the turning path of the largest vehicle that will normally use the driveway.

R 247.247. Residential driveways, number and separation.

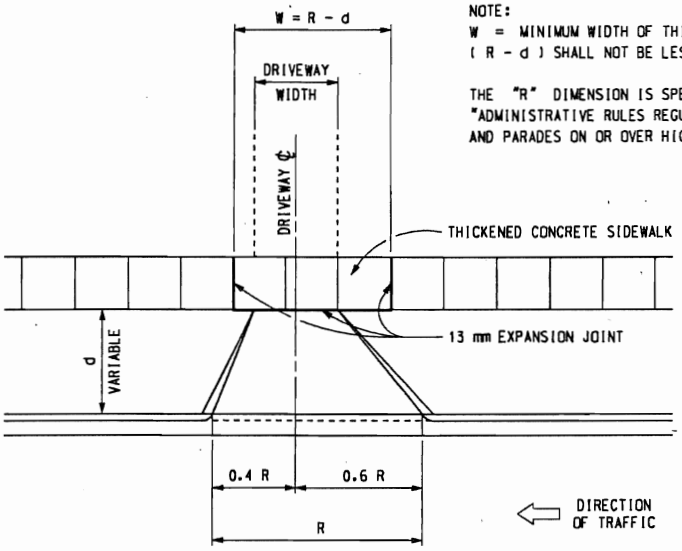
Rule 47. The number of residential driveways permitted shall be determined as follows:

(a) One residential driveway shall be permitted for each platted lot or for unplatted residential property with less than 100 feet of frontage.

(b) One additional residential driveway may be permitted for residential property for each 70 feet of frontage in excess of the first 100 feet of frontage.

(c) Two residential driveways may be permitted on the same property, in lieu of the requirements of paragraph (b), to serve a circle driveway if the frontage of the property is 80 feet or more.

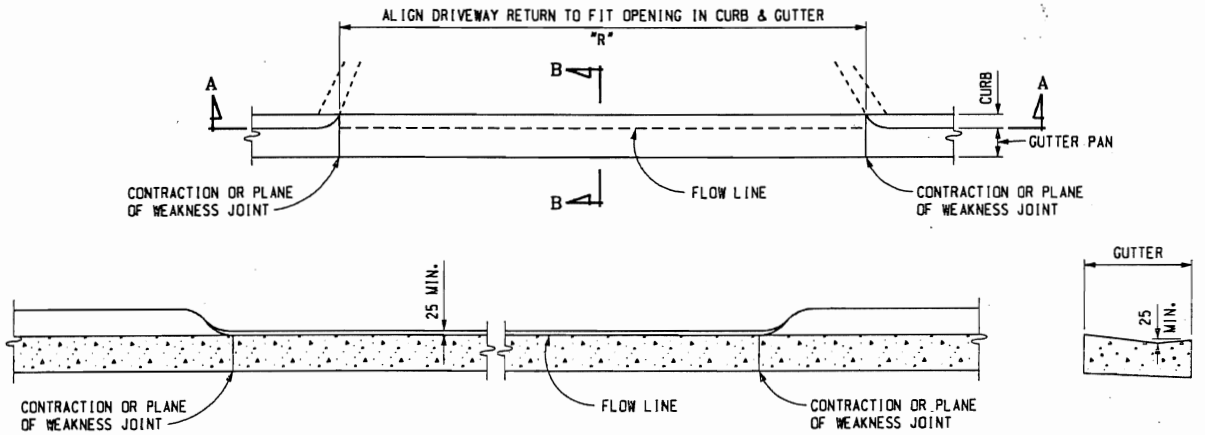
(d) Residential driveways on the same property shall be at least 45 feet apart, center-to-center.



NOTE:
W = MINIMUM WIDTH OF THICKENED CONCRETE SIDEWALK.
(R - d) SHALL NOT BE LESS THAN DRIVEWAY WIDTH.

THE "R" DIMENSION IS SPECIFIED IN THE PUBLICATION "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANNERS AND PARADES ON OR OVER HIGHWAYS".

