



May 16, 2019

Mr. Adam Miller
Growth and Infrastructure Team Leader
City of Phoenix Planning and Development Department
200 West Washington Street, 3rd Floor
Phoenix, AZ 85003

RE: Engineering/Consulting Services 2017-2018 On-Call Contract #144008
City of Phoenix Project #ST85140053-1
Infrastructure Financing Plan Update – Transportation Study
Final Deliverable

Dear Mr. Miller:

Kimley-Horn is pleased to present this memorandum as the final deliverable associated with the Transportation Study completed by Kimley-Horn in support of the 2019 update of the City of Phoenix Infrastructure Financing Plan (IFP).

The scope of this study has primarily revolved around a traffic impact analysis of 2020-2029 land use projections for two “service” areas within the City of Phoenix anticipated to see a significant amount of new development over the next ten years. This new development will likely result in the need for capacity-increasing improvements to the arterial streets that serve the new development.

The analysis conducted by Kimley-Horn complies with the Arizona Revised Statute (ARS) §9-463.05 (the Development Fee statute), Sections E.1 through E.3, which require that for each necessary public service with a development fee, an existing service inventory, an existing level of service (LOS) analysis, and a description of additional service infrastructure necessary and attributable to new development in the service area, be prepared by qualified professionals licensed in this state.

Service Area Figures

Kimley-Horn analyzed the following service areas:

- *Northern* service area (combination of the Northwest and Northeast service areas from the prior IFP); and
- *Southwest* service area.

The boundaries of the Northern and Southwest service areas are shown in **Figure A** and **Figure B**, respectively.

Figure A – Northern Service Area

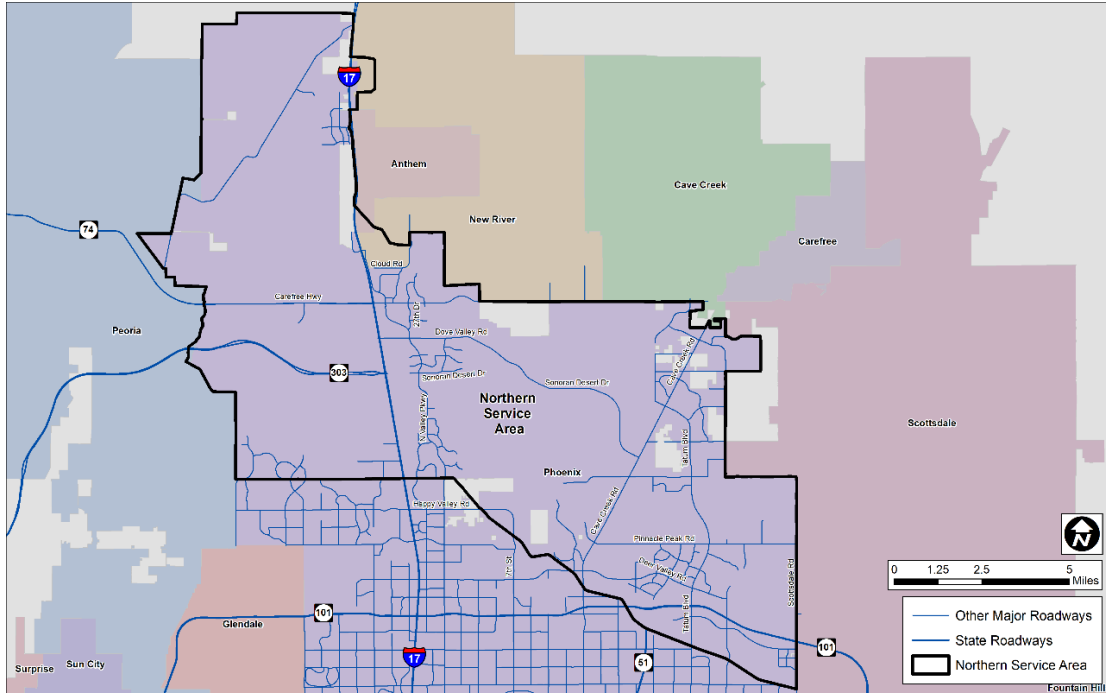
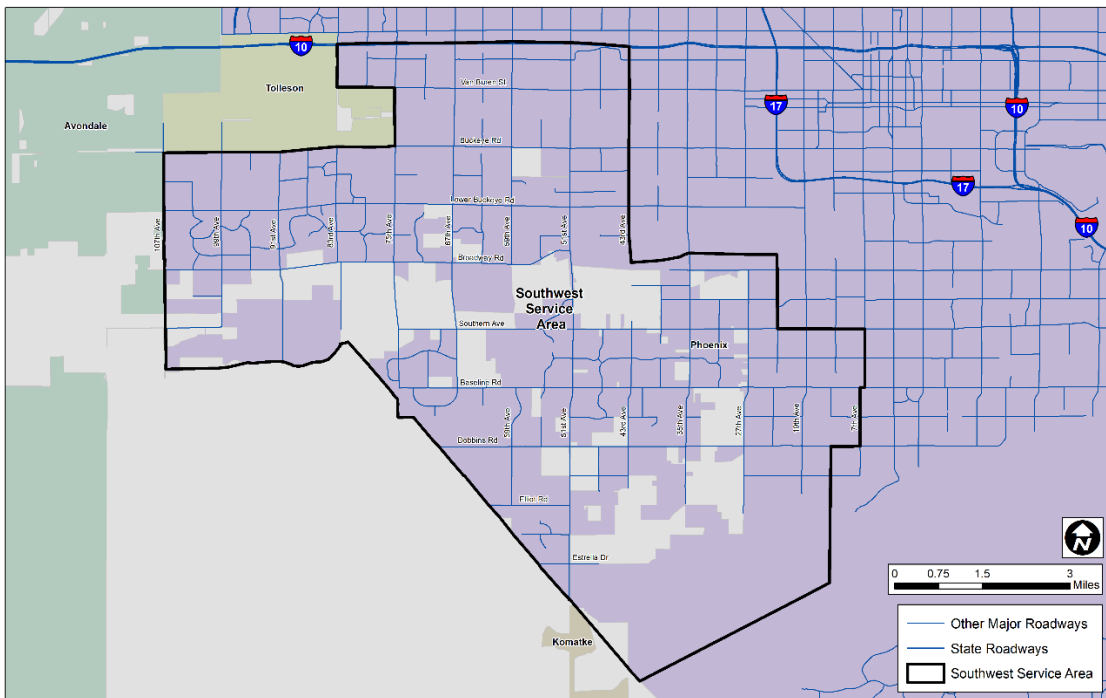


Figure B – Southwest Service Area



Transportation Study Tables

Collectively, **Tables 1 through 19** provide the values, factors, relationships, and formulas developed by Kimley-Horn in conjunction with the City of Phoenix to develop the initial arterial street Gross Impact Fee per Equivalent Demand Unit (EDU) for each service area.

Table 1 presents the major arterial street capacity thresholds developed by Kimley-Horn in conjunction with City staff for use in the IFP. These capacity thresholds are the estimated maximum number of vehicles per day the various roadway cross-sections can accommodate.

Table 2 presents the trip generation and traffic impact calculations for the various types of land uses projected for development within the 2020-2029 planning period. The assumed daily trip generation rates, new trip factors, and average trip lengths are used to calculate estimated travel demand, which is expressed in vehicle miles of travel (VMT). An EDU adjustment factor for travel demand for each land use has been developed by comparing the travel demand of single-family residential land use to the travel demand of the other land uses.

Table 3 provides a comparison of the EDU adjustment factors developed in the prior table to the EDU adjustment factors developed in the prior version of the IFP. The new EDU adjustment factors are lower than those from the previous IFP, except for the multi-family residential land use. This is because the trip generation rates from the 10th edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual are generally lower than those from the 9th edition of the same manual. The mini warehouse and hotel EDU factors were not part of the prior IFP and are provided herein for assessment purposes only – they were not used for estimating future travel demands.

Table 4 and Table 5 show the current and projected EDUs in the Northern and Southwest service areas, respectively, based on the different land use categories and EDU factors shown in prior tables.

Table 6 presents the assumed roadway construction costs for various arterial street cross-sections. The construction cost information was developed by Kimley-Horn based on actual bid tab cost information from 18 recent local street improvement projects. More detail on the construction costs is available in Kimley-Horn's April 19, 2019 memo on unit costs.

Tables 7 and 8 indicate the existing (2019) and 2020-2029 planned capacity of each arterial street segment of interest in the Northern and Southwest service areas, respectively. The existing capacity is based on the street cross section and the segment length and is expressed in vehicle-miles.

Tables 9 and 10 indicate which improvements are included in the 2020-2029 Infrastructure Improvement Plan (IIP) and provide construction costs for those improvements.

Table 11 provides the estimated value of the existing culverts and the estimated cost of the culverts to be installed as part of the IIP for the Northern service area. **Table 12** provides the estimated value of the existing storm drain system in the Southwest service area while **Table 13** provides the estimated cost of the storm drains to be installed as part of the IIP for the Southwest service area.

Tables 14 and 15 provide the estimated value of the existing bridges and the estimated cost of the bridges to be installed as part of the IIP for the Northern and Southwest service areas, respectively.

Tables 16 and 17 show for the Northern and Southwest service areas, respectively, the comparison of the percentage of the ultimate capacity that will be constructed by the 2020-2029 IIP to the percentage of the buildout EDUs that are assumed in the 2020-2029 timeframe to ensure that there is not a disproportionate amount of roadway network capacity being shouldered by the impact fee program.

Tables 18 and 19 provide the initial gross fee per EDU calculation for the Northern and Southwest service areas, respectively. These values need to be adjusted by the City of Phoenix, as needed, to account for credits and offsets that go into the calculation of the net impact fee per EDU.

Please contact Michael Grandy at (480) 207-2662 should you have any questions regarding the content of this letter.

Sincerely,



Michael Grandy, P.E.

Attachments: Tables 1 through 19

Table 1 - Major Arterial Street Capacity

Roadway Cross Section ⁽¹⁾		Standard City of Phoenix Street Cross Section Equivalent ⁽³⁾	Roadway Capacity ^(4,5)	
MASIF Study Abbr. ⁽²⁾	Distinguishing Features ⁽¹⁾		Total Capacity ⁽⁶⁾ (LOS E, V/C = 1.00)	
			Maximum vehicles per day (veh/day)	Maximum vehicles per day per lane (veh/day/ln)
6LD	3 thru lanes + left turn lane(s), in each direction (3 & 3). Opposing traffic flows separated by raised median.	A, B	55,000	9,167
5LD	Same as 6LD, except only 2 thru lanes in one direction (3 & 2, rather than 3 & 3).	Non-Standard (N/S)	45,833	9,167
4LD	2 thru lanes + left turn lane, in each direction (2 & 2). Opposing traffic flows separated by raised median.	CM	36,667	9,167
5LU+	3 thru lanes in one direction; 2 in the other (3 & 2). Opposing traffic flows separated by a 2-way left turn lane.	N/S	43,542	8,708
4LU+	2 thru lanes each direction (2 & 2). Opposing traffic flows separated by a 2-way left turn lane.	C, D	34,833	8,708
3LU+	Same as 4LU+, except only 1 thru lane in one direction (2 & 1, rather than 2 & 2).	N/S	26,125	8,708
2LU+	1 thru lane each direction (1 & 1). Opposing traffic flows separated by a 2-way left turn lane.	N/S	17,417	8,708
4LU-	2 thru lanes each direction (2 & 2). Minimal to no separation between opposing traffic flows; left turns made from thru lanes.	N/S	27,500	6,875
2LU-	1 thru lane each direction (1 & 1). Minimal to no separation between opposing traffic flows; left turns made from thru lanes.	N/S	13,750	6,875

1. Major arterial streets with six thru lanes and a raised median are designated as "6LD" segments. City adopted/standard cross sections "A" (140' ROW, 24' median width), and "B" (130' ROW, 14' median width) are 6LD examples. While 6LDs are considered "standard" for major arterials, there are a significant number of partially-to-fully built out major arterials that provide fewer than 6 thru lanes and that may or may not provide raised medians and/or separate left turn lanes. Because the three most significant factors in the calculation of roadway segment capacity are (1) the number of through lanes; (2) the existence or absence of a raised center median; and (3) the existence or absence of separate left turn lanes, a separate and distinct set of capacity values has been established for each major arterial cross section variation observed to exist within the service areas under consideration in this study.
2. MASIF stands for Major Arterial Streets Impact Fee.
3. Standard City of Phoenix Street cross sections referenced in the MASIF tables are shown on the City's *Street Classification Map*, 2014 revision; and in the City's *Street Planning and Design Guidelines*, adopted in 2009. This study focuses on roadway capacity specifically, as Major Arterial impact fees do not currently cover outside curb and gutter or surface features behind/outside of the outside curb.
4. Roadway Capacity, in the context of this study, provides the necessary services of vehicular mobility and land use connectivity. To make use of traffic count data readily available from the City, a peak hour-to-daily traffic volume conversion approach was used to establishing the capacity values indicated in this table.
5. Sources used to establish the daily traffic volume capacity values in this table include the following: (1) City of Phoenix *Street Planning and Design Guidelines*; (2) Florida Department of Transportation *Quality/Level of Service Handbook*; (3) City of Phoenix *General Plan - Circulation Element*; (4) Maricopa County Department of Transportation (MCDOT) *Roadway Design Manual*; and (5) Transportation Research Board *Highway Capacity Manual*.
6. Total capacity is defined, for the purposes of this study, as the maximum amount of traffic that a major arterial street can carry under prevailing conditions of geometry, traffic mix, and location.

Table 2 - Trip Generation, Traffic Impact, and Equivalent Demand Unit (EDU) Calculations

Land Use ⁽¹⁾	Development Units ⁽²⁾	Trip Generation Calculations									Traffic Impact Calculations				
		Total Trip Rates		% Primary Trips	PM Pk Hr Trip End Split			Combined Trip Generation Adjustment Factor ⁽⁷⁾	Adjusted Trip Rates		Avg Trip	Avg Trip Length ^{(5)/(6)} (mi)	Travel Demand (VMT) ⁽³⁾		EDU ⁽⁴⁾ Factor
		Daily (veh/day)	PM Peak Hour (veh/hr)		In (Include)	Out to External (Include)	Out to Internal (Exclude)		PM Peak Hour (veh/hr)	Daily (veh/day)			Trip Length Weighting Factor ⁽⁶⁾	PM Peak Hour (veh/hr)	
Single-Family Res. (ITE LUC 210)	DWU	9.44	0.99	86%	63%	2%	35%	56%	0.55	5.26	121%	11.64	6.43	61.28	1.00
Multi-Family Res. (ITE LUC 220)	DWU	7.32	0.56	86%	63%	0%	37%	54%	0.30	3.97	121%	11.64	3.53	46.16	0.75
Commercial/Retail (ITE LUC 820)	KSF	37.75	3.81	56%	48%	8%	44%	31%	1.19	11.80	66%	6.35	7.56	74.90	1.22
Office (ITE LUC 710)	KSF	9.74	1.15	100%	16%	34%	50%	50%	0.57	4.83	73%	7.02	4.01	33.93	0.55
Industrial (ITE LUC 110)	KSF	4.96	0.63	100%	13%	44%	44%	57%	0.36	2.80	73%	7.02	2.50	19.68	0.32
Public/Institutional (ITE LUC 610)	KSF	10.72	0.97	80%	32%	14%	54%	36%	0.35	3.91	73%	7.02	2.48	27.46	0.45
Mini Warehouse (ITE LUC 151)	KSF	1.51	0.17	92%	47%	11%	42%	53%	0.09	0.80	75%	7.22	0.65	5.77	0.09
Hotel (ITE LUC 310)	Rooms	8.36	0.60	58%	51%	10%	39%	35%	0.21	2.95	75%	7.22	1.53	21.27	0.35

- ITE LUC stands for Institute of Transportation Engineers (ITE) *Trip Generation, 10th Ed.* Land Use Code (LUC). ITE is the source of all unadjusted trip generation rates used in this study.
- Units of measure used specifically for the purposes of trip generation and impact fee calculations presented in this transportation study, include "DWU" (Residential Dwelling Unit), "KSF" (1,000 square feet), and Rooms
- VMT stands for vehicle miles traveled. One vehicle using one mile of service area major arterial to complete a trip is equal to one vehicle-mile of service area major arterial demand.
- EDU = Equivalent Demand Unit; the number of single family residential DWU trips it would take to cause the same travel demand impact of a single development unit of any other type.
- Units of measure used specifically for the purposes of trip generation and impact fee calculations presented in this transportation study include "veh" (vehicles) and "mi" (miles).
- Average trip length value of 9.62 and length weighting factors were derived from Table 30 - Daily Travel Statistics by Weekday vs. Weekend, of the *National Household Travel Survey (NHTS), 2009 Update*.
- Trip End is a term used to recognize that a single trip made from one land use to another is considered both an inbound trip generated by (i.e. attracted to) the land use defining the trip's termination point, and an outbound trip generated (i.e. produced) by the trips origination point. These two trip ends only impact the travel route between them one time. To avoid double counting, it is necessary to discount those outbound/production trips that terminate internal to the service area. Production trips that terminate outside the service area should not be discounted, as they will not have been also recognized as an inbound trip for other development internal to the service area.

