

CHAPTER 3 – STREET DESIGN STANDARDS

3.1 GENERAL INFORMATION

1. The street system and classification shall be based on the City of Surprise Long Range Master Street Plan.
2. The technical street design requirements for all street classifications are shown in Table 3-2 on the following page. For rural minor roads, refer to MCDOT Roadway Design Manual Figure 5.4.
3. Street cross sections shall be in accordance with City of Surprise Standard Details 3-01 through 3-07.
4. All street intersections shall be constructed with concrete vertical curb returns and sidewalk ramps as specified within this chapter. For back of curb radii between 30 feet and 35 feet, use City of Surprise Standard Detail 3-11. For curb radii less than 30 feet, use MAG Detail 235-2. The radii of sidewalk ramps to the back of curb at intersection locations are detailed in Table 3-1.

Table 3-1 Radius of Sidewalk Ramps/Curb Returns to Back of Curb at Intersection Locations

<u>Street Classification</u>	<u>Parkways</u>	<u>Arterial</u>	<u>Collector</u>	<u>Local</u>
Parkways	35'	35'	30'	N/A
Arterial	35'	35'	30'	20'
Collector	30'	30'	25'	20'
Local	N/A	20'	20'	20'

5. Developments within the city are required to replace overhead facilities with a rating of less than 69 kV with underground facilities. This includes electrical, alarm, and communication facilities.
6. The minimum length of a cul-de-sac is 300'.
7. When matching existing pavement, a normal crown pavement cross slope shall be between 1.5% and 2.5%.
8. Pavement markers for fire hydrants shall be placed according to MAG Detail 122.
9. Sidewalk improvements shall be in accordance with the Americans with Disabilities Act (ADA), and MAG Specification 340 and Detail 230. The maximum slope of an ADA-approved ramp is 1:12 or 8.33% for running slope and 1:48 or 2.00% for cross slope. Changes in the level of sidewalk surfaces or ramps of ¼ inch or greater can become tripping hazards. Gaps in grates/openings wider than 1/2 inch are not allowed.

10. All trench backfill and pavement replacement shall be in accordance with MAG Details 200-1 and 200-2 and the Pavement Cut Policy contained within the current SUDC.
11. AMERICANS WITH DISABILITIES ACT (ADA)
 - a. Safety railing along slopes shall be in accordance with ADA. The following are conditions where ADA safety railings are required: A 1:1 or greater slope with a 1-foot or larger drop, a 2:1 or greater slope with a four-foot or larger drop, and a 3:1 or greater slope with a six-foot or larger drop.
 - b. Detectable Warnings: MAG Section 340.2.1.1 states that detectable warnings such as truncated domes shall contrast visually with adjoining surfaces. Visual contrast shall be obtained by color, and safety yellow or another approved color such as terracotta is recommended. All truncated domes must be approved, and the currently approved suppliers for the City of Surprise are *ACO*, *ARCIS*, *Armor-Tile* and *TekWay*. Other suppliers may be approved, but they must have a verifiable history and approval from the City of Surprise prior to ordering.

3.2 VALLEY GUTTERS

1. Concrete valley gutters shall be constructed per MAG Detail 240.
2. Valley Gutter Guidelines:
 - a. Valley gutters are not allowed to cross parkways, arterials and collectors.
 - b. Valley gutters crossing local street intersections with local or collector streets shall be a minimum of six feet wide.
 - c. Mid-block valley gutters on local streets shall be a minimum of eight feet wide. Mid-block valley gutters are not permitted on any other street classification.
 - d. Asphalt valley gutters are not allowed on public streets.