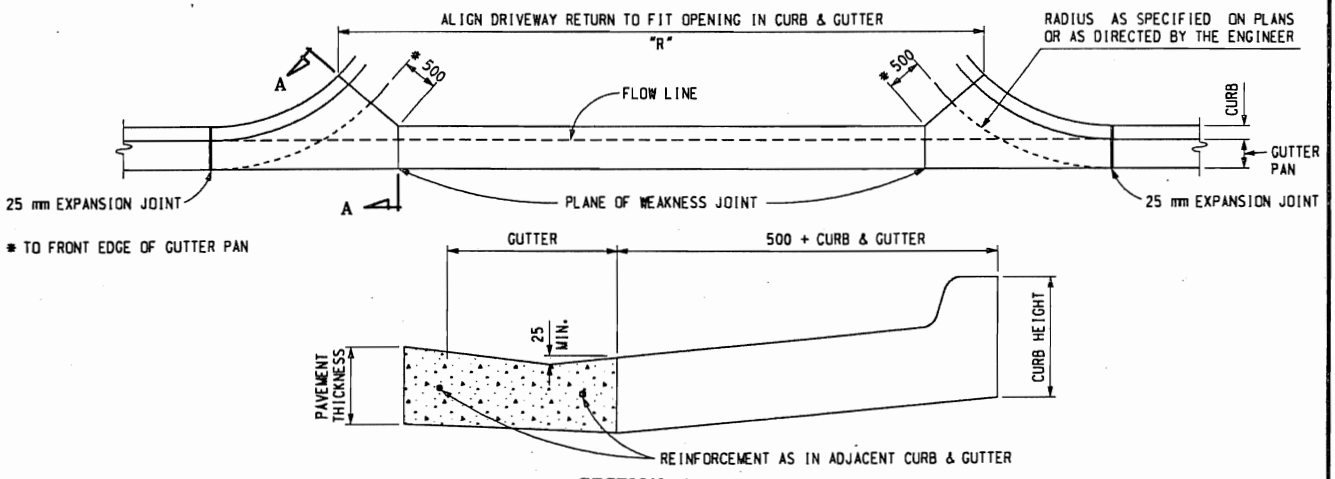
CONCRETE DRIVEWAY OPENING LAYOUT



SECTION A - A

SECTION B - B

CONCRETE DRIVEWAY OPENING, DETAIL L



SECTION A - A

CONCRETE DRIVEWAY OPENING, DETAIL M

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY TECHNICAL SERVICES STANDARD PLAN FOR

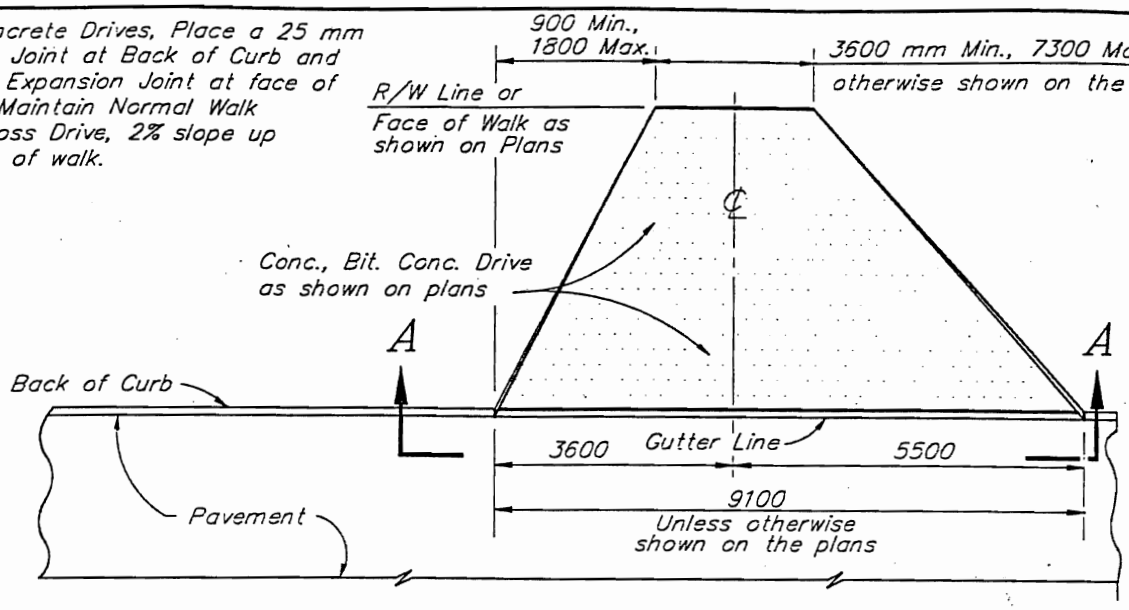
DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK

