INFRASTRUCTURE ASSESSMENT REPORT SOUTH MOUNTAIN 370 PARCEL

Prepared for:

Arizona State Land Department
Phoenix, Arizona

November 22, 2019

Olsson Project No. 019-2127

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INFRASTRUCTURE ASSESSMENT REPORT
SOUTH MOUNTAIN 370 PARCEL

TABLE OF CONTENTS

1. INTRODUCTION....1
   1.1. Project Location and Description....1
   1.2. Project Purpose and Need....1

2. INFRASTRUCTURE CONCEPT....1
   2.1. Overview....1
   2.2. Land Use....2
   2.3. Archeological....2
   2.4. Roadway....2
   2.5. Water....4
   2.6. Reclaimed Water....5
   2.7. Wastewater....5
   2.8. Storm Water....6
   2.9. Dry Utilities....8

3. BASIS OF INFRASTRUCTURE COST....9
   3.1. Estimated Construction Cost....9
   3.2. Estimated Impact Fees....9

4. REFERENCES....10

LIST OF EXHIBITS

1. Project Location Map
2. City of Phoenix Land Use Plan
3. Conceptual Roadway Plan
4. Roadway Typical Sections
5. Conceptual Water Plan
6. Conceptual Wastewater Plan
7. Conceptual Storm Water Plan

APPENDICES

Appendix A – Opinion of Probable Cost Breakdown
Appendix B – Estimated Impact Fee

1. INTRODUCTION

1.1 Project Location and Description

South Mountain 370 Parcel is a 373.48-acre (gross) land area currently owned by the Arizona State Land Department (ASLD) in south Phoenix. The area of land is bounded on the west by S. Chandler Boulevard and the Foothills Reserve Community, on the north by Chandler Boulevard, and on the south by new SR 202L. The east boundary borders the Arizona Greens Community. See Figure 1: Project Location Map.

1.2 Project Need and Purpose

ASLD has retained Olsson to develop this Assessment Report. This Infrastructure Assessment Report provides an understanding of the current infrastructure of the property and surrounding area, as well as the proposed improvements that will be necessary to develop the property. The proposed infrastructure improvements are based on the requirements and criteria of ASLD and the City of Phoenix (COP). This report is based on information received from field survey data, data received from various agencies, the meetings with representatives of the various agencies involved. The infrastructure costs were developed using unit price bid information obtained from recent local construction projects.

The opinion of probable construction costs and information within the report is based on Olsson's reasonable professional judgement, information provided by others, and experience, and does not constitute a warranty, express or implied, that the requirements for development, contractor's bids , or the negotiated price of the work will not vary from the Client's budget or from any opinion of probable cost prepared by Olsson.

2. INFRASTRUCTURE CONCEPT

2.1 Overview

This infrastructure assessment is based on the requirements and criteria obtained from ASLD and COP. The meetings held with ASLD, and other agencies have provided additional detail to the proposed infrastructure improvements.

The Major Infrastructure Improvements are:

- Roadway
- Water
- Reclaimed Water
- Wastewater
- Storm Water
- Dry Utilities

Sections 2.4 through 2.9 give a detailed discussion of these Major Infrastructure Improvements.

2.2 Land Use

South Mountain 370 consists of 373.48 (gross) acres, made up of Parcels, 1, 2, 3, 4, and 5 on the Amended State Plat No. 30 South Mountain 620 dated 09/02/2008 by the County Recorder. The Amended State Plat No. 30 South Mountain 620 describes a proposed alignment for an extension of Liberty Lane, as well as open space. County Assessor Parcel Identification Numbers 300-96-708A and 300-96-709A. (The Parcels and proposed Liberty Lane Extension are shown on Exhibit No. 2.

Per Rezoning Application No. Z-77-03 dated 12/16/08 and Zoning Ordinance G-5299, the South Mountain 370 Parcel acreage is divided into the following Zoning Districts: R1-8, (321.40 acres), R-2, 33.0 acres, R-3A, (11 acres), and C-2, (10.9 acres). The zoning districts are shown on Exhibit No. 2.

2.3 Archeological (Information not available)

2.4 Roadway

Chandler Boulevard

Chandler Boulevard is the north boundary of the Parcel from 19th Avenue to 27th Avenue. The north side of Chandler Boulevard was recently constructed to 42-feet wide between 19th Avenue and 27th Avenue. Through this area, Chandler Blvd. consist of two 11-ft travel lanes with a 10-ft center turn lane and 4-ft and 6-ft bicycle lanes, respectfully. The north side improvements include curb and gutter, sidewalk, storm drain and street lighting. This is considered an interim roadway condition.

The long-term plan for future developments to Chandler Boulevard will add two additional lanes to the south, resulting in two travel lanes in each direction with a center turn-lane and bicycle lanes. This will be the ultimate build out condition.

The City of Phoenix classifies Chandler Boulevard as an Arterial Roadway with a Cross Section X-D. Cross Section X-D is a 64 feet wide roadway within a 100 feet wide right-of-way. The ultimate roadway cross section will consist of two travel lanes and bicycle lane in the eastbound and westbound directions with a center turn lane. To achieve this cross section the asphalt pavement will be widened by 22-feet to the south. The interim striped bike to the south will be removed and restriped to the outside edge of the new asphalt pavement. Additional improvements will include curb and gutter, detached concrete sidewalk,18" collector pipe, catch basins, street lighting, pavement marking, and landscaping.

West Liberty Lane

The City of Phoenix classifies West Liberty Lane as a Collector Roadway on the COP Classification Map with a Cross Section E. Cross Section E consist of a 50 feet wide roadway (two 10.5 ft travel lanes and 4 ft bike lane in each direction) within an 80 feet wide right-of-way. The West Liberty Lane alignment is proposed from its current end at 19th Avenue, traversing northwest through the Parcel intersecting with Chandler Boulevard, approximately 3,200 feet west of 19th Avenue.

South Chandler Boulevard

South Chandler Boulevard is a north-south roadway from Shaughnessy Road (which aligns to Chandler Boulevard to the west) to Cottonwood Lane and is the west boundary of the Parcel. South Chandler Boulevard provides one lane in each direction with no striped bike lanes. The west half of the roadway is built with curb and gutter and sidewalk its full length, and the east half is built with curb and gutter for approximately 100-ft. The pavement width is 20 feet wide between Shaughnessy Road and Cotton Lane.

The City of Phoenix classifies South Chandler Boulevard as Arterial Roadway with a Cross Section X-D. Cross Section X-D is a 64 feet wide roadway. With the construction of the South Mountain Freeway, South Chandler Boulevard has been cut off just south of Cottonwood Lane. It appears the dead-end street will only serve local traffic. If so, there will be no need to improve the street. This needs to be confirmed with the City of Phoenix.

Loop 202 South Mountain Freeway (SR 202L)

SR 202L is the south boundary of the Parcel between 19th Avenue and 27th Avenue. SR 202L is a controlled access facility.

2.5 Water

The City of Phoenix owns, operates and maintains the existing water system that provides water to the existing developments within the area. Water service will be provided to the development by the City of Phoenix. Through coordination with the City of Phoenix and researching City as-built Plans and GIS mapping the following existing waterlines lie along the perimeter of the proposed site.

Chandler Boulevard

- 48-inch transmission main (existing)
- 12-inch distribution main (existing)

West Liberty Lane

- 12-inch distribution main

West Hidden View Drive

- 8-inch distribution main (possible extension by developer)

Glen Haven Drive

- 8-inch distribution main (possible extension by developer)

West Cottonwood Lane

- 8-inch distribution main (possible extension by developer)

The City of Phoenix may require the developer to construct a 12-inch distribution main within West Liberty Lane to be extended and looped with the 12-inch main within Chandler Boulevard. The length of the extension is approximately 3,500 feet. This 12-inch main will provide water to the 370 Parcel as well as other connections based on water supply and available pressures. These other connection points are located along the eastern property at West Hidden View Drive and Glen Haven Drive. An additional connection point along the western boundary is located within West Cottonwood Lane. A meeting with the City of Phoenix is recommended to determine if any other connections are required and if there will be any required offsite improvements associated with the development of this property.