Table 3 - EDU Adjustment Factor Comparison

Land Use	EDU Adjustment Factor	
	Current (Prior IFP)	Proposed (2020-2029)
Single-Family Residential	1.00	1.00
Multi-Family Residential	0.70	0.75
Commercial/Retail	1.37	1.22
Office	0.63	0.55
Industrial	0.44	0.32
Public/Institutional	0.61	0.45
Mini Warehouse	-	0.09
Hotel	-	0.35

Table 4 - Northern Service Area Equivalent Demand Units

Land Use	Equivalent Demand Units, "EDU"			
	Existing (2019)	2020-2029 Growth	2029 Total	Buildout
Single-Family Residential	34,090	18,222	52,312	118,502
Multi-Family Residential	6,737	6,166	12,903	48,591
Commercial/Retail	5,345	3,947	9,292	42,000
Office	581	1,052	1,633	16,792
Industrial	403	254	657	14,420
Public/Institutional	2,981	1,873	4,854	9,377
Northern Service Area Totals	50,137	31,514	81,651	249,682

Table 5 - Southwest Service Area Equivalent Demand Units

Land Use	Equivalent Demand Units, "EDU"			
	Existing (2019)	2020-2029 Growth	2029 Total	Buildout
Single-Family Residential	42,399	15,805	58,204	62,987
Multi-Family Residential	810	4,622	5,432	8,492
Commercial/Retail	6,585	4,380	10,965	14,858
Office	1,602	1,441	3,043	4,569
Industrial	16,634	4,198	20,832	24,040
Public/Institutional	3,945	2,866	6,811	8,064
Southwest Service Area Totals	71,975	33,312	105,287	123,010

Table 6 - 2020-2029 Major Arterial Street Construction Unit Costs

Cross Section (XSEC) Type		Capacity (veh/day)	Roadway Construction Cost (per mile)
Lane Configuration (1)	Standard City Cross Section (2)		
6LD	A	55,000	\$ 3,947,094
6LD	B	55,000	\$ 3,667,281
4LU+	C	34,833	\$ 3,076,813
4LD	CM	34,833	\$ 3,004,840
4LU+	D	34,833	\$ 2,745,591

1. Streets with six thru lanes and a raised median are considered "divided" and are designated as "6LD" segments. Streets with four thru lanes and a raised median are designated as "4LD" segments. Streets with four thru lanes but no raised median are considered "undivided" and are designated as "4LU" segments, with a "+" indicating a two-way left-turn lane is provided and a "-" indicating no left-turn lane is provided.
2. Standard City of Phoenix Street cross sections referenced are shown on the City's *Street Classification Map*, 2014 revision; and in the City's *Street Planning and Design Guidelines*, adopted in 2009.
3. Construction costs include 15% for design and 22% for City of Phoenix administrative costs.

Table 7 - 2019 Major Arterial Street Existing and 2020-2029 Planned Capacity - Northern Service Area

Planned Major Arterial Street Segment		Ultimate Length, "L _{Ult} " (miles)	Existing Length, "L ₂₀₁₉ " (miles)	Ultimate City Standard Cross Section, "XSEC _{ULT} "	Ultimate Lane Config., "LCON _{Ult} "	Existing Lane Config., "LCON ₂₀₁₉ "	Ultimate Capacity, "VMC _{Ult} " (veh-miles)	Existing Capacity, "VMC ₂₀₁₉ " (veh-miles)	2020-29 Planned Additional Capacity (veh-miles)
39th Ave/Vision Way (39A), Pioneer Rd to Anthem Way									
39A	Pioneer Road to Daisy Mtn Rd	1.35	0.00	C	4LU+	DNE	47,025	0	0
39A	Daisy Mtn Rd to 2640' s/o Anthem Way	2.46	0.00	C	4LU+	DNE	85,690	0	0
39A	2640' south to Anthem Way	0.50	0.50	C	4LU+	4LU+	17,417	17,417	0
43rd Ave (43A), Dixileta Dr to Carefree Hwy									
43A	Dixileta Dr to Dove Valley Rd	1.89	0.00	A	6LD	DNE	103,950	0	0
43A	Dove Valley Rd to Carefree Hwy	1.00	0.00	A	6LD	DNE	55,000	0	0
51st Ave (51A), Inspiration Pkwy (Jomax Rd align.) to Pyramid Peak Pkwy									
51A	Jomax Rd to CAP	0.83	0.83	A	6LD	4LD	45,650	30,433	0
51A	CAP to Dixileta Dr	1.57	0.00	A	6LD	DNE	86,350	0	0
51A	Dixileta Dr to Dove Valley Rd	1.76	0.00	A	6LD	DNE	96,800	0	0
51A	Dove Valley Rd to Carefree Hwy	1.00	0.00	A	6LD	DNE	55,000	0	0
51A	Carefree Hwy to Pioneer Rd	2.00	0.00	A	6LD	DNE	110,000	0	0
51A	Pioneer Rd to Pyramid Peak Pkwy	1.83	0.00	A	6LD	DNE	100,650	0	0
Anthem Way (ANT), Avenue A to I-17									
ANT	Avenue A to New River Rd	1.16	0.00	B	6LD	DNE	63,800	0	0
ANT	New River Rd to Avenue B	0.67	0.00	B	6LD	DNE	36,850	0	0
ANT	Avenue B to Pyramid Peak Pkwy	0.67	0.00	B	6LD	DNE	36,850	0	0
ANT	Pyramid Peak Pkwy to 43rd Ave	0.50	0.50	B	6LD	4LD	27,500	18,333	0
ANT	43rd Ave to I-17	0.31	0.31	B	6LD	6LD	17,050	17,050	0
Avenue A (AVA), Desert Hills Dr (@ west limit of fee area) to New River Rd (at north limit of fee area)									
AVA	New River Rd to Desert Hills Dr	1.00	1.00	B	6LD	DNE	55,000	0	0
AVA	Desert Hills Dr to Anthem Wy	2.99	0.00	B	6LD	DNE	164,450	0	0
AVA	Anthem Wy to Jenny Lin Rd	2.00	0.00	B	6LD	DNE	110,000	0	0
AVA	Jenny Lin Rd to New River Rd	1.33	0.00	B	6LD	DNE	73,150	0	0
Avenue C (AVC), New River Rd to Pioneer Rd									
AVC	New River Rd to Pioneer Rd	1.00	0.00	A	6LD	DNE	55,000	0	0
Carefree Hwy (CFH), west limit of fee area (@ +/- 73rd Ave align.) to Paloma Pkwy									
CFH	I-17 to North Valley Pkwy	0.36	0.36	A	6LD	5LD	19,800	16,500	3,300
CFH	North Valley Pkwy to Paloma Pkwy	1.11	1.11	A	6LD	5LD	61,050	50,875	10,175
Daisy Mountain Dr (DSY), west limit of fee area (@ Avenue A) to I-17									
DSY	Avenue A to New River Rd	1.17	0.00	A	6LD	DNE	64,350	0	0
DSY	New River Rd to Avenue B	0.50	0.00	A	6LD	DNE	27,500	0	0
DSY	Avenue B to Pyramid Peak Pkwy	1.00	0.00	A	6LD	DNE	55,000	0	0
DSY	Pyramid Peak Pkwy to City Limit	1.50	0.00	A	6LD-1/2	DNE	41,250	0	41,250
DSY	City Limit to I-17	0.43	0.00	A	6LD-1/2	DNE	11,825	0	11,825
Dixileta Dr (DXD), CAP (@ +/- 73rd Ave align.) to I-17									
DXD	CAP to 67th Ave	0.72	0.00	A	6LD	DNE	39,600	0	0
DXD	67th Ave to 51st Ave	2.05	0.00	A	6LD	DNE	112,750	0	0
DXD	51st Ave to I-17	2.50	0.00	A	6LD	DNE	137,500	0	0
Jenny Lin Rd (JLN), Avenue A to I-17									
JLN	Avenue A to New River Rd	0.83	0.00	B	6LD	DNE	45,650	0	0
JLN	New River Rd to I-17	1.12	0.00	B	6LD	DNE	61,600	0	0
New River Rd (NRV), Cloud Rd to I-17 (north of Jenny Lin Rd)									
NRV	Cloud Rd to Avenue C	1.00	1.00	B	6LD	DNE	55,000	0	0
NRV	Avenue C to Avenue A	1.00	1.00	B	6LD	DNE	55,000	0	0
NRV	Avenue A to Pioneer Rd	0.83	0.83	A	6LD	DNE	45,650	0	0
NRV	Pioneer Rd to Desert Hills Dr	0.67	0.67	A	6LD	DNE	36,850	0	0
NRV	Desert Hills Dr to Daisy Mtn Dr	1.67	1.67	A	6LD	DNE	91,850	0	0
NRV	Daisy Mtn Dr to Anthem Wy	1.50	1.50	A	6LD	DNE	82,500	0	0
NRV	Anthem Wy to Jenny Lin Rd	0.83	0.83	A	6LD	DNE	45,650	0	0
NRV	Jenny Lin Rd to I-17	1.50	1.06	A	6LD	DNE	82,500	0	0
North Valley Pkwy (NVP), CAP to Carefree Hwy									
NVP	Jomax Rd to 500' s/o CAP	0.15	0.15	A	6LD	4LU+	8,250	5,225	0
NVP	500' s/o CAP to CAP	0.10	0.10	A	6LD	5LD	5,500	4,583	0
NVP	CAP to Quail Track Dr	0.12	0.12	A	6LD	5LD	6,600	5,500	0
NVP	Quail Track Dr to Copperhead Tr	0.58	0.58	A	6LD	6LD	31,875	31,875	0
NVP	Copperhead Tr to 660' n/o Casino Ave	0.61	0.61	A	6LD	5LD	33,802	27,958	0
NVP	660' n/o Casino Ave to Dixileta Dr	0.74	0.74	A	6LD	5LD	40,700	33,917	0
NVP	Dixileta Dr to 200' s/o Rancho Tierra	0.71	0.71	A	6LD	6LD-1/2	39,050	19,525	19,525
NVP	200' s/o Rancho Tierra to Sonoran Desert Dr	0.40	0.40	A	6LD	4LD	22,000	14,667	7,333
NVP	Sonoran Desert Dr to Dove Valley Rd	1.12	1.12	A	6LD	4LD	61,600	41,067	20,533
NVP	Dove Valley Rd to 27th Dr	0.26	0.26	A	6LD	4LD	14,300	9,533	0
NVP	27th Dr to exist. north end of road	0.41	0.41	A	6LD	4LD	22,781	15,188	0
NVP	Exist. north end of road to Carefree Hwy	0.59	0.00	A	6LD	DNE	32,188	0	32,188

Table 7 - 2019 Major Arterial Street Existing and 2020-2029 Planned Capacity - Northern Service Area