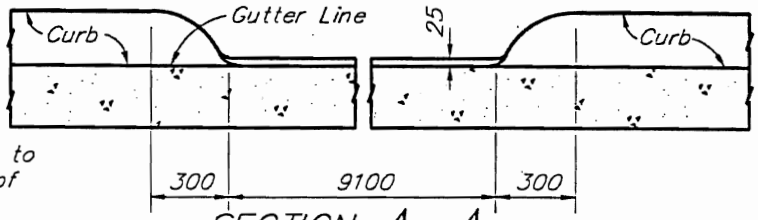
11-9-98 F.H.W.A. APPROVAL	5-29-98 PLAN DATE	R-29-C	SHEET 2 OF 4

MDOT - Metric Standard plans · design

A

At all Concrete Drives, Place a 25 mm Expansion Joint at Back of Curb and a 13 mm Expansion Joint at face of Sidewalk. Maintain Normal Walk grade across Drive, 2% slope up from face of walk.

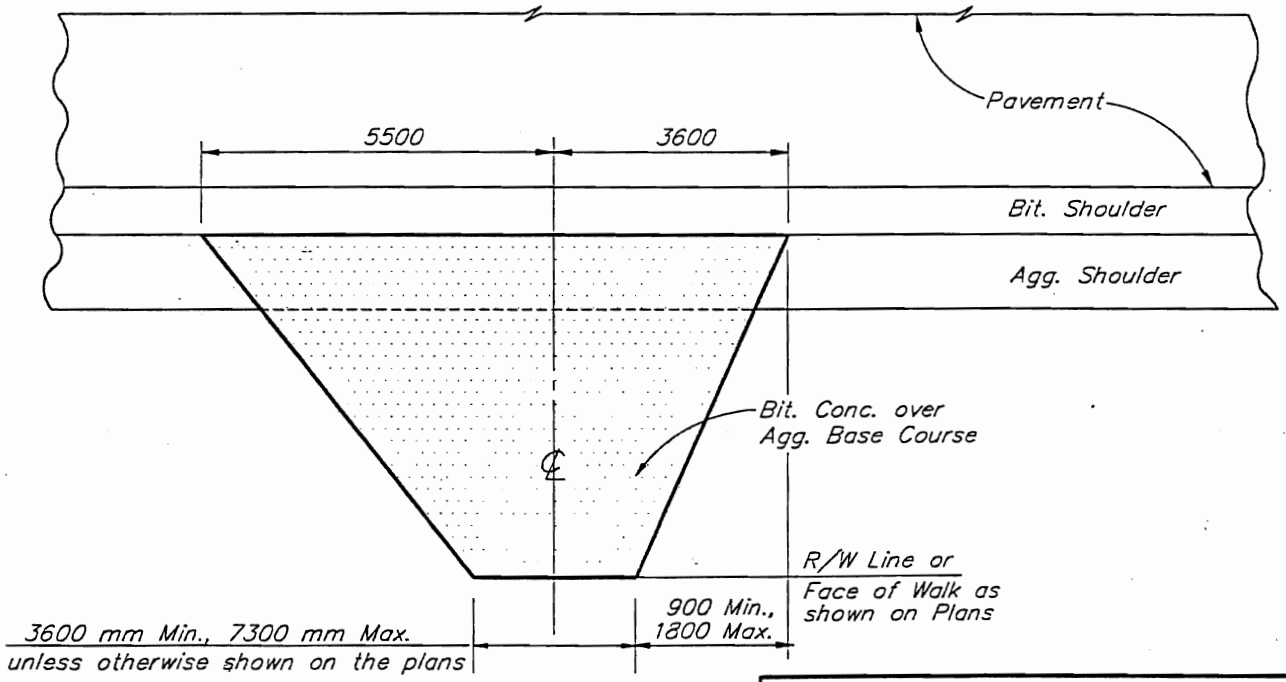




SECTION A - A

On all concrete or bituminous drives, curbs shall be constructed with height varying from 150 mm at back of curb to 0 mm height at face of walk or end of drive reconstruction. Top of curb shall be straight line between top of road curb and face of walk or end of drive reconstruction.