2.6 Reclaimed Water

As of the date of this report, there are no known reclaimed water systems within the area. A meeting with the City of Phoenix is recommended to determine the most acceptable alternative to bring reclaimed water to the area for the development of this property.

Per City of Phoenix Code 37-113, reclaimed water will made available for development that have more than 5- acres of turf. If a development contains more than 5-acres of turf, the City may require the developer construct a reclaimed water to serve the area.

2.7 Wastewater

The City of Phoenix owns, operates and maintains the existing sanitary sewer system providing service to the area. Research of City as-built Plans and GIS mapping provided the following information regarding the existing sanitary sewer system along the perimeter of the proposed site:

Glen Haven Drive

- 8-inch sewer line (possible extension by developer)

West Liberty Lane

- 8-inch sewer line (possible extension by developer)

A newly constructed 15-inch sewer line is located along the property's southern boundary from South17th Avenue on the east side through a utility easement to South 27th Avenue on the west side. It is anticipated that connections will be made into this sanitary sewer main when development occurs. How and where the connections are to be made should be discussed with the City of Phoenix at the time of land plan preparation.

Other potential connection points include 8-inch lines within West Hidden View Drive and Glen Haven Drive. The 8-inch lines within and Liberty Lane along the eastern boundary may be extended northwest for approximately 2,700 feet to service the northeastern portion of the site. This line may have the ability to then extend in a southerly direction and connect with the 15-inch sewer line. A meeting with City of Phoenix is recommended to determine if there are any other required offsite improvements to accommodate the development of this property.

2.8 Storm Water

Olsson reviewed several documents to understand the various stormwater management plans. The following studies for South Mountain 370 Parcel were reviewed:

- Kimley Horn. Drainage & Structure Selection Memorandum Wash #1 at Chandler Boulevard & Shaughnessy Road
- Kimley Horn. Final Drainage Report, 27th Avenue to 19th Avenue, May 2016, COP Project No. ST85100367
- ADOT, South Mountain Freeway Pecos Segment, Final Drainage Report, Feb 2017, Project No. 202L MA 054 H8827 01 C
- Flood Control District of Maricopa County, Ahwatukee Foothills Area Drainage Master Plan

The initial hydrologic analysis for the South Mountain Freeway was performed by WSP and is documented in the Master Drainage Report SR202L South Mountain Freeway Project (MDR) dated October 2016. The watershed flows from the South Mountain Range to the north, then south and westerly.

Subsequent evaluation of the hydrology resulting from the Ahwatukee Foothills ADMS and the Chandler Blvd Final Drainage Report by ADOT resulted in modifying the Chandler Blvd and Pecos Road culvert. The Ahwatukee Foothills ADMS utilized the FLO-2D model to evaluate the hydrology. The ADMS boundary was broken up into 4 separate models. The West Model envelops the South Mountain 370 Parcel. The West Model utilized a 15' x 15' grid. All model parameters are detailed in the ADMS report. The Chandler Blvd Final Drainage Report utilized results from the ADMS model for both Bridges. Eighteen proposed wash corridors have been established based on existing topography. It is possible that some or all the wash corridors will buried/removed or re-channelized as the 370 Parcel is developed. Proposed corridor widths were established using normal depth evaluations. The results are shown on Exhibit No. 7. These corridors are to be preserved are to be preserved in a natural condition for storm water and sediment flow through the South Mountain 370 parcel. In total the wash corridors have an area of approximately 18 acres.

The wash corridors will have a natural bottom and vegetated side slopes designed to be compatible with existing natural washes and future designed channel washes in

the project vicinity. It is likely berms will need to be constructed at the outside edge of the corridors to contain storm water flow. The corridors will allow the benefits and natural function of floodplains to be maintained by conveying flows through the property, protecting adjacent areas from flooding, while allowing storm water and sediment inflows to sustain vegetation in these washes. The wash corridors will be between 15 feet to 120 feet in width.

The corridors will be designed to convey the 100-year peak discharge event with calculated freeboard. Pre- and post- development water surface elevations will be established by developers to demonstrate that matters have not been made worse resulting from proposed projects. This can include elevating pads at least 1-foot above the 100-year water surface elevation, not restricting existing sediment capacity moving downstream and evaluating setting foundation depth below estimated scour depths.

Offsite storm water enters this parcel through the two bridges located on Chandler Boulevard located at the west and east end of the northern boundary. There is also offsite flow entering the east border of the parcel at a few low flow outlets from the adjacent subdivision east of 19th Avenue. As stated in the Chandler Boulevard, 27th Avenue to 19th Avenue, Final Drainage Report, the peak discharges for a 100-year 6-hour storm event for Wash No. 1 conveys 963 cfs at Structure No. 1 and 1,717 cfs for Wash No. 2 at Structure No. 2, as shown on Exhibit No. 7. Based on current information it is likely that berms will not be needed at the north and south sides of Chandler Boulevard.

The approximately 500 ft long, 165 ft wide drainage easement located at the south side of Chandler Boulevard east of Wash No. 1 as shown on the City of Phoenix Chandler Boulevard, 27th Avenue to 19th Avenue plans should be revisited to determine if the length of the drainage easement can be reduced.

Runoff from the South Mountain watershed produces sediment-laden flows. As flooding is conveyed thru the South Mountain 370 Parcel and the topography gradually flattens sediment can be deposited as the flooding recedes. Care must be taken as development occurs that the sediment carrying capacity of the washes is not diminished.

Three areas with erosion/sedimentation concerns were noted east of the 370 Parcel, which are in developed areas, that show erosion/sedimentation concerns. A sediment yield analysis was done as part of the ADMS/P which determined anticipated sediment loads associated with a 100-year storm event. This data should be reviewed prior to development.

The design frequency for the pipe/box culverts is dependent on the roadway classification as outlined below:

- Arterial Roadway 50-year event
- Collector Roadway 25-year event
- Local Roadway 10-year event

For the design flow, the headwater level must be no higher than the lowest roadway elevation. For the 100-year design event, the design shall cause no increase in water surface elevation from existing condition upstream or downstream of the Project Right-of-Way (ROW) or the drainage easement.

Additional roadway crossings have been identified for the future Liberty Lane roadway improvements. It is assumed the proposed culvert crossings will be sized for the 100-year design event to not reduce the sediment carrying capacity existing wash corridors from upstream. Culverts have been sized accordingly and are shown on Exhibit No. 7.

2.9 Dry Utilities

The dry utilities will be required to serve the proposed development:

- Electric by Salt River Project
- Gas by Southwest Gas
- Cable by Cox Communications
- Telephone by CenturyLink

Salt River Project, Cox Communications, CenturyLink

Salt River Project (SRP) services the South Mountain 370 Parcel area. SRP has existing conduit in a joint use trench with Cox Communications and Century Link in the Chandler Boulevard right of way between 19th and 27th Avenues. The SRP facilities located in the joint use trench include street lighting and distribution lines. SRP's Marley Substation is located at the south side of West Liberty Avenue just west of 18th Avenue.

SRP, Cox Communication and Century Link joint trench is assumed in Liberty Lane between 19th Avenue and Chandler Boulevard.