Planned Major Arterial Street Segment		Ultimate Length, "L _{Ult} " (miles)	Existing Length, "L ₂₀₁₉ " (miles)	Ultimate City Standard Cross Section, "XSEC _{ULT} "	Ultimate Lane Config., "LCON _{Ult} "	Existing Lane Config., "LCON ₂₀₁₉ "	Ultimate Capacity, "VMC _{Ult} " (veh-miles)	Existing Capacity, "VMC ₂₀₁₉ " (veh-miles)	2020-29 Planned Additional Capacity (veh-miles)
Pioneer Rd (PIO), New River Rd to I-17									
PIO	New River Rd to Avenue C	1.00	0.00	B	6LD	DNE	55,000	0	0
PIO	Avenue C to Cloud Rd	0.50	0.00	B	6LD	DNE	27,500	0	0
PIO	Cloud Rd to Pyramid Peak Pkwy	0.76	0.00	B	6LD	DNE	41,800	0	0
PIO	Pyramid Peak Pkwy to 51st Ave	1.00	0.00	B	6LD	DNE	55,000	0	0
PIO	51st Ave to 39th Ave	2.00	0.00	B	6LD	DNE	110,000	0	0
PIO	39th Ave to I-17	0.33	0.33	B	6LD	2LU-	18,150	4,538	0
Pyramid Peak Pkwy (PYR), southwest corner of fee area (@ +/-67th Ave & Jomax Rd) to Anthem Wy									
PYR	SW Limit of fee area to 64th Ave	0.18	0.18	B	6LD	4LD	9,900	6,600	0
PYR	64th Ave to Cavedale Dr	0.13	0.13	B	6LD	4LD	7,150	4,767	0
PYR	Cavedale Dr to 400' n/o Maya Wy	0.20	0.20	B	6LD	4LD	11,000	7,333	0
PYR	410' North of Maya Wy to 190' s/o of Bent Tree Dr	0.29	0.29	B	6LD	4LU+	15,950	10,102	0
PYR	190' s/o Bent Tree Dr to Dynamite Blvd	0.50	0.50	B	6LD	4LD	27,500	18,333	0
PYR	Dynamite Blvd to Brookhart Wy	0.23	0.23	B	6LD	4LD	12,650	8,433	0
PYR	Brookhart Wy to CAP	0.70	0.70	B	6LD	6LD	38,500	38,500	0
PYR	CAP to Dixileta	0.77	0.00	B	6LD	DNE	42,350	0	0
PYR	Dixileta Dr to Dove Valley Rd	1.44	0.00	B	6LD	DNE	79,200	0	0
PYR	Dove Valley Rd to Carefree Hwy	0.98	0.00	B	6LD	DNE	53,900	0	0
PYR	Carefree Hwy to Pioneer Rd	3.24	0.00	B	6LD	DNE	178,200	0	0
PYR	Pioneer Rd to 51st Ave	2.33	0.00	B	6LD	DNE	128,150	0	0
PYR	51st Ave to Daisy Mtn Dr	0.50	0.00	B	6LD	DNE	27,500	0	0
PYR	Daisy Mtn Dr to Anthem Wy	1.50	0.00	B	6LD	DNE	82,500	0	26,125
Sonoran Desert Dr (SDD), I-17 to east limit of fee area (@ +/- 16th St align.)									
SDD	I-17 to North Valley Pkwy	1.02	1.02	A	6LD	6LD	56,100	56,100	0
SDD	North Valley Pkwy to 1250' e/o NVP	0.25	0.25	A	6LD	2LU+	13,750	4,354	9,396
SDD	1250' e/o NVP to Paloma Pkwy	0.25	0.25	A	6LD	2LU+	13,750	4,354	9,396
SDD	Paloma Pkwy to Dove Valley Rd.	3.05	0.00	A	6LD	DNE	167,750	0	53,121
7th St (7S), CAP to Happy Valley Rd									
7S	CAP to Happy Valley Rd	0.51	0.51	B	6LD	2LU-	28,050	7,013	0
Black Mountain Blvd (BMB), Loop 101 to Cave Creek Rd									
BMB	1,150' s/o Mayo Blvd to Mayo Blvd	0.22	0.22	A	4LD	4LD	8,067	8,067	0
BMB	Mayo Blvd to Deer Valley Rd	0.24	0.24	A	6LD	6LD	13,200	13,200	0
BMB	Deer Valley Rd to Rough Rider Rd	0.50	0.50	A	6LD	6LD	27,500	27,500	0
BMB	Rough Rider Rd to Pinnacle Peak Rd	0.50	0.50	A	6LD	2LU+	27,500	8,708	18,792
BMB	Pinnacle Peak Rd to Happy Valley Rd	1.08	0.00	A	6LD	DNE	59,400	0	59,400
BMB	Happy Valley Rd to 885' s/o Briles Rd	0.73	0.00	A	6LD	DNE	40,150	0	40,150
BMB	885' s/o Briles Rd to Jomax Rd	0.42	0.42	A	6LD	2LU-	23,100	5,775	0
BMB	Jomax Rd to Cave Creek Rd	0.68	0.00	A	6LD	DNE	37,400	0	0
Cave Creek Rd (CAV), CAP to North City limits									
CAV	CAP to Deer Valley Rd	0.48	0.48	B	6LD	4LD	26,400	17,600	8,800
CAV	Deer Valley Rd to Cielo Grande Ave	0.50	0.50	B	6LD	5LD	27,500	22,917	4,583
CAV	Cielo Grande Ave to 835' n/o Cielo Grande Ave	0.16	0.16	B	6LD	5LD	8,800	7,333	1,467
CAV	835' n/o Cielo Grande to 405' s/o Pinnacle Peak	0.14	0.14	B	6LD	5LD	7,700	6,417	1,283
CAV	405' s/o Pinnacle Peak to Pinnacle Peak Rd	0.08	0.08	B	6LD	5LD	4,400	3,667	733
CAV	Pinnacle Peak Rd to HVR alignment	1.00	1.00	B	6LD	5LD	55,000	45,833	9,167
CAV	HVR alignment to 2400' s/o Jomax Rd	0.57	0.57	B	6LD	4LD	31,350	20,900	10,450
CAV	2400' s/o of Jomax Rd to Jomax Rd	0.45	0.45	B	6LD	4LD	24,750	16,500	0
CAV	Jomax Rd to Black Mtn Pkwy	0.62	0.62	B	6LD	4LD	34,100	22,733	0
CAV	Black Mtn Pkwy to Dynamite Blvd	0.51	0.51	B	6LD	4LD	28,050	18,700	0
CAV	Dynamite Blvd to 290' n/o Peak View Rd	0.61	0.61	B	6LD	4LD	33,550	22,367	0
CAV	290' n/o Peak View Rd to Tatum Blvd	0.53	0.53	B	6LD	4LD	29,150	19,433	0
CAV	Tatum Blvd to Desert Willow Pky	0.85	0.85	B	6LD	4LD	46,750	31,167	0
CAV	Desert Willow Pky to Lone Mtn Rd	0.25	0.25	B	6LD	4LD	13,750	9,167	0
CAV	Lone Mtn Rd to 925' n/o Lone Mtn Rd	0.18	0.18	B	6LD	4LD	9,900	6,600	0
CAV	925' n/o Lone Mtn Rd to Ashler Hills Dr	0.39	0.39	B	6LD	4LD	21,450	14,300	0
CAV	Ashler Hills Dr to Ocupado Dr	0.26	0.26	B	6LD	4LD	14,300	9,533	0
CAV	Ocupado Dr to Rancho Paloma	0.18	0.18	B	6LD	4LD	9,900	6,600	0
CAV	Rancho Paloma to 300' s/o Smokehouse Trl	0.40	0.40	B	6LD	4LD	22,000	14,667	0
CAV	300' s/o Smokehouse Trl to City Limits	0.21	0.21	B	6LD	4LD	11,550	7,700	0

Table 7 - 2019 Major Arterial Street Existing and 2020-2029 Planned Capacity - Northern Service Area

Planned Major Arterial Street Segment		Ultimate Length, "L _{Ult} " (miles)	Existing Length, "L ₂₀₁₉ " (miles)	Ultimate City Standard Cross Section, "XSEC _{ULT} "	Ultimate Lane Config., "LCON _{Ult} "	Existing Lane Config., "LCON ₂₀₁₉ "	Ultimate Capacity, "VMC _{Ult} " (veh-miles)	Existing Capacity, "VMC ₂₀₁₉ " (veh-miles)	2020-29 Planned Additional Capacity (veh-miles)
Deer Valley Rd (DEE), Cave Creek Rd to Scottsdale Rd									
DEE	CAP to Cave Creek Rd	0.37	0.37	B	6LD	6LD	20,350	20,350	0
DEE	Cave Creek Rd to 28th St	0.58	0.58	B	6LD	6LD	31,900	31,900	0
DEE	28th St to Black Mtn Pkwy	1.00	1.00	B	6LD	6LD	55,000	55,000	0
DEE	Black Mtn Pkwy to 40th St	1.00	1.00	A	6LD	6LD	55,000	55,000	0
DEE	40th St to Tatum Blvd	0.74	0.74	A	6LD	4LU-	40,700	20,350	20,350
DEE	Tatum Blvd to Marriott Dr	0.49	0.49	A	6LD	4LD	26,950	17,967	0
DEE	Marriott Dr to 56th St	0.54	0.54	A	6LD	4LD	29,700	19,800	0
DEE	56th St to Wash e/o Superblock 1 South	0.61	0.61	A	6LD	6LD	33,550	33,550	0
DEE	Wash e/o Superblock 1 South to 64th St	0.56	0.00	A	6LD	DNE	30,800	0	30,800
DEE	64th St to Scottsdale Rd	1.09	0.00	A	6LD	DNE	59,950	0	59,950
Desert Peak Pkwy (DPK), Happy Valley Rd to Cave Creek Rd									
DPK	Happy Valley Rd to Cave Creek Rd	0.68	0.68	A	6LD	6LD	37,400	37,400	0
Happy Valley Rd (HVR), CAP (@ +/- 7th Ave align.) to Desert Peak Pkwy									
HVR	CAP to 7th St	1.00	1.00	A	6LD	2LU-	55,000	13,750	13,750
HVR	7th St to 16th St align.	1.00	0.00	A	6LD	DNE	55,000	0	0
HVR	16th St align. to e/o Cave Creek Wash	0.24	0.00	A	4LD	DNE	8,800	0	0
HVR	e/o Cave Creek Wash to Desert Peak Pkwy	0.92	0.92	A	4LD	4LD	33,733	33,733	0
Lone Mountain Rd (LNM), Sonoran Desert Dr to Cave Creek Rd									
LNM	Sonoran Desert Dr to Black Mtn Blvd	1.47	0.00	A	6LD	DNE	80,850	0	0
LNM	Black Mtn Blvd to 705' w/o Cave Creek Rd	0.66	0.66	A	6LD	2LU-	36,300	9,075	0
LNM	705' w/o Cave Creek Rd to Cave Creek Rd	0.13	0.13	A	6LD	2LU+	7,150	2,264	0
Pinnacle Peak Rd (PIN), Cave Creek Rd to Scottsdale Rd									
PIN	Cave Creek Rd to Black Mtn Blvd	1.18	1.18	A	6LD	DNE	64,900	0	64,900
PIN	Black Mtn Blvd to 2500' w/o Cashman Dr	0.25	0.25	A	6LD	DNE	13,750	0	13,750
PIN	2500' w/o Cashman Dr to 1140' w/o Cashman	0.27	0.27	A	6LD	DNE	14,850	0	14,850
PIN	1140' w/o Cashman Dr to 40th St	0.80	0.80	A	6LD	DNE	44,000	0	44,000
PIN	40th St to Tatum Blvd	0.81	0.81	A	6LD	DNE	44,550	0	44,550
PIN	Tatum Blvd to 56th St	1.00	1.00	A	6LD	DNE	55,000	0	0
PIN	56th St to 64th St	0.50	0.50	A	6LD	DNE	27,500	0	0
PIN	64th St to Scottsdale Rd	1.00	1.00	A	6LD	DNE	55,000	0	0
Sonoran Desert Drive (SDD), West limit of fee area (16th St align) to Cave Creek Rd									
SDD	West Limit of Fee Area to Lone Mtn Rd	1.80	1.80	A	6LD	2LU+	99,000	31,350	0
SDD	Lone Mtn Rd to 1.16 mi w/o Cave Creek Rd	0.90	0.90	A	6LD	2LU+	49,500	15,675	0
SDD	1.16 mi w/o Cave Creek Rd to Cave Creek Rd	1.16	1.16	A	6LD	2LD	63,800	22,729	0
Tatum Blvd (TAT), CAP to Lone Mtn Rd									
TAT	CAP to Saguaro	0.67	0.67	A	6LD	4LD	36,850	24,567	12,283
TAT	Saguaro to Mayo Blvd	0.21	0.21	A	6LD	4LD	11,550	7,700	3,850
TAT	Mayo Blvd to 420' s/o Loop 101	0.22	0.22	A	6LD	4LU+	12,100	7,663	4,437
TAT	420' s/o Loop 101 to 360' n/o Loop 101	0.15	0.15	A	6LD	6LD	8,250	8,250	0
TAT	360' n/o Loop 101 to Deer Valley Rd	0.45	0.45	A	6LD	6LD	24,750	24,750	0
TAT	Deer Valley Rd to Abraham Dr	0.16	0.16	A	6LD	5LD	8,800	7,333	0
TAT	Abraham Dr to 510' n/o Ranger Dr	1.02	1.02	A	6LD	4LD	56,100	37,400	0
TAT	510' n/o Ranger Dr to Pinnacle Peak Rd	0.18	0.18	A	6LD	4LU+	9,900	6,270	0
TAT	Pinnacle Peak Rd to 40th St	0.55	0.55	A	6LD	4LU-	30,250	15,125	0
TAT	40th St to Happy Valley Rd	0.35	0.35	A	6LD	4LU-	19,250	9,625	0
TAT	Happy Valley Rd to 280' s/o Prickly Pear Trl	0.71	0.71	A	6LD	4LU-	39,050	19,525	0
TAT	280' s/o Prickly Pear Trl to Jomax Rd	0.42	0.42	A	6LD	5LD	23,100	19,250	0
TAT	Jomax Rd to Dynamite Blvd	1.00	1.00	A	6LD	4LU-	55,000	27,500	0
TAT	Dynamite Blvd to Dixileta Dr	0.63	0.63	A	6LD	4LD	34,650	23,100	0
TAT	Dixileta Dr to Cave Creek Rd	0.76	0.76	A	6LD	4LD	41,800	27,867	0
TAT	Cave Creek Rd to Black Mtn Pkwy	0.32	0.32	B	6LD	4LD	17,600	11,733	0
TAT	Black Mtn Pkwy to Lone Mtn Rd	0.92	0.00	A	6LD	DNE	50,600	0	0
64th St (64S), CAP to Happy Valley Rd									
64S	CAP to Mayo Blvd	1.00	0.00	D	4LU+	DNE	34,833	0	0
64S	Mayo Blvd to 385' n/o Loop 101	0.43	0.43	A	6LD	6LD	23,650	23,650	0
64S	385' n/o Loop 101 to Deer Valley Rd	0.47	0.00	A	6LD	DNE	25,850	0	25,850
64S	Deer Valley Rd to N. boundary of SB 1S	1.50	0.00	A	6LD	DNE	82,500	0	82,500
64S	N. boundary of SB 1S to Pinnacle Peak Rd	0.50	0.00	A	6LD	DNE	27,500	0	0
64S	Pinnacle Peak Rd to Happy Valley Rd	0.99	0.00	CM	4LD	DNE	36,300	0	0
Total Northern Service Area Capacity		128.66	59.83	-	-	-	6,872,886	1,638,657	834,812

Table 8 - 2019 Major Arterial Street Existing and 2020-2029 Planned Capacity - Southwest Service Area

