Saint Louis County

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St. Louis County Public Works Department Policy for Roadway Standards in Plats and Subdivisions

Introduction

The St. Louis County Public Works Department has been directed through Subdivision Ordinance Number 60 to establish the required standards for roadways in plats and subdivisions. This policy establishes consistent standards which will enable all developers to design with consistent rules.

This policy is based upon the 2011 American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, otherwise known as the *Green Book*.

Roadway Improvement Standards for Plats and Subdivisions

General

Primary Access Roads are defined as roads which connect the proposed plat or subdivision roads to a Public Roadway. Public Roadways are defined as follows.

- US Highway
- Minnesota State Highway
- County Highway (County State Aid Highway, County Road or Unorganized Township)
- Municipal Street (Municipal State Aid Street or Municipal Street)
- Organized Township Road

Access roads shall meet the highest design standard required in the plat or subdivision. All plat and subdivision roads shall be designed by a registered professional engineer. Appeals to the requirement for a registered professional engineer may be submitted to the St. Louis County Traffic Engineer for approval by the Public Works Director/Highway Engineer. Reasons for appeal may include, but are not limited to, size of plat, land use, number of lots, topography, design complexity, hydraulic requirements and traffic demand.

Road Right-of-Way Width

The minimum right-of-way widths are based upon the functional classification of the road. The functional classification shall be determined by the Public Works Department.

Functional Classification	Minimum Right-of-Way Width
Rural or Urban Minor Arterial	150 ft
Rural or Urban Major Collector	80 ft
Rural or Urban Minor Collector	66 ft
Local	66 ft

Road Width

The standard for roadway widths is based on single unit lots. If the proposed plat has multiple unit lots, such as an apartment building, the proposed required driving surface width will be determined by the estimated average daily traffic (ADT) and approved by the Public Works Department.

Number of Lots being Served	Estimated ADT	Minimum Road Surface Width (including shoulders)
3-10	15-50	20 ft
11-20	51-100	22 ft
21-30	101-150	24 ft
31-50	151-250	26 ft
50-100	251-400	30 ft
>100	>400	See note*

*The developer of a proposed plat or subdivision will be required to perform a traffic and geometric analysis by a registered professional engineer for design adequacy based on the proposed design usage. The proposed road design shall be approved by the Public Works Department.

Number of Lanes

There shall be a minimum of one traveled lane in each direction for all roads.

Level of Service

The Primary Access Road and all other roads within the plat or subdivision shall be designed to meet a minimum traffic operational performance of level of service B.

Design Speed

The design speed of all roads (paved and unpaved) shall be established based upon the following table.

Type of Terrain	Design Speed (mph) for Specified Design Volume (veh/day)					
	<50	50-250	250-400	400-1,500	1,500-2,000	>2,000
Level	30	30	40	50	50	50
Rolling	20	30	30	40	40	40

*Table values based upon AASHTO *Green Book* Table 5-1

Clear Zone

Rural

The minimum clear zone shall be 7 ft as measured from the outside edge of the shoulder. The clear zone shall be clear of unyielding objects such as trees, sign supports, utility poles, light poles and any other fixed object that may increase the potential of the severity of a crash when a vehicle runs off the road.

Urban

Clearance of 1.5 ft from the face of the curb to fixed objects must be provided when the posted speed is 40 to 45 mph. A 7 ft clear zone measured from the driving lane must be provided when the posted speed exceeds 45 mph.

Horizontal Alignment

All roads (paved and unpaved) shall meet the minimum horizontal curve radius in the following table. Superelevation transition and runoff shall be provided if the curve has superelevation in accordance with the AASHTO *Green Book*.

Design Speed (mph)	Maximum *e* (%)	Maximum *f*	Minimum Radius (ft)
20	0	0.27	99
25	0	0.23	182
30	0	0.20	300
35	0	0.18	454
40	0	0.16	667
45	0	0.15	900
50	0	0.14	1,191

*Table values based upon AASHTO *Green Book* Table 3-7

Design Speed (mph)	Maximum *e* (%)	Maximum *f*	Minimum Radius (ft)
20	4	0.27	86
25	4	0.23	154
30	4	0.20	250
35	4	0.18	371
40	4	0.16	533
45	4	0.15	711
50	4	0.14	926
20	6	0.27	81
25	6	0.23	144
30	6	0.20	231
35	6	0.18	340
40	6	0.16	485
45	6	0.15	643
50	6	0.14	833

*Table values based upon AASHTO *Green Book* Table 3-7

Vertical Alignment and Stopping Sight Distance

The maximum grade of all roads shall be in accordance with the following table.

Type of Terrain	Maximum Grade (%) for Specified Design Speed (mph)					
	20	25	30	40	45	50
Level	8	7	7	7	7	6
Rolling	11	11	10	10	9	8

*Table values based upon AASHTO *Green Book* Table 5-2

Stopping sight distance and vertical curve design (paved and unpaved roads) shall meet the criteria in accordance with the following table.