PAVEMENT WITH CURBS



PAVEMENT WITH SHOULDERS

Work this Sheet with the General Notes on Standard Plan MP1

WAYNE COUNTY

PREPARED BY DESIGN OFFICE

S. A. Siewert
DIRECTOR OF ENGINEERING

George R. Schneider
DIVISION DESIGN ENGINEER

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION
PAVING STANDARD PLAN FOR
RESIDENTIAL DRIVEWAY

04/17/97
PLAN DATE

MP6-97

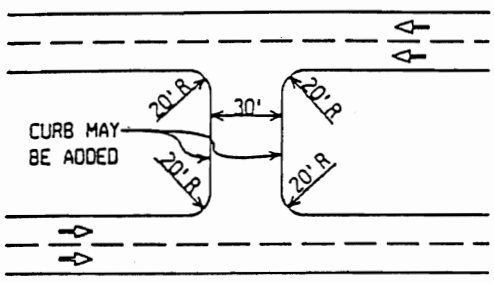
SHEET
1 OF 1

B

BI-DIRECTIONALS

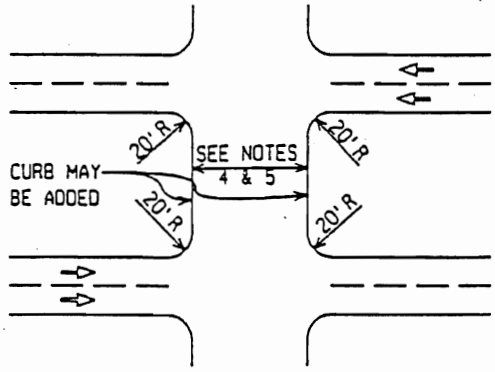
FREE-ACCESS

DIMENSIONS MAY VARY DEPENDING ON DESIGN VEHICLE AND TURNING MOVEMENTS. CONSULT DISTRICT TRAFFIC AND SAFETY ENGINEER FOR USE OF DECELERATION LANES. SEE DESIGN GUIDE VII-650 SERIES FOR DETAILS.



RADII SHALL FORM A SEMICIRCLE FOR MEDIAN WIDTHS OF 40' OR LESS. ALSO, SEE NOTES.

B-1



RADII SHALL FORM A SEMICIRCLE FOR MEDIAN WIDTHS OF 40' OR LESS. ALSO, SEE NOTES.