Planned Major Arterial Street Segment		Ultimate Length, "L _{ult} " (miles)	Existing Length, "L ₂₀₁₉ " (miles)	Ultimate City Standard Cross Section, "XSEC _{ULT} "	Ultimate Lane Config., "LCON _{ult} "	Existing Lane Config., "LCON ₂₀₁₉ "	Ultimate Capacity, "VMC _{ult} " (veh-miles)	Existing Capacity, "VMC ₂₀₁₉ " (veh-miles)	2020-29 Planned Additional Capacity (veh-miles)
19th Ave (19A), Baseline Rd to Southern Ave									
19A	Baseline Rd to Fremont Rd	0.25	0.25	D	4LU+	4LU+	8,708	8,708	0
19A	Fremont Rd to Vineyard Rd	0.25	0.25	D	4LU+	4LU+	8,708	8,708	0
19A	Vineyard Rd to Alta Vista Rd	0.25	0.25	D	4LU+	4LU+	8,708	8,708	0
19A	Alta Vista Rd to 170' s/o Lynne	0.14	0.14	D	4LU+	4LU+	4,877	4,877	0
19A	170' s/o Lynne Ln to Lynne Ln	0.03	0.03	D	4LU+	4LU+	1,045	1,045	0
19A	Lynne Ln to Southern Ave	0.08	0.08	D	4LU+	4LU+	2,787	2,787	0
51st Ave (51A), City Limits to I-10									
51A	City Limits to Estrella Dr	0.60	0.60	CM	4LD	2LU-	22,000	8,250	13,750
51A	Estrella Dr to Elliot Rd	1.00	1.00	CM	4LD	2LU-	36,667	13,750	22,917
51A	Elliot Rd to Dobbins Rd	1.00	1.00	CM	4LD	2LU-	36,667	13,750	22,917
51A	Dobbins Rd to South Mountain Ave	0.50	0.50	CM	4LD	4LD	18,333	18,333	0
51A	South Mountain Ave to 130' s/o Beverly Rd	0.24	0.24	CM	4LD	4LD	8,800	8,800	0
51A	130' s/o Beverly Rd to Beverly Rd	0.03	0.03	CM	4LD	4LD	1,100	1,100	0
51A	Beverly Rd to Baseline Rd	0.24	0.24	CM	6LD	6LD	13,200	13,200	0
51A	Baseline Rd to 905' n/o Baseline Rd	0.17	0.17	CM	6LD	5LD	9,350	7,792	0
51A	905' n/o Baseline Rd to Burgess Ln	0.66	0.66	CM	4LD	4LD	24,200	24,200	0
51A	Burgess Ln to Southern Ave	0.17	0.17	CM	6LD	6LD	9,350	9,350	0
51A	Southern Ave to Broadway Rd	0.78	0.78	CM	4LD	4LD	28,600	28,600	0
51A	Broadway Rd to Salt River Bridge	0.12	0.12	CM	4LD	4LU+	4,400	4,180	0
51A	Salt River Bridge to Broadway Rd	0.45	0.45	CM	4LD	4LU+	16,500	15,675	0
51A	Broadway Rd to Lower Buckeye Rd	0.74	0.74	CM	4LD	4LU+	27,133	25,777	0
51A	Lower Buckeye Rd to N. Limit of Fee Area	0.50	0.50	D	4LU+	4LU+	17,417	17,417	0
51A	S. Limit of Fee Area to Buckeye Rd	0.44	0.44	D	4LU+	4LU+	15,327	15,327	0
51A	Buckeye Rd to Van Buren St	1.00	1.00	D	4LU+	4LU+	34,833	34,833	0
51A	Van Buren St to I-10	0.79	0.79	D	5LU+	5LU+	34,398	34,398	0
75th Ave (75A), Baseline Rd to Buckeye Rd									
75A	Baseline Rd to 1300' n/o Baseline Rd	0.25	0.25	D	4LU+	2LU-	8,708	3,438	5,271
75A	1300' n/o Baseline Rd to 350' n/o Vineyard	0.33	0.33	D	4LU+	2LU+	11,413	5,707	5,707
75A	350' n/o Vineyard to Salt River	0.42	0.42	D	4LU+	2LU-	14,514	5,729	8,785
75A	Salt River to Broadway Rd	0.93	0.00	D	4LU+	DNE	32,395	0	32,395
75A	Broadway Rd to 1325' n/o Broadway Rd	0.25	0.25	CM	4LD	4LU+	9,201	8,708	493
75A	1325' n/o Broadway Rd to 1300' s/o Lower Buckeye Rd	0.50	0.50	CM	4LD	4LU+	18,333	17,417	917
75A	1300' s/o Lower Buckeye Rd to 1060' s/o Lower Buckeye Rd	0.05	0.05	CM	4LD	4LU+	1,833	1,742	92
75A	1060' s/o Lower Buckeye Rd to Lower Buckeye Rd	0.20	0.20	CM	4LD	4LU+	7,333	6,967	367
75A	Lower Buckeye Rd to 900' n/o Lower Buckeye Rd	0.17	0.17	D	4LU+	3LU+	5,922	4,441	1,480
75A	900' n/o Lower Buckeye Rd to 1650' n/o Lower Buckeye Rd	0.14	0.14	D	4LU+	3LU+	4,877	3,658	1,219
75A	1650' n/o Lower Buckeye Rd to Durango St	0.19	0.19	D	4LU+	4LU+	6,618	6,618	0
75A	Durango St to Buckeye Rd	0.48	0.48	D	4LU+	4LU+	16,720	16,720	0
75th Ave (75A), Buckeye Rd to Van Buren St, east half (northbound lanes) only									
75A	Buckeye Rd to Van Buren St	1.01	1.01	CM-1/2	4LD-1/2	4LU+-1/2	18,517	17,591	0
75th Ave (75A), Van Buren St to I-10									
75A	Van Buren St to Roosevelt St	0.48	0.48	D	4LU+	4LU+	16,720	16,720	0
75A	Roosevelt St to I-10	0.21	0.21	A	6LD	4LU+	11,550	7,315	0
Baseline Rd (BLR), 75th Ave to 7th Ave									
BLR	75th Ave to 71st Ave	0.50	0.50	B	6LD	4LD	27,500	18,333	9,167
BLR	71st Ave to 67th Ave	0.50	0.50	B	6LD	3LU+	27,500	13,063	14,438
BLR	67th Ave to 63rd Ave	0.44	0.44	B	6LD	3LU+	24,200	11,495	12,705
BLR	63rd Ave to 59th Ave	0.56	0.56	B	6LD	2LU-	30,800	7,700	23,100
BLR	59th Ave to 55th Ave	0.49	0.49	B	6LD	2LU-	26,950	6,738	20,213
BLR	55th Ave to 890' w/o 51st Ave	0.33	0.33	B	6LD	4LD	18,150	12,100	6,050
BLR	890' w/o 51st Ave to 51st Ave	0.17	0.17	B	6LD	4LD	9,350	6,233	3,117
BLR	51st Ave to 47th Ave	0.49	0.49	B	6LD	4LU+	26,950	17,068	9,882
BLR	47th Ave to 43rd Ave	0.49	0.49	B	6LD	4LU+	26,950	17,068	9,882
BLR	43rd Ave to 1330' w/o 35th Ave	0.75	0.75	CM	4LD	4LD	27,500	27,500	0
BLR	1330' w/o 35th Ave to 35th Ave	0.25	0.25	CM	4LD	4LD	9,167	9,167	0
BLR	35th Ave to 660' w/o 31st Ave	0.38	0.38	CM	4LD	4LU+	13,933	13,237	697
BLR	660' w/o 31st Ave to 125' e/o 29th Dr	0.38	0.38	CM	4LD	4LU+	13,933	13,237	697
BLR	125' e/o 29th Dr to 27th Ave	0.25	0.25	CM	4LD	4LU+	9,167	8,708	458
BLR	27th Ave to 19th Ave	1.00	1.00	CM	4LD	4LU+	36,667	34,833	1,833
BLR	19th Ave to 7th Ave	1.00	1.00	CM	4LD	4LU+	36,667	34,833	1,833

Table 8 - 2019 Major Arterial Street Existing and 2020-2029 Planned Capacity - Southwest Service Area

Planned Major Arterial Street Segment	Ultimate Length, "L _{ult} " (miles)	Existing Length, "L ₂₀₁₉ " (miles)	Ultimate City Standard Cross Section, "XSEC _{ult} "	Ultimate Lane Config., "LCON _{ult} "	Existing Lane Config., "LCON ₂₀₁₉ "	Ultimate Capacity, "VMC _{ult} " (veh-miles)	Existing Capacity, "VMC ₂₀₁₉ " (veh-miles)	2020-29 Planned Additional Capacity (veh-miles)
Broadway Rd (BWR), 43rd Ave to 23rd Ave								
BWR 43rd Ave to 310' w/o 35th Ave	0.98	0.98	B	6LD	2LU+	53,900	17,068	36,832
BWR 310' w/o 35th Ave to 35th Ave	0.06	0.06	B	6LD	3LU+	3,300	1,568	1,733
BWR 35th Ave to 27th Ave	1.00	1.00	B	6LD	6LD	55,000	55,000	0
BWR 27th Ave to 23rd Ave	0.49	0.49	B	6LD	6LD	26,950	26,950	0
Buckeye Rd (BR), 107th Ave to 75th Ave, south half (eastbound lanes) only								
BR 107th Ave to 1980' e/o 107th Ave	0.37	0.37	A-1/2	6LD-1/2	4LU+ ^{1/2}	10,175	6,444	3,731
BR 1980' e/o 107th Ave to 99th Ave	0.63	0.63	A-1/2	6LD-1/2	4LU+ ^{1/2}	17,325	10,973	6,353
BR 99th Ave to 91st Ave	1.00	1.00	A-1/2	6LD-1/2	4LU+ ^{1/2}	27,500	17,417	10,083
BR 91st Ave to 83rd Ave	0.98	0.98	A-1/2	6LD-1/2	4LU+ ^{1/2}	26,950	17,068	9,882
BR 83rd Ave to 1300' e/o 83rd Ave	0.25	0.25	A-1/2	6LD-1/2	4LU+ ^{1/2}	6,875	4,354	2,521
BR 1300' e/o 83rd Ave to 79th Ave	0.25	0.25	A-1/2	6LD-1/2	4LU+ ^{1/2}	6,875	4,354	2,521
BR 79th Ave to 75th Ave	0.50	0.50	A-1/2	6LD-1/2	4LU+ ^{1/2}	13,750	8,708	5,042
Buckeye Rd (BR), 75th Ave to 43rd Ave - Full Street								
BR 75th Ave to 69th Ave	0.75	0.75	D	4LU+	4LU+	26,125	26,125	0
BR 69th Ave to 300' w/o 67th Ave	0.19	0.19	D	4LU+	4LU+	6,618	6,618	0
BR 300' w/o 67th Ave to 67th Ave	0.06	0.06	D	4LU+	4LU+	2,090	2,090	0
BR 67th Ave to 530' e/o 67th Ave	0.10	0.10	D	4LU+	4LU+	3,483	3,483	0
BR 530' e/o 67th Ave to 340' w/o 65th Ave	0.15	0.15	D	4LU+	4LU-	5,225	4,125	1,100
BR 340' w/o 65th Ave to 63rd Ave	0.24	0.24	D	4LU+	4LU-	8,360	6,600	1,760
BR 63rd Ave to 1325' w/o 59th Ave	0.25	0.25	D	4LU+	4LU-	8,708	6,875	1,833
BR 1325' w/o 59th Ave to 59th Ave	0.25	0.25	D	4LU+	4LU-	8,708	6,875	1,833
BR 59th Ave to 55th Ave	0.50	0.50	D	4LU+	4LU+	17,417	17,417	0
BR 55th Ave to 51st Ave	0.50	0.50	D	4LU+	4LU+	17,417	17,417	0
BR 51st Ave to 43rd Ave	1.00	1.00	D	4LU+	4LU+	34,833	34,833	0
Dobbins Rd, 7th Ave to Carver Rd (W Limit of Fee Area)								
DBN 7th Ave to 135' w/o 10th Dr	0.25	0.25	C	4LU+	2LU+	8,708	4,354	0
DBN 135' w/o 10th Dr to 470' e/o 17th Dr	0.40	0.40	C	4LU+	2LU-	13,933	5,500	0
DBN 470' e/o 17th Ave to 17th Ave	0.09	0.09	C	4LU+	2LU+	3,135	1,568	0
DBN 17th Ave to 19th Ave	0.25	0.25	C	4LU+	2LU-	8,708	3,438	0
DBN 19th Ave to 27th Ave	1.00	1.00	C	4LU+	2LU-	34,833	13,750	0
DBN 27th Ave to 33rd Ave	0.74	0.74	C	4LU+	2LU-	25,777	10,175	15,602
DBN 33rd Ave to 35th Ave	0.25	0.25	C	4LU+	2LU+	8,708	4,354	4,354
DBN 35th Ave to 35th Glen	0.10	0.10	C	4LU+	2LU+	3,483	1,742	1,742
DBN 35th Glen to 39th Ave Align	0.40	0.40	C	4LU+	2LU-	13,933	5,500	8,433
DBN 39th Ave Align to 43rd Ave	0.50	0.50	C	4LU+	2LU+	17,417	8,708	8,708
DBN 43rd Ave to 48th Dr	0.65	0.65	C	4LU+	2LU+	22,642	11,321	11,321
DBN 48th Dr to 51st Ave	0.35	0.35	C	4LU+	3LU+	12,192	9,144	3,048
DBN 51st Ave to 270' w/o 53rd Ave	0.31	0.31	C	4LU+	3LU+	10,798	8,099	2,700
DBN 270' w/o 53rd Ave to 360' w/o 56th Glen	0.48	0.48	C	4LU+	2LU+	16,720	8,360	8,360
DBN 360' w/o 56th Glen to 59th Ave	0.20	0.20	C	4LU+	2LU-	6,967	2,750	4,217
DBN 59th Ave to 67th Ave	0.96	0.96	C	4LU+	2LU-	33,440	13,200	20,240
DBN 67th Ave to Carver (W Limit of Fee Area)	0.29	0.29	C	4LU+	2LU-	10,102	3,988	6,114
Total Southwest Service Area Capacity	41.74	40.80	-	-	-	1,582,228	1,121,959	410,439

Table 9 - 2020-2029 Major Arterial Street Infrastructure Improvements Plan (IIP) - Northern Service Area