Southwest Gas

A 4" high pressure gas line is bordering the north side of South Mountain Freeway from 17th Avenue to South Chandler Blvd. A 4" gas line is bordering the west side of Chandler Blvd. inside a PUE north to Chandler Blvd.

It is possible that the developer may be required to construct a new 4" gas line within the Liberty Lane Right-of-Way between 19th Avenue and Chandler Boulevard to service the area.

3. BASIS OF INFRASTRUCTURE COST

3.1 Estimated Construction Cost

The estimated construction cost is based on the tabulated major infrastructure items for Roadway, Water, Reclaimed Water, Sewer, Storm Water and Dry Utilities proposed for construction. The City of Phoenix will charge impact Fees and possibility provide impact Fee Credits to select major infrastructure items for the development of this property. These Fee and Credits have not been included in the construction cost opinion due to the high variability based on exact use. Appendix B Estimated Impact Fees for further information.

Costs have been developed by comparison with recent bid results for COP. Unit costs from COP projects were utilized as a basis for estimating the recommended work. These costs are based on the most current data available, but are subject to change based on market conditions, labor, and available materials at the time of construction.

The Opinion of Probable Construction Cost for infrastructure improvements including roadway, water, wastewater, reclaimed water and dry utilities is estimated to be $ 5,324,946. The breakdown of estimated costs is shown in Appendix A.

3.2 Estimated Impact Fees

The impact fees for this site will depend heavily on the exact use, square footage, and mechanical design including water meter size and fixture unit counts. A calculation of estimated impact fees is shown in the Appendix B.

4. REFERENCES

Kimley Horn. Drainage & Structure Selection Memorandum Wash #1 at Chandler Boulevard & Shaughnessy Road

Kimley Horn. Final Drainage Report, Chandler Boulevard, 27th Avenue to 19th Avenue, May 2016,
COP Project No. ST85100367

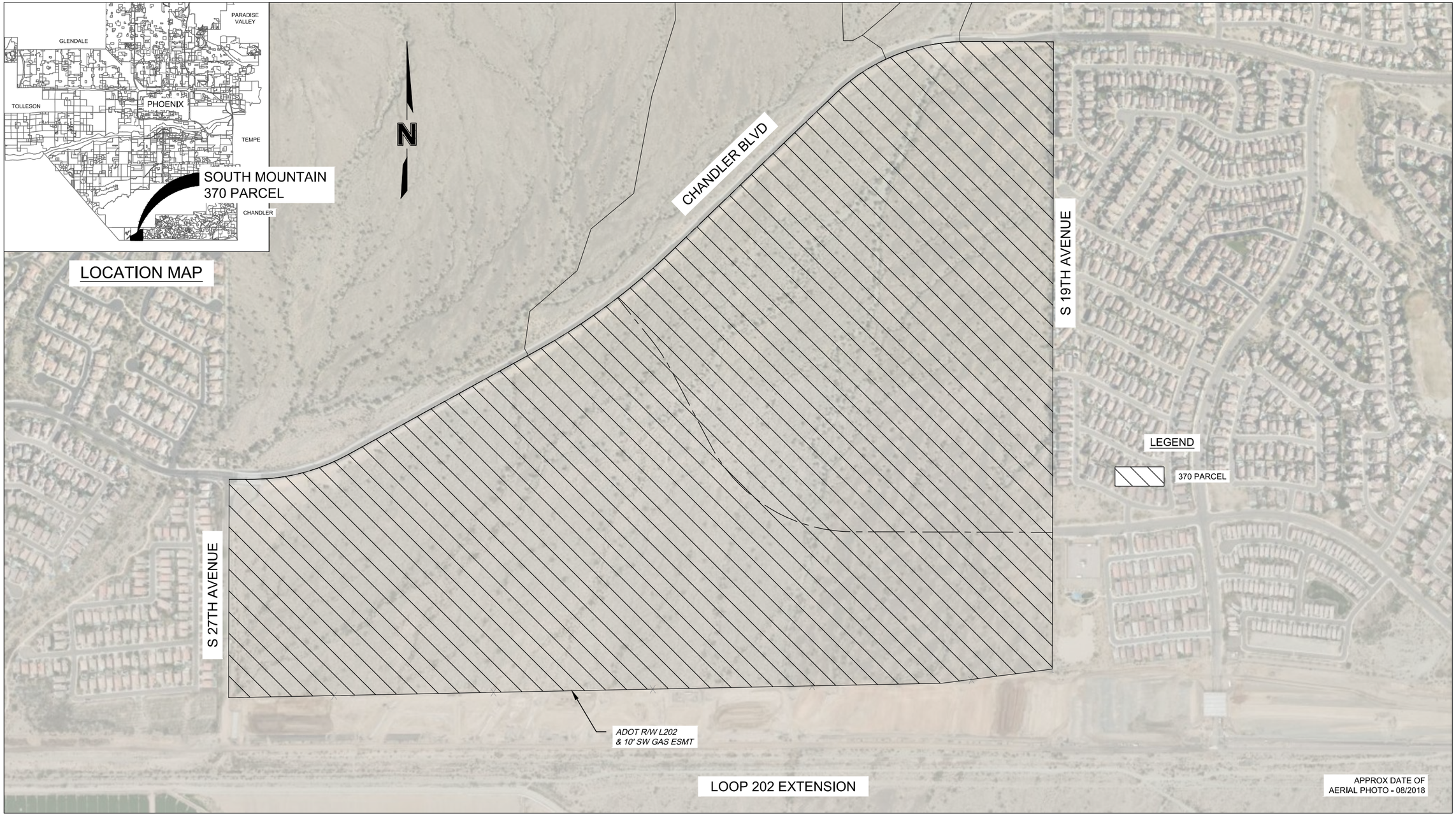
ADOT, South Mountain Freeway Pecos Segment, Final Drainage Report, Feb 2017, Project No. 202L MA 054 H8827 01 C
ADOT, State Route 202 Loop, Segment A – Drainage Main Construction Plans, Project No. 202L MA 054 H8827 01 C

Flood Control District of Maricopa County, Ahwatukee Foothills Area Drainage Master Plan

City of Phoenix Chandler Boulevard: 27th Avenue to 19th Avenue Construction Plans, 2016, COP Project No. ST85100367

City of Phoenix SR202L (Pecos Road) Sanitary Sewer, Chandler Boulevard to 17th Avenue Construction Plans, 2018, COP Project No. WS90500298-1