TABLE 3-2

TECHNICAL DESIGN REQUIREMENTS BY STREET CLASSIFICATION

ITEM		PARKWAY	MAJOR ARTERIAL	MINOR ARTERIAL	COLLECTOR	LOCAL	LOCAL CUL-DE-SAC
DESIGN SPEED (VD)		55 MPH	55 MPH	55 MPH	50 MPH	30 MPH	N/A
DESIGN VEHICLE		WB-20D (WB-67)	SU-40	SU-40	SU-40	SU-40	SU-40
SUPERELEVATIONS (E _{MAX})		4%	4%	4%	4%	N/A	N/A
MINIMUM RIGHT OF WAY (FULL LENGTH)		200'	136'	110'	105' (HIGH VOLUME) 80' (RESIDENTIAL) 60' (COMMERCIAL)	55' (ON STREET PARKING) 40' (NO PARKING)	125'
MINIMUM STREET WIDTH (BACK OF CURB TO BACK OF CURB)		140'	101' (W/O BIKE LANE) 111' (W/ BIKE LANE)	79'	77' (HIGH VOLUME) 53' (RESIDENTIAL) 38' (COMMERCIAL)	32' (ON STREET PARKING) 28' (NO PARKING)	105'
CURB (*)	(MAG STD DET 220-1)	VERTICAL CURB AND GUTTER				ROLL CURB AND GUTTER (VERTICAL CURB AND GUTTER IS ALLOWED WHERE REQUIRED FOR DRAINAGE)	
SIDEWALK WIDTH (*)	(MAG STD DET 230)	12'	6'	6'	6' (HIGH VOL & RES) 5' (COMMERCIAL)	5' (ON STREET PARKING) N/A (NO PARKING)	5'
PAVEMENT STRUCTURE (β)		PER GEOTECHNICAL RECOMMENDATIONS. 5" AC OVER 9" ABC MINIMUM			PER GEOTECHNICAL RECOMMENDATIONS. 3" AC OVER 8" ABC MINIMUM		
LONGITUDINAL SLOPE		0.3% MINIMUM 8% MAXIMUM			0.3% MINIMUM 12% MAXIMUM		0.3% MIN 12% MAX
CROSS SLOPE		2% MINIMUM - 3% MAXIMUM					
VERTICAL CURVES (α)	REQUIRED WHEN:		GRADE CHANGE EXCEEDS 1.0%		GRADE CHANGE EXCEEDS 2.0%		
	CREST CURVE MINIMUM		LENGTH = 160 x A	LENGTH = 85 x A	LENGTH = 55 x A	LENGTH = 28 x A	LENGTH = 28 x A
	SAG CURVE MINIMUM		LENGTH = 160 x A	LENGTH = 75 x A	LENGTH = 55 x A	LENGTH = 35 x A	LENGTH = 35 x A
HORIZONTAL CURVES	REQUIRED WHEN:		TANGENT CL DEFLECT MORE THAN 7 DEGREES		TANGENT CL DEFLECT MORE THAN 10 DEGREES		
	MINIMUM RADIUS		500'		100'		
	MINIMUM TANGENT CL BETWEEN REVERSE CURVES		150'		100'		
TAPERS (β)	LENGTH		Vd x W			(Vd ² x W) / 60	

NOTES: A = ALGEBRAIC DIFFERENCE OF THE TWO SLOPES. | W = DISTANCE FROM LIP OF GUTTER TO EDGE OF EXISTING PAVEMENT.

(α) LENGTH OF VERTICAL CURVE SHALL BE ADJUSTED TO AN EVEN ONE-HALF STATION (I.E. 160 x A = 532'; USE 550'). | (β) PAVEMENT SECTION FOR INTERIM ROADWAY TAPERS SHALL BE 3" AC OVER 8" ABC MIN.

(*) 4-INCH ROLL CURB WILL BE ALLOWED ON LOCAL STREETS ONLY WHERE DRIVEWAYS ARE ANTICIPATED AND 6-INCH VERTICAL CURB IS NOT REQUIRED FOR STORM WATER DRAINAGE CAPACITY. IN THESE AREAS THE SIDEWALK SHALL BE CONSTRUCTED 5-INCHES THICK PER MAG STANDARD DETAIL 250-1. 4-INCH THICK SIDEWALK MAY BE CONSTRUCTED IN COMMON AREAS NOT SUBJECT TO DRIVEWAY TRAFFIC.