Street	Segment	Ultimate City Standard Cross Section, "XSEC _{ult} "	Ultimate Lane Config., "LCON _{ult} "	Ultimate Length, "L _{ult} " (miles)	Percent Physically Complete (pavement & concrete in place)	Percent Functionally Complete (striped number of thru lanes)	Preliminary Estimate of Ultimate Needed Roadway Construction Cost	Value of Existing Roadway	2020-29 IIP Planned Improvement	Roadway Construction Cost Accounted for in 2020-2029 Impact Fee
39th Ave/Vision Way (39A), Pioneer Rd to Anthem Way										
39A	Pioneer Road to Daisy Mtn Rd	C	4LU+	1.35	0.0%	0.0%	\$4,153,698	\$0	No	\$0
39A	Daisy Mtn Rd to 2640' s/o Anthem Way	C	4LU+	2.46	0.0%	0.0%	\$7,568,961	\$0	No	\$0
39A	2640' south to Anthem Way	C	4LU+	0.50	100.0%	100.0%	\$0	\$1,372,796	No	\$0
43rd Ave (43A), Dixileta Dr to Carefree Hwy										
43A	Dixileta Dr to Dove Valley Rd	A	6LD	1.89	0.0%	0.0%	\$7,460,007	\$0	No	\$0
43A	Dove Valley Rd to Carefree Hwy	A	6LD	1.00	0.0%	0.0%	\$3,947,094	\$0	No	\$0
51st Ave (51A), Inspiration Pkwy (Jomax Rd align.) to Pyramid Peak Pkwy										
51A	Jomax Rd to CAP	A	6LD	0.83	77.8%	66.7%	\$710,477	\$1,510,075	No	\$0
51A	CAP to Dixileta Dr	A	6LD	1.57	0.0%	0.0%	\$6,196,937	\$0	No	\$0
51A	Dixileta Dr to Dove Valley Rd	A	6LD	1.76	0.0%	0.0%	\$6,946,885	\$0	No	\$0
51A	Dove Valley Rd to Carefree Hwy	A	6LD	1.00	0.0%	0.0%	\$3,947,094	\$0	No	\$0
51A	Carefree Hwy to Pioneer Rd	A	6LD	2.00	0.0%	0.0%	\$7,894,187	\$0	No	\$0
51A	Pioneer Rd to Pyramid Peak Pkwy	A	6LD	1.83	0.0%	0.0%	\$7,223,181	\$0	No	\$0
Anthem Way (ANT), Avenue A to I-17										
ANT	Avenue A to New River Rd	B	6LD	1.16	0.0%	0.0%	\$4,254,046	\$0	No	\$0
ANT	New River Rd to Avenue B	B	6LD	0.67	0.0%	0.0%	\$2,457,078	\$0	No	\$0
ANT	Avenue B to Pyramid Peak Pkwy	B	6LD	0.67	0.0%	0.0%	\$2,457,078	\$0	No	\$0
ANT	Pyramid Peak Pkwy to 43rd Ave	B	6LD	0.50	100.0%	66.7%	\$0	\$906,045	No	\$0
ANT	43rd Ave to I-17	B	6LD	0.31	100.0%	100.0%	\$0	\$851,133	No	\$0
Avenue A (AVA), Desert Hills Dr (@ west limit of fee area) to New River Rd (at north limit of fee area)										
AVA	New River Rd to Desert Hills Dr	B	6LD	1.00	0.0%	0.0%	\$3,667,281	\$0	No	\$0
AVA	Desert Hills Dr to Anthem Wy	B	6LD	2.99	0.0%	0.0%	\$10,965,170	\$0	No	\$0
AVA	Anthem Wy to Jenny Lin Rd	B	6LD	2.00	0.0%	0.0%	\$7,334,562	\$0	No	\$0
AVA	Jenny Lin Rd to New River Rd	B	6LD	1.33	0.0%	0.0%	\$4,877,484	\$0	No	\$0
Avenue C (AVC), New River Rd to Pioneer Rd										
AVC	New River Rd to Pioneer Rd	A	6LD	1.00	0.0%	0.0%	\$3,947,094	\$0	No	\$0
Carefree Hwy (CFH), west limit of fee area (@ +/- 73rd Ave align.) to Paloma Pkwy										
CFH	I-17 to North Valley Pkwy	A	6LD	0.36	77.8%	83.3%	\$315,767	\$823,677	Yes	\$315,767
CFH	North Valley Pkwy to Paloma Pkwy	A	6LD	1.11	66.7%	83.3%	\$1,460,425	\$2,553,400	Yes	\$1,460,425
Daisy Mountain Dr (DSY), west limit of fee area (@ Avenue A) to I-17										
DSY	Avenue A to New River Rd	A	6LD	1.17	0.0%	0.0%	\$4,618,100	\$0	No	\$0
DSY	New River Rd to Avenue B	A	6LD	0.50	0.0%	0.0%	\$1,973,547	\$0	No	\$0
DSY	Avenue B to Pyramid Peak Pkwy	A	6LD	1.00	0.0%	0.0%	\$3,947,094	\$0	No	\$0
DSY	Pyramid Peak Pkwy to City Limit	A	6LD-1/2	1.50	0.0%	0.0%	\$5,920,640	\$0	Yes	\$5,920,640
DSY	City Limit to I-17	A	6LD-1/2	0.43	0.0%	0.0%	\$1,697,250	\$0	Yes	\$1,697,250
Dixileta Dr (DXD), CAP (@ +/- 73rd Ave align.) to I-17										
DXD	CAP to 67th Ave	A	6LD	0.72	0.0%	0.0%	\$2,841,907	\$0	No	\$0
DXD	67th Ave to 51st Ave	A	6LD	2.05	0.0%	0.0%	\$8,091,542	\$0	No	\$0
DXD	51st Ave to I-17	A	6LD	2.50	0.0%	0.0%	\$9,867,734	\$0	No	\$0
Jenny Lin Rd (JLN), Avenue A to I-17										
JLN	Avenue A to New River Rd	B	6LD	0.83	0.0%	0.0%	\$3,043,843	\$0	No	\$0
JLN	New River Rd to I-17	B	6LD	1.12	0.0%	0.0%	\$4,107,355	\$0	No	\$0
New River Rd (NRV), Cloud Rd to I-17 (north of Jenny Lin Rd)										
NRV	Cloud Rd to Avenue C	B	6LD	1.00	22.2%	0.0%	\$2,860,479	\$0	No	\$0
NRV	Avenue C to Avenue A	B	6LD	1.00	22.2%	0.0%	\$2,860,479	\$0	No	\$0
NRV	Avenue A to Pioneer Rd	A	6LD	0.67	22.2%	0.0%	\$2,553,611	\$0	No	\$0
NRV	Pioneer Rd to Desert Hills Dr	A	6LD	0.67	22.2%	0.0%	\$2,052,489	\$0	No	\$0
NRV	Desert Hills Dr to Daisy Mtn Dr	A	6LD	1.67	22.2%	0.0%	\$5,131,222	\$0	No	\$0
NRV	Daisy Mtn Dr to Anthem Wy	A	6LD	1.50	22.2%	0.0%	\$4,618,100	\$0	No	\$0
NRV	Anthem Wy to Jenny Lin Rd	A	6LD	0.83	22.2%	0.0%	\$2,565,611	\$0	No	\$0
NRV	Jenny Lin Rd to I-17	A	6LD	1.50	22.2%	0.0%	\$4,618,100	\$0	No	\$0
North Valley Pkwy (NVP), CAP to Carefree Hwy										
NVP	Jomax Rd to 500' s/o CAP	A	6LD	0.15	77.8%	63.3%	\$118,413	\$274,559	No	\$0
NVP	500' s/o CAP to CAP	A	6LD	0.10	100.0%	83.3%	\$0	\$219,647	No	\$0
NVP	CAP to Quail Track Dr	A	6LD	0.12	100.0%	83.3%	\$0	\$274,559	No	\$0
NVP	Quail Track Dr to Copperhead Tr	A	6LD	0.58	100.0%	100.0%	\$0	\$1,592,443	No	\$0
NVP	Copperhead Tr to 660' n/o Casino Ave	A	6LD	0.61	77.8%	82.7%	\$552,593	\$1,400,252	No	\$0
NVP	660' n/o Casino Ave to Dixileta Dr	A	6LD	0.74	100.0%	83.3%	\$0	\$1,702,267	No	\$0
NVP	Dixileta Dr to 200' s/o Rancho Tierra	A	6LD	0.71	33.3%	50.0%	\$1,855,134	\$988,413	Yes	\$1,855,134
NVP	200' s/o Rancho Tierra to Sonoran Desert Dr	A	6LD	0.40	33.3%	66.7%	\$1,065,715	\$741,310	Yes	\$1,065,715
NVP	Sonoran Desert Dr to Dove Valley Rd	A	6LD	1.12	77.8%	66.7%	\$986,773	\$2,059,194	Yes	\$986,773
NVP	Dove Valley Rd to 27th Dr	A	6LD	0.26	77.8%	66.7%	\$236,826	\$466,751	No	\$0
NVP	27th Dr to exist. north end of road	A	6LD	0.41	77.8%	66.7%	\$355,238	\$768,766	No	\$0
NVP	Exist. north end of road to Carefree Hwy	A	6LD	0.59	0.0%	0.0%	\$2,328,785	\$0	Yes	\$2,328,785
Pioneer Rd (PIO), New River Rd to I-17										
PIO	New River Rd to Avenue C	B	6LD	1.00	0.0%	0.0%	\$3,667,281	\$0	No	\$0
PIO	Avenue C to Cloud Rd	B	6LD	0.50	0.0%	0.0%	\$1,833,640	\$0	No	\$0
PIO	Cloud Rd to Pyramid Peak Pkwy	B	6LD	0.76	0.0%	0.0%	\$2,787,134	\$0	No	\$0
PIO	Pyramid Peak Pkwy to 51st Ave	B	6LD	1.00	0.0%	0.0%	\$3,667,281	\$0	No	\$0
PIO	51st Ave to 39th Ave	B	6LD	2.00	0.0%	0.0%	\$7,334,562	\$0	No	\$0
PIO	39th Ave to I-17	B	6LD	0.33	22.2%	25.0%	\$953,493	\$219,647	No	\$0

Table 9 - 2020-2029 Major Arterial Street Infrastructure Improvements Plan (IIP) - Northern Service Area

Street	Segment	Ultimate City Standard Cross Section, "XSEC _{ult} "	Ultimate Lane Config., "LCON _{ult} "	Ultimate Length, "L _{ult} " (miles)	Percent Physically Complete (pavement & concrete in place)	Percent Functionally Complete (striped number of thru lanes)	Preliminary Estimate of Ultimate Needed Roadway Construction Cost	Value of Existing Roadway	2020-29 IIP Planned Improvement	Roadway Construction Cost Accounted for in 2020-2029 Impact Fee
Sonoran Desert Drive (SDD), West limit of fee area (16th St align) to Cave Creek Rd										
SDD	West Limit of Fee Area to Lone Mtn Rd	A	6LD	1.80	33.3%	31.7%	\$4,736,512	\$1,564,987	No	\$0
SDD	Lone Mtn Rd to 1.16 mi w/o Cave Creek Rd	A	6LD	0.90	33.3%	31.7%	\$2,368,256	\$796,222	No	\$0
SDD	1.16 mi w/o Cave Creek Rd to Cave Creek Rd	A	6LD	1.16	33.3%	35.6%	\$3,039,262	\$1,125,692	No	\$0
Tatum Blvd (TAT), CAP to Lone Mtn Rd										
TAT	CAP to Saguario	A	6LD	0.67	55.6%	66.7%	\$1,184,128	\$1,235,516	Yes	\$1,184,128
TAT	Saguario to Mayo Blvd	A	6LD	0.21	55.6%	66.7%	\$355,238	\$384,383	Yes	\$355,238
TAT	Mayo Blvd to 420' s/o Loop 101	A	6LD	0.22	55.6%	63.3%	\$394,709	\$384,383	Yes	\$394,709
TAT	420' s/o Loop 101 to 360' n/o Loop 101	A	6LD	0.15	100.0%	100.0%	\$0	\$411,839	No	\$0
TAT	360' n/o Loop 101 to Deer Valley Rd	A	6LD	0.45	100.0%	100.0%	\$0	\$1,235,516	No	\$0
TAT	Deer Valley Rd to Abraham Dr	A	6LD	0.16	88.9%	83.3%	\$78,942	\$356,927	No	\$0
TAT	Abraham Dr to 510' n/o Ranger Dr	A	6LD	1.02	77.8%	66.7%	\$907,832	\$1,867,002	No	\$0
TAT	510' N/O Ranger Dr to Pinnacle Peak Rd	A	6LD	0.18	77.8%	66.7%	\$157,884	\$329,471	No	\$0
TAT	Pinnacle Peak Rd to 40th St	A	6LD	0.55	77.8%	66.7%	\$473,651	\$1,015,869	No	\$0
TAT	40th St to Happy Valley Rd	A	6LD	0.35	77.8%	66.7%	\$315,767	\$631,486	No	\$0
TAT	Happy Valley Rd to 280' S/O Prickly Pear Tri	A	6LD	0.71	77.8%	66.7%	\$631,535	\$1,290,428	No	\$0
TAT	280' S/O Prickly Pear Tri to Jomax Rd	A	6LD	0.42	77.8%	83.3%	\$355,238	\$960,957	No	\$0
TAT	Jomax Rd to Dynamite Blvd	A	6LD	1.00	77.8%	66.7%	\$868,361	\$1,839,546	No	\$0
TAT	Dynamite Blvd to Dixileta Dr	A	6LD	0.63	77.8%	66.7%	\$552,593	\$1,153,148	No	\$0
TAT	Dixileta Dr to Cave Creek Rd	A	6LD	0.76	77.8%	66.7%	\$671,006	\$1,400,252	No	\$0
TAT	Cave Creek Rd to Black Mtn Pkwy	B	6LD	0.32	100.0%	66.7%	\$0	\$576,574	No	\$0
TAT	Black Mtn Pkwy to Lone Mtn Rd	A	6LD	0.92	0.0%	0.0%	\$3,631,326	\$0	No	\$0
64th St (64S), CAP to Happy Valley Rd										
64S	CAP to Mayo Blvd	D	4LU+	1.00	0.0%	0.0%	\$2,745,591	\$0	No	\$0
64S	Mayo Blvd to 385' n/o Loop 101	A	6LD	0.43	100.0%	100.0%	\$0	\$1,180,604	No	\$0
64S	385' n/o Loop 101 to Deer Valley Rd	A	6LD	0.47	0.0%	0.0%	\$1,855,134	\$0	Yes	\$1,855,134
64S	Deer Valley Rd to N. boundary of SB 1S	A	6LD	1.50	0.0%	0.0%	\$5,920,640	\$0	Yes	\$5,920,640
64S	N. boundary of SB 1S to Pinnacle Peak Rd	A	6LD	0.50	0.0%	0.0%	\$1,973,547	\$0	No	\$0
64S	Pinnacle Peak Rd to Happy Valley Rd	CM	4LD	0.99	0.0%	0.0%	\$2,974,792	\$0	No	\$0
Total Northern Service Area 2020-2029 IIP Costs							\$343,586,323	\$ 85,332,980	-	\$66,215,251

Table 10 - 2020-2029 Major Arterial Street Infrastructure Improvements Plan (IIP) - Southwest Service Area