LIST OF EXHIBITS



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PROJECT NO: 019-2127	SOUTH MOUNTAIN 370 PARCEL PROJECT LOCATION MAP	olsson 7878 North 16th Street Suite 105 Phoenix, AZ 85020 TEL 602.748.1000	EXHIBIT
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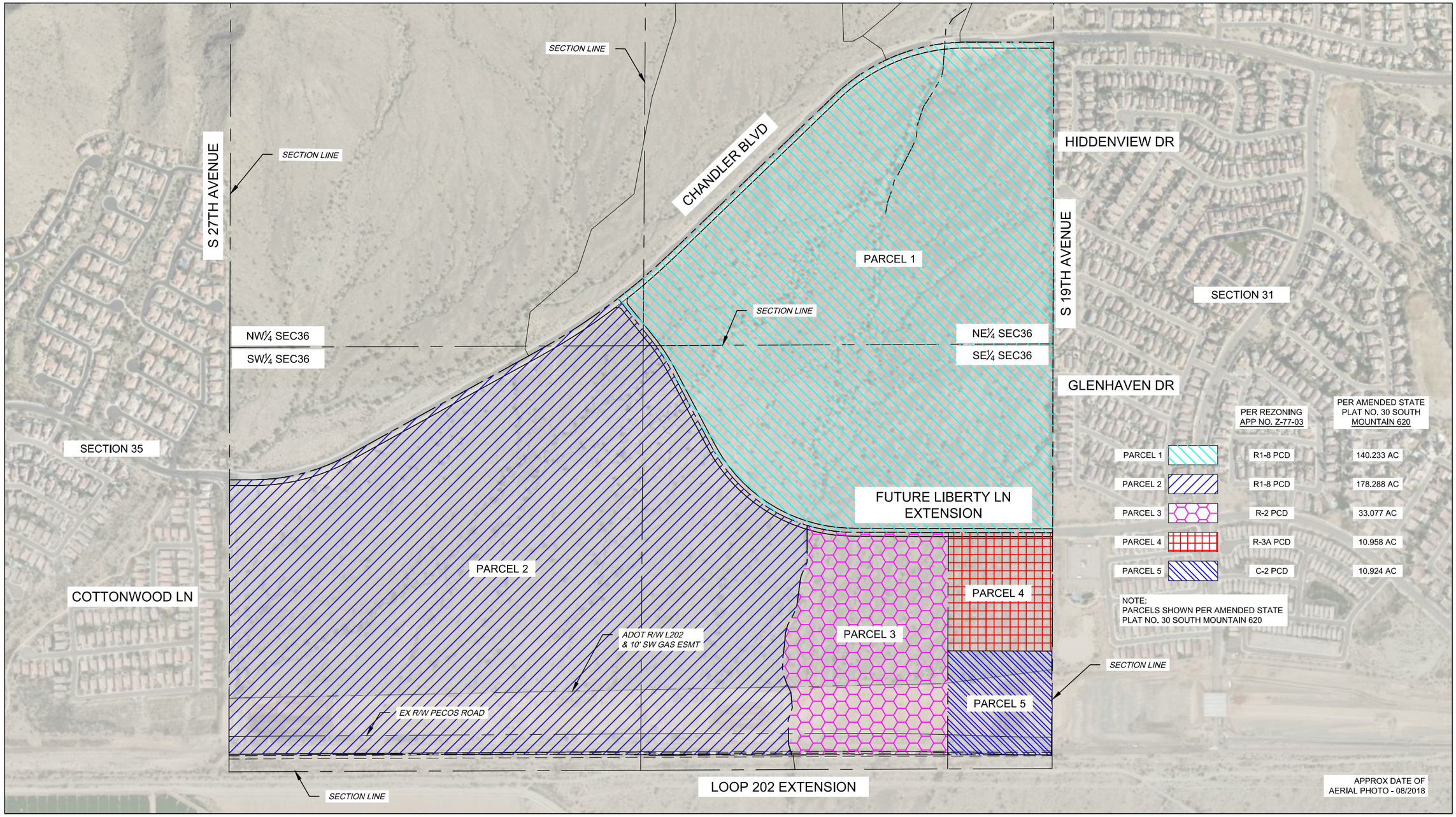
DATE: 8/6/2019			



	PER REZONING APP NO. Z-77-03	PER AMENDED STATE PLAT NO. 30 SOUTH MOUNTAIN 620
PARCEL 1	R1-8 PCD	140.233 AC
PARCEL 2	R1-8 PCD	178.288 AC
PARCEL 3	R-2 PCD	33.077 AC
PARCEL 4	R-3A PCD	10.958 AC
PARCEL 5	C-2 PCD	10.924 AC

NOTE:
PARCELS SHOWN PER AMENDED STATE PLAT NO. 30 SOUTH MOUNTAIN 620

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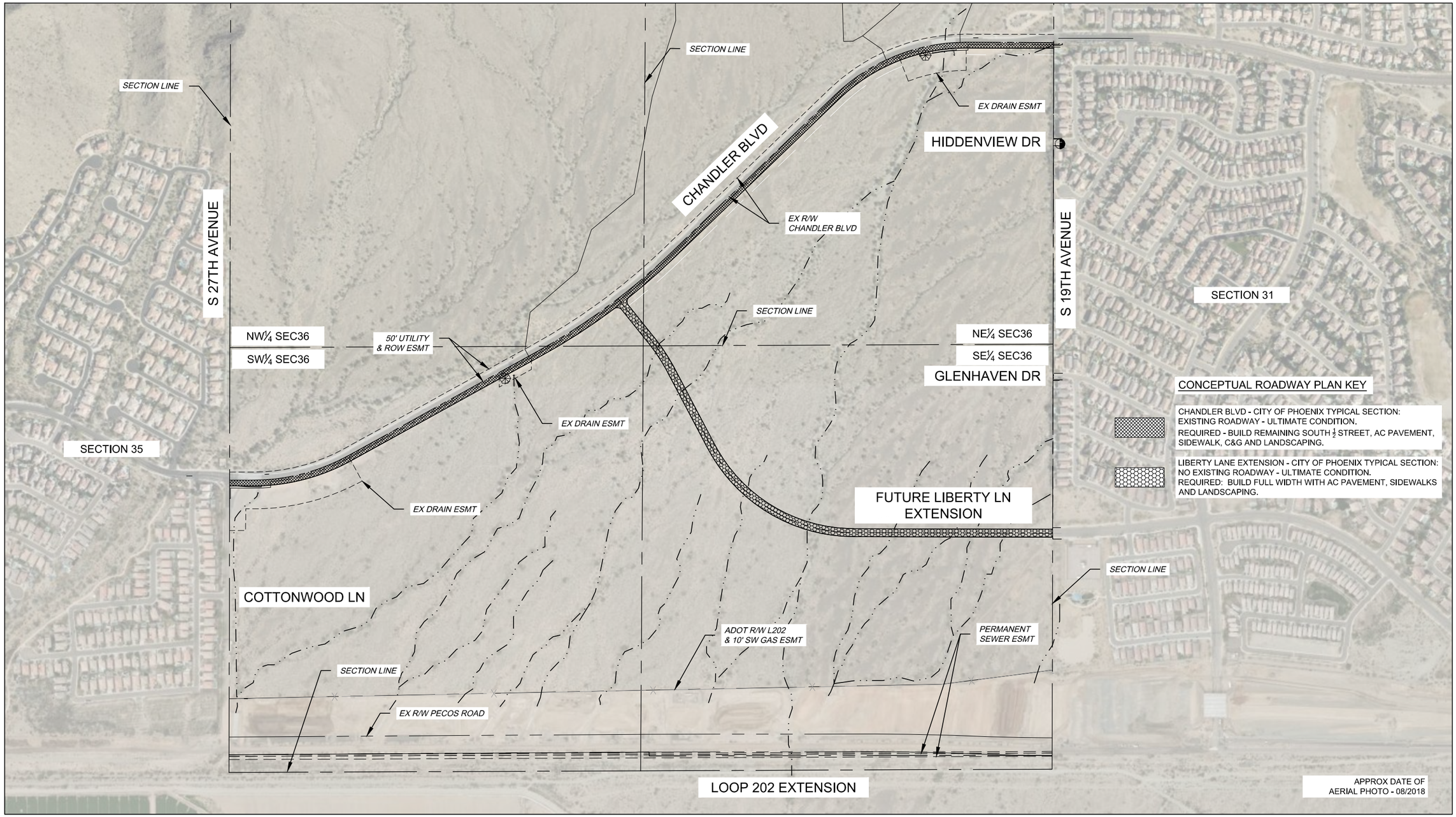