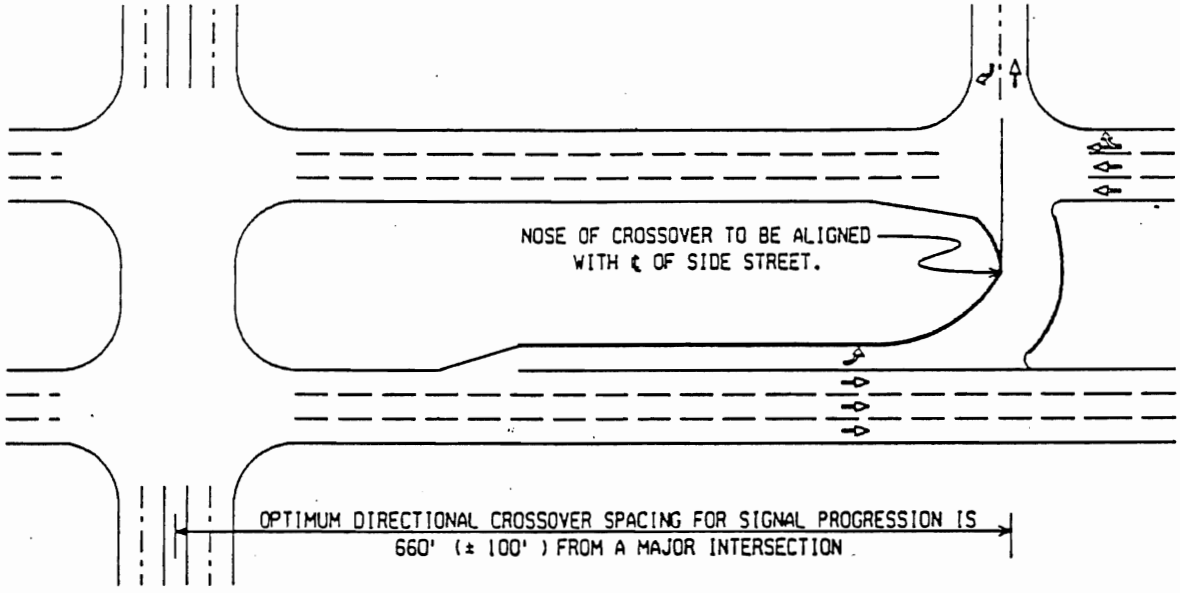
B-2

SPECIAL

SPECIAL SITUATIONS, I.E., WIDE STREETS, ONE-WAY STREETS, OR HEAVY LEFT-TURN MOVEMENTS MAY MAKE OTHER CROSSOVER WIDTHS DESIRABLE. THEIR DETAILS SHOULD BE DETERMINED BY THE GEOMETRIC DESIGN UNIT OF THE TRAFFIC AND SAFETY DIVISION. ALSO, SEE NOTES.

B-0

GENERAL PLACEMENT OF DIRECTIONAL CROSSOVERS



THE NUMBER OF CROSSOVERS PER MILE IS DETERMINED BY NEED. GENERALLY, 1/8 MILE SPACING IS USED IN URBAN AREAS AND 1/4 MILE SPACING IS USED IN RURAL AREAS.

MICHIGAN DEPARTMENT OF TRANSPORTATION

PREPARED BY TRAFFIC & SAFETY

DRAWN BY: LPS

CHECKED BY: TDH

for ENGINEER OF CONSTRUCTION

ENGINEER OF MAINTENANCE

ENGINEER OF MATERIALS AND TECHNOLOGY

ENGINEER OF TRAFFIC AND SAFETY

ENGINEER OF DESIGN

DEPARTMENT DIRECTOR PATRICK M. NOWAK

BY: DEPUTY DIRECTOR - HIGHWAYS

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DESIGN GUIDE FOR

CROSSOVERS

10-15-93 PLAN DATE

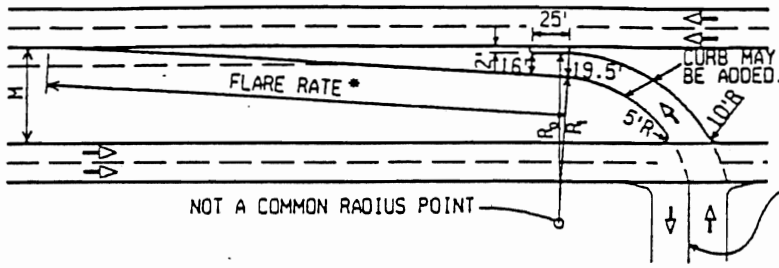
VII-670C

SHEET 1 OF 4

DIRECTIONALS

FREE-ACCESS

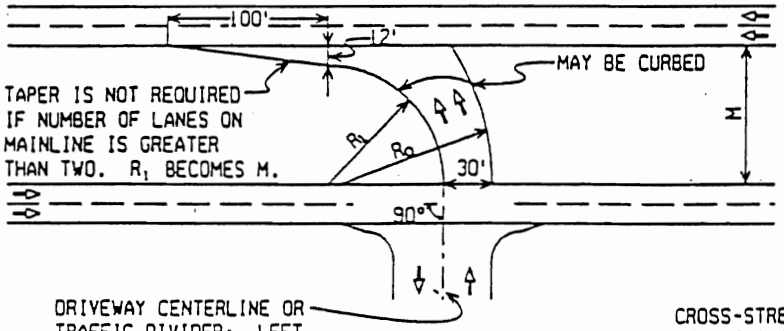
CROSS-STREET DIRECTIONALS FOR MEDIAN WIDTHS OVER 100' AND LESS THAN 26' REQUIRE SPECIAL STUDY. RURAL CROSS-STREET DIRECTIONALS REQUIRE SPECIAL STUDY.