Street	Segment	Ultimate City Standard Cross Section, "XSEC _{ult} "	Ultimate Lane Config., "LCON _{ult} "	Ultimate Length, "L _{ult} " (miles)	Percent Physically Complete (pavement & concrete in place)	Percent Functionally Complete (striped number of thru lanes)	Preliminary Estimate of Ultimate Needed Roadway Construction Cost	Value of Existing Roadway	2020-29 IIP Planned Improvement	Roadway Construction Cost Accounted for in 2020-2029 Impact Fee
19th Ave (19A), Baseline Rd to Southern Ave										
19A	Baseline Rd to Fremont Rd	D	4LU+	0.25	100.0%	100.0%	\$0	\$686,398	No	\$0
19A	Fremont Rd to Vineyard Rd	D	4LU+	0.25	100.0%	100.0%	\$0	\$686,398	No	\$0
19A	Vineyard Rd to Alta Vista Rd	D	4LU+	0.25	100.0%	100.0%	\$0	\$686,398	No	\$0
19A	Alta Vista Rd to 170' s/o Lynne	D	4LU+	0.14	100.0%	100.0%	\$0	\$384,383	No	\$0
19A	170' s/o Lynne Ln to Lynne Ln	D	4LU+	0.03	100.0%	100.0%	\$0	\$82,368	No	\$0
19A	Lynne Ln to Southern Ave	D	4LU+	0.08	100.0%	100.0%	\$0	\$219,647	No	\$0
51st Ave (51A), City Limits to I-10										
51A	City Limits to Estrella Dr	CM	4LD	0.60	28.6%	37.5%	\$1,292,081	\$631,486	Yes	\$1,292,081
51A	Estrella Dr to Elliot Rd	CM	4LD	1.00	28.6%	37.5%	\$2,133,436	\$1,043,325	Yes	\$2,133,436
51A	Elliot Rd to Dobbins Rd	CM	4LD	1.00	28.6%	37.5%	\$2,133,436	\$1,043,325	Yes	\$2,133,436
51A	Dobbins Rd to South Mountain Ave	CM	4LD	0.50	100.0%	100.0%	\$0	\$1,372,796	No	\$0
51A	South Mountain Ave to 130' s/o Beverly Rd	CM	4LD	0.24	100.0%	100.0%	\$0	\$658,942	No	\$0
51A	130' s/o Beverly Rd to Beverly Rd	CM	4LD	0.03	100.0%	100.0%	\$0	\$82,368	No	\$0
51A	Beverly Rd to Baseline Rd	CM	6LD	0.24	100.0%	100.0%	\$0	\$658,942	No	\$0
51A	Baseline Rd to 905' n/o Baseline Rd	CM	6LD	0.17	100.0%	83.3%	\$0	\$384,383	No	\$0
51A	905' n/o Baseline Rd to Burgess Ln	CM	4LD	0.66	100.0%	100.0%	\$0	\$1,812,090	No	\$0
51A	Burgess Ln to Southern Ave	CM	6LD	0.17	100.0%	100.0%	\$0	\$466,751	No	\$0
51A	Southern Ave to Broadway Rd	CM	4LD	0.78	100.0%	100.0%	\$0	\$2,141,561	No	\$0
51A	Broadway Rd to Salt River Bridge	CM	4LD	0.12	100.0%	95.0%	\$0	\$302,015	No	\$0
51A	Salt River Bridge to Broadway Rd	CM	4LD	0.45	100.0%	95.0%	\$0	\$1,180,604	No	\$0
51A	Broadway Rd to Lower Buckeye Rd	CM	4LD	0.74	100.0%	95.0%	\$0	\$1,921,914	No	\$0
51A	Lower Buckeye Rd to N. Limit of Fee Area	D	4LU+	0.50	100.0%	100.0%	\$0	\$1,372,796	No	\$0
51A	S. Limit of Fee Area to Buckeye Rd	D	4LU+	0.44	100.0%	100.0%	\$0	\$1,208,060	No	\$0
51A	Buckeye Rd to Van Buren St	D	4LU+	0.40	100.0%	100.0%	\$0	\$2,745,591	No	\$0
51A	Van Buren St to I-10	D	5LU+	0.79	100.0%	100.0%	\$0	\$2,169,017	No	\$0
75th Ave (75A), Baseline Rd to Buckeye Rd										
75A	Baseline Rd to 1300' n/o Baseline Rd	D	4LU+	0.25	42.9%	39.5%	\$384,383	\$274,559	Yes	\$384,383
75A	1300' n/o Baseline Rd to 350' n/o Vineyard	D	4LU+	0.33	100.0%	50.0%	\$0	\$439,295	Yes	\$0
75A	350' n/o Vineyard to Salt River	D	4LU+	0.42	28.6%	39.5%	\$823,677	\$439,295	Yes	\$823,677
75A	Salt River to Broadway Rd	D	4LU+	0.93	0.0%	0.0%	\$2,553,400	\$0	Yes	\$2,553,400
75A	Broadway Rd to 1325' n/o Broadway Rd	CM	4LD	0.25	100.0%	94.6%	\$0	\$658,942	Yes	\$0
75A	1325' n/o Broadway Rd to 1300' s/o Lower Buckeye Rd	CM	4LD	0.50	100.0%	95.0%	\$0	\$1,317,884	Yes	\$0
75A	1300' s/o Lower Buckeye Rd to 1060' s/o Lower Buckeye Rd	CM	4LD	0.05	100.0%	95.0%	\$0	\$137,280	Yes	\$0
75A	1060' s/o Lower Buckeye Rd to Lower Buckeye Rd	CM	4LD	0.20	100.0%	95.0%	\$0	\$521,662	Yes	\$0
75A	Lower Buckeye Rd to 900' n/o Lower Buckeye Rd	D	4LU+	0.17	71.4%	75.0%	\$137,280	\$356,927	Yes	\$137,280
75A	900' n/o Lower Buckeye Rd to 1650' n/o Lower Buckeye Rd	D	4LU+	0.14	71.4%	75.0%	\$109,824	\$302,015	Yes	\$109,824
75A	1650' n/o Lower Buckeye Rd to Durango St	D	4LU+	0.19	100.0%	100.0%	\$0	\$521,662	No	\$0
75A	Durango St to Buckeye Rd	D	4LU+	0.48	100.0%	100.0%	\$0	\$1,317,884	No	\$0
75th Ave (75A), Buckeye Rd to Van Buren St, east half (northbound lanes) only										
75A	Buckeye Rd to Van Buren St	CM-1/2	4LD-1/2	1.01	100.0%	95.0%	\$0	\$2,635,768	No	\$0
75th Ave (75A), Van Buren St to I-10										
75A	Van Buren St to Roosevelt St	D	4LU+	0.48	100.0%	100.0%	\$0	\$1,317,884	No	\$0
75A	Roosevelt St to I-10	A	6LD	0.21	100.0%	63.3%	\$0	\$356,927	No	\$0
Baseline Rd (BLR), 75th Ave to 7th Ave										
BLR	75th Ave to 71st Ave	B	6LD	0.50	77.8%	66.7%	\$403,401	\$906,045	Yes	\$403,401
BLR	71st Ave to 67th Ave	B	6LD	0.50	55.6%	47.5%	\$806,802	\$658,942	Yes	\$806,802
BLR	67th Ave to 63rd Ave	B	6LD	0.44	66.7%	47.5%	\$550,092	\$576,574	Yes	\$550,092
BLR	63rd Ave to 59th Ave	B	6LD	0.56	22.2%	25.0%	\$1,613,604	\$384,383	Yes	\$1,613,604
BLR	59th Ave to 55th Ave	B	6LD	0.49	77.8%	25.0%	\$403,401	\$329,471	Yes	\$403,401
BLR	55th Ave to 890' w/o 51st Ave	B	6LD	0.33	77.8%	66.7%	\$256,710	\$604,030	Yes	\$256,710
BLR	890' w/o 51st Ave to 51st Ave	B	6LD	0.17	88.9%	66.7%	\$73,346	\$302,015	Yes	\$73,346
BLR	51st Ave to 47th Ave	B	6LD	0.49	77.8%	63.3%	\$403,401	\$851,133	Yes	\$403,401
BLR	47th Ave to 43rd Ave	B	6LD	0.49	66.7%	63.3%	\$586,765	\$851,133	Yes	\$586,765
BLR	43rd Ave to 1330' w/o 35th Ave	CM	4LD	0.75	100.0%	100.0%	\$0	\$2,059,194	No	\$0
BLR	1330' w/o 35th Ave to 35th Ave	CM	4LD	0.25	88.9%	100.0%	\$90,145	\$686,398	Yes	\$90,145
BLR	35th Ave to 660' w/o 31st Ave	CM	4LD	0.38	85.7%	95.0%	\$150,242	\$988,413	Yes	\$150,242
BLR	660' w/o 31st Ave to 125' e/o 29th Dr	CM	4LD	0.38	100.0%	95.0%	\$0	\$988,413	Yes	\$0
BLR	125' e/o 29th Dr to 27th Ave	CM	4LD	0.25	85.7%	95.0%	\$120,194	\$658,942	Yes	\$120,194
BLR	27th Ave to 19th Ave	CM	4LD	1.00	100.0%	95.0%	\$0	\$2,608,312	Yes	\$0
BLR	19th Ave to 7th Ave	CM	4LD	1.00	100.0%	95.0%	\$0	\$2,608,312	Yes	\$0
Broadway Rd (BWR), 43rd Ave to 23rd Ave										
BWR	43rd Ave to 310' w/o 35th Ave	B	6LD	0.98	100.0%	31.7%	\$0	\$851,133	Yes	\$0
BWR	310' w/o 35th Ave to 35th Ave	B	6LD	0.06	100.0%	47.5%	\$0	\$82,368	Yes	\$0
BWR	35th Ave to 27th Ave	B	6LD	1.00	100.0%	100.0%	\$0	\$2,745,591	No	\$0
BWR	27th Ave to 23rd Ave	B	6LD	0.49	100.0%	100.0%	\$0	\$1,345,340	No	\$0
Buckeye Rd (BR), 107th Ave to 75th Ave, south half (eastbound lanes) only										
BR	107th Ave to 1980' e/o 107th Ave	A-1/2	6LD-1/2	0.37	55.6%	63.3%	\$439,295	\$631,486	Yes	\$439,295
BR	1980' e/o 107th Ave to 99th Ave	A-1/2	6LD-1/2	0.63	55.6%	63.3%	\$768,766	\$1,098,237	Yes	\$768,766
BR	99th Ave to 91st Ave	A-1/2	6LD-1/2	1.00	55.6%	63.3%	\$1,208,060	\$1,729,723	Yes	\$1,208,060
BR	91st Ave to 83rd Ave	A-1/2	6LD-1/2	0.98	55.6%	63.3%	\$1,208,060	\$1,702,267	Yes	\$1,208,060
BR	83rd Ave to 1300' e/o 83rd Ave	A-1/2	6LD-1/2	0.25	55.6%	63.3%	\$302,015	\$439,295	Yes	\$302,015
BR	1300' e/o 83rd Ave to 79th Ave	A-1/2	6LD-1/2	0.25	55.6%	63.3%	\$302,015	\$439,295	Yes	\$302,015
BR	79th Ave to 75th Ave	A-1/2	6LD-1/2	0.50	55.6%	63.3%	\$604,030	\$878,589	Yes	\$604,030

Table 10 - 2020-2029 Major Arterial Street Infrastructure Improvements Plan (IIP) - Southwest Service Area

Street	Segment	Ultimate City Standard Cross Section, "XSEC _{ult} "	Ultimate Lane Config., "LCON _{ult} "	Ultimate Length, "L _{ult} " (miles)	Percent Physically Complete (pavement & concrete in place)	Percent Functionally Complete (striped number of thru lanes)	Preliminary Estimate of Ultimate Needed Roadway Construction Cost	Value of Existing Roadway	2020-29 IIP Planned Improvement	Roadway Construction Cost Accounted for in 2020-2029 Impact Fee
Buckeye Rd (BR), 75th Ave to 43rd Ave - Full Street										
BR	75th Ave to 69th Ave	D	4LU+	0.75	100.0%	100.0%	\$0	\$2,059,194	No	\$0
BR	69th Ave to 300' w/o 67th Ave	D	4LU+	0.19	85.7%	100.0%	\$82,368	\$521,662	No	\$0
BR	300' w/o 67th Ave to 67th Ave	D	4LU+	0.06	100.0%	100.0%	\$0	\$164,735	No	\$0
BR	67th Ave to 530' e/o 67th Ave	D	4LU+	0.10	100.0%	100.0%	\$0	\$274,559	No	\$0
BR	530' e/o 67th Ave to 340' w/o 65th Ave	D	4LU+	0.15	57.1%	78.9%	\$164,735	\$329,471	Yes	\$164,735
BR	340' w/o 65th Ave to 63rd Ave	D	4LU+	0.24	85.7%	78.9%	\$82,368	\$521,662	Yes	\$82,368
BR	63rd Ave to 1325' w/o 59th Ave	D	4LU+	0.25	85.7%	78.9%	\$109,824	\$549,118	Yes	\$109,824
BR	1325' w/o 59th Ave to 59th Ave	D	4LU+	0.25	71.4%	78.9%	\$192,191	\$549,118	Yes	\$192,191
BR	59th Ave to 55th Ave	D	4LU+	0.50	100.0%	100.0%	\$0	\$1,372,796	No	\$0
BR	55th Ave to 51st Ave	D	4LU+	0.50	100.0%	100.0%	\$0	\$1,372,796	No	\$0
BR	51st Ave to 43rd Ave	D	4LU+	1.00	100.0%	100.0%	\$0	\$2,745,591	No	\$0
Dobbins Rd, 7th Ave to Carver Rd (W Limit of Fee Area)										
DBN	7th Ave to 135' w/o 10th Dr	C	4LU+	0.25	71.4%	50.0%	\$215,377	\$356,927	No	\$0
DBN	135' w/o 10th Dr to 470' e/o 17th Dr	C	4LU+	0.40	42.9%	39.5%	\$707,667	\$439,295	No	\$0
DBN	470' e/o 17th Ave to 17th Ave	C	4LU+	0.09	57.1%	50.0%	\$123,073	\$137,280	No	\$0
DBN	17th Ave to 19th Ave	C	4LU+	0.25	42.9%	39.5%	\$430,754	\$274,559	No	\$0
DBN	19th Ave to 27th Ave	C	4LU+	1.00	28.6%	39.5%	\$2,184,537	\$1,070,781	No	\$0
DBN	27th Ave to 33rd Ave	C	4LU+	0.74	28.6%	39.5%	\$1,630,711	\$796,222	Yes	\$1,630,711
DBN	33rd Ave to 35th Ave	C	4LU+	0.25	57.1%	50.0%	\$338,449	\$356,927	Yes	\$338,449
DBN	35th Ave to 35th Glen	C	4LU+	0.10	57.1%	50.0%	\$123,073	\$137,280	Yes	\$123,073
DBN	35th Glen to 39th Ave Align	C	4LU+	0.40	28.6%	39.5%	\$892,276	\$439,295	Yes	\$892,276
DBN	39th Ave Align to 43rd Ave	C	4LU+	0.50	57.1%	50.0%	\$646,131	\$686,398	Yes	\$646,131
DBN	43rd Ave to 48th Dr	C	4LU+	0.65	57.1%	50.0%	\$861,508	\$906,045	Yes	\$861,508
DBN	48th Dr to 51st Ave	C	4LU+	0.35	71.4%	75.0%	\$307,681	\$713,854	Yes	\$307,681
DBN	51st Ave to 270' w/o 53rd Ave	C	4LU+	0.31	71.4%	75.0%	\$276,913	\$631,486	Yes	\$276,913
DBN	270' w/o 53rd Ave to 360' w/o 56th Glen	C	4LU+	0.48	71.4%	50.0%	\$430,754	\$658,942	Yes	\$430,754
DBN	360' w/o 56th Glen to 59th Ave	C	4LU+	0.20	71.4%	39.5%	\$184,609	\$219,647	Yes	\$184,609
DBN	59th Ave to 67th Ave	C	4LU+	0.96	28.6%	39.5%	\$2,123,001	\$1,043,325	Yes	\$2,123,001
DBN	67th Ave to Carver (W Limit of Fee Area)	C	4LU+	0.29	28.6%	39.5%	\$646,131	\$302,015	Yes	\$646,131
Total Southwest Service Area 2020-2029 IIP Costs							\$32,611,990	\$ 82,175,550	-	\$28,868,214

Table 11 - Existing and 2020-2029 IIP Major Arterial Street Culvert Costs - Northern Service Area

Street Name	Culvert ID	Length (feet)	Width (feet)	Height (feet)*	Diameter (inches)	Barrels	Total (cf)	Total (lf)	Culvert Construction Cost/Value	Culvert Status (E, P, F)	Existing Culvert Value	2020-2029 IIP Culvert Cost
39th Ave/Vision Way (39A), Pioneer Rd to Anthem Way												
39th Ave / Vision Way ¹	36+	156	8	6		7	52,416	1,092	\$1,310,400	F	\$0	\$0
Anthem Way (ANT), Avenue A to I-17												
Anthem Way, Pyramid Peak to 43rd	197	135			36	2		270	\$87,750	E	\$87,750	\$0
Daisy Mountain Dr (DSY), west limit of fee area (@ Avenue A) to I-17												
Daisy Mountain ¹	88	170	8	6		6	48,960	1,020	\$1,224,000	P	\$0	\$1,224,000
New River Rd (NRV), Cloud Rd to I-17 (north of Jenny Lin Rd)												
New River Rd	267										\$0	\$0
North Valley Pkwy (NVP), CAP to Carefree Hwy												
North Valley Pkwy (Quail Track to Copperhead)	306?	250	5	6		4		1,000	\$750,000	E	\$750,000	\$0
North Valley Pkwy (Quail Track to Copperhead)	N/A	165	5	6		4		660	\$495,000	E	\$495,000	\$0
North Valley Pkwy (Casino to Dixileta)	3?	145	5	6		2		290	\$217,500	E	\$217,500	\$0
North Valley Pkwy (27th Dr to North End)	4	150			36	5		750	\$243,750	E	\$243,750	\$0
Pyramid Peak Pkwy (PYR), southwest corner of fee area (@ +/-67th Ave & Jomax Rd) to Anthem WY												
Pyramid Peak ¹	143	150	6	6		2	10,800	300	\$270,000	P	\$0	\$270,000
Sonoran Desert Dr (SDD), I-17 to east limit of fee area (@ +/- 16th St align.)												
Sonoran Desert Dr ⁵	8	150	12	4		6	43,200		\$1,080,000	E	\$1,080,000	\$0
Sonoran Desert Dr ⁵	9*+	81	10	6		2	9,720		\$243,000	X	\$243,000	\$243,000
Sonoran Desert Dr ⁵	10*+	162	10	6		2	19,440		\$486,000	P	\$0	\$486,000
Sonoran Desert Dr ^{1,3}	277	175	6	6		6		1,050	\$945,000	E	\$945,000	\$0
Sonoran Desert Dr ⁵	7	300	12	6		1	21,600		\$540,000	P	\$0	\$540,000
Sonoran Desert Dr ⁵	107+	180	12	6		3	38,880		\$972,000	P	\$0	\$972,000
Sonoran Desert Dr ⁵	108+	160	12	6		2	23,040		\$576,000	P	\$0	\$576,000
Black Mountain Blvd (BMB), Loop 101 to Cave Creek Rd												
Black Mountain Pkwy ²	114	162	10	6		6	58,320		\$1,458,000	P	\$0	\$1,458,000
Black Mountain Pkwy ²	115	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Black Mountain Pkwy ²	116	162	8	6		1	7,776		\$194,400	P	\$0	\$194,400
Black Mountain Pkwy ²	117	162	8	6		4	31,104		\$777,600	P	\$0	\$777,600
Black Mountain Pkwy ²	152	162	6	6		2	11,664		\$291,600	P	\$0	\$291,600
Black Mountain Pkwy ²	153	162	6	6		4	23,328		\$583,200	P	\$0	\$583,200
Black Mountain Pkwy ²	154	162	6	6		6	34,992		\$874,800	P	\$0	\$874,800
Black Mountain Pkwy ²	158	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Black Mountain Pkwy ²	203	162	8	6		1	7,776		\$194,400	P	\$0	\$194,400
Black Mountain Pkwy ²	204	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Black Mountain Pkwy ²	240*	235	8	4		2	15,040	470	\$376,000	E	\$376,000	\$0
Cave Creek Rd (CAV), CAP to North City limits												
Cave Creek Rd ⁴	54*	50	10	1		3	1,500		\$37,500	X	\$37,500	\$37,500
Cave Creek Rd ⁴	55*	50	10	4		3	6,000		\$150,000	X	\$150,000	\$150,000
Cave Creek Rd ⁴	56*	50	6	2		10	6,000		\$150,000	X	\$150,000	\$150,000
Cave Creek Rd ⁴	109*	50	10	1		2	1,000		\$25,000	X	\$25,000	\$25,000
Cave Creek Rd ⁴	110*	50	10	2		3	3,000		\$75,000	X	\$75,000	\$75,000
Cave Creek Rd ⁴	111*	50	10	2		3	3,000		\$75,000	X	\$75,000	\$75,000
Cave Creek Rd ⁴	112*	50	10	2		3	3,000		\$75,000	X	\$75,000	\$75,000
Cave Creek Rd ⁴	113*	50	10	1		1	500		\$12,500	X	\$12,500	\$12,500
Cave Creek Rd ⁴	144*	50	12	6		6	21,600		\$540,000	X	\$540,000	\$540,000
Cave Creek Rd ⁴	145*	50			48	1		50	\$21,250	X	\$21,250	\$21,250
Cave Creek Rd ⁴	146*	50	6	1		2	600		\$15,000	X	\$15,000	\$15,000
Deer Valley RD (DEE), Cave Creek Rd to Scottsdale Rd												
Deer Valley Dr ²	250*	81	25	8		1	16,200		\$405,000	X	\$405,000	\$405,000
Deer Valley Dr ²	251*	81	25	8		1	16,200		\$405,000	X	\$405,000	\$405,000
Deer Valley Dr ²	261	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Deer Valley Dr ²	262	162	8	6		3	23,328		\$583,200	P	\$0	\$583,200
Deer Valley Dr ²	263	162	10	6		4	38,880		\$972,000	P	\$0	\$972,000
Deer Valley Dr ²	270	162	8	6		4	31,104		\$777,600	P	\$0	\$777,600
Deer Valley Dr ²	271	162	6	6		2	11,664		\$291,600	P	\$0	\$291,600
Deer Valley Dr ²	273	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Pinnacle Peak Rd (PIN), Cave Creek Rd to Scottsdale Rd												
Pinnacle Peak Rd ²	196	162	8	6		1	7,776		\$194,400	P	\$0	\$194,400
Pinnacle Peak Rd ²	197	162	8	6		2	15,552		\$388,800	P	\$0	\$388,800
Pinnacle Peak Rd ²	198	162	6	6		2	11,664		\$291,600	P	\$0	\$291,600
Pinnacle Peak Rd ²	199	162	10	6		9	87,480		\$2,187,000	P	\$0	\$2,187,000
Pinnacle Peak Rd ²	200	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Pinnacle Peak Rd ²	201	162	8	6		1	7,776		\$194,400	P	\$0	\$194,400
Pinnacle Peak Rd ²	202	162	8	6		5	38,880		\$972,000	P	\$0	\$972,000
Pinnacle Peak Rd ²	205	162	8	6		3	23,328		\$583,200	P	\$0	\$583,200
Pinnacle Peak Rd ²	206	162	8	6		3	23,328		\$583,200	P	\$0	\$583,200
Pinnacle Peak Rd ²	207	162	8	6		2	15,552		\$388,800	P	\$0	\$388,800
Pinnacle Peak Rd ²	208	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Pinnacle Peak Rd ²	209	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Pinnacle Peak Rd ²	210	162	6	6		1	5,832		\$145,800	P	\$0	\$145,800
Pinnacle Peak Rd ²	211	162	10	6		2	19,440		\$486,000	P	\$0	\$486,000