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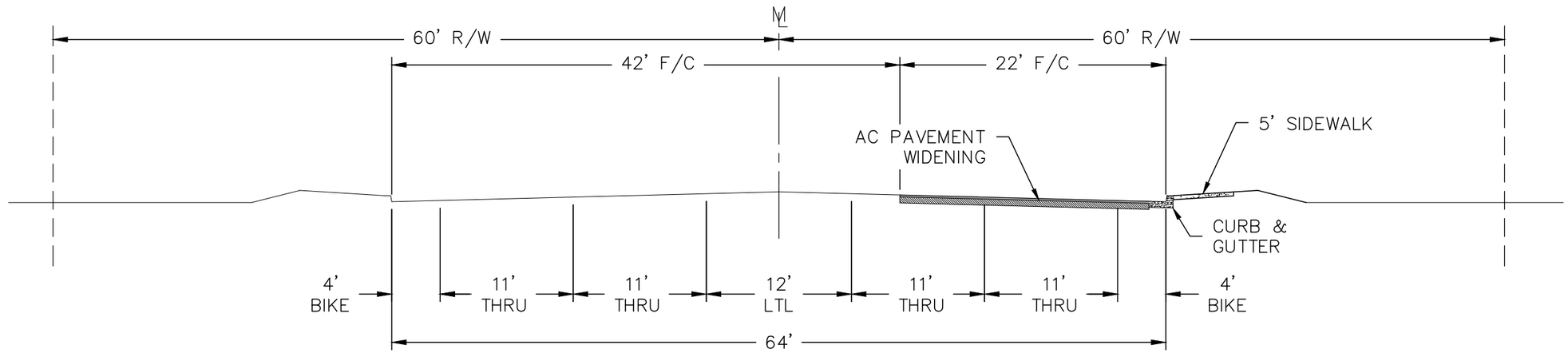
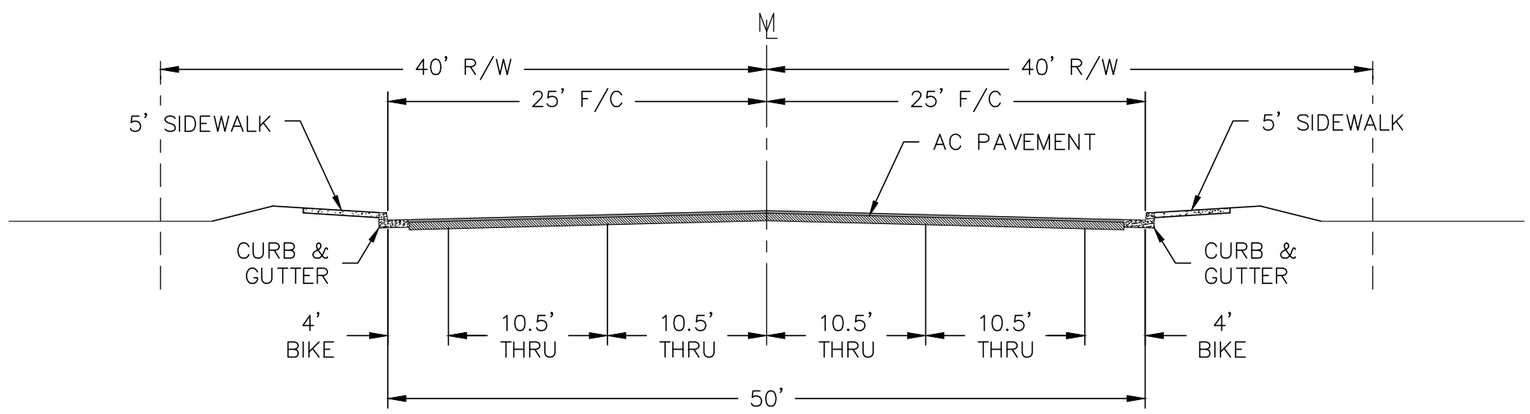


CHANDLER BLVD

(ARTERIAL ROADWAY - CROSS SECTION X-D)



LIBERTY LANE

(COLLECTOR ROADWAY - CROSS SECTION E)

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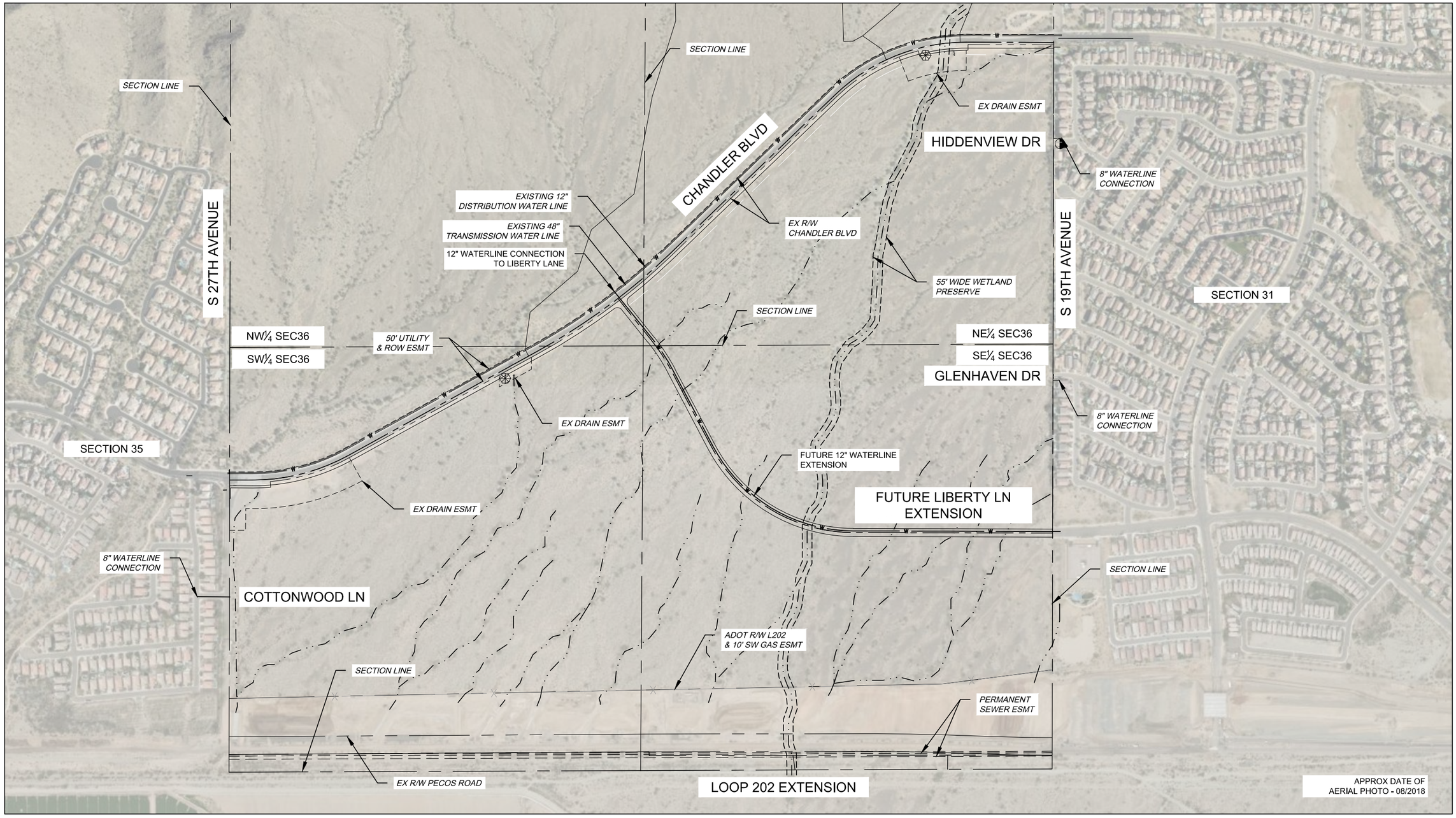