Design Speed (mph)	Stopping Sight Distance (ft)	Rate of Vertical Curvature, *K*	
		Crest	Sag
20	115	7	17
25	155	12	26
30	200	19	37
35	250	29	49
40	305	44	64
45	360	61	79
50	425	84	96

*Table values based upon AASHTO *Green Book* Table 5-3

K = L/A or L = KA

L = length of curve; A = algebraic difference between grades

Cross Slope

The normal crown cross slope for paved roads shall be 2%, and unpaved roads shall be 3%.

Vertical Clearance

A vertical clearance of 16 ft shall be maintained over the entire roadway width for all roads.

Intersections

The maximum grade of intersection legs should not exceed 6%.

The legs of intersections should intersect at right angles. The angle of the intersection may be relaxed to +/- 30° from the right angle (90°) if reviewed and approved by the Public Works Department.

The intersection of the Primary Access Road and Public Roadway (see section title *General*) shall be controlled by a stop condition on the Primary Access Road. Adequate intersection sight distance for a stop-controlled intersection will be determined using Case B1, Left Turn from Stop as shown in the following table.

Design Speed (mph)	Stopping Sight Distance (ft)	Intersection Sight Distance for Passenger Cars (ft)
20	115	225
25	155	280
30	200	335
35	250	390
40	305	445
45	360	500
50	425	555
55	495	610
60	570	665
65	645	720

*Table values based upon AASHTO *Green Book* Table 9-6

Intersection sight distance for roads within the plat or subdivision shall meet the requirements in the AASHTO *Green Book* for the assigned traffic control of the intersection.

Cul-de-sacs

All dead-end roads shall provide vehicles an adequate area to turn around.

The minimum radius of a cul-de-sac, as measured from the outside edge of driving surface, is 50 ft. The minimum radius of the right-of-way for a cul-de-sac shall be a minimum of 15 ft from the outside edge of the driving surface. A vegetated island is permitted in the center of

the cul-de-sac, but the vegetated island must allow for a minimum cul-de-sac driving surface width of 30 ft.

If a turn-around alternative other than a cul-de-sac is proposed, the proposed design is required to meet the turning radius of a Single Unit Truck design vehicle (SU-40).

Drainage

Adequate and sustainable drainage shall be provided for the entire site. Drainage design for the plat or subdivision roads shall account for water from the new roadway, existing hydraulic features and the new land use envisioned for the plat or subdivision. Cross sections are required at 100 ft intervals to allow for the review of drainage.

The foreslope (inslope) and backslopes of ditches shall be no steeper than 1 (vertical) units to 3 (horizontal) units.

Culverts shall be sized based upon on the hydraulic requirements of the following table. The minimum diameter of culverts placed under the roadway shall be 15 in. The minimum diameter of culverts placed under driveways shall be 12 in.

Projected ADT	Minimum Overtopping Flood Frequency
0-10	2 year
11-49	5 year
50-399	10 year
400-1,499	25 year
>1,500	50 year

*Mn/DOT *Drainage Manual*, Table 3.1

Bicycle/Pedestrian Facilities

Bicycle and pedestrian facilities shall be designed in accordance with the Minnesota Department of Transportation (Mn/DOT) *Road Design Manual*.

New and Reconstructed Structures

All new and reconstructed structures such as bridges, culverts over 48 in and larger and retaining walls shall be designed by a registered professional engineer, and be reviewed and approved by the St. Louis County Public Works Department.

Traffic Control Devices

Traffic control devices for all roads (paved and unpaved) shall be in accordance with the Minnesota Manual on Uniform Traffic Control Devices (MUTCD).

Road Surface

All roads shall have a minimum of 5 inches of Class 5 gravel modified to up to 15% passing the #200 sieve under the traveled lanes. Shoulders on paved roads shall have a minimum of 3.5 inches of Class 1 gravel. All gravel shall meet the Mn/DOT material specifications found in Mn/DOT *Standard Specifications for Construction* 3138.

Roads with a width of 26 ft (as determined by the section titled *Road Width*) shall be paved with a bituminous mixture. The pavement structure shall be designed by a registered professional engineer and accommodate the anticipated traffic loads. The proposed pavement design shall be approved by the Public Works Department.

Other Requirements

The County Engineer may require that additional items be evaluated and/or designed by a registered professional engineer for design adequacy based on the proposed usage. The proposed design shall be approved by the Public Works Department.

The Public Works Department reserves the right to implement additional or modified requirements not specifically included in this policy to ensure the construction of a safe access and/or plat or subdivision road suitable for the traveling public and future users of the plat or subdivision.

Public Works Director/Highway Engineer

7/7/2014
Date