Table 11 - Existing and 2020-2029 IIP Major Arterial Street Culvert Costs - Northern Service Area

Street Name	Culvert ID	Length (feet)	Width (feet)	Height (feet)*	Diameter (inches)	Barrels	Total (cf)	Total (lf)	Culvert Construction Cost/Value	Culvert Status (E, P, F)	Existing Culvert Value	2020-2029 IIP Culvert Cost
39th Ave/Vision Way (39A), Pioneer Rd to Anthem Way												
39th Ave / Vision Way ¹	36+	156	8	6		7	52,416	1,092	\$1,310,400	F	\$0	\$0
Sonoran Desert Drive (SDD), West limit of fee area (16th St align) to Cave Creek Rd												
Sonoran Desert Dr ^{1,3}	14*	81			36	2		162	\$52,650	FX	\$52,650	\$0
Sonoran Desert Dr ^{1,3}	15*	81			24	4		324	\$64,800	FX	\$64,800	\$0
Sonoran Desert Dr ^{1,3}	16*	81	10	6		3	14,580		\$364,500	FX	\$364,500	\$0
Sonoran Desert Dr ^{2,3}	17*	81			36	8		648	\$210,600	FX	\$210,600	\$0
Sonoran Desert Dr ^{2,3}	18*	81			36	8		648	\$210,600	FX	\$210,600	\$0
Sonoran Desert Dr ^{2,3}	19*	81			30	1		81	\$22,275	FX	\$22,275	\$0
Sonoran Desert Dr ^{2,3}	19A*	81	10	6		3	14,580		\$364,500	FX	\$364,500	\$0
Sonoran Desert Dr ^{2,3}	20*	81	8	6		3	11,664		\$291,600	FX	\$291,600	\$0
Sonoran Desert Dr ^{2,3}	21*	81			36	2		162	\$52,650	FX	\$52,650	\$0
Sonoran Desert Dr ^{2,3}	104*	81	6	6		1	2,916		\$72,900	FX	\$72,900	\$0
Sonoran Desert Dr ^{2,3}	105*	81	8	6		3	11,664		\$291,600	FX	\$291,600	\$0
Sonoran Desert Dr ^{2,3}	106*	81			30	3		243	\$66,825	FX	\$66,825	\$0
Sonoran Desert Dr ^{2,3}	107*	81			30	2		162	\$44,550	FX	\$44,550	\$0
Sonoran Desert Dr ^{2,3}	108*	81	10	6		6	29,160		\$729,000	FX	\$729,000	\$0
Tatum Blvd (TAT), CAP to Lone Mtn Rd												
Tatum s/o Jomax	171	100	10	4		1	4,000		\$100,000	E	\$100,000	\$0
Tatum n/o Pinnacle	213	162	10	6		1	9,720		\$243,000	E	\$243,000	\$0
Pinnacle Peak Rd & Tatum Intersection	212	168	8	6		2	16,128		\$403,200	E	\$403,200	\$0
64th St (64S), CAP to Happy Valley Rd												
64th St ²	265	162	8	6		11	85,536		\$2,138,400	P	\$0	\$2,138,400
Subtotal									\$32,106,300	-	\$10,009,500	\$23,015,650
Design (15%)									\$4,815,945	-	\$1,501,425	\$3,452,348
COP Administrative Cost (22%)									\$7,063,386	-	\$2,202,090	\$5,063,443
Total Northern Service Area Culvert Cost									\$43,985,631	-	\$13,713,015	\$31,531,441

1) Culvert details from JE Fuller, *Desert View Arterial Street Drainage Structure Analysis (September 2002)*, City of Phoenix
 2) Culvert details from JE Fuller, *North Gateway Drainage Structure Cost Analysis (May 2005)*, City of Phoenix
 3) Culvert details correlated to ST85100294 design plans, see Culvert ID and Station in comments. Note that this alignment was modified from 2005 report.
 4) Cave Creek extensions based on expansion from 48' pavement half-width to 70' fully built half-width(cross-section B), assumed as 25' per half of roadway.
 5) Sonora Desert Drive Extension, spans North Gateway and Desert View study areas.
 6) Culvert details revised to meet 6'x6' minimum size requirement, *City of Phoenix Storm Water Policies and Standards (rev. December 2013)*
 7) Culvert unit cost of \$200/\$275/\$325/\$425 for 24"/30"/36"/48" cylinders derived by City of Phoenix from JE Fuller, *Estrella and Laveen Drainage Structure Cost Analysis (September 2018)*
 8) Culvert unit cost of \$25 per cubic feet for boxes derived by City of Phoenix from JE Fuller, *Estrella and Laveen Drainage Structure Cost Analysis (September 2018)*; p. 16 Table 5
 9) Culvert dimensions provided by the City of Phoenix
 *extension only
 +numbering per JE Fuller, *North Gateway Drainage Structure Cost Analysis (May 2005)*, City of Phoenix

Table 12 - Existing Major Arterial Street Storm Drain Value - Southwest Service Area

Street	Segment	Existing SD Pipe Size	Ultimate Length, "L _{ult} " (miles)	Length Modifier	Length of Existing Pipe (Feet)	Pipe Unit Cost	Value of Existing Storm Facility	Value of Storm Facility CB, MH, Laterals (30% of Facility)
19th Ave (19A), Baseline Rd to Southern Ave								
19A	Baseline Rd to Fremont Rd	33	0.25		1,320	\$144	\$190,080	\$57,024
19A	Fremont Rd to Vineyard Rd	36	0.25		1,320	\$166	\$219,120	\$65,736
19A	Vineyard Rd to Alta Vista Rd	36	0.25		1,320	\$166	\$219,120	\$65,736
19A	Alta Vista Rd to 170' s/o Lynne	39	0.14		739	\$178	\$131,578	\$39,473
19A	170' s/o Lynne Ln to Lynne Ln	39	0.03		158	\$178	\$28,195	\$8,459
19A	Lynne Ln to Southern Ave	39	0.08		422	\$178	\$75,187	\$22,556
51st Ave (51A), City Limits to I-10								
51A	Dobbins Rd to South Mountain Ave	72	0.50		2,640	\$385	\$1,016,400	\$304,920
51A	South Mountain Ave to 130' s/o Beverly Rd	72	0.24		1,267	\$385	\$487,872	\$146,362
51A	130' s/o Beverly Rd to Beverly Rd	72	0.03		158	\$385	\$60,984	\$18,295
51A	Beverly Rd to Baseline Rd	72	0.24		1,267	\$385	\$487,872	\$146,362
51A	Baseline Rd to 905' n/o Baseline Rd	24	0.17		898	\$100	\$89,760	\$26,928
51A	905' n/o Baseline Rd to Burgess Ln	42	0.66		3,485	\$189	\$658,627	\$197,588
51A	Burgess Ln to Southern Ave	42	0.17		898	\$189	\$169,646	\$50,894
51A	Southern Ave to Broadway Rd	42	0.78		4,118	\$189	\$778,378	\$233,513
51A	Broadway Rd to Salt River Bridge	42	0.12		634	\$189	\$119,750	\$35,925
51A	Salt River Bridge to Broadway Rd	96	0.45		2,376	\$485	\$1,152,360	\$345,708
51A	Broadway Rd to Lower Buckeye Rd	96	0.74		3,907	\$485	\$1,894,992	\$568,498
51A	Lower Buckeye Rd to N. Limit of Fee Area	96	0.50		2,640	\$485	\$1,280,400	\$384,120
51A	S. Limit of Fee Area to Buckeye Rd	90	0.44		2,323	\$460	\$1,068,672	\$320,602
51A	Buckeye Rd to Van Buren St	84	1.00		5,280	\$435	\$2,296,800	\$689,040
51A	Van Buren St to I-10	84	0.79		4,171	\$435	\$1,814,472	\$544,342
75th Ave (75A), Baseline Rd to Buckeye Rd								
75A	Salt River to Broadway Rd	96	0.93		4,910	\$485	\$2,381,544	\$714,463
75A	Broadway Rd to 1325' n/o Broadway Rd	78	0.25		1,325	\$410	\$543,250	\$162,975
75A	1325' n/o Broadway Rd to 1300' s/o Lower Buckeye Rd	78	0.50		2,640	\$410	\$1,082,400	\$324,720
75A	1300' s/o Lower Buckeye Rd to 1060' s/o Lower Buckeye Rd	78	0.05		264	\$410	\$108,240	\$32,472
75A	1060' s/o Lower Buckeye Rd to Lower Buckeye Rd	78	0.20		1,056	\$410	\$432,960	\$129,888
75A	Lower Buckeye Rd to 900' n/o Lower Buckeye Rd	66	0.17		898	\$360	\$323,136	\$96,941
75A	900' n/o Lower Buckeye Rd to 1650' n/o Lower Buckeye Rd	66	0.14		739	\$360	\$266,112	\$79,834
75A	1650' n/o Lower Buckeye Rd to Durango St	66	0.19		1,003	\$360	\$361,152	\$108,346
75A	Durango St to Buckeye Rd	66	0.48		2,534	\$360	\$912,384	\$273,715
75th Ave (75A), Buckeye Rd to Van Buren St, east half (northbound lanes) only								
75A	Buckeye Rd to Van Buren St	60	1.01	50.0%	2,666	\$320	\$853,248	\$255,974
75th Ave (75A), Van Buren St to I-10								
75A	Van Buren St to Roosevelt St	24	0.48	33.0%	836	\$100	\$83,635	\$25,091
Baseline Rd (BLR), 75th Ave to 7th Ave								
BLR	67th Ave to 63rd Ave	54	0.44	50.0%	1,162	\$305	\$354,288	\$106,286
BLR	59th Ave to 55th Ave	30	0.49		2,587	\$121	\$313,051	\$93,915
BLR	55th Ave to 890' w/o 51st Ave	66	0.33	200.0%	3,485	\$360	\$1,254,528	\$376,358
BLR	890' w/o 51st Ave to 51st Ave	66	0.17	200.0%	1,795	\$360	\$646,272	\$193,882
BLR	51st Ave to 47th Ave	36	0.49	50.0%	1,294	\$166	\$214,738	\$64,421
BLR	47th Ave to 43rd Ave	96	0.49	50.0%	1,294	\$485	\$627,396	\$188,219
BLR	43rd Ave to 1330' w/o 35th Ave	72	0.75		3,960	\$385	\$1,524,600	\$457,380
BLR	1330' w/o 35th Ave to 35th Ave	96	0.25		1,320	\$485	\$640,200	\$192,060
BLR	35th Ave to 660' w/o 31st Ave	96	0.38		2,006	\$485	\$973,104	\$291,931
BLR	660' w/o 31st Ave to 125' e/o 29th Dr	72	0.38		2,006	\$460	\$922,944	\$276,883
BLR	125' e/o 29th Dr to 27th Ave	66	0.25		1,320	\$360	\$475,200	\$142,560
BLR	27th Ave to 19th Ave	84	1.00		5,280	\$435	\$2,296,800	\$689,040
BLR	19th Ave to 7th Ave	72	1.00		5,280	\$535	\$2,824,800	\$847,440
Broadway Rd (BWR), 43rd Ave to 23rd Ave								
BWR	43rd Ave to 310' w/o 35th Ave	36	0.98	200.0%	10,349	\$166	\$1,717,901	\$515,370
BWR	310' w/o 35th Ave to 35th Ave	24	0.06		317	\$100	\$31,680	\$9,504
BWR	35th Ave to 27th Ave	24	1.00		5,280	\$100	\$528,000	\$158,400
BWR	27th Ave to 23rd Ave	24	0.49		2,587	\$100	\$258,720	\$77,616

Table 12 - Existing Major Arterial Street Storm Drain Value - Southwest Service Area