DETAIL	MEDIAN WIDTH	R_1	R_o
D-11U	100'-66'	1.4M	1.6M
D-12U	65'-41'	1.4M	1.8M
D-13U	40'-26'	1.8M	2.0M
D-10	SPECIAL		

* USE DESIGN GUIDE VII-100 AND VII-101 SERIES FOR DESIRABLE FLARE RATES.

D-10 THRU D-13U



DETAIL	MEDIAN WIDTH	R_1	R_o
D-21U	100'-30'	M-12	(1.75 X M)
D-20	SPECIAL		

CROSS-STREET DIRECTIONALS FOR MEDIAN WIDTHS OVER 100' AND LESS THAN 30' REQUIRE SPECIAL STUDY.

D-20 AND D-21U

SPECIAL

SPECIAL SITUATIONS MAY MAKE OTHER CROSSOVER DETAILS DESIRABLE. THEIR DETAILS SHOULD BE DETERMINED BY THE GEOMETRIC DESIGN UNIT OF THE TRAFFIC AND SAFETY DIVISION.

SPECIAL STUDY IS REQUIRED FOR DIRECTIONAL CROSSOVERS WITH MEDIAN WIDTHS LESS THAN 30' OR GREATER THAN 120'.

WIDENING MAY BE REQUIRED OPPOSITE CROSSOVER TO ACCOMODATE TURNS IN NARROW MEDIANS. (LOONS)

D-0

WIDENING

THE TAPER RATE FOR BOTH CURBED ROADWAYS AND UNCURBED FLARES IS THE SAME.

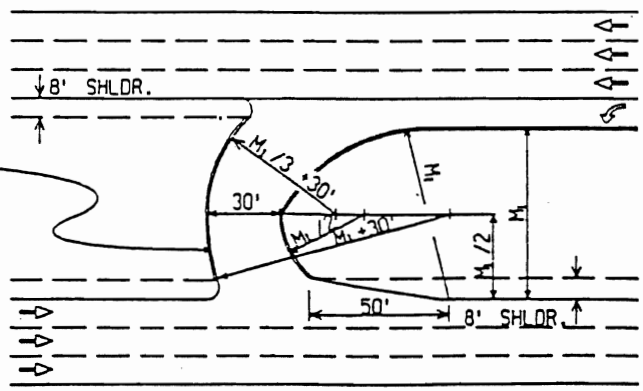
MPH	TAPER FEET
≤ 35	75
40	100
45	130
50	180
55	225

T-1

UNCURBED SECTION

IN AN UNCURBED AREA, USE TYPE "B" CURB ALONG STORAGE LANE AND ON BOTH INSIDE AND OUTSIDE RADII.

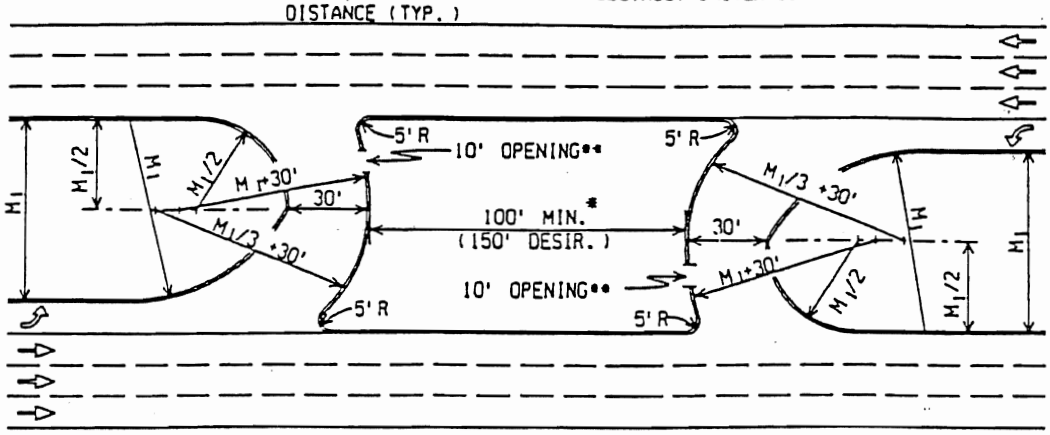
WHEN M_1 IS LESS THAN 40', THE OUTSIDE RADIUS SHALL EQUAL M_1.