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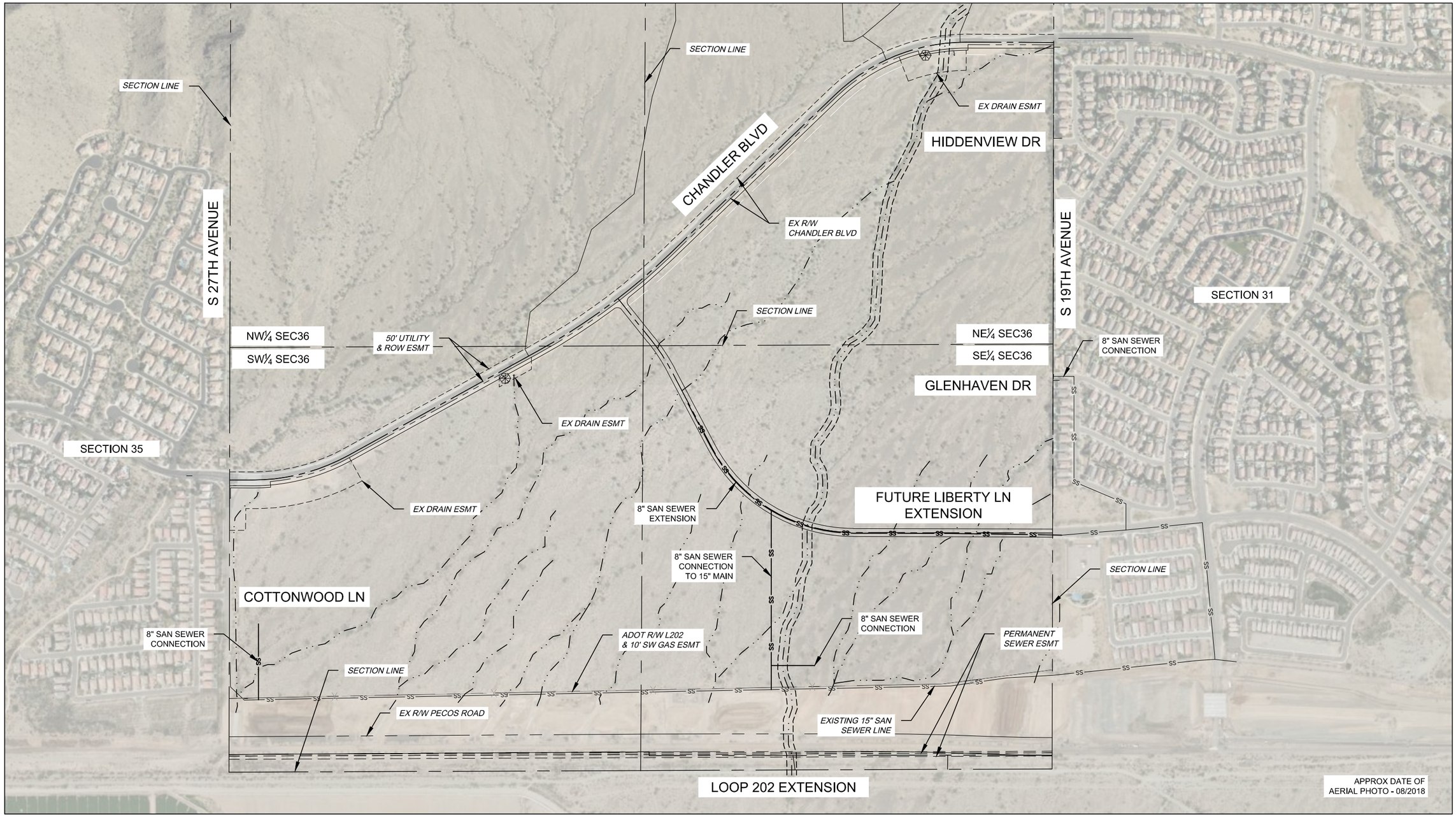

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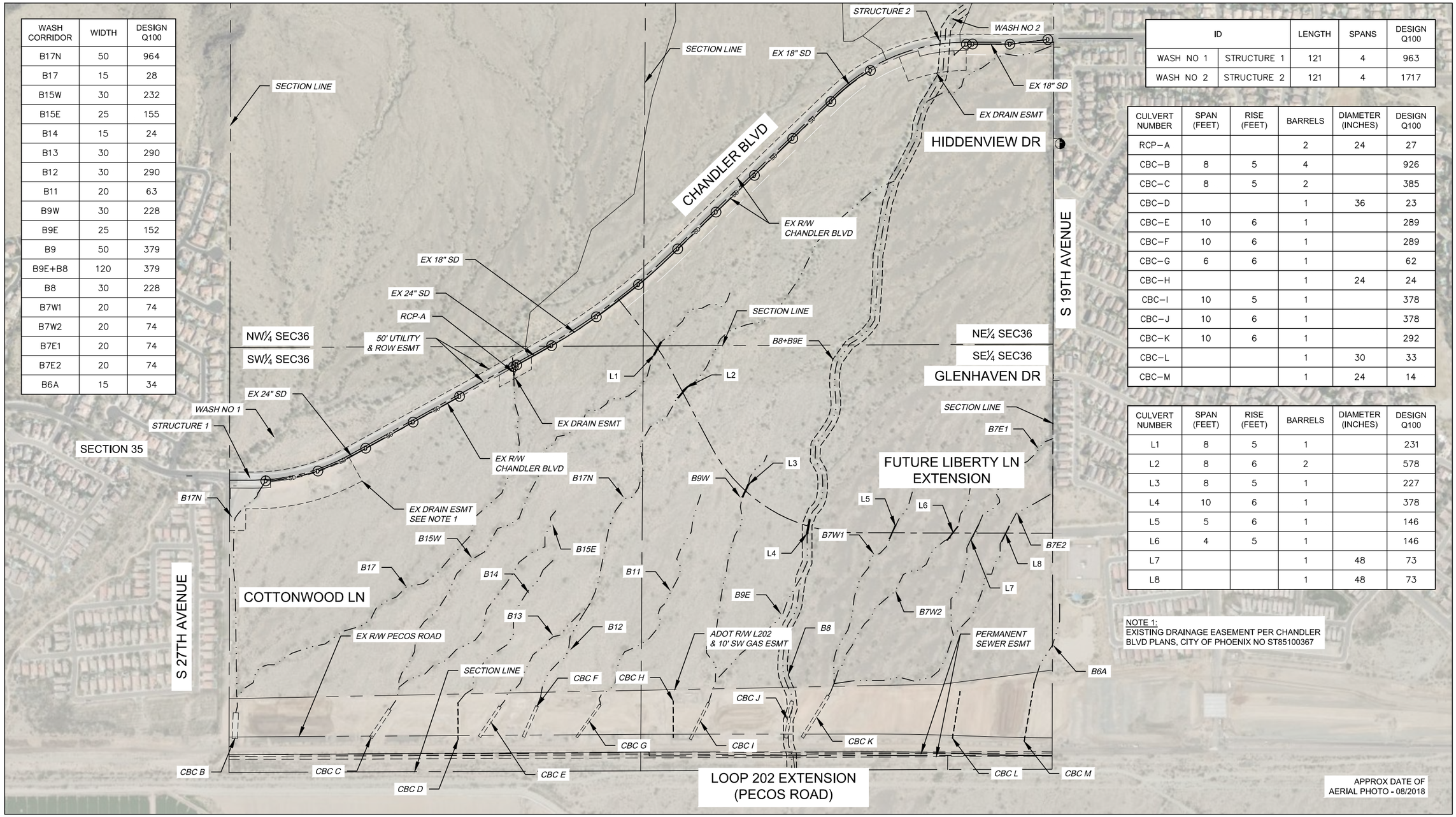
PROJECT NO: 019-2127	SOUTH MOUNTAIN 370 PARCEL CONCEPTUAL WASTEWATER PLAN	olsson 7878 North 16th Street Suite 105 Phoenix, AZ 85020 TEL 602.748.1000	EXHIBIT
DRAWN BY: SWA			6
DATE: 8/6/2019			