APPENDIX 3-1

DRIVEWAY PLAN FOR RESIDENTIAL LOT



CITY OF SURPRISE (APPENDIX 3-1)

Driveway Plan for Residential Lot

(Attach (2) copies to civil permit application)

Property Information:

Owner's Name: _____

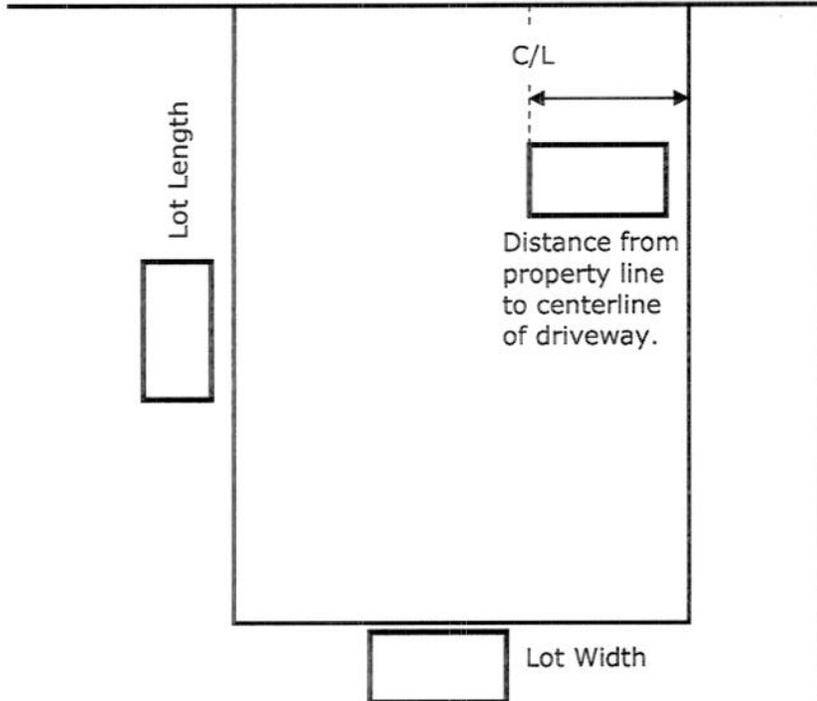
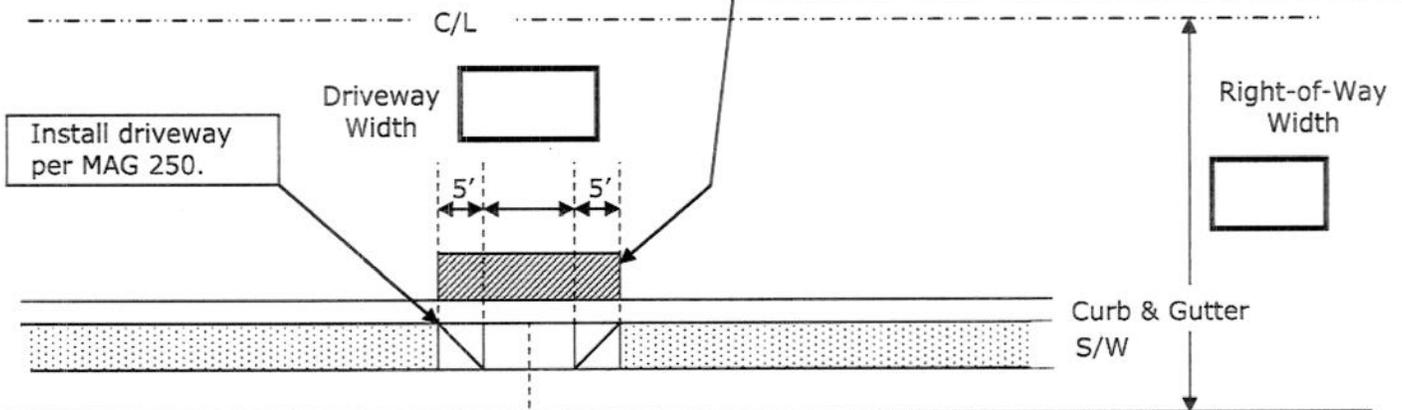
Site Address: _____ Zip Code: _____

Phone Number: _____ APN#: _____

Site/Construction Plan:

Boxes to be completed by applicant.

Sawcut and remove existing pavement minimum 4' wide. AC replacement per City of Surprise approved mix design list. Consult inspector for appropriate mix designs. AC replacement to match existing depth of asphalt.



THIS SECTION TO BE COMPLETED BY CITY STAFF

Permit Quantities:

Concrete Base Fee	_____ EA
Driveway Cut Residential	_____ EA
Driveway Residential	_____ EA
Paving Base Fee	_____ EA
Pavement	_____ SY

Approval:

DATE