D-1

CURBED SECTION

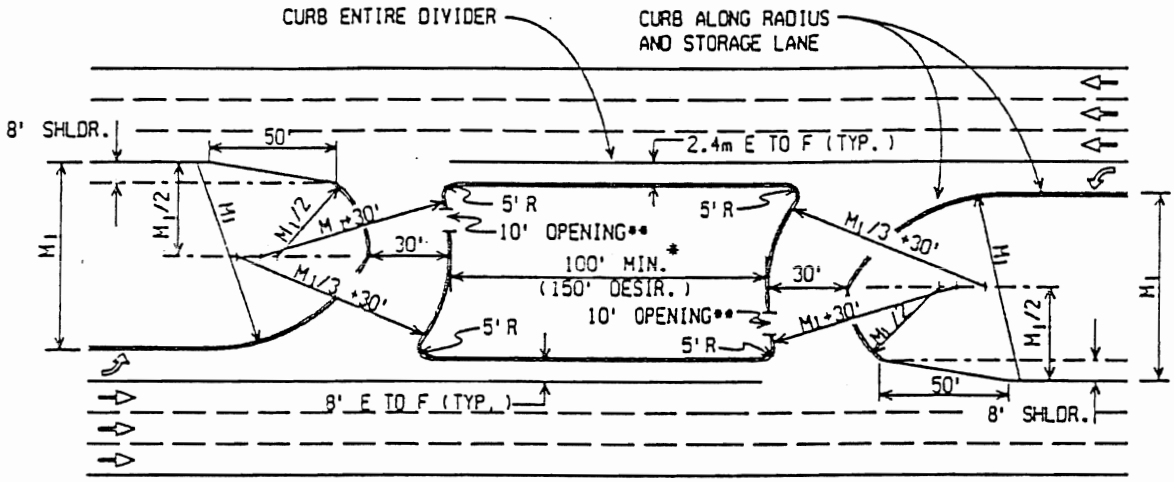
CREST OF MOUND, FOR DRAINAGE AND AESTHETICS, SHOULD NOT EXCEED 1' ABOVE TOP OF CURB. IF NOT PAVED, VEGETATION MUST NOT OBSTRUCT DRIVER SIGHT DISTANCE (TYP.)



*WHERE CONDITIONS REQUIRE MODIFICATION, CONSULT THE GEOMETRIC DESIGN UNIT OF THE TRAFFIC AND SAFETY DIVISION.
**SEE DETAIL "L" ON STANDARD PLAN II-29 SERIES.