WASH CORRIDOR	WIDTH	DESIGN Q100
B17N	50	964
B17	15	28
B15W	30	232
B15E	25	155
B14	15	24
B13	30	290
B12	30	290
B11	20	63
B9W	30	228
B9E	25	152
B9	50	379
B9E+B8	120	379
B8	30	228
B7W1	20	74
B7W2	20	74
B7E1	20	74
B7E2	20	74
B6A	15	34



ID		LENGTH	SPANS	DESIGN Q100
WASH NO 1	STRUCTURE 1	121	4	963
WASH NO 2	STRUCTURE 2	121	4	1717

CULVERT NUMBER	SPAN (FEET)	RISE (FEET)	BARRELS	DIAMETER (INCHES)	DESIGN Q100
RCP–A			2	24	27
CBC–B	8	5	4		926
CBC–C	8	5	2		385
CBC–D			1	36	23
CBC–E	10	6	1		289
CBC–F	10	6	1		289
CBC–G	6	6	1		62
CBC–H			1	24	24
CBC–I	10	5	1		378
CBC–J	10	6	1		378
CBC–K	10	6	1		292
CBC–L			1	30	33
CBC–M			1	24	14

CULVERT NUMBER	SPAN (FEET)	RISE (FEET)	BARRELS	DIAMETER (INCHES)	DESIGN Q100
L1	8	5	1		231
L2	8	6	2		578
L3	8	5	1		227
L4	10	6	1		378
L5	5	6	1		146
L6	4	5	1		146
L7			1	48	73
L8			1	48	73

NOTE 1:
EXISTING DRAINAGE EASEMENT PER CHANDLER BLVD PLANS, CITY OF PHOENIX NO ST85100367

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DATE: 8/6/2019			

APPENDIX A

OPINION OF PROBABLE COST BREAKDOWN

ENGINEERING CONSTRUCTION COST ESTIMATE
INFRASTRUCTURE ASSESSMENT REPORT - 370 PARCEL

Project Location: Chandler Blvd - 19th Avenue to 27th Avenue

11/6/2019

CHANDLER BOULEVARD OPINION OF PROBABLE CONSTRUCTION COSTS

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
	Mobilization	LS	1	$50,000.00	$50,000.00
	Clearing and Grubbing	AC	2.9	$1,200.00	$3,480.00
	Subgrade Preparation	SY	13951	$1.30	$18,136.30
	Asphalt Concrete Surface Course (D 1/2, 1-1/2" Thick)	TON	1177	$70.00	$82,390.00
	Asphalt Concrete Surface Base (C 1-3/4, 6" Thick)	TON	4708	$68.00	$320,144.00
	Emulsified Asphalt For Tack Coat	TON	10	$800.00	$8,000.00
	Concrete Sidewalk	SF	28635	$3.64	$104,231.40
	Combined Concrete Curb and Gutter	LF	5727	$11.70	$67,005.90
	Furnish and Install Street Light, Complete in Place	EA	30	$1,900.00	$57,000.00
	Install Junction Box	EA	30	$160.00	$4,800.00
	LED Street Light Fixture	EA	30	$515.00	$15,450.00
	Decomposed Granite 3/4" Minus	SF	45816	$0.37	$16,951.92
	Landscape Establishment	LS	1	$25,000.00	$25,000.00
	Salvage Trees and Cacti	LS	1	$15,000.00	$15,000.00
	SWPPP	LS	1	$25,000.00	$25,000.00
SUBTOTAL ROADWAY ITEMS					**$812,589.52**
RECLAIMED WATER ITEMS					
SUBTOTAL RECLAIMED WATER ITEMS					
STORM DRAIN ITEMS					
	Concrete Catch Basin, Type 1, M-1, L=6 ft.	EA	9	$2,855.00	$25,695.00
	Concrete Catch Basin, Type 1, M-1, L=10 ft.	EA	1	$3,500.00	$3,500.00
	Concrete Catch Basin, Type 1, M-1, L=17 ft.	EA	2	$4,155.00	$8,310.00
	Headwall for 18" Pipe	EA	1	$3,820.00	$3,820.00
	18" Catch Basin Connector Pipe	LF	198	$65.00	$12,870.00
	Channel / Berm Excavation	CY	40000	$6.00	$240,000.00
SUBTOTAL STORM DRAIN ITEMS					**$294,195.00**
SUBTOTAL CONSTRUCTION COST					**$1,106,784.52**
CONTINGENCY & UNIDENTIFIED ITEMS (20%)					**$221,356.90**
SUBTOTAL CONSTRUCTTION COST AND CONTINGENCY					**$1,328,141.42**

ENGINEERING CONSTRUCTION COST ESTIMATE
INFRASTRUCTURE ASSESSMENT REPORT - 370 PARCEL

Project Location: Chandler Blvd - 19th Avenue to 27th Avenue

11/6/2019

CHANDLER BOULEVARD OPINION OF PROBABLE CONSTRUCTION COSTS

FINAL DESIGN ENGINEERING (8%)				**$106,251.31**
CONSTRUCTION ENGINEERING (15%)				**$199,221.21**
CONSTRUCTION SURVEYING (1.5%)				**$19,922.12**
TRAFFIC CONTROL (5%)				**$66,407.07**
TOTAL CONSTRUCTION COST				**$1,719,943.14**

ENGINEERING CONSTRUCTION COST ESTIMATE
INFRASTRUCTURE ASSESSMENT REPORT - 370 PARCEL

Project Location: Chandler Blvd - 19th Avenue to 27th Avenue

LIBERTY LANE OPINION OF PROBABLE CONSTRUCTION COSTS

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
	Mobilization	LS	1	$50,000.00	$50,000.00
	Clearing and Grubbing	AC	6.5	$1,200.00	$7,800.00
	Subgrade Preparation	SY	18424	$1.30	$23,951.20
	Asphalt Concrete Surface Course (D 1/2, 1-1/2" Thick)	TON	1554	$70.00	$108,780.00
	Asphalt Concrete Surface Base (C 1-3/4, 6" Thick)	TON	6218	$68.00	$422,824.00
	Emulsified Asphalt For Tack Coat	TON	6	$800.00	$4,800.00
	Concrete Sidewalk	SF	17640	$3.64	$64,209.60
	Combined Concrete Curb and Gutter	LF	7056	$11.70	$82,555.20
	Furnish and Install Street Light, Complete in Place	EA	18	$1,900.00	$34,200.00
	Install Junction Box	EA	18	$160.00	$2,880.00
	LED Street Light Fixture	EA	18	$515.00	$9,270.00
	Decomposed Granite 3/4" Minus	SF	112896	$0.37	$41,771.52
	Landscape Establishment	LS	1	$25,000.00	$25,000.00
	Salvage Trees and Cacti	LS	1	$15,000.00	$15,000.00
	SWPPP	LS	1	$25,000.00	$25,000.00
SUBTOTAL ROADWAY ITEMS					**$918,041.52**
WATER ITEMS					
	12-inch Water Main Pipe, Furnish and Install (Liberty Lane)	LF	3500	$63.00	$220,500.00
	8-inch Water Main Connections, Furnish and Install (Cotton Wood Ln, West Hidden View Dr., Glen Haven Dr.)	LF	300	$48.00	$14,400.00
	Fire Hydrant Assembly	EA	6	$2,500.00	$15,000.00
SUBTOTAL WATER ITEMS					**$249,900.00**
RECLAIMED WATER ITEMS					
SUBTOTAL RECLAIMED WATER ITEMS					
WASTEWATER ITEMS					
	8"- PVC Sewer Pipe (Liberty Lane)	LF	2700	$48.00	$129,600.00
	8" - PVC Sewer Pipe Connections (West Hidden View Dr., Glen Haven Dr.)	LF	300	$48.00	$14,400.00
	5' Dia. Sanitary Manhole (Assume every 300' spacing)	EA	5	$2,500.00	$12,500.00
SUBTOTAL WASTEWATER ITEMS					**$156,500.00**
STORM DRAIN ITEMS					
	Concrete Catch Basin	EA	24	$2,855.00	$68,520.00
	18" Catch Basin Connector Pipe	LF	600	$65.00	$39,000.00
	18" Storm Drain Pipe	LF	3500	$50.00	$175,000.00
	18"x18"x18" Prefabricated Tee	EA	12	$855.00	$10,260.00
	Storm Drain Manhole	EA	12	$2,800.00	$33,600.00
	8'x5' Single Barrel Box Culvert	LF	80	$600.00	$48,000.00
	8'x5' Single Barrel Box Culvert	LF	80	$600.00	$48,000.00
	8'x6' Double Barrel Box Culvert	LF	80	$1,200.00	$96,000.00