Street	Segment	Existing SD Pipe Size	Ultimate Length, "L _{ult} " (miles)	Length Modifier	Length of Existing Pipe (Feet)	Pipe Unit Cost	Value of Existing Storm Facility	Value of Storm Facility CB, MH, Laterals (30% of Facility)
Buckeye Rd (BR), 75th Ave to 43rd Ave - Full Street								
BR	67th Ave to 530' e/o 67th Ave	66	0.10		528	\$360	\$190,080	\$57,024
BR	530' e/o 67th Ave to 340' w/o 65th Ave	66	0.15		792	\$360	\$285,120	\$85,536
BR	340' w/o 65th Ave to 63rd Ave	66	0.24		1,267	\$360	\$456,192	\$136,858
BR	63rd Ave to 1325' w/o 59th Ave	66	0.25		1,320	\$360	\$475,200	\$142,560
BR	1325' w/o 59th Ave to 59th Ave	48	0.25		1,320	\$211	\$278,520	\$83,556
BR	59th Ave to 55th Ave	36	0.50		2,640	\$166	\$438,240	\$131,472
BR	55th Ave to 51st Ave	30	0.50		2,640	\$121	\$319,440	\$95,832
BR	51st Ave to 43rd Ave	54	1.00		5,280	\$305	\$1,610,400	\$483,120
Subtotal							\$ 41,245,740	\$12,373,722
<i>Design (15%)</i>							<i>\$6,186,861</i>	<i>\$1,856,058</i>
<i>COP Administrative Cost (22%)</i>							<i>\$9,074,063</i>	<i>\$2,722,219</i>
Total Southwest Service Area Existing Storm Drain Value							\$ 56,506,664	\$16,951,999

1) Existing storm drain pipe sizes, lengths, and unit costs provided by the City of Phoenix

2) Storm drain unit costs adapted by the City of Phoenix from JE Fuller, *Estrella and Laveen Drainage Structure Cost Analysis (September 2018)*, p. 16 Table 5

Table 13 - 2020-2029 IIP Major Arterial Street Storm Drain Costs - Southwest Service Area

Storm Drain Segment	ID	Diameter (in)	Length (ft)	Pipe Unit Cost	2020-2029 IIP Storm Drain Cost
51st Avenue - Estrella Dr to Elliot Rd					
Segment 1	165	24	1,000	\$100	\$100,000
Segment 2	165	30	1,000	\$121	\$121,000
Segment 3	165	36	1,000	\$166	\$166,000
Segment 4	165	42	1,300	\$189	\$245,700
Baseline Road - 43rd Ave to 51st Ave					
Segment 1	153	24	1,000	\$100	\$100,000
Segment 2	153	30	1,000	\$121	\$121,000
Segment 3	153	30	1,000	\$121	\$121,000
Segment 4	153	36	1,300	\$166	\$215,800
Dobbins Road - 19th Ave to 27th Ave					
Segment 1	176	42	1,000	\$189	\$189,000
Dobbins Road - 27th Ave to 35th Ave					
Segment 1	173	42	1,320	\$189	\$249,480
Segment 2	173	42	1,320	\$189	\$249,480
Segment 3	173	54	1,320	\$305	\$402,600
Segment 4	173	60	1,300	\$320	\$416,000
Dobbins Road - 35th Ave to 43rd Ave					
Segment 1	172	60	1,100	\$320	\$352,000
Segment 2	172	66	1,100	\$360	\$396,000
Segment 3	172	72	1,100	\$385	\$423,500
Segment 4	172	78	1,100	\$410	\$451,000
Dobbins Road - 43rd Ave to 47th Ave					
Segment 1	18	36	2,945	\$166	\$488,870
Dobbins Road - 47th Ave to 51st Ave					
Segment 1	20	36	2,726	\$166	\$452,516
Dobbins Road - 51st Ave to 59th Ave					
Segment 1	154	24	1,000	\$100	\$100,000
Segment 2	154	30	1,000	\$121	\$121,000
Segment 3	154	30	1,000	\$121	\$121,000
Segment 4	154	36	1,300	\$166	\$215,800
75th Ave - Baseline Rd to Vineyard					
Segment 1	156	36	600	\$166	\$99,600
Segment 2	156	36	600	\$166	\$99,600
Segment 3	156	42	600	\$189	\$113,400
Segment 4	156	42	800	\$189	\$151,200
75th Ave - Vineyard Rd to Southern Ave					
Segment 1	155	24	600	\$100	\$60,000
Segment 2	155	36	600	\$166	\$99,600
Segment 3	155	42	600	\$189	\$113,400
(culvert) Segment 4	155	48	800	\$261	\$208,800
75th Ave - Southern Ave to Salt River					
Segment 1	157	54	700	\$305	\$213,500

Table 13 - 2020-2029 IIP Major Arterial Street Storm Drain Costs - Southwest Service Area

Storm Drain Segment	ID	Diameter (in)	Length (ft)	Pipe Unit Cost	2020-2029 IIP Storm Drain Cost
75th Ave - Salt River to Broadway					
Segment 1	117	78	1,000	\$410	\$410,000
Segment 2	117	78	1,000	\$410	\$410,000
Segment 3	117	84	1,000	\$435	\$435,000
Segment 4	117	84	1,500	\$435	\$652,500
75th Ave - Broadway Rd to Lower Buckeye					
Segment 1	116	66	1,320	\$360	\$475,200
Segment 2	116	66	1,320	\$360	\$475,200
Segment 3	116	72	1,320	\$385	\$508,200
Segment 4	116	72	1,320	\$385	\$508,200
75th Ave - Lower Buckeye Rd to Buckeye Rd					
Segment 1	115	66	1,320	\$360	\$475,200
Segment 2	115	66	1,320	\$360	\$475,200
Segment 3	115	66	1,320	\$360	\$475,200
Segment 4	115	66	1,320	\$360	\$475,200
75th Ave - Buckeye Rd to Van Buren					
Segment 1	114	54	1,320	\$305	\$402,600
Segment 2	114	60	1,320	\$320	\$422,400
Segment 3	114	66	1,320	\$360	\$475,200
Segment 4	114	66	1,320	\$360	\$475,200
Subtotal					\$14,528,346
Design (15%)					\$2,179,252
COP Administrative Cost (22%)					\$3,196,236
Total Southwest Service Area 2020-2029 IIP Storm Drain Cost					\$19,903,834

- 1) Existing storm drain pipe sizes, lengths, and unit costs provided by the City of Phoenix
- 2) Storm drain unit costs adapted by the City of Phoenix from JE Fuller, *Estrella and Laveen Drainage Structure Cost Analysis (September 2018)*
- 3) Culvert unit costs adapted by the City of Phoenix from JE Fuller, *Estrella and Laveen Drainage Structure Cost Analysis (September 2018)*

Table 14 - Existing and 2020-2029 IIP Major Arterial Street Bridge Costs - Northern Service Area

Existing Bridges Street Name	Bridge ID	Length (feet)	Width (feet)	Deck (sq ft)	Unit Cost	Cost
Carefree Highway (2 structures)	182	430	82	35,260	\$151	\$5,324,260
Deer Valley (CAP)	-	200	150	30,000	\$151	\$4,530,000
Sonoran Desert Dr (Skunk Creek)	73	700	110	77,000	\$151	\$11,627,000
Sonoran Desert Dr (Apache Wash)	9	350	68	23,800	\$151	\$3,593,800
Sonoran Desert Dr	-	230	68	15,640	\$151	\$2,361,640
Sonoran Desert Dr (Cave Creek Wash)	13	450	68	30,600	\$151	\$4,620,600
North Valley Pkwy (CAP)	-	450	125	56,250	\$151	\$8,493,750
<i>Subtotal</i>						\$40,551,050
<i>Design (15%)</i>						\$6,082,658
<i>COP Administrative Cost (22%)</i>						\$8,921,231
Total Northern Existing Bridge Value						\$55,554,939
2020-2029 IFP Bridges Street Name	Bridge ID	Length (feet)	Width (feet)	Deck (sq ft)	Unit Cost	Cost
North Valley Pkwy ⁽³⁾	11	-	-	-	-	\$36,375,000
North Valley Pkwy	13	780	120	93,600	\$151	\$14,133,600
Cave Creek (CAP)	-	200	50	10,000	\$151	\$1,510,000
Tatum Blvd (CAP)	-	200	50	10,000	\$151	\$1,510,000
Deer Valley Dr	264	100	140	14,000	\$151	\$2,114,000
Deer Valley Dr	269	100	140	14,000	\$151	\$2,114,000
Sonoran Desert Dr	274	600	120	72,000	\$151	\$10,872,000
<i>Subtotal</i>						\$68,628,600
<i>Design (15%)</i>						\$10,294,290
<i>COP Administrative Cost (22%)</i>						\$15,098,292
Total Northern IIP Bridge Cost						\$94,021,182

1) Bridge detail from JE Fuller, *North Gateway Drainage Structure Analysis (May 2005)* ; p. 26 Table 4

2) Bridge unit cost provided by Kimley-Horn (April 2019)

3) North Valley Pkwy Bridge ID 11 cost from Gannett Fleming, *North Valley Parkway Bridge at Sonoran Wash, Preliminary Engineering and Project Scoping Report* (October 2008). Cost shown provided by City of Phoenix Street Transportation Department (May 2019) is exclusive of right-of-way cost and soft costs, and has been adjusted for inflation to April 2019 using ENR BCI.

Table 15 - Existing and 2020-2029 IIP Major Arterial Street Bridge Costs - Southwest Service Area

Existing Bridges		Bridge ID	Length (feet)	Width (feet)	Deck (sq ft)	Unit Cost	Cost
Street Name							
51st Avenue	-		1,635	82	134,070	\$151	\$20,244,570
<i>Subtotal</i>							\$20,244,570
<i>Design (15%)</i>							\$3,036,686
<i>COP Administrative Cost (22%)</i>							\$4,453,805
Total Southwest Existing Bridge Value							\$27,735,061
2020-2029 IIP Bridges		Bridge ID	Length (feet)	Width (feet)	Deck (sq ft)	Unit Cost	Cost
Street Name							
75th Avenue	-		1,660	82	136,120	\$151	\$20,554,120
<i>Subtotal</i>							\$20,554,120
<i>Design (15%)</i>							\$3,083,118
<i>COP Administrative Cost (22%)</i>							\$4,521,906
Total Southwest IIP Bridge Cost							\$28,159,144

- 1) Bridge detail from JE Fuller, *North Gateway Drainage Structure Analysis (May 2005)*; p. 26 Table 4
- 2) Bridge unit cost provided by Kimley-Horn (April 2019)

Table 16 - Northern Service Area Equity Calculation

Northern Area	Capacity (veh-day)	Capacity (% of Ult.)	EDU	EDU (% of BuildOut)	EDU % / Capacity % Ratio
Existing (2019) Major Arterial Roadways	1,638,657	23.8%	50,137	20.1%	0.84
10-Year IIP (2020-2029) Major Arterial Roadways	834,812	12.1%	31,514	12.6%	1.04
Ultimate Major Arterial Roadways	6,872,886	100.0%	249,682	100.0%	1.00

Table 17 - Southwest Service Area Equity Calculation

Southwest Area	Capacity (veh-day)	Capacity (% of Ult.)	EDU	EDU (% of BldOut)	EDU % / Capacity % Ratio
Existing (2019) Major Arterial Roadways	1,121,959	70.9%	71,975	58.5%	0.83
10-Year IIP (2020-2029) Major Arterial Roadways	410,439	25.9%	33,312	27.1%	1.04
Ultimate Major Arterial Roadways	1,582,228	100.0%	123,010	100.0%	1.00

Table 18 - Northern Service Area Gross Fee Calculation

NORTHERN SERVICE AREA EXISTING		AMOUNT
Existing Major Arterial Roadway Value		\$85,332,980
Existing Major Arterial Culvert Value		\$13,713,015
Existing Major Arterial Bridge Value		\$55,554,939
Total Value - Existing Major Arterial Network		\$154,600,934
NORTHERN SERVICE AREA 2020-2029 PLANNED		AMOUNT
2020-2029 Planned Major Arterial Roadway Cost		\$66,215,251
2020-2029 Planned Major Arterial Culvert Cost		\$31,531,441
2020-2029 Planned Major Arterial Bridge Cost		\$94,021,182
Total Cost - 2020-2029 Planned Major Arterial Network		\$191,767,874
NORTHERN SERVICE AREA GROSS FEE CALCULATION		AMOUNT
Existing & 2020-2029 Planned Major Arterial Network Value		\$346,368,807
Adjustment for Pass-Through Traffic		0.72
Major Arterial Network Value, Adjusted for Pass-Through Traffic		\$249,385,541
Adjustment for 2029 Capacity		1.00
Major Arterial Network Value, Adjusted for Excess Capacity		\$249,385,541
2029 Northern Area EDU		81,650
Northern Service Area Gross Fee per EDU		\$3,054

1) Adjustment for Pass-Through Traffic factors the cost to only apply to traffic with an origin or destination in the service area. This is calculated as 100% minus the pass-through percentage (i.e., the percentage of traffic in the service area with neither an origin or destination in the service area). A pass-through percentage of 28% in the Northern service area was calculated by Kimley-Horn in April 2019 based on StreetLight origin-destination data.

2) Adjustment for 2029 Capacity is based on the Excess Capacity Ratio, which is the ratio of the 2020-2029 EDU as a percent of buildout EDU divided by the 2020-2029 lane miles as a percent of ultimate lane miles. The calculated Excess Capacity Ratio for 2020-2029 for the Northern service area is 1.04. An Excess Capacity Ratio below 1.0 would indicate a disproportionate amount of roadway network capacity is being shouldered by the impact fee program. Because the Excess Capacity Ratio is greater than 1.0, no adjustment factor is needed for the 2029 capacity.

Table 19 - Southwest Service Area Gross Fee Calculation

SOUTHWEST SERVICE AREA EXISTING		AMOUNT
Existing Major Arterial Roadway Value		\$82,175,550
Existing Major Arterial Storm Drain Value		\$73,458,664
Existing Major Arterial Bridge Value		\$27,735,061
Total Value - Existing Major Arterial Network		\$183,369,275
SOUTHWEST SERVICE AREA 2020-29 PLANNED		AMOUNT
2020-29 Planned Major Arterial Roadway Cost		\$28,868,214
2020-29 Planned Major Arterial Storm Drain Cost		\$19,903,834
2020-29 Planned Major Arterial Bridge Cost		\$28,159,144
Total Cost - 2020-29 Planned Major Arterial Network		\$76,931,193
SOUTHWEST SERVICE AREA GROSS FEE CALCULATION		AMOUNT
Existing & 2020-29 Planned Major Arterial Network Value		\$260,300,467
Adjustment for Pass-Through Traffic		0.78
Major Arterial Network Value, Adjusted for Pass-Through Traffic		\$203,034,365
Adjustment for 2029 Capacity		1.00
Major Arterial Network Value, Adjusted for Excess Capacity		\$203,034,365
2029 Southwest Area EDU		105,287
Southwest Area Gross Fee per EDU		\$1,928

1) Adjustment for Pass-Through Traffic factors the cost to only apply to traffic with an origin or destination in the service area. This is calculated as 100% minus the pass-through percentage (i.e., the percentage of traffic in the service area with neither an origin or destination in the service area). A pass-through percentage of 22% in the Southwest service area was calculated by Kimley-Horn in April 2019 based on StreetLight origin-destination data.

2) Adjustment for 2029 Capacity is based on the Excess Capacity Ratio, which is the ratio of the 2020-2029 EDU as a percent of buildout EDU divided by the 2020-2029 lane miles as a percent of ultimate lane miles. The calculated Excess Capacity Ratio for 2020-2029 for the Southwest service area is 1.04. An Excess Capacity Ratio below 1.0 would indicate a disproportionate amount of roadway network capacity is being shouldered by the impact fee program. Because the Excess Capacity Ratio is greater than 1.0, no adjustment factor is needed for the 2029 capacity.