D-2

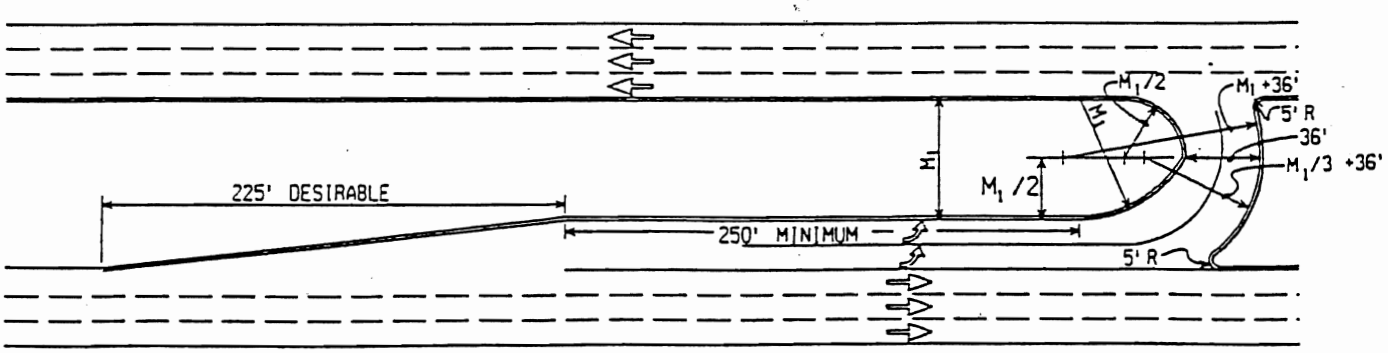
UNCURBED SECTION



*WHERE CONDITIONS REQUIRE MODIFICATION, CONSULT THE GEOMETRIC DESIGN UNIT OF THE TRAFFIC AND SAFETY DIVISION.
**SEE DETAIL "L" ON STANDARD PLAN II-29 SERIES.

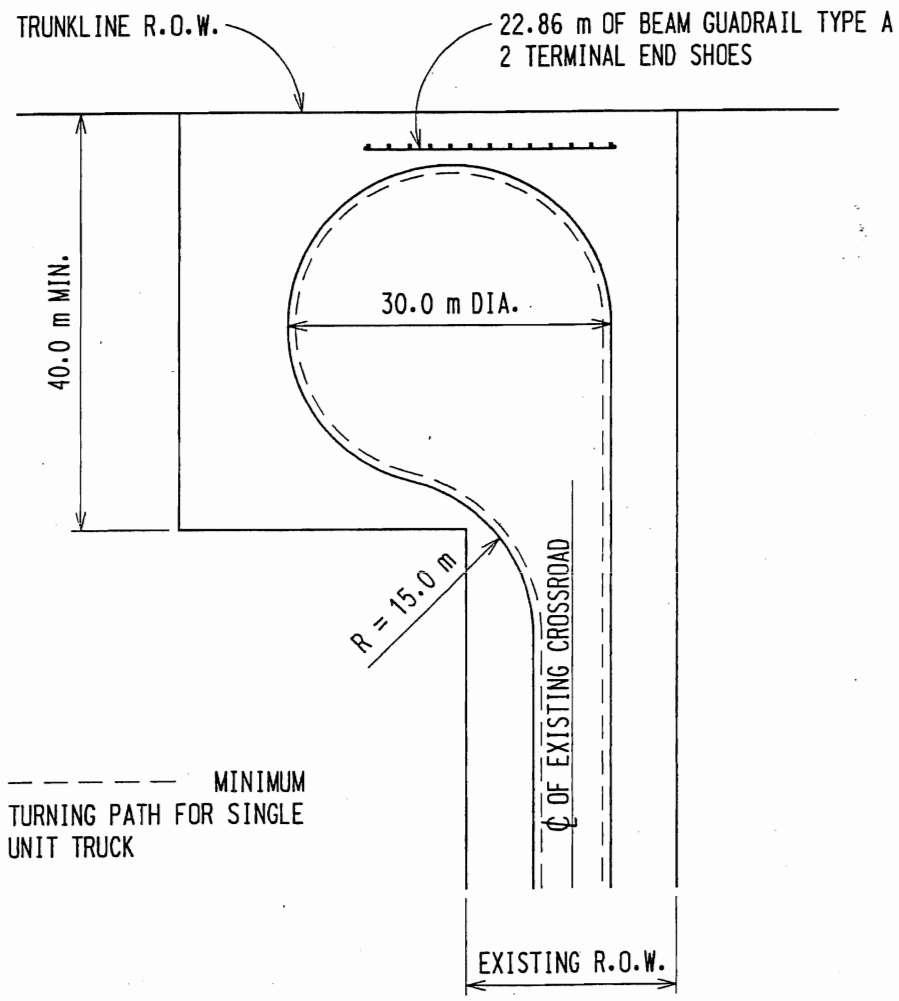
D-3

DUAL TURNS



12.07.03 (continued)

Design of Turnarounds



TYPICAL TURNAROUND OR CUL-DE-SAC