ENGINEERING CONSTRUCTION COST ESTIMATE
INFRASTRUCTURE ASSESSMENT REPORT - 370 PARCEL

Project Location: Chandler Blvd - 19th Avenue to 27th Avenue

LIBERTY LANE OPINION OF PROBABLE CONSTRUCTION COSTS

	10'x6' Single Barrel Box Culvert	LF	80	$700.00	$56,000.00
	5'x6' Single Barrel Box Culvert	LF	80	$500.00	$40,000.00
	4'x5' Single Barrel Box Culvert	LF	80	$400.00	$32,000.00
	48" Reinforced Concrete Pipe	LF	80	$325.00	$26,000.00
	48" Reinforced Concrete Pipe	LF	80	$325.00	$26,000.00
SUBTOTAL STORM DRAIN ITEMS					**$698,380.00**
DRY UTILITY ITEMS					
	SRP, Cox and Century Link Joint Trench	LF	2100	$60.00	$126,000.00
	Manholes every 500 ft	EA	4	$6,000.00	$24,000.00
	Southwest Gas - 4" Main	LF	2100	$70.00	$147,000.00
SUBTOTAL DRY UTILITY ITEMS					**$297,000.00**
SUBTOTAL CONSTRUCTION COST					**$2,319,821.52**
CONTINGENCY & UNIDENTIFIED ITEMS (20%)					**$463,964.30**
SUBTOTAL CONSTRUCTTION COST AND CONTINGENCY					**$2,783,785.82**
FINAL DESIGN ENGINEERING (8%)					**$222,702.87**
CONSTRUCTION ENGINEERING (15%)					**$417,567.87**
CONSTRUCTION SURVEYING (1.5%)					**$41,756.79**
TRAFFIC CONTROL (5%)					**$139,189.29**
TOTAL CONSTRUCTION COST					**$3,605,002.64**

APPENDIX B

ESTIMATED IMPACT FEES

Development Impact Fee Calculation
Ahwatukee
Category - Residential

Single-Family Residential Impact Fees	Acres	DU/Acre	Total DU	Net Impact Fee	Administrative Charge	Water Meter Fee	Sewer Development Occupational Fee	Total Cost/DU
Impact Fee Area - Ahwatukee				$6395/DU	$95/DU	$600/DU	$600/DU	$7,690/DU
R1-8 (4 - 4.5 DU/Acre)	318.521	4	1050	$6,714,750	$99,750	$630,000	$630,000	$8,074,500
R-2 - (5 - 6.5 DU/Acre)	33.07	6	198.42	$1,268,896	$18,850	$119,052	$119,052	$1,525,850
R-3A (5 - 6.5 DU/Acre)	10.96	6	65.76	$420,535	$6,247	$39,456	$39,456	$505,694

Development Services Department
Management Services
Prepared by: Sara Torales
November 21, 2019

Development Impact Fee Calculation
Ahwatukee
Fees effective September 5, 2016
Category - Commercial / Retail

	1	2	3	4	5	6	7	8	9	10	11	12
Capital Facility Category	Demand Units	EDUs	Total EDUs	Gross Fee Per EDU	Total Gross Charges	Alt Revenue Offset per EDU	Total Alt Revenue Offset	DOF Offset (Meter Size/Type)	Total DOF Offset	Net Development Impact Fee	DIF Admin Charge	Total DIF
DEVELOPMENT IMPACT FEES (DIF)			1 X 2		3 X 4		3 X 6		1 X 8	5 - 7 - 9	5 X 1%	10 + 11
Fire Protection (1,000 sq ft)	118.70	0.78	92.59	$551.00	$51,014.89	$38.00	$3,518.27			$47,496.62	$510.15	$48,006.77
Police (1,000 sq ft)	118.70	0.78	92.59	$499.00	$46,200.41	$40.00	$3,703.44			$42,496.97	$462.00	$42,958.98
Parks (1,000 sq ft)	118.70	0.05	5.94	$1,758.00	$10,433.73	$1,055.00	$6,261.43			$4,172.31	$104.34	$4,276.64
Libraries (1,000 sq ft)	118.70	0.00	0.00	$0.00	$0.00	$83.00	$0.00			$0.00	$0.00	$0.00
Major Arterials (1,000 sq ft)	118.70	0.00	0.00	$0.00	$0.00	$345.00	$0.00			$0.00	$0.00	$0.00
Storm Drainage (Acres)	10.90	0.00	0.00	$0.00	$0.00	$0.00	$0.00			$0.00	$0.00	$0.00
Water - Domestic (Water Meter: 1 x 6")	1	95.40	95.40	$4,580.00	$436,932.00	$481.00	$45,887.40	$27,600.00	$27,600.00	$363,444.60	$4,369.32	$367,813.92
Wastewater (Water Meter: 1 x 6")	1	101.25	101.25	$2,103.00	$212,928.75	$282.00	$28,552.50	$27,600.00	$27,600.00	$156,776.25	$2,129.29	$158,905.54
Water - Landscape (Water Meter: 4 x 2")	4	11.30	45.20	$4,580.00	$207,016.00	$481.00	$21,741.20	$4,500.00	$18,000.00	$167,274.80	$2,070.16	$169,344.96
Subtotal Development Impact Fees												**$791,306.80**
WATER RESOURCE ACQUISITION FEES (WRAF)					1 X 4							5
WRAF - Domestic (Water Meter: 1 x 6")	1			$74,196.00	$74,196.00							$74,196.00
WRAF - Landscape (Water Meter: 4 x 2")	4			$8,788.00	$35,152.00							$35,152.00
Subtotal Water Resource Acquisition Fees												**$109,348.00**
DEVELOPMENT OCCUPATIONAL FEES (DOF)					1 X 4							5
DOF - Water (Water Meter: 1 x 6")	1			$27,600.00	$27,600.00							$27,600.00
DOF - Waterwater (Water Meter: 1 x 6")	1			$27,600.00	$27,600.00							$27,600.00
DOF - Landscape (Water Meter: 4 x 2")	4			$4,500.00	$18,000.00							$18,000.00
Subtotal Development Occupational Fees												**$73,200.00**
Total Development-Related Charges												**$973,854.80**

Project Specifications:

Commercial / Retail Land Use
Parcel Acreage: 10.9
Building Sq Ft: 118,701
Domestic Meter: 1 x 6" compound meter
Landscape Meter: 4 x 2" compound meters